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# Lewis Pressurized, Fluidized-Bed Combustion Program—Data and Calculated Results

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# LEWIS PRESSURIZED, FLUIDIZED-BED COMBUSTION PROGRAM -

## DATA AND CALCULATED RESULTS

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### SUMMARY

A 200-kilowatt (thermal), pressurized, fluidized-bed (PFB) reactor and research test facility were designed, constructed, and operated by the NASA Lewis Research Center. The facility was established as part of a NASA-funded project to assess and evaluate the effect of PFB hot-gas effluent on aircraft turbine engine materials that may have applications in stationary powerplant turbogenerators.

The facility was intended for research and development work and was designed to operate over a wide range of conditions. These conditions included the type and rate of consumption of fuel (e.g., coal) and sulfur-reacting sorbent material; the ratio of feed fuel to sorbent material; the ratio of feed fuel to combustion airflow; the depth of the fluidized reaction bed; the temperature and pressure in the reaction bed; and the type of test unit that was exposed to the combustion exhaust gases.

This report presents the test data obtained in carrying out over 200 different tests in a 2-year period. Some of the tests involved the inter-relationship of the various operating parameters on reactor performance, other tests were carried out after making physical changes in the configuration of the reactor and/or gas cleanup system, and still other tests involved steady-state, endurance testing of component materials being investigated.

The report includes a description of the data acquisition and control instrumentation and how the instrument signals were used in making calculations. The procedures used in making these tests, including variations between one test series and another, are also described in this report.

NASA has terminated its in-house experimental PFB research, and the facility has been deactivated. The efforts put forth in this program may be of benefit to others who are considering such work for eventual commercial development of the fluidized-bed combustion concept. Many of the technical problems solved in this small facility are expected to be scalable to larger research or commercial facilities.

### INTRODUCTION

This report presents the data and performance of a pressurized, fluidized-bed (PFB), coal-burning combustor that was operated at the NASA Lewis Research Center. The PFB facility was used to furnish high-pressure, high-temperature combustion gases for the evaluation of gas turbine components. Hot-combustion-gas-using turbines have a potential use in future coal-burning power generation plants (ref. 1). In such applications, the turbine components will be subjected to gases containing more contaminants and corrosive substances than current hot gas turbines experience. The Lewis PFB facility

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was the first to flow over 1500° F gases through an operating gas turbine for long durations.

The PFB combustor is of interest because it is capable of in-situ coal-sulfur capture without the use of postcombustion gas cleanup systems. It has the ability to operate at a higher thermal efficiency and at lower operating temperatures than conventional coal-burning combustors (ref. 1). The PFB combustor also has application in cogeneration powerplants that use the hot combustion gases to provide electric power and steam for heating (ref. 2).

The Lewis PFB facility incorporates a 200-kilowatt (thermal) research combustor with several distinguishing features. It uses a tapered conical combustor design that has increasing cross-sectional bed surface area with reactor height. This results in a lower combustion gas bed exit velocity and theoretically lower bed particle entrainment while maintaining the essential PFB characteristics. The combustor has the capability of operating with different types of coal and sulfur sorbent and at any desired constant bed depth.

The physical characteristics and operating procedures used to date with the Lewis PFB facility were reported by Kobak and Rollbuhler (ref. 3). This report describes the tests done in this facility and the data obtained. Some of the tests were carried out to ascertain the combustor performance characteristics, other tests were performed to check out the combustion gas cleanup system, and still other tests involved turbine component life testing.

In this report the data acquisition system parameters and the data sources are described and located in table 1 and figures 1 to 11. Then the equations used to obtain calculation results from the measured data are presented in table 2. The sequence of tests carried out in this program and the key operating parameters of each test are listed in table 3. The test data and calculations from each of these tests have been combined into groupings associated with a particular part of the PFB system (combustor solids input information, combustor temperatures and pressures, etc.) and are presented in table 4. The solid materials associated with the PFB testing (e.g., coal, limestone, bed residue, and combustion gas flyash) were collected, weighed, screened for size, and chemically analyzed for many of the tests, and the results are listed in tables 5 to 10. The information presented is for a program that was carried out from mid-1977 to mid-1979.

Reports have been previously published covering certain specific interest areas of the PFB testing. Initial test results were reported by Priem, Rollbuhler, and Patch (ref. 4). A comparison of theoretical and experimental results in particle carryover was written by Patch (refs. 5 and 6). The characteristics of the PFB control system have been described by Kobak (ref. 7). Results of various gas cleanup techniques were reported by Rollbuhler and Kobak (ref. 8). And the corrosion-erosion behavior of turbine components during life tests can be found in reports by Zellars, Rowe, Lowell, Benford, and Rollbuhler (refs. 9 to 11). This report does not attempt to draw any conclusions but presents all the measured data and calculations for the entire NASA PFB program as a microfiche supplement (table 4).

#### DATA ACQUISITION PARAMETERS

Data from the Lewis PFB facility were generated from over 150 thermocouples, 45 pressure transducers, 10 fluid-flow-measuring transducers, 8 load cells, and an assortment of valve- and switch-actuated positioners,

rotation transducers, accelerometers, and gas analyzer signals. The data signals from these sources were recorded on high-speed data accumulators; each signal was associated with a particular data channel. There were over 200 channels being used. The data were recorded digitally at selected times in a given test. The accumulator, or recorder, could scan and record the 200 data channels in less than five hundredths of a second. Along with recording the data at selected time intervals, key data values were transmitted to a high-speed digital computer for processing into engineering expressions and performance calculations.

The data parameters are listed in table 1. The table has been divided into sections representative of various segments of the PFB facility. These segments are

- 1(a) - Combustor input solids data
- 1(b) - Combustor input air system data
- 1(c) - Combustor temperature and pressure data
- 1(d) - Combustor wall temperature data
- 1(e) - PFB system solids discharge data
- 1(f) - PFB coolant system data
- 1(g) - Combustion gas system data
- 1(h) - Combustion gas analyzing system data
- 1(i) - PFB test unit data

In each section, or table subdivision, the data parameter recording channel number is listed along with the tests in which the particular parameter applied. Over the program lifetime some parameters were dropped and new parameters put on the same data channel. Sometimes the parameter was switched from one channel to another and at other times the parameter transducer and/or its operating range was changed.

The locations of the parameter transducers are presented in figures 1 to 11. An overall schematic of the Lewis PFB combustion system is shown in figure 1. The main portions of it are the reactor vessel or combustor, the coal and sorbent feed system, the combustion gas cleanup system, the test section, the combustion gas cooldown and vent system, and the component water coolant system. A detailed description of the construction and test operation of these systems is presented in reference 3. Figures 2 to 11 show each of the PFB subsystems in schematic form and the general location of the data-producing transducers. At each measuring transducer location in the figures, a system identification number and the data-recording channel (DC) number are given. The thermocouple identification numbers contain the letter K, T, or R, referring to thermocouple type (K = Chromel-Alumel, T = copper-constantan, and R = platinum-rhodium).

The combustor input solids flow rates (coal and sorbent materials) into the combustor were determined in two ways: from changes in the supply hopper weights over the total time of a test, and from fuel hopper incremental weight readings. The input solids parameters are listed in table 1(a) and identified in figures 3 and 4. The PFB discharge solids were (1) the combustor bed material that was being "skimmed" off the bed surface so as to maintain a constant bed depth, (2) the combustor bed contents that remained in the combustor at the test conclusion, and (3) the combustion gas particles that were captured in the PFB cleanup system. The discharge solid parameters are listed in table 1(e), and the data locations are noted in figures 5, 7, and 11.

The combustor input gas flow during normal operations was heated compressed air. Its flow rate was determined by measuring the air's temperature and pressure and a venturi pressure drop as listed in table 1(b) with



the parameter data locations shown in figure 6. The combustor output gases either flowed through a cleanup, cooldown system and vented to the atmosphere or they flowed through a cleanup system, a test section, and a cooldown system and then vented. The combustion gas parameters are listed in table 1(g) and the transducer locations are presented in figures 7 and 11.

The combustor, or reactor vessel, internal pressure and temperature parameters are listed in tables 1(c) and (d). The temperatures were obtained from thermocouples inserted at various combustor heights into the unit's interior. The thermocouples were protected with Hastelloy jackets. Other thermocouples were located within the reactor refractory and insulated walls. The location and depths are noted in figure 2 and table 1(d). The wall temperatures were used to calculate wall heat transfer rates. Besides measuring the combustion gas absolute pressure values, we determined differential pressures across various portions of the combustor bed.

To initiate combustion within the PFB reactor, a natural gas and compressed-air burner was utilized. It was built into the bottom of the reactor and is shown in figure 8. The instrumentation, which included flowmeters, thermocouples, and pressure transducers, gave information of concern in starting the PFB operations. The operations engineer monitored the startup conditions so as not to exceed certain PFB operating limits. These data parameters are not included in this report because they do not apply to the steady-state PFB testing. More information on starting the PFB is presented in reference 3.

The PFB combustor was kept at steady-state operating temperatures and pressures by controlling the fuel and air flow rates and the heat removal rate from the reactor. The heat removal was accomplished by regulating the cooling water flow rate through and around the reactor. The coolant flowed through internal combustor heat exchangers ("rakes"), which could be varied in number and location within the combustor. The water coolant flow rate and temperature-measuring parameters are listed in table 1(f) and shown in figure 9. Normally not all the available coolant rakes would be used; in fact for the last series of tests, none of them were used. The reactor outer wall was wrapped with a water coolant line that was also instrumented.

As part of the test procedure the combustion gases within and those leaving the combustor were monitored for their composition. A portion of the gases was continuously withdrawn from the system and passed through the gas analyzer. The analyzer determined the concentrations of hydrocarbons, nitrogen oxides, sulfur oxides, carbon monoxide and dioxide, and oxygen. These concentration parameters and other pertinent data concerning the analysis are listed in table 1(h). A schematic of the gas analysis system is shown in figure 10. The gas sample line between the system components was kept warm enough to avoid possible product condensation within it.

The schematic of the turbine component testing system is presented in figure 11. The instrumentation parameters associated with this testing are listed in table 1(i). This testing generally required additional gas cleanup of flyash carryover from the combustor. This was done upstream of the component test units, using a two-stage, cyclone, gas-solids separator plus an optional ceramic filter assembly in series between the combustor gas exit and the component gas input port. The test component unit temperatures and pressures were measured, and instrumentation was provided for taking turbine spinup and braking data. The control of the spin rate was a critical operating parameter.

The instrumentation was set up not only to provide test data but also to serve as a safety system. The key parameter instrumentation was calibrated

daily. The control data values had to remain within specific minimum and maximum values at specific times during a test sequence; otherwise an audible and visual alarm would occur and corrective action would have to be made within a given time before the PFB control system would initiate shut-down procedures. Key data and calculations were displayed in the PFB control room for the operator's use. More information about the operational controls and safety features can be found in reference 7.

## DESCRIPTION OF THE DATA CALCULATION PROCEDURES

Once the test data had been obtained, they were not only recorded but many of them were used in calculations determining the performance level of the PFB systems, the system thermodynamics, and the operational rate of change in the processes. These calculations were made by using the formulas listed in table 2.

Calculating the combustion performance and fuel-burning efficiency required knowing the flow rates of the fuel and air entering the combustor and measuring the combustion gas chemical and physical conditions. Determining the actual fuel flow rate proved to be the most difficult calculation. The PFB fuel feed unit was designed to auger a physical volume of material into the combustor per unit of time, but there was no instantaneous rate-measuring flowmeter to verify that this was occurring. Solids flow rate had to be determined from changing fuel hopper weight signals. The rate was determined by using a least-squares fit calculation (CAL05 in table 2) of the changing fuel hopper load cell signals over a finite time span. The longer the time, the more load cell signals that could be fitted into the calculation and the more trustworthy the flow rate answer became. It actually amounted to an average flow rate over the time increment being considered. During this program two different signal acquisition systems were used for this calculation. One was known as the "Modicon" system and the other as the "Escort" system. The Escort system could take more weight signals in a given time to make the calculation than could the Modicon, and therefore more reliance was put on its results.

The fuel itself was a variable mixture of coal and sulfur-retaining ("sorbent") minerals. The solids ratio in this mixture was set by batch mixing of weighed quantities of each component and mechanically blending the solids. The other factor in the combustion process, the air, had its flow rate and density determined continuously from standard venturi flow equations (CAL04).

The combustion efficiency (CAL72) was determined from the available energy in the input coal and the amount of this energy that remained in the combustion gas and solid discharge materials. This involved knowing not only the chemical composition of the combustion products but also the quantity and composition of the partially reacted solids entrained in the gases. The solids in the gases (i.e., flyash) were collected and analyzed at an analytical laboratory. Measurement of the actual combustion gas flow rate (CAL37) was attempted, but the gas flowmeter pressure ports had a tendency to plug with the fine flyash. It was therefore assumed that the combustion gas flow rate was equivalent to the input air flow rate and that the volatile portion of the burning coal was fully oxidized in the air stream.

The PFB heat transfer rates and coefficients were calculated for the heat being removed from the combustion process by the reactor coolant rakes (CAL26, 27, and 30), the heat flowing through the reactor walls (CAL28 and 30), and the heat being carried out of the system in the combustion

gases (CAL38). Miscellaneous heat transfer rates were calculated for the other heat transfer units in the PFB system (CAL29). A large amount of heat was lost through the component walls; therefore the calculated thermal balance for the entire PFB system (CAL58) amounted to about three quarters of the total potential energy in the fuel.

The chief objective during the turbine component testing was to determine the time before turbine material changes began occurring. The combustion gases were therefore held constant, as much as possible, in flow rate, temperature, pressure, and composition over the test lifetime. Calculations were made of the rates of erosion and deposition on the component surfaces. These calculations were based on physical measurements made at intermediate test shutdown times. The samples were chemically analyzed during and after testing. Data on the turbine component tests can be found in references 9 to 11.

### TEST SEQUENCE

The complete listing of all tests carried out in the Lewis PFB facility is given in table 3. The listing shows that the testing consisted of two chief phases: (1) testing of the PFB combustion process variables (test series A to N) and (2) time duration testing of gas turbine sample components (test series TB1, TB2, T3, T4, T5, T6, T7, and CASO to CAS4).

The testing was usually done on a continuous basis from Monday through Friday with the weekend used for examination of the test samples and the system components. Starting the PFB on Monday used approximately 6 hours before steady-state test conditions were achieved and test data could be recorded. For any test series the combustion bed depth, the type of coal, the type of coal-sulfur sorbent material, and the extent of internal reactor cooling were kept constant. The combustion bed depth was held at a constant level during a given test series except when the combustion gas velocity was excessive and large quantities of solids were being blown out of the reactor.

For the combustion process tests, A to N in table 3, two types of coal were used: Pittsburgh seam No. 8 and Ohio seam. Two types of coal-sulfur sorbent materials were used: pure granular limestone and dolomite. The sorbent-coal ratio, in the fuel put into the reactor, was varied between 0.06 and 0.30.

During a given test series the combustion bed depth was preset to be maintained at some fixed level between 44 and 97 inches. The number of reactor internal coolant rakes was also held constant during a test series from zero to six.

During any test series the fuel-air ratio, the sorbent-coal ratio, the combustion pressure, the fuel flow rate (and combustion temperature), and the combustion air temperature and flow rate could be and were varied. In a given test series the fuel-air ratio was set between 0.04 and 0.10, the combustion pressure operating range was 40 to 90 psia, and the combustion temperature was held to some approximate value between 1500° and 1900° F by the quantity of fuel (10 to 80 lb/hr) injected into the reactor.

Each test was carried out at close to steady-state operating conditions for 2 to 6 hours. During that time span, data were recorded at intervals - usually 1/2 hour apart. These recorded data were given a reading number every time a data scan was made. Thus each test included six or more readings. The data reading numbers are listed for each test in table 3.

A variable in some tests was the input combustion air temperature. It was usually set at about 100° F by passing a portion of the incoming com-

pressed air through an exhaust gas heat exchanger and then remixing the heated air with the remaining ambient-temperature input air. If all the incoming air was passed through the heat exchanger, the input combustion air temperature could be increased to about 300° F.

For the turbine component tests it was desired to hold all the operating conditions at fixed values over the test duration. The test duration varied depending on how well the test samples held up in the combustion gas environment. This included testing of material samples in a cascade test unit (tests CASO to CAS4), testing of turbine sample blades rotating in uncleaned combustion gases (tests TB1A-F and TB2A-G), and testing of research material rotors in a gas turbine (tests T3 to T7). The final turbine test (T7) involved the longest exposure time of a given turbine test rotor to hot combustion gases - over 400 hours.

## TEST DATA AND RESULTS

The test data values, in engineering terms, and the calculations obtained from the data, are presented in table 4 for the tests listed in table 3. Table 4 has been divided into sections similar to the way the data parameters were divided in table 1; that is,

- 4(a) - Combustor input solids data
- 4(b) - Combustor input air system data
- 4(c) - Combustor temperature and pressure data
- 4(d) - Combustor wall temperature data
- 4(e) - PFB system solids discharge data
- 4(f) - PFB coolant system data
- 4(g) - Combustion gas system data
- 4(h) - Combustion gas analyzing system data
- 4(i) - PFB test unit data

Table 4 is included as a microfiche supplement to this report.

The data and results are average values for each test. As mentioned in the test sequence section, each test data value has been obtained by averaging the data values obtained in six or more test readings made during the steady-state testing time. It was attempted to keep operating conditions at a steady-state level during that portion of each test when readings were being obtained. The degree that this was attained is indicated by the standard deviation value listed together with the average test data value.

The data were recorded at a higher degree of precision than could reliably be expected from most of the instrumentation. Therefore the data values are presented only to the extent of expected accuracy. Those test data value locations where obviously erroneous data were being recorded are footnoted in the table. Those test data value locations where data were not recorded for that parameter during the test are also footnoted in the table.

The calculation values reported were determined by a computer for each test reading, and then the reading values were averaged for the test that included those readings. The standard deviation was also determined for the calculations that comprised the given test.

The data and calculations are presented for all the tests done in the Lewis PFB facility. No attempt is made in this report to interpret these data or calculations. Interpretations of particular portions of this information can be found in references 4 to 11.

## PFB SOLIDS ANALYSIS

An important factor in the operation of a PFB system is what is happening to the solid materials being introduced into the system. The input solids are the coal and the coal-sulfur sorbent material, the output solids are the reactor ash (that which is removed during a test and that remaining in the reactor after a test) and the flyash in the combustion gases. It is desired to operate the PFB at the highest thermal efficiency and at the same time minimize the quantity of solid material in the combustion gases.

The chemical analyses of the two types of coal and the two types of sorbent used in this program are given in table 5. The analyses were provided by the suppliers and verified by spot sample laboratory analysis. The table values are averages with a  $\pm 5$  percent variation. The chief difference between the Pittsburgh and Ohio coal, as far as this program was concerned, was the sulfur content and the heat of combustion. The sorbents differed in that the limestone was almost all calcium carbonate, while the dolomite was half calcium carbonate and half magnesium carbonate. Theoretically the calcium has a greater affinity for combining with the sulfur from the burning coal than does the magnesium. The combination of calcium and sulfur forms solid calcium sulfate. The calcium and magnesium are expressed in terms of their oxide form in table 5. This is the form that they assume in a high-temperature environment, such as a PFB combustion bed, with large flows of excess air passing by them.

Before a new test series was started each week the PFB reactor was filled to the desired depth with previously used bed material and topped off with new sorbent material. The quantities put in the reactor before each test series are listed in table 6. Also listed is the quantity of material removed from the reactor at the conclusion of a given test series. The input and output quantities do not agree because for some test series the input quantity settled after being deposited and it took further input during the testing period to bring the bed level up to the desired height. In other tests the combustion gas flow carried out large quantities of very fine bed particles, finer than the particles with which the bed was initially filled.

In order to determine the quantity of bed solid material entrained in the combustion gases as flyash, a portion ( $\sim 1/4$ ) of the gases was diverted periodically during each test through a microfine gas-filtering system. This system is shown in figure 7. The diverted gases passed through a flowmeter, a cyclone-type separator, a microporous element gas filter, and a commercial gas filter bag before venting to the atmosphere. The system was able to capture particles 0.2 micrometer and larger. The quantity of solids removed by this system is assumed to be representative of the rest of the combustion gases and is reported in table 7 as the grains of solid mass per standard cubic foot of gas.

The solids mass balance data for each test are reported in table 7. The input solids that should remain unreacted during testing are the ash in the coal, about 8 percent, and the oxide portion of the sorbent, about 57 percent in limestone. The solids being removed from the PFB system during testing are the bed surface removal unit discharge, the gas cyclone separator discharge solids, and the flyash that remains in the gases leaving the system. The bed surface discharge solids were collected in a weigh system and the net weight is listed as DC023. The cyclone separator discharge solids were also collected and weighed; the value is DC025. At various times

during a test series the accumulation of discharge solids was weighed and samples were taken for particle sizing and chemical analysis.

The solids from the bed surface and from the cyclone were sampled and sent to an analytical laboratory for composition determination. The results of this analysis are given in table 8. The solids were first separated chemically into the volatile and nonvolatile portions. The bed sample was mostly nonvolatile and the cyclone sample was about three quarters nonvolatile. The nonvolatile portion was analyzed for calcium, silica, sulfur, carbon, carbon oxides, sulfur oxides, and hydrogen concentrations.

Some of the solids from the bed surface and from the cyclone separator were analyzed for particle size distribution. Both a dry and a wet sieving technique were used to determine the size distribution of particles 25 micrometers and bigger. For particles smaller than 28 micrometers, the Andreason pipetting technique was used for determining particle size. The size is reported in table 9 as the mass percentage of the sample that is smaller than a stated size. Sizing is reported down to 5 micrometers. It was found to be important that the particle sizing analysis, and to a lesser extent the chemical analysis, of the solids be done as soon as possible after collecting the material. The particles are hygroscopic and they start caking and fusing together within a few days. There is also a change in particle coloring.

Table 10 shows a comparison of the chemical and sizing analysis for three different test bed samples. The finer material from the bed contained a greater percentage of sulfur than did the coarser portion. The coarser material was composed of a higher percentage of lime than were the smaller particles. Since the higher sulfur concentration was in the finer bed particles, it was important for the PFB operator to keep the combustion gas flow rate low enough to minimize the entrainment of these particles in the exhaust gases.

#### CONCLUDING REMARKS

Within the report is a vast array of test data and calculations pertaining to the operation of a PFB combustion system under various operating conditions. The Lewis PFB system is a research and development facility of 200-kilowatt (thermal) size that can be operated over widely varying conditions. The system is extensively equipped with sophisticated instrumentation and operating controls. A great deal of effort has been put into obtaining a high degree of accuracy in the results.

The data and results have been grouped in this report such that the reader interested in a particular test parameter or test condition can locate the pertinent information without looking through all the data. The reader should first check through the table of test parameters to determine if the ones he is interested in are listed. Or, if he is interested in a particular calculation, the reader can check in table 2 for how that calculation was made and what input data were used in the calculation. Next he should check table 3 for the particular type of PFB test he is concerned with. Knowing the parameters and the tests of interest, the reader can look in table 4 for the data for those tests and the desired parameters.

Together with the PFB facility report (ref. 3) this report shows what results can be obtained with given components and equipment. For example, changes in the gas cleanup system described by Rollbuhler and Kobak (ref. 8) can be related to the gas solids loading and flyash collected as reported in this publication. The description of the controls in both ref-

erences 3 and 7 and an analysis of the standard deviations of the control parameters listed in this report suggest areas of improvement in future PFB installations.

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TABLE 1. - PFB TEST DATA PARAMETERS

## (a) Combustor input solids data

Recording data channel	Parameter	Data source	Valid test series
DC001	Coal consumed, lb	$\Delta$ Weight	All
DC002	Coal hopper meter screw average value	-----	↓
DC003	Sorbent consumed, lb	$\Delta$ Weight	
DC004	Sorbent hopper meter screw average value	-----	
DC005	Fuel consumed, lb	CALC5	
DC006	Fuel hopper meter screw average value	-----	↓
DC014	Fuel injector line pressure drop, psid	AS085	J1-T7D
DC022	Fuel injector line wall temperature, °F	K007	A1A-TB2G
DC033	Fuel injector line pressure drop, psid	AS085	A1A-TB2G
DC092	Present fuel flow rate, pph (Modicon)	-----	E1-T7D
DC093	Present fuel flow time, sec (Modicon)	-----	
DC094	Previous fuel flow rate, pph (Modicon)	-----	
DC095	Accumulated fuel flow, lb (Modicon)	-----	↓
DC100	Reactor fuel flow indication, mV	-----	T3A-T7D
DC174	Present fuel flow rate, pph (Modicon)	-----	A1A-TB2G
DC175	Present fuel flow time, sec (Modicon)	-----	
DC176	Previous fuel flow rate, ppm (Modicon)	-----	
DC177	Accumulated fuel flow, lb (Modicon)	-----	↓
DC298	Present fuel flow rate, ppm (Escort)	-----	T3A-T7D
CALC06	Sorbent-coal ratio	DC004/DC002	All
CALC07	Coal flow rate, pph	CALC5,6	All
CALC08	Sorbent flow rate, pph	CALC5,7	All
CALC05	Fuel flow rate, pph ( $\Delta$ W least-squares fit)	DC174	A1A-TB2G
CALC05	Fuel flow rate, pph ( $\Delta$ W least-squares fit)	DC092	E1-G19
CALC05	Fuel flow rate, pph ( $\Delta$ W least-squares fit)	DC298	H1-T702
CALC13	Input calcium-sulfur ratio	CALC8,7	All
DC022	Fuel line pressure drop, psid	AS085	E1-T7D

## (b) Combustor input air system data

Recording data channel	Parameter	Data source	Valid test series
DC008	Combustor air venturi differential pressure, psid	AS046	All
DC009	Combustor air line pressure, psia	AS025	↓
DC010	Combustor air inlet temperature, °F	K001	
DC011	Fuel air injector venturi differential pressure, psid	AS010	
DC012	Fuel air injector line pressure, psia	AS011	
DC013	Fuel air injector gas temperature, °F	T036	
DC015	Burner air venturi differential pressure, psid	AS042	
DC016	Burner air line pressure, psia	AS018	
DC050	Reactor air inlet temperature, °F	K004	
DC054	Reactor grid air differential pressure, psid	AS029	
DC055	Reactor internal gas pressure, psia	TP064	
DC099	Air heater vent air temperature, °F	K043	
DC131	Air heater reactor air temperature, °F	K025	
DC148	Air heater input air pressure, psia	AS035	
DC149	Air heater venturi differential pressure, psia	AS019	
CALC04A	Combustor airflow rate, pph	DC8,9,10	↓
CALC04B	Burner airflow rate, pph	DC13,15,16	
CALC04C	Fuel air injector flow rate, pph	DC11,12,13	
CALC04	Total combustion airflow rate, pph	CALC4A,B,C	
CALC09	Reactor coal-air ratio	CALC04,07	
CALC16	Reactor grid airflow coefficient	DC50,54,55	



TABLE 1. - Continued.

(c) Combustor temperature and pressure data

Recording data channel	Parameter	Data source	Valid test series	
DC030	Bed temperature, 5 inches up left side, °F	R097	A11	
DC031	Bed temperature, 5 inches up right side, °F	R098	A11	
DC032	Bed temperature, 15 inches up, °F	R114	A11	
DC033	Bed temperature, 29 inches up, °F	R100	E1-T7D	
DC034	Bed temperature, 42 inches up, °F	R091	A11	
DC035	Bed temperature, 55 inches up, °F	R092	↓	
DC036	Bed temperature, 67 inches up, °F	R093		
DC037	Bed temperature, 79 inches up, °F	R094		
DC038	Bed temperature, 96 inches up, °F	R095		
DC039	Internal temperature below gas exit, °F	R096		
DC028	Reactor grid metal temperature, °F	R112		A1A-TB2G
DC029	Reactor grid cap metal temperature, °F	R113		A1A-TB2G
DC051	Reactor grid to port 1 differential pressure, psid	-----		E1-T3E
DC052	Reactor port 1 to port 2 differential pressure, psid	-----		E1-T3E
DC056	Reactor overall bed differential pressure, psid	TP042		A11
DC167	Bed sample rod 1 temperature, °F	K011	↓	
DC168	Bed sample rod 2 temperature, °F	K012		
DC169	Bed sample rod 3 temperature, °F	K013		
DC170	Bed sample rod 4 temperature, °F	K014		
DC171	Bed sample rod 5 temperature, °F	K015		
DC172	Bed sample rod 6 temperature, °F	K016		
DC173	Bed sample rod 7 temperature, °F	K017		
DC178	Reactor grid to port 1 differential pressure, psid	-----	A1A-TB2G	
DC179	Reactor port 1 to port 2 differential pressure, psid	-----	↓	
DC180	Reactor port 2 to port 3 differential pressure, psid	-----		
DC181	Reactor port 3 to port 4 differential pressure, psid	-----		

TABLE 1. - Continued.

## (d) Combustor wall temperature data

Recording data channel	Parameter	Data source	Valid test series
DC026	Reactor port 6 wall surface temperature, °F	T042	E1-T7D
DC027	Reactor port 4 wall surface temperature, °F	T039	↓
DC028	Reactor port 1 wall surface temperature, °F	T040	
DC029	Reactor combustor wall surface temperature, °F	R104	↓
DC040	Reactor combustor bottom wall shallow temperature, °F	R101	A11
DC041	Reactor combustor bottom wall deep temperature, °F	R102	A11
DC042	Reactor combustor top wall shallow temperature, °F	R103	A11
DC043	Reactor combustor top wall deep temperature, °F	R104	A1A-TB2G
DC044	Reactor port 4 wall shallow temperature, °F	R105	A11
DC045	Reactor port 4 wall deep temperature, °F	R106	↓
DC046	Reactor top cap wall deep temperature, °F	R107	
DC047	Reactor top cap wall surface temperature, °F	K026	↓
DC048	Reactor top cap wall surface temperature, °F	K027	A1A-TB2G
DC112	Reactor port 6 wall insulation temperature, °F	K060	T3A-T7D
DC156	Reactor gas exit wall temperature, °F	K068	A1A-E15
DC171	Reactor exit pipe insert wall temperature, °F	K058	E1-T7D
DC043	Reactor port 6 wall deep temperature, °F	R112	↓
DC048	Reactor top cap wall surface temperature, °F	R113	
DC156	Reactor gas exit wall temperature, °F	K042	F1-T7D

TABLE 1. - Continued.

## (e) PFB system solids discharge data

Recording data channel	Parameter	Data source	Valid test series
DC049	Reactor-solids discharge pipe wall temperature, °F	K005	A11
DC118	Reactor-solids discharge coolant temperature, °F	T030	A11
DC119	Reactor-solids removal unit (probe) temperature, °F	T031	A1A-TB2G
DC023	Reactor-solids discharge, lb	ΔWeight	A11
DC136	Gas-solids sampler gas pressure, psia	TP055	↓
DC137	Gas-solids sampler venturi differential pressure, psid	TP058	
DC138	Gas-solids sampler gas temperature, °F	K049	
DC025	Gas-solids separator solids discharge, lb	ΔWeight	
DC139	Gas-solids separator hopper wall temperature, °F	K051	↓
DC140	Gas-solids separator hopper coolant temperature, °F	T029	A1A-TB2G
DC141	Gas-solids separator collector temperature, °F	K052	A1A-E15
DC150	Gas-solids separator discharge differential pressure, psid	-----	I1-T7D
DC165	Reactor-solids separator pipe wall temperature, °F	K054	A11
DC166	Reactor-solids separator gas temperature, °F	K057	A11
DC173	Gas-solids separator gas wall temperature, °F	K055	E1-T7D
DC174	Gas-solids separator hopper wall temperature, °F	K056	↓
DC175	Gas-solids separator exit gas temperature, °F	K059	
DC176	Gas-solids filter unit wall temperature, °F	K066	
DC180	Gas-solids separator differential pressure, psid	TP163	

TABLE 1. - Continued.

(f) PFB coolant system data

Recording data channel	Parameter	Data source	Valid test series	
DC051	Reactor coolant water flow rate, gal/min	F10	T3F-T7D	
DC052	Reactor coolant water flow rate, gal/min	F11	T3F-T7D	
DC077	Reactor coolant water inlet temperature, °F	T038	A11	
DC078	Reactor coolant water inlet pressure, psia	WS008	↓ A1A-TB2G	
DC079	Reactor coolant water flow rate, gal/min	F2/WS013		
DC080	Reactor coolant water exit pressure, psia	WS038		
DC081	Reactor coolant 1 outlet temperature, °F	T001		
DC082	Reactor coolant 2 outlet temperature, °F	T002		
DC083	Reactor coolant 3 outlet temperature, °F	T003		
DC084	Reactor coolant 4 outlet temperature, °F	T004		
DC085	Reactor coolant 5 outlet temperature, °F	T005		
DC086	Reactor coolant 6 outlet temperature, °F	T006		
DC087	Reactor coolant 7 outlet temperature, °F	T007		
DC088	Reactor coolant 8 outlet temperature, °F	T008		
DC089	Reactor coolant 9 outlet temperature, °F	T009		
DC090	Reactor coolant 10 outlet temperature, °F	T010		
DC091	Reactor coolant 11 outlet temperature, °F	T011		
DC092	Reactor coolant 12 outlet temperature, °F	T012		
DC093	Reactor coolant 13 outlet temperature, °F	T013		↓ E1-T7D
DC094	Reactor coolant 14 outlet temperature, °F	T014		
DC095	Reactor coolant 15 outlet temperature, °F	T015	↓ A11	
DC096	Reactor coolant 16 outlet temperature, °F	T016		
DC096	Reactor coolant water flow rate, gal/min	-----	E1-T7D	
DC097	Reactor coolant combustor water flow rate, gal/min	F3/WS009	A11	
DC098	Reactor coolant combustor water outlet temperature, °F	T028	↓ A1A-TB2G	
DC101	Reactor coolant water flow rate, gal/min	F1/WS017		
DC102	Reactor coolant water exit pressure, psia	WS039		
DC103	Reactor coolant 17 outlet temperature, °F	T017		
DC104	Reactor coolant 18 outlet temperature, °F	T018		
DC105	Reactor coolant 19 outlet temperature, °F	T019		
DC106	Reactor coolant 20 outlet temperature, °F	T020		
DC107	Reactor coolant 21 outlet temperature, °F	T021		
DC108	Reactor coolant 22 outlet temperature, °F	T022		
DC109	Reactor coolant 23 outlet temperature, °F	T023		
DC110	Reactor coolant 24 outlet temperature, °F	T024		
DC111	Reactor coolant 25 outlet temperature, °F	T025		
DC112	Reactor coolant 26 outlet temperature, °F	T026		
DC113	Reactor coolant transition section flow rate, gal/min	F4/WS012		A1A-TB2G
DC114	Reactor coolant transition section exit temperature, °F	T027		A11
DC115	Reactor top wall coolant exit temperature, °F	T032		A11
DC116	Reactor mid-wall coolant exit temperature, °F	T033	A11	
DC117	Reactor bottom wall coolant exit temperature, °F	T034	↓ A11	
DC120	Reactor outside wall coolant exit temperature, °F	T075		
DC121	Reactor outside wall coolant flow rate, gal/min	F5/WS016		
DC140	Reactor transition coolant exit pressure, psia	WP004		E1-T7D
DC141	Reactor coolant water flow rate, gal/min	F9	F1-T7D	
DC145	PFB system coolant discharge pressure, psia	WP004	A1A-TB2G	
CALC26	Heat exchanger heat transfer rate, Btu/hr	-----	A11	
CALC27	Heat exchangers heat transfer rate, Btu/hr	-----	↓	
CALC28	Reactor wall heat transfer rate, Btu/hr	-----		
CALC30	Heat transfer coefficient, Btu/hr ft <sup>2</sup> °F	-----		
CALC58	PFB system total heat transfer rate, Btu/hr	-----	↓	

TABLE 1. - Continued.

(g) Combustion gas system data

Recording data channel	Parameter	Data source	Valid test series
DC122	Reactor gas cooler 4 coolant temperature, °F	T050	All
DC123	Reactor gas cooler 3 coolant temperature, °F	T051	
DC124	Reactor gas cooler 2 coolant temperature, °F	T059	
DC125	Reactor gas cooler 1 coolant temperature, °F	T053	
DC126	Reactor gas cooler 4 gas exit temperature, °F	K028	
DC127	Reactor gas cooler 3 gas exit temperature, °F	K029	
DC128	Reactor gas cooler 2 gas exit temperature, °F	K030	
DC129	Reactor gas cooler 1 gas exit temperature, °F	K031	
DC130	Exhaust gas cooler exit water temperature, °F	T057	
DC132	Gas-air heat exchanger 4 gas wall temperature, °F	K032	
DC133	Gas-air heat exchanger 3 gas wall temperature, °F	K033	
DC134	Gas-air heat exchanger 2 gas wall temperature, °F	K034	
DC135	Gas-air heat exchanger 1 gas wall temperature, °F	K035	
DC142	Gas system coolant water flow rate, gal/min	F6/WS036	
DC143	Gas system coolant exit temperature, °F	T074	
DC144	Exhaust gas temperature, °F	K036	
DC145	Exhaust gas exit pressure, psia	-----	E1-CAS4
DC146	Exhaust gas flow rate, mV	-----	E1-CAS4
DC151	Exhaust gas flow rate, mV	-----	T3A-T7D
DC076	Exhaust gas cooler exit gas temperature, °F	K039	A11
DC152	Exhaust gas exit pressure, psia	-----	T3A-T7D
CALC29	Gas system coolant heat transfer, Btu/hr	-----	A11
CALC37	Gas flow rate, lb/hr	-----	
CALC38	Combustion gas heat transfer, Btu/hr	-----	
CALC39	Combustion gas velocity at reactor grid, ft/sec	-----	
CALC40	Combustion gas velocity at 26-in. bed depth, ft/sec	-----	
CALC41	Combustion gas velocity at 44-in. bed depth, ft/sec	-----	
CALC42	Combustion gas velocity at 56-in. bed depth, ft/sec	-----	
CALC43	Combustion gas velocity at 68-in. bed depth, ft/sec	-----	
CALC44	Combustion gas velocity at 80-in. bed depth, ft/sec	-----	
CALC45	Combustion gas velocity at 97-in. bed depth, ft/sec	-----	

TABLE 1. - Continued.

## (h) Combustion gas analyzing system data

Recording data channel	Parameter	Data source	Valid test series
DC027	Reactor sample port gas temperature, °F	K050	A1A-TB2G
DC026	Reactor sample port gas pressure, psia	TP016	A1A-TB2G
DC063	Gas analysis NO <sub>x</sub> value, ppm	-----	A1A-TB2G
DC064	Gas analysis NO <sub>x</sub> value, ppm	-----	E1-T7D
DC065	Gas analysis CO value, ppm	-----	E1-T7D
DC066	Gas analysis CO value, ppm	-----	A1A-TB2G
DC067	Gas analysis hydrocarbon value, ppm	-----	A1A-TB2G
DC068	Gas analysis hydrocarbon value, ppm	-----	E1-T7D
DC069	Gas analysis CO <sub>2</sub> value, ppm	-----	A1A-TB2G
DC070	Gas analysis CO <sub>2</sub> value, ppm	-----	E1-T7D
DC071	Gas analysis SO <sub>x</sub> value, ppm	-----	A1A-TB2G
DC072	Gas analysis SO <sub>x</sub> value, ppm	-----	E1-T7D
DC073	Gas analysis O <sub>2</sub> concentration, ppm	-----	A11
DC074	Gas analysis SO <sub>x</sub> permissive signal, mV	-----	↓
DC075	Gas analysis sample gas temperature, °F	K037	↓
DC057	Gas analysis sample gas pressure, psia	TP109	↓
DC089	Sample line steam heating differential temperature, °F	K040/041	E1-T7D
DC090	Sample line steam-heated wall temperature, °F	K036	E1-T7D
DC091	Sample line gas wall temperature, °F	K045	E1-T7D
DC146	Sample line steam input wall temperature, °F	K038	A1A-TB2G
DC150	Sample line steam heating differential temperature, °F	K040/041	A1A-TB2G
DC157	Reactor sample port gas temperature, °F	K050	J1-T7D
DC159	Sample line gas wall temperature, °F	K045	A1A-TB2G
CALC34	Combustor gas valid SO <sub>x</sub> concentration, ppm	-----	A11
CALC46	Exhaust gas NO <sub>x</sub> concentration, lb/10 <sup>6</sup> Btu	-----	↓
CALC47	Exhaust gas SO <sub>x</sub> concentration, lb/10 <sup>6</sup> Btu	-----	↓
CALC49	Exhaust sulfur percentage of input coal sulfur	-----	↓

TABLE 1. - Concluded.

(i) PFB test unit data

Recording data channel	Parameter	Data source	Valid test series
DC051	Test sample 1 temperature, °F	R121	A1A-TB2G
DC052	Test sample 2 temperature, °F	R122	A1A-TB2G
DC150	Test section gas pressure, psia	-----	E1-H26
DC151	Test sample rotation rate, rpm	-----	A1A-M12
DC152	Test section coolant exit 1 temperature, °F	T049	A1A-M12
DC153	Test section coolant exit 2 temperature, °F	T054	A11
DC154	Test section coolant exit 3 temperature, °F	T055	A11
DC155	Test section coolant exit 4 temperature, °F	T056	A1A-CAS4
DC157	Test section gas exit temperature, °F	K044	E1-I13
DC158	Test section gas inlet temperature, °F	K044	A1A-TB2G
DC145	Test turbine stator gas pressure, psia	-----	L1-T7D
DC146	Test turbine gas exit pressure, psia	-----	L1-T7D
DC119	Test turbine gas inlet wall temperature, °F	K027	T3F-T7D
DC155	Test turbine gas exit temperature, °F	K071	L1-T7D
DC158	Test section 1 sample temperature, °F	R121	E1-T7D
DC159	Test section 2 sample temperature, °F	R122	
DC167	Test turbine inlet gas temperature, °F	K067	
DC168	Test turbine inlet gas temperature, °F	K068	
DC169	Test turbine body wall differential temperature, °F	K069-070	
DC170	Test turbine blade temperature, °F	-----	
DC172	Test turbine coolant exit temperature, °F	T061	
DC177	Test turbine gas inlet pressure, psia	TP164	
DC178	Test turbine internal gas pressure, psia	-----	
DC179	Test turbine gas exit pressure, psia	-----	
DC181	Test turbine case internal pressure, psia	AS183	
DC182	Test turbine lubricating oil flow rate, gal/min	LP112	
DC183	Test turbine bearing 1 temperature, °F	K021	
DC184	Test turbine bearing 2 temperature, °F	K022	
DC185	Test turbine thrust bearing 1 temperature, °F	K023	
DC186	Test turbine thrust bearing 2 temperature, °F	K024	
DC187	Test turbine journal bearing 1 temperature, °F	K019	
DC188	Test turbine journal bearing 2 temperature, °F	K020	
DC189	Test turbine lubrication oil exit temperature, °F	T086	
DC190	Test turbine lubrication oil inlet temperature, °F	T078	
DC191	Test turbine brake air temperature, °F	T087	
DC192	Test turbine brake air pressure, psia	AS152	
DC193	Test turbine brake air differential pressure, psid	AS153	
DC194	Test turbine housing gas differential pressure, psid	AS162	
DC195	Test turbine shaft rotation rate 1, rpm	AS174	E1-T7D
DC196	Test turbine shaft rotation rate 2, rpm	AS172	
DC197	Test turbine rotation acceleration 1	AS164	
DC198	Test turbine rotation acceleration 2	AS166	
DC199	Test turbine window purge gas temperature, °F	T088	

TABLE 2. - CALCULATION EQUATIONS (a)

CALC06 = Fuel sorbent-coal ratio (LCRAT)

LCRAT = Ratio of sorbent hopper outflow to coal hopper outflow  
 Sorbent hopper outflow = Function of sorbent meter screw rotation rate  
 (DC004)  
 Coal hopper outflow = Function of coal meter screw rotation rate  
 (DC002)

CALC05 = Reactor fuel flow rate, lb/hr (ESHFRN)

ESHFRN = DC174, Modicon-calculated fuel flow rate, lb/hr, for tests A1A-TB2G.  
 ESHFRN = DC092, Modicon-calculated fuel flow rate, lb/hr, for tests E1-G19.  
 ESHFRN = DC298, Escort-calculated fuel flow rate, lb/hr, for tests Hi-T7D2.  
 ESHFRN is determined from a least-squares fit equation:

$$ESHFRN = [(\sum W_i)(\sum T_i) - N\sum(W_i \times T_i)] / [(\sum T_i)^2 - N\sum(T_i)^2]$$

where

$W_i$  = DC005, fuel used in test, lb, since startup  
 $T_i$  = Time, sec, since startup  
 $N$  = Data points recorded since startup  
 For the Modicon, data points taken approximately once a minute.  
 For the Escort, data points taken approximately 15 times per minute.

CALC07 = Reactor input coal flow rate, lb/hr (CFRAT)

CFRAT = (ESHFRN)/(1.00 + LCRAT)  
 ESHFRN from CALC5  
 LCRAT from CALC6

CALC08 = Reactor input sorbent flow rate, lb/hr (LFR)

LFR = ESHFRN - CFRAT  
 ESHFRN from CALC05  
 CFRAT from CALC07

CALC04 = Reactor input total airflow rate, lb/hr (TAF)

TAF = WAIRR + WAIR + FAF  
 WAIRR = Reactor main combustion airflow rate, lb/hr  
 = Function of a venturi airflow computer subroutine that uses  
 DC008, combustion air venturi differential pressure  
 DC009, combustion air line pressure  
 DC010, combustion air inlet temperature  
 Venturi throat diameter and inlet diameter  
 WAIR = Reactor burner system airflow rate, lb/hr  
 = Function of a venturi computer subroutine that uses  
 DC015, burner air venturi high differential pressure  
 DC016, burner air line pressure  
 DC013, air inlet temperature, °F  
 Venturi throat and inlet diameters  
 FAF = Fuel system injection airflow rate, lb/hr  
 = Function of a venturi computer subroutine that uses  
 DC011, fuel injection air venturi differential pressure  
 DC012, fuel injection air line pressure  
 DC013, air inlet temperature, °F  
 Venturi throat and inlet diameters

CALC09 = Reactor input coal-air ratio (CARAT)

CARAT = CFRAT/TAF  
 CFRAT from CALC07  
 TAF from CALC04



TABLE 2. - Continued. (b)

CALC13 = PFB input calcium-sulfur ratio (RICSR)

$$\text{RICSR} = \text{Ratio of calcium input to sulfur input from coal} \\ = (\text{LFR})(\text{percent CA})(\text{MWS})/(\text{CFRAT})(\text{percent S})(\text{MWCA})$$

LFR from CALC08

Percent CA = Mole percent calcium in sorbent:

If sorbent is limestone, percent CA = 38

If sorbent is dolomite, percent CA = 20

MWS = Molecular weight of sulfur = 32

CFRAT from CALC07

Percent S = Mole percent sulfur in coal:

If coal is Pittsburgh No. 8, percent S = 1.95

If coal is Ohio seam, percent S = 2.8

MWCA = Molecular weight of calcium = 40

CALC46 = PFB exhaust gas NO<sub>x</sub> concentration, lb NO<sub>x</sub>/10<sup>6</sup> Btu energy (NOXVG)

$$\text{NOXVG} = (\text{GANO})(\text{WETAF})(\text{MWNO}_2)/[(\text{MWE G})(\Delta\text{HCOAL})(\text{CFRAT})]$$

GANO = Exhaust gas NO<sub>x</sub> concentration, ppm, DC063 (Tests A1A-TB2G) DC064 (Tests E1-T7D2)

WETAF = TAF, CALC04

MWNO<sub>2</sub> = NO<sub>2</sub> molecular weight = 46.007

MWE G = Exhaust gas molecular weight ~ N<sub>2</sub> gas molecular weight = 28.0

ΔHCOAL = Heat content of coal, Btu/lb

CFRAT from CALC07

CALC47 = PFB exhaust gas SO<sub>x</sub> concentration, lb SO<sub>x</sub>/10<sup>6</sup> Btu energy (SO2VG)

$$\text{SO2VG} = (\text{SO2})(\text{WETAF})(\text{MWSO}_2)/[(\text{MWE G})(\Delta\text{HCOAL})(\text{CFRAT})]$$

SO2 = Exhaust gas SO<sub>x</sub> concentration valid value, ppm, CALC34

WETAF = TAF

MWSO<sub>2</sub> = SO<sub>2</sub> molecular weight = 64.06

MWE G = Exhaust gas molecular weight

ΔHCOAL = Coal heat content, Btu/lb

CFRAT from CALC07

CALC049 = Exhaust gas sulfur as a percentage of input sulfur (PCTSV)

$$\text{PCTSV} = (\text{SO2VG})(\Delta\text{HCOAL})/[(10^4)(\text{FRAC.S in coal})]$$

SO2VG = CALC47

ΔHCOAL = Coal heat content, Btu/lb

FRAC.S = 0.0195 if Pittsburgh coal is used

= 0.0280 if Ohio coal is used

CALC16 = Reactor grid airflow coefficient (GPFC)

$$\text{GPFC} = (\text{WAIRR})/[(\text{K4})(\text{Y4})(\text{DAIR})(\text{RGDP})]$$

WAIRR = Reactor main combustion airflow rate, lb/hr (See CALC04)

K4 = Flow area coefficient = 979.9 for tests A1A-TB2G

= 735.1 for tests E1-CAS4

= 1003.7 for tests L1-T7D2

Y4 = 1.40 + [(RGDP)/(RDGP + RGDP)]

RGDP = DC054, reactor grid air differential pressure, psid

RDGP = DC055, reactor combustion gas pressure, psia

DAIR = Air density, lb/ft<sup>3</sup> = Function of RDGP, RGDP, and RAIT

RAIT = DC050 Grid air temperature, °F

TABLE 2 - Continued. (c)

CALC72 = Reactor combustion efficiency (CE)

$$CE = 1.0000 - BETA1 - BETA2$$

BETA1 = Energy loss in gas exhaust products

BETA2 = Energy loss in reactor solid discharge

$$BETA1 = (WEG/MWEG)[(XCO)(MWCO)(QCO) + (XHC)(MWHC)(QHC)] / [(WC)(FC)(QCL)]$$

$$BETA2 = [(WD)(QDL) + (WASG)(WE/WG)(QASL)] / [(WC)(FC)(QCL)]$$

$$WEG = \text{Exhaust gas flow rate corrected for moisture} = (WE) - (WC)(FC)(YH) \\ \times (MWH2O/MWH2)(1 - ZA) - (WC)(1 - FC)$$

$$We = \text{Exhaust gas flow rate} = \{(WA) + (WC)[1 - (FC)(YASH)] - (WD)[(YYC) \\ + (YYH2) + (YYS) + (YCO2)] + (WL)(YXCO2)\} / [1 + (WASG/WG) \\ \times (YAC + YAH2 + YAS + YACO2)]$$

Calculation subroutines:

ZH = Weight fraction of H<sub>2</sub> in discharge

$$= [(WD)(YYH2) + (WASG)(WE/WG)(YAH2)] / [(WC)(FC)(YH)]$$

MWEG = Molecular weight of exhaust gases

$$= (XN2)(MWN2) + (XCO)(MWCO) + (XCO2)(MWCO2) + (XHC)(MWHC) \\ + (XO2)(MWO2) + (XNOX)(MWN02) + (XS02)(MWS02)$$

XN2 = Mole fraction of nitrogen gas

$$= (1.000) - (XCO) - (XHC) - (XCO2) - (XNOX) - (XS02) - (XO2)$$

$$QCL = \text{Coal } \Delta H = (QCB) - (1040)(YH)(MWH2O/MWH2)$$

$$XCO = \text{Mole fraction of CO} = YCO \times 10^{-6}$$

YCO = CO in gases, ppm

$$XCO2 = \text{Mole fraction of CO}_2 = YCO2 \times 10^{-6}$$

YCO2 = CO<sub>2</sub> in gases, ppm

$$XHC = \text{Mole fraction of hydrocarbons} = YHC \times 10^{-6}$$

YHC = HC in gases, ppm

$$XNOX = \text{Mole fraction of nitrogen oxides} = YNOX \times 10^{-6}$$

YNOX = NO<sub>x</sub> in gases, ppm

$$XO2 = \text{Mole fraction of O}_2 = YO2 \times 10^{-6}$$

YO2 = O<sub>2</sub> in gases, ppm

$$XS02 = \text{Mole fraction of SO}_2 = YS02 \times 10^{-6}$$

YS02 = SO<sub>2</sub> in gases, ppm

$$MWCO = \text{Molecular weight of CO} = 28.02$$

$$MWN2 = \text{Molecular weight of N}_2 = 28.16$$

$$MWHC = \text{Molecular weight of HC} = 16.05$$

$$MWO2 = \text{Molecular weight of O}_2 = 32.00$$

$$MWH2O = \text{Molecular weight of water} = 18.02$$

$$MWS02 = \text{Molecular weight of SO}_2 = 64.07$$

TABLE 2. - Continued. (a)

MWH2 = Molecular weight of H<sub>2</sub> = 2.02  
 MWNO2 = Molecular weight of NO<sub>2</sub> = 46.00  
 MWCO2 = Molecular weight of CO<sub>2</sub> = 44.02  
 QCO = CO ΔH = 4346 Btu/lb  
 QHC = Hydrocarbons ΔH = 21 515 Btu/lb  
 QDL = Solids discharge heat value, Btu/lb  
 QASL = Gas flyash heat value, Btu/lb  
 WC = Coal flow rate, lb/hr, CALC07  
 WD = Reactor solids discharge rate, lb/hr  
 WG = Exhaust gas flow rate through sampler, lb/hr  
 WASG = Exhaust gas flyash flow rate into sampler, lb/hr  
 WA = Reactor input combustion airflow rate, lb/hr from CALC04  
 WL = Reactor sorbent flow, lb/hr from CALC08  
 FC = Ratio of dry to wet coal  
 YASH = Weight fraction of ash in coal  
 YH = Weight fraction of hydrogen in coal  
 YYCO2 = Weight fraction of CO<sub>2</sub> to discharge solids  
 YYS = Weight fraction of S in discharge solids  
 YYH2 = Weight fraction of H<sub>2</sub> in discharge solids  
 YYC = Weight fraction C in discharge solids  
 YACO2 = Weight fraction of CO<sub>2</sub> in flyash  
 YAS = Weight fraction of S in flyash  
 YAH2 = Weight fraction of H<sub>2</sub> in flyash  
 YAC = Weight fraction of C in flyash  
 YXCO2 = Weight fraction of CO<sub>2</sub> products per pound of limestone

CALC30 = Heat transfer coefficient, Btu/hr ft<sup>2</sup> °F (UE)

$$UE = (HTR/area)/[(0.5)(GTB + GTA - WTO - WTI)]$$

HTR = Heat transfer rate, Btu/hr

AREA = Heat transfer area, ft<sup>2</sup>

GTB = Combustion gas temperature before the heat transfer unit, °F

GTA = Combustion gas temperature after the heat transfer unit, °F

WTO = Heat transfer unit coolant outlet temperature, °F

WTI = Heat transfer unit coolant inlet temperature, °F (DC077)

CALC37 = Combustion gas flow rate, lb/hr (WEC)

A venturi gas flowmeter was installed in the PFB exit gas line for tests E1 to CAS4. The flowmeter signal was recorded on DC146. The flowmeter had problems due to flyash fouling, and the results were erratic.

TABLE 2. - Continued. (e)

$$WEC = (1890)(Y7)(K7) \left( \sqrt{(RH07)(EGF)} \right)$$

$$Y7 = 1.000 - (0.293)(2.32)(EGF/EGVP)$$

EGF = Vent gas venturi pressure differential, psid (DC146)

EGVP = Vent gas pressure, psia (DC145)

K7 = Nominal discharge coefficient

RH07 = Vent gas density, lb/ft<sup>3</sup>

= Nitrogen density = (0.072)(EGVP/14.7)(529.7)/(EGVT) + 460)

EGVT = Vent gas temperature, °F

If WEC was calculated to be less than TAF (CALC04), TAF was assumed to be more accurate than WEC in being the combustion gas flow rate.

CALC34 = Combustion gas valid SO<sub>x</sub> concentration, ppm (S02)

S02 = GASD, DC071 (tests A1A to TB2G) or DC72 (tests E1 to T7D2) only if GAO, DC073, is equal to or greater than 50 000 ppm and GAIP, DC057, is greater than 20 psia. If these conditions are not met, S02 = 0.

CALC39 = Reactor grid level gas velocity, ft/sec (VELG)

$$VELG = (TAFS) / [AREA1 \times RHOAIR]$$

TAFS = Combustor airflow rate, lb/sec = TAF/3600

TAF = Combustion airflow rate, lb/hr (CALC04)

AREA1 = Reactor cross-sectional area at grid plate = 0.43 ft<sup>2</sup>

RHOAIR = Air density, lb/ft<sup>3</sup> = Function of RDGP and TBB

RDGP = Combustion pressure, psia (DC055)

TBB = Bed bottom temperature, °F (either DC030 or DC031; whichever is greatest)

CALC40 = Reactor port 1 level gas velocity, ft/sec (VEL1)

$$VEL1 = (WETAF) / [(AREA1)(RHON1)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater

AREA1 = Bed cross-sectional area at port 1 level = 0.43 ft<sup>2</sup>

RHON1 = Gas density, lb/ft<sup>3</sup>, at port 1 level

N2 density = (0.072)(RDGP/14.7)(529.7/RBT32 + 460° F)

RDGP = Combustion pressure, psia, DC055

RBT32 = Combustion gas temperature near port 1, °F (DC032)

CALC41 = Reactor port 2 level gas velocity, ft/sec (VEL2)

$$VEL2 = (WETAF) / [(AREA2)(RHON2)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater

AREA2 = Bed cross-sectional area at port 2 level = 0.92 ft<sup>2</sup>

RHON2 = Gas density, lb/ft<sup>3</sup>, at port 2 level

N2 density = (0.072)(RDGP/14.7)(529.7/RBT34 + 460)

RDGP = Combustion pressure, psia (DC055)

RBT34 = Combustion gas temperature near port 2 level, °F (DC034)

CALC42 = Reactor port 3 level gas velocity, ft/sec (VEL3)

$$VEL3 = (WETAF) / [(AREA3)(RHON3)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater

AREA3 = Bed cross-sectional area at port 3 level = 1.17 ft<sup>2</sup>

RHON3 = Gas density, lb/ft<sup>3</sup>, at port 3 level

N2 density = (0.072)(RDGP/14.7)(529.7/RBT35 + 460)

RDGP = Combustion gas pressure, psia (DC055)

RBT35 = Combustion gas temperature near port 3 level, °F (DC035)

TABLE 2. - Continued. (r)

CALC43 = Reactor port 4 level gas velocity, ft/sec (VEL4)

$$VEL4 = (WETAF)/[(AREA4)(RHON4)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater  
 AREA4 = Bed cross-sectional area at port 4 level = 1.40 ft<sup>2</sup>  
 RHON4 = Gas density, lb/ft<sup>3</sup>, at port 4 level  
           N2 density = (0.072)(RDGP/14.7)(529.7/RBT36 + 460)  
 RDGP = Combustion gas pressure, psia (DC055)  
 RBT36 = Combustion gas temperature near port 4 level, °F (DC036)

CALC44 = Reactor port 5 level gas velocity, ft/sec (VEL5)

$$VEL5 = (WETAF)/[(AREA5)(RHON5)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater  
 AREA5 = Bed cross-sectional area at port 5 level = 1.77 ft<sup>2</sup>  
 RHON5 = Gas density, lb/ft<sup>3</sup>, at port 5 level  
           N2 density = (0.072)(RDGP/14.7)(529.7/RBT37 + 460)  
 RDGP = Combustion gas pressure, psia (DC055)  
 RBT37 = Gas temperature near port 5 level, °F (DC037)

CALC45 = Reactor port 6 level gas velocity, ft/sec (VEL6)

$$VEL6 = (WETAF)/[(AREA6)(RHON6)(3600 \text{ sec/hr})]$$

WETAF = WE(CALC37) or TAF(CALC04), whichever is greater  
 AREA6 = Bed cross-sectional area at port 6 level = 2.18 ft<sup>2</sup>  
 RHON6 = Gas density, lb/ft<sup>3</sup>, at port 6 level  
           N2 density = (0.072)(RDGP/14.7)(529.7/RBT38 + 460)  
 RDGP = Combustion gas pressure, psia (DC055)  
 RBT38 = Gas temperature near port 6 level, °F (DC038)

CALC26 = Heat transfer from reactor heat exchangers, Btu/hr (HETHT)

$$HETHT = (HETCF)(CPW)(HEOT - CWIT)(500 \text{ lb min/gal hr})$$

HETCF = Heat exchanger total coolant flow rate, gal/min (DC097)  
 CPW = Heat capacity of coolant = Function of HEOT  
 HEOT = Coolant outflow temperature, °F (DC098)  
 CWIT = Coolant inlet temperature, °F (DC077)

CALC27 = Heat transfer from reactor heat extractors, Btu/hr (HXTHT)

$$HXTHT = (HXTCF)(CPW)(HXOT - CWIT)(500.4 \text{ lb min/gal hr})$$

HXTCF = Heat extractor total coolant flow rate, gal/min (DC113)  
 CPW = Heat capacity of coolant = Function of HXOT  
 HXOT = Coolant outflow temperature, °F (DC114)

CALC28 = Reactor wall coolant heat transfer, Btu/hr (RWHT)

$$RWHT = (RWCF)(CPW)(RWCT - CWIT)(500.4 \text{ lb min/gal hr})$$

RWCF = Wall coolant flow rate, gal/min (DC121)  
 CPW = Coolant heat capacity = Function of RWCT  
 RWCT = Coolant outflow temperature, °F (DC120)

TABLE 2. - Concluded. (g)

CALC29 = Auxiliary systems coolant heat transfer, Btu/hr (ASHT)

$$ASHT = (ASCF)(CPW)(ASCT - CWIT)(500.4 \text{ lb min/gal hr})$$

ASCF = Auxiliary system coolant flow rate, gal/min (DC142)

CPW = Coolant heat capacity = Function of ASCT

ASCT = Coolant outflow temperature, °F (DC077)

CALC38 = Vent gas heat transfer, Btu/hr (WEHT)

$$WEHT = (WEC)(CPN)(EGVT - RAFT)$$

WEC = Vent gas flow rate, lb/hr (CALC37)

CPN = Vent gas heat capacity Nitrogen gas heat capacity

= Function of EGVT and EGVP

EGVT = Vent gas temperature, °F (DC144)

EGVP = Vent gas pressure, psia, DC145 (E1 to CA4), DC152 (T3A to T7D2)

RAFT = Input air temperature, °F (DC010)

CALC58 = PFB total heat transfer, Btu/hr (TARH)

$$TARH = HETHT + HXTHT + ASHT + WEHT + RWHT + CAHT$$

HETHT = CALC26

HXTHT = CALC27

HETHT + HXTHT = CALC26X

ASHT = CALC29

WEHT = CALC38

RWHT = CALC28

CAHT = Preheater air heat adsorption, Btu/hr

CAHT = (CAF)(CP)(CATOUT - AIT)

CAF = Air flow rate, lb/hr

CP = Air heat capacity, Btu/lb/°F, a function of AIT and CAIP

CATOUT = Vent air temperature, °F (DC099) or reactor input air temperature, °F (DC131), whichever is greater.

CAF = Function of a venturi subroutine that includes

AIT, injection air temperature, DC013

CAIP, air heater line pressure, psia (DC148)

CADP, air heater venturi differential pressure, psid (DC149)

Venturi inlet diameter to venturi throat diameter = 0.390/0.1283

Calculation of solids in vent gases (table 6)

$$\text{Solids, lbm} = (\text{grams/std ft}^3 \text{ of gas})(\text{Gas flow rate, lb/hr})(\text{Flow time, hr})/507$$

TABLE 3. - TEST SEQUENCE OPERATING PARAMETERS (a)

Test series	First reading	Last reading	Combustion coal type	Combustion coal sulfur sorbent type	Combustion bed depth, in.	Number of combustor coolant rakes used	Planned fuel-air ratio	Planned sorbent-coal ratio	Planned combustor pressure, psia	Planned bed temperature, °F	Test elapsed time, hr		
A1A	184	194	Pitt. 8	Limestone	97	3	0.06	0.12	60	1600	8.0		
A2A	195	209			↓		↓	↓	.09	↓	75	1700	7.5
A11A	210	224			↓		↓	↓	.11	↓	40	↓	7.3
A10A	225	240			↓		↓	↓	.08	↓	80	↓	7.5
A9A	241	256			↓		↓	↓	.09	.18	60	↓	3.5
A9B	260	267			↓		↓	56	.09	.18	↓	↓	3.4
A1B	270	280			↓		↓	↓	.07	.12	↓	1600	3.5
A10B	281	291			↓		↓	↓	.06	.15	↓	↓	3.8
A11B	292	309			↓		↓	↓	.07	.18	↓	↓	3.5
A8B	310	317			↓		↓	↓	↓	.06	↓	↓	3.5
A7B	318	330			↓		↓	↓	↓	.12	70	1650	6.5
A6B	331	336			↓		↓	↓	↓	↓	50	1500	2.5
A5B	337	342			↓		↓	↓	↓	↓	40	1450	2.5
A3B	343	351			↓		↓	↓	↓	↓	50	1600	3.5
A6B	382	359			↓		↓	↓	↓	↓	40	1600	3.5
A12B	360	367			↓		↓	↓	.10	↓	25	1600	3.5
A17B	377	382			↓		↓	↓	.07	↓	70	1700	2.5
C1	399	409	↓	↓	44	↓	↓	60	1600	4.0			
C3	411	418	↓	↓	↓	↓	↓	50	↓	3.5			
C8	419	424	↓	↓	↓	↓	↓	60	↓	2.5			
C11	431	438	↓	↓	↓	↓	.06	60	↓	3.5			
C12	440	447	↓	↓	↓	.10	.12	25	↓	3.0			
C16	448	454	↓	↓	↓	.07	↓	40	↓	3.0			
C17	455	462	↓	↓	↓	.07	↓	70	1700	3.0			
D6	468	480	↓	↓	68	.06	↓	40	1650	6.0			
D7	481	492	↓	↓	↓	.06	↓	60	1650	5.5			
D2	493	503	↓	↓	↓	.06	↓	80	1650	4.5			
D1	511	518	↓	↓	↓	.05	↓	↓	1450	3.5			
D10	519	531	↓	↓	↓	.05	↓	↓	1450	6.0			
D3	533	546	↓	↓	↓	.06	↓	↓	1750	6.5			
D4	547	558	↓	↓	↓	.06	↓	↓	1850	6.5			
E1	111	119	↓	↓	↓	4	.08	.13	↓	1700	3.5		
E2	123	131	↓	↓	↓	↓	.06	↓	↓	↓	4.0		
E3	132	155	↓	↓	↓	↓	.10	↓	↓	↓	5.6		
E4	156	175	↓	↓	↓	↓	.08	↓	40	↓	5.5		
E5	176	190	↓	↓	↓	↓	↓	60	↓	5.5			
E6	192	202	↓	↓	↓	↓	↓	80	1500	5.0			
E9 <sup>a</sup>	208	221	↓	↓	↓	↓	↓	↓	1700	3.5			
E8	249	263	↓	↓	↓	↓	↓	↓	1700	7.0			
E19	272	281	↓	↓	↓	↓	↓	↓	1700	4.5			
E13A	283	286	↓	↓	↓	↓	.07	↓	1800	1.5			
E13B	281	291	↓	↓	↓	↓	.07	↓	1800	2.0			

<sup>a</sup>All tests were made using 100° F input air except test series E9, where 300° F input air was used.

TABLE 3. - Continued. (b)

Test series	First reading	Last reading	Combustion coal type	Combustion coal sulfur sorbent type	Combustion bed depth, in.	Number of combustor coolant rakes used	Planned fuel-air ratio	Planned sorbent-coal ratio	Planned combustor pressure, psia	Planned bed temperature, °F	Test elapsed time, hr			
E14	296	308	Pitt. 8	Limestone	68	4	0.09	0.10	80	1800	3.0			
E11	313	320			↓		↓	0.07		.10	1600	3.5		
E12	324	332			↓		↓	.09		.10	1600	3.5		
E15	339	342			↓		↓	.07		.16	1600	1.5		
F1	393	491			↓		↓	97		.08	.13	1700	4.0	
F2	403	412			↓		↓	↓		.06	↓	1700	4.5	
F3	419	433			↓		↓	↓		.10	↓	1700	3.5	
F4	435	446			↓		↓	↓		.07	↓	1800	4.5	
F6	449	461			↓		↓	↓		.08	↓	1900	3.5	
F5	465	471			↓		↓	↓		.09	↓	1800	2.0	
F7	501	505			↓		↓	↓		.08	↓	1700	2.0	
F8	522	530			↓		↓	↓		.08	↓	60	1700	4.0
F9	557	560			↓		↓	↓		.08	↓	40	1700	1.5
F19	563	570			↓		↓	↓		.07	.16	80	1800	3.5
F16	572	580			↓		↓	↓		.07	.10	80	1800	4.0
F27	584	590	↓	↓	↓	.08	.06	60	1900	3.0				
G2	617	626	↓	↓	68	None	.04	.13	80	1700	4.5			
G3	630	638			↓		↓	.03		↓	↓	4.0		
G6	641	649			↓		↓	.04		↓	↓	4.0		
G1	672	680			↓		↓	.06		↓	↓	4.0		
G5	684	694			↓		↓	.04		↓	↓	1900	4.5	
G10	697	705			↓		↓	.04		.10	↓	1800	4.0	
G9	707	715			↓		↓	.05		.10	↓	1800	4.0	
G13	735	740			↓		↓	.04		.16	↓	1600	2.5	
G12	748	751			↓		↓	↓		↓	↓	1800	1.5	
G15A	781	788			↓		↓	↓		↓	↓	1700	3.5	
G15B	795	803			↓		↓	↓		↓	↓	1700	4.0	
G14	811	819			↓		↓	.05		↓	↓	1600	↓	
G11	821	829			↓		↓	.05		↓	↓	1800	↓	
G7	835	843			↓		↓	.05		.10	↓	1600	↓	
G8	846	853			↓		↓	.04		.10	↓	1600	3.5	
G16	864	871			↓		↓	.04		.10	↓	1700	3.5	
G22	873	881			↓		↓	.05		.07	↓	↓	4.0	
G23	887	890			↓		↓	.04		.07	↓	↓	1.5	
G24	892	900			↓		↓	↓		.07	↓	↓	4.0	
G17	902	910	↓	↓	↓	.13	↓	↓	4.0					
G18	914	922	↓	↓	↓	.13	↓	1800	4.0					
G19	923	929	↓	↓	↓	.13	↓	1800	3.0					
H1	673	679	↓	↓	44	4	.07	.06	↓	1700	3.0			
H2	685	689			↓		↓	.06		↓	↓	2.0		
H3	694	701			↓		↓	.06		↓	↓	3.5		
H4	702	711			↓		↓	.07		↓	↓	4.5		
H5A	712	722			↓		↓	.07		↓	↓	1900	2.5	
H5B	731	734			↓		↓	.06		↓	↓	1.5		
H6	750	754			↓		↓	.06		↓	↓	2.0		
H7	758	765			↓		↓	.06		↓	↓	3.5		
H8	767	774			↓		↓	.07		↓	↓	3.5		
H9	776	784			↓		↓	.07		.13	↓	4.0		
H10	786	793			↓		↓	.06		↓	↓	3.5		
H11	795	803			↓		↓	.07		↓	↓	4.0		
H12	805	813	↓	↓	.07	↓	↓	1700	4.0					



TABLE 3. - Continued. (c)

Test series	First reading	Last reading	Combustion coal type	Combustion coal sulfur sorbent type	Combustion bed depth, in.	Number of combustor coolant rakes used	Planned fuel-air ratio	Planned sorbent-coal ratio	Planned combustor pressure, psia	Planned bed temperature, F	Test elapsed time, hr			
H14	815	821	Pitt. 8	Limestone	44	4	0.07	0.13	80	1900	3.0			
H13	843	851		↓			↓	↓	.06	↓	80	1700	3.5	
H15	854	861		↓			↓	↓	.07	↓	50	1700	3.5	
H16	863	871		↓			↓	↓	.06	↓	50	1700	4.0	
H18	873	880		↓			↓	↓	.07	↓	50	1900	3.5	
H19	884	891		↓			↓	↓	↓	↓	80	↓	3.5	
H20	893	900		↓			↓	↓	↓	.30	↓	↓	3.5	
H23	904	913		↓			↓	↓	↓	.30	↓	↓	4.5	
H24	914	922		↓			↓	↓	↓	.06	↓	↓	4.0	
H25	923	931		↓			↓	↓	↓	.13	↓	↓	4.0	
H26	932	938		↓			↓	↓	↓	.13	↓	↓	3.0	
I1	947	955		Ohio			Dolomite	68	4	↓	↓	↓	↓	4.0
I2	956	966					↓			↓	↓	.06	↓	↓
I3	968	975	↓		↓	↓	.08			↓	↓	1700	3.5	
I4	977	985	↓		↓	↓	.07			↓	↓	1700	4.0	
I5A	988	991	↓		↓	↓	.06			↓	↓	1700	1.5	
I5B	992	995	↓		↓	↓	.06			↓	↓	1700	1.5	
I6	1008	1015	↓		↓	↓	.07			↓	↓	1900	3.5	
I7	1017	1024	↓		↓	↓	.06			.06	↓	1900	3.5	
I8	1030	1034	↓		↓	↓	.07			↓	↓	1900	2.0	
I9	1035	1043	↓		↓	↓	.06			↓	↓	1700	4.0	
I10A	1044	1050	↓		↓	↓	.07			↓	↓	↓	3.0	
I10B	1051	1054	↓		↓	↓	.07			↓	↓	↓	1.5	
I11	1055	1063	↓		↓	↓	.07			.25	↓	↓	4.0	
I12	1074	1082	↓	↓	↓	.06	.25	↓	1900	4.0				
I13	1094	1101	↓	↓	↓	.06	.25	↓	1900	3.5				
J1	1139	1156	Ohio	Limestone	68	4	.09	.13	↓	1700	5.0			
J2	1159	1167					↓	↓	↓	.06	↓	↓	1700	4.0
J3	1174	1180					↓	↓	↓	.06	↓	↓	1900	3.0
J4	1186	1201					↓	↓	↓	.09	↓	↓	↓	3.2
J5	1206	1214					↓	↓	↓	.06	↓	↓	↓	3.3
J6	1216	1222					↓	↓	↓	.06	.06	↓	↓	3.0
J7	1226	1239					↓	↓	↓	.09	↓	↓	↓	3.1
J8	1250	1260					↓	↓	↓	.06	↓	↓	1700	4.5
J9	1268	1271					↓	↓	↓	.09	↓	↓	1700	2.5
K1	1351	1360	Ohio	Limestone	68	4	.06	.13	↓	1700	4.1			
K3	1410	1423					↓	↓	↓	.09	↓	↓	1900	3.1
K4	1424	1432					↓	↓	↓	.06	↓	↓	1900	3.5
K2	1435	1446					↓	↓	↓	.09	↓	↓	1700	4.0
K7	1448	1458					↓	↓	↓	.09	.06	↓	1700	4.0
K8	1460	1467					↓	↓	↓	.06	↓	↓	1700	3.5
K6	1471	1488					↓	↓	↓	.09	↓	↓	1900	4.0
K5	1489	1498					↓	↓	↓	.06	↓	↓	↓	4.5
K9	1506	1517					↓	↓	↓	.09	↓	↓	↓	2.5
K10	1522	1531					↓	↓	↓	.09	.20	↓	↓	2.0
K12	1534	1543					↓	↓	↓	.06	↓	↓	1700	4.5
K11	1545	1533					↓	↓	↓	.06	↓	↓	1900	4.0
K14	1555	1572					↓	↓	↓	.09	↓	↓	1900	4.1
K13	1578	1589					↓	↓	↓	↓	↓	↓	1700	2.5
K15	1595	1608					↓	↓	↓	↓	.13	↓	1900	3.0
K16	1611	1618					↓	↓	↓	↓	.13	↓	60	1900





TABLE 4. - PFB TEST RESULTS  
PROVIDED ON MICROFICHE SUPPLEMENT

TABLE 5. - COAL AND SORBENT ANALYSIS

## (a) Coal analysis

Component	Pittsburgh #8	Ohio
	Content, wt%	
Proximate		
Moisture	2.12	3.24
Ash	8.20	9.64
Volatile	37.41	37.17
Fixed carbon	52.27	49.95
Heating value, Btu/lb	13 274	12 767
Ultimate		
Carbon	75.38	73.66
Hydrogen	5.14	5.08
Nitrogen	1.49	1.25
Sulfur	1.99	2.39
Oxygen	7.61	7.61
Ash	8.38	9.97
Silica as a % of the ash	46.21	47.06
Ferric oxide as a % of the ash	19.29	21.55
Alumina as a % of the ash	25.68	24.67
Lime as a % of the ash	1.57	1.11

## (b) Sorbent analysis (dry basis)

Component	Limestone	Dolomite
	Content, wt%	
Calcium oxide	53.97	29.62
Carbon dioxide	43.42	46.00
Silica	1.17	1.46
Magnesium oxide	1.16	20.31
Alumina	.14	.53
Ferric oxide	.11	.53
Sulfur	.08	.16

TABLE 6. - PFB REACTOR LOADING

First test after loading bed	Type of old bed material added	Quantity of old bed material added, lb	Type of new bed material added	Quantity of new bed material added, lb	Total quantity of bed material added, lb	Quantity of bed material removed after last test	Last test
Checkout	Limestone	208	Limestone	548	756	?	Checkout
Checkout	↓	283	Limestone	354	637	?	Checkout
A1A	↓	507	Limestone	215	722	?	A9A
A9B	↓	252	None	None	252	180	A17B
C1	↓	?	Limestone	?	?	72	C17
D6	↓	250	None	None	250	228	D4
E1	None	None	Limestone	270	270	217	E8
E17	Limestone	217	None	None	217	255	E15
F1	↓	292	Limestone	244	536	?	F5
F7	↓	40	Limestone	540	580	362	F27
G2	↓	200	None	None	200	205	G12
G15	↓	205	↓	↓	205	184	G19
H1	↓	210	↓	↓	210	?	H14
H13	↓	130	↓	↓	130	101	H26
I1	↓	91	Dolomite	10	101	117	I13
J1	Limestone and Dolomite	57/67	Dolomite	66	195	130	J9
K1	Limestone	167	Limestone	34	201	140	K1
K3	↓	173	↓	27	200	130	K16
L1	↓	206	↓	10	216	112	L6
M1	↓	182	↓	30	212	164	M16
N1	↓	216	None	None	216	194	N7
CAS1	↓	138	Limestone	62	200	125	CAS1
CAS2	↓	182	None	None	182	169	CAS2
CAS3	↓	200	Limestone	15	215	?	CAS3
CAS4	None	None	Limestone	250	250	216	CAS4
TB1A	Limestone	195	None	None	195	?	TB1C
TB1D	↓	200	None	None	200	145	TB1F
TB1G	↓	145	None	None	145	125	TB1G
TB1H	↓	125	Limestone	20	145	160	TB1H
TB2A	↓	228	None	None	228	232	TB2A
TB2B	↓	270	Limestone	80	350	210	TB2C
TB2D	↓	210	Limestone	90	300	?	TB2E
TB2F	↓	300	None	None	300	?	TB2G
T3A	↓	198	↓	↓	198	205	T3A
T3B	↓	205	↓	↓	205	231	T3B
T3C	↓	?	↓	↓	?	?	T3D
T3E	↓	?	↓	↓	?	250	T3E
T3F	↓	210	↓	↓	210	?	T3F
T4	Limestone and Dolomite	25/130	Dolomite	40	200	184	T4
T5	Limestone	134	Limestone	66	200	140	T5
T6A	Limestone	205	Limestone	10	215	142	T6A
T6B	None	None	Limestone	210	210	215	T6B
T7A	Limestone	215	None	None	215	250	T7A
T7B	↓	215	↓	↓	215	275	T7B
T7C	↓	215	↓	↓	215	173	T7C
T7D	↓	208	↓	↓	208	100	T7D

TABLE 7. - RC13 PFB TEST RESULTS: SYSTEM SOLIDS MASS BALANCE (a)

Test	Test date	Test time span, hr	Initial bed weight, lb	Total coal used, lb	Ash in coal used, lb	Total sorbent used, lb	Solids in sorbent used, lb	Bed solids discharge, lb	Turbine separator solids, lb	Separators 1 to 4 solids discharge, lb	Exhaust gas loading, g/std ft <sup>3</sup>	Exhaust gas solids, lb	Final bed weight, lb	Gas flow rate, lb/hr
A1A	3-10-77	7.95	722	279	22.9	27	15.4	50	-----	9.5	3.360	30.7	---	582
A2A	3-10-77	7.47	---	-----	-----	73	41.6	31	-----	6.6	1.226	10.2	---	564
A11A	3-10-77	7.32	---	253	20.7	51	29.1	23	-----	5.2	1.734	14.1	---	565
A10A	5-11-77	7.45	---	272	22.3	31	17.7	36	-----	-----	2.350	19.8	---	574
A9A	5-11-77	3.53	---	127	10.4	12	6.8	-----	-----	-----	-----	-----	---	564
A9B	5-18-77	3.42	252	125	10.2	25	14.3	15	-----	-----	1.865	7.2	---	573
A1B	5-18-77	3.52	---	121	9.9	24	13.7	14	-----	-----	1.635	5.8	---	507
A10B	5-19-77	3.82	---	127	10.4	20	11.4	13	-----	-----	1.847	7.9	---	565
A11B	↓	3.50	---	124	10.2	-----	-----	13	-----	-----	2.090	8.2	---	569
A8B	↓	3.50	---	118	9.7	12	6.8	-----	-----	6.9	1.967	7.6	---	560
A7B	↓	6.50	---	235	19.3	40	22.8	-----	-----	4.3	1.886	14.7	---	606
A6B	↓	2.50	---	78	6.4	6	3.4	-----	-----	4.0	3.020	7.7	---	520
A5B	5-20-77	2.50	---	100	8.2	7	4.0	-----	-----	3.6	2.880	7.0	---	494
A3B	↓	3.50	---	102	8.4	10	5.7	-----	-----	7.6	2.540	10.0	---	568
A16B	↓	3.50	---	109	8.9	10	5.7	-----	-----	8.3	2.760	10.8	---	565
A12B	↓	3.50	---	98	8.0	-----	-----	-----	-----	4.9	2.770	6.2	---	325
A17B	↓	2.50	---	31	2.5	13	7.4	-----	-----	8.5	1.551	4.8	180	634
C1	6-2-77	4.00	195	133	10.8	23	13.1	16	-----	.7	2.440	11.3	---	589
C3	6-2-77	3.50	---	123	10.1	10	5.7	4	-----	2.2	1.657	6.7	---	586
C8	6-3-77	2.50	---	89	7.2	10	6.0	12	-----	11.6	1.552	4.5	---	584
C11	↓	3.50	---	117	9.6	15	8.4	-----	-----	1.1	1.414	5.8	---	597
C12	↓	2.95	---	105	8.6	16	9.5	-----	-----	4.6	1.992	4.1	---	350
C16	↓	3.00	---	114	9.3	8	4.8	-----	-----	3.5	2.340	8.1	---	588
C17	↓	3.00	---	129	10.6	10.5	6.0	-----	-----	5.5	1.028	4.2	72	688
D6	7-26-77	6.00	250	224	18.4	17	9.7	-----	-----	-----	3.400	24.1	---	598
D7	↓	5.50	---	192	15.7	20	11.4	-----	-----	-----	1.807	11.9	---	607
D2	↓	4.50	---	145	11.9	11	6.3	-----	-----	-----	1.791	9.3	---	587
D1	↓	3.50	---	105	8.6	4	2.3	-----	-----	-----	1.697	7.0	---	595
D10	7-27-77	5.50	---	138	11.3	-----	-----	-----	-----	-----	1.768	8.7	---	452
D3	7-27-77	6.00	---	217	17.8	4.7	2.7	-----	-----	-----	1.419	10.4	---	619
D4	7-27-77	6.50	---	159	13.0	53.4	30.4	-----	-----	-----	-----	-----	228	587
TB1A	5-25-77	2.0	180	91.6	7.5	6.0	3.4	12.3	-----	1.8	2.70	6.1	---	571
TB1B	5-26-77	4.0	---	297	24.4	17.9	10.2	31	-----	17.5	2.26	10.4	---	584
TB1C	5-26-77	2.0	195	-----	-----	-----	-----	-----	-----	-----	2.51	5.7	---	572
TB1D	6-9-77	2.3	200	-----	-----	-----	-----	-----	-----	-----	1.21	3.5	---	635
TB1E	6-10-77	2.0	---	-----	-----	-----	-----	-----	-----	-----	3.38	8.7	---	655
TB1F	6-10-77	2.0	---	-----	-----	-----	-----	-----	-----	-----	1.89	4.8	145	643
TB1G	6-16-77	2.0	145	-----	-----	-----	-----	-----	-----	-----	.45	1.1	125	625
TB1H	7-14-77	2.7	145	-----	-----	-----	-----	-----	-----	-----	.91	3.0	160	629
TB2A	8-4-77	?	228	-----	-----	-----	-----	-----	-----	-----	1.53	-----	232	575
TB2B	8-11-77	5.1	350	-----	-----	-----	-----	-----	-----	-----	1.62	9.6	---	592
TB2C	8-12-77	6.5	---	322	26.4	38	21.7	-----	-----	-----	.66	5.0	210	590

TABLE 7. - Continued. (b)

Test	Test date	Test time span, hr	Initial bed weight, lb	Total coal used, lb	Ash in coal used, lb	Total sorbent used, lb	Solids in sorbent used, lb	Bed solids discharge, lb	Turbine separator solids, lb	Separators 1 to 4 solids discharge, lb	Exhaust gas loading, g/std ft <sup>3</sup>	Exhaust gas solids, lb	Final bed weight, lb	Gas flow rate, lb/hr
TB2D	8-16-77	2.5	300	-----	-----	-----	-----	-----	-----	-----	1.93	5.8	---	610
TB2E	8-17-77	3.0	---	-----	-----	-----	-----	-----	-----	-----	3.52	12.0	---	575
TB2F	8-31-77	3.7	300	114	9.3	5.4	3.1	-----	-----	-----	1.42	6.2	---	591
TB2G	8-31-77	?	---	-----	-----	-----	-----	-----	-----	-----	1.65	-----	---	591
E1	3-22-78	3.5	---	195	16.0	20	11.4	8.32	2.54	1.77	.567	5.1	---	542
E2	3-22-78	4.0	---	211	17.3	25	14.3	20.72	7.12	4.18	1.404	14.6	---	875
E3	3-22-78	5.5	---	244	20.0	29	16.5	6.22	1.86	1.34	.707	4.8	---	399
E4	3-23-78	5.5	---	253	20.7	30	17.1	14.65	8.56	10.30	.783	12.3	---	498
E5	3-23-78	5.5	---	259	21.2	30	17.1	9.20	1.78	8.73	1.394	9.4	---	507
E6	3-23-78	5.0	---	168	13.8	19	10.8	.70	2.48	13.74	.727	5.1	---	416
E9	3-23-78	3.5	---	146	12.0	17	9.7	13.82	2.10	2.28	.538	3.0	---	474
E8	3-24-78	6.98	---	337	27.6	39.2	29.3	-----	-----	-----	-----	-----	---	569
E19	3-28-78	4.5	---	186	15.3	20.3	11.6	2.59	-----	6.68	.968	4.7	---	548
E13A	3-28-78	1.5	---	71	5.8	6.3	3.6	-----	-----	-----	-----	-----	---	665
E13B	3-28-78	2.0	---	88	7.2	7.8	4.4	3.66	1.132	3.66	1.132	3.0	---	679
E14	3-28-78	3.0	---	126	10.3	11.1	6.3	1.49	-----	.23	.683	2.0	---	488
E11	3-29-78	3.5	---	131	10.7	11.0	6.3	4.11	-----	.01	.975	3.7	---	550
E12	3-29-78	3.5	---	115	9.4	14.6	8.3	2.11	-----	-----	1.679	4.7	---	405
E15	3-29-78	1.5	---	55	4.5	8.1	4.6	.54	-----	-----	4.367	6.6	---	555
F1	4-12-78	4.02	---	188	15.4	22.0	12.5	.14	-----	8.42	1.751	7.8	---	562
F2	4-12-78	4.50	---	219	18.0	25.7	14.6	.40	-----	31.77	3.012	21.4	---	801
F3	4-12-78	3.50	---	132	10.8	15.4	8.8	.08	-----	14.15	3.796	10.0	---	380
F6	4-13-78	3.50	---	191	15.7	22.2	12.7	1.07	-----	14.28	1.415	6.2	---	631
F4	4-13-78	4.50	---	230	18.9	26.8	15.3	.59	-----	7.22	2.309	14.1	---	690
F7	4-19-78	2.00	---	68	5.6	7.9	4.5	-----	-----	-----	-----	-----	---	---
F8	4-20-78	4.00	---	153	12.5	18.0	10.3	.66	-----	7.03	1.826	6.9	---	481
F9	4-20-78	1.50	---	45	3.7	6.9	3.9	-----	16.97	.51	3.242	4.5	---	473
F19	4-21-78	3.50	---	179	14.7	19.2	10.9	.44	-----	9.79	1.577	7.5	---	692
F16	4-21-78	4.00	---	180	14.8	16.5	9.4	.44	-----	10.79	1.575	8.4	---	680
F27	4-21-78	3.00	---	135	11.8	7.6	4.3	7.33	-----	13.07	2.419	9.1	---	637
G2	3-9-78	4.5	?	79	6.5	9	5.1	2.25	3.96	-----	.164	.8	---	574
G3	3-9-78	4.0	---	111	9.1	13	7.4	17.34	9.83	.20	.146	.9	---	793
G6	3-9-78	4.0	---	91	7.5	11	6.3	6.48	5.82	.04	.137	.7	---	607
G7	5-11-78	4.0	---	75	6.2	6	3.4	.03	2.03	.17	.538	1.8	---	418
G5	5-11-78	4.5	---	165	13.5	15	8.6	6.76	7.67	1.90	.387	2.9	---	851
G10	5-11-78	4.0	---	129	10.6	11	6.3	15.69	7.89	1.79	.452	3.0	---	845
G9	5-11-78	4.0	---	106	7.6	9	5.1	3.46	5.03	2.28	.295	1.3	---	558
G13	5-12-78	2.5	---	52	4.3	8	4.6	7.00	4.33	2.23	.552	1.7	---	635
G12	5-12-78	1.5	---	47	3.9	7	4.0	17.03	3.20	1.43	9.380	.6	---	555
G15A	5-15-78	3.5	---	85	7.0	13	7.4	24.09	4.89	1.44	.298	1.2	---	594
G15B	5-16-78	4.0	---	118	9.7	18	10.3	13.08	3.77	1.20	.312	1.4	---	579
G14	5-17-78	4.0	---	53	4.3	8	4.6	2.59	2.05	1.41	.350	1.1	---	411





TABLE 7. - Continued. (d)

Test	Test date	Test time span, hr	Initial bed weight, lb	Total coal used, lb	Ash in coal used, lb	Total sorbent used, lb	Solids in sorbent used, lb	Bed solids discharge, lb	Turbine separator solids, lb	Separators 1 to 4 solids discharge, lb	Exhaust gas loading, g/std ft <sup>3</sup>	Exhaust gas solids, lb	Final bed weight, lb	Gas flow rate, lb/hr
I1	10-3-78	4.00	---	239	19.6	40.5	23.1	8.12	16.22	7.57	-----	-----	---	832
I2	10-3-78	5.00	---	327	26.8	53.6	30.6	10.81	19.31	.57	-----	-----	---	1021
I3	10-3-78	3.50	---	184	15.1	29.4	16.8	10.92	5.97	.22	-----	-----	---	656
I4	10-4-78	4.02	---	160	13.1	25.8	14.7	9.32	1.42	1.92	-----	-----	---	502
I5A	↓	1.50	---	71	5.8	12.6	7.2	-----	-----	-----	-----	-----	---	684
I5B	↓	1.50	---	74	6.1	12.9	7.4	12.61	1.25	58.67	-----	-----	---	741
I6	↓	3.50	---	218	17.9	21.6	12.3	10.59	5.18	35.12	3.611	20.6	---	827
I7	↓	3.52	---	245	20.1	16.4	9.3	7.77	3.02	4.86	3.542	25.5	---	1038
I8	10-5-78	2.00	---	120	9.8	8.1	4.6	9.51	.32	9.52	2.164	6.5	---	763
I9	↓	4.00	---	200	16.4	14.7	8.4	6.98	.70	16.51	1.983	11.4	---	729
I10A	↓	3.00	---	125	10.3	18.7	10.7	-----	-----	-----	-----	-----	---	575
I10B	↓	1.50	---	60	4.9	21.6	12.3	7.17	.45	11.62	3.252	5.4	---	561
I11	↓	4.00	---	181	14.8	64.7	36.9	9.17	1.50	9.62	6.030	29.8	---	627
I12	10-6-78	4.00	---	226	18.5	80.7	46.0	9.02	3.32	27.52	-----	-----	---	834
I13	10-6-78	3.50	---	239	19.6	86.1	49.1	19.37	.05	69.42	5.529	40.2	---	1052
J1	11-7-78	5.00	---	181	17.4	23.1	13.2	-----	20.32	.14	.362	1.4	---	385
J2	11-7-78	4.00	---	191	18.3	24.3	13.9	.10	26.17	.11	.346	1.9	---	684
J3	11-8-78	3.00	---	192	18.4	24.5	14.0	.24	35.33	-----	3.353	20.1	---	1011
J4	↓	3.20	---	154	14.8	19.6	11.2	-----	9.97	27.52	2.119	7.0	---	521
J5	↓	3.27	---	210	20.2	26.7	15.2	.52	41.43	11.16	2.551	16.7	---	1014
J6	↓	3.00	---	209	20.1	13.0	7.4	.32	17.92	.01	.840	5.0	---	1007
J7	↓	3.05	---	145	13.9	9.0	5.1	.09	7.17	-----	4.099	11.1	---	450
J8	11-9-78	4.50	---	228	21.9	14.2	8.1	.12	11.77	10.17	-----	-----	---	771
J9	11-9-78	2.47	---	99	9.5	6.1	3.5	.06	22.62	.06	-----	-----	---	376
T4	11-15-78	21.5	200	1060	101.8	128	73.0	-----	12.60	-----	1.385	36.81	184	627
K1	11-29-78	4.08	---	163	15.6	21	12.0	.14	15.63	.27	.431	2.2	---	645
K3	12-5-78	3.05	---	138	13.2	17.9	10.2	.13	8.08	.31	.102	.3	---	450
K4	↓	3.52	---	209	20.1	27.1	15.5	4.34	25.24	7.49	1.332	8.8	---	955
K2	↓	4.00	---	148	14.2	15.5	9.5	.09	11.16	6.11	.580	1.9	---	412
K7	↓	4.00	---	152	14.6	9.4	5.4	.14	10.75	.08	.136	.5	---	415
K8	↓	3.50	---	168	16.1	10.2	5.9	2.61	13.63	1.53	2.009	10.0	---	722
K6	12-6-78	4.02	---	187	18.0	11.4	6.5	.89	13.85	.96	1.871	6.7	---	455
K5	12-6-78	4.50	---	292	28.9	17.8	10.2	2.45	72.06	25.50	3.002	26.0	---	974
K9	↓	2.52	---	126	12.1	7.7	4.4	.31	14.59	9.84	.693	1.5	---	449
K10	12-6-78	2.02	---	92	8.8	18.3	10.4	.20	15.18	1.99	.419	.8	---	470
K12	12-6-78	4.50	---	196	18.8	39.2	22.3	1.08	16.65	3.24	-----	-----	---	649
K11	12-7-78	3.98	---	268	25.7	53.7	30.6	2.03	77.31	41.81	1.534	11.8	---	982
K14	↓	4.05	---	180	19.3	36.1	20.6	5.03	13.65	.25	-----	-----	---	433
K13	↓	2.53	---	88	8.4	17.6	10.0	.21	12.44	2.23	-----	-----	---	376
K15	↓	3.02	---	127	12.2	16.7	9.5	.25	14.96	1.28	-----	-----	---	449
K16	↓	1.52	---	58	5.6	7.7	4.4	.96	14.01	.29	-----	-----	---	450



TABLE 8. - RC13 PFB TEST RESULTS: REACTOR BED AND EXHAUST GAS SOLIDS CHEMICAL COMPOSITION (a)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
A1A	Bed	76.5	25.2	3.7	7.3	47.6	0.3	0.6	3.1	21.1	----	0.6	----	----
5-10-77	Gas	87.4	13.0	2.2	34.3	18.3	↓	16.5	17.7	2.9	----	.3	----	----
A2A	Bed	----	----	5.9	----	----	↓	.6	----	16.6	----	----	----	----
5-10-77	Gas	97.1	6.9	2.1	38.8	12.1	↓	16.5	21.6	1.0	----	.2	----	----
A11A	Bed	----	10.2	5.9	3.2	64.6	↓	.6	----	16.6	----	----	----	----
5-10-77	Gas	96.4	8.3	2.2	39.0	11.0	↓	16.5	21.0	.7	----	.2	----	----
A10A	Bed	92.3	8.7	6.1	4.7	63.9	↓	.6	2.0	9.8	----	.8	----	----
5-10-77	Gas	89.5	9.3	1.8	36.3	11.8	↓	16.5	19.2	2.5	----	.3	----	----
A9A	Bed	----	----	7.5	----	----	↓	.6	----	5.7	----	----	----	----
5-10-77	Gas	----	----	1.5	----	----	↓	16.5	----	1.5	----	----	----	----
A9B	Bed	94.2	6.2	7.5	3.8	60.3	↓	.6	----	5.7	----	----	----	----
5-18-77	Gas	79.3	10.0	1.5	33.9	5.6	↓	10.7	----	1.5	----	----	----	----
A1B	Bed	97.9	13.5	5.2	4.2	66.7	↓	.6	.4	5.2	----	.5	----	----
5-18-77	Gas	81.0	8.3	1.5	34.3	5.0	↓	10.8	18.3	.4	----	.7	----	----
A10B	Bed	97.9	2.1	8.1	4.2	62.2	↓	----	----	1.7	----	----	----	----
5-19-77	Gas	85.1	12.0	2.9	31.6	8.9	↓	2.9	----	1.7	----	----	----	----
A11B	Bed	98.5	1.8	8.2	6.9	65.1	↓	----	----	1.2	----	----	----	----
5-19-77	Gas	86.9	11.8	3.5	29.7	10.8	↓	1.3	----	.6	----	----	----	----
A8B	Bed	98.3	1.4	8.6	4.5	62.2	.3	.4	----	1.3	----	----	----	----
5-19-77	Gas	86.5	14.8	4.3	28.4	13.3	↓	16.5	----	2.1	----	----	----	----
A7B	Bed	98.4	1.5	7.7	5.0	62.2	↓	.1	----	1.1	----	----	----	----
5-19-77	Gas	83.8	15.4	3.9	31.5	10.0	↓	.8	----	.8	----	----	----	----
A6B	Bed	92.5	7.6	8.2	5.1	57.1	↓	2.4	----	9.7	----	----	----	----
5-19-77	Gas	81.1	16.5	3.5	30.6	8.0	↓	2.4	----	.7	----	----	----	----
A5B	Bed	88.6	11.7	6.9	4.1	53.0	↓	12.1	----	12.5	----	----	----	----
5-20-77	Gas	72.6	15.4	3.3	23.6	6.2	↓	12.1	----	.5	----	----	----	----
A3B	Bed	89.9	10.7	7.4	3.8	51.8	↓	.6	----	10.5	----	----	----	----
5-20-77	Gas	80.2	16.3	3.7	23.2	9.4	↓	3.4	----	.5	----	----	----	----
A16B	Bed	97.5	2.6	9.6	5.4	60.2	↓	.6	----	3.0	----	----	----	----
5-20-77	Gas	80.1	17.0	3.9	26.8	9.3	↓	2.9	----	1.9	----	----	----	----
A12B	Bed	98.6	1.5	8.1	7.0	59.9	.3	.6	----	1.0	----	----	----	----
5-20-77	Gas	62.8	12.7	1.9	24.9	3.5	↓	24.5	----	.4	----	----	----	----
A17B	Bed	98.8	1.2	5.8	4.2	64.1	.3	.6	----	1.1	----	----	----	----
5-20-77	Gas	93.5	9.6	2.6	35.8	12.2	↓	16.5	----	.5	----	----	----	----
C1	Bed	86.4	14.9	4.8	5.0	53.1	.3	.6	1.8	17.5	----	.6	----	----
6-2-77	Gas	78.9	18.5	3.6	30.2	9.0	↓	2.6	15.3	1.4	----	.3	----	----
C3	Bed	97.5	3.1	5.4	3.8	63.3	↓	.6	----	2.6	----	----	----	----
6-2-77	Gas	78.7	14.8	3.2	29.3	9.4	↓	6.6	----	1.7	----	----	----	----
C8	Bed	95.1	6.2	5.5	5.4	59.9	↓	.6	----	5.8	----	----	----	----
6-3-77	Gas	79.8	16.0	3.5	30.6	8.5	↓	4.3	----	1.7	----	----	----	----
C11	Bed	98.3	2.1	5.9	4.4	63.3	↓	.6	----	1.7	----	----	----	----
6-3-77	Gas	80.8	15.3	3.3	29.8	10.7	↓	3.9	----	2.2	----	----	----	----
C12	Bed	99.1	1.3	6.0	4.1	61.1	↓	.6	----	.9	----	----	----	----
6-3-77	Gas	64.4	17.9	2.8	22.1	8.3	↓	17.7	----	1.7	----	----	----	----

TABLE 8. - Continued. (b)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous	Content, wt%
C16	Bed	98.6	1.8	6.1	3.9	61.1	0.3	0.6	----	1.5	----	----	----	----	
6-3-77	Gas	75.2	16.7	3.2	26.7	10.2		8.1	----	1.8	----	----	----	----	
C17	Bed	99.8	0.5	6.2	4.0	63.8		0.6	----	.6	----	----	----	----	
6-3-77	Gas	87.5	19.2	3.7	33.3	9.1		16.5	----	.8	----	----	----	----	
D1	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-26-77	Gas	80.3	14.7	3.3	35.0	7.5		5.0	----	.5	----	----	----	----	
D2	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-26-77	Gas	90.9	13.0	3.5	32.8	12.2		16.5	16.5	.8	0.8	----	----	----	
D3	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-27-77	Gas	93.9	7.5	3.3	36.8	11.2		16.5	----	.4	----	----	----	----	
D4	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
?	Gas	----	----	3.3	----	----		16.5	----	.4	----	----	----	----	
D6	Bed	----	----	6.0	----	----		.6	----	.6	----	----	----	----	
7-26-77	Gas	88.4	13.4	3.0	22.6	28.8		16.5	----	.8	----	----	----	----	
D7	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-26-77	Gas	88.8	12.4	2.9	27.4	16.5		16.5	----	.4	----	----	----	----	
D10	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-27-77	Gas	78.6	16.1	3.5	34.2	4.6		5.3	----	.4	----	----	----	----	
TB1A	Bed	----	----	5.8	----	----		.6	----	1.1	----	----	----	----	
	Gas	----	----	2.6	----	----		16.5	----	.5	----	----	----	----	
TB1B	Bed	----	----	5.8	----	----		.6	----	1.1	----	----	----	----	
	Gas	----	----	2.6	----	----		16.5	----	.5	----	----	----	----	
TB1C	Bed	----	----	5.8	----	----		.6	----	1.1	----	----	----	----	
	Gas	----	----	2.6	----	----		16.5	----	.5	----	----	----	----	
TB1D	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	2.8	----	----		16.5	----	1.7	----	----	----	----	
TB1E	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	2.8	----	----		16.5	----	1.7	----	----	----	----	
TB1F	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	2.8	----	----		16.5	----	1.7	----	----	----	----	
TB1G	Bed	----	----	6.2	----	----		.6	----	.6	----	----	----	----	
6-16-77	Gas	----	----	2.3	37.0	----		16.5	19.8	.8	16.2	----	----	----	
TB1H	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
7-14-77	Gas	----	----	3.1	36.4	----		16.5	19.4	.8	14.3	----	----	----	
TB2A	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	3.3	----	----		16.5	----	.4	----	----	----	----	
TB2B	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	3.3	----	----		16.5	----	.4	----	----	----	----	
TB2C	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
8-12-77	Gas	----	----	.9	36.5	8.2		16.5	17.5	.4	15.7	----	----	----	
TB2D	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	3.3	----	----		16.5	----	.4	----	----	----	----	
TB2E	Bed	----	----	6.0	----	----		.6	----	.9	----	----	----	----	
	Gas	----	----	3.3	----	----		16.5	----	.4	----	----	----	----	





TABLE 8. - Continued. (e)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
Content, wt%														
G19	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	97.9	---	3.3	33.5	20.1	0.1	0.3	---	0.8	---	---	---	---
G22	Bed	---	---	---	---	---	0	0	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	1.6	---	---	---	---	---	---
G23	Bed	---	---	---	---	---	0	0	---	---	---	---	---	---
	Gas	---	---	---	---	---	0	1.8	---	---	---	---	---	---
G24	Bed	---	---	---	---	---	0	0	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	1.1	---	---	---	---	---	---
T3A-1	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
T3A-2	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	.8	44.8	9.0	---	.1	22.1	---	14.8	1.1	---	0.9
T3A-3	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	.8	44.9	9.1	---	0	21.0	---	14.8	1.2	---	1.0
T3B	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	.8	44.8	9.0	---	.1	22.1	---	14.8	1.1	---	.9
T3C	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	1.0	44.1	8.9	---	.2	21.9	---	14.7	1.4	---	1.0
T3D	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	1.1	43.3	8.5	---	0	22.2	---	15.1	1.4	---	.9
T3E	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	.8	44.0	8.6	---	.5	21.1	---	15.8	1.4	---	1.0
T3F	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	3.0	32.7	7.3	---	1.0	18.5	---	17.9	1.5	---	2.6
H1	Bed	---	---	7.9	7.5	60.0	0	.1	---	1.0	---	---	---	---
	Gas	92.1	---	1.0	39.0	7.1	.1	7.9	---	.9	---	---	---	---
H2	Bed	---	---	8.5	7.0	60.5	0	0	---	.7	---	---	---	---
	Gas	89.9	---	2.3	32.3	11.8	.1	9.8	---	1.1	---	---	---	---
H3	Bed	---	---	---	---	---	0	0	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	10.7	---	---	---	---	---	---
H4	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	18.1	---	---	---	---	---	---
H5	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	4.9	---	---	---	---	---	---
H6	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	2.8	---	---	---	---	---	---
H7	Bed	---	---	7.3	9.7	61.2	0	.1	---	.9	---	---	---	---
	Gas	99.0	---	1.0	38.1	14.1	.1	.8	---	1.0	---	---	---	---
H8	Bed	---	---	6.3	9.9	64.7	0	.1	---	.7	---	---	---	---
	Gas	99.0	---	.7	43.7	8.6	.1	.8	---	.6	---	---	---	---
H10	Bed	---	---	6.3	9.9	61.7	0	0	---	.8	---	---	---	---
	Gas	98.8	---	1.2	38.9	13.4	.1	.5	---	1.1	---	---	---	---
H11	Bed	---	---	6.3	9.3	62.9	0	0	---	.3	---	---	---	---
	Gas	98.7	---	1.1	38.7	11.5	.1	.4	---	.8	---	---	---	---



TABLE 8. - Continued. (r)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
Content, wt%														
H13	Bed	----	----	5.8	7.8	62.7	0	0	----	5.5	----	----	----	----
	Gas	90.9	----	3.8	22.4	22.5	.1	7.6	----	1.7	----	----	----	----
H14	Bed	----	----	5.9	10.1	62.2	0	0	----	.5	----	----	----	----
	Gas	92.9	----	1.2	35.8	8.6	.1	6.7	----	.8	----	----	----	----
H15	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	5.4	----	----	----	----	----	----
H16	Bed	----	----	----	----	----	0	.2	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	3.3	----	----	----	----	----	----
H18	Bed	----	----	7.1	7.7	63.7	.1	.7	----	.3	----	----	----	----
	Gas	97.3	----	4.2	10.9	47.1	0	1.8	----	1.0	----	----	----	----
H19	Bed	----	----	7.4	7.7	62.9	0	.1	----	.5	----	----	----	----
	Gas	98.5	----	3.3	21.9	34.2	0	.7	----	1.5	----	----	----	----
H20	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.4	----	----	----	----	----	----
H23	Bed	----	----	----	----	----	0	.2	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	.8	----	----	----	----	----	----
H24	Bed	----	----	5.5	7.2	69.6	0	.2	----	1.1	----	----	----	----
	Gas	97.9	----	2.9	18.6	42.8	.1	.6	----	1.7	----	----	----	----
H25	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.2	----	----	----	----	----	----
I1	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.2	----	----	----	----	----	----
I2	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.1	----	----	----	----	----	----
I3	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.2	----	----	----	----	----	----
I4	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	1.8	----	----	----	----	----	----
I5	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	2.5	----	----	----	----	----	----
I6	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.3	----	----	----	----	----	----
I7	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.9	----	----	----	----	----	----
I8	Bed	----	----	----	----	----	0	0	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	1.0	----	----	----	----	----	----
I9	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	6.7	----	----	----	----	----	----
I10	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.2	11.0	----	----	----	----	----	----
I11	Bed	----	----	----	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	----	----	----	.1	1.4	----	----	----	----	----	----
I12	Bed	----	----	----	----	----	0	.2	----	----	----	----	----	----
	Gas	----	----	----	----	----	0	.4	----	----	----	----	----	----

TABLE 8. - Continued. (g)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
Content, wt%														
I13	Bed	---	---	---	---	---	0	0.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	1.0	---	---	---	---	---	---
J1	Bed	---	---	---	---	---	.1	3.7	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	10.3	---	---	---	---	---	---
J2	Bed	---	---	---	---	---	.1	.9	---	---	---	---	---	---
	Gas	---	---	---	---	---	0	.5	---	---	---	---	---	---
J3	Bed	---	---	---	---	---	0	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	4.2	---	---	---	---	---	---
J4	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	2.6	---	---	---	---	---	---
J5	Bed	---	---	---	---	---	0	.8	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	1.0	---	---	---	---	---	---
J6	Bed	---	---	---	---	---	0	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	.5	---	---	---	---	---	---
J7	Bed	---	---	---	---	---	0	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	3.9	---	---	---	---	---	---
J8	Bed	---	---	---	---	---	.1	.7	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	2.9	---	---	---	---	---	---
J9	Bed	---	---	---	---	---	.1	1.6	---	---	---	---	---	---
	Gas	---	---	---	---	---	0	1.0	---	---	---	---	---	---
T4	Coarse flyash	---	---	4.3	27.0	17.2	---	.9	12.8	---	16.8	11.2	---	0.6
	Fine flyash	---	---	4.0	36.9	9.7	---	2.8	18.7	---	11.9	5.3	---	1.8
K1	Bed	---	---	---	---	---	.1	.5	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	4.0	---	---	---	---	---	---
K2	Bed	---	---	---	---	---	0	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	5.3	---	---	---	---	---	---
K3	Bed	---	---	---	---	---	0	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	4.7	---	---	---	---	---	---
K4	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	.4	---	---	---	---	---	---
K5	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	0	.3	---	---	---	---	---	---
K6	Bed	---	---	---	---	---	0	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	3.3	---	---	---	---	---	---
K7	Bed	---	---	---	---	---	.1	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	7.4	---	---	---	---	---	---
K8	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	2.8	---	---	---	---	---	---
K9	Bed	---	---	---	---	---	0	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	2.3	---	---	---	---	---	---
K10	Bed	---	---	---	---	---	.1	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.1	1.3	---	---	---	---	---	---

TABLE 8. - Continued. (h)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
Content, wt%														
K11	Bed	----	----	---	----	----	0	0.1	----	----	----	----	----	----
	Gas	----	----	---	----	----	0	.1	----	----	----	----	----	----
K12	Bed	----	----	---	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	---	----	----	.1	1.4	----	----	----	----	----	----
K13	Bed	----	----	---	----	----	.1	.6	----	----	----	----	----	----
	Gas	----	----	---	----	----	.1	1.8	----	----	----	----	----	----
K14	Bed	----	----	---	----	----	0	.6	----	----	----	----	----	----
	Gas	----	----	---	----	----	.1	4.0	----	----	----	----	----	----
K15	Bed	----	----	---	----	----	.1	.4	----	----	----	----	----	----
	Gas	----	----	---	----	----	.1	1.8	----	----	----	----	----	----
K16	Bed	----	----	---	----	----	0	.4	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	5.8	----	----	----	----	----	----
T5	Coarse flyash	----	----	1.9	31.2	28.8	---	.7	15.5	----	13.3	1.8	----	0.8
	Fine flyash	----	----	2.0	37.9	22.2	---	.9	18.7	----	11.2	1.9	----	1.5
CAS1	----	----	----	----	----	----	----	----	----	----	----	----	----	(a)
CAS0	----	----	----	----	----	----	----	----	----	----	----	----	----	↓
CAS2	----	----	----	----	----	----	----	----	----	----	----	----	----	↓
CAS3	----	----	----	----	----	----	----	----	----	----	----	----	----	↓
CAS4	----	----	----	----	----	----	----	----	----	----	----	----	----	↓
L1	Bed	----	----	---	----	----	0	.2	----	----	----	----	----	----
	Gas	----	----	---	----	----	.3	6.3	----	----	----	----	----	----
L2	Bed	----	----	---	----	----	.1	1.3	----	----	----	----	----	----
	Gas	----	----	---	----	----	.3	3.7	----	----	----	----	----	----
L3	Bed	----	----	---	----	----	.1	.8	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	1.7	----	----	----	----	----	----
L4	Bed	----	----	---	----	----	0	.1	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	.4	----	----	----	----	----	----
L5	Bed	----	----	---	----	----	.1	.5	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	.7	----	----	----	----	----	----
L6	Bed	----	----	---	----	----	.1	.4	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	2.7	----	----	----	----	----	----
M1	Bed	----	----	---	----	----	.1	.3	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	1.4	----	----	----	----	----	----
M2	Bed	----	----	---	----	----	.1	.2	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	1.5	----	----	----	----	----	----
M3	Bed	----	----	---	----	----	.2	.3	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	.4	----	----	----	----	----	----
M4	Bed	----	----	---	----	----	.1	.1	----	----	----	----	----	----
	Gas	----	----	---	----	----	.2	.2	----	----	----	----	----	----

<sup>a</sup>No analysis.

TABLE 8. - Concluded. (i)

[ASTM D-3174 and D-3175 for coal analysis.]

Test and date	Solids source	Ash	Volatiles	Sulfur	Silica	Calcia	Content, wt%							
							Hydrogen	Carbon	Alumina	CO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Magnesia	SO <sub>3</sub>	Miscellaneous
M5	Bed	---	---	---	---	---	0.1	1.7	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	1.2	---	---	---	---	---	---
M6	Bed	---	---	---	---	---	.1	.3	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.2	---	---	---	---	---	---
M7	Bed	---	---	---	---	---	.1	.6	---	---	---	---	---	---
	Gas	---	---	---	---	---	.3	.6	---	---	---	---	---	---
M8	Bed	---	---	---	---	---	.1	.6	---	---	---	---	---	---
	Gas	---	---	---	---	---	.3	1.7	---	---	---	---	---	---
M9	Bed	---	---	---	---	---	.1	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	1.5	---	---	---	---	---	---
M11	Bed	---	---	---	---	---	.1	.2	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.7	---	---	---	---	---	---
M12	Bed	---	---	---	---	---	.1	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.3	---	---	---	---	---	---
N1	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.6	---	---	---	---	---	---
N2	Bed	---	---	---	---	---	0	.1	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.6	---	---	---	---	---	---
N5A	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
N5B	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
N6	Bed	---	---	---	---	---	.1	.7	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.5	---	---	---	---	---	---
N55A	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
N55B	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
N7	Bed	---	---	---	---	---	.1	.4	---	---	---	---	---	---
	Gas	---	---	---	---	---	.2	.3	---	---	---	---	---	---
T6A	Bed	---	---	---	---	(a)	(a)	---	---	---	---	---	---	---
	Gas	---	---	---	---	↓	↓	---	---	---	---	---	---	---
T6B	Bed	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gas	---	---	---	---	---	---	---	---	---	---	---	---	---
T7	Bed	---	---	---	47	4	---	---	25	---	17	1	---	---
	Coarse flyash	---	---	---	36	15	---	---	18	---	13	1	9	---
	Fine flyash	---	---	---	28	3	---	---	16	---	14	1	26	---

<sup>a</sup>No analysis.

TABLE 9. - RC13 TEST RESULTS: COLLECTED SOLIDS SIZE DISTRIBUTION (a)

Test	Solids source	Solids size, $\mu\text{m}$											
		2000	1410	1000	707	500	354	177	74	37	25	10	5
		Amount of solids smaller than stated size, wt%											
A1A	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	98.6	84.6	47.0	31.3	27.1	19.9
A2A	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	99.2	88.1	29.1	13.7	10.6	8.3
A9A	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
A10A	Bed	94.8	73.5	50.9	28.4	19.3	12.5	6.4	3.0	.7	-----	-----	-----
5-11-77	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
A11A	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
A1B	Bed	97.9	77.1	48.5	20.8	11.8	6.1	1.4	.2	-----	-----	-----	-----
5-18-77	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
A3B	Bed	97.1	88.8	71.2	46.9	28.5	13.9	4.3	1.1	.6	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	70	40.6	26.3	16.8	-----
A5B	Bed	97.3	86.0	69.9	43.5	24.8	13.3	4.0	1.3	-----	-----	-----	-----
	Gas	----	----	----	99.9	99.9	99.5	98.1	84.1	34.9	19.8	14.9	9.6
A6B	Bed	98.5	90.2	74.9	50.0	30.0	16.7	5.0	1.6	.8	-----	-----	-----
5-19-77	Gas	----	----	----	99.5	99.2	98.6	96.4	80.5	48.1	29.2	22.2	16.7
A7B	Bed	98.5	88.8	73.4	47.1	27.1	14.8	4.5	2.0	1.2	.9	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	36.3	19.0	16.5	11.0
A8B	Bed	98.2	86.6	68.4	41.0	23.8	13.5	9.7	.7	-----	-----	-----	-----
	Gas	----	----	----	100	99.5	99.1	97.7	75.6	34.9	22.7	17.1	11.7
A9B	Bed	98.9	80.1	53.3	26.0	16.9	10.3	5.5	.8	.4	-----	-----	-----
	Gas	----	----	----	99.5	99.0	98.6	95.1	76.4	30.3	19.9	14.6	9.8
A10B	Bed	91.6	81.0	58.7	31.6	20.1	13.4	5.8	2.0	.9	-----	-----	-----
	Gas	----	----	----	99.8	99.0	98.0	96.8	73.0	34.8	18.9	15.3	-----
A11B	Bed	97.9	84.4	63.9	35.8	20.7	11.7	4.2	1.1	.8	.8	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
A12B	Bed	96.4	82.0	65.8	43.0	25.9	14.5	9.2	1.0	.8	.8	-----	-----
5-20-77	Gas	----	----	----	100	99.9	99.6	97.8	86.0	53.1	38.3	34.7	22.1
A16B	Bed	99.6	88.0	79.3	50.1	30.3	16.8	3.5	1.1	-----	-----	-----	-----
	Gas	----	----	----	99.9	99.8	99.1	97.3	78.6	44.3	37.0	11.8	-----
A17B	Bed	97.3	85.9	71.4	49.4	28.9	14.9	5.0	2.9	2.8	2.7	-----	-----
	Gas	----	----	----	-----	99.5	99.2	97.7	81.0	55.5	29.7	22.9	19.1
C1	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	99.7	99.2	98.4	91.9	74.2	39.9	16.9	15.9	14.7
C3	Bed	97.9	82.6	63.1	37.6	21.9	11.8	2.9	.9	-----	-----	-----	-----
	Gas	----	----	----	99.8	99.5	98.9	93.2	72.0	39.1	21.5	19.1	17.0
C8	Bed	96.8	80.4	62.4	37.9	20.8	11.1	2.3	.3	-----	-----	-----	-----
6-3-77	Gas	----	----	----	99.1	98.6	98.3	96.3	80.6	48.3	34.3	24.9	16.8
C11	Bed	97.3	84.8	69.9	46.2	28.0	15.5	3.6	1.0	-----	-----	-----	-----
	Gas	----	----	----	99.6	99.4	99.2	97.9	82.2	47.8	33.0	25.8	16.4
C12	Bed	96.9	81.5	65.3	42.0	24.6	13.4	3.3	1.1	-----	-----	-----	-----
	Gas	----	----	----	99.9	99.8	99.3	94.4	64.6	20.5	17.6	13.4	9.8
C16	Bed	97.1	89.1	69.4	46.2	27.9	15.4	3.3	1.4	-----	-----	-----	-----
	Gas	----	----	----	99.8	99.5	98.9	95.6	76.6	38.2	20.5	18.3	15.9



TABLE 9. - Continued. (c)

Test	Solids source	Solids size, $\mu\text{m}$											
		2000	1410	1000	707	500	354	177	74	37	25	10	5
		Amount of solids smaller than stated size, wt%											
E1	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E1	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E2	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E2	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E3	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E3	Gas	---	---	---	99.40	99.0	98.2	91.9	---	---	---	---	---
E4	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E4	Gas	---	---	---	96.1	88.2	74.50	47.90	31.50	6.2	1.30	---	---
E5	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E5	Gas	---	---	---	99.40	98.2	94.6	79.10	40.0	---	---	---	---
E6	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E6	Gas	---	---	---	99.7	99.5	98.8	92.9	---	---	---	---	---
E9	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E9	Gas	---	---	---	99.20	98.75	97.8	92.2	---	---	---	---	---
E11	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E11	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E12	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E12	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E13	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E13	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E14	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E14	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E15	Bed	---	---	---	---	---	---	---	---	---	---	---	---
E15	Gas	---	---	---	---	---	---	---	---	---	---	---	---
E17	Bed	99.5	89.3	67.8	32.2	10.9	3.7	---	---	---	---	---	---
E17	Gas	---	---	---	---	---	---	---	---	---	---	---	---
F1	---	(a)	(a)	---	---	---	---	---	---	---	---	---	---
F2	---	---	---	---	---	---	---	---	---	---	---	---	---
F3	---	---	---	---	---	---	---	---	---	---	---	---	---
F4	---	---	---	---	---	---	---	---	---	---	---	---	---
F5	---	---	---	---	---	---	---	---	---	---	---	---	---
F6	---	---	---	---	---	---	---	---	---	---	---	---	---
F7	---	---	---	---	---	---	---	---	---	---	---	---	---
F8	---	---	---	---	---	---	---	---	---	---	---	---	---
F9	Bed	---	---	---	---	---	---	---	---	---	---	---	---
F9	Gas	---	---	---	97.6	95.0	90.0	77.1	57.1	---	---	---	---
F16	---	(a)	(a)	---	---	---	---	---	---	---	---	---	---
F19	---	(a)	(a)	---	---	---	---	---	---	---	---	---	---
F27	---	(a)	(a)	---	---	---	---	---	---	---	---	---	---
G1	Bed	---	---	---	---	---	---	---	---	---	---	---	---
G1	Gas	---	---	---	99.6	99.4	99.1	95.1	76.0	---	---	---	---
G2	Bed	---	---	---	---	---	---	---	---	---	---	---	---
G2	Gas	---	---	---	98.8	98.1	96.8	88.9	71.7	---	---	---	---

<sup>a</sup>No analysis.







TABLE 9. - Continued. (f)

Test	Solids source	Solids size, $\mu\text{m}$											
		2000	1410	1000	707	500	354	177	74	37	25	10	5
		Amount of solids smaller than stated size, wt%											
I7	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I8	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I9	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I10	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I11	Bed	98.3	92.0	84.0	71.2	50.6	29.5	5.7	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I12	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
I13	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
J3	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	92.3	84.2	73.5	48.0	28.0	17.7	143.9	7.4	3.2
J5	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	92.8	85.5	75.0	46.5	22.2	18.0	13.7	3.8	1.2
J6	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	96.3	90.5	82.5	63.6	51.0	35.5	27.7	6.2	2.3
T4	Bed	97.9	91.1	79.5	65.2	46.5	33.1	9.5	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	99.8	-----	-----	97.5	94.9	89.2	68.4	32.0	14.3
K1	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	99.5	99.1	98.5	97.0	83.5	64.0	49.7	21.0	8.3
T5	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	-----	-----	-----	99.3	98.0	94.1	91.2	51.0	23.5
CAS1	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	-----	-----	-----	-----	-----	96.1	93.1	83.9	74.5	70.3	52.4	25.5
CAS0-1	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
0-18-79	Gas	-----	-----	-----	99.1	97.5	97.1	96.3	92.3	87.5	83.2	51.0	21.2
CAS0-2	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1-19-79	Gas	-----	-----	-----	99.1	-----	-----	98.8	97.3	9.20	83.5	51.5	19.5
CAS0-3	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1-19-79	Gas	-----	-----	-----	98.5	97.6	96.0	91.0	85.7	74.2	63.5	42.5	17.5
CAS0-4	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1-19-79	Gas	-----	-----	-----	-----	-----	-----	97.5	94.5	91.5	72.5	35.2	17.5
CAS2-1	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10-30-79	Gas	-----	-----	-----	89.0	84.5	80.0	71.0	33.0	18.0	13.5	-----	-----
CAS2-3	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1-31-79	Gas	-----	-----	-----	-----	-----	-----	95.4	91.7	88.1	85.6	-----	-----
CAS2-4	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1-31-79	Gas	-----	-----	-----	93.4	89.4	85.2	82.2	71.7	55.5	45.0	22.0	9.5
CAS3-2	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-14-79	Gas	-----	-----	-----	-----	96.2	-----	92.1	84.5	80.5	60.0	34.5	13.5
CAS3-4	Bed	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-15-79	Gas	-----	-----	-----	-----	-----	-----	92.6	87.5	70.5	61.5	37.5	14.2

TABLE 9. - Concluded. (g)

Test	Solids source	Solids size, $\mu\text{m}$											
		2000	1410	1000	707	500	354	177	74	37	25	10	5
Amount of solids smaller than stated size, wt%													
CAS4-2	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-22-79	Gas	----	----	----	-----	-----	-----	97.5	94.5	91.5	62.5	39.5	18.8
L1	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.8	98.1	97.6	97.0	95.1	88.3	80.6	35.5	16.5
L2	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.6	97.6	96.6	95.1	63.5	40.2	23.2	16.7	-----
L3	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.7	97.5	96.2	94.5	55.5	29.2	19.5	-----	-----
L4	Bed	----	----	98.2	91.0	81.0	78.0	75.5	54.5	-----	-----	-----	-----
	Gas	----	----	----	98.5	97.6	96.5	94.5	78.2	34.5	21.0	-----	-----
L5	Bed	----	----	82.5	68.2	52.0	41.0	24.5	13.8	-----	-----	-----	-----
	Gas	----	----	----	98.5	97.0	95.0	92.0	87.5	86.5	83.5	28.2	14.5
L6	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.7	97.6	96.6	94.5	92.2	78.5	30.2	17.5	-----
M1	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	99.4	99.1	98.7	97.7	903.4	88.0	79.2	40.5	17.5
M4	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	99.7	98.6	98.0	95.8	92.7	85.5	78.6	35.5	14.5
M5	Bed	----	----	82.0	72.5	56.5	42.5	32.5	18.2	-----	-----	-----	-----
	Gas	----	----	----	98.6	98.5	98.0	95.3	90.0	83.5	79.2	37.5	15.5
M12	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	71.0	56.5	46.0	33.0	23.5	15.5	11.0	2.8	.8
T6	Bed	----	----	(a)	(a)	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N5A	Bed	----	----	87.5	76.2	55.2	38.2	26.5	18.2	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N5B	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.6	97.6	94.8	86.2	55.5	16.5	5.0	-----	-----
N6	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.8	97.8	97.5	96.2	81.5	30.0	25.5	14.5	-----
N55A	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	99.4	98.6	97.5	96.0	91.5	74.2	51.0	32.5	-----
N55B	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	98.5	97.5	96.4	94.6	90.2	83.2	70.0	-----	-----
N7	Bed	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	99.4	98.6	97.5	96.4	95.0	87.2	56.2	21.0	10.5	-----
T7	Bed	----	----	(a)	(a)	-----	-----	-----	-----	-----	-----	-----	-----
	Gas	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>a</sup>No analysis.

TABLE 10. - PFB COMBUSTION BED DISCHARGE ANALYSIS

Test and date		Particle size range, $\mu\text{m}$			
		<590	590 - 840	840 - 1410	>1410
A10A 5/11/77	Amount in size range, percent	22.8	13.7	36.5	26.5
	Silica content, percent	6.9	3.2	3.4	4.1
	Lime content, percent	55.9	64.6	66.9	71.8
	Sulfur content, percent	9.8	10.2	8.8	6.0
	Carbon dioxide content, percent	.9	.7	.6	.2
	Ignition loss, percent	4.0	3.3	2.8	3.8
A10B 5/19/77	Amount in size range, percent	24.1	17.9	39.0	19.0
	Silica content, percent	8.3	4.4	4.6	4.1
	Lime content, percent	54.2	63.5	65.1	71.7
	Sulfur content, percent	8.6	9.2	8.2	6.4
	Carbon dioxide content, percent	2.9	.7	.9	.6
	Ignition loss, percent	6.2	5.6	5.0	3.4
C3 6/27/77	Amount in size range, percent	27.6	22.3	32.5	17.4
	Silica content, percent	10.2	4.8	3.7	3.8
	Lime content, percent	49.9	65.2	68.4	73.5
	Sulfur content, percent	9.2	8.5	5.6	3.9
	Carbon dioxide content, percent	.1	1.6	2.4	5.1
	Ignition loss, percent	2.7	3.5	4.3	7.2

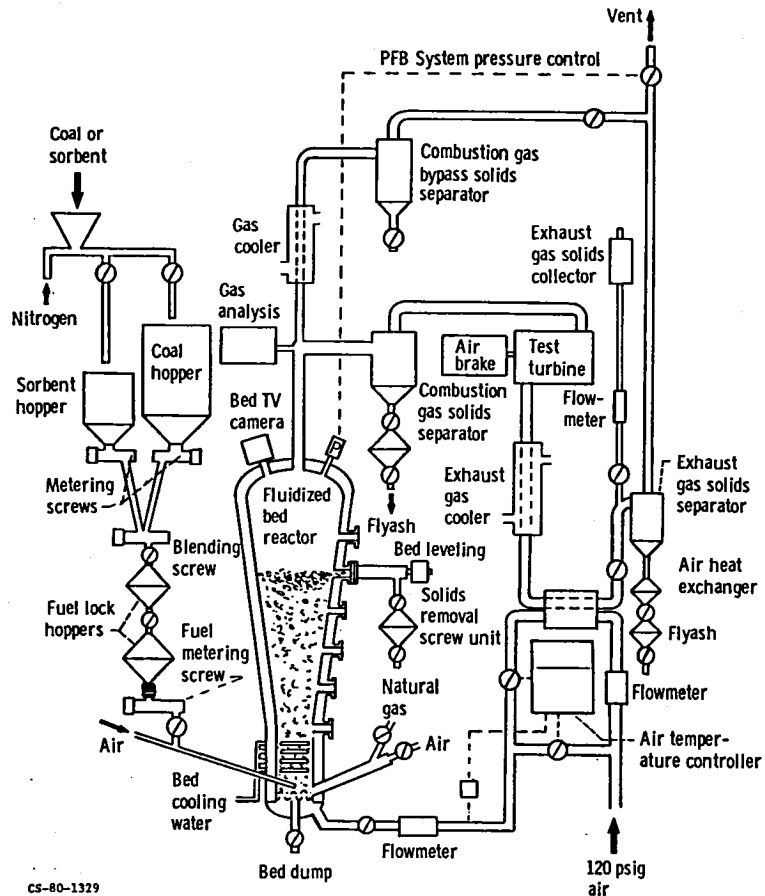


Figure 1. - Schematic of Lewis PFB combustor system.

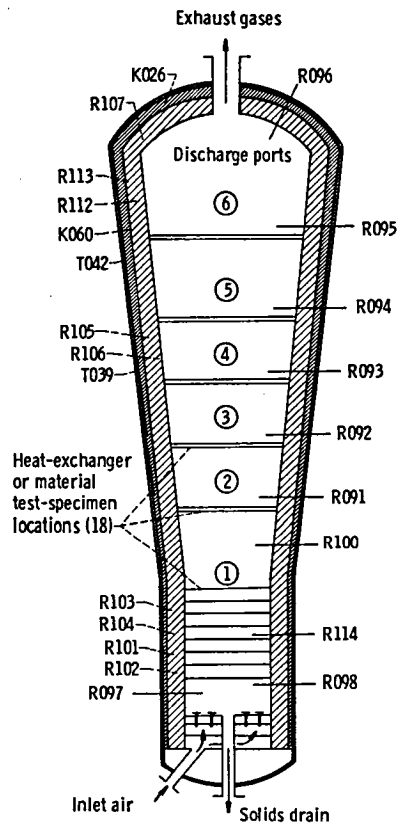


Figure 2. - PFB reactor temperature instrumentation.

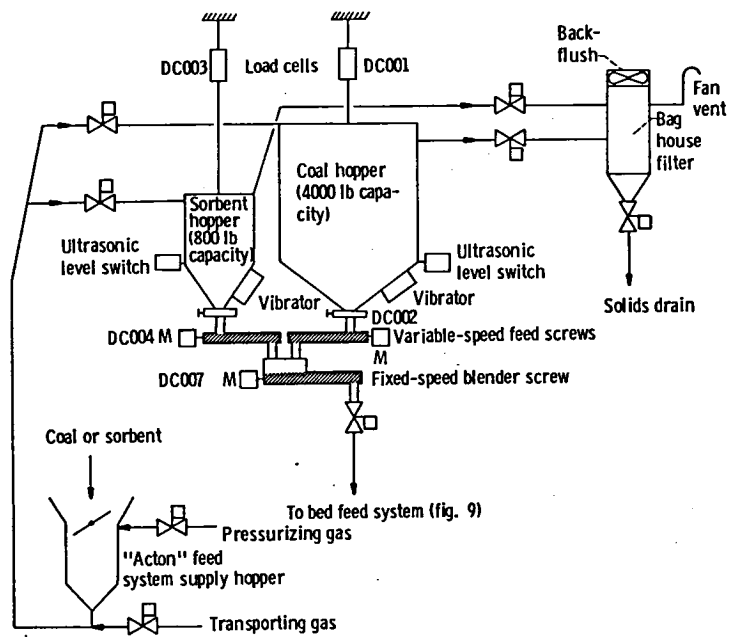


Figure 3. - PFB fuel supply system.

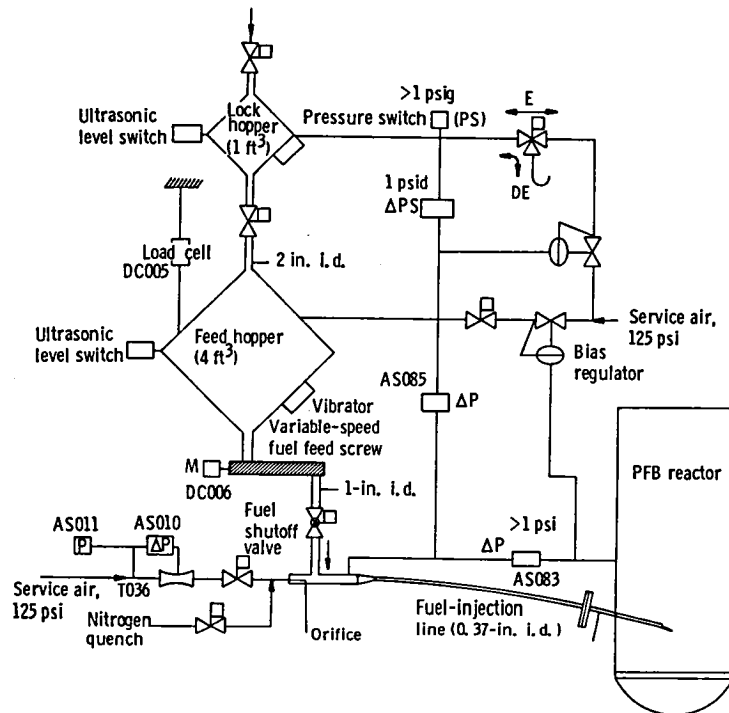


Figure 4. - PFB bed feed system.

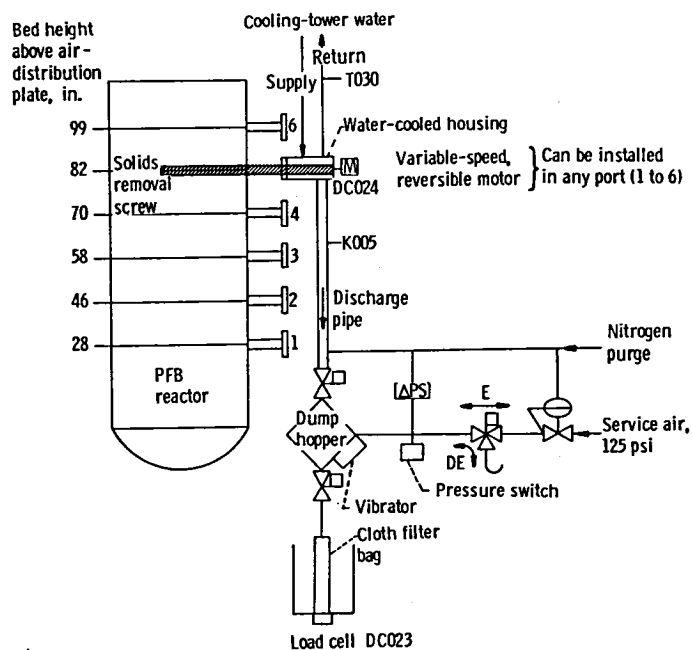


Figure 5. - PFB solids removal system.

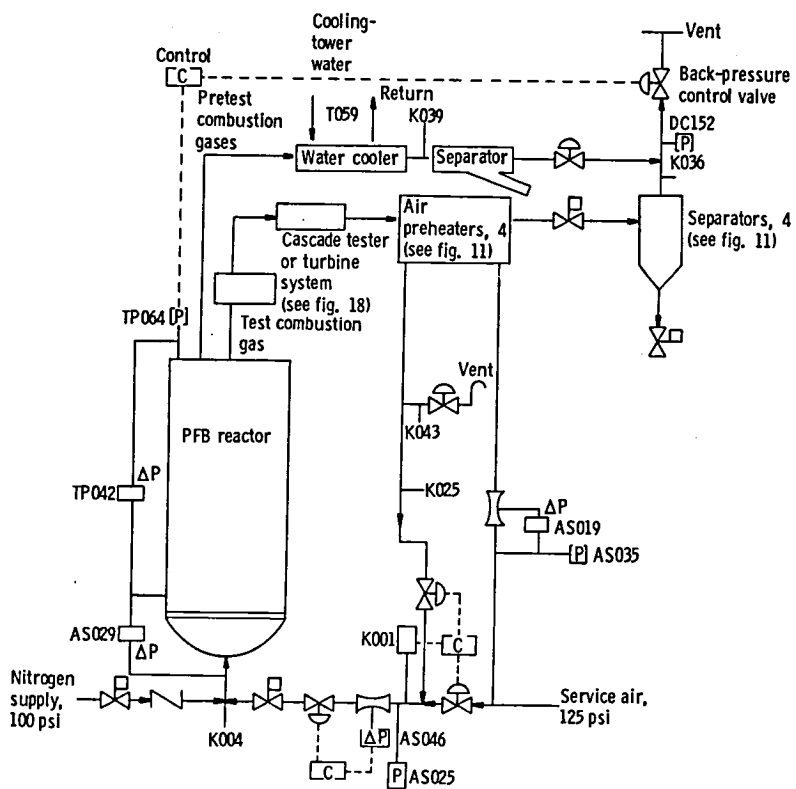


Figure 6. - PFB combustion air system.

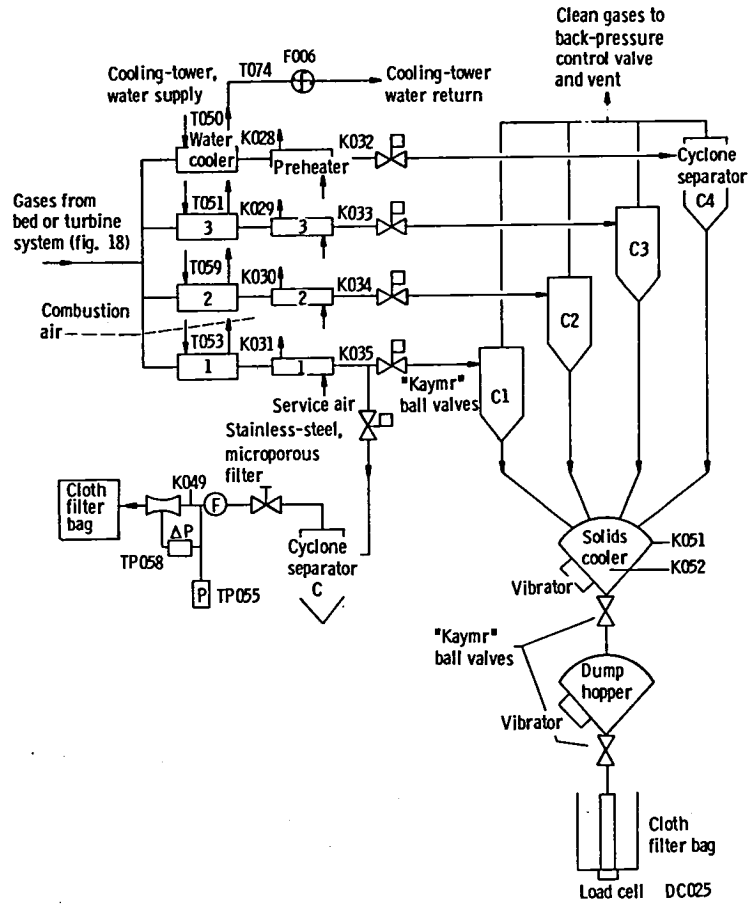


Figure 7. - PFB exhaust system.

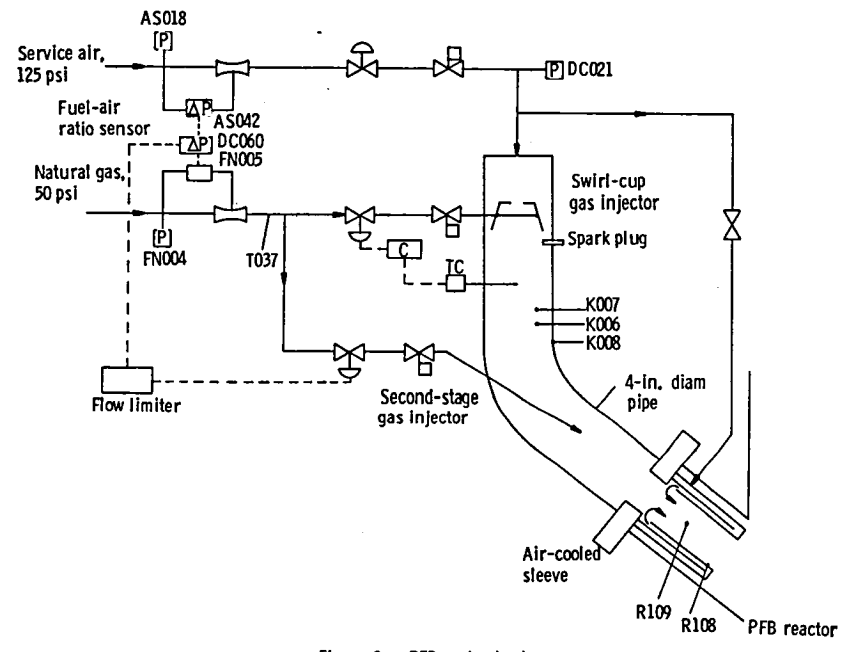


Figure 8. - PFB preheater burner.



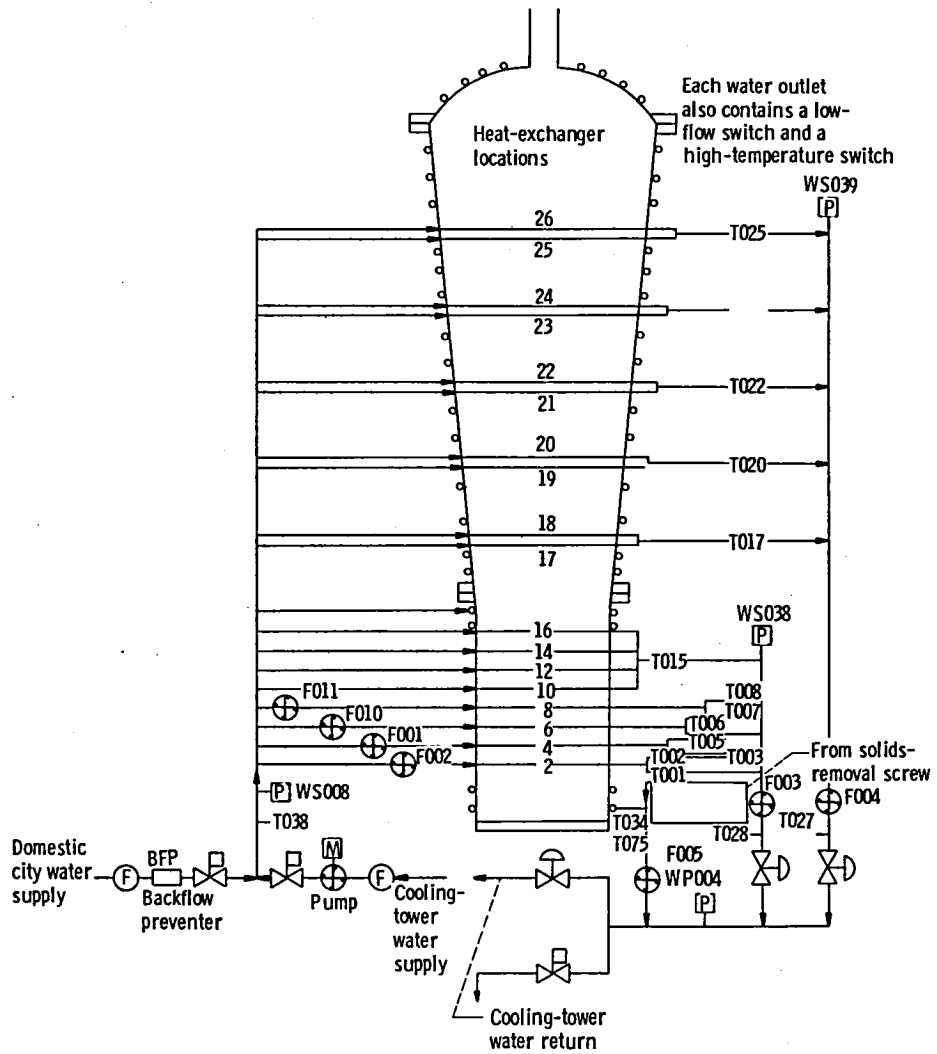


Figure 9. - PFB reactor water cooling system.

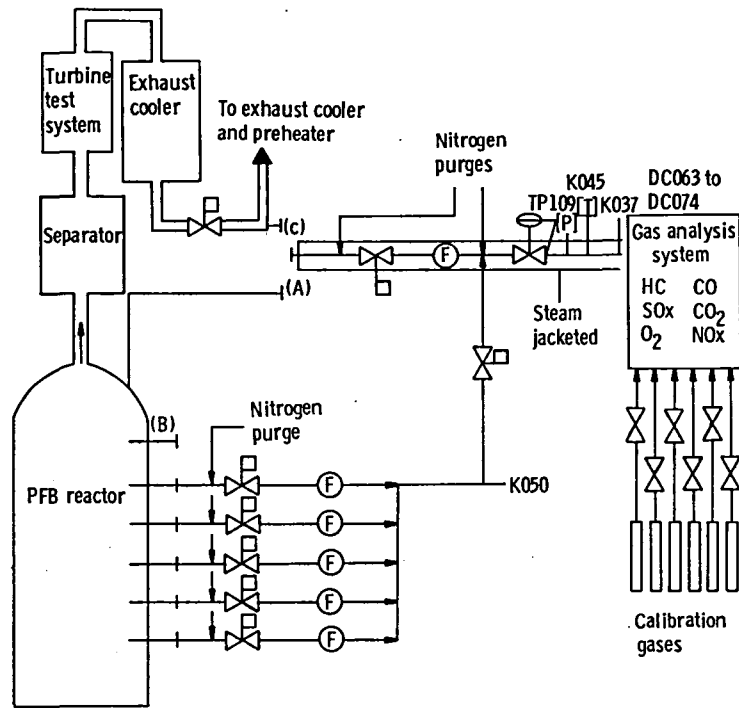


Figure 10. - PFB gas analysis system.

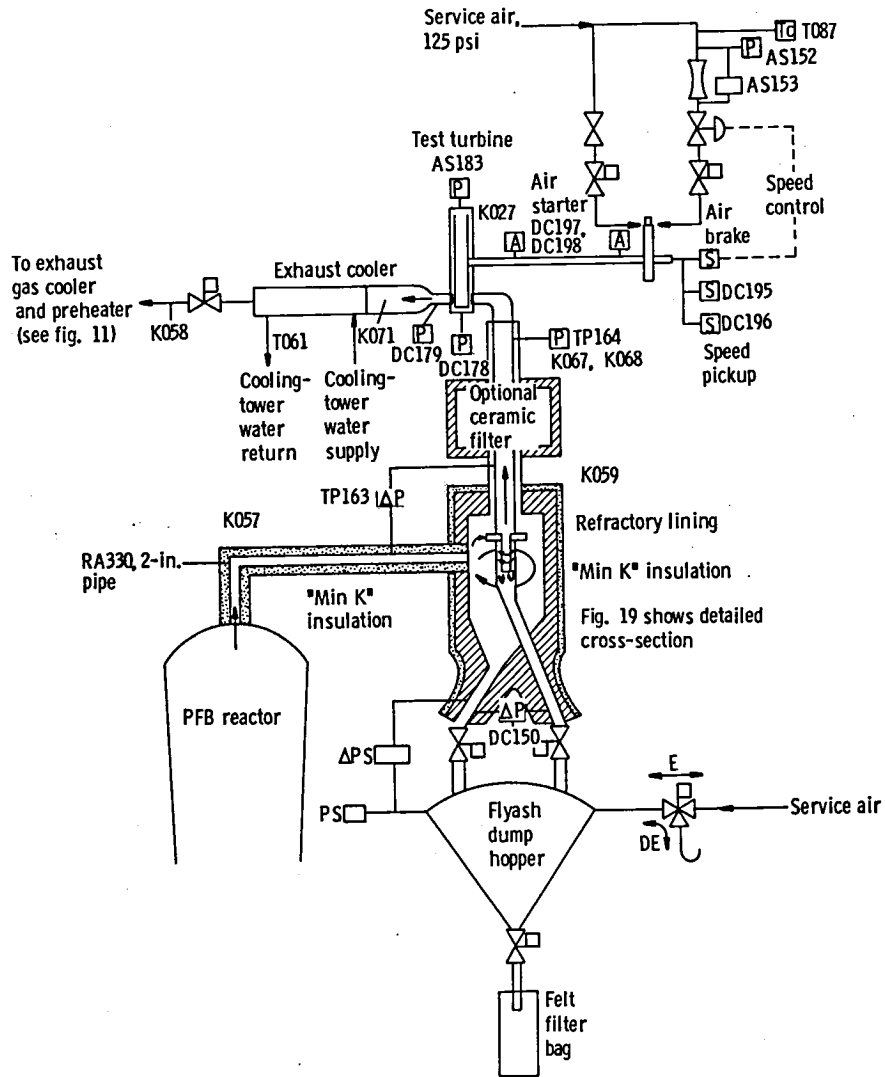


Figure 11. - Turbine test section and hot gas cleanup system.

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16. Abstract A 200-kW (thermal), pressurized, fluidized-bed (PFB) combustion reactor and a related testing facility were designed, constructed, and operated by the NASA Lewis Research Center. The facility was intended for the evaluation of advanced aircraft turbine engine materials that might be used in powerplant turbogenerators utilizing PFB combustors. The facility reactor could be operated over a range of parameters: type of fuel, type of sulfur sorbent material, percentage of sorbent in the fuel, flow rate of fuel and combustion air, reactor bed depth, temperature and pressure of combustion exhaust gases, and combustion operating time. Tests were made to determine the relationships between the operating parameters and the reactor and gas cleanup systems and to check out how changes in the physical configuration of the system affected performance and how various materials were affected during long-time, steady-state exposure to the PFB environment. The instrumentation and control data are presented along with how they were used to obtain the test results. The various formulas used are also given. The operating procedures and test variations are presented. NASA has terminated its PFB work, but many of the results obtained may be useful for future research or commercial development of PFB facilities.			
17. Key Words (Suggested by Author(s)) Fluidized-bed combustion; Turbine materials; Coal and limestone burning; Gas cleanup; Combustion emissions		18. Distribution Statement Unclassified - unlimited STAR Category 44	
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MICROFICHE SUPPLEMENT TO NASA TM-81767  
TABLE 4. - PFB TEST RESULTS

TABLE 4. - PFB TEST RESULTS

FOLDOUT FRAME I

(a) Combustor input solids data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
001	Coal consumed, lb	278	(a)	253	271	103	125	121	127	124
002	Coal meter screw value	65	55	95	52	67	25	49	43	37
002	Standard deviation	(a)	(a)	0	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	27	73	51	31	16	24	29	20	(b)
004	Sorbent meter screw value	8	4	7	5	4	4	8	10	2
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	368	319	303	341	134	158	135	168	171
006	Fuel meter screw value	18	16	17	18	16	15	13	15	15
006	Standard deviation	1	0	1	1	1	1	4	1	1
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	62	67	69	56	61	85	84	69	66
022	Standard deviation	0	3	5	2	3	2	4	1	1
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	10.8	9.9	10.0	11.5	10.8	14.3	14.4	13.0	14.3
033	Standard deviation	0.1	0.5	0.4	0.7	0.5	0.3	1.0	0.6	0.2
092	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Accumulated fuel, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	54.2	34.1	44.8	39.9	44.0	41.0	38.1	44.5	49.5
174	Standard deviation	10.9	17.2	8.5	11.7	8.2	6.5	14.8	4.8	15.5
175	Fuel flow time, sec	1000	1121	1102	912	1105	1315	1025	874	1272
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	45.3	43.7	41.2	45.3	43.8	43.5	42.0	39.3	43.6
176	Standard deviation	2.7	14.1	4.2	3.9	1.6	1.3	1.6	7.2	1.8
177	Accumulated fuel flow, lb	316	699	432	392	662	122	294	516	701
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.17	0.16	0.15	0.15	0.13	0.13	0.13	0.15	0.20
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	46.3	29.4	38.8	34.7	38.9	36.2	33.6	38.7	41.1

176	Standard deviation	2.7	14.1	4.2	3.9	1.6	1.3	1.6	7.2	1.8
177	Accumulated fuel flow, lb	316	699	432	392	662	122	294	516	701
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.17	0.16	0.15	0.15	0.13	0.13	0.13	0.15	0.20
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	46.3	29.4	38.8	34.7	38.9	36.2	33.6	38.7	41.1
C07	Standard deviation	9.3	14.8	7.4	10.2	7.3	5.8	13.1	4.2	12.9
C08	Sorbent flow rate, lb/hr	8.0	4.7	6.0	5.2	5.1	4.7	4.4	5.8	8.4
C08	Standard deviation	1.6	2.4	1.1	1.5	1.0	0.8	1.7	0.6	2.6
C05	Fuel flow rate, lb/hr	54.2	34.1	44.8	39.9	44.0	40.9	38.1	44.5	49.5
C05	Standard deviation	10.9	17.2	8.5	11.7	8.2	6.5	14.8	4.8	15.5
C13	Input calcium-sulfur ratio	2.68	2.48	2.40	2.34	2.04	2.04	2.06	2.35	3.16
C13	Standard deviation	0	0	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
001	Coal consumed, lb	118	234	79	100	101	109	98	31
002	Coal meter screw value	25	30	33	17	43	25	13	(b)
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	12	41	6	7	9	11	(a)	13
004	Sorbent meter screw value	4	4	5	2	6	4	2	(a)
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(b)
005	Fuel consumed, lb	166	245	105	78	158	138	116	85
006	Fuel meter screw value	14	17	13	11	16	17	9	19
006	Standard deviation	0	4	1	1	1	1	1	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	74	82	74	68	66	69	83	86
022	Standard deviation	5	3	3	1	1	4	4	1
033	Fuel injector differ- ential pressure, psid	13.4	10.3	10.8	11.3	11.6	12.2	10.5	8.6
033	Standard deviation	0.5	1.2	0	0.1	0.1	0.4	0.3	0.1
092	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Accumulated fuel, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	44.1	45.9	43.0	140.2	48.1	48.7	36.5	51.4
174	Standard deviation	5.9	7.9	8.6	226.7	14.2	4.9	9.0	13.6
175	Fuel flow time, sec	1195	1106	1062	1452	777	1138	948	1336
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	41.9	44.8	40.4	32.9	41.1	48.7	34.4	57.7
176	Standard deviation	1.6	4.9	2.7	12.8	6.1	3.2	4.0	16.2
177	Accumulated fuel flow, lb	871	252	304	410	558	741	903	165
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.09	0.14	0.14	0.14	0.14	0.14	0.14	0.14
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.5	40.4	37.9	123.4	42.4	42.7	32.1	45.2
C07	Standard deviation	5.4	7.0	7.6	199.5	12.5	4.3	8.0	12.0



174	Standard deviation	5.9	7.5	8.0	22.0	7.2	7.2	9.8	13.6
175	Fuel flow time, sec	1195	1106	1062	1452	777	1138	948	1336
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	41.9	44.8	40.4	32.9	41.1	48.7	34.4	57.7
176	Standard deviation	1.6	4.9	2.7	12.8	6.1	3.2	4.0	16.2
177	Accumulated fuel flow, lb	871	252	304	410	558	741	903	165
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.09	0.14	0.14	0.14	0.14	0.14	0.14	0.14
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.5	40.4	37.9	123.4	42.4	42.7	32.1	45.2
C07	Standard deviation	5.4	7.0	7.6	199.5	12.5	4.3	8.0	12.0
C08	Sorbent flow rate, lb/hr	3.6	5.5	5.1	16.8	5.8	5.9	4.4	6.2
C08	Standard deviation	0.5	1.0	1.0	27.1	1.7	0.6	1.1	1.6
C05	Fuel flow rate, lb/hr	44.1	45.9	43.0	140.2	48.1	48.7	36.5	51.4
C05	Standard deviation	5.9	7.9	8.6	226.7	14.2	4.9	9.0	13.6
C13	Input calcium-sulfur ratio	1.39	2.12	2.12	2.12	2.12	2.17	2.12	2.12
C13	Standard deviation	0	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
001	Coal consumed, lb	132	122	88	117	(a)	113	128
002	Coal meter screw value	43	49	(b)	25	49	28	82
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	23	10	11	15	17	8	(a)
004	Sorbent meter screw value	11	6	(b)	14	14	14	14
004	Standard deviation	(a)	(a)	(b)	(a)	0	0	0
005	Fuel consumed, lb	142	137	86	147	122	139	125
006	Fuel meter screw value	18	19	18	21	13	20	23
006	Standard deviation	1	0	0	1	2	1	1
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	63	60	57	53	63	71	73
022	Standard deviation	1	0	2	1	3	1	0
033	Fuel injector differ- ential pressure, psid	11.3	11.7	11.0	11.7	11.7	11.6	10.2
033	Standard deviation	0.4	0	0.6	0.2	0.1	0.8	0.1
092	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Accumulated fuel, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	37.9	46.7	39.7	53.7	40.2	41.9	41.2
174	Standard deviation	8.3	18.5	5.4	18.3	9.6	3.8	6.6
175	Fuel flow time, sec	950	840	1165	1206	991	1263	604
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	39.8	47.7	41.7	37.7	38.5	40.8	44.3
176	Standard deviation	7.5	16.1	4.6	7.2	7.7	3.1	7.3
177	Accumulated fuel flow, lb	848	297	182	397	567	697	845
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.14	0.15	0.08	0.20	0.19	0.20	0.09
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	33.2	40.5	36.8	44.7	33.7	35.1	37.9
C07	Standard deviation	7.2	16.1	5.0	15.3	8.0	3.2	6.1
C08	Sorbent flow rate, lb/hr	4.7	6.2	2.9	8.9	6.4	6.9	3.3

174	Standard deviation	8.3	18.5	5.4	18.3	9.6	3.8	6.6
175	Fuel flow time, sec	950	840	1165	1206	991	1263	604
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	39.8	47.7	41.7	37.7	38.5	40.8	44.3
176	Standard deviation	7.5	16.1	4.6	7.2	7.7	3.1	7.3
177	Accumulated fuel flow, lb	848	297	182	397	567	697	845
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.14	0.15	0.08	0.20	0.19	0.20	0.09
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	33.2	40.5	36.8	44.7	33.7	35.1	37.9
C07	Standard deviation	7.2	16.1	5.0	15.3	8.0	3.2	6.1
C08	Sorbent flow rate, lb/hr	4.7	6.2	2.9	8.9	6.4	6.9	3.3
C08	Standard deviation	1.0	2.5	0.4	3.1	1.5	0.6	0.5
C05	Fuel flow rate, lb/hr	37.9	46.7	39.7	53.7	40.2	41.9	41.2
C05	Standard deviation	8.3	18.5	5.4	18.3	9.6	3.8	6.6
C13	Input calcium-sulfur ratio	2.23	2.39	1.22	3.12	2.98	3.07	1.36
C13	Standard deviation	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME |

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
001	Coal consumed, lb	224	191	144	105	138	217	159
002	Coal meter screw value	96	96	96	96	96	96	96
002	Standard deviation	0	0	0	0	0	0	0
003	Sorbent consumed, lb	17	20	11	4	(b)	5	53
004	Sorbent meter screw value	12	12	12	12	12	12	12
004	Standard deviation	0	0	0	0	0	0	0
005	Fuel consumed, lb	257	217	161	111	156	254	191
006	Fuel meter screw value	20	19	18	13	10	21	19
006	Standard deviation	1	0	1	1	0	2	4
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	75	72	77	74	68	72	82
022	Standard deviation	2	1	1	2	1	6	1
033	Fuel injector differential pressure, psid	2.77	2.35	1.45	1.80	3.31	2.71	2.65
033	Standard deviation	0.18	0.24	0.11	0.45	0.43	0.23	0.20
092	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Accumulated fuel, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	45.5	37.1	26.3	29.1	25.1	45.8	37.4
174	Standard deviation	8.5	4.2	8.5	3.1	2.7	8.9	7.6
175	Fuel flow time, sec	865	1112	695	1636	1694	823	1151
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	43.1	37.9	32.3	30.1	26.4	43.1	35.1
176	Standard deviation	4.0	3.0	11.7	2.6	1.6	7.0	9.4
177	Accumulated fuel flow, lb	174	416	578	909	206	296	546
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.14	0.14	0.13	0.11	0.13	0.12	0.12
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.1	32.7	23.4	26.2	22.2	40.9	33.4
C07	Standard deviation	7.5	3.7	7.6	2.8	2.4	8.0	6.8
C08	Sorbent flow rate, lb/hr	5.5	4.4	2.9	3.0	2.8	4.9	4.0
C08	Standard deviation	1.0	0.5	0.9	0.3	0.3	1.0	0.8

095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	45.5	37.1	26.3	29.1	25.1	45.8	37.4
174	Standard deviation	8.5	4.2	8.5	3.1	2.7	8.9	7.6
175	Fuel flow time, sec	865	1112	695	1636	1694	823	1151
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	43.1	37.9	32.3	30.1	26.4	43.1	35.1
176	Standard deviation	4.0	3.0	11.7	2.6	1.6	7.0	9.4
177	Accumulated fuel flow, lb	174	416	578	909	206	296	546
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.14	0.14	0.13	0.11	0.13	0.12	0.12
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.1	32.7	23.4	26.2	22.2	40.9	33.4
C07	Standard deviation	7.5	3.7	7.6	2.8	2.4	8.0	6.8
C08	Sorbent flow rate, lb/hr	5.5	4.4	2.9	3.0	2.8	4.9	4.0
C08	Standard deviation	1.0	0.5	0.9	0.3	0.3	1.0	0.8
C05	Fuel flow rate, lb/hr	45.5	37.1	26.3	29.1	25.0	45.8	37.4
C05	Standard deviation	8.5	4.2	8.5	3.1	2.7	8.9	7.6
C13	Input calcium-sulfur ratio	2.14	2.12	1.95	1.76	2.00	1.87	1.87
C13	Standard deviation	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
001	Coal consumed, lb	92	297	(a)	582	418	(a)	1610	1530
002	Coal meter screw value	7	16	47	56	68	40	44	47
002	Standard deviation	0	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	6	18	69	80	64	114	181	64
004	Sorbent meter screw value	6	4	3	6	8	5	6	7
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	99	311	849	645	468	808	1950	1700
006	Fuel meter screw value	15	14	14	23	21	21	20	20
006	Standard deviation	0	1	1	1	0	1	2	6
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	75	73	74	67	64	67	75	84
022	Standard deviation	1	1	5	2	3	6	6	6
033	Fuel injector differential pressure, psid	12.1	11.6	10.8	9.3	9.6	11.6	16.1	15.8
033	Standard deviation	0.4	0.5	0.5	0.4	0.3	0.6	1.1	1.5
092	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Accumulated fuel, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	40.5	42.3	40.6	47.7	50.0	46.4	46.3	41.8
174	Standard deviation	7.6	9.7	11.7	6.1	10.0	9.0	7.0	7.0
175	Fuel flow time, sec	657	861	1021	1100	624	1030	1018	985
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	37.1	38.6	40.5	46.7	48.1	50.6	44.8	41.6
176	Standard deviation	2.1	2.2	10.4	3.4	2.5	8.8	3.4	8.1
177	Accumulated fuel flow, lb	213	464	488	467	337	531	487	409
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	36.2	37.8	36.3	42.2	44.2	41.0	40.9	36.8
C07	Standard deviation	6.8	8.6	10.5	5.4	8.8	8.0	6.2	6.1
C08	Sorbent flow rate, lb/hr	4.3	4.5	4.3	5.5	5.9	5.5	5.4	5.0

	lb/hr								
174	Standard deviation	7.6	9.7	11.7	6.1	10.0	9.0	7.0	7.0
175	Fuel flow time, sec	657	861	1021	1100	624	1030	1018	985
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	37.1	38.6	40.5	46.7	48.1	50.6	44.8	41.6
176	Standard deviation	2.1	2.2	10.4	3.4	2.5	8.8	3.4	8.1
177	Accumulated fuel flow, lb	213	464	488	467	337	531	487	409
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	36.2	37.8	36.3	42.2	44.2	41.0	40.9	36.8
C07	Standard deviation	6.8	8.6	10.5	5.4	8.8	8.0	6.2	6.1
C08	Sorbent flow rate, lb/hr	4.3	4.5	4.3	5.5	5.9	5.5	5.4	5.0
C08	Standard deviation	0.8	1.0	1.2	0.7	1.2	1.1	0.8	0.8
C05	Fuel flow rate, lb/hr	40.5	42.3	40.6	47.7	50.0	46.5	46.3	41.8
C05	Standard deviation	7.6	9.6	11.7	6.1	10.0	9.0	7.0	7.0
C13	Input calcium-sulfur ratio	1.86	1.86	1.86	2.03	2.07	2.07	2.07	2.14
C13	Standard deviation	0	0	0	0	0	0	0	0.01

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





174	Standard deviation	9.7	6.0	7.3	5.7	8.2	2.0	7.4
175	Fuel flow time, sec	551	1272	1406	1299	1414	1248	1616
175	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
176	Previous fuel flow, lb/hr	44.5	32.6	31.5	33.8	30.6	34.1	38.8
176	Standard deviation	1.6	0.9	3.5	1.6	1.9	1.6	15.7
177	Accumulated fuel flow, lb	481	476	719	287	735	186	408
177	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	39.4	28.2	28.2	32.6	29.1	29.4	32.4
C07	Standard deviation	8.6	5.3	6.4	5.0	7.3	1.8	6.5
C08	Sorbent flow rate, lb/hr	5.2	3.8	3.8	4.3	3.9	3.9	4.3
C08	Standard deviation	1.1	0.7	0.9	0.7	1.0	0.2	0.9
C05	Fuel flow rate, lb/hr	44.6	31.9	32.0	36.9	33.0	33.3	36.7
C05	Standard deviation	9.7	6.0	7.3	5.7	8.2	2.0	7.4
C13	Input calcium-sulfur ratio	2.07	2.07	2.07	2.07	2.07	2.07	2.07
C13	Standard deviation	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**



100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.12	0.12	0.12	0.12
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	53.2	60.6	42.8	48.8	45.8	32.7	43.7
C07	Standard deviation	12.3	7.5	13.6	12.0	13.2	4.4	4.3
C08	Sorbent flow rate, lb/hr	6.2	7.1	5.0	5.7	5.3	3.8	5.1
C08	Standard deviation	1.4	0.9	1.6	1.4	1.5	0.5	0.5
C05	Fuel flow rate, lb/hr	59.4	67.7	47.7	54.5	51.2	36.5	48.8
C05	Standard deviation	13.8	8.4	15.2	13.3	14.8	4.9	4.8
C13	Input calcium-sulfur ratio	1.81	1.82	1.81	1.81	1.81	1.79	1.81
C13	Standard deviation	0	0.02	0.01	0.01	0.01	0.01	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
001	Coal consumed, lb	186	71	88	126	131	115	55
002	Coal meter screw value	96	96	96	96	95	96	(b)
002	Standard deviation	0	0	0	0	0	0	(b)
003	Sorbent consumed, lb	20	6	8	11	11	15	8
004	Sorbent meter screw value	15	12	12	12	12	21	(b)
004	Standard deviation	2	0	0	0	0	0	(b)
005	Fuel consumed, lb	206	77	96	137	142	129	63
006	Fuel meter screw value	22	29	27	23	20	15	17
006	Standard deviation	0	0	0	0	1	0	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	50.3	60.9	53.1	48.0	38.4	45.8	42.5
092	Standard deviation	11.3	2.1	4.1	13.4	12.7	18.6	4.9
093	Fuel flow time, sec	848	399	1098	514	1239	1066	1311
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	43.8	54.6	52.6	47.3	40.3	32.3	38.5
094	Standard deviation	6.9	1.1	1.9	5.5	4.3	2.4	3.5
095	Accumulated fuel, lb	232	428	538	733	709	138	368
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
006	Sorbent-coal ratio	0.11	0.09	0.09	0.09	0.08	0.13	0.15

100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.11	0.09	0.09	0.09	0.08	0.13	0.15
C06	Standard deviation	0.01	0	0	0	0.01	0.03	0
C07	Coal flow rate, lb/hr	45.3	55.9	48.8	44.1	35.5	40.6	37.0
C07	Standard deviation	10.1	1.9	3.7	12.4	11.7	16.1	4.2
C08	Sorbent flow rate, lb/hr	5.0	4.9	4.3	3.9	2.9	5.2	5.5
C08	Standard deviation	1.3	0.2	0.3	1.1	1.0	2.8	0.6
C05	Fuel flow rate, lb/hr	50.3	60.9	53.1	48.0	38.4	45.8	42.5
C05	Standard deviation	11.3	2.1	4.1	13.4	12.7	18.6	4.9
C13	Input calcium-sulfur ratio	1.73	1.38	1.37	1.38	1.28	1.96	2.30
C13	Standard deviation	0.18	0.02	0	0.01	0.13	0.46	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.12	0.12	0.11	0.12	0.12
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	50.5	52.8	38.9	51.1	47.8	41.8	36.9	44.2
C07	Standard deviation	8.4	4.9	6.9	11.5	15.6	2.1	1.5	11.8
C08	Sorbent flow rate, lb/hr	5.9	6.2	4.5	6.0	5.6	4.8	4.3	5.2
C08	Standard deviation	1.0	0.6	0.8	1.3	1.8	0.2	0.2	1.3
C05	Fuel flow rate, lb/hr	56.4	58.9	43.5	57.1	53.3	46.6	41.2	49.4
C05	Standard deviation	9.3	5.5	7.7	12.8	17.4	2.3	1.7	13.2
C13	Input calcium-sulfur ratio	1.82	1.83	1.82	1.82	1.81	1.79	1.82	1.83
C13	Standard deviation	0.01	0.01	0.01	0.02	0.02	0	0.01	0.03

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





174	Standard deviation lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.11	0.09	0.06	0.12	0.12	0.12	0.09	0.09
C06	Standard deviation	0.03	0	0	0	0	0	0.01	0
C07	Coal flow rate, lb/hr	52.9	49.0	47.1	28.3	26.5	24.3	23.4	45.2
C07	Standard deviation	9.4	2.0	6.5	12.3	10.0	4.3	12.2	7.1
C08	Sorbent flow rate, lb/hr	5.6	4.5	2.6	3.3	3.1	2.8	2.1	4.0
C08	Standard deviation	1.5	0.2	0.3	1.4	1.2	0.5	1.0	0.6
C05	Fuel flow rate, lb/hr	58.6	53.4	49.8	31.6	29.6	27.1	25.5	49.2
C05	Standard deviation	10.2	2.2	6.8	13.8	11.2	4.8	13.2	7.7
C13	Input calcium-sulfur ratio	1.68	1.42	0.87	1.82	1.82	1.80	1.41	1.37
C13	Standard deviation	0.43	0	0.01	0	0.01	0	0.18	0.01

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



094	Standard deviation	10.7	1.9	5.7	1.7	4.5	8.7	2.3	7.8	0.8
095	Accumulated fuel, lb	541	701	61	229	337	504	663	793	957
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
128	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.09	0.09	0.15	0.15	0.15	0.15	0.15	0.09	0.09
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	36.4	30.0	26.3	26.9	26.2	17.0	15.2	32.9	12.6
C07	Standard deviation	7.4	12.2	2.3	1.3	3.8	9.8	3.2	3.3	4.8
C08	Sorbent flow rate, lb/hr	3.1	2.7	3.9	4.0	3.9	2.5	2.2	2.9	1.1
C08	Standard deviation	0.6	1.1	0.3	0.2	0.6	1.5	0.5	0.3	0.4
C05	Fuel flow rate, lb/hr	39.5	32.7	30.2	30.9	30.0	19.5	17.4	35.8	13.8
C05	Standard deviation	8.1	13.3	2.7	1.5	4.3	11.3	3.7	3.6	5.2
C13	Input calcium-sulfur ratio	1.35	1.38	2.31	2.33	2.31	2.31	2.29	1.37	1.37
C13	Standard deviation	0	0	0	0	0.01	0.01	0	0	0.01

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
001	Coal consumed, lb	66	72	50	26	122	68	92	76
002	Coal meter screw value	96	96	(b)	(b)	96	96	96	(b)
002	Standard deviation	0	0	(b)	(b)	0	0	0	(b)
003	Sorbent consumed, lb	5	4	3	1	15	8	11	9
004	Sorbent meter screw value	7	7	(b)	(a)	17	16	16	(b)
004	Standard deviation	0	0	(b)	(b)	0	0	0	(b)
005	Fuel consumed, lb	72	76	53	28	136	76	102	84
006	Fuel meter screw value	11	16	6	12	17	12	19	16
006	Standard deviation	1	0	1	1	2	1	1	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	0.174	0.174	0.177	0.143	0.126	(a)	(a)
022	Standard deviation	(b)	0.074	0.096	0.078	0.123	0.034	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	19.6	25.3	14.2	23.6	32.8	24.7	43.1	29.8
092	Standard deviation	7.4	3.2	6.9	3.1	5.1	11.2	23.0	5.2
093	Fuel flow time, sec	1126	1520	1760	1628	1097	1225	1114	1532
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous-fuel flow, lb/hr	20.1	23.4	17.6	21.3	34.3	23.1	30.7	30.0
094	Standard deviation	7.1	1.2	4.8	1.0	9.1	5.6	3.5	2.4
095	Accumulated fuel, lb	59	240	342	470	580	715	875	562
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.08	0.06	0.06	0.06	0.11	0.12	0.11	0.11

100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C06	Sorbent-coal ratio	0.08	0.06	0.06	0.06	0.11	0.12	0.11	0.11
C06	Standard deviation	0.02	0	0	0	0.02	0	0	0
C07	Coal flow rate, lb/hr	18.2	23.9	13.4	22.3	29.6	22.2	38.7	26.7
C07	Standard deviation	6.8	3.0	6.6	2.9	4.6	10.1	20.7	4.6
C08	Sorbent flow rate, lb/hr	1.4	1.4	0.8	1.3	3.3	2.6	4.4	3.1
C08	Standard deviation	0.6	0.2	0.4	0.2	0.8	1.2	2.4	0.5
C05	Fuel flow rate, lb/hr	19.6	25.3	14.2	23.6	32.8	24.7	43.1	29.8
C05	Standard deviation	7.4	3.2	6.9	3.1	5.1	11.2	23.0	5.2
C13	Input calcium-sulfur ratio	1.18	0.89	0.89	0.89	1.72	1.81	1.78	1.78
C13	Standard deviation	0.24	0	0	0	0.31	0.02	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
001	Coal consumed, lb	106	84	155	210	89	94	138	224	203
002	Coal meter screw value	95	(b)	95	95	95	95	95	95	95
002	Standard deviation	0	(b)	0	0	0	0	0	0	0
003	Sorbent consumed, lb	5	4	8	10	4	5	7	12	20
004	Sorbent meter screw value	7	(a)	6	5	5	7	7	5	16
004	Standard deviation	(a)	(b)	(a)	(a)	(a)	0	0	(a)	0
005	Fuel consumed, lb	112	88	163	221	93	99	146	236	223
006	Fuel meter screw value	18	25	31	29	40	46	46	44	37
006	Standard deviation	0	0	0	0	1	0	0	0	0
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(a)	(a)	(a)	0.16	0.15	(a)	0.12
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	0.21	0	(b)	0.04
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	36.0	42.5	49.7	48.7	72.7	102.4	92.5	72.2	62.1
092	Standard deviation	2.8	2.8	8.9	13.7	18.5	0.1	16.6	25.5	4.8
093	Fuel flow time, sec	1451	1159	849	662	621	645	459	588	901
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	35.1	44.5	48.1	47.3	71.3	101.8	91.9	95.0	60.9
094	Standard deviation	1.2	0.6	2.1	3.6	15.0	1.0	17.5	12.8	2.9
095	Accumulated fuel, lb	334	799	1024	448	370	66	343	219	328
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	46	(b)	(b)	(b)	(b)	46	(b)	(b)	(b)
100	Standard deviation	(a)	(b)	(b)	(b)	(b)	(a)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	34.7	43.2	45.6	47.9	60.9	70.9	163.0	65.6	60.7
298	Standard deviation	1.6	0.9	4.4	3.7	2.1	1.8	192.4	7.0	7.0

095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	
100	Fuel flow indicated value	46	(b)	(b)	(b)	(b)	46	(b)	(b)	
100	Standard deviation	(a)	(b)	(b)	(b)	(b)	(a)	(b)	(b)	
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
298	Present fuel flow, lb/hr	34.7	43.2	45.6	47.9	60.9	70.9	163.0	65.6	60.7
298	Standard deviation	1.6	0.9	4.4	3.7	2.1	1.8	183.4	7.8	7.0
C06	Sorbent-coal ratio	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09
C06	Standard deviation	0	0	0	0	0	0	0	0	0.03
C07	Coal flow rate, lb/hr	32.9	41.2	43.5	45.6	58.1	67.6	155.3	62.3	55.6
C07	Standard deviation	1.4	0.9	4.2	3.6	2.0	1.7	174.4	7.5	6.1
C08	Sorbent flow rate, lb/hr	1.7	2.0	2.1	2.3	2.9	3.4	7.7	3.2	5.1
C08	Standard deviation	0.2	0	0.2	0.1	0.1	0.1	8.6	0.3	1.9
C05	Fuel flow rate, lb/hr	34.7	43.2	45.6	47.9	60.9	70.9	163.0	65.6	60.6
C05	Standard deviation	1.6	0.9	4.4	3.7	2.1	1.8	183.4	7.8	7.0
C13	Input calcium-sulfur ratio	0.81	0.76	0.76	0.77	0.77	0.77	0.78	0.81	1.43
C13	Standard deviation	0.04	0	0.02	0.02	0.01	0	0.05	0.04	0.51

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
001	Coal consumed, lb	219	206	212	144	159	167	167	197	175
002	Coal meter screw value	95	95	95	95	95	95	95	95	95
002	Standard deviation	0	0	0	0	0	0	0	1	0
003	Sorbent consumed, lb	26	24	26	17	19	19	20	23	21
004	Sorbent meter screw value	11	12	11	13	13	12	16	16	17
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	0	0	0
005	Fuel consumed, lb	246	231	238	162	179	186	187	220	196
006	Fuel meter screw value	38	44	38	20	37	31	30	34	34
006	Standard deviation	1	1	0	0	1	2	0	1	1
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	60.9	66.6	56.3	39.6	60.3	62.7	49.0	58.3	57.5
092	Standard deviation	5.5	13.2	15.5	3.0	2.5	33.4	6.8	8.8	2.8
093	Fuel flow time, sec	1111	512	641	1128	769	1021	720	838	884
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	66.5	70.1	59.5	38.6	60.7	50.3	50.5	54.4	54.5
094	Standard deviation	13.1	2.8	2.2	2.4	2.7	2.4	4.7	3.5	3.6
095	Accumulated fuel, lb	613	673	221	452	671	167	418	663	692
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	46	(b)	46	(b)	46	(b)	(b)	(b)
100	Standard deviation	(b)	0	(b)	0	(b)	0	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	60.5	72.3	61.1	54.2	60.1	51.7	50.4	57.1	52.9
298	Standard deviation	2.7	8.1	5.5	42.9	4.6	4.5	2.1	6.5	8.5
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.12	0.12	0.11	0.12	0.12	0.12



094	Standard deviation	13.1	2.8	2.2	2.4	2.7	2.4	4.7	3.5	3.6
095	Accumulated fuel, lb	613	673	221	452	671	167	418	663	692
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	46	(b)	46	(b)	46	(b)	(b)	(b)
100	Standard deviation	(b)	0	(b)	0	(b)	0	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	60.5	72.3	61.1	54.2	60.1	51.7	50.4	57.1	52.9
298	Standard deviation	2.7	8.1	5.5	42.9	4.6	4.5	2.1	6.5	8.5
C06	Sorbent-coal ratio	0.12	0.12	0.12	0.12	0.12	0.11	0.12	0.12	0.12
C06	Standard deviation	0	0	0	0	0.01	0	0	0	0
C07	Coal flow rate, lb/hr	54.0	64.6	54.6	48.5	53.6	46.5	45.1	51.1	47.3
C07	Standard deviation	2.5	7.0	5.0	38.5	4.0	4.1	2.0	5.8	7.6
C08	Sorbent flow rate, lb/hr	6.5	7.6	6.5	5.7	6.5	5.3	5.3	5.9	5.6
C08	Standard deviation	0.3	1.1	0.5	4.5	0.7	0.5	0.2	0.6	0.9
C05	Fuel flow rate, lb/hr	60.5	72.3	61.1	54.2	60.1	51.7	50.4	57.1	52.9
C05	Standard deviation	2.7	8.1	5.5	42.9	4.6	4.5	2.1	6.5	8.5
C13	Input calcium-sulfur ratio	1.87	1.83	1.86	1.84	1.88	1.77	1.83	1.81	1.84
C13	Standard deviation	0.06	0.06	0.03	0.06	0.09	0	0.05	0.04	0.05

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

FOLDOUT FRAME |

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
001	Coal consumed, lb	179	190	272	206	233	173
002	Coal meter screw value	95	95	95	95	95	94
002	Standard deviation	0	0	0	0	0	0
003	Sorbent consumed, lb	43	48	25	20	27	20
004	Sorbent meter screw value	31	35	15	13	16	16
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	222	239	297	227	260	194
006	Fuel meter screw value	38	41	38	35	38	39
006	Standard deviation	1	0	1	1	1	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	61.8	72.6	59.7	83.1	77.4	67.5
092	Standard deviation	5.9	12.8	9.9	40.3	26.6	8.9
093	Fuel flow time, sec	925	599	826	759	690	617
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	67.1	69.6	64.9	58.4	63.3	61.4
094	Standard deviation	9.2	3.5	11.5	3.8	2.3	1.5
095	Accumulated fuel, lb	258	569	493	269	542	788
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	46	(b)	46	(b)	(b)	46
100	Standard deviation	0	(b)	0	(b)	(b)	0
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	61.4	67.3	61.4	60.3	63.5	60.7
298	Standard deviation	4.2	5.2	5.8	7.1	1.5	4.0
C06	Sorbent-coal ratio	0.22	0.25	0.11	0.10	0.11	0.12

094	Standard deviation	9.2	3.5	11.5	3.8	2.3	1.5
095	Accumulated fuel, lb	258	569	493	269	542	788
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	46	(b)	46	(b)	(b)	46
100	Standard deviation	0	(b)	0	(b)	(b)	0
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	61.4	67.3	61.4	60.3	63.5	60.7
298	Standard deviation	4.2	5.2	5.8	7.1	1.5	4.0
C06	Sorbent-coal ratio	0.22	0.25	0.11	0.10	0.11	0.12
C06	Standard deviation	0.06	0	0.09	0.03	0	0
C07	Coal flow rate, lb/hr	50.4	53.7	55.3	55.2	57.0	54.4
C07	Standard deviation	3.0	4.1	2.2	7.7	1.3	3.6
C08	Sorbent flow rate, lb/hr	11.0	13.5	6.0	5.1	6.5	6.3
C08	Standard deviation	3.0	1.0	5.2	1.3	0.2	0.4
C05	Fuel flow rate, lb/hr	61.4	67.3	61.4	60.3	63.5	60.7
C05	Standard deviation	4.2	5.2	5.8	7.1	1.5	4.0
C13	Input calcium-sulfur ratio	3.42	3.92	1.70	1.48	1.77	1.81
C13	Standard deviation	0.95	0.02	1.45	0.44	0.01	0.02

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

**FOLDOUT FRAME** |

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test								
		I1	I2	I3	I4	I5	I5B	I6	I7	I8
001	Coal consumed, lb	239	327	184	160	71	74	218	245	120
002	Coal meter screw value	95	95	95	95	95	95	95	95	95
002	Standard deviation	0	0	0	0	0	0	0	0	0
003	Sorbent consumed, lb	41	54	29	26	13	13	22	16	8
004	Sorbent meter screw value	12	17	16	12	14	9	9	5	5
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	280	381	214	186	84	87	240	262	129
006	Fuel meter screw value	45	50	40	28	36	36	49	56	47
006	Standard deviation	1	2	0	1	0	0	1	1	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	74.0	73.4	62.0	52.3	57.1	60.7	75.5	83.3	64.9
092	Standard deviation	8.4	21.1	3.5	13.6	24.2	6.8	16.1	25.3	5.4
093	Fuel flow time, sec	705	359	841	827	531	877	659	647	701
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	68.6	76.5	61.6	46.1	54.8	57.5	68.6	72.6	61.1
094	Standard deviation	2.8	3.0	2.7	1.6	1.1	3.1	3.4	2.7	4.6
095	Accumulated fuel, lb	232	600	534	211	398	506	780	217	602
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	46	(b)	(b)	(b)	(b)	(b)	(b)	46	(b)
100	Standard deviation	0	(b)	(b)	(b)	(b)	(b)	(b)	0	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	69.3	75.2	62.2	46.3	54.5	57.8	70.4	73.8	65.1
298	Standard deviation	2.9	5.2	2.4	1.1	3.1	1.4	5.8	2.9	4.4
C06	Sorbent-coal ratio	0.17	0.16	0.16	0.16	0.18	0.17	0.11	0.07	0.07

100	Standard deviation	0	(b)	(b)	(b)	(b)	(b)	0	(b)	
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
298	Present fuel flow, lb/hr	69.3	75.2	62.2	46.3	54.5	57.8	70.4	73.8	65.1
298	Standard deviation	2.9	5.2	2.4	1.1	3.1	1.4	5.8	2.9	4.4
C06	Sorbent-coal ratio	0.17	0.16	0.16	0.16	0.18	0.17	0.11	0.07	0.07
C06	Standard deviation	0.01	0	0	0	0	0.01	0.05	0	0
C07	Coal flow rate, lb/hr	59.2	64.6	53.6	39.9	46.2	49.3	63.7	69.1	61.0
C07	Standard deviation	2.5	4.6	2.1	1.0	2.7	1.3	5.3	2.7	4.1
C08	Sorbent flow rate, lb/hr	10.1	10.5	8.6	6.4	8.2	8.5	6.8	4.7	4.1
C08	Standard deviation	0.6	0.6	0.3	0.2	0.5	0.3	2.8	0.3	0.3
C05	Fuel flow rate, lb/hr	69.3	75.2	62.2	46.3	54.5	57.8	70.4	73.8	65.1
C05	Standard deviation	2.9	5.2	2.4	1.0	3.1	1.4	5.8	2.9	4.4
C13	Input calcium-sulfur ratio	1.40	1.34	1.31	1.32	1.42	0.88	0.55	0.55	0.55
C13	Standard deviation	0.07	0.03	0.01	0.04	0.04	0.05	0.38	0.02	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test					
		19	110A	110B	111	112	113
001	Coal consumed, lb	200	125	60	181	226	239
002	Coal meter screw value	95	95	95	95	94	95
002	Standard deviation	0	0	0	0	0	0
003	Sorbent consumed, lb	15	19	22	65	81	86
004	Sorbent meter screw value	6	17	36	28	29	36
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	215	144	82	246	307	326
006	Fuel meter screw value	36	31	31	37	46	57
006	Standard deviation	0	2	1	1	0	2
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	68.9	61.9	50.1	79.7	75.8	98.6
092	Standard deviation	35.8	14.9	4.8	37.5	6.5	4.4
093	Fuel flow time, sec	656	546	963	510	592	513
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	65.9	49.0	52.9	62.7	75.5	94.5
094	Standard deviation	40.9	3.9	6.2	1.3	5.1	4.0
095	Accumulated fuel, lb	796	429	128	327	792	246
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	34	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	12	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	53.5	47.2	55.2	60.3	76.6	93.4
298	Standard deviation	1.7	3.3	2.4	2.4	1.9	3.4
C06	Sorbent-coal ratio	0.07	0.15	0.36	0.36	0.36	0.36
C06	Standard deviation	0	0.13	0.01	0	0.01	0.01
C07	Coal flow rate, lb/hr	49.9	41.5	40.7	44.4	56.4	69.9

100	Fuel flow indicated value	(b)	(b)	(b)	(b)	54	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	12	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	53.5	47.2	55.2	60.3	76.6	93.4
298	Standard deviation	1.7	3.3	2.4	2.4	1.9	3.4
C06	Sorbent-coal ratio	0.07	0.15	0.36	0.36	0.36	0.36
C06	Standard deviation	0	0.13	0.01	0	0.01	0.01
C07	Coal flow rate, lb/hr	49.9	41.5	40.7	44.4	56.4	68.8
C07	Standard deviation	1.6	5.9	1.6	1.8	1.6	2.5
C08	Sorbent flow rate, lb/hr	3.6	5.6	14.4	15.8	20.2	24.6
C08	Standard deviation	0.2	4.0	0.8	0.6	0.4	0.9
C05	Fuel flow rate, lb/hr	53.5	47.2	55.2	60.3	76.6	93.4
C05	Standard deviation	1.7	3.3	2.4	2.4	1.9	3.4
C13	Input calcium-sulfur ratio	0.60	1.25	2.92	2.93	2.94	2.94
C13	Standard deviation	0.03	1.07	0.05	0.04	0.07	0.05

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
001	Coal consumed, lb	181	191	192	154	210	209	145	228	99
002	Coal meter screw value	87	87	88	87	95	95	94	95	94
002	Standard deviation	0	1	0	0	0	0	0	0	0
003	Sorbent consumed, lb	23	24	25	20	27	13	9	14	6
004	Sorbent meter screw value	4	7	7	8	5	4	5	5	6
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	205	216	217	174	237	222	154	243	105
006	Fuel meter screw value	19	31	53	34	53	53	32	33	22
006	Standard deviation	2	0	0	0	1	0	1	1	0
014	Fuel injector differential pressure, psid	3.19	6.05	10.94	1.93	1.28	(b)	2.80	4.79	2.28
014	Standard deviation	0.69	0.27	0.82	1.21	0.66	(b)	0.10	0.19	0.19
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	35.6	55.3	73.8	57.5	72.5	69.2	59.8	58.6	42.9
092	Standard deviation	13.9	19.0	5.8	7.8	5.3	5.0	33.6	10.8	6.4
093	Fuel flow time, sec	1069	791	627	626	592	498	687	853	970
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	40.8	52.6	70.6	54.5	71.9	71.9	49.4	55.8	41.2
094	Standard deviation	4.4	3.4	3.1	3.3	4.0	6.3	1.6	14.4	2.2
095	Accumulated fuel, lb	454	718	145	427	819	241	354	776	280
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	0	0	23	46	(b)	0	0	(b)	46
100	Standard deviation	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)	(a)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	42.5	53.3	71.5	55.3	69.5	73.3	50.6	55.4	42.2
298	Standard deviation	4.4	3.6	1.5	3.9	6.2	2.6	3.5	2.3	2.1
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.06	0.06	0.06	0.06
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	27.7	47.0	60.1	37.4	50.0	47.0	30.0	47.0	27.7



094	Standard deviation	4.4	3.4	3.1	3.3	4.0	6.3	1.6	14.4	2.2
095	Accumulated fuel, lb	454	718	145	427	819	241	354	776	280
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	0	0	23	46	(b)	0	0	(b)	46
100	Standard deviation	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)	(a)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	42.5	53.3	71.5	55.3	69.5	73.3	50.6	55.4	42.2
298	Standard deviation	4.4	3.6	1.5	3.9	6.2	2.6	3.5	2.3	2.1
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.06	0.06	0.06	0.06
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	37.7	47.3	63.4	49.0	61.7	69.0	47.6	52.1	39.8
C07	Standard deviation	3.9	3.2	1.3	3.5	5.5	2.5	3.3	2.1	2.0
C08	Sorbent flow rate, lb/hr	4.8	6.0	8.1	6.2	7.8	4.3	3.0	3.2	2.5
C08	Standard deviation	0.5	0.4	0.2	0.4	0.7	0.2	0.2	0.1	0.1
C05	Fuel flow rate, lb/hr	42.5	53.3	71.5	55.3	69.5	73.3	50.6	55.4	42.2
C05	Standard deviation	4.4	3.6	1.5	3.9	6.2	2.6	3.5	2.3	2.1
C13	Input calcium-sulfur ratio	0.73	0.73	0.73	0.73	0.73	0.35	0.35	0.35	0.35
C13	Standard deviation	0	0	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

FOLDOUT FRAME |

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
001	Coal consumed, lb	163	138	209	148	152	168	187	292	126
002	Coal meter screw value	19	34	60	16	35	24	64	48	80
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	21	18	27	17	9	10	11	18	8
004	Sorbent meter screw value	3	6	10	1	3	2	5	4	21
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	184	156	237	165	162	179	199	310	134
006	Fuel meter screw value	22	25	38	18	19	29	27	42	27
006	Standard deviation	1	0	0	0	1	0	0	0	0
014	Fuel injector differ- ential pressure, psid	0.97	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	0.44	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	53.9	53.2	78.0	43.3	39.7	54.8	50.6	71.3	52.0
092	Standard deviation	18.2	7.7	15.4	4.2	4.0	5.0	6.8	8.7	9.5
093	Fuel flow time, sec	1180	793	369	932	1334	849	672	848	575
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	44.6	51.1	65.4	42.4	39.2	50.6	47.8	70.5	51.4
094	Standard deviation	3.2	1.7	5.0	3.1	1.0	1.9	1.3	5.7	3.0
095	Accumulated fuel, lb	127	243	465	711	897	106	339	608	787
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	46	46	(b)	(b)	46	(b)	(b)	46	46
100	Standard deviation	0	0	(b)	(b)	0	(b)	(b)	0	0
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	45.4	50.8	67.9	41.4	39.4	50.7	48.1	67.3	53.5
298	Standard deviation	2.8	1.4	9.3	2.6	0.8	2.3	1.8	2.5	5.3
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.12	0.06	0.06	0.06	0.06	0.06
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.2	44.9	60.1	37.1	37.1	47.8	45.3	63.4	50.4
C07	Standard deviation	2.5	1.2	9.2	2.0	0.7	2.2	1.7	2.4	5.0

095	Accumulated fuel, lb	3.2	1.7	5.0	3.1	1.0	1.9	1.3	5.7	3.0
095	Standard deviation	127	243	465	711	897	106	339	608	787
100	Fuel flow indicated value	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Standard deviation	46	46	(b)	(b)	46	(b)	(b)	46	46
174	Present fuel flow, lb/hr	0	0	(b)	(b)	0	(b)	(b)	0	0
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	45.4	50.8	67.9	41.4	39.4	50.7	48.1	67.3	53.5
298	Standard deviation	2.8	1.4	9.3	2.6	0.8	2.3	1.8	2.5	5.3
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.12	0.06	0.06	0.06	0.06	0.06
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	40.2	44.9	60.1	37.1	37.1	47.8	45.3	63.4	50.4
C07	Standard deviation	2.5	1.2	8.2	2.9	0.7	2.2	1.7	2.4	5.0
C08	Sorbent flow rate, lb/hr	5.2	5.8	7.8	4.3	2.3	2.9	2.8	3.9	3.1
C08	Standard deviation	0.3	0.2	1.1	0.8	0	0.1	0.1	0.1	0.3
C05	Fuel flow rate, lb/hr	45.4	50.8	67.9	41.4	39.4	50.7	48.1	67.3	53.5
C05	Standard deviation	2.8	1.4	9.3	2.6	0.8	2.3	1.8	2.5	5.3
C13	Input calcium-sulfur ratio	1.39	1.40	1.40	1.28	0.66	0.66	0.66	0.66	0.66
C13	Standard deviation	0	0	0	0.28	0.01	0	0	0.01	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data chan- nel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
001	Coal consumed, lb	92	196	268	180	88	127	58
002	Coal meter screw value	0	39	64	22	48	48	0
002	Standard deviation	(b)	(a)	(a)	(a)	(a)	(a)	(b)
003	Sorbent consumed, lb	18	39	54	36	18	17	8
004	Sorbent meter screw value	0	10	17	6	8	3	0
004	Standard deviation	(b)	(a)	(a)	(a)	(a)	(a)	(b)
005	Fuel consumed, lb	110	236	322	217	106	144	66
006	Fuel meter screw value	32	27	48	29	19	26	25
006	Standard deviation	0	0	0	0	1	0	0
014	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differ- ential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	52.9	63.8	89.3	54.8	55.5	50.2	42.9
092	Standard deviation	1.3	28.9	27.9	8.7	37.9	7.6	0.9
093	Fuel flow time, sec	1094	843	531	1096	919	740	1101
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	52.5	52.8	80.0	54.0	41.1	47.9	43.1
094	Standard deviation	1.3	2.0	3.4	4.0	2.0	3.3	1.1
095	Accumulated fuel, lb	205	433	782	208	345	562	703
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	23	46	(b)	46	(b)	45
100	Standard deviation	(b)	(a)	0	(b)	0	(b)	1
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	54.6	52.4	80.1	52.7	41.0	46.9	43.9
298	Standard deviation	1.2	2.2	6.6	1.6	2.6	3.8	0.4
C06	Sorbent-coal ratio	0.20	0.20	0.20	0.20	0.20	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	45.5	43.7	66.8	43.9	34.2	41.5	38.8

094	Standard deviation	1.3	2.0	3.4	4.0	2.0	3.3	1.1
095	Accumulated fuel, lb	205	433	782	208	345	562	703
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	23	46	(b)	46	(b)	45
100	Standard deviation	(b)	(a)	0	(b)	0	(b)	1
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	54.6	52.4	80.1	52.7	41.0	46.9	43.9
298	Standard deviation	1.2	2.2	6.6	1.6	2.6	3.8	0.4
C06	Sorbent-coal ratio	0.20	0.20	0.20	0.20	0.20	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	45.5	43.7	66.8	43.9	34.2	41.5	38.8
C07	Standard deviation	1.0	1.9	5.5	1.3	2.2	3.3	0.3
C08	Sorbent flow rate, lb/hr	9.1	8.7	13.4	8.8	6.8	5.4	5.1
C08	Standard deviation	0.2	0.4	1.1	0.2	0.4	0.4	0
C05	Fuel flow rate, lb/hr	54.6	52.4	80.1	52.7	41.0	46.9	43.9
C05	Standard deviation	1.2	2.2	6.6	1.6	2.6	3.8	0.4
C13	Input calcium-sulfur ratio	2.16	2.16	2.18	2.17	2.16	1.42	1.42
C13	Standard deviation	0	0	0	0	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
001	Coal consumed, lb	1030	866	1200	2100	1260
002	Coal meter screw value	95	95	52	28	28
002	Standard deviation	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	133	112	155	267	161
004	Sorbent meter screw value	16	12	9	6	4
004	Standard deviation	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	1170	979	1360	2370	1420
006	Fuel meter screw value	22	29	23	14	15
006	Standard deviation	(a)	(a)	(a)	(a)	(a)
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	5.02	3.73
014	Standard deviation	(b)	(b)	(b)	2.74	0
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	48.3	75.8	50.9	39.5	39.3
092	Standard deviation	24.0	35.8	14.3	27.4	19.5
093	Fuel flow time, sec	1179	734	794	1137	1135
093	Standard deviation	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	45.8	72.3	49.1	34.8	38.4
094	Standard deviation	21.5	31.2	24.9	19.7	23.9
095	Accumulated fuel, lb	492	445	414	463	404
095	Standard deviation	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(a)	(a)	(a)	(a)	(a)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	42.0	60.7	44.7	68.0	64.2
298	Standard deviation	4.3	7.5	7.1	43.9	35.6
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0

094	Standard deviation	21.5	31.2	24.9	19.7	23.9
095	Accumulated fuel, lb	492	445	414	463	404
095	Standard deviation	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(a)	(a)	(a)	(a)	(a)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	42.0	60.7	44.7	68.0	64.2
298	Standard deviation	4.3	7.5	7.1	43.9	35.6
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0
C07	Coal flow rate, lb/hr	37.3	53.8	39.6	35.0	34.8
C07	Standard deviation	3.8	6.6	6.3	24.3	17.3
C08	Sorbent flow rate, lb/hr	4.8	7.0	5.1	4.4	4.5
C08	Standard deviation	0.5	0.9	0.8	3.1	2.2
C05	Fuel flow rate, lb/hr	42.0	60.7	44.7	39.5	39.3
C05	Standard deviation	4.3	7.5	7.1	27.4	19.5
C13	Input calcium-sulfur ratio	2.00	1.40	2.01	1.98	2.00
C13	Standard deviation	0.01	0.01	0.01	0.02	0.03

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

**FOLDOUT FRAME**

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3D	T3F	T4	T5
001	Coal consumed, lb	332	1150	914	891	2390	315	1060	652
002	Coal meter screw value	22	20	21	49	30	95	44	53
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	51	140	109	108	288	36	128	85
004	Sorbent meter screw value	2	4	4	5	6	9	5	8
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	383	1290	1020	1000	2680	351	1190	737
006	Fuel meter screw value	15	15	12	20	20	13	32	24
006	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	5.16	0.37
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	2.49	0
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	0.14	4.56	30.0	22.5	0.16	0.15	0.14	0.29
022	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	0	0
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	34.3	33.5	34.2	42.5	45.7	43.9	64.1	65.5
092	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
093	Fuel flow time, sec	1070	984	905	927	1032	352	821	435
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	39.9	31.7	30.2	38.9	38.7	42.6	56.2	58.3
094	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
095	Accumulated fuel, lb	233	503	490	649	555	143	436	378
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	39	37	29	38	34	43	(b)	(b)
100	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(a)	(a)	(a)	(a)	(a)	59.2	58.4	56.3
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(a)	18.7	9.9
C06	Sorbent-coal ratio	0.15	0.12	0.12	0.12	0.12	0.12	0.12	0.13
C06	Standard deviation	0	0.01	0	0	0	0	0.02	0



094	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
095	Accumulated fuel, lb	233	503	490	649	555	143	436
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	39	37	29	38	34	43	(b)
100	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(a)	(a)	(a)	(a)	(a)	59.2	58.4
298	Standard deviation	(b)	(b)	(b)	(b)	(b)	(a)	18.7
C06	Sorbent-coal ratio	0.15	0.12	0.12	0.12	0.12	0.12	0.12
C06	Standard deviation	0	0.01	0	0	0	0	0.02
C07	Coal flow rate, lb/hr	29.8	29.8	30.6	37.9	40.8	39.4	52.1
C07	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	16.4
C08	Sorbent flow rate, lb/hr	4.6	3.7	3.6	4.6	4.9	4.6	6.3
C08	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	2.5
C05	Fuel flow rate, lb/hr	34.3	33.5	34.2	42.5	45.7	43.9	58.4
C05	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	18.7
C13	Input calcium-sulfur ratio	2.39	1.91	1.84	1.88	1.90	1.80	0.67
C13	Standard deviation	0.03	0.13	0.06	0.04	0.06	0.01	0.13

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

FOLDOUT FRAME

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
001	Coal consumed, lb	334	166	225	362	447	91	127	71
002	Coal meter screw value	54	35	30	41	73	0	16	0
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	42	21	29	46	27	5	17	9
004	Sorbent meter screw value	16	16	16	16	8	(b)	1	0
004	Standard deviation	0	0	0	0	0	(b)	(a)	0
005	Fuel consumed, lb	377	187	254	408	473	97	144	81
006	Fuel meter screw value	30	16	25	40	41	24	8	3
006	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(b)
	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	59.9	40.4	53.0	73.8	67.1	45.9	23.9	19.9
092	Standard deviation	3.8	8.8	6.6	4.6	6.0	1.4	2.3	5.0
093	Fuel flow time, sec	691	1107	737	652	678	1195	2087	2604
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	61.9	37.0	52.7	76.1	66.9	50.5	24.3	18.1
094	Standard deviation	5.5	3.7	6.5	8.1	8.4	3.0	0.8	1.7
095	Accumulated fuel, lb	292	578	855	272	745	163	154	334
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	46	(b)	46	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	0	(b)	0	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	97.5	76.2	110.3	121.9	103.4	54.6	26.8	25.1
298	Standard deviation	42.1	59.1	47.8	45.8	43.9	8.7	2.9	1.7
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.06	0.06	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	53.2	35.8	47.0	65.5	63.3	43.3	21.2	17.6

094	Standard deviation	5.5	3.7	6.5	8.1	8.4	3.0	0.8	1.7
095	Accumulated fuel, lb	292	578	855	272	745	163	154	334
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	46	(b)	46	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	0	(b)	0	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	97.5	76.2	110.3	121.9	103.4	54.6	26.8	25.1
298	Standard deviation	42.1	59.1	47.8	45.8	43.9	8.7	2.9	1.7
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.06	0.06	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	53.2	35.8	47.0	65.5	63.3	43.3	21.2	17.6
C07	Standard deviation	3.3	7.8	5.9	4.1	5.6	1.3	2.0	4.4
C08	Sorbent flow rate, lb/hr	6.8	4.6	6.0	8.3	3.8	2.6	2.8	2.3
C08	Standard deviation	0.4	1.0	0.7	0.5	0.3	0.1	0.3	0.6
C05	Fuel flow rate, lb/hr	60.0	40.4	53.0	73.8	67.1	45.9	23.9	20.0
C05	Standard deviation	3.8	8.8	6.6	4.6	6.0	1.4	2.3	5.0
C13	Input calcium-sulfur ratio	1.38	1.39	1.38	1.38	0.65	0.65	1.41	1.40
C13	Standard deviation	0.01	0.01	0.01	0.01	0.01	0	0	0

<sup>a</sup>The data or results obtained are obviously in error.  
<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
001	Coal consumed, lb	95	194	196	110	87	60	167	162	150
002	Coal meter screw value	97	92	97	(b)	(b)	96	96	96	96
002	Standard deviation	0	6	0	(b)	(b)	0	0	0	0
003	Sorbent consumed, lb	12	25	11	6	5	3	33	32	30
004	Sorbent meter screw value	4	4	3	(b)	(b)	8	11	25	20
004	Standard deviation	(a)	(a)	(a)	(b)	(b)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	107	219	207	117	93	64	201	195	181
006	Fuel meter screw value	7	18	18	7	3	9	9	5	18
006	Standard deviation	1	0	0	0	1	0	1	1	0
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	24.6	41.2	40.5	23.5	17.4	22.8	29.1	27.9	45.2
092	Standard deviation	2.1	5.4	6.6	1.1	2.5	6.6	18.2	3.4	6.0
093	Fuel flow time, sec	1898	1032	1220	2538	1891	1199	1186	1503	990
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	21.0	37.9	37.6	29.5	17.2	28.3	29.9	32.0	40.6
094	Standard deviation	3.4	4.5	1.4	8.0	1.8	6.8	18.5	12.0	4.4
095	Accumulated fuel, lb	461	663	902	75	207	307	449	650	895
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	46	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	0	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	72.4	81.0	26.6	23.7	58.3	32.9	66.3	61.5
298	Standard deviation	(b)	52.2	79.5	1.5	0	55.7	7.6	81.7	19.8
C06	Sorbent-coal ratio	0.13	0.13	0.06	0.06	0.06	0.06	0.20	0.20	0.20
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	21.8	36.6	38.3	22.2	16.4	21.6	24.3	23.3	37.7
C07	Standard deviation	1.9	4.7	6.2	1.1	2.4	6.2	15.2	2.9	5.0

094	Standard deviation	3.4	4.5	1.4	8.0	1.8	6.8	18.5	12.0	4.4
095	Accumulated fuel, lb	461	663	902	75	207	307	449	650	895
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(b)	(b)	(b)	(b)	(b)	(b)	46	(b)	(b)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	0	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	(b)	72.4	81.0	26.6	23.7	58.3	32.9	66.3	61.5
298	Standard deviation	(b)	52.2	79.5	1.5	0	55.7	7.6	81.7	19.8
C06	Sorbent-coal ratio	0.13	0.13	0.06	0.06	0.06	0.06	0.20	0.20	0.20
C06	Standard deviation	0	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	21.8	36.6	38.3	22.2	16.4	21.6	24.3	23.3	37.7
C07	Standard deviation	1.9	4.7	6.2	1.1	2.4	6.2	15.2	2.9	5.0
C08	Sorbent flow rate, lb/hr	2.8	4.6	2.2	1.3	1.0	1.2	4.8	4.6	7.5
C08	Standard deviation	0.2	0.7	0.4	0.1	0.1	0.3	3.0	0.6	1.0
C05	Fuel flow rate, lb/hr	24.6	41.2	40.5	23.5	17.4	22.8	29.1	27.9	45.2
C05	Standard deviation	2.1	5.4	6.6	1.1	2.5	6.6	18.2	3.4	6.00
C13	Input calcium-sulfur ratio	1.41	1.36	0.63	0.63	0.63	0.62	2.16	2.16	2.16
C13	Standard deviation	0	0.04	0	0	0	0.01	0.01	0.01	0.01

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

TABLE 4. - Continued.

(a) Continued. - Combustor input solids data

Data channel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
001	Coal consumed, lb	288	235	161	134	110	212	181	48
002	Coal meter screw value	31	64	41	29	24	30	83	96
002	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	0
003	Sorbent consumed, lb	37	31	21	18	14	28	24	6
004	Sorbent meter screw value	5	11	7	5	4	11	16	16
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	0	0
005	Fuel consumed, lb	326	266	183	152	125	240	205	54
006	Fuel meter screw value	22	18	20	15	9	16	14	3
006	Standard deviation	2	1	6	0	1	1	1	0
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
014	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	36.1	37.1	45.2	36.3	23.2	33.4	43.8	19.7
092	Standard deviation	13.6	10.6	27.7	16.2	6.4	4.8	39.5	2.9
093	Fuel flow time, sec	1175	1404	1249	1327	2008	1230	1152	1490
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	34.7	33.5	32.7	33.0	24.3	34.6	33.8	20.6
094	Standard deviation	4.7	1.4	1.1	1.3	4.0	3.3	1.6	6.1
095	Accumulated fuel, lb	228	536	761	739	87	310	545	702
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(a)	(a)	(a)	(a)	(a)	46	(a)	(a)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	0	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	34.9	32.7	34.5	33.9	23.3	34.4	33.7	19.6
298	Standard deviation	5.9	3.2	5.9	4.5	4.1	2.1	1.5	2.5
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	30.9	28.9	30.5	30.0	20.6	30.4	29.8	17.4
C07	Standard deviation	5.2	2.8	5.2	3.9	3.6	1.9	1.3	2.2

094	Standard deviation	4.7	1.4	1.1	1.3	4.0	3.3	1.6	6.1
095	Accumulated fuel, lb	228	536	761	739	87	310	545	702
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	(a)	(a)	(a)	(a)	(a)	46	(a)	(a)
100	Standard deviation	(b)	(b)	(b)	(b)	(b)	0	(b)	(b)
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	34.9	32.7	34.5	33.9	23.3	34.4	33.7	19.6
298	Standard deviation	5.9	3.2	5.9	4.5	4.1	2.1	1.5	2.5
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0	0	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	30.9	28.9	30.5	30.0	20.6	30.4	29.8	17.4
C07	Standard deviation	5.2	2.8	5.2	3.9	3.6	1.9	1.3	2.2
C08	Sorbent flow rate, lb/hr	4.0	3.7	4.0	3.9	2.6	4.0	3.9	2.2
C08	Standard deviation	0.7	0.4	0.7	0.5	0.5	0.2	0.2	0.3
C05	Fuel flow rate, lb/hr	34.9	32.7	34.5	33.9	23.3	34.4	33.7	19.6
C05	Standard deviation	5.9	3.2	5.9	4.5	4.1	2.1	1.5	2.5
C13	Input calcium-sulfur ratio	2.01	2.02	2.04	2.03	1.99	2.03	2.02	2.01
C13	Standard deviation	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(a) Concluded. - Combustor input solids

Data channel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
001	Coal consumed, lb	903	790	2820	2580	2320	2140	1910
002	Coal meter screw value	96	34	32	72	38	72	83
002	Standard deviation	0	(a)	(a)	(a)	(a)	(a)	(a)
003	Sorbent consumed, lb	119	101	371	333	302	277	249
004	Sorbent meter screw value	8	6	6	13	6	10	12
004	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
005	Fuel consumed, lb	1020	892	3190	2910	2630	2410	2160
006	Fuel meter screw value	18	16	16	17	20	20	22
006	Standard deviation	2	5	1	3	5	3	2
014	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	17.11	17.49	20.63
014	Standard deviation	(b)	(b)	(b)	(b)	2.13	1.05	3.00
022	Fuel injector line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
022	Fuel line pressure differential, psid	0.23	0.13	0.09	0.12	2.06	0.20	(b)
022	Standard deviation	0.21	0.04	0.08	0.13	1.63	0.24	(b)
033	Fuel injector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Present fuel flow, lb/hr	41.0	39.9	39.9	37.7	38.0	42.3	40.1
092	Standard deviation	18.5	22.5	23.0	18.8	18.5	19.5	17.8
093	Fuel flow time, sec	1189	1172	1238	1172	1154	1070	988
093	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
094	Previous fuel flow, lb/hr	36.0	34.0	37.5	36.5	36.6	38.7	37.9
094	Standard deviation	12.2	6.8	19.3	12.1	12.6	11.7	11.3
095	Accumulated fuel, lb	478	433	486	493	459	517	480
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	39	43	0	46	38	23	46
100	Standard deviation	(a)	(a)	(a)	1	(a)	(a)	0
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	40.2	34.5	35.9	34.4	33.9	37.0	38.2
298	Standard deviation	10.2	5.7	5.9	5.5	8.2	5.9	19.8
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0.02	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	36.1	30.6	31.8	30.5	30.1	32.8	33.8



094	Standard deviation	12.2	6.8	19.3	12.1	12.6	11.7	11.3
095	Accumulated fuel, lb	478	433	486	493	459	517	480
095	Standard deviation	(a)	(a)	(a)	(a)	(a)	(a)	(a)
100	Fuel flow indicated value	39	43	0	46	38	23	46
100	Standard deviation	(a)	(a)	(a)	1	(a)	(a)	0
174	Present fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Fuel flow time, sec	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Previous fuel flow, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Accumulated fuel flow, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)
177	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
298	Present fuel flow, lb/hr	40.2	34.5	35.9	34.4	33.9	37.0	38.2
298	Standard deviation	10.2	5.7	5.9	5.5	8.2	5.9	19.8
C06	Sorbent-coal ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.13
C06	Standard deviation	0.02	0	0	0	0	0	0
C07	Coal flow rate, lb/hr	36.1	30.6	31.8	30.5	30.1	32.8	33.8
C07	Standard deviation	15.9	5.0	5.2	4.8	7.3	5.2	17.5
C08	Sorbent flow rate, lb/hr	4.9	3.9	4.2	3.9	3.9	4.3	4.4
C08	Standard deviation	2.7	0.6	0.7	0.6	0.9	0.7	2.3
C05	Fuel flow rate, lb/hr	41.0	34.5	35.9	34.4	33.9	37.0	38.2
C05	Standard deviation	18.5	5.7	5.9	5.5	8.2	5.9	19.8
C13	Input calcium-sulfur ratio	2.09	2.00	2.05	2.01	2.01	2.02	2.03
C13	Standard deviation	0.30	0.02	0.03	0.02	0.02	0.02	0.01

<sup>a</sup>The data or results obtained are obviously in error.

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2



131	Air heater combustor temperature, °F	65	73	73	62	74	92	98	86	149	130
131	Standard deviation										
148	Air heater inlet pressure, psia	134	135	129	130	133	130	130	130	130	77
148	Standard deviation										
149	Air heater venturi differential pressure, psid	0.02	0.04	0.06	0.04	0.05	0.18	0.13	0.17	0.86	3
149	Standard deviation										
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	1.21
C04A	Standard deviation										
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation										
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation										
C04	Total airflow rate, lb/hr	582	564	565	574	564	573	507	565	569	(b)
C04	Standard deviation										
C09	Reactor coal-air ratio	0.080	0.052	0.069	0.061	0.069	0.063	0.058	0.068	0.072	11
C09	Standard deviation										
C16	Reactor grid flow coefficient	0.388	0.451	0.433	0.436	0.460	0.133	0.140	0.181	0.197	
C16	Standard deviation										

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
008	Air venturi pressure differential, psid	4.52	5.10	3.99	3.41	4.56	4.57	0.99	6.55
008	Standard deviation	0.02	1.39	0.02	0.01	0.01	0.02	0.01	0.04
009	Air line pressure, psid	129.9	127.0	126.5	126.3	129.6	128.7	129.3	127.6
009	Standard deviation	4.5	1.6	1.1	1.5	0.9	3.0	2.2	0.7
010	Air inlet temperature, °F	84	87	70	66	64	72	96	90
010	Standard deviation	5	5	2	1	1	7	4	4
011	Fuel air venturi pressure differential, psid	3.16	2.65	3.32	3.50	3.44	3.60	3.66	2.76
011	Standard deviation	0.25	0.28	0.06	0.06	0.05	0.13	0.06	0.04
012	Fuel air line pressure, psia	131.5	128.5	128.0	127.8	129.7	130.1	130.9	129.2
012	Standard deviation	4.5	1.5	1.1	1.5	1.1	3.2	2.2	0.7
013	Fuel air inlet temperature, °F	87	91	72	69	66	78	101	92
013	Standard deviation	5	6	2	1	1	9	4	5
015	Burner air venturi pressure differential, psid	0.17	1.08	0.15	0.15	0.19	0.18	0.14	0.20
015	Standard deviation	0.02	3.21	0.01	0.01	0.01	0.08	0.01	0.04
016	Burner air pressure, psia	129.7	126.7	126.3	126.1	128.3	128.4	129.2	127.5
016	Standard deviation	4.5	1.8	1.1	1.5	0.9	2.9	2.2	0.7
050	Reactor inlet air temperature, °F	74	83	71	66	64	68	83	89
050	Standard deviation	5	2	2	1	1	4	4	3
054	Reactor grid air differential pressure, psid	12.0	7.9	5.8	5.1	6.1	6.6	2.7	5.3
054	Standard deviation	0.3	3.4	0.3	0.2	0.2	0.3	0.2	0.1
055	Reactor internal pressure, psia	72.2	79.7	64.1	56.9	63.0	55.8	39.7	79.4
055	Standard deviation	0.2	11.3	0.1	0.1	0.1	0.1	0.4	0.2
099	Air heater vent. temperature, °F	437	380	373	358	394	407	334	490
099	Standard deviation	6	65	33	31	41	41	23	33
131	Air heater combustor temperature, °F	269	265	268	252	266	272	237	334
131	Standard deviation	5	45	10	5	3	3	13	4
148	Air heater inlet pressure, psia	130.0	126.1	126.6	126.9	130.0	129.4	129.4	127.4
148	Standard deviation	3.3	2.8	0.8	1.5	1.0	3.6	2.0	0.8
149	Air heater venturi differential pressure, psid	1.97	1.88	2.23	2.32	2.31	2.30	2.21	3.27
149	Standard deviation	0.05	0.46	0.13	0.05	0.09	0.16	0.12	0.13
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate	560	606	520	494	568	565	325	634

099	Standard deviation	6	65	33	31	41	41	23	33
131	Air heater combustor temperature, °F	269	265	268	252	266	272	237	334
131	Standard deviation	5	45	10	5	3	3	13	4
148	Air heater inlet pressure, psia	130.0	126.1	126.6	126.9	130.0	129.4	129.4	127.4
148	Standard deviation	3.3	2.8	0.8	1.5	1.0	3.6	2.0	0.8
149	Air heater venturi differential pressure, psid	1.97	1.88	2.23	2.32	2.31	2.30	2.21	3.27
149	Standard deviation	0.05	0.46	0.13	0.05	0.09	0.16	0.12	0.13
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	560	606	520	494	568	565	325	634
C04	Standard deviation	12	67	3	6	3	9	3	7
C09	Reactor coal-air ratio	0.072	0.067	0.072	0.252	0.075	0.076	0.098	0.071
C09	Standard deviation	0.009	0.013	0.015	0.408	0.022	0.008	0.024	0.019
C16	Reactor grid flow coefficient	0.198	0.242	0.268	0.295	0.342	0.348	0.270	0.504
C16	Standard deviation	0.021	0.032	0.017	0.012	0.009	0.009	0.010	0.009

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



	73	191	184	109	173	230	310
131	Air heater combustor temperature, °F						
131	12	1	2	28	7	32	37
148	Air heater inlet pressure, psia						
148	132.4	130.9	130.3	131.3	129.3	132.1	132.0
148	Standard deviation						
149	3.2	1.1	0.8	1.5	5.6	2.6	0.7
149	Air heater venturi differential pressure, psid						
149	0	0.01	0.01	0.07	0.04	0.31	1.64
C04A	Combustor airflow rate, lb/hr						
C04A	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation						
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr						
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation						
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr						
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation						
C04	589	586	584	597	350	588	688
C04	Total airflow rate, lb/hr						
C04	7	4	3	7	10	7	3
C04	Standard deviation						
C09	0.056	0.069	0.063	0.075	0.096	0.060	0.055
C09	Reactor coal-air ratio						
C09	0.012	0.027	0.008	0.025	0.021	0.005	0.008
C09	Standard deviation						
C16	0.448	0.533	0.614	0.804	0.506	0.740	0.916
C16	Reactor grid flow coefficient						
C16	0.042	0.022	0.015	0.019	0.141	0.029	0.024
C16	Standard deviation						

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

C00 Sorbent-coal ratio 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0  
 C06 Standard deviation 0 0 0 0 0 0 0 0  
 C07 Coal flow rate, lb/hr 53.2 35.8 47.0 65.5 63.3 43.3 21.2 17.6

FOLDOUT FRAME /

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data channel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
008	Air venturi pressure differential, psid	5.76	5.75	5.74	5.72	2.69	5.72	5.73
008	Standard deviation	0.02	0.01	0.02	0.02	0.01	0.03	0.03
009	Air line pressure, psid	124.1	128.4	126.1	125.4	126.3	132.7	124.6
009	Standard deviation	1.6	2.3	2.3	1.7	3.8	2.2	2.4
010	Air inlet temperature, °F	70	67	81	69	62	74	84
010	Standard deviation	3	1	2	2	1	8	4
011	Fuel air venturi pressure differential, psid	3.52	3.32	2.47	2.50	2.49	2.85	2.43
011	Standard deviation	0.12	0.12	0.12	0.12	0.19	0.17	0.20
012	Fuel air line pressure, psia	123.5	127.8	125.7	124.8	125.4	132.2	124.1
012	Standard deviation	1.7	2.3	2.3	1.4	3.7	2.2	2.5
013	Fuel air inlet temperature, °F	74	69	85	71	65	78	87
013	Standard deviation	3	2	3	2	2	8	4
015	Burner air venturi pressure differential, psid	0.11	0.10	0.09	0.10	0.14	0.13	0.12
015	Standard deviation	0.01	0.01	0.01	0.01	0.01	0.01	0.02
016	Burner air pressure, psia	124.2	128.5	126.3	125.5	126.3	132.8	124.7
016	Standard deviation	1.6	2.3	2.3	1.7	3.7	2.2	2.4
050	Reactor inlet air temperature, °F	72	68	76	70	63	69	81
050	Standard deviation	3	1	2	2	2	6	2
054	Reactor grid air differential pressure, psid	3.80	2.75	2.11	1.75	0.95	1.64	1.83
054	Standard deviation	0.20	0.24	0.16	0.10	0.09	0.16	0.26
055	Reactor internal pressure, psia	41.2	61.7	82.1	82.2	82.1	82.1	81.9
055	Standard deviation	0.1	0.2	0.2	0.1	0.2	0.4	0.2
099	Air heater vent temperature, °F	412	463	212	408	372	474	465
099	Standard deviation	99	4	158	2	5	3	11
131	Air heater combustor temperature, °F	250	287	135	236	217	267	266
131	Standard deviation	62	3	75	5	5	5	7
148	Air heater inlet pressure, psia	123.9	128.4	123.1	125.4	126.1	132.6	124.4
148	Standard deviation	1.7	2.4	8.8	1.7	3.8	2.2	2.6
149	Air heater venturi differential pressure, psid	2.44	2.71	0.79	1.33	1.55	1.45	1.29
149	Standard deviation	0.37	0.04	0.55	0.04	0.07	0.09	0.09
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate	598	607	587	595	452	610	597



		120.7	120.7	120.7	120.7	120.7	120.7	120.7
148	pressure, psia Standard deviation	1.7	2.4	8.8	1.7	3.8	2.2	2.6
149	Air heater venturi dif- ferential pressure, psid	2.44	2.71	0.79	1.33	1.55	1.45	1.29
149	Standard deviation	0.37	0.04	0.55	0.04	0.07	0.09	0.09
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	598	607	587	595	452	619	587
C04	Standard deviation	5	5	6	7	10	10	8
C09	Reactor coal-air ratio	0.067	0.054	0.039	0.044	0.049	0.066	0.057
C09	Standard deviation	0.013	0.006	0.013	0.004	0.005	0.013	0.012
C16	Reactor grid flow coefficient	0.351	0.522	0.457	0.628	0.669	0.815	0.582
C16	Standard deviation	0.027	0.035	0.038	0.029	0.059	0.046	0.160

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



131	Air heater combustor temperature, °F	79	181	210	221	275	230	267	238
131	Standard deviation	3	58	21	72	16	85	9	64
148	Air heater inlet pressure, psia	127.9	128.8	127.0	127.4	132.2	131.6	132.2	132.8
148	Standard deviation	2.4	4.3	2.1	1.8	3.0	2.5	2.1	2.7
149	Air heater venturi differential pressure, psid	(b)	0.45	0.53	1.19	1.80	2.70	1.58	2.12
149	Standard deviation	(b)	0.13	0.22	0.70	0.35	0.47	0.20	6.55
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	571	584	572	635	655	643	625	629
C04	Standard deviation	8	12	9	31	11	14	9	116
C09	Reactor coal-air ratio	0.063	0.065	0.063	0.067	0.067	0.064	0.065	0.106
C09	Standard deviation	0.012	0.015	0.018	0.009	0.013	0.013	0.010	0.299
C16	Reactor grid flow coefficient	0.257	0.330	0.474	0.607	0.633	0.508	0.928	0.545
C16	Standard deviation	0.023	0.053	0.094	0.086	0.084	0.069	0.169	0.099

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



099	Standard deviation	5	6	6	13	11	39	14
131	Air heater combustor temperature, °F	294	274	288	266	270	240	267
131	Standard deviation	3	5	5	14	8	32	19
148	Air heater inlet pressure, psia	126.1	129.1	130.0	131.5	126.3	131.6	131.7
148	Standard deviation	3.2	4.5	4.7	7.7	2.5	0.7	0.6
149	Air heater venturi differential pressure, psid	3.17	1.47	1.74	1.59	1.40	0.77	1.19
149	Standard deviation	0.46	0.11	0.29	0.71	0.11	0.34	0.14
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	575	592	590	610	575	599	591
C04	Standard deviation	17	14	11	69	7	11	2
C09	Reactor coal-air ratio	0.069	0.048	0.048	0.054	0.051	0.049	0.055
C09	Standard deviation	0.016	0.008	0.010	0.010	0.013	0.003	0.011
C16	Reactor grid flow coefficient	0.752	0.753	0.810	0.457	0.607	0.466	0.360
C16	Standard deviation	0.098	0.058	0.027	0.025	0.083	0.028	0.047

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



	100	101	102	103	104	105	106	107
099	6	20	24	11	3	5	10	5
131	293	336	280	282	278	243	275	290
131	5	3	17	21	5	5	8	8
148	126.3	125.2	126.8	125.3	125.2	121.5	121.2	127.6
148	1.3	1.0	1.0	0.9	2.9	1.9	2.1	2.7
149	0.91	1.47	0.55	0.96	1.01	1.01	5.22	1.20
149	0.26	0.05	0.06	0.14	0.11	0.06	0.06	0.08
C04A	482	816	338	433	442	360	417	506
C04A	85	6	3	5	5	3	4	10
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	542	875	399	498	507	416	474	569
C04	85	6	4	5	7	4	5	12
C09	0.100	0.069	0.107	0.098	0.091	0.079	0.092	0.084
C09	0.029	0.009	0.034	0.024	0.027	0.010	0.009	0.019
C16	0.494	0.414	0.381	0.375	0.374	0.415	0.374	0.647
C16	0.006	0.005	0.041	0.003	0.004	0.024	0.002	0.011

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**





099	Standard deviation	24	3	2	3	4	9	4
131	Air heater combustor temperature, °F	323	312	323	300	294	262	277
131	Standard deviation	37	6	3	6	6	12	6
148	Air heater inlet pressure, psia	132.3	132.3	131.7	133.2	132.3	133.2	129.4
148	Standard deviation	2.0	0.8	0.5	0.8	0.6	1.3	2.0
149	Air heater venturi differential pressure, psid	1.65	2.11	2.06	1.56	1.98	1.63	1.88
149	Standard deviation	0.79	0.07	0.04	0.12	0.08	0.15	0.15
C04A	Combustor airflow rate, lb/hr	486	603	618	425	486	339	447
C04A	Standard deviation	4	8	2	2	3	4	48
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	548	665	679	488	550	405	511
C04	Standard deviation	4	8	2	3	4	4	49
C09	Reactor coal-air ratio	0.083	0.084	0.072	0.090	0.065	0.100	0.074
C09	Standard deviation	0.019	0.003	0.006	0.025	0.021	0.040	0.015
C16	Reactor grid flow coefficient	0.518	0.525	0.526	0.502	0.520	0.507	0.524
C16	Standard deviation	0.005	0.005	0.004	0.008	0.004	0.012	0.012

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

(b) Continued. - Combustor input air system data

Data channel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
008	Air venturi pressure differential, psid	5.95	14.53	2.32	9.82	8.08	4.57	4.24	4.16	3.98
008	Standard deviation	0.03	0.06	0.15	0.05	0.04	0.20	0.01	0.03	0.02
009	Air line pressure, psid	130.8	128.0	132.1	130.1	129.0	130.9	132.8	127.4	128.7
009	Standard deviation	2.2	1.0	2.0	1.1	2.2	1.7	1.6	1.0	3.5
010	Air inlet temperature, °F	98	98	102	96	99	97	57	94	102
010	Standard deviation	4	0	3	2	2	3	3	2	2
011	Fuel air venturi pressure differential, psid	6.22	5.65	5.34	5.71	5.61	6.01	6.12	6.68	6.78
011	Standard deviation	0.19	0.12	0.33	0.13	0.22	0.23	0.12	0.05	0.18
012	Fuel air line pressure, psia	130.9	128.4	132.1	130.4	129.5	131.1	132.7	128.1	128.8
012	Standard deviation	2.2	1.0	2.0	1.2	2.2	1.7	1.6	1.0	3.5
013	Fuel air inlet temperature, °F	52	73	61	57	51	53	52	45	38
013	Standard deviation	7	2	4	1	2	1	4	3	0
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	130.9	128.4	132.2	130.5	129.6	131.0	132.8	128.1	128.8
016	Standard deviation	2.2	1.0	2.0	1.1	2.2	1.7	1.6	1.0	3.5
050	Reactor inlet air temperature, °F	99	100	101	101	101	98	60	98	103
050	Standard deviation	0	0	0	0	0	0	3	0	0
054	Reactor grid air differential pressure, psid	2.04	7.68	0.67	4.51	3.76	2.16	1.86	1.97	2.38
054	Standard deviation	0.09	0.21	0.05	0.16	0.19	0.06	0.10	0.03	0.04
055	Reactor internal pressure, psia	73.2	79.9	72.8	81.0	80.7	76.6	80.1	60.4	40.7
055	Standard deviation	0.8	0.1	6.0	0.6	0.2	2.1	0.2	0.1	0.0
099	Air heater vent temperature, °F	302	518	251	422	508	273	435	437	266
099	Standard deviation	63	12	10	100	17	32	2	8	1
131	Air heater combustor temperature, °F	416	527	363	496	525	403	266	441	410
131	Standard deviation	11	13	8	40	8	7	2	5	1
148	Air heater inlet pressure, psia	126.2	124.2	127.3	125.9	125.1	126.3	127.9	124.0	124.6
148	Standard deviation	1.0	0.8	1.7	0.9	1.9	1.4	1.4	0.9	2.9
149	Air heater venturi differential pressure, psid	0.39	1.95	0.20	1.43	2.31	0.31	1.70	3.19	0.37
149	Standard deviation	0.03	0.69	0.01	0.90	0.66	0.02	0.02	0.04	0.01
C04A	Combustor airflow rate, lb/hr	500	743	317	631	572	441	445	417	407
C04A	Standard deviation	4	4	11	3	6	8	4	2	5
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate,	562	801	380	690	631	502	507	481	473

	302	316	331	422	506	273	453	457	400
099									
131									
131									
148									
148									
149									
149									
C04A									
C04A									
C04B									
C04B									
C04C									
C04C									
C04									
C04									
C09									
C09									
C16									
C16									

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
008	Air venturi pressure differential, psid	9.84	9.62	7.83	6.06	13.82	7.52	2.92	16.16
008	Standard deviation	0.05	0.04	0.04	0.04	0.09	0.06	0.05	0.10
009	Air line pressure, psid	131.4	129.6	132.9	128.8	130.4	129.3	134.9	131.5
009	Standard deviation	1.2	2.2	0.6	2.5	2.0	1.3	1.7	1.2
010	Air inlet temperature, °F	106	104	106	67	99	111	119	96
010	Standard deviation	5	3	1	4	2	4	3	2
011	Fuel air venturi pressure differential, psid	6.06	5.87	7.03	5.79	5.68	5.58	6.13	5.99
011	Standard deviation	0.10	0.22	0.05	0.35	0.20	0.11	0.15	0.14
012	Fuel air line pressure, psia	131.8	130.1	133.3	128.8	130.4	129.4	135.0	131.6
012	Standard deviation	1.2	2.2	0.7	2.4	1.9	1.3	1.7	1.1
013	Fuel air inlet temperature, °F	39	37	37	63	56	51	48	64
013	Standard deviation	1	1	2	5	4	1	1	8
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	131.8	130.0	133.3	128.9	130.5	129.4	134.9	131.6
016	Standard deviation	1.2	2.2	0.6	2.4	1.9	1.3	1.7	1.2
050	Reactor inlet air temperature, °F	104	103	104	68	104	103	103	102
050	Standard deviation	0	0	0	2	0	0	0	0
054	Reactor grid air differential pressure, psid	3.81	3.88	4.12	1.09	3.34	2.11	0.93	2.95
054	Standard deviation	0.13	0.10	0.06	0.16	0.05	0.04	0.23	0.04
055	Reactor internal pressure, psia	80.7	80.8	60.6	75.7	79.9	79.6	79.9	80.6
055	Standard deviation	0.1	0.1	0.2	11.9	0.2	0.3	0.2	0.3
099	Air heater vent temperature, °F	489	524	533	106	264	241	191	279
099	Standard deviation	69	5	12	8	2	2	2	4
131	Air heater combustor temperature, °F	527	545	555	98	389	359	267	415
131	Standard deviation	21	12	4	5	2	3	4	8
148	Air heater inlet pressure, psia	127.2	125.7	128.6	124.7	126.1	125.1	129.9	127.0
148	Standard deviation	1.0	2.0	0.5	1.9	1.7	1.1	1.5	0.9
149	Air heater venturi dif- ferential pressure, psid	1.80	2.09	1.64	(b)	0.72	0.64	0.54	0.54
149	Standard deviation	0.49	0.13	0.03	(b)	0.05	0.02	0.02	0.12
C04A	Combustor airflow rate, lb/hr	629	619	570	515	734	549	354	791
C04A	Standard deviation	5	6	2	6	7	3	5	4
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	692	680	637	574	793	607	417	851

	489	524	533	106	264	241	191	279
099	Air heater vent temperature, °F							
	69	5	12	8	2	2	2	4
131	Standard deviation							
	527	545	555	98	389	359	267	415
131	Air heater combustor temperature, °F							
	21	12	4	5	2	3	4	8
148	Standard deviation							
	127.2	125.7	128.6	124.7	126.1	125.1	129.9	127.0
148	Air heater inlet pressure, psia							
	1.0	2.0	0.5	1.9	1.7	1.1	1.5	0.9
149	Standard deviation							
	1.80	2.09	1.64	(b)	0.72	0.64	0.54	0.54
149	Air heater venturi differential pressure, psid							
	0.49	0.13	0.03	(b)	0.05	0.02	0.02	0.12
C04A	Standard deviation							
	629	619	570	515	734	549	354	791
C04A	Combustor airflow rate, lb/hr							
	5	6	2	6	7	3	5	4
C04B	Standard deviation							
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr							
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation							
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr							
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation							
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr							
	692	680	637	574	793	607	417	851
C04	Standard deviation							
	6	8	2	7	8	4	6	4
C09	Reactor coal-air ratio							
	0.077	0.072	0.074	0.049	0.033	0.039	0.056	0.053
C09	Standard deviation							
	0.014	0.003	0.010	0.021	0.013	0.007	0.029	0.008
C16	Reactor grid flow coefficient							
	0.525	0.511	0.526	0.817	0.658	0.620	0.614	0.750
C16	Standard deviation							
	0.007	0.006	0.005	0.036	0.003	0.005	0.066	0.004

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
008	Air venturi pressure differential, psid	16.13	5.84	8.19	6.08	6.76	6.58	2.88	16.31	2.91
008	Standard deviation	0.08	0.02	0.03	0.01	0.03	0.02	0.01	0.13	0.02
009	Air line pressure, psid	130.8	132.2	129.0	128.1	133.5	130.6	133.3	130.7	133.3
009	Standard deviation	1.3	1.3	3.0	1.5	2.3	1.0	0.8	3.5	2.9
010	Air inlet temperature, °F	99	101	100	103	107	108	117	96	110
010	Standard deviation	1	2	2	2	4	5	4	3	2
011	Fuel air venturi pressure differential, psid	5.82	6.12	5.87	5.67	6.08	5.85	5.98	5.79	6.13
011	Standard deviation	0.15	0.10	0.27	0.15	0.22	0.14	0.07	0.31	0.26
012	Fuel air line pressure, psia	130.8	132.2	129.1	128.2	133.5	130.5	133.3	130.7	133.2
012	Standard deviation	1.4	1.3	3.0	1.5	2.3	1.0	0.8	3.5	2.9
013	Fuel air inlet temperature, °F	79	68	62	59	60	63	50	52	68
013	Standard deviation	3	5	2	2	4	6	0	3	3
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	131.0	132.3	129.2	128.3	133.5	130.6	133.3	130.8	133.2
016	Standard deviation	1.3	1.3	3.0	1.5	2.2	1.0	0.8	3.5	2.9
050	Reactor inlet air temperature, °F	102	103	102	103	102	103	103	102	103
050	Standard deviation	0	0	0	0	0	0	1	0	0
054	Reactor grid air differential pressure, psid	2.82	1.39	1.72	1.38	2.00	2.18	1.10	4.29	1.13
054	Standard deviation	0.02	0.02	0.03	0.04	0.05	0.05	0.03	0.12	0.03
055	Reactor internal pressure, psia	80.5	80.6	80.6	80.4	80.6	80.1	80.0	80.1	80.1
055	Standard deviation	0.3	0.2	0.3	0.2	0.3	0.2	0.1	0.2	0.1
099	Air heater vent temperature, °F	257	231	238	228	223	211	168	256	174
099	Standard deviation	5	4	4	1	11	4	1	4	9
131	Air heater combustor temperature, °F	377	323	341	327	321	304	238	387	241
131	Standard deviation	7	4	3	1	22	4	1	6	11
148	Air heater inlet pressure, psia	126.7	127.7	124.9	124.2	128.7	126.3	128.7	126.5	128.5
148	Standard deviation	0.8	1.1	2.6	1.3	2.0	0.8	0.7	3.1	2.5
149	Air heater venturi dif- ferential pressure, psid	0.36	0.39	0.51	0.56	0.66	0.67	0.77	0.99	0.50
149	Standard deviation	0.05	0.04	0.05	0.03	0.09	0.08	0.01	0.06	0.07
C04A	Combustor airflow rate, lb/hr	786	497	575	497	533	519	350	791	353
C04A	Standard deviation	5	2	8	4	4	4	2	13	4
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
		045	550	625	556	504	579	411	851	415

099	Standard deviation	5	4	4	1	11	4	1	4	9
131	Air heater combustor temperature, °F	377	323	341	327	321	304	238	387	241
131	Standard deviation	7	4	3	1	22	4	1	6	11
148	Air heater inlet pressure, psia	126.7	127.7	124.9	124.2	128.7	126.3	128.7	126.5	128.5
148	Standard deviation	0.8	1.1	2.6	1.3	2.0	0.8	0.7	3.1	2.5
149	Air heater venturi dif- ferential pressure, psid	0.36	0.39	0.51	0.56	0.66	0.67	0.77	0.99	0.50
149	Standard deviation	0.05	0.04	0.05	0.03	0.09	0.08	0.01	0.06	0.07
C04A	Combustor airflow rate, lb/hr	786	497	575	497	533	519	350	791	353
C04A	Standard deviation	5	2	8	4	4	4	2	13	4
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	845	558	635	556	594	579	411	851	415
C04	Standard deviation	6	3	9	5	5	4	2	15	6
C09	Reactor coal-air ratio	0.043	0.054	0.041	0.048	0.044	0.029	0.037	0.039	0.031
C09	Standard deviation	0.009	0.022	0.004	0.003	0.006	0.017	0.008	0.004	0.012
C16	Reactor grid flow coefficient	0.762	0.690	0.716	0.693	0.615	0.576	0.547	0.623	0.545
C16	Standard deviation	0.005	0.004	0.007	0.008	0.008	0.006	0.010	0.005	0.009

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





	234	235	199	224	252	217	270	280
099	Air heater vent temperature, °F							
099	3	2	3	1	2	4	9	7
131	Air heater combustor temperature, °F							
131	4	3	5	3	5	5	5	3
148	Air heater inlet pressure, psia							
148	130.2	129.4	127.6	126.0	125.7	126.2	128.1	127.2
148	Standard deviation							
148	2.0	2.0	1.7	0.8	1.2	1.3	2.6	0.9
149	Air heater venturi differential pressure, psid							
149	0.55	0.66	0.37	0.41	0.70	0.74	9.47	13.69
149	Standard deviation							
149	0.06	0.06	0.01	0.01	0.08	0.06	0.31	0.17
C04A	Combustor airflow rate, lb/hr							
C04A	568	567	374	526	737	536	650	628
C04A	Standard deviation							
C04A	12	7	3	6	7	4	7	3
C04B	Burner airflow rate, lb/hr							
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation							
C04B	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr							
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation							
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr							
C04	631	629	435	585	797	596	710	685
C04	Standard deviation							
C04	13	9	5	6	8	5	9	4
C09	Reactor coal-air ratio							
C09	0.029	0.038	0.031	0.038	0.037	0.037	0.055	0.039
C09	Standard deviation							
C09	0.011	0.005	0.015	0.005	0.006	0.017	0.030	0.007
C16	Reactor grid flow coefficient							
C16	0.611	0.641	0.585	0.630	0.664	0.618	0.651	0.652
C16	Standard deviation							
C16	0.007	0.009	0.007	0.005	0.007	0.008	0.004	0.002

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
008	Air venturi pressure differential, psid	3.23	7.39	7.84	5.33	10.52	25.89	20.30	21.30	11.13
008	Standard deviation	0.06	0.19	0.37	0.07	0.32	0.64	2.25	0.72	0.44
009	Air line pressure, psid	128.1	134.2	132.9	135.7	130.5	116.7	131.7	131.9	125.9
009	Standard deviation	2.4	3.1	5.0	1.6	3.3	0.5	1.7	2.8	3.9
010	Air inlet temperature, °F	101	98	98	99	99	97	95	95	99
010	Standard deviation	1	1	1	1	1	1	1	1	1
011	Fuel air venturi pressure differential, psid	5.56	6.04	6.65	6.85	6.17	5.39	6.66	6.14	5.40
011	Standard deviation	0.19	0.25	0.26	0.07	0.21	0.14	0.08	0.20	0.27
012	Fuel air line pressure, psia	128.1	134.1	132.9	135.8	130.7	118.2	131.9	132.2	126.1
012	Standard deviation	2.4	3.1	5.0	1.6	3.3	0.5	1.8	2.7	3.9
013	Fuel air inlet temperature, °F	92	72	70	69	95	89	71	76	91
013	Standard deviation	3	1	0	0	2	4	0	5	3
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	130.2	136.3	135.1	137.9	132.7	120.1	134.1	134.3	128.2
016	Standard deviation	2.4	3.1	5.0	1.6	3.3	0.5	1.8	2.8	3.9
050	Reactor inlet air temperature, °F	101	100	99	99	99	98	99	100	101
050	Standard deviation	0	0	0	0	0	1	0	0	0
054	Reactor grid air differential pressure, psid	2.67	6.76	12.45	8.72	15.34	7.82	5.14	4.22	2.65
054	Standard deviation	0.04	0.08	0.46	0.50	0.34	0.29	0.35	0.03	0.05
055	Reactor internal pressure, psia	80.1	80.2	49.2	49.2	50.1	62.2	60.5	79.0	79.2
055	Standard deviation	0.1	0.1	0.1	0.2	0.9	0.1	2.2	0.1	0.2
099	Air heater vent temperature, °F	213	225	237	223	207	498	445	481	419
099	Standard deviation	11	2	2	4	15	44	77	15	12
131	Air heater combustor temperature, °F	295	336	348	327	274	391	476	470	408
131	Standard deviation	16	2	4	9	35	147	23	11	17
148	Air heater inlet pressure, psia	124.9	130.1	129.1	131.5	127.1	116.3	128.4	128.5	123.4
148	Standard deviation	2.1	2.5	4.3	1.3	2.8	0.5	1.5	2.4	3.4
149	Air heater venturi dif- ferential pressure, psid	0.04	0.27	0.30	0.25	0.02	7.03	0.88	1.00	1.01
149	Standard deviation	0.02	0.01	0.01	0.02	0.02	0.46	0.31	0.01	0.02
C04A	Combustor airflow rate, lb/hr	368	561	574	483	650	883	868	888	654
C04A	Standard deviation	1	2	1	1	1	9	39	1	1
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate	424	622	637	548	700	927	922	940	700

099	Air heater vent temperature, °F	11	2	2	4	15	44	77	15	12
131	Standard deviation	295	336	348	327	274	391	476	470	408
131	Air heater combustor temperature, °F	16	2	4	9	35	147	23	11	17
148	Standard deviation	124.9	130.1	129.1	131.5	127.1	116.3	128.4	128.5	123.4
148	Air heater inlet pressure, psia	2.1	2.5	4.3	1.3	2.8	0.5	1.5	2.4	3.4
149	Standard deviation	0.04	0.27	0.30	0.25	0.02	7.03	0.88	1.00	1.01
149	Air heater venturi differential pressure, psid	0.02	0.01	0.01	0.02	0.02	0.46	0.31	0.01	0.02
C04A	Standard deviation	368	561	574	483	650	883	868	888	654
C04A	Combustor airflow rate, lb/hr	1	2	1	1	1	9	39	1	1
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	424	622	637	548	709	937	932	949	709
C04	Standard deviation	2	2	2	1	2	10	39	3	2
C09	Reactor coal-air ratio	0.078	0.066	0.068	0.083	0.082	0.072	0.175	0.066	0.078
C09	Standard deviation	0.003	0.001	0.006	0.007	0.003	0.002	0.208	0.008	0.009
C16	Reactor grid flow coefficient	0.367	0.349	0.326	0.333	0.327	0.576	0.713	0.708	0.660
C16	Standard deviation	0.003	0.001	0.006	0.009	0.002	0.010	0.005	0.001	0.007

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
008	Air venturi pressure differential, psid	10.78	17.70	10.10	2.89	11.33	8.51	5.83	9.98	7.46
008	Standard deviation	0.88	0.35	0.13	0.06	0.55	0.25	0.16	0.52	0.22
009	Air line pressure, psid	126.3	132.2	134.4	132.9	123.4	130.9	129.1	126.0	131.8
009	Standard deviation	8.9	1.9	1.4	2.4	4.9	2.3	3.2	4.6	3.7
010	Air inlet temperature, °F	95	94	95	98	95	95	97	97	95
010	Standard deviation	1	1	2	2	1	3	1	1	2
011	Fuel air venturi pressure differential, psid	5.59	6.17	6.32	6.23	5.40	5.52	6.20	5.97	6.75
011	Standard deviation	0.83	0.12	0.17	0.21	0.47	0.20	0.13	0.20	0.21
012	Fuel air line pressure, psia	126.5	132.4	134.7	133.2	123.7	130.9	129.0	126.0	131.7
012	Standard deviation	8.9	1.9	1.4	2.4	4.9	2.2	3.2	4.6	3.7
013	Fuel air inlet temperature, °F	66	62	59	58	67	56	82	81	58
013	Standard deviation	2	0	1	2	2	4	4	6	4
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	128.5	134.6	136.9	135.4	125.7	133.3	131.4	128.4	134.1
016	Standard deviation	9.0	1.8	1.4	2.5	5.0	2.3	3.2	4.7	3.7
050	Reactor inlet air temperature, °F	101	100	99	98	99	98	99	99	98
050	Standard deviation	0	0	0	1	0	0	0	0	1
054	Reactor grid air differential pressure, psid	2.46	3.56	2.52	1.21	2.60	11.22	13.10	19.99	18.09
054	Standard deviation	0.05	0.05	0.05	0.07	0.12	0.30	0.42	0.71	2.60
055	Reactor internal pressure, psia	79.1	79.0	78.9	78.8	78.2	80.0	49.5	49.3	49.3
055	Standard deviation	0.1	0.1	0.2	0.2	1.6	0.1	0.1	0.1	0.1
099	Air heater vent temperature, °F	413	487	422	333	456	426	352	427	428
099	Standard deviation	36	15	24	6	15	8	60	21	3
131	Air heater combustor temperature, °F	404	485	425	319	448	440	407	439	433
131	Standard deviation	33	7	4	4	5	10	15	8	2
148	Air heater inlet pressure, psia	123.6	128.8	130.7	129.4	121.1	126.9	125.3	122.6	127.5
148	Standard deviation	7.7	1.5	1.2	2.1	4.3	1.9	2.7	4.0	3.1
149	Air heater venturi dif- ferential pressure, psid	0.97	1.30	1.37	1.21	1.22	0.74	0.68	0.68	0.67
149	Standard deviation	0.02	0.26	0.15	0.02	0.03	0.17	0.01	0.01	0.02
C04A	Combustor airflow rate, lb/hr	646	826	651	356	654	593	492	624	560
C04A	Standard deviation	5	2	1	1	2	7	1	8	2
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	703	888	714	418	709	652	552	682	625

099	Standard deviation	36	15	24	6	15	8	60	21	3
131	Air heater combustor temperature, °F	404	485	425	319	448	440	407	439	433
131	Standard deviation	33	7	4	4	5	10	15	8	2
148	Air heater inlet pressure, psia	123.6	128.8	130.7	129.4	121.1	126.9	125.3	122.6	127.5
148	Standard deviation	7.7	1.5	1.2	2.1	4.3	1.9	2.7	4.0	3.1
149	Air heater venturi differential pressure, psid	0.97	1.30	1.37	1.21	1.22	0.74	0.68	0.68	0.67
149	Standard deviation	0.02	0.26	0.15	0.02	0.03	0.17	0.01	0.01	0.02
C04A	Combustor airflow rate, lb/hr	646	826	651	356	654	593	492	624	560
C04A	Standard deviation	5	2	1	1	2	7	1	8	2
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	703	888	714	418	709	652	552	682	625
C04	Standard deviation	10	2	2	2	4	7	2	8	3
C09	Reactor coal-air ratio	0.077	0.073	0.076	0.116	0.076	0.071	0.082	0.075	0.076
C09	Standard deviation	0.003	0.008	0.007	0.091	0.006	0.007	0.003	0.009	0.012
C16	Reactor grid flow coefficient	0.678	0.717	0.674	0.535	0.670	0.284	0.271	0.272	0.261
C16	Standard deviation	0.007	0.005	0.008	0.016	0.010	0.002	0.005	0.003	0.021

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

FOLDOUT FRAME

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data channel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
008	Air venturi pressure differential, psid	8.95	10.15	10.89	10.92	10.43	10.64
008	Standard deviation	0.04	1.03	0.22	0.45	0.30	0.12
009	Air line pressure, psid	136.5	132.4	128.8	128.6	133.2	131.1
009	Standard deviation	0.7	5.6	1.9	4.3	3.0	1.3
010	Air inlet temperature, °F	93	93	95	95	99	96
010	Standard deviation	3	2	1	1	3	4
011	Fuel air venturi pressure differential, psid	6.01	5.66	5.58	5.41	5.77	5.63
011	Standard deviation	0.05	0.44	0.21	0.29	0.25	0.10
012	Fuel air line pressure, psia	136.4	132.4	128.8	128.6	133.1	131.1
012	Standard deviation	0.7	5.5	1.9	4.3	3.0	1.2
013	Fuel air inlet temperature, °F	53	54	68	59	50	47
013	Standard deviation	1	3	1	6	1	1
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	138.9	134.7	131.1	130.9	135.6	133.4
016	Standard deviation	0.7	5.6	1.9	4.4	3.1	1.3
050	Reactor inlet air temperature, °F	98	97	98	98	97	97
050	Standard deviation	0	0	0	0	0	0
054	Reactor grid air differential pressure, psid	11.49	12.23	11.00	11.20	12.00	12.30
054	Standard deviation	0.16	0.63	0.19	0.17	0.29	0.24
055	Reactor internal pressure, psia	79.9	80.1	80.3	80.3	80.2	80.3
055	Standard deviation	0.1	0.2	0.2	0.1	0.1	0.1
099	Air heater vent temperature, °F	435	429	440	397	332	314
099	Standard deviation	9	5	7	26	33	33
131	Air heater combustor temperature, °F	441	440	443	405	388	396
131	Standard deviation	7	3	5	21	2	8
148	Air heater inlet pressure, psia	132	128	125	125	129	127
148	Standard deviation	1	5	2	4	3	1
149	Air heater venturi differential pressure, psid	0.634	0.638	0.666	0.652	0.627	0.629
149	Standard deviation	0.011	0.011	0.026	0.016	0.016	0.014
C04A	Combustor airflow rate, lb/hr	622	647	658	658	655	657
C04A	Standard deviation	2	19	1	1	2	2
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

099	Air heater vent temperature, °F	435	429	440	397	332	314
099	Standard deviation	9	5	7	26	33	33
131	Air heater combustor temperature, °F	441	440	443	405	388	396
131	Standard deviation	7	3	5	21	2	8
148	Air heater inlet pressure, psia	132	128	125	125	129	127
148	Standard deviation	1	5	2	4	3	1
149	Air heater venturi dif- ferential pressure, psid	0.634	0.638	0.666	0.652	0.627	0.629
149	Standard deviation	0.011	0.011	0.026	0.016	0.016	0.014
C04A	Combustor airflow rate, lb/hr	622	647	658	658	655	657
C04A	Standard deviation	2	19	1	1	2	2
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	684	706	716	715	716	717
C04	Standard deviation	2	17	1	3	3	2
C09	Reactor coal-air ratio	0.074	0.076	0.077	0.077	0.080	0.076
C09	Standard deviation	0.004	0.006	0.003	0.010	0.002	0.005
C16	Reactor grid flow coefficient	0.294	0.295	0.317	0.314	0.302	0.299
C16	Standard deviation	0.002	0.006	0.003	0.002	0.004	0.003

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





	392	549	270	210	238	246	313	537	440
099									
131	115	36	59	3	2	4	81	11	30
	457	534	370	308	360	368	419	522	447
131									
148	32	19	9	3	5	5	27	7	13
	131.4	128.0	130.3	130.4	130.4	129.9	129.6	127.5	129.9
148									
149	0.9	2.1	0.9	1.0	0.8	0.9	0.9	1.2	1.3
	0.92	4.50	0.97	0.64	0.80	0.78	0.81	4.90	4.81
149									
C04A	0.42	1.63	0.78	0.04	0.02	0.06	0.32	0.19	0.02
	770	961	595	440	622	680	767	979	702
C04A									
C04B	1	11	3	2	14	1	2	5	0
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B									
C04C	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C									
C04	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
	832	1021	656	502	684	741	827	1038	763
C04									
C09	1	9	4	2	14	0	3	5	1
	0.071	0.063	0.082	0.079	0.068	0.067	0.077	0.067	0.080
C09									
	0.003	0.004	0.004	0.002	0.004	0.002	0.006	0.003	0.005
C16									
	0.585	0.568	0.510	0.460	0.524	0.547	0.489	0.511	0.496
C16									
	0.006	0.009	0.003	0.006	0.004	0.004	0.002	0.010	0.005

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test					
		19	110A	110B	111	112	113
008	Air venturi pressure differential, psid	10.66	6.24	5.77	7.74	14.78	28.31
008	Standard deviation	0.19	1.86	0.06	0.13	0.33	3.04
009	Air line pressure, psid	134.7	134.7	134.4	131.6	132.5	132.2
009	Standard deviation	1.9	4.1	1.5	2.1	1.1	1.1
010	Air inlet temperature, °F	96	97	96	99	84	92
010	Standard deviation	1	1	1	5	18	1
011	Fuel air venturi pressure differential, psid	5.99	5.93	5.88	5.67	5.82	5.88
011	Standard deviation	0.12	0.33	0.13	0.17	0.09	0.08
012	Fuel air line pressure, psia	135.0	134.5	134.2	131.4	132.5	132.3
012	Standard deviation	1.7	4.1	1.5	2.1	1.1	1.1
013	Fuel air inlet temperature, °F	53	65	66	61	47	57
013	Standard deviation	3	4	1	9	1	1
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	137.2	136.7	136.4	133.6	134.6	134.5
016	Standard deviation	1.7	4.1	1.5	2.1	1.1	1.1
050	Reactor inlet air temperature, °F	97	97	97	97	86	97
050	Standard deviation	0	0	0	0	19	0
054	Reactor grid air differential pressure, psid	4.60	3.05	2.89	3.51	8.09	9.14
054	Standard deviation	0.02	0.64	0.01	0.02	0.15	1.49
055	Reactor internal pressure, psia	80.1	80.1	80.2	80.2	80.3	80.1
055	Standard deviation	0.2	0.1	0.1	0.1	0.2	0.2
099	Air heater vent temperature, °F	376	223	216	229	230	247
099	Standard deviation	71	13	3	7	79	6
131	Air heater combustor temperature, °F	391	328	312	339	348	375
131	Standard deviation	16	19	4	10	141	8
148	Air heater inlet pressure, psia	131.2	130.7	130.4	128.1	128.9	128.9
148	Standard deviation	1.4	3.5	1.3	1.8	0.9	0.9
149	Air heater venturi dif- ferential pressure, psid	3.44	0.51	0.51	0.60	0.74	1.37
149	Standard deviation	1.94	0.07	0.02	0.13	0.37	0.11
C04A	Combustor airflow rate, lb/hr	667	514	500	567	774	991
C04A	Standard deviation	1	65	0	3	10	35
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Total airflow rate	729	575	561	627	824	1052

		210	220	210	225	233	247
099	Standard deviation temperature, °F	71	13	3	7	79	6
131	Air heater combustor temperature, °F	391	328	312	339	348	375
131	Standard deviation	16	19	4	10	141	8
148	Air heater inlet pressure, psia	131.2	130.7	130.4	128.1	128.9	128.9
148	Standard deviation	1.4	3.5	1.3	1.8	0.9	0.9
149	Air heater venturi dif- ferential pressure, psid	3.44	0.51	0.51	0.60	0.74	1.37
149	Standard deviation	1.94	0.07	0.02	0.13	0.37	0.11
C04A	Combustor airflow rate, lb/hr	667	514	500	567	774	991
C04A	Standard deviation	1	65	0	3	10	35
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	729	575	561	627	834	1052
C04	Standard deviation	1	65	1	3	10	35
C09	Reactor coal-air ratio	0.068	0.073	0.073	0.071	0.068	0.065
C09	Standard deviation	0.002	0.013	0.003	0.003	0.002	0.002
C16	Reactor grid flow coefficient	0.504	0.480	0.479	0.491	0.432	0.529
C16	Standard deviation	0.001	0.011	0.001	0.003	0.006	0.025

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
008	Air venturi pressure differential, psid	2.34	9.84	27.32	5.22	30.02	29.80	3.73	12.62	2.50
008	Standard deviation	0.09	0.25	0.56	0.13	3.36	3.43	0.10	0.64	0.06
009	Air line pressure, psid	135.6	129.2	125.9	129.7	123.3	122.2	128.7	131.3	125.5
009	Standard deviation	1.6	3.0	1.0	2.9	5.1	6.1	3.9	5.2	3.2
010	Air inlet temperature, °F	103	102	87	112	95	92	111	93	105
010	Standard deviation	3	3	1	9	1	1	5	5	4
011	Fuel air venturi pressure differential, psid	6.01	5.56	5.23	5.49	5.11	4.97	5.51	5.73	5.35
011	Standard deviation	0.12	0.23	0.11	0.22	0.49	0.56	0.36	0.46	0.29
012	Fuel air line pressure, psia	135.2	128.8	125.7	129.4	123.3	121.9	128.4	131.2	125.4
012	Standard deviation	1.6	3.0	1.0	2.8	5.2	6.0	3.8	5.1	3.2
013	Fuel air inlet temperature, °F	49	44	41	36	62	55	41	41	66
013	Standard deviation	2	1	1	2	1	5	1	2	4
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	135.6	129.3	126.0	129.7	123.7	122.4	128.8	131.5	125.7
016	Standard deviation	1.6	3.0	1.0	2.8	5.1	6.0	3.8	5.1	3.2
050	Reactor inlet air temperature, °F	100	101	99	102	100	100	99	99	99
050	Standard deviation	1	0	0	0	0	0	1	0	0
054	Reactor grid air differential pressure, psid	2.42	5.74	14.47	4.70	8.50	7.89	1.64	3.65	0.97
054	Standard deviation	1.84	0.34	0.56	0.19	0.54	0.44	0.44	0.18	0.04
055	Reactor internal pressure, psia	79.5	79.8	79.5	79.4	79.7	79.7	79.4	79.3	79.4
055	Standard deviation	0.4	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0
099	Air heater vent temperature, °F	214	277	290	243	520	420	364	293	387
099	Standard deviation	3	7	2	4	26	92	3	10	9
131	Air heater combustor temperature, °F	316	428	444	371	517	503	366	441	380
131	Standard deviation	4	8	2	4	12	14	1	4	5
148	Air heater inlet pressure, psia	131.3	125.9	123.0	126.1	120.9	119.7	125.1	127.3	122.3
148	Standard deviation	1.3	2.5	0.9	2.4	4.5	5.3	3.4	4.4	2.8
149	Air heater venturi dif- ferential pressure, psid	0.28	0.53	0.91	0.41	1.69	0.89	0.51	0.49	0.40
149	Standard deviation	0.01	0.03	0.03	0.03	0.65	0.32	0.03	0.07	0.01
C04A	Combustor airflow rate, lb/hr	323	625	954	462	960	953	391	711	318
C04A	Standard deviation	6	2	5	4	11	10	3	3	1
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	385	684	1011	521	1014	1007	450	771	376

099	Air heater vent temperature, °F	3	7	2	4	26	92	3	10	9
131	Standard deviation Air heater combustor temperature, °F	316	428	444	371	517	503	366	441	380
131	Standard deviation	4	8	2	4	12	14	1	4	5
148	Air heater inlet pressure, psia	131.3	125.9	123.0	126.1	120.9	119.7	125.1	127.3	122.3
148	Standard deviation	1.3	2.5	0.9	2.4	4.5	5.3	3.4	4.4	2.8
149	Air heater venturi dif- ferential pressure, psid	0.28	0.53	0.91	0.41	1.69	0.89	0.51	0.49	0.40
149	Standard deviation	0.01	0.03	0.03	0.03	0.65	0.32	0.03	0.07	0.01
C04A	Combustor airflow rate, lb/hr	323	625	954	462	960	953	391	711	318
C04A	Standard deviation	6	2	5	4	11	10	3	3	1
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	385	684	1011	521	1014	1007	450	771	376
C04	Standard deviation	6	3	5	4	10	10	5	6	3
C09	Reactor coal-air ratio	0.098	0.069	0.063	0.094	0.061	0.069	0.106	0.068	0.106
C09	Standard deviation	0.010	0.005	0.001	0.006	0.005	0.002	0.007	0.003	0.005
C16	Reactor grid flow coefficient	0.365	0.425	0.401	0.348	0.532	0.550	0.501	0.609	0.533
C16	Standard deviation	0.047	0.013	0.010	0.008	0.012	0.013	0.005	0.015	0.011

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



099	Standard deviation	22	50	13	12	3	10	7	21	2
131	Air heater combustor temperature, °F	356	303	441	366	425	479	368	502	351
131	Standard deviation	36	86	12	10	8	6	5	16	1
148	Air heater inlet pressure, psia	133.3	131.4	130.9	131.7	131.1	125.6	128.7	126.0	131.3
148	Standard deviation	1.0	1.1	1.3	1.4	0.8	3.7	2.1	3.2	1.2
149	Air heater venturi differential pressure, psid	0.84	0.49	1.01	0.81	0.83	4.23	4.11	4.18	0.36
149	Standard deviation	0.36	0.20	0.05	0.02	0.01	0.22	0.23	0.04	0.02
C04A	Combustor airflow rate, lb/hr	493	387	892	349	352	663	394	913	388
C04A	Standard deviation	5	6	3	3	2	3	2	8	1
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	645	450	955	412	415	722	455	974	449
C04	Standard deviation	7	6	4	3	2	6	3	11	2
C09	Reactor coal-air ratio	0.062	0.100	0.063	0.090	0.089	0.066	0.100	0.065	0.112
C09	Standard deviation	0.003	0.003	0.009	0.007	0.002	0.003	0.004	0.002	0.011
C16	Reactor grid flow coefficient	0.481	0.460	0.318	0.276	0.289	0.318	0.296	0.302	0.276
C16	Standard deviation	0.012	0.012	0.003	0.003	0.007	0.005	0.005	0.008	0.004

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





099	Air heater combustor temperature, °F	3	2	27	45	2	1	1
131	Air heater combustor temperature, °F	362	415	487	350	313	353	351
131	Air heater inlet temperature, °F	3	3	4	9	5	1	1
148	Air heater inlet pressure, psia	132.7	130.6	128.1	132.5	132.8	132.2	128.6
148	Air heater venturi differential pressure, psid	0.9	1.7	1.8	0.7	0.6	0.7	0.4
149	Air heater venturi differential pressure, psid	0.407	0.568	1.258	0.448	0.331	0.364	0.381
149	Standard deviation	0.012	0.009	0.166	0.170	0.009	0.008	0.005
C04A	Combustor airflow rate, lb/hr	407	588	924	371	315	388	387
C04A	Standard deviation	4	4	4	3	1	2	1
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	470	649	982	433	376	449	450
C04	Standard deviation	5	4	5	3	1	2	1
C09	Reactor coal-air ratio	0.097	0.067	0.068	0.102	0.091	0.092	0.086
C09	Standard deviation	0.002	0.003	0.006	0.003	0.006	0.008	0.001
C16	Reactor grid flow coefficient	0.289	0.319	0.321	0.309	0.301	0.323	0.322
C16	Standard deviation	0.004	0.011	0.008	0.005	0.005	0.007	0.010

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
008	Air venturi pressure differential, psid	6.38	7.31	5.71	6.83	6.37	2.75	7.40	5.32
008	Standard deviation	3.42	2.76	3.15	2.03	2.51	1.96	1.15	3.05
009	Air line pressure, psid	124.1	126.6	130.5	131.6	129.7	119.8	129.0	128.1
009	Standard deviation	19.4	13.5	2.9	1.9	4.6	30.7	3.6	20.1
010	Air inlet temperature, °F	93	85	78	76	76	67	56	46
010	Standard deviation	10	9	9	6	9	3	6	8
011	Fuel air venturi pressure differential, psid	5.56	5.43	5.59	5.48	5.75	5.62	5.94	5.59
011	Standard deviation	0.80	1.07	1.23	1.34	0.61	1.67	0.44	1.08
012	Fuel air line pressure, psia	123.9	126.2	129.9	131.1	129.4	119.7	128.8	127.9
012	Standard deviation	19.3	13.5	2.9	1.9	4.6	30.6	3.5	20.1
013	Fuel air inlet temperature, °F	81	79	74	73	72	63	52	37
013	Standard deviation	14	8	10	6	9	2	6	5
015	Burner air venturi pressure differential, psid	5.95	2.71	3.46	1.04	3.18	4.17	7.52	6.32
015	Standard deviation	3.17	3.40	3.51	2.46	3.84	5.23	0	2.39
016	Burner air pressure, psia	124.0	126.3	132.4	133.6	131.4	121.3	129.0	128.3
016	Standard deviation	19.3	13.5	2.9	1.9	4.6	31.2	3.5	20.1
050	Reactor inlet air temperature, °F	93	85	78	75	76	70	57	54
050	Standard deviation	10	9	9	5	8	5	6	17
054	Reactor grid air differential pressure, psid	1.79	4.85	1.75	1.51	3.88	3.19	3.63	21.77
054	Standard deviation	0.81	8.29	0.72	0.23	2.83	2.26	1.72	11.55
055	Reactor internal pressure, psia	64.9	71.3	66.3	73.6	72.0	54.7	72.9	68.3
055	Standard deviation	20.4	18.3	19.8	17.2	13.2	21.7	10.3	20.0
099	Air heater vent temperature, °F	155	107	94	101	102	74	101	101
099	Standard deviation	56	24	16	6	14	5	23	16
131	Air heater combustor temperature, °F	202	117	93	100	100	73	95	100
131	Standard deviation	109	45	15	6	13	5	18	17
148	Air heater inlet pressure, psia	120.2	122.4	126.5	127.5	125.8	116.6	125.8	125.4
148	Standard deviation	18.4	12.7	2.5	1.6	3.9	29.6	3.1	19.5
149	Air heater venturi dif- ferential pressure, psid	0.75	0.62	0.47	0.49	0.58	0.53	0.55	0.54
149	Standard deviation	2.31	1.09	0.19	0.14	0.18	0.18	0.19	0.18
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Total airflow rate	591	629	625	626	627	664	627	645

099	Standard deviation	56	24	16	6	14	5	23	16
131	Air heater combustor temperature, °F	202	117	93	100	100	73	95	100
131	Standard deviation	109	45	15	6	13	5	18	17
148	Air heater inlet pressure, psia	120.2	122.4	126.5	127.5	125.8	116.6	125.8	125.4
148	Standard deviation	18.4	12.7	2.5	1.6	3.9	29.6	3.1	19.5
149	Air heater venturi differential pressure, psid	0.75	0.62	0.47	0.49	0.58	0.53	0.55	0.54
149	Standard deviation	2.31	1.09	0.19	0.14	0.18	0.18	0.19	0.18
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	591	639	635	626	637	664	627	645
C04	Standard deviation	139	102	73	74	48	139	85	71
C09	Reactor coal-air ratio	0.054	0.047	0.050	0.066	0.064	0.060	0.097	0.081
C09	Standard deviation	0.035	0.030	0.034	0.065	0.032	0.026	0.109	0.022
C16	Reactor grid flow coefficient	0.664	0.669	0.625	0.725	0.473	0.345	0.511	0.207
C16	Standard deviation	0.055	0.386	0.105	0.072	0.120	0.068	0.101	0.102

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
008	Air venturi pressure differential, psid	7.57	6.29	8.59	8.31	8.00
008	Standard deviation	1.47	1.92	1.10	1.96	0.41
009	Air line pressure, psid	132.9	132.6	128.6	128.5	128.2
009	Standard deviation	3.4	2.9	6.8	11.4	18.0
010	Air inlet temperature, °F	110	27	110	101	100
010	Standard deviation	24	8	16	33	13
011	Fuel air venturi pressure differential, psid	5.67	5.55	5.41	5.06	5.34
011	Standard deviation	0.34	0.36	0.63	1.11	0.89
012	Fuel air line pressure, psia	132.7	132.1	128.2	128.5	128.1
012	Standard deviation	3.3	2.9	6.7	11.3	18.0
013	Fuel air inlet temperature, °F	21	17	29	21	41
013	Standard deviation	5	5	3	6	6
015	Burner air venturi pressure differential, psid	0.73	2.73	0.20	10.35	(b)
015	Standard deviation	2.96	4.70	1.44	1.23	(b)
016	Burner air pressure, psia	127.4	133.2	128.9	129.0	128.6
016	Standard deviation	27.2	3.0	6.7	11.3	18.1
050	Reactor inlet air temperature, °F	95	39	98	91	101
050	Standard deviation	16	29	12	23	9
054	Reactor grid air differential pressure, psid	16.30	15.76	4.83	3.77	3.64
054	Standard deviation	3.27	5.43	0.74	0.71	0.73
055	Reactor internal pressure, psia	76.7	75.5	79.4	79.3	77.5
055	Standard deviation	8.6	12.5	5.2	14.9	11.7
099	Air heater vent. temperature, °F	237	122	232	240	256
099	Standard deviation	56	24	35	71	42
131	Air heater combustor temperature, °F	355	110	335	353	371
131	Standard deviation	94	19	58	123	68
148	Air heater inlet pressure, psia	129.3	129.2	126.0	126.0	125.4
148	Standard deviation	2.9	2.8	5.8	10.8	17.5
149	Air heater venturi dif- ferential pressure, psid	0.75	(b)	0.83	0.86	0.66
149	Standard deviation	0.23	(b)	0.20	1.17	0.90
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate,	644	655	648	655	632

	temperature, °F					
099	Standard deviation	56	24	35	71	42
131	Air heater combustor temperature, °F	355	110	335	353	371
131	Standard deviation	94	19	58	123	68
148	Air heater inlet pressure, psia	129.3	129.2	126.0	126.0	125.4
148	Standard deviation	2.9	2.8	5.8	10.8	17.5
149	Air heater venturi differential pressure, psid	0.75	(b)	0.83	0.86	0.66
149	Standard deviation	0.23	(b)	0.20	1.17	0.90
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	644	655	648	655	632
C04	Standard deviation	64	47	47	68	18
C09	Reactor coal-air ratio	0.059	0.084	0.062	0.055	0.055
C09	Standard deviation	0.006	0.010	0.010	0.036	0.028
C16	Reactor grid flow coefficient	0.296	0.212	0.576	0.468	0.501
C16	Standard deviation	0.017	0.014	0.049	0.032	0.042

<sup>b</sup>Data or results were not obtained.

FOLDED FRAME

2



149	Air heater venturi differential pressure, psid	0.90	0.31	0.39	3.60	3.62	0.43	0.32	0.42
	Standard deviation								
C04A	Combustor airflow rate, lb/hr	0.20 748	0.02 252	0.04 456	0.48 911	3.22 914	0.03 421	0.05 494	0.03 301
	Standard deviation								
C04A	Burner airflow rate, lb/hr	6 (b)	10 (b)	8 (b)	16 (b)	14 (b)	3 (b)	5 (b)	1 (b)
	Standard deviation								
C04B	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
	Standard deviation								
C04C	Total airflow rate, lb/hr	808	322	512	965	974	482	554	360
	Standard deviation								
C04	Reactor coal-air ratio	6	30	14	20	14	3	5	2
	Standard deviation								
C09	Reactor grid flow coefficient	0.066	0.112	0.092	0.068	0.065	0.090	0.038	0.049
	Standard deviation								
C16	Reactor grid flow coefficient	0.004	0.024	0.012	0.005	0.005	0.003	0.004	0.012
	Standard deviation								
C16	Reactor grid flow coefficient	0.499	0.398	0.459	0.501	0.502	0.462	0.466	0.417
	Standard deviation								
C16	Standard deviation	0.005	0.006	0.008	0.004	0.004	0.008	0.008	0.014

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

C-2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
008	Air venturi pressure differential, psid	3.75	13.92	12.71	3.70	1.98	6.19	6.20	3.98	12.89
008	Standard deviation	0.07	0.59	0.69	0.11	0.05	0.19	0.22	0.13	0.26
009	Air line pressure, psid	133.5	122.1	130.4	132.3	136.5	129.8	128.6	126.1	133.9
009	Standard deviation	2.7	5.5	5.4	4.5	3.2	2.5	4.0	5.1	2.2
010	Air inlet temperature, °F	116	93	96	119	92	121	114	111	99
010	Standard deviation	6	6	5	6	4	4	4	5	7
011	Fuel air venturi pressure differential, psid	5.74	4.83	5.45	5.57	5.98	5.34	5.22	5.05	5.78
011	Standard deviation	0.20	0.46	0.50	0.39	0.24	0.17	0.32	0.44	0.22
012	Fuel air line pressure, psia	132.5	121.3	129.4	131.3	135.4	128.9	127.6	125.2	132.9
012	Standard deviation	2.6	5.4	5.3	4.4	3.1	2.5	3.9	5.0	2.2
013	Fuel air inlet temperature, °F	40	37	33	23	18	25	32	26	25
013	Standard deviation	5	2	4	3	1	3	3	1	2
015	Burner air venturi pressure differential, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
015	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
016	Burner air pressure, psia	133.0	121.8	130.0	131.8	135.9	129.4	128.1	125.7	133.4
016	Standard deviation	2.7	5.4	5.4	4.4	3.2	2.5	3.9	5.0	2.2
050	Reactor inlet air temperature, °F	102	102	102	102	102	101	102	102	102
050	Standard deviation	0	0	0	0	0	0	0	0	0
054	Reactor grid air differential pressure, psid	2.12	5.31	5.25	2.06	1.36	2.92	3.04	2.16	5.46
054	Standard deviation	0.15	0.08	0.09	0.13	0.15	0.11	0.26	0.24	0.09
055	Reactor internal pressure, psia	79.3	78.6	79.6	79.4	77.9	79.7	80.5	79.7	79.0
055	Standard deviation	0.8	3.1	0.1	0.2	1.7	0.4	0.6	0.2	1.6
099	Air heater vent. temperature, °F	218	289	305	224	192	234	248	237	314
099	Standard deviation	6	9	5	6	5	5	2	6	32
131	Air heater combustor temperature, °F	311	439	455	329	268	350	368	350	454
131	Standard deviation	11	11	4	7	11	9	3	10	15
148	Air heater inlet pressure, psia	129.5	119.6	126.8	128.4	131.9	126.3	125.3	123.1	129.9
148	Standard deviation	2.3	4.9	4.7	3.8	2.6	2.1	3.4	4.4	1.9
149	Air heater venturi dif- ferential pressure, psid	0.48	0.72	0.66	0.54	0.47	0.71	0.55	0.45	0.83
149	Standard deviation	0.04	0.06	0.05	0.04	0.04	0.06	0.04	0.02	0.06
C04A	Combustor airflow rate, lb/hr	399	712	708	393	301	497	498	400	722
C04A	Standard deviation	3	11	8	5	1	5	7	3	5
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate,	460	766	767	454	366	556	555	456	785



C04A	Combustor airflow rate, lb/hr	399	712	708	393	301	497	498	400	722
C04A	Standard deviation	3	11	8	5	1	5	7	3	5
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	460	766	767	454	366	556	555	456	785
C04	Standard deviation	4	12	9	7	3	4	8	7	6
C09	Reactor coal-air ratio	0.047	0.048	0.050	0.049	0.045	0.039	0.044	0.051	0.048
C09	Standard deviation	0.004	0.006	0.008	0.002	0.007	0.011	0.027	0.006	0.006
C16	Reactor grid flow coefficient	0.440	0.496	0.492	0.440	0.421	0.465	0.456	0.437	0.494
C16	Standard deviation	0.014	0.005	0.003	0.016	0.021	0.006	0.017	0.026	0.005

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



148	Standard deviation	6.8	4.6	1.7	4.0	2.7	2.6	2.7	2.7
149	Air heater venturi differential pressure, psid	0.62	0.70	0.57	0.46	0.38	(b)	(b)	0.93
149	Standard deviation	0.16	0.08	0.77	0.03	0.05	(b)	(b)	0.73
C04A	Combustor airflow rate, lb/hr	603	599	586	601	382	597	600	275
C04A	Standard deviation	4	4	38	5	4	3	2	10
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	659	655	640	653	439	655	658	337
C04	Standard deviation	6	6	37	8	4	3	3	10
C09	Reactor coal-air ratio	0.047	0.044	0.048	0.046	0.047	0.046	0.045	0.052
C09	Standard deviation	0.008	0.004	0.013	0.007	0.008	0.003	0.002	0.007
C16	Reactor grid flow coefficient	0.478	0.473	0.470	0.474	0.427	0.477	0.480	0.393
C16	Standard deviation	0.004	0.008	0.006	0.010	0.013	0.003	0.009	0.013

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(b) Continued. - Combustor input air system data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
008	Air venturi pressure differential, psid	8.73	8.55	10.61	9.91	10.25	10.90	10.88
008	Standard deviation	0.56	1.88	0.63	1.20	1.92	1.31	0.30
009	Air line pressure, psid	125.0	126.1	126.2	131.3	126.0	128.9	129.2
009	Standard deviation	4.0	6.8	4.0	3.2	13.4	6.2	2.5
010	Air inlet temperature, °F	46	95	97	95	95	95	97
010	Standard deviation	8	10	3	6	8	6	3
011	Fuel air venturi pressure differential, psid	5.41	4.51	5.24	5.63	5.46	5.47	5.57
011	Standard deviation	0.40	1.01	0.40	0.36	0.67	0.58	0.24
012	Fuel air line pressure, psia	124.9	125.9	126.1	131.2	126.0	128.8	129.3
012	Standard deviation	3.9	6.7	4.0	3.2	13.4	6.2	2.5
013	Fuel air inlet temperature, °F	40	61	77	62	71	71	70
013	Standard deviation	9	8	11	12	13	11	10
015	Burner air venturi pressure differential, psid	(b)	2.15	(b)	(b)	7.44	1.29	(b)
015	Standard deviation	(b)	4.77	(b)	(b)	4.46	3.36	(b)
016	Burner air pressure, psia	125.5	126.5	126.8	131.6	126.5	129.3	129.7
016	Standard deviation	4.0	6.8	4.0	3.1	13.5	6.2	2.5
050	Reactor inlet air temperature, °F	52	97	103	100	100	100	100
050	Standard deviation	7	8	2	5	9	7	1
054	Reactor grid air differential pressure, psid	5.44	3.39	4.20	3.97	4.00	4.36	4.29
054	Standard deviation	0.40	0.66	0.27	0.39	0.58	0.33	0.10
055	Reactor internal pressure, psia	75.1	84.0	78.9	79.9	78.1	81.2	82.1
055	Standard deviation	5.3	9.4	1.3	6.5	11.5	4.1	1.4
099	Air heater vent temperature, °F	110	171	230	229	218	235	235
099	Standard deviation	17	45	26	42	43	42	13
131	Air heater combustor temperature, °F	98	319	332	377	311	326	333
131	Standard deviation	15	82	38	49	75	70	24
148	Air heater inlet pressure, psia	123.4	123.8	124.1	127.8	123.5	125.9	126.3
148	Standard deviation	3.4	5.9	3.5	2.7	12.9	5.4	2.2
149	Air heater venturi dif- ferential pressure, psid	0.13	0.82	0.26	0.44	0.37	0.32	0.39
149	Standard deviation	0.20	0.82	0.21	0.22	0.20	0.21	0.27
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	671	648	696	694	697	717	715

		110	174	230	229	218	235	235
099	Standard deviation temperature, °F	17	45	26	42	43	42	13
131	Air heater combustor temperature, °F	98	319	332	377	311	326	333
131	Standard deviation	15	82	38	49	75	70	24
148	Air heater inlet pressure, psia	123.4	123.8	124.1	127.8	123.5	125.9	126.3
148	Standard deviation	3.4	5.9	3.5	2.7	12.9	5.4	2.2
149	Air heater venturi dif- ferential pressure, psid	0.13	0.82	0.26	0.44	0.37	0.32	0.39
149	Standard deviation	0.20	0.82	0.21	0.22	0.20	0.21	0.27
C04A	Combustor airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04A	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	671	648	696	694	697	717	715
C04	Standard deviation	15	34	20	41	37	12	6
C09	Reactor coal-air ratio	0.054	0.048	0.046	0.044	0.043	0.046	0.047
C09	Standard deviation	0.025	0.008	0.007	0.010	0.011	0.007	0.025
C16	Reactor grid flow coefficient	0.412	0.486	0.502	0.509	0.499	0.493	0.498
C16	Standard deviation	0.009	0.028	0.006	0.008	0.035	0.024	0.006

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



		270	280	290	300	310	320
099	Standard deviation temperature, °F	3	2	27	45	2	1
131	Air heater combustor temperature, °F	362	415	487	350	313	353
131	Standard deviation	3	3	4	9	5	1
148	Air heater inlet pressure, psia	132.7	130.6	128.1	132.5	132.8	132.2
148	Standard deviation	0.9	1.7	1.8	0.7	0.6	0.7
149	Air heater venturi dif- ferential pressure, psid	0.407	0.568	1.258	0.448	0.331	0.364
149	Standard deviation	0.012	0.009	0.166	0.170	0.009	0.008
C04A	Combustor airflow rate, lb/hr	407	588	924	371	315	388
C04A	Standard deviation	4	4	4	3	1	2
C04B	Burner airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04B	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Fuel airflow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C04C	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C04	Total airflow rate, lb/hr	470	649	982	433	376	449
C04	Standard deviation	5	4	5	3	1	2
C09	Reactor coal-air ratio	0.097	0.067	0.068	0.102	0.091	0.092
C09	Standard deviation	0.002	0.003	0.006	0.003	0.006	0.008
C16	Reactor grid flow coefficient	0.289	0.319	0.321	0.309	0.301	0.323
C16	Standard deviation	0.004	0.011	0.008	0.005	0.005	0.007

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

## (c) Combustor temperature and pressure data

Data channel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
030	Bed temperature 5 in. from bottom, °F	1629	1636	1617	1654	1693	1636	1607	1598	1617
030	Standard deviation	49	20	27	27	35	21	63	19	15
031	Bed temperature 5 in. from bottom, °F	1602	1585	1589	1639	1655	1658	1653	1633	1622
031	Standard deviation	30	34	29	23	25	19	47	18	14
032	Bed temperature 15 in. from bottom, °F	1571	1600	1580	1592	1608	1586	1581	1585	1585
032	Standard deviation	18	23	18	14	14	12	27	9	10
033	Bed temperature 29 in. from bottom, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
034	Bed temperature 42 in. from bottom, °F	1572	1602	1588	1601	1614	1585	1583	1591	1593
034	Standard deviation	18	22	17	14	13	10	18	9	10
035	Bed temperature 55 in. from bottom, °F	1553	1594	1588	1600	1610	1574	1566	1585	1586
035	Standard deviation	17	26	16	14	13	10	36	8	10
036	Bed temperature 67 in. from bottom, °F	(b)	(b)	(b)	(b)	1517	1503	1465	1489	1493
036	Standard deviation	(b)	(b)	(b)	(b)	7	35	21	7	11
037	Bed temperature 79 in. from bottom, °F	1545	1578	1581	1596	1597	1355	1420	1399	1433
037	Standard deviation	16	29	14	16	12	56	20	30	7
038	Bed temperature 96 in. from bottom, °F	1477	1402	1504	1560	1492	1251	1338	1334	1365
038	Standard deviation	18	48	30	21	13	45	11	18	6
039	Preexit gas temperature, °F	1280	1233	1270	1335	1344	1192	1273	1278	1305
039	Standard deviation	29	28	11	33	12	35	17	11	6
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface temperature, °F	601	539	570	596	583	531	468	845	842
029	Standard deviation	33	73	27	29	31	21	33	14	12
051	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	3.70	5.56	3.59	3.37	2.85	1.71	1.45	1.27	1.20
056	Standard deviation	0.22	2.56	0.26	0.32	0.21	0.17	0.18	0.16	0.20
167	Bed sample rod temperature, °F	1624	1644	1638	1667	1706	1652	1639	1652	1641
167	Standard deviation	25	26	23	21	28	14	67	16	13
168	Bed sample rod temperature, °F	1590	1608	1588	1607	1633	1610	1594	1619	1611
168	Standard deviation	20	22	17	14	20	12	59	14	8
169	Bed sample rod temperature, °F	1590	1592	1561	1569	1591	1555	1518	1550	1541
169	Standard deviation	19	18	17	11	17	11	91	12	8
170	Bed sample rod tempera-	59	65	66	52	60	86	82	66	62



168	Standard deviation	20	22	17	14	20	12	59	14	8
169	Bed sample rod temperature, °F	1590	1592	1561	1569	1591	1555	1518	1550	1541
169	Standard deviation	19	18	17	11	17	11	91	12	8
170	Bed sample rod temperature, °F	59	65	66	52	60	86	83	66	63
170	Standard deviation	0.6	2.9	4.8	3.5	3.8	1.5	4.4	1.5	0.6
171	Bed sample rod temperature, °F	59	65	66	52	60	86	82	66	63
171	Standard deviation	0.6	2.4	4.8	3.3	4.0	1.5	4.9	1.3	0.5
172	Bed sample rod temperature, °F	1583	1615	1596	1609	1625	1594	1585	1602	1602
172	Standard deviation	20	21	15	10	14	10	28	11	8
173	Bed sample rod temperature, °F	1532	1545	1546	1550	1555	86	83	66	63
173	Standard deviation	18	38	12	9	12	2	5	1	1
178	Grid to port 1 bed differential pressure, psid	0.477	0.454	0.542	0.593	1.920	0.626	0.580	0.637	0.729
178	Standard deviation	0.114	0.233	0.085	0.208	3.183	0.250	0.099	0.161	0.186
179	Port 1 to port 2 bed differential pressure, psid	0.713	2.368	0.684	0.640	1.739	0.702	0.678	0.645	0.706
179	Standard deviation	0.116	3.011	0.052	0.062	2.715	0.061	0.069	0.039	0.045
180	Port 2 to port 3 bed differential pressure, psid	1.234	1.265	0.585	0.623	1.810	0.589	0.539	0.386	0.334
180	Standard deviation	(b)	1.033	0.133	0.115	3.109	0.142	0.111	0.030	0.042
181	Port 3 to port 4 bed differential pressure, psid	3.135	0.855	0.654	0.578	1.974	0.015	0.017	0.011	0.007
182	Standard deviation	0.269	0.760	0.110	0.148	3.653	0.001	0.001	0.001	0.004

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

(c) Continued. - Combustor temperature and pressure data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
030	Bed temperature 5 in. from bottom, °F	1617	1672	1546	1476	1605	1582	1583	1710
030	Standard deviation	15	33	15	18	21	24	19	40
031	Bed temperature 5 in. from bottom, °F	1618	1642	1535	1457	1588	1586	1588	1712
031	Standard deviation	13	46	12	17	17	23	19	28
032	Bed temperature 15 in. from bottom, °F	1584	1633	1539	(b)	1574	1582	1568	1709
032	Standard deviation	10	17	9	(b)	12	11	11	15
033	Bed temperature 29 in. from bottom, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
034	Bed temperature 42 in. from bottom, °F	1592	1523	1545	1481	1581	1588	1572	1715
034	Standard deviation	10	59	9	12	12	11	11	14
035	Bed temperature 55 in. from bottom, °F	1581	1601	1528	1460	1566	1579	1532	1687
035	Standard deviation	10	60	11	14	12	11	10	15
036	Bed temperature 67 in. from bottom, °F	1493	1519	1459	1396	1491	1520	1454	1613
036	Standard deviation	11	39	13	13	11	8	11	11
037	Bed temperature 79 in. from bottom, °F	1439	1462	1418	1362	1440	1472	1409	1558
037	Standard deviation	10	37	13	13	11	9	13	6
038	Bed temperature 96 in. from bottom, °F	1374	1396	1364	1313	1378	1417	1350	1492
038	Standard deviation	10	35	13	13	11	8	19	4
039	Preexit gas temperature, °F	1390	1350	1302	1252	1315	1350	1263	1433
039	Standard deviation	197	14	13	11	13	8	19	5
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface tempera- ture, °F	874	947	951	924	981	1004	1184	1019
029	Standard deviation	17	27	12	13	14	12	14	15
051	Grid to port 1 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.13	1.00	1.13	1.22	1.18	1.07	0.90	1.00
056	Standard deviation	0.22	0.23	0.19	0.29	0.23	0.16	0.21	0.14
167	Bed sample rod tempera- ture, °F	1631	1652	1569	1502	1618	1626	1595	1739
167	Standard deviation	10	50	16	13	18	17	19	27
168	Bed sample rod tempera- ture, °F	1599	1622	1540	1474	1580	1588	1570	1708
168	Standard deviation	9	46	13	11	17	15	16	21
169	Bed sample rod tempera- ture, °F	1528	1547	1472	1422	1504	1508	1495	1612
169	Standard deviation	8	46	12	35	13	12	12	20
170	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	291	(b)	(b)	(b)	(b)

167	Bed sample rod temperature, °F	1631	1652	1569	1502	1618	1626	1595	1739
167	Standard deviation	10	50	16	13	18	17	19	27
168	Bed sample rod temperature, °F	1599	1622	1540	1474	1580	1588	1570	1708
168	Standard deviation	9	46	13	11	17	15	16	21
169	Bed sample rod temperature, °F	1528	1547	1472	1422	1504	1508	1495	1612
169	Standard deviation	8	46	12	35	13	12	12	20
170	Bed sample rod temperature, °F	(b)	(b)	(b)	291	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	505	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	1599	1634	1554	1248	1589	1599	1579	1727
172	Standard deviation	8	42	13	530	15	13	14	15
173	Bed sample rod temperature, °F	(b)	(b)	(b)	304	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	535	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	0.41	0.44	0.55	0.80	0.73	0.82	0.50	0.42
178	Standard deviation	0.19	0.17	0.10	0.63	0.21	0.21	0.09	0.16
179	Port 1 to port 2 bed differential pressure, psid	0.63	0.62	0.67	0.70	0.77	0.70	0.64	0.60
179	Standard deviation	0.05	0.06	0.06	0.12	0.08	0.06	0.05	0.05
180	Port 2 to port 3 bed differential pressure, psid	0.29	0.30	0.21	0.27	0.20	0.18	0.04	0.19
180	Standard deviation	0.06	0.07	0.04	0.19	0.03	0.03	0.03	0.09
181	Port 3 to port 4 bed differential pressure, psid	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
182	Standard deviation	0	0	0	0.04	0	0	0	0

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



	1416	1454	1433	1441	1435	1431	1529
169 Bed sample rod temperature, °F	15	4	17	3	10	7	49
170 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171 Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172 Bed sample rod temperature, °F	1519	1599	1580	1591	1588	1588	1712
172 Standard deviation	17	9	18	4	12	11	53
173 Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178 Grid to port 1 bed differential pressure, psid	0.62	0.52	0.48	0.55	0.58	0.58	0.46
178 Standard deviation	0.06	0.10	0.04	0.08	0.08	0.23	0.10
179 Port 1 to port 2 bed differential pressure, psid	0.12	0.06	0.03	0.04	0.02	0	0.01
179 Standard deviation	0.01	0.03	0.01	0.01	0.03	0	0
180 Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181 Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182 Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

(c) Continued. - Combustor temperature and pressure data

Data chan- nel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
030	Bed temperature 5 in. from bottom, °F	1642	1673	1721	1466	1478	1857	1933
030	Standard deviation	19	12	18	11	13	13	18
031	Bed temperature 5 in. from bottom, °F	1651	1665	1677	1437	1461	1816	1855
031	Standard deviation	17	9	16	7	12	15	27
032	Bed temperature 15 in. from bottom, °F	1656	1651	1642	1460	1447	1765	1577
032	Standard deviation	8	6	12	4	4	19	182
033	Bed temperature 29 in. from bottom, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
033	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
034	Bed temperature 42 in. from bottom, °F	1653	1650	1642	1463	1453	1763	1681
034	Standard deviation	8	6	12	4	3	20	103
035	Bed temperature 55 in. from bottom, °F	1653	1651	1642	1466	1452	1763	1681
035	Standard deviation	8	6	12	4	3	20	103
036	Bed temperature 67 in. from bottom, °F	1634	1589	1529	1393	1344	1764	1666
036	Standard deviation	8	7	18	4	6	21	115
037	Bed temperature 79 in. from bottom, °F	(b)	(b)	1444	1333	1271	1636	1537
037	Standard deviation	(b)	(b)	20	3	8	22	123
038	Bed temperature 96 in. from bottom, °F	1467	1477	1379	1282	1212	1536	1454
038	Standard deviation	41	6	20	5	11	27	106
039	Preexit gas temperature, °F	1388	1427	1338	1244	1172	1483	1406
039	Standard deviation	51	5	20	6	11	29	100
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.35	1.33	1.49	1.77	2.02	1.83	1.78
056	Standard deviation	0.29	0.36	0.22	0.36	0.27	0.31	0.26
167	Bed sample rod tempera- ture, °F	1683	1684	1058	1453	1451	1829	1856
167	Standard deviation	12	8	31	4	11	21	29
168	Bed sample rod tempera- ture, °F	1535	1875	1020	1378	1369	(b)	(b)
168	Standard deviation	168	33	164	11	19	(b)	(b)
169	Bed sample rod tempera- ture, °F	1305	1304	1257	1240	1234	1290	1389
169	Standard deviation	11	6	33	3	3	60	24

051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.35	1.33	1.49	1.77	2.02	1.83	1.78
056	Standard deviation	0.29	0.36	0.22	0.36	0.27	0.31	0.26
167	Bed sample rod temperature, F	1683	1684	1058	1453	1451	1829	1856
167	Standard deviation	12	8	31	4	11	21	29
168	Bed sample rod temperature, F	1535	1875	1020	1378	1369	(b)	(b)
168	Standard deviation	168	33	164	11	19	(b)	(b)
169	Bed sample rod temperature, F	1305	1304	1257	1240	1234	1290	1389
169	Standard deviation	11	6	33	3	3	60	24
170	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, F	1325	1433	(b)	1241	1329	1533	1437
172	Standard deviation	133	32	(b)	63	41	24	125
173	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	0.32	0.27	(b)	0.22	0.14	0.34	0.09
178	Standard deviation	0.15	0.19	(b)	0.14	0.06	0.18	0.04
179	Port 1 to port 2 bed differential pressure, psid	5.52	6.78	(b)	8.15	8.11	8.12	8.21
179	Standard deviation	0.03	0.17	(b)	0.08	0.03	0.05	0.02
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME **2**





167	Standard deviation	17	11	15	32	16	33	34	272
168	Bed sample rod temperature, F	1569	1573	1580	1698	1712	1735	1762	1727
168	Standard deviation	17	10	14	30	34	51	60	291
169	Bed sample rod temperature, F	1470	1472	1465	1315	1349	1213	1172	1253
169	Standard deviation	16	8	14	55	30	30	70	180
170	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, F	1575	1581	1584	871	1629	1231	1450	1306
172	Standard deviation	17	9	12	117	27	70	69	91
173	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	0.65	0.83	0.72	1.13	1.38	1.84	1.65	0.45
178	Standard deviation	0.24	0.16	0.22	0.14	0.23	0.25	0.29	0.39
179	Port 1 to port 2 bed differential pressure, psid	0.71	0.71	0.65	0.04	0.01	0.08	8.30	0.16
179	Standard deviation	0.07	0.04	0.04	0.05	0.01	0.09	2.85	0.09
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



167	Standard deviation	20	15	28	18	18	(b)	(b)
168	Bed sample rod temperature, °F	(b)	2367	2476	1901	1796	(b)	(b)
168	Standard deviation	(b)	123	135	98	70	(b)	(b)
169	Bed sample rod temperature, °F	1593	1674	1664	1660	1672	(b)	(b)
169	Standard deviation	12	9	8	10	19	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	1755	1788	1766	1816	1823	(b)	(b)
172	Standard deviation	25	32	16	24	22	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	0.51	(b)	(b)	0.13	(b)	(b)	(b)
178	Standard deviation	0.18	(b)	(b)	0.23	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	0.26	0.27	0.14	0.16	(b)	(b)
179	Standard deviation	(b)	0.01	0.01	0.04	0.01	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	0.11	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	0.15	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(a)	0.07	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	0.14	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2



		(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.56	2.00	1.64	1.85	1.75	1.97	2.06 1.69
056	Standard deviation	0.14	0.17	0.12	0.17	0.12	0.12	0.10 0.13
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**





		(b)	(b)	0.01	(b)	(b)	(b)	0	0	0
052	Standard deviation	(b)	(b)	0.01	(b)	(b)	(b)	0	0	0
056	Overall bed differential pressure, psid	2.40	2.79	2.68	2.72	2.88	3.14	2.56	2.70	2.66
056	Standard deviation	0.15	0.14	0.12	0.30	0.25	0.16	0.06	0.11	0.14
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



029	Grid cap surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed differential pressure, psid	3.27	3.20	3.29	3.54	0.30	0.91	0.85	0.75	0.63
051	Standard deviation	0.23	0.12	0.27	0.12	0.09	0.26	0.13	0.09	0.09
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	1.27	1.33	1.54	1.57	1.79
052	Standard deviation	(b)	(b)	(b)	(b)	0.07	0.08	0.05	0.03	0.05
056	Overall bed differential pressure, psid	1.84	1.81	1.83	1.93	1.93	2.01	2.09	2.18	2.16
056	Standard deviation	0.19	0.09	0.15	0.14	0.19	0.10	0.14	0.10	0.09
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





		0.08	0.10	0.37	0.24	0.20	0.31	0.60	0.65	0.65
056	Standard deviation									
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME )

TABLE 4. - Continued.

(c) Continued. - Combustor temperature and pressure data

Data channel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
030	Bed temperature 5 in. from bottom, °F	1774	1795	1819	1810	1810	1793
030	Standard deviation	28	19	36	13	16	19
031	Bed temperature 5 in. from bottom, °F	1774	1798	1738	1701	1718	1704
031	Standard deviation	28	18	33	14	15	14
032	Bed temperature 15 in. from bottom, °F	1804	1833	1851	1834	1832	1810
032	Standard deviation	30	20	34	14	15	20
033	Bed temperature 29 in. from bottom, °F	1811	1840	1859	1843	1840	1818
033	Standard deviation	31	20	36	14	15	19
034	Bed temperature 42 in. from bottom, °F	1773	1802	1821	1807	1803	1784
034	Standard deviation	28	18	31	13	14	17
035	Bed temperature 55 in. from bottom, °F	1803	1844	1869	1849	1846	1825
035	Standard deviation	30	19	29	15	15	19
036	Bed temperature 67 in. from bottom, °F	1769	1816	1843	1821	1820	1801
036	Standard deviation	27	17	24	14	14	16
037	Bed temperature 79 in. from bottom, °F	1748	1799	1827	1804	1804	1787
037	Standard deviation	25	15	19	13	12	13
038	Bed temperature 96 in. from bottom, °F	1712	1761	1792	1772	1771	1756
038	Standard deviation	20	13	14	12	10	9
039	Preexit gas temperature, °F	1668	1715	1743	1727	1727	711
039	Standard deviation	18	11	14	10	9	7
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	0.70	0.89	0.88	0.93	0.76	0.72
056	Standard deviation	0.17	0.22	0.22	0.16	0.23	0.17
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)

		(b)	(b)	(b)	(b)	(b)	(b)
	ferential pressure, psid						
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	0.70	0.89	0.88	0.93	0.76	0.72
056	Standard deviation						
167	Bed sample rod temperature, °F	0.17	0.22	0.22	0.16	0.23	0.17
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



056	Overall bed differential pressure, psid	0.76	0.65	0.27	0.27	0.44	0.58	0.55	0.76	0.56
056	Standard deviation	0.11	0.18	0.05	0.11	0.02	0.07	0.08	0.29	0.08
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**





167	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



		0.30	0.31	0.41	0.12	0.36	0.37	0.20	0.38	0.21
056	Standard deviation									
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.55	1.75	1.40	1.41	1.41	1.69 1.76
056	Standard deviation	0.10	0.42	0.38	0.18	0.14	0.17 0.34
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2





168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2



169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



	ferential pressure, psid								
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	0.76	0.85	0.85	1.00	1.26	0.79	1.01	1.32
056	Standard deviation	0.18	0.19	0.10	0.30	0.17	0.13	0.27	0.18
167	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**



052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.13	1.13	2.04	1.37	0.37	1.58	2.18
056	Standard deviation	0.26	0.27	0.45	0.44	0.24	0.47	0.32
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
181	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

**FOLDOUT FRAME 2**

TABLE 4. - Continued.

(c) Continued. - Combustor temperature and pressure data

Data channel	Parameter	Test					
		19	110A	110B	111	112	113
030	Bed temperature 5 in. from bottom, °F	1588	1598	1559	1581	1612	1776
030	Standard deviation	28	17	8	17	34	19
031	Bed temperature 5 in. from bottom, °F	1627	1624	1582	1611	1636	1794
031	Standard deviation	29	19	9	18	29	30
032	Bed temperature 15 in. from bottom, °F	1628	1625	1587	1613	1666	1846
032	Standard deviation	28	20	6	15	33	17
033	Bed temperature 29 in. from bottom, °F	1636	1631	1592	1619	1675	1859
033	Standard deviation	29	20	6	15	34	18
034	Bed temperature 42 in. from bottom, °F	1599	1574	1551	1586	1637	1813
034	Standard deviation	25	22	7	13	34	13
035	Bed temperature 55 in. from bottom, °F	1604	1567	1556	1620	1680	1863
035	Standard deviation	23	27	12	10	31	18
036	Bed temperature 67 in. from bottom, °F	1585	1544	1530	1599	1651	1826
036	Standard deviation	24	23	10	9	29	17
037	Bed temperature 79 in. from bottom, °F	1581	1534	1518	1588	1631	1793
037	Standard deviation	24	22	8	9	27	14
038	Bed temperature 96 in. from bottom, °F	1574	1516	1494	1558	1596	1741
038	Standard deviation	26	23	5	10	25	12
039	Preexit gas temperature, °F	1548	1482	1454	1508	1547	1692
039	Standard deviation	28	22	2	8	26	16
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	0.60	0.59	0.67	0.78	0.61	0.54
056	Standard deviation	0.05	0.04	0.02	0.07	0.10	0.09
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)



	ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	0.60	0.59	0.67	0.78	0.61	0.54
056	Standard deviation	0.05	0.04	0.02	0.07	0.10	0.09
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

FOLDOUT FRAME TABLE 4. - Continued.

(c) Concluded. - Combustor temperature and pressure data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
030	Bed temperature 5 in. from bottom, °F	1745	1719	1773	1706	1733
030	Standard deviation	117	78	47	183	128
031	Bed temperature 5 in. from bottom, °F	1773	1767	1810	1770	1836
031	Standard deviation	183	103	61	200	119
032	Bed temperature 15 in. from bottom, °F	1773	1791	1827	1779	1817
032	Standard deviation	201	118	66	211	82
033	Bed temperature 29 in. from bottom, °F	1783	1797	1832	1789	1837
033	Standard deviation	204	120	67	198	78
034	Bed temperature 42 in. from bottom, °F	1735	1754	1789	1743	1792
034	Standard deviation	209	127	68	178	75
035	Bed temperature 55 in. from bottom, °F	1764	1803	1814	1762	1841
035	Standard deviation	205	120	75	187	77
036	Bed temperature 67 in. from bottom, °F	1684	1736	1728	1678	1751
036	Standard deviation	208	122	75	171	96
037	Bed temperature 79 in. from bottom, °F	1634	1647	1680	1638	1665
037	Standard deviation	225	140	75	163	102
038	Bed temperature 96 in. from bottom, °F	1570	1578	1630	1591	1601
038	Standard deviation	246	167	87	159	125
039	Preexit gas temperature, °F	1520	1528	1586	1551	1556
039	Standard deviation	227	164	87	154	120
028	Grid surface temperature, °F	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)
029	Grid cap surface tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)
051	Grid to port 1 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)
052	Port 1 to port 2 bed dif- ferential pressure, psid	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)
056	Overall bed differential pressure, psid	1.69	2.11	1.23	0.89	1.70
056	Standard deviation	0.35	0.34	0.31	0.69	0.35
167	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)

		0.35	0.34	0.31	0.69	0.35
056	Standard deviation					
167	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
167	Standard deviation	(b)	(b)	(b)	(b)	(b)
168	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
168	Standard deviation	(b)	(b)	(b)	(b)	(b)
169	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
169	Standard deviation	(b)	(b)	(b)	(b)	(b)
170	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
170	Standard deviation	(b)	(b)	(b)	(b)	(b)
171	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)
172	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
172	Standard deviation	(b)	(b)	(b)	(b)	(b)
173	Bed sample rod temperature, °F	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)
178	Grid to port 1 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)
178	Standard deviation	(b)	(b)	(b)	(b)	(b)
179	Port 1 to port 2 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)
179	Standard deviation	(b)	(b)	(b)	(b)	(b)
180	Port 2 to port 3 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)
181	Port 3 to port 4 bed differential pressure, psid	(b)	(b)	(b)	(b)	(b)
182	Standard deviation	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

## (d) Combustor wall temperature data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	317	273	254	246	279	425	453	518	534
040	Standard deviation	54	82	67	63	50	27	9	24	5
041	Combustor bottom deep temperature, °F	962	927	944	987	1042	887	930	1073	1080
041	Standard deviation	14	25	14	32	18	42	46	14	7
042	Combustor top shallow temperature, °F	443	452	456	439	460	409	475	544	566
042	Standard deviation	13	11	12	6	4	48	4	22	1
043	Combustor top deep temperature, °F	1312	1320	1273	1275	1294	1236	1282	1253	1269
043	Standard deviation	15	15	15	8	7	27	9	8	7
044	Port 4 shallow tempera- ture, °F	899	890	922	951	973	850	1004	978	1036
044	Standard deviation	15	11	11	13	2	91	13	29	8
045	Port 4 deep temperature °F	1338	1330	1356	1396	1401	1235	1326	1284	1325
045	Standard deviation	16	13	13	11	5	60	7	21	7
046	Top cap deep temperature, °F	797	835	834	863	890	538	807	797	(b)
046	Standard deviation	41	7	5	14	2	53	36	11	(b)
047	Top cap surface tempera- ture, °F	94	88	80	75	80	188	224	207	224
047	Standard deviation	0	6	7	1	5	24	6	20	1
048	Top cap surface tempera- ture, °F	88	83	78	73	77	130	155	150	155
048	Standard deviation	1	7	7	1	5	10	4	9	4
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	356	340	338	351	348	340	361	331	356
156	Standard deviation	6	6	4	7	3	25	8	48	1
171	Exit pipe wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	534	563	554	537	537	548	621	684
040	Standard deviation	3	9	7	5	5	6	29	25
041	Combustor bottom deep temperature, °F	1088	1120	1082	1031	1097	1119	1190	1269
041	Standard deviation	10	50	14	14	10	12	13	23
042	Combustor top shallow temperature, °F	573	614	646	635	624	646	691	687
042	Standard deviation	4	18	3	6	6	5	15	16
043	Combustor top deep temperature, °F	1277	1315	1294	1230	1293	1301	1319	1453
043	Standard deviation	10	77	15	18	11	5	7	10
044	Port 4 shallow tempera- ture, °F	1053	1054	1060	1025	1031	1077	1081	1148
044	Standard deviation	3	10	8	12	14	10	10	5
045	Port 4 deep temperature °F	1336	1348	1327	1268	1323	1365	1324	1453
045	Standard deviation	7	43	17	15	14	7	19	3
046	Top cap deep temperature, °F	706	891	793	(b)	(b)	895	742	(b)
046	Standard deviation	0	33	119	(b)	(b)	42	134	(b)
047	Top cap surface tempera- ture, °F	234	242	236	222	228	234	228	262
047	Standard deviation	6	5	4	4	3	3	6	2
048	Top cap surface tempera- ture, °F	163	170	158	146	146	152	167	184
048	Standard deviation	7	5	5	5	2	5	8	1
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	367	368	353	335	358	370	328	406
156	Standard deviation	8	42	7	3	3	2	8	2
171	Exit pipe wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4-wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	632	653	658	641	659	672	680
040	Standard deviation	13	6	3	7	9	2	10
041	Combustor bottom deep temperature, °F	1133	1185	1171	1154	1179	1197	1276
041	Standard deviation	12	10	14	6	9	7	44
042	Combustor top shallow temperature, °F	674	696	708	689	729	766	781
042	Standard deviation	11	9	1	8	18	4	11
043	Combustor top deep temperature, °F	1314	1308	1304	1341	1496	1513	1612
043	Standard deviation	58	6	13	60	36	10	52
044	Port 4 shallow temperature, °F	962	1038	1068	1029	1070	1090	1134
044	Standard deviation	27	18	2	23	2	9	24
045	Port 4 deep temperature °F	1196	1280	1291	1275	1303	1337	1404
045	Standard deviation	18	17	6	18	11	9	38
046	Top cap deep temperature, °F	779	852	884	864	886	906	951
046	Standard deviation	27	15	3	12	2	11	21
047	Top cap surface temperature, °F	186	212	211	195	199	219	232
047	Standard deviation	25	3	3	11	6	3	7
048	Top cap surface temperature, °F	95	98	100	92	107	110	112
048	Standard deviation	2	2	1	5	7	2	3
112	Port 6 insulation temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	276	345	342	335	321	367	395
156	Standard deviation	103	4	1	14	13	5	11
171	Exit pipe wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test						
		D6	D7	D1	D1	D10	D3	D4
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b0)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	543	632	628	602	559	632	626
040	Standard deviation	49	18	49	19	13	45	49
041	Combustor bottom deep temperature, °F	1180	1220	1189	1003	866	1221	1028
041	Standard deviation	29	7	36	14	17	52	185
042	Combustor top shallow temperature, °F	556	656	552	557	522	601	600
042	Standard deviation	108	7	28	14	7	42	37
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	1050	1177	1034	1025	977	1183	1133
044	Standard deviation	135	6	46	15	12	65	83
045	Port 4 deep temperature °F	1413	1444	1345	1260	1212	1567	1479
045	Standard deviation	60	4	34	6	8	39	113
046	Top cap deep temperature, °F	625	923	851	865	812	920	932
046	Standard deviation	232	15	28	12	15	56	47
047	Top cap surface tempera- ture, °F	229	242	220	215	197	236	233
047	Standard deviation	23	2	8	6	3	11	17
048	Top cap surface tempera- ture, °F	239	259	236	237	219	260	253
048	Standard deviation	28	3	9	4	3	12	18
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	398	404	31	354	321	423	388
156	Standard deviation	11	2	7	3	3	7	36
171	Exit pipe wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	627	628	627	358	359	342	367	603
040	Standard deviation	17	12	17	30	13	18	12	118
041	Combustor bottom deep temperature, °F	1148	1089	1152	1005	1005	979	1020	1159
041	Standard deviation	12	9	18	33	11	26	26	164
042	Combustor top shallow temperature, °F	661	721	699	393	497	512	521	545
042	Standard deviation	22	3	7	72	41	16	13	103
043	Combustor top deep temperature, °F	1474	1493	1302	1224	1289	1266	1265	(b)
043	Standard deviation	27	7	7	57	16	36	19	(b)
044	Port 4 shallow tempera- ture, °F	1004	1076	1076	1099	1154	1187	1138	1044
044	Standard deviation	25	9	25	91	62	49	15	245
045	Port 4 deep temperature °F	1277	1320	1313	1428	1462	1475	1431	1315
045	Standard deviation	16	5	19	69	36	54	15	270
046	Top cap deep temperature, °F	782	885	894	924	800	1020	984	831
046	Standard deviation	27	14	13	117	35	69	20	211
047	Top cap surface tempera- ture, °F	172	206	207	315	366	376	340	250
047	Standard deviation	31	21	10	83	26	36	34	57
048	Top cap surface tempera- ture, °F	125	135	136	335	394	413	387	264
048	Standard deviation	1	4	7	91	27	34	40	60
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	142	171	177	207	230	236	251	244
156	Standard deviation	48	32	15	14	16	42	3	59
171	Exit pipe wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.



TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
026	Port 6 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Port 4 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Port 1 wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
028	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Combustor wall surface temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
029	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
040	Combustor bottom surface temperature, °F	659	686	646	678	703	432	420
040	Standard deviation	157	7	31	12	23	24	8
041	Combustor bottom deep temperature, °F	1050	1277	1116	1329	1348	1288	1139
041	Standard deviation	216	27	172	8	24	39	58
042	Combustor top shallow temperature, °F	680	728	727	628	714	617	693
042	Standard deviation	19	5	3	61	21	48	32
043	Combustor top deep temperature, °F	1371	1418	1417	1312	1411	1858	1886
043	Standard deviation	5	6	4	47	32	39	15
044	Port 4 shallow tempera- ture, °F	1290	1349	1341	1313	1321	1179	1253
044	Standard deviation	7	1	6	50	38	79	45
045	Port 4 deep temperature °F	1642	1699	1683	1678	1652	1596	1636
045	Standard deviation	13	5	10	23	36	52	28
046	Top cap deep temperature, °F	1031	1065	1058	933	1002	775	966
046	Standard deviation	4	5	7	95	16	90	39
047	Top cap surface tempera- ture, °F	296	264	269	99	102	360	360
047	Standard deviation	15	27	14	11	5	13	37
048	Top cap surface tempera- ture, °F	374	366	364	344	356	129	129
048	Standard deviation	5	8	6	13	15	7	1
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
156	Gas exit wall temperature, °F	281	276	327	263	266	271	279
156	Standard deviation	4	3	16	4	6	9	4
171	Exit pipe wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		E1	E2	E3	E4	E5	E6	E9	E8
026	Port 6 wall temperature, °F	201	205	209	202	197	176	168	167
026	Standard deviation	5	5	4	2	3	7	2	9
027	Port 4 wall temperature, °F	210	214	210	226	210	194	202	208
027	Standard deviation	4	2	3	8	12	3	4	12
028	Port 1 wall temperature, °F	104	106	104	102	101	99	100	100
028	Standard deviation	1	2	1	1	3	1	1	4
029	Combustor wall surface temperature, °F	1370	1293	1348	1391	1342	1246	1289	1244
029	Standard deviation	11	9	41	16	7	33	9	38
040	Combustor bottom surface temperature, °F	410	345	380	402	392	370	390	378
040	Standard deviation	3	12	26	7	4	15	9	19
041	Combustor bottom deep temperature, °F	1233	1012	1130	1283	1227	1089	1202	1209
041	Standard deviation	5	29	172	16	12	26	8	23
042	Combustor top shallow temperature, °F	936	911	913	953	934	900	877	808
042	Standard deviation	9	12	22	4	7	21	11	61
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	272	272	270	288	268	249	258	259
044	Standard deviation	4	2	1	9	11	4	5	17
045	Port 4 deep temperature °F	242	243	241	267	245	222	231	234
045	Standard deviation	4	2	2	10	13	4	5	15
046	Top cap deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
046	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
047	Top cap surface tempera- ture, °F	337	373	356	380	350	297	316	335
047	Standard deviation	4	4	5	5	7	15	2	9
048	Top cap surface tempera- ture, °F	185	190	192	180	175	156	149	153
048	Standard deviation	5	5	4	3	3	6	1	3
112	Port 6 insulation tempera- ture, °F	292	292	292	293	293	293	293	291
112	Standard deviation	0	0	0	0	0	0	0	0
156	Gas exit wall temperature, °F	480	548	496	533	501	423	461	481
156	Standard deviation	9	4	8	6	6	14	3	14
171	Exit pipe wall tempera- ture, °F	465	479	434	425	411	368	496	518
171	Standard deviation	13	5	40	38	4	3	3	17
043	Port 6 deep temperature, °F	188	192	196	180	172	155	148	155
043	Standard deviation	6	6	4	4	4	7	0	4

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
026	Port 6 wall temperature, °F	167	196	211	212	196	183	185
026	Standard deviation	13	5	4	1	4	3	2
027	Port 4 wall temperature, °F	207	215	238	242	212	203	205
027	Standard deviation	10	4	6	1	9	2	2
028	Port 1 wall temperature, °F	104	113	116	119	115	109	107
028	Standard deviation	4	1	1	1	2	1	1
029	Combustor wall surface temperature, °F	1246	1378	1422	1448	1336	1311	1313
029	Standard deviation	61	27	2	3	16	10	14
040	Combustor bottom surface temperature, °F	359	408	420	428	392	376	385
040	Standard deviation	45	4	1	1	9	4	1
041	Combustor bottom deep temperature, °F	1256	1329	1322	1302	1159	1128	1177
041	Standard deviation	20	16	15	12	19	17	12
042	Combustor top shallow temperature, °F	760	904	953	989	957	918	906
042	Standard deviation	81	13	11	6	20	7	0
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	262	281	308	311	273	259	262
044	Standard deviation	18	5	6	1	11	2	2
045	Port 4 deep temperature °F	233	247	275	279	244	233	236
045	Standard deviation	13	4	8	1	10	1	2
046	Top cap deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	234
046	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	0
047	Top cap surface tempera- ture, °F	296	357	372	351	321	289	311
047	Standard deviation	39	10	3	3	4	4	5
048	Top cap surface tempera- ture, °F	158	177	190	192	175	163	165
048	Standard deviation	5	4	3	1	4	3	2
112	Port 6 insulation tempera- ture, °F	289	288	289	289	289	289	290
112	Standard deviation	1	0	0	1	0	1	0
156	Gas exit wall temperature, °F	474	567	582	530	498	446	496
156	Standard deviation	62	14	2	5	4	3	14
171	Exit pipe wall tempera- ture, °F	484	446	456	449	439	381	408
171	Standard deviation	56	4	8	3	10	5	5
043	Port 6 deep temperature, °F	158	178	192	193	176	164	166
043	Standard deviation	6	4	3	1	4	3	1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
026	Port 6 wall temperature, °F	195	212	202	210	215	213	186	202	205
026	Standard deviation	7	1	1	3	0	1	2	2	3
027	Port 4 wall temperature, °F	239	257	242	251	260	252	241	243	247
027	Standard deviation	9	2	6	9	2	7	3	5	1
028	Port 1 wall temperature, °F	110	115	114	115	116	113	107	109	106
028	Standard deviation	2	1	1	1	0	3	1	2	1
029	Combustor wall surface temperature, °F	1373	1365	1348	1411	1462	1473	1291	1317	1320
029	Standard deviation	39	6	17	13	14	8	13	7	4
040	Combustor bottom surface temperature, °F	355	359	324	372	369	323	233	222	276
040	Standard deviation	8	2	4	18	11	5	27	27	3
041	Combustor bottom deep temperature, °F	1075	1086	503	1237	1141	1049	335	425	625
041	Standard deviation	31	9	20	47	58	19	84	48	132
042	Combustor top shallow temperature, °F	920	940	906	945	976	991	774	857	835
042	Standard deviation	16	8	8	10	8	2	20	3	11
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	301	318	301	317	330	326	307	312	314
044	Standard deviation	10	3	5	11	2	3	6	7	2
045	Port 4 deep temperature, °F	274	293	276	289	301	296	276	281	291
045	Standard deviation	10	2	5	11	2	3	6	6	2
046	Top cap deep temperature, °F	676	742	746	771	816	828	637	753	742
046	Standard deviation	45	17	3	19	9	9	30	2	8
047	Top cap surface temperature, °F	280	299	258	290	301	281	252	257	267
047	Standard deviation	5	5	4	9	1	5	3	3	0
048	Top cap surface temperature, °F	176	195	185	191	194	192	173	182	187
048	Standard deviation	8	2	1	2	1	1	2	2	3
112	Port 6 insulation temperature, °F	286	293	293	291	290	287	(b)	(b)	(b)
112	Standard deviation	2	1	1	0	1	0	(b)	(b)	(b)
156	Gas exit wall temperature, °F	426	452	392	453	463	422	384	397	418
156	Standard deviation	9	3	9	5	3	6	5	3	1
171	Exit pipe wall temperature, °F	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
171	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Port 6 deep temperature, °F	176	196	184	191	194	192	174	182	185
043	Standard deviation	8	2	1	2	0	1	1	3	4

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
026	Port 6 wall temperature, °F	214	220	223	194	194	185	159	203
026	Standard deviation	1	1	1	2	2	2	5	11
027	Port 4 wall temperature, °F	257	260	265	238	225	224	197	242
027	Standard deviation	1	1	2	4	6	7	5	17
028	Port 1 wall temperature, °F	110	112	116	119	114	116	108	122
028	Standard deviation	0	2	1	4	1	5	4	4
029	Combustor wall surface temperature, °F	1371	1392	1445	1419	1333	1361	1334	1510
029	Standard deviation	8	9	3	15	12	8	42	25
040	Combustor bottom surface temperature, °F	192	180	202	281	374	409	420	456
040	Standard deviation	27	17	8	20	5	10	26	3
041	Combustor bottom deep temperature, °F	166	206	233	468	1060	1110	982	1261
041	Standard deviation	16	8	26	330	35	21	14	16
042	Combustor top shallow temperature, °F	878	886	917	952	889	894	798	975
042	Standard deviation	5	4	6	7	15	11	62	27
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	328	332	341	312	295	294	758	958
044	Standard deviation	2	1	2	5	3	8	12	43
045	Port 4 deep temperature °F	297	301	311	277	262	259	774	972
045	Standard deviation	2	1	3	5	5	7	11	41
046	Top cap deep temperature, °F	780	806	846	728	739	740	581	781
046	Standard deviation	10	6	6	8	4	5	25	35
047	Top cap surface tempera- ture, °F	287	294	311	330	338	328	251	328
047	Standard deviation	3	3	1	22	5	5	7	13
048	Top cap surface tempera- ture, °F	195	199	203	188	187	176	740	958
048	Standard deviation	1	2	1	3	2	2	32	57
112	Port 6 insulation tempera- ture, °F	(b)	(b)	(b)	292	290	287	287	291
112	Standard deviation	(b)	(b)	(b)	1	0	0	0	3
156	Gas exit wall temperature, °F	457	464	480	334	375	343	254	373
156	Standard deviation	3	7	5	41	2	3	7	12
171	Exit pipe wall tempera- ture, °F	(a)	(a)	(a)	1063	1142	1096	882	1244
171	Standard deviation	(b)	(b)	(b)	31	10	11	19	22
043	Port 6 deep temperature, °F	195	200	202	187	187	174	1021	1308
043	Standard deviation	1	2	1	2	3	3	37	65

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
026	Port 6 wall temperature, °F	217	213	199	191	184	191	171	185	198
026	Standard deviation	5	1	2	4	5	4	2	10	4
027	Port 4 wall temperature, °F	256	249	229	218	196	191	200	231	222
027	Standard deviation	6	4	4	6	3	4	2	9	7
028	Port 1 wall temperature, °F	126	125	117	116	108	107	111	113	117
028	Standard deviation	3	0	1	1	1	1	1	1	1
029	Combustor wall surface temperature, °F	1479	1469	1322	1425	1389	1369	1327	1432	1334
029	Standard deviation	12	16	9	19	19	15	16	24	25
040	Combustor bottom surface temperature, °F	447	467	430	452	440	421	400	418	424
040	Standard deviation	4	9	1	7	3	15	14	4	7
041	Combustor bottom deep temperature, °F	1198	1240	1116	1225	1080	1120	977	1126	962
041	Standard deviation	11	25	19	12	35	23	52	13	26
042	Combustor top shallow temperature, °F	996	983	884	899	904	890	860	911	906
042	Standard deviation	8	2	2	15	7	10	4	23	22
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	951	908	820	868	859	831	761	898	818
044	Standard deviation	10	12	3	18	8	16	12	41	28
045	Port 4 deep temperature °F	945	893	805	859	859	826	750	907	808
045	Standard deviation	12	13	3	19	9	16	13	44	28
046	Top cap deep temperature, °F	814	777	679	690	707	702	631	723	693
046	Standard deviation	4	11	6	17	11	9	4	41	27
047	Top cap surface tempera- ture, °F	330	320	247	261	317	306	262	340	283
047	Standard deviation	12	13	10	10	7	9	2	15	5
048	Top cap surface tempera- ture, °F	1021	967	850	856	850	854	774	902	871
048	Standard deviation	9	17	2	14	14	12	6	61	36
112	Port 6 insulation tempera- ture, °F	297	297	295	288	289	292	287	288	292
112	Standard deviation	0	0	0	1	1	0	0	0	1
156	Gas exit wall temperature, °F	373	332	276	280	342	330	278	408	297
156	Standard deviation	13	10	7	8	5	11	2	15	2
171	Exit pipe wall tempera- ture, °F	1201	1044	1004	1033	1040	1015	882	1195	899
171	Standard deviation	10	24	26	27	14	17	9	23	17
043	Port 6 deep temperature, °F	1362	1306	1176	1198	1190	1192	1092	1249	1192
043	Standard deviation	10	17	3	17	12	13	5	68	41

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
026	Port 6 wall temperature, °F	191	183	200	185	206	205	202	219
026	Standard deviation	1	7	2	3	9	1	4	4
027	Port 4 wall temperature, °F	210	218	222	212	226	229	234	237
027	Standard deviation	6	6	12	4	3	9	8	4
028	Port 1 wall temperature, °F	113	109	117	117	119	118	119	127
028	Standard deviation	1	2	2	0	1	1	2	2
029	Combustor wall surface temperature, °F	1307	1344	1392	1385	1404	1386	1435	1477
029	Standard deviation	17	28	10	3	8	37	15	4
040	Combustor bottom surface temperature, °F	407	413	459	458	436	441	456	480
040	Standard deviation	5	22	3	3	8	5	11	4
041	Combustor bottom deep temperature, °F	1025	1221	1092	1190	1203	1191	1252	1274
041	Standard deviation	34	23	28	12	20	54	19	28
042	Combustor top shallow temperature, °F	857	833	916	932	933	933	935	977
042	Standard deviation	4	29	9	2	3	6	14	8
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	813	832	844	851	883	873	907	941
044	Standard deviation	8	30	20	7	11	24	15	4
045	Port 4 deep temperature °F	808	830	837	846	882	868	908	946
045	Standard deviation	9	29	22	7	11	26	15	4
046	Top cap deep temperature, °F	670	675	701	710	764	754	758	793
046	Standard deviation	6	25	10	1	10	23	9	4
047	Top cap surface tempera- ture, °F	310	311	297	314	343	327	341	351
047	Standard deviation	5	16	4	1	6	13	3	2
048	Top cap surface tempera- ture, °F	831	827	867	872	915	923	938	983
048	Standard deviation	9	26	12	1	18	17	18	8
112	Port 6 insulation tempera- ture, °F	293	289	292	296	296	292	291	298
112	Standard deviation	1	0	1	0	1	1	2	2
156	Gas exit wall temperature, °F	351	350	317	353	390	354	389	399
156	Standard deviation	4	18	5	1	5	9	7	3
171	Exit pipe wall tempera- ture, °F	1013	1049	959	1042	1132	1040	1132	1145
171	Standard deviation	14	21	12	6	14	29	21	9
043	Port 6 deep temperature, °F	1162	1163	1201	1211	1261	1262	1283	1332
043	Standard deviation	9	31	15	2	19	21	18	6

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5V	H6	H7	H8
026	Port 6 wall temperature, °F	184	192	203	211	227	229	185	221	226
026	Standard deviation	5	2	3	3	2	1	9	2	2
027	Port 4 wall temperature, °F	213	211	212	215	251	255	208	246	247
027	Standard deviation	2	1	1	2	5	1	8	1	3
028	Port 1 wall temperature, °F	118	118	120	123	136	138	121	137	145
028	Standard deviation	1	1	1	1	2	1	4	1	3
029	Combustor wall surface temperature, °F	1343	1331	1322	1341	1478	1467	1365	1467	1503
029	Standard deviation	10	4	9	5	13	9	40	10	9
040	Combustor bottom surface temperature, °F	325	407	430	443	462	497	437	494	510
040	Standard deviation	37	3	3	3	1	6	29	1	5
041	Combustor bottom deep temperature, °F	750	1071	1199	1226	1343	1471	1438	1407	1435
041	Standard deviation	71	22	18	12	7	4	10	3	20
042	Combustor top shallow temperature, °F	803	804	816	831	894	887	697	891	933
042	Standard deviation	4	0	3	5	12	9	56	17	8
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	700	712	741	761	852	846	723	837	837
044	Standard deviation	4	4	8	3	12	9	53	3	2
045	Port 4 deep temperature, °F	1377	1418	1479	1505	1683	1668	1567	1624	1619
045	Standard deviation	10	6	17	7	15	9	55	4	7
046	Top cap deep temperature, °F	716	763	806	836	939	1004	812	963	966
046	Standard deviation	5	4	18	4	17	11	45	7	8
047	Top cap surface temperature, °F	283	300	285	306	359	382	230	243	246
047	Standard deviation	2	8	21	4	8	21	6	7	3
048	Top cap surface temperature, °F	773	828	884	925	1013	1013	807	991	1010
048	Standard deviation	11	7	15	7	15	9	56	11	2
112	Port 6 insulation temperature, °F	396	421	449	470	510	514	406	503	515
112	Standard deviation	6	3	7	3	7	3	26	6	1
156	Gas exit wall temperature, °F	284	316	321	326	390	415	318	317	295
156	Standard deviation	4	3	12	8	6	15	8	9	5
171	Exit pipe wall temperature, °F	880	1009	1018	1018	1018	1018	1018	1018	1018
171	Standard deviation	22	5	1	1	0	1	1	1	1
043	Port 6 deep temperature, °F	1316	1405	1497	1529	1691	1691	1572	1635	1630
043	Standard deviation	3	8	20	6	14	7	44	10	5

<sup>b</sup>Data or results were not obtained.



TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
026	Port 6 wall temperature, °F	219	216	211	201	193	156	194	205	209
026	Standard deviation	2	2	6	7	9	10	7	3	5
027	Port 4 wall temperature, °F	215	208	216	195	202	191	216	231	208
027	Standard deviation	6	4	4	8	5	10	8	2	6
028	Port 1 wall temperature, °F	143	141	148	161	171	147	161	169	169
028	Standard deviation	1	1	11	2	1	9	2	3	2
029	Combustor wall surface temperature, °F	1502	1504	1521	1384	1467	1268	1329	1337	1432
029	Standard deviation	9	6	6	18	12	27	15	7	17
040	Combustor bottom surface temperature, °F	504	490	496	474	487	417	462	460	481
040	Standard deviation	3	5	7	15	13	14	10	4	12
041	Combustor bottom deep temperature, °F	1367	1357	1420	1108	1373	1248	1313	1308	1434
041	Standard deviation	12	13	8	12	18	20	20	17	14
042	Combustor top shallow temperature, °F	941	947	950	909	897	709	801	818	844
042	Standard deviation	3	1	3	24	14	32	14	2	16
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	818	830	839	747	770	661	752	773	805
044	Standard deviation	5	4	2	37	27	37	12	4	14
045	Port 4 deep temperature °F	1620	1657	1665	1451	1598	1388	1505	1522	1632
045	Standard deviation	11	10	4	36	24	44	18	10	20
046	Top cap deep temperature, °F	927	962	967	841	860	663	806	891	931
046	Standard deviation	17	10	3	43	21	46	26	16	14
047	Top cap surface temperature, °F	227	229	220	176	208	253	295	328	340
047	Standard deviation	9	3	5	6	4	17	6	10	2
048	Top cap surface temperature, °F	1003	1020	1035	943	924	697	874	934	982
048	Standard deviation	3	7	3	45	26	60	27	8	18
112	Port 6 insulation temperature, °F	508	512	514	478	459	351	440	470	490
112	Standard deviation	1	2	3	20	15	29	15	4	7
156	Gas exit wall temperature, °F	278	305	285	218	271	271	325	358	362
156	Standard deviation	12	8	2	7	4	24	5	8	3
171	Exit pipe wall temperature, °F	1013	1018	1018	936	1018	1012	1018	1018	1018
171	Standard deviation	14	1	1	23	1	14	1	1	1
043	Port 6 deep temperature, °F	1631	6174	1679	1463	1602	1341	1513	1553	1647
043	Standard deviation	10	10	4	38	19	54	24	12	19

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
026	Port 6 wall temperature, °F	196	195	196	210	205	200
026	Standard deviation	1	2	4	2	3	1
027	Port 4 wall temperature, °F	222	213	213	231	228	226
027	Standard deviation	5	5	6	5	2	1
028	Port 1 wall temperature, °F	165	157	151	148	140	133
028	Standard deviation	5	1	3	2	2	2
029	Combustor wall surface temperature, °F	1458	1477	1491	1482	1472	1463
029	Standard deviation	11	6	8	9	5	3
040	Combustor bottom surface temperature, °F	485	471	405	416	420	418
040	Standard deviation	8	3	12	4	1	1
041	Combustor bottom deep temperature, °F	1341	1327	1012	1054	1135	1167
041	Standard deviation	15	14	91	70	9	28
042	Combustor top shallow temperature, °F	882	886	899	889	876	872
042	Standard deviation	2	3	2	4	3	2
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	827	833	848	855	848	844
044	Standard deviation	7	4	5	2	2	3
045	Port 4 deep temperature °F	1631	1671	1699	1686	1677	1667
045	Standard deviation	14	9	11	11	6	3
046	Top cap deep temperature, °F	972	977	1011	1020	1011	1001
046	Standard deviation	7	6	6	2	3	4
047	Top cap surface tempera- ture, °F	340	337	340	337	328	315
047	Standard deviation	7	1	4	9	7	9
048	Top cap surface tempera- ture, °F	1015	1026	1056	1060	1052	1048
048	Standard deviation	6	7	5	4	3	3
112	Port 6 insulation tempera- ture, °F	497	499	511	520	514	510
112	Standard deviation	3	2	3	1	3	1
156	Gas exit wall temperature, °F	364	370	376	326	327	334
156	Standard deviation	4	2	5	30	12	8
171	Exit pipe wall tempera- ture, °F	1018+	1018+	1018+	1018+	1018+	1018
171	Standard deviation	1	1	1	1	1	1
043	Port 6 deep temperature, °F	1644	1688	1720	1705	1700	1688
043	Standard deviation	14	10	11	9	6	5

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
026	Port 6 wall temperature, °F	182	212	212	199	195	193	197	198	200
026	Standard deviation	18	6	5	7	2	1	2	1	2
027	Port 4 wall temperature, °F	213	239	231	217	203	208	226	237	230
027	Standard deviation	14	9	4	9	2	3	9	2	2
028	Port 1 wall temperature, °F	108	114	114	114	112	112	112	114	114
028	Standard deviation	4	1	1	1	1	0	3	1	0
029	Combustor wall surface temperature, °F	1414	1463	1484	1366	1345	1336	1446	1480	1499
029	Standard deviation	47	9	5	25	3	5	18	7	11
040	Combustor bottom surface temperature, °F	453	472	491	476	459	456	459	466	487
040	Standard deviation	27	5	10	15	0	1	15	3	4
041	Combustor bottom deep temperature, °F	1443	1436	1488	1332	1334	1312	1435	1425	1460
041	Standard deviation	18	15	8	11	12	7	16	11	17
042	Combustor top shallow temperature, °F	766	864	888	863	824	818	819	878	899
042	Standard deviation	55	7	6	21	2	2	31	5	3
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	774	855	841	774	734	741	818	857	843
044	Standard deviation	62	4	5	35	2	2	28	3	2
045	Port 4 deep temperature °F	1630	1675	1650	1488	1484	1488	1660	1683	1653
045	Standard deviation	61	9	8	35	6	4	16	7	12
046	Top cap deep temperature, °F	834	1022	995	889	845	857	927	1034	1022
046	Standard deviation	88	25	11	41	3	3	34	14	2
047	Top cap surface temperature, °F	271	303	204	168	171	179	217	246	229
047	Standard deviation	35	39	6	7	2	2	13	1	5
048	Top cap surface temperature, °F	849	1031	1040	969	912	916	972	1046	1042
048	Standard deviation	98	16	8	37	1	1	37	9	2
112	Port 6 insulation temperature, °F	419	508	515	484	456	457	477	506	509
112	Standard deviation	49	9	6	17	1	1	16	4	2
156	Gas exit wall temperature, °F	327	363	269	234	254	263	285	288	263
156	Standard deviation	32	29	4	6	4	1	30	3	7
171	Exit pipe wall temperature, °F	1018+	1018+	1018+	1018+	1018+	1018+	1018+	1018+	1018+
171	Standard deviation	1	1	1	8	1	1	1	1	1
043	Port 6 deep temperature, °F	1603	1694	1661	1508	1507	1511	1672	1707	1670
043	Standard deviation	66	13	8	30	6	3	17	9	11

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test					
		I9	I10A	I10B	I11	I12	I13
026	Port 6 wall temperature, °F	198	197	201	197	175	169
026	Standard deviation	3	4	2	6	6	14
027	Port 4 wall temperature, °F	219	210	201	205	192	192
027	Standard deviation	12	6	1	4	3	15
028	Port 1 wall temperature, °F	113	116	113	114	105	101
028	Standard deviation	1	1	1	2	2	4
029	Combustor wall surface temperature, °F	1376	1336	1316	1327	1307	1395
029	Standard deviation	36	9	5	10	36	43
040	Combustor bottom surface temperature, °F	467	455	455	454	405	425
040	Standard deviation	15	3	2	2	15	34
041	Combustor bottom deep temperature, °F	1293	1293	1267	1278	1308	1412
041	Standard deviation	21	8	2	11	34	15
042	Combustor top shallow temperature, °F	872	828	815	811	749	734
042	Standard deviation	22	5	3	2	25	52
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	784	727	708	725	707	748
044	Standard deviation	38	5	4	11	37	67
045	Port 4 deep temperature, °F	1498	1432	1411	1468	1480	1609
045	Standard deviation	44	17	3	15	45	51
046	Top cap deep temperature, °F	952	864	817	816	799	810
046	Standard deviation	37	22	6	3	25	73
047	Top cap surface temperature, °F	213	200	193	194	204	201
047	Standard deviation	4	6	3	10	12	10
048	Top cap surface temperature, °F	981	907	877	885	851	863
048	Standard deviation	39	13	5	9	38	79
112	Port 6 insulation temperature, °F	489	462	452	450	423	417
112	Standard deviation	12	7	3	4	19	39
156	Gas exit wall temperature, °F	246	232	227	238	265	261
156	Standard deviation	2	10	1	5	17	10
171	Exit pipe wall temperature, °F	1018+	990	980	1016	1018+	1005
171	Standard deviation	1	13	16	4	1	32
043	Port 6 deep temperature, °F	1530	1459	1430	1484	1501	1615
043	Standard deviation	35	20	2	11	33	34

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
026	Port 6 wall temperature, °F	170	175	210	198	201	204	197	201	192
026	Standard deviation	5	3	2	7	4	2	3	5	3
027	Port 4 wall temperature, °F	189	196	220	199	236	237	227	201	206
027	Standard deviation	3	2	1	5	4	2	3	3	5
028	Port 1 wall temperature, °F	121	128	134	134	133	132	130	135	139
028	Standard deviation	4	2	1	1	0	1	1	4	2
029	Combustor wall surface temperature, °F	1338	1344	1419	1471	1485	1481	1492	1323	1368
029	Standard deviation	16	3	12	8	8	8	9	15	6
040	Combustor bottom surface temperature, °F	381	407	397	428	457	480	501	407	416
040	Standard deviation	10	10	3	6	12	2	3	6	1
041	Combustor bottom deep temperature, °F	739	1141	1224	1231	1352	1387	1448	1247	1237
041	Standard deviation	25	32	10	13	21	16	17	19	10
042	Combustor top shallow temperature, °F	811	844	865	900	922	920	930	811	849
042	Standard deviation	26	2	2	11	2	1	4	19	6
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	686	716	811	799	865	862	829	727	723
044	Standard deviation	17	12	4	6	3	2	8	22	2
045	Port 4 deep temperature °F	1395	1457	1614	1600	1672	1672	1600	1465	1438
045	Standard deviation	24	14	15	11	12	12	12	20	3
046	Top cap deep temperature, °F	710	788	944	915	1014	1021	925	832	783
046	Standard deviation	19	20	10	8	4	1	13	15	3
047	Top cap surface temperature, °F	245	273	285	282	332	343	281	244	245
047	Standard deviation	4	7	6	12	11	3	4	2	3
048	Top cap surface temperature, °F	786	846	989	993	1051	1054	1017	883	871
048	Standard deviation	26	19	12	7	5	2	15	17	3
112	Port 6 insulation temperature, °F	392	413	485	487	502	505	492	445	438
112	Standard deviation	13	8	7	6	3	1	7	9	1
156	Gas exit wall temperature, °F	263	310	363	322	390	396	308	316	271
156	Standard deviation	4	6	5	6	10	2	3	4	3
171	Exit pipe wall temperature, °F	717	980	998	867	1011	1016	815	803	791
171	Standard deviation	154	16	9	20	6	3	16	72	11
043	Port 6 deep temperature, °F	1352	1447	1631	1601	1691	1697	1607	1480	1426
043	Standard deviation	25	16	14	12	16	16	13	13	7

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
026	Port 6 wall temperature, °F	145	174	203	212	210	206	212	217	215
026	Standard deviation	13	10	7	0	1	3	2	3	1
027	Port 4 wall temperature, °F	182	209	233	214	208	218	231	242	240
027	Standard deviation	13	11	3	5	2	5	8	6	2
028	Port 1 wall temperature, °F	112	109	114	117	118	117	122	122	125
028	Standard deviation	9	4	1	1	0	0	2	2	2
029	Combustor wall surface temperature, °F	1220	1418	1405	1347	1324	1309	1426	1419	1442
029	Standard deviation	56	32	23	12	3	4	33	13	13
040	Combustor bottom surface temperature, °F	269	312	321	339	341	327	348	337	353
040	Standard deviation	38	19	7	3	2	3	8	7	1
041	Combustor bottom deep temperature, °F	647	581	1040	815	802	1010	827	1232	742
041	Standard deviation	66	34	129	15	3	27	7	47	59
042	Combustor top shallow temperature, °F	603	764	803	788	777	752	804	807	829
042	Standard deviation	84	44	21	3	3	8	30	25	12
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	623	780	836	772	732	759	819	855	822
044	Standard deviation	61	23	5	23	4	12	27	5	3
045	Port 4 deep temperature °F	1356	1599	1649	1503	1463	1528	1649	1672	1607
045	Standard deviation	61	31	13	26	5	9	39	8	11
046	Top cap deep temperature, °F	575	747	891	854	802	827	868	949	908
046	Standard deviation	75	48	24	23	8	12	19	18	6
047	Top cap surface tempera- ture, °F	241	346	400	332	309	334	330	393	356
047	Standard deviation	29	12	5	13	6	5	2	20	1
048	Top cap surface tempera- ture, °F	604	804	953	951	888	901	961	1031	1004
048	Standard deviation	85	55	31	25	9	11	25	13	5
112	Port 6 insulation tempera- ture, °F	293	390	457	480	454	449	477	503	505
112	Standard deviation	41	28	19	9	4	4	9	10	3
156	Gas exit wall temperature, °F	294	311	404	311	308	350	333	413	335
156	Standard deviation	27	12	14	9	1	9	5	12	1
171	Exit pipe wall tempera- ture, °F	106	1018+	1018+	1018+	1018+	1018+	1018+	1018+	1018+
171	Standard deviation	1	2	1	1	1	1	2	1	1
043	Port 6 deep temperature, °F	1235	1467	2633	3117	1434	2913	2543	1264	2267
043	Standard deviation	77	50	618	2	5	540	380	185	104

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
026	Port 6 wall temperature, °F	216	215	218	219	211	214	216
026	Standard deviation	0	1	4	3	3	1	3
027	Port 4 wall temperature, °F	241	232	236	238	231	234	240
027	Standard deviation	1	9	9	4	5	9	7
028	Port 1 wall temperature, °F	130	127	121	118	117	128	127
028	Standard deviation	0	2	3	4	4	2	3
029	Combustor wall surface temperature, °F	1476	1358	1427	1450	1363	1458	1482
029	Standard deviation	2	45	27	14	11	13	2
040	Combustor bottom surface temperature, °F	345	323	340	371	358	366	371
040	Standard deviation	5	7	9	7	2	1	4
041	Combustor bottom deep temperature, °F	598	766	1300	930	808	831	955
041	Standard deviation	42	161	28	22	11	17	6
042	Combustor top shallow temperature, °F	867	825	784	841	834	844	879
042	Standard deviation	3	31	12	16	10	14	5
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	841	798	845	838	769	814	860
044	Standard deviation	1	30	33	9	13	23	6
045	Port 4 deep temperature °F	1645	1547	1701	1630	1486	1637	1694
045	Standard deviation	5	42	31	12	14	22	2
046	Top cap deep temperature, °F	909	873	914	917	832	843	885
046	Standard deviation	2	25	37	16	16	15	5
047	Top cap surface tempera- ture, °F	356	343	420	371	316	339	349
047	Standard deviation	3	7	19	10	6	2	1
048	Top cap surface tempera- ture, °F	1011	975	1021	1040	948	955	1008
048	Standard deviation	1	27	41	17	20	19	8
112	Port 6 insulation tempera- ture, °F	505	489	499	518	479	482	499
112	Standard deviation	1	11	20	9	9	7	3
156	Gas exit wall temperature, °F	342	351	430	343	298	337	346
156	Standard deviation	2	5	11	10	2	2	1
171	Exit pipe wall tempera- ture, °F	1018+	1018+	990	1018+	1018+	1018+	1018+
171	Standard deviation	1	1	33	2	1	2	1
043	Port 6 deep temperature, °F	1789	2312	381	1777	2470	1691	940
043	Standard deviation	60	228	326	200	31	176	56

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter.	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
026	Port 6 wall temperature, °F	179	175	200	195	195
026	Standard deviation	37	39	23	29	28
027	Port 4 wall temperature, °F	215	210	228	219	230
027	Standard deviation	37	42	17	24	28
028	Port 1 wall temperature, °F	114	110	122	129	128
028	Standard deviation	11	13	8	14	15
029	Combustor wall surface temperature, °F	1312	1218	1461	1433	1469
029	Standard deviation	157	190	88	195	146
040	Combustor bottom surface temperature, °F	252	294	404	493	478
040	Standard deviation	64	60	73	69	89
041	Combustor bottom deep temperature, °F	582	1180	1243	1168	1102
041	Standard deviation	379	242	79	109	160
042	Combustor top shallow temperature, °F	673	575	863	859	860
042	Standard deviation	148	141	96	171	166
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	762	709	797	736	777
044	Standard deviation	160	194	70	142	131
045	Port 4 deep temperature °F	1566	1494	1589	1501	1583
045	Standard deviation	201	287	91	254	163
046	Top cap deep temperature, °F	763	710	852	835	808
046	Standard deviation	206	234	119	142	167
047	Top cap surface tempera- ture, °F	323	305	351	319	317
047	Standard deviation	75	85	44	66	61
048	Top cap surface tempera- ture, °F	839	797	936	912	889
048	Standard deviation	241	278	136	168	201
112	Port 6 insulation tempera- ture, °F	394	390	462	432	422
112	Standard deviation	104	124	64	87	86
156	Gas exit wall temperature, °F	323	301	329	320	322
156	Standard deviation	77	100	53	81	65
171	Exit pipe wall tempera- ture, °F	439	639	710	737	767
171	Standard deviation	144	239	130	226	166
043	Port 6 deep temperature, °F	1231	1229	1368	1304	1286
043	Standard deviation	241	310	134	201	223

<sup>b</sup>Data or results were not obtained.



TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data channel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
026	Port 6 wall temperature, °F	175	198	180	201	200	142	186	170
026	Standard deviation	44	37	47	18	35	35	27	32
027	Port 4 wall temperature, °F	217	239	220	235	226	175	218	205
027	Standard deviation	50	40	51	21	32	40	24	34
028	Port 1 wall temperature, °F	127	130	112	115	121	110	113	108
028	Standard deviation	18	14	12	7	10	13	9	7
029	Combustor wall surface temperature, °F	1189	1359	1265	1406	1396	1096	1399	1259
029	Standard deviation	331	228	269	105	200	316	129	251
040	Combustor bottom surface temperature, °F	377	399	335	383	350	268	375	246
040	Standard deviation	126	113	128	54	95	92	45	59
041	Combustor bottom deep temperature, °F	1030	1038	1001	1099	885	684	1212	977
041	Standard deviation	402	380	463	268	354	339	188	387
042	Combustor top shallow temperature, °F	711	801	602	738	266	593	818	647
042	Standard deviation	229	198	236	154	290	234	137	148
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow temperature, °F	750	869	797	932	911	581	783	695
044	Standard deviation	244	191	267	74	190	211	96	182
045	Port 4 deep temperature, °F	743	857	758	883	857	1281	1577	1444
045	Standard deviation	238	185	250	73	169	352	124	307
046	Top cap deep temperature, °F	574	718	611	738	781	485	804	690
046	Standard deviation	210	182	244	61	231	223	178	218
047	Top cap surface temperature, °F	273	283	202	201	281	166	297	278
047	Standard deviation	70	77	74	41	92	68	58	105
048	Top cap surface temperature, °F	688	851	728	908	877	551	883	775
048	Standard deviation	270	228	306	92	231	264	187	254
112	Port 6 insulation temperature, °F	348	420	365	438	428	268	430	380
112	Standard deviation	123	106	138	45	106	113	87	112
156	Gas exit wall temperature, °F	284	205	148	180	203	123	240	246
156	Standard deviation	83	70	63	42	61	56	92	106
171	Exit pipe wall temperature, °F	850	398	340	529	495	201	522	490
171	Standard deviation	242	208	250	167	206	202	297	267
043	Port 6 deep temperature, °F	976	1169	1010	1244	1203	1103	1537	1181
043	Standard deviation	356	283	398	101	292	377	157	301

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
026	Port 6 wall temperature, °F	180	203	204	217	208	203	194	176
026	Standard deviation	27	2	3	11	8	3	6	3
027	Port 4 wall temperature, °F	214	230	244	258	240	244	215	191
027	Standard deviation	29	7	10	5	18	1	5	2
028	Port 1 wall temperature, °F	129	147	149	154	154	154	130	134
028	Standard deviation	14	1	1	3	4	2	4	3
029	Combustor wall surface temperature, °F	1323	1382	1465	1501	1474	1517	1374	1412
029	Standard deviation	44	7	22	13	55	8	30	20
040	Combustor bottom surface temperature, °F	409	396	409	476	471	469	491	483
040	Standard deviation	40	37	33	15	28	3	15	4
041	Combustor bottom deep temperature, °F	1063	826	982	1215	1197	1097	1174	1033
041	Standard deviation	35	94	62	33	48	10	20	30
042	Combustor top shallow temperature, °F	716	810	843	911	893	916	778	842
042	Standard deviation	80	4	21	17	50	6	42	5
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	718	748	808	885	837	853	690	660
044	Standard deviation	70	17	31	16	69	4	13	9
045	Port 4 deep temperature °F	1471	1464	1609	1712	1659	1652	1362	1311
045	Standard deviation	55	18	24	16	74	19	22	24
046	Top cap deep temperature, °F	702	791	853	959	948	944	723	745
046	Standard deviation	87	6	26	24	54	5	39	9
047	Top cap surface tempera- ture, °F	278	256	301	330	262	300	299	270
047	Standard deviation	18	8	13	38	18	2	11	6
048	Top cap surface tempera- ture, °F	779	903	950	1049	1031	1050	774	799
048	Standard deviation	115	16	31	30	66	6	41	14
112	Port 6 insulation tempera- ture, °F	377	446	451	476	485	498	402	403
112	Standard deviation	59	4	7	19	21	1	19	7
156	Gas exit wall temperature, °F	320	236	330	351	228	286	308	235
156	Standard deviation	26	19	17	92	6	2	7	7
171	Exit pipe wall tempera- ture, °F	818	638	839	995	931	712	660	519
171	Standard deviation	50	51	21	(b)	27	8	11	19
043	Port 6 deep temperature, °F	1208	1274	1354	1480	1471	1474	1157	1168
043	Standard deviation	103	21	28	29	67	11	43	19

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
026	Port 6 wall temperature, °F	180	203	205	203	193	175	193	202	212
026	Standard deviation	6	5	2	3	10	6	3	3	1
027	Port 4 wall temperature, °F	198	225	236	212	198	195	209	226	238
027	Standard deviation	2	12	3	9	5	8	4	6	5
028	Port 1 wall temperature, °F	146	148	151	153	147	139	147	154	159
028	Standard deviation	3	6	3	1	6	6	1	3	0
029	Combustor wall surface temperature, °F	1529	1551	1549	1572	1446	1406	1411	1547	1544
029	Standard deviation	28	4	5	8	28	8	11	20	7
040	Combustor bottom surface temperature, °F	518	541	542	542	497	482	499	528	531
040	Standard deviation	20	1	1	1	25	7	3	10	3
041	Combustor bottom deep temperature, °F	1205	1251	1247	1218	987	1105	1130	1189	1180
041	Standard deviation	15	19	13	12	49	13	13	11	5
042	Combustor top shallow temperature, °F	885	929	933	943	904	865	868	924	952
042	Standard deviation	25	3	2	5	26	2	4	23	3
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	709	817	852	798	704	684	706	771	835
044	Standard deviation	32	32	2	23	36	8	6	23	15
045	Port 4 deep temperature °F	1454	1642	1665	1561	1378	1380	1403	1543	1653
045	Standard deviation	45	31	6	20	48	8	13	25	11
046	Top cap deep temperature, °F	787	916	973	924	819	778	792	839	914
046	Standard deviation	30	37	5	25	38	2	5	20	20
047	Top cap surface tempera- ture, °F	299	325	371	333	288	288	305	316	284
047	Standard deviation	8	7	11	11	14	4	3	2	11
048	Top cap surface tempera- ture, °F	831	986	1054	1002	882	816	837	894	995
048	Standard deviation	37	48	6	33	46	5	6	24	33
112	Port 6 insulation tempera- ture, °F	414	480	507	491	444	407	426	451	487
112	Standard deviation	16	19	3	12	23	4	5	10	12
156	Gas exit wall temperature, °F	280	346	380	301	256	292	314	312	302
156	Standard deviation	10	15	7	17	12	10	3	4	13
171	Exit pipe wall tempera- ture, °F	639	883	890	673	562	733	776	777	923
171	Standard deviation	31	15	10	8	10	20	17	17	61
043	Port 6 deep temperature, °F	1234	1426	1493	1418	1269	1225	1240	1313	1434
043	Standard deviation	44	50	5	31	52	4	7	25	31

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Continued. - Combustor wall temperature data

Data chan- nel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
026	Port 6 wall temperature, °F	170	200	196	216	211	178	198	192
026	Standard deviation	29	3	11	7	8	15	3	3
027	Port 4 wall temperature, °F	200	216	216	233	225	193	203	185
027	Standard deviation	29	10	21	8	6	14	5	14
028	Port 1 wall temperature, °F	112	131	123	135	140	116	132	125
028	Standard deviation	12	2	6	1	3	8	5	3
029	Combustor wall surface temperature, °F	1425	1522	1409	1524	1535	1429	1507	1529
029	Standard deviation	102	6	132	8	8	77	8	15
040	Combustor bottom surface temperature, °F	492	541	445	541	538	426	496	478
040	Standard deviation	68	3	79	4	6	73	3	10
041	Combustor bottom deep temperature, °F	1296	1281	1182	1274	1180	1012	1061	967
041	Standard deviation	62	15	133	6	29	52	22	41
042	Combustor top shallow temperature, °F	747	892	758	888	911	749	889	900
042	Standard deviation	130	5	72	13	3	102	6	3
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	769	837	720	835	800	728	811	754
044	Standard deviation	113	7	102	6	19	93	4	32
045	Port 4 deep temperature °F	1596	1642	1510	1632	1552	1542	1617	1494
045	Standard deviation	109	8	141	7	25	89	9	47
046	Top cap deep temperature, °F	760	935	802	910	895	789	907	867
046	Standard deviation	166	3	63	8	19	82	5	27
047	Top cap surface tempera- ture, °F	309	291	276	287	321	336	359	318
047	Standard deviation	41	17	46	13	16	31	1	14
048	Top cap surface tempera- ture, °F	843	1044	865	1010	983	844	1001	946
048	Standard deviation	196	2	82	15	27	107	7	36
112	Port 6 insulation tempera- ture, °F	404	502	436	501	490	417	487	468
112	Standard deviation	92	2	36	8	14	49	3	12
156	Gas exit wall temperature, °F	312	301	267	298	287	325	344	264
156	Standard deviation	50	10	62	10	15	29	1	19
171	Exit pipe wall tempera- ture, °F	793	824	701	778	629	774	817	575
171	Standard deviation	95	9	176	6	13	46	4	19
043	Port 6 deep temperature, °F	1308	1474	1307	1448	1394	1291	1429	1344
043	Standard deviation	187	3	97	10	29	107	3	42

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(d) Concluded. - Combustor wall temperature data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
026	Port 6 wall temperature, °F	194	189	221	199	208	212	221
026	Standard deviation	27	41	22	19	26	32	9
027	Port 4 wall temperature, °F	231	213	261	225	232	244	259
027	Standard deviation	26	38	22	21	28	36	14
028	Port 1 wall temperature, °F	141	119	151	143	136	154	131
028	Standard deviation	15	14	10	14	17	25	5
029	Combustor wall surface temperature, °F	1513	1452	1523	1505	1483	1511	1548
029	Standard deviation	115	176	56	69	120	115	10
040	Combustor bottom surface temperature, °F	524	493	498	507	508	521	519
040	Standard deviation	68	112	38	41	66	76	4
041	Combustor bottom deep temperature, °F	1286	1236	1045	1109	1190	1194	1185
041	Standard deviation	64	177	31	49	100	81	16
042	Combustor top shallow temperature, °F	872	799	931	891	844	891	938
042	Standard deviation	148	184	92	93	123	146	5
043	Combustor top deep temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
043	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
044	Port 4 shallow tempera- ture, °F	814	774	888	841	818	870	939
044	Standard deviation	106	163	69	65	106	125	8
045	Port 4 deep temperature °F	1623	1586	1702	1646	1602	1672	1745
045	Standard deviation	115	185	70	78	133	133	10
046	Top cap deep temperature, °F	863	821	936	891	876	891	975
046	Standard deviation	166	223	113	101	141	159	7
047	Top cap surface tempera- ture, °F	289	327	337	347	337	311	328
047	Standard deviation	63	66	28	35	51	48	21
048	Top cap surface tempera- ture, °F	951	893	1034	995	968	994	1082
048	Standard deviation	193	258	132	115	163	187	8
112	Port 6 insulation tempera- ture, °F	460	437	445	445	468	446	424
112	Standard deviation	88	121	47	49	76	78	27
156	Gas exit wall temperature, °F	272	305	324	329	300	304	291
156	Standard deviation	60	64	31	37	52	57	19
171	Exit pipe wall tempera- ture, °F	702	695	802	831	690	827	876
171	Standard deviation	122	150	93	109	150	128	51
043	Port 6 deep temperature, °F	1392	1321	1413	1405	1398	1408	1504
043	Standard deviation	187	280	118	106	163	183	12

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

## (e) PFB system solids discharge data

Data channel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
049	Solids discharge pipe temperature, °F	80	83	81	71	66	84	86	73	69
049	Standard deviation	7	5	6	4	2	4	3	1	1
118	Solids discharge coolant temperature, °F	82	75	71	67	70	107	92	76	74
118	Standard deviation	2	8	8	3	6	2	14	7	2
119	Solids discharge probe coolant temperature, °F	87	79	77	72	75	87	75	65	65
119	Standard deviation	1	8	8	1	6	1	10	0	2
023	Solids discharge, lb	50	31	23	(b)	(b)	3	2	(b)	(b)
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.7	15.1	14.7	15.3	14.5	15.5	15.8	15.4	16.2
136	Standard deviation	0.7	0.9	0.5	1.0	0	0.9	1.2	1.0	1.3
137	Gas sample venturi differential pressure, psid	0.2	0.4	0.1	0.5	0	0.6	0.8	0.6	1.1
137	Standard deviation	0.5	0.6	0.3	0.7	0	0.6	0.8	0.6	0.8
138	Gas sample temperature, °F	71	101	88	108	69	118	142	120	138
138	Standard deviation	39	40	26	47	10	37	42	54	39
025	Flyash solids, lb	3.7	6.6	5.2	(b)	(b)	5.5	(b)	(b)	(b)
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	165	221	240	237	200	202	231	191	213
139	Standard deviation	19	7	6	8	13	39	20	47	11
140	Hopper coolant temperature, °F	68	71	73	60	62	89	87	74	69
140	Standard deviation	1	2	5	2	3	2	2	1	2
141	Flyash collector temperature, °F	98	169	198	196	119	147	167	120	143
141	Standard deviation	28	23	10	13	24	30	33	40	26
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	884	883	878	880	899	243	230	221	218
165	Standard deviation	15	13	12	9	13	2	23	2	1
166	Collector gas temperature, °F	1655	1643	1617	1625	1650	(b)	(b)	(b)	(b)
166	Standard deviation	22	17	22	15	23	(b)	(b)	(b)	(b)
173	Collector wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
049	Solids discharge pipe temperature, °F	78	83	75	69	67	73	86	89
049	Standard deviation	4	3	2	1	1	4	2	1
118	Solids discharge coolant temperature, °F	81	89	72	69	71	73	78	76
118	Standard deviation	8	11	2	2	1	1	9	2
119	Solids discharge probe coolant temperature, °F	77	84	69	66	66	67	77	72
119	Standard deviation	9	9	1	1	1	1	9	1
023	Solids discharge, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	15.4	15.1	15.5	15.7	15.6	16.0	15.9	16.9
136	Standard deviation	0.8	0.8	1.1	1.1	1.2	1.2	1.2	1.1
137	Gas sample venturi differential pressure, psid	0.59	0.38	0.60	0.78	0.70	0.95	0.88	1.47
137	Standard deviation	0.55	0.53	0.71	0.74	0.75	0.76	0.76	0.64
138	Gas sample temperature, °F	123	114	119	118	123	126	132	152
138	Standard deviation	25	27	30	27	37	35	28	37
025	Flyash solids, lb	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	200	229	220	198	214	219	161	250
139	Standard deviation	18	40	18	16	17	14	22	10
140	Hopper coolant temperature, °F	77	86	78	72	68	72	87	90
140	Standard deviation	5	2	2	2	1	4	2	2
141	Flyash collector temperature, °F	148	159	187	170	172	160	138	195
141	Standard deviation	22	37	16	14	21	25	15	17
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Collector gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Collector wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
049	Solids discharge pipe temperature, °F	59	60	56	51	66	74	76
049	Standard deviation	1	1	3	3	3	1	1
118	Solids discharge coolant temperature, °F	80	74	73	78	82	97	96
118	Standard deviation	5	1	1	3	8	5	2
119	Solids discharge probe coolant temperature, °F	78	67	68	69	72	83	83
119	Standard deviation	6	1	1	1	6	2	2
023	Solids discharge, lb	(b)	4.1	4.4	4.4	7.8	6.3	5.4
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	34.3	48.9	42.9	49.6	33.1	43.5	48.8
136	Standard deviation	26.3	19.4	20.9	27.4	10.5	17.9	31.1
137	Gas sample venturi differ- ential pressure, psid	0.07	0.36	0.29	0.51	0.18	0.22	0.15
137	Standard deviation	0.05	0.31	0.34	0.40	0.08	0.14	0.09
138	Gas sample temperature, °F	82	121	108	128	106	116	112
138	Standard deviation	37	46	53	66	18	32	28
025	Flyash solids, lb	(b)	2.9	3.2	5.4	3.4	5.1	1.9
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	120	184	186	185	154	191	217
139	Standard deviation	52	27	15	34	13	26	26
140	Hopper coolant tempera- ture, °F	62	60	58	52	63	72	73
140	Standard deviation	1	1	2	2	4	2	1
141	Flyash collector tempera- ture, °F	95	136	142	133	129	160	172
141	Standard deviation	42	41	37	34	18	41	62
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.



TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
049	Solids discharge pipe temperature, °F	69	67	75	71	63	70	78
049	Standard deviation	4	1	2	2	2	4	1
118	Solids discharge coolant temperature, °F	84	76	72	77	78	94	84
118	Standard deviation	1	3	10	1	4	4	5
119	Solids discharge probe coolant temperature, °F	81	75	64	77	78	81	76
119	Standard deviation	0	3	17	1	4	1	2
023	Solids discharge, lb	(b)	(b)	(b)	0.65	0.55	5.90	(b)
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.9	14.9	(b)	16.6	15.0	15.8	14.5
136	Standard deviation	1.2	1.9	(b)	1.7	1.7	2.5	0.1
137	Gas sample venturi differ- ential pressure, psid	0.36	0.63	(b)	0.95	0.62	0.62	0
137	Standard deviation	0.45	0.47	(b)	0.02	0.33	0.80	0
138	Gas sample temperature, °F	102	121	54	134	111	118	98
138	Standard deviation	44	50	8	58	39	72	29
025	Flyash solids, lb	32.5	12.4	6.8	4.6	6.4	12.5	(b)
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	156	140	83	182	153	192	151
139	Standard deviation	20	19	21	15	11	12	15
140	Hopper coolant tempera- ture, °F	77	73	65	75	67	72	83
140	Standard deviation	3	1	2	2	3	6	1
141	Flyash collector tempera- ture, °F	146	119	107	144	111	121	110
141	Standard deviation	18	32	13	21	12	23	18
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
049	Solids discharge pipe temperature, °F	73	71	71	70	66	69	77	85
049	Standard deviation	2	2	7	2	2	8	7	7
118	Solids discharge coolant temperature, °F	93	86	86	92	86	87	94	95
118	Standard deviation	1	2	2	6	2	3	4	5
119	Solids discharge probe coolant temperature, °F	86	84	84	72	69	72	79	83
119	Standard deviation	0	1	2	2	1	3	2	2
023	Solids discharge, lb	12.3	30.9	70.4	51.4	30.3	52.2	185	139
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.4	15.2	24.5	33.5	39.3	19.1	32.0	14.6
136	Standard deviation	0.1	0.9	16.2	19.6	16.3	9.3	24.8	1.0
137	Gas sample venturi differential pressure, psid	0.03	0.55	0.09	0.11	0.31	0.17	0.12	0.09
137	Standard deviation	0	0.55	0.08	0.06	0.20	0.11	0.07	0.31
138	Gas sample temperature, °F	71	114	74	80	118	74	88	86
138	Standard deviation	2	36	20	30	34	22	36	25
025	Flyash solids, lb	1.8	17.5	40.3	10.0	0.4	11.6	56.7	54.5
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	131	176	171	140	85	133	189	180
139	Standard deviation	41	35	22	22	6	32	25	42
140	Hopper coolant temperature, °F	77	73	74	71	65	68	78	84
140	Standard deviation	1	2	6	4	3	7	6	6
141	Flyash collector temperature, °F	87	140	130	98	65	94	115	126
141	Standard deviation	12	35	25	16	4	22	33	42
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Collector gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Collector wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
049	Solids discharge pipe temperature, °F	82	80	82	76	81	83	88
049	Standard deviation	5	3	5	4	4	4	3
118	Solids discharge coolant temperature, °F	92	92	92	89	(b)	111	117
118	Standard deviation	2	4	3	4	(b)	3	3
119	Solids discharge probe coolant temperature, °F	84	89	93	95	(b)	90	99
119	Standard deviation	1	2	4	4	(b)	5	2
023	Solids discharge, lb	82.2	96.5	28.3	35.4	32.3	8.4	19.4
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	13.9	14.9	15.0	16.3	13.8	14.5	14.5
136	Standard deviation	1.6	1.2	1.0	4.2	1.5	0	0
137	Gas sample venturi differ- ential pressure, psid	0.01	0.22	0.18	0.92	1.49	0.01	(b)
137	Standard deviation	0	0.46	0.32	1.07	0	0.01	(b)
138	Gas sample temperature, °F	79	90	81	109	78	79	84
138	Standard deviation	6	34	9	55	11	4	3
025	Flyash solids, lb	27.6	16.3	3.1	14.3	9.5	1.5	3.5
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	179	168	144	204	169	227	219
139	Standard deviation	27	23	10	20	13	5	23
140	Hopper coolant tempera- ture, °F	84	81	86	78	81	86	92
140	Standard deviation	5	3	5	4	3	3	2
141	Flyash collector tempera- ture, °F	110	111	106	135	111	135	140
141	Standard deviation	18	21	18	19	13	6	18
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
166	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Collector wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
173	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Flyash hopper tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
174	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Collector gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
175	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Filter wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
176	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test							
		E1	E2	E3	E4	R5	E6	E9	E8
049	Solids discharge pipe temperature, °F	54	62	61	58	51	46	48	54
049	Standard deviation	4	2	2	1	2	2	2	2
118	Solids discharge coolant temperature, °F	67	68	68	70	69	68	69	66
118	Standard deviation	1	0	0	4	1	0	1	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	13.9	366	4.7	13.7	8.1	1.1	11.0	10.6
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.9	20.4	14.8	15.1	17.1	16.1	15.3	14.4
136	Standard deviation	0.9	7.3	1.0	1.2	4.3	2.6	1.1	0.3
137	Gas sample venturi differential pressure, psid	0.25	3.80	0.30	0.39	0.91	0.62	0.38	0.04
137	Standard deviation	0.29	0.73	0.34	0.39	1.29	0.82	0.34	0.08
138	Gas sample temperature, °F	94	144	126	108	123	118	102	48
138	Standard deviation	21	90	29	20	58	37	25	2
025	Flyash solids, lb	7.6	14.1	5.3	20.6	4.8	5.9	2.8	5.4
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	194	190	162	135	125	119	136	183
139	Standard deviation	19	10	5	12	4	6	5	6
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	339	339	339	339	339	339	339	339
141	Standard deviation	0	0	0	1	1	0	0	0
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	446	460	429	422	407	364	469	492
165	Standard deviation	10	4	34	32	3	1	4	16
166	Collector gas temperature, °F	341	360	348	348	324	287	330	354
166	Standard deviation	6	2	10	12	3	8	2	10
173	Collector wall temperature, °F	93	88	81	69	64	74	79	85
173	Standard deviation	1	3	2	3	2	4	4	4
174	Flyash hopper temperature, °F	118	137	104	101	82	85	87	98
174	Standard deviation	2	7	8	4	4	4	4	4
175	Collector gas temperature, °F	1398	1405	1414	1475	1375	1193	1287	1309
175	Standard deviation	12	5	29	24	11	39	12	37
176	Filter wall temperature, °F	66	78	78	73	67	66	60	72
176	Standard deviation	2	2	1	2	1	2	1	2
180	Collector differential pressure, psid	0.01	(b)	(b)	(b)	(b)	(b)	0.02	(b)
180	Standard deviation	0	(b)	(b)	(b)	(b)	(b)	0	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
049	Solids discharge pipe temperature, °F	66	65	67	62	53	50	51
049	Standard deviation	3	2	4	1	2	1	0
118	Solids discharge coolant temperature, °F	64	64	67	64	64	63	65
118	Standard deviation	1	1	6	1	1	1	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	4.9	7.3	9.1	1.2	3.6	6.5	1.5
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	21.4	32.3	33.5	30.5	35.1	37.6	16.1
136	Standard deviation	7.9	8.8	8.5	13.5	9.9	10.8	3.3
137	Gas sample venturi differ- ential pressure, psid	2.3	3.4	4.5	3.3	3.5	3.5	1.9
137	Standard deviation	1.6	0.7	1.0	1.5	0.8	0.8	0.9
138	Gas sample temperature, °F	124	102	205	121	133	124	69
138	Standard deviation	52	22	26	35	38	34	3
025	Flyash solids, lb	5.9	3.8	0.5	1.4	0.8	1.4	1.0
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	164	149	151	141	132	133	123
139	Standard deviation	26	3	2	4	7	6	4
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	339	339	339	339	339	339	339
141	Standard deviation	0	0	0	0	0	0	0
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	462	438	448	437	424	377	401
165	Standard deviation	49	4	5	2	7	4	4
166	Collector gas tempera- ture, °F	1440	1625	1637	1559	1424	1355	1429
166	Standard deviation	35	31	11	12	14	13	28
173	Collector wall tempera- ture, °F	72	69	70	69	62	61	64
173	Standard deviation	2	1	0	1	1	1	1
174	Flyash hopper tempera- ture, °F	69	65	66	65	60	59	62
174	Standard deviation	2	0	1	1	1	1	1
175	Collector gas tempera- ture, °F	1409	1603	1610	1528	1398	1325	1400
175	Standard deviation	41	29	11	9	12	12	28
176	Filter wall tempera- ture, °F	68	66	68	69	65	63	66
176	Standard deviation	1	0	1	1	1	1	1
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
049	Solids discharge pipe temperature, °F	55	70	68	65	60	56	68	56	64
049	Standard deviation	4	3	2	1	2	1	2	2	1
118	Solids discharge coolant temperature, °F	68	69	69	67	68	68	67	68	69
118	Standard deviation	0	0	0	1	0	0	0	0	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	1.0	2.0	1.7	1.6	1.3	0.5	0.4	0.6	0.8
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	16.8	16.3	15.8	17.3	15.7	14.3	14.3	16.3	17.5
136	Standard deviation	1.8	2.5	1.1	2.7	1.8	0	0	1.5	0.9
137	Gas sample venturi differential pressure, psid	1.4	1.7	0.8	1.7	1.3	0	(b)	1.1	1.2
137	Standard deviation	0.1	0	0	0.5	0.2	0	(b)	0.1	0.3
138	Gas sample temperature, °F	195	161	159	165	156	109	74	134	184
138	Standard deviation	47	61	50	75	43	14	2	54	58
025	Flyash solids, lb	8.2	26.4	5.2	12.3	5.7	2.0	8.4	8.1	10.8
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	231	239	237	244	223	182	149	171	178
139	Standard deviation	23	34	38	26	31	8	4	27	30
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	78	89	88	89	89	82	90	84	93
165	Standard deviation	3	2	1	1	2	1	1	2	0
166	Collector gas temperature, °F	83	89	88	94	95	87	90	87	94
166	Standard deviation	1	2	1	3	2	2	1	2	0
173	Collector wall temperature, °F	66	79	80	78	74	69	80	68	73
173	Standard deviation	3	3	1	0	2	1	2	3	1
174	Flyash hopper temperature, °F	63	76	78	77	73	68	80	70	71
174	Standard deviation	3	3	0	0	2	1	2	3	1
175	Collector gas temperature, °F	65	80	78	77	73	69	78	68	75
175	Standard deviation	4	3	1	0	2	1	2	2	1
176	Filter wall temperature, °F	68	82	83	82	79	74	82	73	73
176	Standard deviation	2	3	1	0	1	1	1	2	1
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
049	Solids discharge pipe temperature, °F	65	65	64	68	65	58	56	65
049	Standard deviation	0	1	0	1	1	1	0	5
118	Solids discharge coolant temperature, °F	69	69	67	67	69	67	68	71
118	Standard deviation	0	0	0	1	0	3	0	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	0.6	0.7	5.7	1.7	13.3	3.6	0.5	15.5
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	17.0	16.7	16.6	15.9	18.9	17.7	16.5	17.6
136	Standard deviation	2.7	2.2	1.9	2.3	5.2	3.8	2.4	4.0
137	Gas sample venturi differ- ential pressure, psid	1.6	1.6	1.5	0.9	1.8	1.3	0.9	1.3
137	Standard deviation	0.6	0	0	0.9	2.0	1.5	0.9	1.6
138	Gas sample temperature, °F	176	180	177	128	178	178	109	159
138	Standard deviation	68	52	56	66	99	70	61	92
025	Flyash solids, lb	8.6	6.8	6.2	7.3	6.3	4.2	7.7	8.0
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	199	209	198	135	159	140	108	184
139	Standard deviation	40	39	43	38	41	32	25	51
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	101	101	101	272	301	285	253	401
165	Standard deviation	1	1	2	32	3	3	5	8
166	Collector gas tempera- ture, °F	100	103	104	1419	1333	1271	745	1075
166	Standard deviation	1	1	1	34	23	18	25	29
173	Collector wall tempera- ture, °F	76	76	76	85	87	79	79	86
173	Standard deviation	1	1	1	2	1	1	3	3
174	Flyash hopper tempera- ture, °F	75	76	76	94	99	93	88	101
174	Standard deviation	1	0	1	7	3	3	4	4
175	Collector gas tempera- ture, °F	79	80	79	1372	1426	1412	1214	1586
175	Standard deviation	1	1	1	43	9	13	24	21
176	Filter wall tempera- ture, °F	79	81	81	86	92	84	73	90
176	Standard deviation	1	1	1	4	0	1	1	4
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
049	Solids discharge pipe temperature, °F	77	75	72	65	61	66	57	59	67
049	Standard deviation	1	1	1	1	2	2	0	1	1
118	Solids discharge coolant temperature, °F	69	69	67	69	68	70	69	70	68
118	Standard deviation	2	0	0	0	1	0	0	1	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	14.5	0.5	3.5	4.5	10.3	11.1	0.5	10.0	1.8
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	17.8	16.0	17.3	17.1	17.7	17.2	16.3	17.0	16.0
136	Standard deviation	3.8	1.7	3.0	1.8	3.4	3.1	2.3	2.9	2.0
137	Gas sample venturi differential pressure, psid	3.1	1.4	2.5	1.2	1.4	2.5	0.8	1.1	1.0
137	Standard deviation	0	0	0	0.7	1.4	0.1	1.0	1.2	0.8
138	Gas sample temperature, °F	188	167	146	145	156	144	121	160	127
138	Standard deviation	75	33	65	38	81	67	49	70	43
025	Flyash solids, lb	7.0	4.2	49.5	1.5	3.3	1.4	3.2	15.1	1.6
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	189	151	149	143	146	136	110	181	115
139	Standard deviation	46	30	14	23	31	25	18	35	18
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	399	340	306	311	398	388	322	508	357
165	Standard deviation	10	6	5	6	6	8	3	20	5
166	Collector gas temperature, °F	1069	982	886	949	1489	1467	1328	1659	1353
166	Standard deviation	7	22	11	15	38	26	19	24	26
173	Collector wall temperature, °F	94	96	89	88	84	83	76	80	85
173	Standard deviation	2	1	1	2	1	1	0	6	1
174	Flyash hopper temperature, °F	107	110	101	98	97	97	91	100	99
174	Standard deviation	2	4	2	3	4	4	3	10	3
175	Collector gas temperature, °F	1528	1419	1315	1408	1376	1350	1206	1543	1232
175	Standard deviation	10	22	15	21	29	20	14	26	27
176	Filter wall temperature, °F	101	99	88	82	88	92	80	90	89
176	Standard deviation	2	1	1	1	2	2	1	3	1
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

C-3



TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
049	Solids discharge pipe temperature, °F	69	62	67	76	75	67	66	79
049	Standard deviation	1	1	2	0	2	2	4	2
118	Solids discharge coolant temperature, °F	71	68	68	69	70	69	72	70
118	Standard deviation	0	1	0	0	0	0	2	1
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	16.1	11.6	0.7	2.4	14.6	7.3	18.1	10.4
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	17.3	18:2	16.2	18.1	17.0	17.5	16.9	17.1
136	Standard deviation	3.7	3.8	2.0	0	2.7	3.4	2.4	2.1
137	Gas sample venturi differential pressure, psid	3.2	1.5	1.0	1.4	2.1	1.5	0.8	0.8
137	Standard deviation	0.1	1.5	0.7	0	0.1	1.3	0.9	0.8
138	Gas sample temperature, °F	149	185	143	199	172	174	128	140
138	Standard deviation	63	72	39	15	58	54	33	28
025	Flyash solids, lb	3.0	2.3	3.1	0.4	6.4	3.3	7.1	4.2
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	140	139	128	135	189	147	164	157
139	Standard deviation	21	14	10	3	20	19	17	13
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	428	437	382	429	506	447	505	512
165	Standard deviation	8	15	9	3	6	13	3	2
166	Collector gas temperature, °F	1422	1503	1421	1462	1571	1475	1605	1630
166	Standard deviation	25	30	22	10	18	53	24	18
173	Collector wall temperature, °F	88	82	85	88	89	90	88	97
173	Standard deviation	1	2	1	1	2	3	2	3
174	Flyash hopper temperature, °F	103	96	98	101	102	103	102	109
174	Standard deviation	3	5	3	2	3	4	3	4
175	Collector gas temperature, °F	1317	1364	1282	1335	1460	1369	1486	1504
175	Standard deviation	21	27	21	6	10	44	17	14
176	Filter wall temperature, °F	95	86	90	100	102	92	93	104
176	Standard deviation	1	2	2	1	1	3	3	4
180	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
180	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
049	Solids discharge pipe temperature, °F	83	80	78	76	88	92	78	80	87
049	Standard deviation	2	0	1	1	2	1	1	1	2
118	Solids discharge coolant temperature, °F	71	71	74	76	76	77	74	72	75
118	Standard deviation	1	0	1	1	1	0	1	1	1
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	1.0	6.0	9.0	12.9	6.4	5.1	9.6	7.1	4.4
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	18.2	16.8	14.6	14.7	14.6	14.2	15.7	15.0	14.7
136	Standard deviation	2.6	1.4	0.5	0.8	0.9	0.1	2.0	1.5	0.6
137	Gas sample venturi differ- ential pressure, psid	3.0	1.7	0.6	0.6	1.3	(b)	2.0	1.7	0.5
137	Standard deviation	0.4	0.2	0.1	0.5	(b)	(b)	0.5	0.2	0.1
138	Gas sample temperature, °F	199	235	148	140	109	101	134	164	152
138	Standard deviation	103	58	40	35	35	2	72	55	32
025	Flyash solids, lb	4.3	4.5	10.6	11.1	4.9	2.3	3.3	2.9	4.6
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	234	189	168	152	152	162	192	179	168
139	Standard deviation	10	33	32	23	15	5	29	15	26
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	231	240	238	249	285	302	230	232	229
165	Standard deviation	4	1	9	3	4	4	5	3	3
166	Collector gas tempera- ture, °F	1369	1468	1543	1564	1741	1747	1696	1685	1662
166	Standard deviation	10	10	21	6	12	4	28	7	10
173	Collector wall tempera- ture, °F	96	92	88	86	97	105	91	94	100
173	Standard deviation	2	1	1	1	3	0	1	1	2
174	Flyash hopper tempera- ture, °F	109	106	102	98	108	115	98	106	110
174	Standard deviation	2	3	1	1	3	1	2	2	3
175	Collector gas tempera- ture, °F	1161	1315	1389	1386	1539	1569	1508	1534	1475
175	Standard deviation	15	8	20	8	11	4	34	15	8
176	Filter wall tempera- ture, °F	98	99	96	95	110	120	100	106	114
176	Standard deviation	3	2	1	1	3	1	2	2	4
180	Collector differential pressure, psid	0.6	1.0	2.1	1.5	3.0	3.2	3.1	2.4	1.2
180	Standard deviation	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.2	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
049	Solids discharge pipe temperature, °F	75	72	69	67	70	60	75	83	70
049	Standard deviation	3	1	1	1	1	2	2	3	2
118	Solids discharge coolant temperature, °F	75	72	69	67	71	65	67	67	68
118	Standard deviation	1	1	1	1	4	3	9	1	1
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	12.9	11.2	11.5	5.9	2.2	8.3	2.2	3.9	25.3
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	16.3	15.8	14.5	14.4	16.0	14.9	13.6	13.4	13.7
136	Standard deviation	2.4	2.1	0.4	0.2	2.0	1.7	0.6	0.5	0.8
137	Gas sample venturi differential pressure, psid	2.4	0.7	0.2	0.1	2.1	1.6	0.4	0.3	0.7
137	Standard deviation	0.2	1.0	0.2	0.1	0.1	0.3	0.3	0.2	0.2
138	Gas sample temperature, °F	203	195	143	92	149	175	134	126	124
138	Standard deviation	90	68	20	14	100	120	26	33	47
025	Flyash solids, lb	3.5	10.4	3.9	4.6	7.0	9.6	13.7	26.9	10.4
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	144	153	149	107	143	163	184	194	153
139	Standard deviation	11	15	23	9	25	39	7	65	35
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall temperature, °F	219	227	218	178	209	208	233	254	260
165	Standard deviation	6	4	2	5	3	16	3	8	1
166	Collector gas temperature, °F	1665	1718	1709	1458	1668	1439	1560	1596	1687
166	Standard deviation	11	9	7	22	15	32	18	16	19
173	Collector wall temperature, °F	90	86	81	78	81	70	83	92	78
173	Standard deviation	2	2	1	1	1	3	2	1	4
174	Flyash hopper temperature, °F	103	99	94	89	93	83	95	108	91
174	Standard deviation	2	2	2	2	2	5	3	2	4
175	Collector gas temperature, °F	1466	1551	1530	1288	1466	1286	1414	1463	1519
175	Standard deviation	18	15	7	23	18	57	16	13	14
176	Filter wall temperature, °F	109	107	101	91	100	72	90	103	102
176	Standard deviation	3	1	2	2	2	5	3	3	3
180	Collector differential pressure, psid	1.1	2.3	1.6	0.5	1.4	1.4	1.6	2.4	2.2
180	Standard deviation	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
049	Solids discharge pipe temperature, °F	64	62	68	66	56	52
049	Standard deviation	1	1	1	3	3	2
118	Solids discharge coolant temperature, °F	70	71	71	71	70	70
118	Standard deviation	0	2	0	1	0	0
119	Solids discharge probe coolant temperature, °F	174	174	175	175	175	176
119	Standard deviation	0	0	1	0	0	0
023	Solids discharge, lb	4.3	4.3	0.9	9.6	3.9	5.3
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.8	15.1	15.1	16.0	14.9	13.2
136	Standard deviation	1.7	1.9	2.3	3.3	1.8	0
137	Gas sample venturi differ- ential pressure, psid	1.7	1.9	2.3	3.0	1.9	(b)
137	Standard deviation	0.2	0.2	0.2	0.9	0.2	(b)
138	Gas sample temperature, °F	177	195	183	220	206	119
138	Standard deviation	90	74	99	79	68	31
025	Flyash solids, lb	7.2	18.7	28.9	18.1	13.2	8.6
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	167	156	125	153	154	138
139	Standard deviation	33	36	26	31	24	5
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	1.4	1.7	1.8	1.9	1.9	1.9
150	Standard deviation	0	0.2	0.1	0.1	0.1	0.1
165	Collector wall tempera- ture, °F	262	262	265	260	261	255
165	Standard deviation	5	2	3	6	4	3
166	Collector gas tempera- ture, °F	1671	1717	1742	1726	1725	1711
166	Standard deviation	21	12	16	10	9	10
173	Collector wall tempera- ture, °F	72	72	77	76	72	69
173	Standard deviation	2	1	1	1	2	1
174	Flyash hopper tempera- ture, °F	88	90	95	92	92	90
174	Standard deviation	2	3	3	1	2	3
175	Collector gas tempera- ture, °F	1520	1557	1567	1561	1558	1538
175	Standard deviation	15	12	9	9	10	7
176	Filter wall tempera- ture, °F	93	88	91	91	80	73
176	Standard deviation	4	1	2	3	3	2
180	Collector differential pressure, psid	1.5	1.8	2.1	2.1	2.2	2.2
180	Standard deviation	0.1	0.2	0	0	0.1	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
049	Solids discharge pipe temperature, °F	68	69	61	57	56	58	65	60	57
049	Standard deviation	2	4	2	1	1	1	1	2	1
118	Solids discharge coolant temperature, °F	69	69	68	67	68	68	69	68	67
118	Standard deviation	1	1	2	1	0	0	0	0	0
119	Solids discharge probe coolant temperature, °F	175	175	177	177	176	176	174	175	176
119	Standard deviation	0	1	1	0	1	0	0	1	0
023	Solids discharge, lb	8.6	10.7	7.5	7.9	2.6	4.0	6.8	7.1	5.1
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.6	15.4	14.6	14.6	14.6	14.6	16.8	16.7	18.5
136	Standard deviation	0	1.7	0	0	0	0.1	2.2	3.3	2.0
137	Gas sample venturi differential pressure, psid	0	0.6	(b)	(b)	(b)	(b)	2.1	2.7	2.4
137	Standard deviation	0	1.2	(b)	(b)	(b)	(b)	0.6	1.6	0.3
138	Gas sample temperature, °F	61	103	66	56	53	55	149	161	197
138	Standard deviation	3	56	4	2	0	2	96	88	65
025	Flyash solids, lb	11.8	14.6	6.2	2.3	0.4	5.0	2.2	2.6	0.2
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	144	148	139	132	138	147	187	197	204
139	Standard deviation	11	13	2	3	3	24	59	40	29
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	0.07	0.09	0.05	0.05	0.05	0.07	0.08	0.09	0.08
150	Standard deviation	0	0	0	0.01	0	0	0.01	0	0.04
165	Collector wall temperature, °F	242	264	209	186	193	197	225	237	221
165	Standard deviation	19	14	3	6	2	1	8	1	2
166	Collector gas temperature, °F	1700	1737	1685	1512	1548	1545	1722	1748	1704
166	Standard deviation	41	19	10	16	9	7	17	14	15
173	Collector wall temperature, °F	80	85	75	71	69	69	76	77	76
173	Standard deviation	5	4	2	1	1	1	2	1	3
174	Flyash hopper temperature, °F	94	106	89	88	81	84	102	107	99
174	Standard deviation	8	6	2	2	0	1	3	4	2
175	Collector gas temperature, °F	1534	1594	1508	1342	1389	1400	1549	1593	1528
175	Standard deviation	49	14	8	21	11	5	12	16	16
176	Filter wall temperature, °F	83	98	85	75	73	76	88	83	74
176	Standard deviation	8	2	3	2	1	1	2	1	0
180	Collector differential pressure, psid	3.0	4.7	2.1	1.2	2.2	2.5	3.3	5.2	2.7
180	Standard deviation	0.1	0.2	0	0	0.1	0	0.2	0.2	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test					
		I9	I10A	I10B	I11	I12	I13
049	Solids discharge pipe temperature, °F	57	64	67	66	53	58
049	Standard deviation	2	2	0	4	1	2
118	Solids discharge coolant temperature, °F	67	67	66	68	68	68
118	Standard deviation	0	1	0	1	1	1
119	Solids discharge probe coolant temperature, °F	176	175	173	174	177	176
119	Standard deviation	1	0	3	1	0	0
023	Solids discharge, lb	5.7	6.2	2.3	7.5	9.3	7.1
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	15.8	14.6	16.9	15.8	14.5	15.9
136	Standard deviation	1.4	0	0.4	1.4	0	2.5
137	Gas sample venturi differ- ential pressure, psid	1.3	(b)	1.1	1.3	(b)	2.7
137	Standard deviation	0.4	(b)	0.2	0.1	(b)	0.7
138	Gas sample temperature, °F	163	107	199	159	57	104
138	Standard deviation	47	24	5	60	4	87
025	Flyash solids, lb	0.7	0.2	0.1	4.4	3.5	6.0
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	169	128	160	157	173	119
139	Standard deviation	34	24	7	33	21	9
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	0.05	0.09	0.07	0.06	0.13	0.07
150	Standard deviation	0.01	0.06	0.04	0.01	0.04	0.02
165	Collector wall tempera- ture, °F	205	196	191	199	205	208
165	Standard deviation	4	6	1	3	11	10
166	Collector gas tempera- ture, °F	1546	1486	1460	1520	1572	1727
166	Standard deviation	24	23	5	8	29	11
173	Collector wall tempera- ture, °F	75	78	80	77	67	70
173	Standard deviation	1	2	1	5	1	10
174	Flyash hopper tempera- ture, °F	98	96	94	95	91	83
174	Standard deviation	3	3	2	3	6	5
175	Collector gas tempera- ture, °F	1404	1332	1297	1354	1418	1491
175	Standard deviation	25	30	5	7	26	20
176	Filter wall tempera- ture, °F	73	78	81	82	71	75
176	Standard deviation	1	1	0	2	1	3
180	Collector differential pressure, psid	2.3	1.5	1.4	1.7	2.8	2.1
180	Standard deviation	0.2	0.4	0.1	0.1	0.2	0.2

b) Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
049	Solids discharge pipe temperature, °F	55	54	65	47	59	61	53	68	66
049	Standard deviation	1	1	1	6	2	1	1	2	3
118	Solids discharge coolant temperature, °F	67	68	67	68	58	57	57	68	67
118	Standard deviation	0	1	0	0	1	0	0	1	4
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	2.0	0.4	1.0	1.2	0.5	0.6	1.0	1.0	1.3
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	14.5	15.8	15.3	14.9	16.4	15.8	14.2	13.4	13.3
136	Standard deviation	0.8	2.0	1.7	1.1	3.1	2.1	0.5	0	0
137	Gas sample venturi differential pressure, psid	0.9	2.1	1.5	1.2	2.6	1.9	0.6	(b)	(b)
137	Standard deviation	0.1	0.4	0.6	0	1.3	0.6	0	(b)	(b)
138	Gas sample temperature, °F	89	177	181	164	197	216	141	77	66
138	Standard deviation	55	96	75	52	86	86	27	1	2
025	Flyash solids, lb	20.5	19.8	27.3	9.3	13.1	12.2	5.6	4.2	7.5
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	145	192	252	171	259	262	147	203	142
139	Standard deviation	17	50	37	20	32	40	33	12	8
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	0.36	0.99	2.72	0.81	2.87	2.66	0.61	1.41	0.35
150	Standard deviation	0.15	0.05	0.06	0.06	0.17	0.16	0.03	0.02	0.04
165	Collector wall temperature, °F	210	233	253	239	277	281	235	229	205
165	Standard deviation	5	4	4	5	6	4	3	1	1
166	Collector gas temperature, °F	1375	1483	1662	1602	1716	1733	1599	1513	1427
166	Standard deviation	27	12	24	16	25	23	21	17	7
173	Collector wall temperature, °F	69	70	86	66	78	81	74	81	81
173	Standard deviation	1	1	2	6	3	1	1	3	3
174	Flyash hopper temperature, °F	82	83	130	81	97	94	84	90	86
174	Standard deviation	3	1	12	7	1	1	3	4	2
175	Collector gas temperature, °F	1191	1346	1532	1435	1579	1592	1422	1385	1094
175	Standard deviation	30	13	17	12	19	21	10	15	61
176	Filter wall temperature, °F	78	84	92	82	98	104	88	83	81
176	Standard deviation	1	2	0	3	2	1	4	2	0
180	Collector differential pressure, psid	0.77	1.65	2.89	0.92	3.18	2.87	0.62	1.69	0.60
180	Standard deviation	0.12	0.18	0.08	0.07	0.29	0.28	0.05	0.31	0.07

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
049	Solids discharge pipe temperature, °F	80	79	77	77	74	68	62	60
049	Standard deviation	8	6	7	3	6	2	3	5
118	Solids discharge coolant temperature, °F	71	75	71	76	75	68	68	66
118	Standard deviation	2	3	2	3	4	3	1	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	394	173	95	124	309	7.1	11.7	14.9
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	15.4	15.1	14.4	15.5	14.4	14.1	14.3	16.0
136	Standard deviation	1.9	2.1	0.1	2.1	0.1	0.1	0.4	2.1
137	Gas sample venturi differ- ential pressure, psid	1.2	1.1	(b)	0.9	0.2	(b)	0.3	0.8
137	Standard deviation	0.7	0.5	(b)	1.2	0.1	(b)	0.3	1.0
138	Gas sample temperature, °F	159	128	73	149	71	67	81	134
138	Standard deviation	72	59	5	48	5	3	37	78
025	Flyash solids, lb	26.4	815	28.9	44.8	114	46.5	77.6	42.9
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	154	130	136	157	180	87	145	127
139	Standard deviation	42	38	55	28	50	25	58	47
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	235	237	181	221	247	138	265	253
165	Standard deviation	60	80	79	47	75	65	82	109
166	Collector gas tempera- ture, °F	959	1207	1051	1526	1433	718	1463	1232
166	Standard deviation	173	482	627	163	443	614	311	657
173	Collector wall tempera- ture, °F	93	93	89	88	88	72	77	85
173	Standard deviation	9	7	8	5	6	3	5	7
174	Flyash hopper tempera- ture, °F	100	99	94	96	96	76	89	94
174	Standard deviation	10	11	13	5	9	3	11	10
175	Collector gas tempera- ture, °F	1227	1182	943	1431	1335	586	373	219
175	Standard deviation	328	528	630	201	469	540	190	95
176	Filter wall tempera- ture, °F	95	123	119	139	135	72	89	91
176	Standard deviation	11	30	34	16	26	3	12	11
180	Collector differential pressure, psid	1.0	1.3	0.9	1.5	1.3	0.4	0.9	1.4
180	Standard deviation	0.4	0.5	0.7	0.2	0.2	0.5	0.5	0.5

<sup>b</sup>Data or results were not obtained.



TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
049	Solids discharge pipe temperature, °F	60	58	63	66	69	71	69	72	73
049	Standard deviation	1	1	3	2	0	1	1	2	1
118	Solids discharge coolant temperature, °F	67	66	67	66	67	68	68	68	67
118	Standard deviation	2	0	0	0	0	0	0	2	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	0.6	0.4	5.4	1.3	0.9	2.3	2.2	4.5	9.9
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	17.8	16.1	19.5	15.8	15.5	20.6	16.9	24.2	17.5
136	Standard deviation	1.7	0.5	5.1	0.5	0.3	1.8	1.0	3.3	0.3
137	Gas sample venturi differ- ential pressure, psid	1.8	0.9	2.4	0.7	0.5	3.0	1.3	4.7	1.7
137	Standard deviation	0.9	0.2	2.4	0.2	0.2	0.9	0.5	1.6	0.2
138	Gas sample temperature, °F	242	185	268	214	232	354	237	365	303
138	Standard deviation	72	40	104	42	20	29	26	69	9
025	Flyash solids, lb	5.6	4.4	27.6	18.9	8.9	10.4	84.2	62.9	8.3
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	168	199	231	185	215	234	170	231	182
139	Standard deviation	31	14	33	23	26	4	12	23	3
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
165	Collector wall tempera- ture, °F	219	241	291	242	232	251	249	284	250
165	Standard deviation	21	8	5	7	2	3	3	8	1
166	Collector gas tempera- ture, °F	1364	1541	1662	1477	1442	1533	1618	1710	1601
166	Standard deviation	41	35	11	18	5	10	30	12	10
173	Collector wall tempera- ture, °F	80	81	86	83	86	85	89	106	95
173	Standard deviation	12	12	2	7	2	1	9	9	4
174	Flyash hopper tempera- ture, °F	95	94	124	102	100	105	102	178	113
174	Standard deviation	9	6	10	4	1	3	5	9	4
175	Collector gas tempera- ture, °F	123	1318	1511	1296	1129	1392	1421	1569	1415
175	Standard deviation	2	45	11	24	78	13	31	10	23
176	Filter wall tempera- ture, °F	77	80	99	97	93	101	100	110	106
176	Standard deviation	5	4	5	2	1	3	1	5	1
180	Collector differential pressure, psid	1.0	1.1	3.3	0.7	0.8	1.9	0.9	3.6	0.7
180	Standard deviation	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
049	Solids discharge pipe temperature, °F	73	72	73	70	72	72	75
049	Standard deviation	0	1	2	1	0	1	1
118	Solids discharge coolant temperature, °F	68	68	69	52	54	66	67
118	Standard deviation	0	0	1	5	7	1	1
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	0.5	1.5	1.5	6.8	0.9	1.0	0.5
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	16.7	17.9	17.7	14.7	14.6	14.6	14.6
136	Standard deviation	0.2	1.5	8.1	0	0	0	0
137	Gas sample venturi differ- ential pressure, psid	1.2	1.7	1.4	0	0	0	0
137	Standard deviation	0.1	0.9	3.9	0	0	0	0
138	Gas sample temperature, °F	279	325	220	92	78	77	78
138	Standard deviation	10	73	116	9	0	1	0
025	Flyash solids, lb	1.6	21.9	69.5	14.9	15.1	1.0	0.4
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	199	216	202	128	117	120	103
139	Standard deviation	3	25	29	7	3	6	6
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	0.64	1.03	3.12	0.56	0.33	0.57	0.88
150	Standard deviation	0.04	0.11	0.37	0.03	0.03	0.02	0.05
165	Collector wall tempera- ture, °F	255	252	296	253	228	252	257
165	Standard deviation	1	4	10	8	1	2	0
166	Collector gas tempera- ture, °F	1627	1541	1774	1624	1470	1611	1651
166	Standard deviation	6	29	30	16	15	14	6
173	Collector wall tempera- ture, °F	88	98	114	93	95	92	93
173	Standard deviation	1	12	12	8	8	1	1
174	Flyash hopper tempera- ture, °F	105	112	253	116	106	106	102
174	Standard deviation	2	10	29	12	3	2	1
175	Collector gas tempera- ture, °F	1448	1397	1625	1432	1282	1418	1449
175	Standard deviation	9	23	23	17	15	14	9
176	Filter wall tempera- ture, °F	106	106	119	109	99	103	106
176	Standard deviation	1	0	4	4	1	1	0
180	Collector differential pressure, psid	0.8	1.4	4.3	0.7	0.4	0.7	1.0
180	Standard deviation	0.2	0.1	0.2	0.1	0	0.1	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
049	Solids discharge pipe temperature, °F	60	65	65	58	68
049	Standard deviation	5	3	2	6	4
118	Solids discharge coolant temperature, °F	59	63	56	60	63
118	Standard deviation	2	0	3	2	7
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	45.2	3.9	22.0	350	2320
023	Standard deviation	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	16.7	15.9	16.2	16.3	17.1
136	Standard deviation	2.2	3.1	2.6	1.8	2.8
137	Gas sample venturi differ- ential pressure, psid	1.2	2.3	1.0	0.9	2.3
137	Standard deviation	1.1	0.8	1.2	0.8	0.6
138	Gas sample temperature, °F	175	122	146	166	214
138	Standard deviation	84	77	65	74	93
025	Flyash solids, lb	51.4	137	40.8	292	270
025	Standard deviation	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	127	119	128	165	170
139	Standard deviation	37	39	34	65	53
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	(b)	1.3	1.4	4.5	4.1
150	Standard deviation	(b)	0.1	0.3	1.8	1.5
165	Collector wall tempera- ture, °F	296	243	326	318	327
165	Standard deviation	95	54	52	79	61
166	Collector gas tempera- ture, °F	1442	1475	1570	1493	1547
166	Standard deviation	476	400	235	352	236
173	Collector wall tempera- ture, °F	91	86	91	83	87
173	Standard deviation	5	10	5	6	20
174	Flyash hopper tempera- ture, °F	99	94	98	90	98
174	Standard deviation	9	10	5	8	11
175	Collector gas tempera- ture, °F	1321	231	324	1114	1476
175	Standard deviation	366	76	54	626	221
176	Filter wall tempera- ture, °F	94	104	103	98	106
176	Standard deviation	9	17	9	16	20
180	Collector differential pressure, psid	1.62	1.27	1.69	6.45	4.85
180	Standard deviation	0.51	0.46	0.31	2.31	2.04

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
049	Solids discharge pipe temperature, °F	75	79	81	80	74	68	79	59
049	Standard deviation	12	4	3	5	6	2	3	2
118	Solids discharge coolant temperature, °F	67	65	67	69	67	66	66	66
118	Standard deviation	0	1	0	1	1	0	0	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	18.4	48.1	26.9	42.1	32.7	2.9	16.0	10.6
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	19.7	15.1	15.7	20.5	22.9	18.3	16.5	15.0
136	Standard deviation	3.8	0.6	1.4	6.2	6.0	2.5	1.1	0.7
137	Gas sample venturi differential pressure, psid	3.2	0.4	0.7	5.3	5.6	1.9	1.0	0.4
137	Standard deviation	1.4	0.2	0.6	0.3	0.7	1.2	0.6	0.4
138	Gas sample temperature, °F	217	168	161	236	330	238	204	109
138	Standard deviation	117	27	38	143	85	39	41	20
025	Flyash solids, lb	38.3	45.2	16.2	52.6	72.2	2.8	20.4	11.2
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	190	141	191	207	228	178	180	106
139	Standard deviation	46	21	49	50	43	8	12	16
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	7.6	1.9	4.2	5.6	5.7	2.6	1.7	0.9
150	Standard deviation	1.1	0.1	0.4	2.0	2.1	0	0	0.2
165	Collector wall temperature, °F	321	258	339	361	266	304	308	256
165	Standard deviation	28	18	15	57	25	2	8	7
166	Collector gas temperature, °F	1513	1428	1577	1745	1716	1626	1393	1318
166	Standard deviation	41	13	13	19	41	19	25	26
173	Collector wall temperature, °F	90	98	93	88	77	73	90	78
173	Standard deviation	14	2	9	8	4	2	5	11
174	Flyash hopper temperature, °F	99	111	109	127	116	103	104	88
174	Standard deviation	16	2	3	10	19	3	3	4
175	Collector gas temperature, °F	1407	1358	1491	1678	1661	1571	1300	1246
175	Standard deviation	51	15	17	29	46	20	34	31
176	Filter wall temperature, °F	96	94	105	124	91	88	112	84
176	Standard deviation	13	3	5	5	16	2	4	3
180	Collector differential pressure, psid	14.7	2.1	4.8	10.9	8.3	2.2	3.7	2.9
180	Standard deviation	2.1	0.3	0.6	3.1	0.8	0.1	0.2	0.3

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data channel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
049	Solids discharge pipe temperature, °F	59	63	61	54	55	51	62	63	67
049	Standard deviation	2	2	2	2	1	4	2	2	1
118	Solids discharge coolant temperature, °F	65	66	66	64	63	60	63	63	64
118	Standard deviation	1	0	1	0	0	8	0	0	2
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	29.7	24.4	22.8	4.3	6.7	30.0	48.0	30.5	22.3
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	15.5	19.3	19.8	15.7	14.6	16.1	17.4	15.8	19.0
136	Standard deviation	1.0	3.3	3.7	0.9	0.3	1.8	2.4	1.0	4.2
137	Gas sample venturi differential pressure, psid	0.7	2.6	2.4	0.7	0.1	0.8	1.0	0.5	1.4
137	Standard deviation	0.5	0.9	1.5	0.4	0.1	1.0	0.8	0.3	1.2
138	Gas sample temperature, °F	156	297	305	165	78	181	229	163	235
138	Standard deviation	39	74	72	33	10	109	48	32	81
025	Flyash solids, lb	26.2	35.9	22.7	9.3	6.0	26.1	35.0	21.7	36.0
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper temperature, °F	145	235	226	145	117	156	177	160	231
139	Standard deviation	22	42	35	24	20	35	28	28	48
140	Hopper coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	1.4	4.1	4.1	1.4	0.8	2.0	7.7	8.9	6.3
150	Standard deviation	0.2	0.1	0.1	0.1	0.1	0.1	2.9	1.0	0.2
165	Collector wall temperature, °F	294	346	374	316	275	293	312	321	319
165	Standard deviation	11	14	6	16	13	8	3	4	8
166	Collector gas temperature, °F	1483	1684	1702	1562	1374	1407	1422	1533	1679
166	Standard deviation	30	15	9	14	31	12	13	15	12
173	Collector wall temperature, °F	77	73	68	63	77	62	82	87	85
173	Standard deviation	14	4	2	7	1	5	7	12	3
174	Flyash hopper temperature, °F	124	106	108	81	85	74	90	98	150
174	Standard deviation	66	10	8	10	4	4	5	4	16
175	Collector gas temperature, °F	1393	1611	1636	1486	1306	1350	1368	1464	1627
175	Standard deviation	34	19	9	18	33	8	9	16	14
176	Filter wall temperature, °F	92	105	116	96	88	87	102	104	97
176	Standard deviation	2	4	2	7	2	2	4	0	4
180	Collector differential pressure, psid	3.5	7.8	7.7	3.6	2.6	4.5	4.3	3.4	7.0
180	Standard deviation	0.3	0.2	0.7	0.2	0.1	0.3	0.2	0.3	1.1

bData or results were not obtained.

TABLE 4. - Continued.

(e) Continued. - PFB system solids discharge data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
049	Solids discharge pipe temperature, °F	66	67	84	65	73	77	73
049	Standard deviation	5	5	8	8	10	9	9
118	Solids discharge coolant temperature, °F	65	66	73	67	69	71	73
118	Standard deviation	3	1	3	1	2	6	2
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	1380	154	482	439	518	71.7	107
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	18.3	18.7	19.9	21.3	20.2	28.5	23.0
136	Standard deviation	1.9	2.3	2.1	2.4	3.2	4.8	5.6
137	Gas sample venturi differ- ential pressure, psid	1.8	1.7	1.9	1.9	1.5	1.0	1.8
137	Standard deviation	0.7	0.4	0.5	0.4	0.6	0.3	1.0
138	Gas sample temperature, °F	209	207	277	287	224	191	250
138	Standard deviation	55	52	44	43	49	44	93
025	Flyash solids, lb	186	176	494	767	144	91.7	80.1
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	191	177	245	256	216	280	283
139	Standard deviation	40	33	36	34	42	54	31
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	5.3	2.4	3.8	3.5	3.5	3.7	3.8
150	Standard deviation	0.8	0.5	0.6	0.6	0.8	0.6	0.3
165	Collector wall tempera- ture, °F	292	313	340	337	315	315	319
165	Standard deviation	57	68	31	39	54	58	9
166	Collector gas tempera- ture, °F	1630	1556	1689	1642	1611	1668	1742
166	Standard deviation	206	352	72	140	255	161	16
173	Collector wall tempera- ture, °F	76	70	88	66	76	80	78
173	Standard deviation	7	4	8	9	10	9	9
174	Flyash hopper tempera- ture, °F	95	90	105	92	95	101	95
174	Standard deviation	9	8	8	8	10	11	11
175	Collector gas tempera- ture, °F	1567	1492	1619	1582	1510	1574	1657
175	Standard deviation	215	371	75	74	290	200	21
176	Filter wall tempera- ture, °F	92	97	114	101	103	112	111
176	Standard deviation	14	9	9	10	11	12	8
180	Collector differential pressure, psid	5.2	3.2	5.4	5.1	4.3	5.0	5.9
180	Standard deviation	0.9	0.6	0.7	0.6	1.0	1.0	0.6

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(e) Concluded. - PFB system solids discharge data

Data chan- nel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
049	Solids discharge pipe temperature, °F	59	53	76	74	69	60	55	52
049	Standard deviation	3	3	1	1	3	3	1	1
118	Solids discharge coolant temperature, °F	68	69	69	68	69	67	69	66
118	Standard deviation	0	3	1	1	3	2	3	0
119	Solids discharge probe coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
023	Solids discharge, lb	36.7	24.3	29.8	27.3	24.9	50.7	46.3	23.6
023	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
136	Gas sample pressure, psia	21.2	20.1	20.2	22.3	18.5	20.9	19.9	16.6
136	Standard deviation	2.0	2.8	3.7	1.2	1.3	2.8	2.5	1.3
137	Gas sample venturi differ- ential pressure, psid	1.9	1.7	1.7	1.9	0.7	2.0	1.7	0.4
137	Standard deviation	0.4	0.4	0.8	0.3	0.1	0.3	0.1	0.2
138	Gas sample temperature, °F	274	280	252	309	229	298	311	184
138	Standard deviation	71	42	89	15	19	74	45	20
025	Flyash solids, lb	48.8	8.9	40.3	29.4	28.8	60.2	56.6	33.8
025	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
139	Flyash hopper tempera- ture, °F	186	180	169	185	145	187	203	120
139	Standard deviation	30	15	38	4	9	29	23	10
140	Hopper coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Flyash collector tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Collector differential pressure, psid	1.0	0.7	2.7	3.0	1.3	3.4	3.5	1.0
150	Standard deviation	0.1	0	0.9	0.2	0	0.2	0.2	0.1
165	Collector wall tempera- ture, °F	312	310	269	310	303	318	346	286
165	Standard deviation	54	7	64	7	12	48	1	19
166	Collector gas tempera- ture, °F	1645	1670	1540	1652	1543	1600	1636	1472
166	Standard deviation	68	22	286	9	24	41	12	39
173	Collector wall tempera- ture, °F	60	53	79	76	70	61	55	52
173	Standard deviation	5	4	3	2	2	3	1	1
174	Flyash hopper tempera- ture, °F	85	76	91	93	90	79	76	69
174	Standard deviation	6	4	5	3	4	3	4	2
175	Collector gas tempera- ture, °F	1572	1612	1380	1544	1425	1488	1567	1394
175	Standard deviation	83	14	371	8	21	85	10	42
176	Filter wall tempera- ture, °F	88	77	93	95	101	95	102	88
176	Standard deviation	10	3	9	3	4	11	1	5
180	Collector differential pressure, psid	1.6	1.1	3.7	2.0	1.0	5.4	5.7	1.6
180	Standard deviation	0.1	0.2	0.8	0.4	0.1	0.3	0.2	0.1

bData or results were not obtained.

Table 4. - Continued

## (f) Coolant system data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	68	66	64	54	57	81	74	63	62
077	Standard deviation	0	6	7	1	5	1	7	1	2
078	Coolant inlet pressure, psia	55.7	53.0	50.0	51.2	47.9	55.4	52.9	56.1	50.9
078	Standard deviation	0.6	4.2	3.0	2.3	4.7	0.9	14.7	0.5	2.9
079	Coolant flow rate, gal/min	1.95	1.73	1.75	1.67	1.68	1.07	0.86	0.76	0.91
079	Standard deviation	0.02	0.29	0.10	0.07	0.14	0.02	0.24	0	0.23
080	Coolant outlet pressure, psia	35.2	35.5	32.4	35.2	31.8	43.0	43.9	49.5	40.9
080	Standard deviation	0.3	2.3	1.4	2.7	2.5	0.4	11.2	0.4	7.7
081	Outlet 1 coolant tempera- ture, °F	73	68	63	56	59	77	66	57	57
081	Standard deviation	1	8	9	1	7	0	9	0	1
082	Outlet 2 coolant tempera- ture, °F	74	68	62	56	59	77	66	57	56
082	Standard deviation	1	8	9	1	7	0	10	0	1
083	Outlet 3 coolant tempera- ture, °F	74	68	63	56	59	77	66	57	56
083	Standard deviation	1	8	9	1	7	0	9	0	1
084	Outlet 4 coolant tempera- ture, °F	74	68	62	56	58	77	66	57	56
084	Standard deviation	1	8	9	1	7	0	10	0	1
085	Outlet 5 coolant tempera- ture, °F	119	121	113	109	112	129	130	131	122
085	Standard deviation	2	4	6	2	4	1	12	1	13
086	Outlet 6 coolant tempera- ture, °F	74	68	62	56	59	77	66	57	56
086	Standard deviation	1	8	9	1	7	0	9	0	1
087	Outlet 7 coolant tempera- ture, °F	74	68	62	56	59	77	66	58	57
087	Standard deviation	1	8	9	1	7	0	9	0	1
088	Outlet 8 coolant tempera- ture, °F	115	115	109	103	106	130	130	131	123
088	Standard deviation	2	4	7	2	4	1	13	1	14
089	Outlet 9 coolant tempera- ture, °F	74	68	63	56	59	77	66	58	57
089	Standard deviation	1	8	9	1	7	0	9	0	1

FOLDOUT FRAME /



087	Outlet 7 coolant temperature, °F	74	68	62	56	59	77	66	58	57
087	Standard deviation	1	8	9	1	7	0	9	0	1
088	Outlet 8 coolant temperature, °F	115	115	109	103	106	130	130	131	123
088	Standard deviation	2	4	7	2	4	1	13	1	14
089	Outlet 9 coolant temperature, °F	74	68	63	56	59	77	66	58	57
089	Standard deviation	1	8	9	1	7	0	9	0	1
090	Outlet 10 coolant temperature, °F	74	68	63	56	59	77	66	57	56
090	Standard deviation	1	8	9	1	7	0	9	0	1
091	Outlet 11 coolant temperature, °F	74	68	63	56	59	77	66	57	57
091	Standard deviation	1	8	9	1	7	0	9	0	1
092	Outlet 12 coolant temperature, °F	74	68	63	56	59	77	66	57	57
092	Standard deviation	1	8	9	1	7	0	9	0	1
093	Outlet 13 coolant temperature, °F	74	68	63	56	59	77	66	58	57
093	Standard deviation	1	8	9	1	7	0	9	0	1
094	Outlet 14 coolant temperature, °F	119	120	112	108	110	139	135	137	129
094	Standard deviation	2	4	7	2	4	1	10	1	15
095	Outlet 15 coolant temperature, °F	74	68	62	56	59	77	66	57	56
095	Standard deviation	1	8	9	1	7	0	9	0	1
096	Outlet 16 coolant temperature, °F	74	68	63	56	59	77	66	57	57
096	Standard deviation	1	8	9	1	7	0	9	0	1
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	26.5	23.8	24.0	22.8	23.0	20.0	16.4	14.7	17.5
097	Standard deviation	0.2	3.5	1.3	0.8	1.7	0.3	4.5	0.1	4.3
098	Coolant outlet temperature, °F	85	81	75	69	72	91	83	77	74
098	Standard deviation	1	6	8	1	6	0	7	0	3.7
101	Coolant flow rate, gal/min	1.86	1.77	1.68	1.69	1.61	1.45	1.57	1.86	1.73
101	Standard deviation	0.01	0.11	0.10	0.06	0.11	0.02	0.23	0.01	0.09
102	Coolant outlet pressure, °F	42.6	40.8	38.7	39.6	37.5	47.4	43.1	43.1	39.7
102	Standard deviation	0.4	3.0	2.0	1.8	3.4	0.6	12.5	0.4	1.9
103	Outlet 17 coolant temperature, °F	73	68	62	56	58	76	66	57	56
103	Standard deviation	1	8	9	1	7	0	10	0	1

<sup>b</sup> Data or results were not obtained.

FOLDOUT FRAME

2

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
104	Outlet 18 coolant tempera- ture, °F	(b)	54	46	54	53	68	61	56	55
104	Standard deviation	(b)	9	13	1	6	1	8	0	1
105	Outlet 19 coolant tempera- ture, °F	74	68	62	56	59	77	66	57	56
105	Standard deviation	1	8	9	1	7	0	10	0	1
106	Outlet 20 coolant tempera- ture, °F	74	68	62	56	59	77	66	57	56
106	Standard deviation	1	8	9	1	7	0	10	0	1
107	Outlet 21 coolant tempera- ture, °F	74	68	62	56	58	77	66	57	56
107	Standard deviation	1	8	9	1	7	0	10	0	2
108	Outlet 22 coolant tempera- ture, °F	69	69	68	56	61	84	78	65	63
108	Standard deviation	1	4	6	2	5	1	6	1	1
109	Outlet 23 coolant tempera- ture, °F	74	68	62	56	59	77	66	57	56
109	Standard deviation	1	8	9	1	7	0	10	0	1
110	Outlet 24 coolant tempera- ture, °F	74	68	63	56	59	77	66	57	57
110	Standard deviation	1	8	9	1	7	0	9	0	1
111	Outlet 25 coolant tempera- ture, °F	73	68	62	56	59	77	66	57	56
111	Standard deviation	1	8	9	1	7	0	10	0	1
112	Outlet 26 coolant tempera- ture, °F	73	68	63	56	59	77	66	57	57
112	Standard deviation	1	8	9	1	7	0	10	0	1
113	Coolant flow rate, gal/min	11.4	10.9	10.3	10.4	9.9	8.8	9.6	11.4	10.7
113	Standard deviation	0.1	0.7	0.6	0.4	0.7	0.1	1.4	0.1	0.5
114	Coolant outlet tempera- ture, °F	74	68	62	56	58	77	66	57	56
114	Standard deviation	1	8	9	1	7	0	10	0	1
115	Wall coolant top tempera- ture, °F	86	84	80	73	78	95	104	98	94
115	Standard deviation	2	6	8	1	5	4	3	1	2
116	Wall coolant middle temperature, °F	112	113	110	103	108	89	88	76	70
116	Standard deviation	2	5	5	2	3	2	2	1	2
117	Wall coolant bottom temperature, °F	81	78	74	66	69	84	75	65	64
117	Standard deviation	1	6	8	1	5	1	9	0	2
120	Wall coolant total	86	81	78	72	75	90	79	66	66

FOLDOUT FRAME /

21A-A  
7/27/33

115	Standard deviation	2	6	8	1	5	4	3	1	2
116	Wall coolant middle temperature, °F	112	113	110	103	108	89	88	76	70
116	Standard deviation	2	5	5	2	3	2	2	1	2
117	Wall coolant bottom temperature, °F	81	78	74	66	69	84	75	65	64
117	Standard deviation	1	6	8	1	5	1	9	0	2
120	Wall coolant total temperature, °F	86	81	78	72	75	90	79	66	66
120	Standard deviation	1	7	7	1	5	1	11	2	1
121	Wall coolant flow rate, gal/min	8.86	8.40	7.96	8.03	7.69	6.01	6.16	7.29	6.77
121	Standard deviation	0.09	0.51	0.46	0.29	0.55	0.09	0.93	0.04	0.31
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	14.1	14.6	14.7	15.2	15.1	30.3	22.7	14.7	14.6
145	Standard deviation	0	0.8	0.5	0.1	0.5	0.1	8.6	0	0.1
C26	Heat exchanger heat transfer rate, Btu/hr	149890	151990	150510	151700	150860	142780	131400	147140	148710
C26	Standard deviation	4167	7061	4635	3942	7434	2831	2211	3475	5423
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	54907	55497	60519	64575	64356	41482	40493	31189	31311
C28	Standard deviation	4730	6798	8037	5792	9473	2806	12034	7255	3436
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	48.6	49.2	48.4	46.8	46.8	41.5	39.2	42.9	43.2
C30-1	Standard deviation	0.7	1.3	1.0	1.3	1.8	0.2	6.1	0.3	1.4
C58	Total heat transfer rate, Btu/hr	337070	321920	324490	342220	333920	285170	276000	273840	289140
C58	Standard deviation	13511	20814	20144	12460	32606	8832	70023	5927	14227
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	56.5	56.4	56.5	54.0	53.5	54.1	50.5	55.7	55.9
C30-2	Standard deviation	0.9	1.6	0.5	1.7	1.3	0.7	8.5	0.4	0.7
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	61.2	61.3	60.5	58.3	57.9	63.0	54.6	59.5	60.7
C30-3	Standard deviation	0.7	1.8	0.5	1.4	1.4	0.7	7.1	0.2	1.1

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	72	76	64	63	61	63	73	68
077	Standard deviation	8	7	1	1	1	2	7	1
078	Coolant inlet pressure, psia	68.4	52.3	39.8	50.6	51.6	46.2	48.5	34.7
078	Standard deviation	18.8	13.0	3.2	3.8	1.2	2.4	10.3	1.4
079	Coolant flow rate, gal/min	1.53	1.20	1.08	1.28	1.31	1.22	1.26	1.00
079	Standard deviation	0.29	0.20	0.06	0.07	0.02	0.04	0.19	0.03
080	Coolant outlet pressure, psia	42.4	36.0	26.6	32.2	32.9	29.7	30.7	23.8
080	Standard deviation	9.9	8.9	1.6	1.9	0.6	1.1	5.4	0.7
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	110	139	117	107	112	123	133	151
085	Standard deviation	3	11	4	2	3	3	6	2
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	109	130	117	104	107	109	118	129
088	Standard deviation	3	9	3	2	1	2	4	2
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

11-5-134

087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	109	130	117	104	107	109	118	129
088	Standard deviation	3	9	3	2	1	2	4	2
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	114	133	115	103	105	109	118	128
094	Standard deviation	2	6	3	2	1	2	4	2
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	29.6	22.7	20.4	24.3	24.5	22.6	23.3	18.1
097	Standard deviation	5.6	4.1	1.2	0.6	0.4	0.8	3.3	0.6
098	Coolant outlet temperature, °F	80	87	71	68	68	69	80	74
098	Standard deviation	8	8	1	1	1	1	9	1
101	Coolant flow rate, gal/min	2.00	1.50	1.34	1.61	1.62	1.50	2.13	1.21
101	Standard deviation	0.33	0.27	0.08	0.04	0.02	0.05	0.81	0.04
102	Coolant outlet pressure, °F	53.9	43.3	32.5	41.1	41.3	37.2	30.4	28.8
102	Standard deviation	14.2	10.7	2.4	1.6	0.7	1.9	2.3	0.8
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	12.9	10.2	9.2	11.0	11.0	10.2	14.4	8.2
113	Standard deviation	2.5	1.8	0.6	0.3	0.2	0.3	5.4	0.2
114	Coolant outlet temperature, °F	70	73	57	58	56	57	68	57
114	Standard deviation	10	10	0	1	1	1	11	1
115	Wall coolant top temperature, °F	102	110	104	99	95	99	114	117
115	Standard deviation	4	2	2	2	2	5	4	1
116	Wall coolant middle temperature, °F	78	87	80	74	70	73	88	92
116	Standard deviation	5	2	2	2	2	4	3	1
117	Wall coolant bottom temperature, °F	76	83	69	67	66	67	79	73
117	Standard deviation	8	7	1	1	1	1	8	1
120	Wall coolant total	78	82	67	64	65	67	76	72

FOLDOUT FRAME

	ture, °F								
115	Standard deviation	4	2	2	2	2	5	4	1
116	Wall coolant middle temperature, °F	78	87	80	74	70	73	88	92
116	Standard deviation	5	2	2	2	2	4	3	1
117	Wall coolant bottom temperature, °F	76	83	69	67	66	67	79	73
117	Standard deviation	8	7	1	1	1	1	8	1
120	Wall coolant total temperature, °F	78	82	67	64	65	67	76	72
120	Standard deviation	8	9	1	1	0	1	8	1
121	Wall coolant flow rate, gal/min	8.1	6.4	5.6	6.9	6.9	6.4	6.5	5.0
121	Standard deviation	1.5	1.2	0.4	0.2	0.1	0.2	0.9	0.2
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	16.2	19.6	14.7	15.2	15.1	14.8	14.9	14.3
145	Standard deviation	1.1	7.2	0.1	0.1	0.1	0.1	0.7	0.1
C26	Heat exchanger heat transfer rate, Btu/hr	156970	164660	150760	141960	154290	149830	143330	162890
C26	Standard deviation	3203	8652	3603	1884	4682	3629	7078	4805
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	27617	29208	30192	24573	32187	33649	24997	39249
C28	Standard deviation	3993	3713	1001	3648	4182	3964	7742	1798
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	46.1	57.1	51.1	(b)	55.3	60.1	61.8	64.4
C30-1	Standard deviation	1.1	4.7	0.4	(b)	1.6	1.3	3.8	1.9
C58	Total heat transfer rate, Btu/hr	288390	298190	278960	248940	298900	298270	216060	341890
C58	Standard deviation	12423	30416	7080	10155	12345	12931	20625	9829
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	58.1	64.6	65.3	(b)	64.3	61.0	60.2	63.5
C30-2	Standard deviation	1.3	2.4	0.6	(b)	0.7	1.1	0.7	1.3
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	64.7	66.9	62.4	(b)	61.1	60.3	59.4	61.7
C30-3	Standard deviation	1.6	2.3	0.7	(b)	0.5	0.9	0.9	1.1

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	73	61	61	62	66	77	76
077	Standard deviation	6	1	1	1	7	1	1
078	Coolant inlet pressure, psia	59.3	46.4	44.7	47.9	50.1	59.0	50.3
078	Standard deviation	13.8	1.1	1.6	2.2	4.6	11.9	0.4
079	Coolant flow rate, gal/min	2.19	1.99	1.97	2.06	2.12	2.30	2.18
079	Standard deviation	0.43	0.03	0.05	0.06	0.12	0.32	0.01
080	Coolant outlet pressure, psia	40.2	30.8	29.9	31.6	32.8	38.2	31.9
080	Standard deviation	7.8	0.6	0.9	1.2	2.6	7.0	0.1
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	116	107	108	108	107	116	124
085	Standard deviation	10	1	2	2	5	6	4
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	115	106	107	107	107	115	123
088	Standard deviation	9	1	2	2	4	6	4
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /



086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	115	106	107	107	107	115	123
088	Standard deviation	9	1	2	2	4	6	4
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	118	109	109	108	108	116	124
094	Standard deviation	9	1	2	2	4	6	4
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	24.8	22.5	22.0	23.0	23.6	26.0	24.6
097	Standard deviation	4.8	0.4	0.6	0.7	1.5	3.5	0.1
098	Coolant outlet temperature, °F	85	74	74	75	77	87	88
098	Standard deviation	6	1	1	1	6	2	2
101	Coolant flow rate, gal/min	2.2	2.0	1.9	2.0	2.0	2.3	2.1
101	Standard deviation	0.5	0.1	0.1	0.1	0.2	0.3	0
102	Coolant outlet pressure, °F	51.2	39.0	37.6	40.2	41.8	49.0	41.5
102	Standard deviation	10.8	0.9	1.4	1.8	3.6	9.5	0.2
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test.						
		C1	C3	C8	C11	C12	C16	C17
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.9	10.2	9.9	10.4	10.7	11.7	11.1
113	Standard deviation	2.0	0.2	0.3	0.4	0.6	1.6	0
114	Coolant outlet temperature, °F	72	60	61	62	65	76	75
114	Standard deviation	6	1	1	1	7	1	1
115	Wall coolant top temperature, °F	82	84	82	77	91	97	99
115	Standard deviation	3	1	2	2	3	2	1
116	Wall coolant middle temperature, °F	63	61	59	54	64	73	74
116	Standard deviation	1	1	2	2	4	2	1
117	Wall coolant bottom temperature, °F	80	71	72	72	76	86	85
117	Standard deviation	5	1	1	1	5	2	2
120	Wall coolant total	77	68	68	70	74	86	86

FOLDOUT FRAME

115	Standard deviation	3	1	2	2	3	2	1
116	Wall coolant middle temperature, °F	63	61	59	54	64	73	74
116	Standard deviation	1	1	2	2	4	2	1
117	Wall coolant bottom temperature, °F	80	71	72	72	76	86	85
117	Standard deviation	5	1	1	1	5	2	2
120	Wall coolant total temperature, °F	77	68	68	70	74	86	86
120	Standard deviation	6	0	0	1	7	3	1
121	Wall coolant flow rate, gal/min	6.8	6.1	5.9	6.3	6.5	7.0	6.7
121	Standard deviation	1.3	0.1	0.2	0.2	0.5	1.0	0
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	20.6	15.4	15.2	15.4	15.8	17.9	14.1
145	Standard deviation	7.3	0.1	0.1	0.1	0.6	5.7	0
C26	Heat exchanger heat transfer rate, Btu/hr	138920	142340	138590	140150	134850	230100	154470
C26	Standard deviation	3998	1604	3424	1979	9330	3372	6754
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	11675	21810	19048	22853	27068	32342	35584
C28	Standard deviation	3473	4065	3612	4783	7547	7091	2771
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	50.8	48.6	48.7	32.7	45.9	47.5	51.6
C30-1	Standard deviation	0.9	0.3	0.7	0.3	0.7	0.5	1.3
C58	Total heat transfer rate, Btu/hr	229770	262780	256650	258230	212650	260880	328520
C58	Standard deviation	26265	11133	10978	14026	22624	8067	8355
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	46.6	44.6	44.3	33.0	43.2	43.7	47.3
C30-2	Standard deviation	0.9	0.5	0.6	0.3	1.3	0.4	1.0
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	51.1	48.4	47.4	50.7	45.1	46.3	50.0
C30-3	Standard deviation	1.3	0.4	0.7	0.4	1.1	1.0	1.2

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test						
		D6	D7	D2	D7	D10	D3	D4
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	74	68	72	71	74	75	73
077	Standard deviation	0	2	1	1	4	1	1
078	Coolant inlet pressure, psia	60.7	54.6	63.1	66.1	65.9	50.5	67.2
078	Standard deviation	0.7	4.0	2.2	11.6	14.0	13.0	6.7
079	Coolant flow rate, gal/min	1.6	1.8	1.9	2.1	2.0	1.8	2.1
079	Standard deviation	0.1	0.2	0.2	0.5	0.4	0.4	0.2
080	Coolant outlet pressure, psia	45.9	37.0	42.5	45.4	46.1	32.9	44.8
080	Standard deviation	0.4	5.2	4.2	5.4	9.7	7.4	4.9
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	105	97	99	94	97	107	102
085	Standard deviation	0	5	2	4	6	5	3
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	123	115	115	109	113	130	126
088	Standard deviation	1	5	2	7	8	9	5
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME

086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	123	115	115	109	113	130	126
088	Standard deviation	1	5	2	7	8	9	5
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	125	114	114	107	110	123	96
094	Standard deviation	1	5	2	7	8	8	12
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	20.9	23.1	25.0	25.0	24.3	22.9	26.4
097	Standard deviation	0.2	1.4	1.5	4.9	4.3	3.9	2.3
098	Coolant outlet temperature, °F	85	79	82	80	82	86	81
098	Standard deviation	0	3	1	2	4	2	1
101	Coolant flow rate, gal/min	2.0	2.1	2.3	2.3	2.2	2.1	2.4
101	Standard deviation	0.1	0.1	0.1	0.5	0.4	0.4	0.3
102	Coolant outlet pressure, °F	51	44	45	54	55	40	55
102	Standard deviation	1	5	8	8	12	10	5
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

21-1-137

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test						
		D6	D7	D2	D7	D10	D3	D4
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	9.5	10.4	11.2	10.9	10.6	9.9	11.6
113	Standard deviation	0.1	0.6	0.6	2.1	1.8	1.6	0.9
114	Coolant outlet temperature, °F	74	68	(b)	71	74	75	73
114	Standard deviation	0	2	(b)	1	4	1	1
115	Wall coolant top temperature, °F	92	96	(b)	102	95	101	109
115	Standard deviation	5	3	(b)	2	7	8	1
116	Wall coolant middle temperature, °F	78	74	(b)	78	70	75	85
116	Standard deviation	2	1	(b)	2	3	6	1
117	Wall coolant bottom temperature, °F	93	87	(b)	84	87	94	90
117	Standard deviation	2	2	(b)	2	2	2	2

FOLDOUT FRAME

116	Wall coolant middle temperature, °F	78	74	(b)	78	70	75	85
116	Standard deviation	2	1	(b)	2	3	6	1
117	Wall coolant bottom temperature, °F	93	87	(b)	84	87	94	90
117	Standard deviation	2	3	(b)	2	5	4	1
120	Wall coolant total temperature, °F	82	76	76	77	78	88	81
120	Standard deviation	1	2	4	2	3	3	4
121	Wall coolant flow rate, gal/min	4.4	4.8	5.2	5.4	5.0	4.6	5.3
121	Standard deviation	0.1	0.3	0.3	1.1	1.0	0.7	0.4
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	30.3	19.4	(b)	24.9	26.2	15.8	21.8
145	Standard deviation	0.1	6.3	(b)	6.4	8.1	0.8	5.5
C26	Heat exchanger heat transfer rate, Btu/hr	119180	124550	121830	100790	98050	128860	116150
C26	Standard deviation	2693	2527	2786	1498	2985	2568	17487
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	17853	20103	10689	14341	8495	29351	21341
C28	Standard deviation	1803	2160	8348	1910	2893	4579	11297
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	28.3	29.5	28.7	29.0	28.5	28.7	31.4
C30-1	Standard deviation	1.6	1.1	2.3	1.6	1.3	1.8	2.0
C58	Total heat transfer rate, Btu/hr	33387	31172	(b)	34226	20505	43910	34636
C58	Standard deviation	1238	880	(b)	1324	1012	4474	3836
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	48.5	50.5	51.2	48.4	47.9	51.4	55.8
C30-2	Standard deviation	0.4	0.5	0.6	0.3	1.8	2.9	1.6
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	57.7	53.7	54.2	50.4	49.7	50.4	28.8
C30-3	Standard deviation	2.4	1.2	1.2	1.5	1.1	0.8	16.6

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	78	76	77	65	64	67	74	77
077	Standard deviation	0	1	2	3	1	4	2	2
078	Coolant inlet pressure, psia	67.3	62.5	62.0	46.9	50.0	53.6	62.0	62.5
078	Standard deviation	0.2	2.9	2.9	5.1	2.9	7.7	6.7	4.4
079	Coolant flow rate, gal/min	2.1	1.9	2.0	1.9	2.0	2.1	1.9	1.7
079	Standard deviation	0	0.1	0.2	0.1	0.1	0.2	0.2	0.2
080	Coolant outlet pressure, psia	50.5	47.5	45.5	30.1	30.7	32.7	42.6	46.9
080	Standard deviation	0.5	3.1	4.5	4.3	1.5	5.0	5.4	3.5
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	126	128	129	116	111	113	126	121
085	Standard deviation	1	3	6	3	3	3	5	10
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	126	128	128	117	109	110	120	122
088	Standard deviation	1	2	3	3	3	3	5	9
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

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2

	ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	131	129	127	128	118	119	126	128
094	Standard deviation	1	3	3	4	3	4	5	11
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	24.3	22.8	23.6	22.5	24.1	24.9	23.9	22.0
097	Standard deviation	0.3	1.1	2.0	1.5	1.0	2.3	2.7	1.5
098	Coolant outlet temperature, °F	90	89	89	80	77	80	87	89
098	Standard deviation	0	1	1	2	1	3	2	2
101	Coolant flow rate, gal/min	2.1	1.9	1.9	2.0	2.1	2.2	2.1	2.0
101	Standard deviation	0	0.1	0.3	0.1	0.1	0.2	0.2	0.2
102	Coolant outlet pressure, °F	57.6	51.3	51.1	37.9	39.4	42.2	51.7	52.7
102	Standard deviation	0.1	3.9	3.9	4.5	2.4	6.5	5.6	3.8
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.7	11.6	11.5	10.0	10.8	11.1	10.9	9.8
113	Standard deviation	0	0.7	0.7	0.7	0.5	1.1	1.2	0.6
114	Coolant outlet tempera- ture, °F	77	75	77	65	64	67	74	77
114	Standard deviation	0	1	2	3	1	4	2	2
115	Wall coolant top tempera- ture, °F	98	102	105	93	91	100	107	105
115	Standard deviation	1	2	4	7	3	8	7	9
116	Wall coolant middle temperature, °F	79	75	76	72	66	70	80	85
116	Standard deviation	1	2	5	4	2	7	6	6
117	Wall coolant bottom temperature, °F	86	84	86	72	71	75	82	89
117	Standard deviation	0	1	2	5	1	3	2	3

FOLDOUT FRAME

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2

119	Standard deviation	1	2	4	7	3	8	7	9
116	Wall coolant middle temperature, °F	79	75	76	72	66	70	80	85
116	Standard deviation	1	2	5	4	2	7	6	6
117	Wall coolant bottom temperature, °F	86	84	86	72	71	75	82	89
117	Standard deviation	0	1	2	5	1	3	2	3
120	Wall coolant total temperature, °F	85	83	83	80	76	78	84	89
120	Standard deviation	0	1	1	3	1	3	2	3
121	Wall coolant flow rate, gal/min	6.6	7.2	7.2	5.2	5.6	5.8	5.6	4.9
121	Standard deviation	0	0.4	0.4	0.4	0.3	0.6	0.6	0.3
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	30.7	18.6	19.0	16.3	14.9	15.5	26.3	30.3
145	Standard deviation	0.1	7.4	7.7	4.2	0.1	3.7	7.1	3.1
C26	Heat exchanger heat transfer rate, Btu/hr	148090	143060	142010	168630	158530	154150	152700	133920
C26	Standard deviation	5687	7047	6968	5779	5615	6973	7109	28696
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	25138	23548	21094	38433	32250	30397	28465	28797
C28	Standard deviation	1133	5470	6104	8336	5335	5684	6658	8538
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	48.0	47.8	48.0	51.0	49.5	50.8	54.3	48.8
C30-1	Standard deviation	1.2	0.8	2.8	0.9	0.7	0.8	1.5	9.7
C58	Total heat transfer rate, Btu/hr	244400	267450	268670	344180	324280	307810	313700	267830
C58	Standard deviation	26001	28974	22682	29721	17724	30298	17494	66779
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	61.4	61.7	60.5	48.4	45.0	44.6	45.1	5.5
C30-2	Standard deviation	1.4	1.0	1.6	1.2	1.0	0.8	1.2	0.6
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	66.8	62.0	59.3	60.0	55.1	55.2	52.6	59.9
C30-3	Standard deviation	1.2	1.7	1.6	1.8	0.6	1.0	1.8	6.3

<sup>b</sup> Data or results were not obtained.

11/16/42

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	77	78	79	74	78	76	80
077	Standard deviation	1	2	3	2	3	1	1
078	Coolant inlet pressure, psia	65.7	65.1	62.5	66.5	62.4	59.5	66.1
078	Standard deviation	0.6	5.9	2.0	2.8	2.7	1.1	1.0
079	Coolant flow rate, gal/min	2.0	0.9	0.9	0.9	0.8	1.1	1.3
079	Standard deviation	0.1	0.1	0	0	0	0	0
080	Coolant outlet pressure, psia	48.5	58.2	56.2	60.8	56.8	45.0	49.0
080	Standard deviation	0.5	4.6	1.9	2.6	2.9	0.6	0.4
081	Outlet 1 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	132	78	79	74	79	80	83
085	Standard deviation	4	2	3	2	3	2	1
086	Outlet 6 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	132	78	79	75	79	81	87
088	Standard deviation	9	3	3	2	3	2	1
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	132	78	79	75	79	81	87
088	Standard deviation	9	3	3	2	3	2	1
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	137	78	79	74	79	82	85
094	Standard deviation	3	2	3	2	3	2	1
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	22.8	12.2	11.7	12.4	12.0	8.4	9.3
097	Standard deviation	0.3	0.9	0.4	0.4	0.4	0.2	0.1
098	Coolant outlet temperature, °F	91	78	79	75	79	77	81
098	Standard deviation	2	3	3	1	3	1	1
101	Coolant flow rate, gal/min	2.1	0.9	0.9	0.9	0.9	1.0	1.2
101	Standard deviation	0.2	0.1	0	0	0	0	0
102	Coolant outlet pressure, °F	58.0	56.8	55.0	59.4	55.5	50.5	56.8
102	Standard deviation	0.6	4.5	1.7	2.4	2.9	3.2	0.7
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

81:143

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.7	10.5	10.2	10.5	9.9	12.2	12.7
113	Standard deviation	0.2	0.8	0.4	0.4	0.4	2.1	0.1
114	Coolant outlet temperature, °F	77	78	79	74	79	78	81
114	Standard deviation	1	3	3	3	3	1	1
115	Wall coolant top temperature, °F	113	112	120	109	(b)	103	124
115	Standard deviation	5	4	5	7	(b)	9	6
116	Wall coolant middle temperature, °F	86	83	89	81	(b)	87	96
116	Standard deviation	5	3	4	3	(b)	4	3
117	Wall coolant bottom temperature, °F	89	90	91	82	(b)	103	104
117	Standard deviation	2	3	2	3	(b)	4	2
120	Wall coolant total	86	92	91	91	95	104	107

FOLDOUT FRAME /

FOLDOUT FRAMES

2

	113	112	120	109	(b)	103	124
115	Wall coolant top temperature, °F						
115	Standard deviation	5	4	5	7	(b)	9 6
116	Wall coolant middle temperature, °F	86	83	89	81	(b)	87 96
116	Standard deviation	5	3	4	3	(b)	4 3
117	Wall coolant bottom temperature, °F	89	90	91	82	(b)	103 104
117	Standard deviation	2	3	2	3	(b)	4 2
120	Wall coolant total temperature, °F	86	92	91	91	95	104 107
120	Standard deviation	0	3	3	4	4	3 3
121	Wall coolant flow rate, gal/min	5.6	4.6	4.4	3.7	3.2	3.3 3.5
121	Standard deviation	0	0.3	0.2	0.5	0.1	0 0.1
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b) (b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b) (b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b) (b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b) (b)
145	Coolant outlet pressure, psia	29.7	30.1	30.1	29.9	28.3	30.2 30.1
145	Standard deviation	0.2	1.4	1.3	0.7	3.6	0.3 0
C26	Heat exchanger heat transfer rate, Btu/hr	165870	5531	5600	4746	4423	10604 11331
C26	Standard deviation	13750	2351	2276	1108	1113	622 794
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b) (b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b) (b)
C28	Wall heat transfer rate, Btu/hr	27121	31881	26979	30170	27016	45344 46897
C28	Standard deviation	2675	3520	2881	6356	1995	4214 3157
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	54.7	(b)	(b)	(b)	(b)	(b) (b)
C30-1	Standard deviation	3.3	(b)	(b)	(b)	(b)	(b) (b)
C58	Total heat transfer rate, Btu/hr	315560	176650	163020	144460	136910	176770 179050
C58	Standard deviation	8902	8692	6984	24226	11545	12565 11891
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	44.9	(b)	(b)	(b)	(b)	(b) (b)
C30-2	Standard deviation	8.3	(b)	(b)	(b)	(b)	(b) (b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	61.9	(b)	(b)	(b)	(b)	(b) (b)
C30-3	Standard deviation	3.4	(b)	(b)	(b)	(b)	(b) (b)

b Data or results were not obtained.

2176  
 144

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		E1	E2	E3	E4	E5	E6	E9	E8
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	65	65	66	67	67	67	67	64
077	Standard deviation	0	0	0	0	0	0	0	0
078	Coolant inlet pressure, psia	70.6	67.8	70.3	70.6	71.1	72.1	66.9	57.6
078	Standard deviation	0.1	5.9	0.1	0.2	0.2	0.3	6.8	0.2
079	Coolant flow rate, gal/min	2.6	2.4	2.5	2.6	2.6	2.6	2.5	2.4
079	Standard deviation	0	0.2	0	0	0	0	0.1	0
080	Coolant outlet pressure, psia	25.0	26.1	25.8	23.1	22.6	23.3	24.8	27.9
080	Standard deviation	1.0	0.4	0.1	0.8	0.4	0.1	1.5	0.4
081	Outlet 1 coolant temperature, °F	120	117	121	119	118	111	120	120
081	Standard deviation	1	4	2	2	1	1	4	5
082	Outlet 2 coolant temperature, °F	108	104	109	106	106	101	109	114
082	Standard deviation	1	4	2	2	1	1	2	2
083	Outlet 3 coolant temperature, °F	91	93	93	90	90	87	94	96
083	Standard deviation	2	3	0	1	1	1	4	2
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(L)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	110	110	110	107	106	98	107	105
085	Standard deviation	2	4	0	2	1	2	4	3
086	Outlet 6 coolant temperature, °F	122	117	119	119	121	116	127	116
086	Standard deviation	2	4	1	1	2	1	5	6
087	Outlet 7 coolant temperature, °F	119	120	120	118	118	112	122	118
087	Standard deviation	2	5	1	1	1	2	5	4
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME



086	Standard deviation	2	4	1	1	2	1	5	6
087	Outlet 7 coolant temperature, °F	119	120	120	118	118	112	122	118
087	Standard deviation	2	5	1	1	1	2	5	4
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	2.0	2.0	2.1	2.1	2.0	2.0	1.8	2.1
096	Standard deviation	0	0.2	0	0	0	0	0.2	0.2
097	Coolant flow rate, gal/min	9.9	9.4	9.8	10.0	10.0	10.0	9.3	8.5
097	Standard deviation	0.1	0.8	0	0.1	0.1	0	0.9	0.3
098	Coolant outlet temperature, °F	100	98	100	99	99	96	102	101
098	Standard deviation	1	3	0	1	1	1	3	2
101	Coolant flow rate, gal/min	4.2	4.2	4.4	4.6	4.6	4.0	4.1	3.5
101	Standard deviation	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0
102	Coolant outlet pressure, °F	41.3	38.7	37.6	34.5	33.6	41.8	34.1	32.8
102	Standard deviation	1.0	3.3	1.4	0.8	2.0	3.3	2.2	0.2
103	Outlet 17 coolant temperature, °F	115	115	113	113	112	112	116	123
103	Standard deviation	0	2	0	1	0	0	3	1

<sup>b</sup> Data or results were not obtained.

145

Table 4. - Continued

(f) Continued. Coolant system data

FOLDDOUT FRAME

Data channel	Parameter	Test							
		E1	E2	E3	E4	E5	E6	E9	E8
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	11.8	11.8	12.5	13.1	13.3	11.7	12.2	10.5
113	Standard deviation	0.2	0.6	0.3	0.2	0.3	0.7	1.0	0
114	Coolant outlet temperature, °F	83	83	83	83	83	83	84	84
114	Standard deviation	0	0	0	0	0	0	1	0
115	Wall coolant top temperature, °F	77	89	88	85	80	76	71	80
115	Standard deviation	1	3	2	2	2	3	1	3
116	Wall coolant middle temperature, °F	62	69	63	63	60	59	61	64
116	Standard deviation	3	7	2	6	5	3	3	4
117	Wall coolant bottom temperature, °F	83	84	84	84	84	83	86	85
117	Standard deviation	1	2	1	0	0	1	2	2
120	Wall coolant total	74	75	75	76	75	74	76	74

FOLDOUT FRAME 2

115	Standard deviation	1	3	2	2	2	3	1	3
116	Wall coolant middle temperature, °F	62	69	63	63	60	59	61	64
116	Standard deviation	3	7	2	6	5	3	3	4
117	Wall coolant bottom temperature, °F	83	84	84	84	84	83	86	85
117	Standard deviation	1	2	1	0	0	1	2	2
120	Wall coolant total temperature, °F	74	75	75	76	75	74	76	74
120	Standard deviation	1	1	1	0	1	0	1	1
121	Wall coolant flow rate, gal/min	4.4	4.2	4.3	4.1	4.2	4.4	4.1	3.3
121	Standard deviation	0.1	0.4	0.1	0	0	0.1	0.5	0
140	Wall coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
140	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	280170	256890	271550	266860	266890	233990	261370	261720
C26	Standard deviation	6376	2892	2789	7071	6866	10518	5226	7153
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	20211	19866	19076	18251	16953	15740	17967	16156
C28	Standard deviation	2024	391	1294	1084	1744	590	1962	1532
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	63.2	60.5	62.1	60.8	61.6	58.4	63.5	61.9
C30-1	Standard deviation	0.6	0.6	1.9	1.2	0.7	0.6	3.3	4.2
C58	Total heat transfer rate, Btu/hr	309540	309740	303210	295330	295570	278070	454530	305370
C58	Standard deviation	6739	3078	4205	6411	6903	55583	54537	50816
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	64.0	59.5	63.4	59.7	62.4	59.4	64.9	72.3
C30-2	Standard deviation	1.1	0.6	2.7	1.7	0.7	0.9	1.3	2.4
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	60.2	58.8	58.4	56.3	59.6	59.6	60.8	60.7
C30-3	Standard deviation	0.9	0.3	1.9	0.7	0.9	0.8	0.7	0.6

b Data or results were not obtained.

218  
 10/1/66

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	65	65	65	66	66	66	66
077	Standard deviation	0	0	0	0	0	0	0
078	Coolant inlet pressure, psia	65.5	74.5	74.6	74.8	74.9	75.0	77.1
078	Standard deviation	7.5	0.2	0.1	0.2	0.3	0.2	0.4
079	Coolant flow rate, gal/min	2.8	3.1	3.1	3.1	3.1	3.1	3.1
079	Standard deviation	0.3	0	0	0	0	0	0
080	Coolant outlet pressure, psia	26.4	26.0	26.1	26.1	26.0	26.2	26.3
080	Standard deviation	0.7	0	0	0.1	0.1	0	0.2
081	Outlet 1 coolant tempera- ture, °F	117	116	115	116	106	105	103
081	Standard deviation	5	1	1	1	1	1	2
082	Outlet 2 coolant tempera- ture, °F	112	111	109	110	101	101	101
082	Standard deviation	5	1	1	1	1	1	2
083	Outlet 3 coolant tempera- ture, °F	95	93	93	93	89	83	82
083	Standard deviation	4	1	1	1	2	0	2
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	109	106	104	103	102	88	88
085	Standard deviation	3	1	1	1	3	1	2
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	121	119	117	118	116	101	99
087	Standard deviation	5	1	1	1	5	1	2
088	Outlet 8 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME

	ture, °F							
087	Standard deviation	5	1	1	1	5	1	2
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.6	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	0.2	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	9.4	10.5	10.5	10.5	10.0	10.5	10.6
097	Standard deviation	1.0	0	0	0	0.2	0	0.1
098	Coolant outlet temperature, °F	91	90	90	90	86	84	84
098	Standard deviation	2	1	0	1	1	0	1
101	Coolant flow rate, gal/min	4.0	4.6	4.7	4.6	3.8	3.6	0
101	Standard deviation	0.4	0	0	0	0.1	0.1	0
102	Coolant outlet pressure, °F	34.7	33.4	33.3	33.6	44.2	47.3	49.4
102	Standard deviation	2.7	0.2	0.1	0.3	1.3	1.2	1.4
103	Outlet 17 coolant temperature, °F	119	116	115	115	114	114	115
103	Standard deviation	4	1	1	1	0	0	0

b Data or results were not obtained.

2156  
147

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	11.8	13.7	13.7	13.7	11.7	11.0	11.0
113	Standard deviation	1.0	0	0.1	0	0.3	0.2	0.4
114	Coolant outlet temperature, °F	81	79	79	79	79	79	80
114	Standard deviation	2	1	0	1	0	1	1
115	Wall coolant top temperature, °F	80	75	81	82	76	73	78
115	Standard deviation	4	3	1	1	1	1	1
116	Wall coolant middle temperature, °F	75	57	65	64	61	62	67
116	Standard deviation	13	2	2	2	1	3	3
117	Wall coolant bottom temperature, °F	88	88	91	92	88	86	87
117	Standard deviation	2	1	0	1	1	1	1
120	Wall coolant total	71	71	74	74	70	70	71

FOLDOUT FRAME 1

116	Standard deviation	13	2	2	2	1	3	3
117	Wall coolant bottom temperature, °F	88	88	91	92	88	86	87
117	Standard deviation	2	1	0	1	1	1	1
120	Wall coolant total temperature, °F	71	71	74	71	70	70	71
120	Standard deviation	1	1	5	1	1	1	1
121	Wall coolant flow rate, gal/min	3.4	3.8	3.8	3.8	3.8	3.8	3.8
121	Standard deviation	0.4	0.1	0	0	0	0	0
140	Wall coolant outlet pressure, psia	18.3	18.8	18.7	18.5	18.3	18.6	18.0
140	Standard deviation	1.1	0.1	0.1	0.2	0.1	0.2	0.1
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	216860	227720	221600	222180	180080	169190	173650
C26	Standard deviation	8455	6226	4335	9021	4390	5941	6362
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	10493	10553	16206	10914	9039	7496	9931
C28	Standard deviation	2240	1140	8835	2726	994	1318	1039
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	64.8	67.7	66.2	67.1	59.9	57.6	55.8
C30-1	Standard deviation	0.9	0.8	1.4	1.2	0.9	0.8	1.6
C58	Total heat transfer rate, Btu/hr	273560	282680	277360	268980	229070	207290	213570
C58	Standard deviation	61479	6705	3859	7124	5322	5612	5748
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	76.6	78.8	75.9	78.4	69.1	68.2	68.2
C30-2	Standard deviation	2.2	1.3	2.1	1.6	0.9	1.5	2.7
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	0.3	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	0	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

112-148

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	67	67	68	66	67	67	66	67	68
077	Standard deviation	0	0	0	0	0	0	0	0	0
078	Coolant inlet pressure, psia	74.1	73.7	73.9	73.1	72.9	77.3	72.4	73.1	74.4
078	Standard deviation	0.4	0.4	2.3	1.9	0.4	11.8	0.3	0.4	0.5
079	Coolant flow rate, gal/min	3.1	3.0	3.0	3.0	3.0	3.1	3.2	3.2	3.2
079	Standard deviation	0	0	0.1	0.1	0	0.3	0	0	0
080	Coolant outlet pressure, psia	26.4	26.6	28.7	27.9	27.1	28.1	27.4	26.8	26.6
080	Standard deviation	0.3	0.1	5.0	3.7	0.1	2.6	0.2	0.1	0
081	Outlet 1 coolant temperature, °F	107	104	108	109	110	105	93	96	98
081	Standard deviation	1	0	2	1	1	3	3	1	1
082	Outlet 2 coolant temperature, °F	102	98	100	101	99	92	76	93	92
082	Standard deviation	1	0	1	1	4	2	3	0	0
083	Outlet 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant temperature, °F	122	115	124	125	119	112	96	107	99
086	Standard deviation	10	1	1	1	6	3	4	1	0
087	Outlet 7 coolant temperature, °F	107	104	95	99	102	103	106	103	101
087	Standard deviation	1	1	1	1	1	4	1	0	0
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDFOUT FRAME /



FOLDDOUT FRAME

2

087	Standard deviation	1	1	1	1	4	1	0	0	
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
096	Coolant flow rate, gal/min	2.2	2.3	1.9	2.0	2.6	2.8	2.6	2.4	
096	Standard deviation	0.5	0	0	0	0.3	0.3	0.1	0	
097	Coolant flow rate, gal/min	11.5	11.6	11.8	11.8	12.2	12.5	12.6	12.6	13.6
097	Standard deviation	0.4	0.1	0.3	0.2	0.2	1.1	0.1	0.1	0
098	Coolant outlet temperature, °F	97	94	94	95	96	93	90	96	95
098	Standard deviation	1	0	1	1	1	2	2	0	0
101	Coolant flow rate, gal/min	3.2	3.1	3.1	3.2	3.2	3.1	2.8	2.8	2.7
101	Standard deviation	0	0	0.1	0.1	0.1	0.3	0	0	0
102	Coolant outlet pressure, °F	30.0	30.6	32.2	30.7	29.8	34.0	39.9	39.5	38.6
102	Standard deviation	0.7	0.1	4.7	3.8	1.0	2.7	0.1	0.1	0.1
103	Outlet 17 coolant temperature, °F	128	128	126	130	133	131	68	69	70
103	Standard deviation	3	1	2	2	1	3	0	0	0

<sup>b</sup> Data or results were not obtained.

149

Table 4. - Continued

(f) Continued. Coolant system data

FOLDOUT FRAME

Data channel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	12.2	12.0	11.8	11.8	11.9	13.2	7.7	7.8	8.0
113	Standard deviation	0	0	0.4	0.3	0.1	1.2	0	0	0
114	Coolant outlet temperature, °F	84	85	84	84	85	84	67	69	69
114	Standard deviation	1	1	1	1	0	1	0	0	0
115	Wall coolant top temperature, °F	77	82	87	88	88	83	91	80	87
115	Standard deviation	1	1	2	2	2	1	2	1	1
116	Wall coolant middle temperature, °F	66	72	74	74	72	68	81	70	77
116	Standard deviation	2	1	2	2	1	1	2	1	1
117	Wall coolant bottom temperature, °F	89	91	92	91	93	90	89	90	88
117	Standard deviation	1	0	1	1	0	1	0	0	0
120	Wall coolant total	75	76	79	63	83	113	72	73	74

FOLDOUT FRAME  
 2

	temperature, °F									
116	Standard deviation	2	1	2	2	1	1	2	1	1
117	Wall coolant bottom temperature, °F	89	91	92	91	93	90	89	90	88
117	Standard deviation	1	0	1	1	0	1	0	0	0
120	Wall coolant total temperature, °F	75	76	79	63	83	113	72	73	74
120	Standard deviation	0	0	3	18	10	3	0	0	0
121	Wall coolant flow rate, gal/min	4.0	4.2	3.9	4.1	4.2	4.2	3.8	3.7	4.0
121	Standard deviation	0	0.1	0.2	0.2	0.1	0.3	0.1	0	0
140	Wall coolant outlet pressure, psia	19.1	19.2	21.1	20.4	19.3	20.0	18.9	18.2	18.3
140	Standard deviation	0	0	5.4	3.9	0	1.3	0.2	0	0
141	Coolant flow rate, gal/min	1.2	1.3	1.7	1.6	1.5	1.4	1.3	1.4	1.5
141	Standard deviation	0	0.1	0.1	0	0.1	0.2	0	0	0
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	272060	259210	251440	279740	287770	272540	158860	188440	192540
C26	Standard deviation	9340	3935	2306	2925	7222	4995	12551	3264	1625
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	15692	18488	21705	24861	33321	95996	12338	10526	12631
C28	Standard deviation	692	541	4382	8807	21058	11732	294	225	223
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	53.6	49.9	53.2	54.8	54.6	49.8	37.6	43.8	44.3
C30-1	Standard deviation	0.9	0.4	1.4	0.6	2.2	0.4	3.9	0.5	0.4
C58	Total heat transfer rate, Btu/hr	442480	493040	390900	409690	545860	732460	309200	325100	329310
C58	Standard deviation	14366	4217	12892	138580	70685	49675	11590	5908	2346
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	61.0	54.9	56.3	58.4	53.6	43.5	18.9	50.8	46.4
C30-2	Standard deviation	1.1	0.5	2.0	0.6	7.6	0.4	4.7	0.6	0.3
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	60.7	57.7	55.3	60.2	65.6	63.6	(b)	(b)	(b)
C30-3	Standard deviation	20	0.9	1.1	0.6	3.3	0.6	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

7/26/19  
150

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	68	67	65	66	67	65	66	67
077	Standard deviation	0	0	0	1	0	3	0	0
078	Coolant inlet pressure, psia	74.6	68.5	62.4	72.0	76.7	71.2	78.9	75.1
078	Standard deviation	0.6	7.1	5.5	7.2	0.4	7.1	2.7	6.6
079	Coolant flow rate, gal/min	3.2	2.9	2.6	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	0	0.3	0.2	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	27.1	27.4	28.1	22.6	23.5	32.1	24.8	25.5
080	Standard deviation	0.2	0.2	0.1	1.5	0	8.1	4.9	4.5
081	Outlet 1 coolant temperature, °F	102	105	107	65	64	60	61	65
081	Standard deviation	0	4	3	0	0	2	0	3
082	Outlet 2 coolant temperature, °F	99	101	95	66	65	61	62	66
082	Standard deviation	0	4	2	0	0	2	0	3
083	Outlet 3 coolant temperature, °F	107	111	111	66	65	62	62	66
083	Standard deviation	1	4	3	0	0	2	0	2
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant temperature, °F	105	109	111	67	68	67	68	69
086	Standard deviation	1	3	3	0	0	3	0	1
087	Outlet 7 coolant temperature, °F	108	114	118	65	61	58	56	63
087	Standard deviation	1	5	4	2	1	1	1	5
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

087	Outlet 7 coolant temperature, °F	108	114	118	65	61	58	56	63
087	Standard deviation	1	5	4	2	1	1	1	5
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	13.5	12.3	11.0	2.7	2.8	2.4	2.8	2.7
097	Standard deviation	0	1.2	0.9	0.2	0	0.4	0.1	0.2
098	Coolant outlet temperature, °F	101	105	105	67	68	67	68	69
098	Standard deviation	0	3	3	0	0	3	0	0
101	Coolant flow rate, gal/min	2.7	2.4	2.2	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	0	0.3	0.2	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	39.2	38.2	37.5	38.5	40.4	45.2	42.0	41.6
102	Standard deviation	0.2	1.3	1.1	1.6	0	5.3	4.3	4.3
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

1  
FOLDOUT FRAME  
2

213  
~~151~~  
 151

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	7.9	7.3	6.6	7.6	7.9	6.6	8.3	7.9
113	Standard deviation	0	0.7	0.5	0.7	0	1.3	0.2	0.6
114	Coolant outlet temperature, °F	69	69	67	67	68	66	67	69
114	Standard deviation	0	0	0	1	0	3	0	0
115	Wall coolant top temperature, °F	91	92	92	83	84	76	79	86
115	Standard deviation	1	0	0	4	3	2	1	3
116	Wall coolant middle temperature, °F	79	79	82	111	97	69	84	110
116	Standard deviation	2	3	6	31	18	6	9	32
117	Wall coolant bottom temperature, °F	89	91	93	94	93	98	94	102
117	Standard deviation	0	2	1	2	0	5	2	3

FOLDOUT FRAME

116	Standard deviation	2	3	6	31	18	6	9	32
117	Wall coolant bottom temperature, °F	89	91	93	94	93	98	94	102
117	Standard deviation	0	2	1	2	0	5	2	3
120	Wall coolant total temperature, °F	74	75	74	76	77	77	76	81
120	Standard deviation	0	1	0	1	0	2	1	2
121	Wall coolant flow rate, gal/min	4.1	3.9	3.3	3.9	4.2	3.5	3.9	3.8
121	Standard deviation	0.1	0.5	0.3	0.4	0.1	0.8	0.2	0.3
140	Wall coolant outlet pressure, psia	18.9	20.5	22.4	18.5	19.1	29.5	20.3	21.4
140	Standard deviation	0.2	1.6	1.0	2.3	0	9.3	5.1	4.7
141	Coolant flow rate, gal/min	1.5	1.4	1.2	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	0	0.1	0.1	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	228550	231470	224830	7843	6594	6217	6353	8468
C26	Standard deviation	2332	2923	3336	782	455	1211	475	1252
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	13563	14424	14759	20460	21635	20224	18503	25795
C28	Standard deviation	420	571	565	1454	444	3015	1621	3534
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	47.5	46.5	46.7	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	0.7	1.2	1.5	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	442510	452690	424510	166590	219880	172620	106410	258820
C58	Standard deviation	31222	36514	6455	11103	5832	20206	1918	6935
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	56.2	54.8	43.8	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	0.5	1.1	1.4	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

152

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	66	67	66	67	66	67	68	66	66
077	Standard deviation	1	0	0	0	1	0	0	1	0
078	Coolant inlet pressure, psia	74.3	77.1	78.4	77.7	71.8	77.0	77.6	81.1	77.6
078	Standard deviation	5.4	0.6	2.6	0.4	7.3	0.3	0.5	3.1	0.5
079	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	25.7	23.7	24.8	23.4	23.7	22.7	23.6	32.2	23.7
080	Standard deviation	4.3	0.2	4.4	0.1	0.8	0.1	0.1	7.3	0.1
081	Outlet 1 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLIOUT FRAME



088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	2.7	2.8	2.8	2.8	2.6	2.9	2.8	2.7	2.8
097	Standard deviation	0.3	0	0.1	0	0.2	0	0	0.1	0
098	Coolant outlet temperature, °F	68	69	67	69	67	69	69	67	68
098	Standard deviation	0	0	0	0	1	0	0	1	0
101	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	41.6	40.8	41.8	40.7	39.4	40.2	40.8	47.9	40.9
102	Standard deviation	2.4	0.1	3.8	0.1	1.4	0.1	0.1	6.2	0.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

FOLDOUT FRAME

2

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	7.9	8.3	8.3	8.3	7.6	8.2	8.2	7.8	8.2
113	Standard deviation	0.8	0	0.2	0	0.7	0	0	0.4	0
114	Coolant outlet tempera- ture, °F	68	69	67	68	67	69	69	67	68
114	Standard deviation	0	0	0	0	1	0	0	1	0
115	Wall coolant top tempera- ture, °F	93	99	92	80	82	85	79	82	88
115	Standard deviation	1	4	3	1	2	1	1	2	2
116	Wall coolant middle temperature, °F	121	128	99	81	85	95	109	79	97
116	Standard deviation	17	19	28	2	5	9	23	11	20
117	Wall coolant bottom temperature, °F	102	103	97	98	95	93	95	96	98
117	Standard deviation	3	1	0	1	2	1	1	1	0

FOLDOUT FRAME

	temperature, °F									
117	Standard deviation	3	1	0	1	2	1	1	1	0
120	Wall coolant total temperature, °F	79	79	76	78	77	77	79	78	77
120	Standard deviation	1	1	0	0	0	0	2	1	0
121	Wall coolant flow rate, gal/min	3.9	4.0	4.0	4.0	3.7	3.9	4.1	3.8	4.1
121	Standard deviation	0.6	0.2	0.1	0	0.4	0.2	0.2	0.3	0.1
140	Wall coolant outlet pressure, psia	21.7	19.2	20.3	19.1	20.0	18.4	19.2	28.0	19.4
140	Standard deviation	5.1	0.2	4.6	0	1.6	0.1	0.1	7.7	0
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	10151	9104	8486	7549	6169	6814	5788	6901	7580
C26	Standard deviation	293	586	378	603	536	602	344	584	284
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	26091	24541	21515	21679	20071	19073	21429	23564	21214
C28	Standard deviation	3490	4109	491	543	1155	836	4555	1948	895
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	247330	161340	157560	153320	151720	145740	97719	236190	107120
C58	Standard deviation	5026	5226	5280	2771	10 052	8248	1435	8289	3226
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

11501  
104

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	68	66	66	67	66	67	69	67
077	Standard deviation	0	1	1	0	0	0	0	0
078	Coolant inlet pressure, psia	77.4	80.4	73.9	83.9	83.2	77.1	78.8	79.1
078	Standard deviation	0.2	3.3	6.2	0.3	2.0	0.4	2.8	8.0
079	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	23.8	26.9	23.1	35.1	33.4	23.7	27.2	38.8
080	Standard deviation	0.1	6.7	0.7	0.8	3.8	0.3	6.2	0.5
081	Outlet 1 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

FOLDOUT FRAME

	ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	2.8	2.8	2.7	2.6	2.7	2.8	2.7	2.3
097	Standard deviation	0	0.1	0.2	0	0	0	0.1	0.3
098	Coolant outlet temperature, °F	69	67	68	68	68	68	70	70
098	Standard deviation	0	0	0	0	0	0	0	0
101	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	40.9	44.2	39.3	50.8	49.3	40.5	44.0	53.0
102	Standard deviation	0.1	5.7	1.2	0.5	3.4	0.2	5.4	2.5
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

155

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.2	8.2	8.0	7.9	7.9	8.3	8.1	7.1
113	Standard deviation	0	0.3	0.6	0.1	0.1	0	0.3	0.8
114	Coolant outlet temperature, °F	69	67	67	68	68	68	70	69
114	Standard deviation	0	0	0	0	0	0	0	0
115	Wall coolant top temperature, °F	93	85	90	97	100	93	90	99
115	Standard deviation	1	1	2	0	2	2	2	4
116	Wall coolant middle temperature, °F	80	103	111	112	99	128	85	105
116	Standard deviation	2	22	15	14	15	28	8	21
117	Wall coolant bottom temperature, °F	97	94	99	102	99	98	102	111
117	Standard deviation	0	1	2	0	1	0	2	4

FOLDOUT FRAME /

115	Standard deviation	1	1	2	0	2	2	2	4
116	Wall coolant middle temperature, °F	80	103	111	112	99	128	85	105
116	Standard deviation	2	22	15	14	15	28	8	21
117	Wall coolant bottom temperature, °F	97	94	99	102	99	98	102	111
117	Standard deviation	0	1	2	0	1	0	2	4
120	Wall coolant total temperature, °F	79	76	77	78	78	78	81	82
120	Standard deviation	0	0	1	1	1	1	1	2
121	Wall coolant flow rate, gal/min	4.1	3.8	3.7	3.6	3.9	4.1	3.9	3.3
121	Standard deviation	0	0.1	0.3	0.2	0.2	0.2	0.2	0.4
140	Wall coolant outlet pressure, psia	19.4	22.7	19.1	30.8	29.0	19.0	23.0	35.7
140	Standard deviation	0	1.0	1.3	0.9	3.9	0.3	6.6	0.3
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	7131	6610	7795	8338	8427	7265	6783	9099
C26	Standard deviation	433	697	560	195	347	550	669	1127
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	22520	19121	20431	21327	24195	23794	23525	23602
C28	Standard deviation	1016	1444	771	718	1655	3874	570	1082
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	162250	162490	116790	152670	222640	159870	166280	159260
C58	Standard deviation	6927	7960	5903	2305	2787	8687	4085	3437
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

216  
156

Table 4. - Continued  
(f) Continued. Coolant system data

Data channel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
051	Coolant flow rate, gal/min	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2
051	Standard deviation	0	0	0	0.1	0	0	0	0	0
052	Coolant flow rate, gal/min	2.5	2.5	2.5	2.4	2.6	2.5	2.5	2.5	2.5
052	Standard deviation	0	0	0	0.1	0	0	0	0	0
077	Coolant inlet temperature, °F	71	70	72	74	74	75	72	70	73
077	Standard deviation	1	0	1	1	1	0	1	0	1
078	Coolant inlet pressure, psia	66	66	66	65	66	66	66	66	66
078	Standard deviation	0	0	0	3	0	0	0	0	0
079	Coolant flow rate, gal/min	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0
079	Standard deviation	0	0	0	0.1	0	0	0	0	0
080	Coolant outlet pressure, psia	37.4	37.5	37.4	37.2	36.7	36.8	36.6	36.7	36.9
080	Standard deviation	0.1	0	0.1	0.6	0	0	0.2	0.1	0.1
081	Outlet 1 coolant temperature, °F	108	112	115	123	131	131	131	131	134
081	Standard deviation	0	0	3	2	1	0	2	0	1
082	Outlet 2 coolant temperature, °F	114	116	118	127	134	136	128	133	140
082	Standard deviation	1	0	3	3	1	0	3	1	1
083	Outlet 3 coolant temperature, °F	117	122	123	132	140	145	142	141	146
083	Standard deviation	1	0	3	3	2	0	2	1	1
084	Outlet 4 coolant temperature, °F	109	111	111	119	125	128	124	124	128
084	Standard deviation	1	0	3	3	1	0	3	1	2
085	Outlet 5 coolant temperature, °F	114	116	116	124	130	133	130	128	130
085	Standard deviation	1	0	3	3	1	0	1	0	1
086	Outlet 6 coolant temperature, °F	117	122	122	130	135	140	137	135	140
086	Standard deviation	1	0	3	3	1	0	1	1	2
087	Outlet 7 coolant temperature, °F	121	124	126	133	139	146	143	141	145
087	Standard deviation	1	6	3	3	1	0	1	1	1
088	Outlet 8 coolant temperature, °F	105	108	107	113	120	125	118	118	123
088	Standard deviation	1	0	2	2	1	0	3	0	1
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME



	121	124	126	133	139	146	145	141	145
087	Outlet 7 coolant temperature, °F								
087	Standard deviation	1	6	3	3	1	0	1	1
088	Outlet 8 coolant temperature, °F	105	108	107	113	120	125	118	118
088	Standard deviation	1	0	2	2	1	0	3	0
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	10.0	9.9	9.9	9.7	10.1	10.0	9.9	9.9
097	Standard deviation	0	0	0.3	0.4	0.1	0	0.1	0
098	Coolant outlet temperature, °F	111	114	115	122	128	131	127	127
098	Standard deviation	1	0	3	3	1	0	1	1
101	Coolant flow rate, gal/min	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.0
101	Standard deviation	0	0	0	0.1	0	0	0	0
102	Coolant outlet pressure, °F	15.3	14.6	14.2	14.1	16.9	18.1	14.0	14.3
102	Standard deviation	0.5	0.2	0.1	0.1	0.7	0.2	0	0.3
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

7/14/51  
151

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.0	10.0	10.0	10.0	9.0	8.4	8.3	8.2	8.3
113	Standard deviation	0	0	0	0.4	0.8	0	0	0	0
114	Coolant outlet temperature, °F	71	71	72	75	75	76	73	71	74
114	Standard deviation	1	0	1	1	1	0	1	0	1
115	Wall coolant top temperature, °F	98	98	98	96	105	112	96	98	104
115	Standard deviation	2	1	1	1	2	2	2	2	4
116	Wall coolant middle temperature, °F	106	102	97	93	119	120	96	109	113
116	Standard deviation	8	6	4	9	38	30	25	11	13
117	Wall coolant bottom temperature, °F	100	100	103	106	118	122	112	123	129
117	Standard deviation	1	0	1	1	2	1	3	0	2

FOLDOUT FRAME

	Temperature, °F	1	0	1	2	3	1	1	0	1
120	Standard deviation	1	0	1	2	3	1	1	0	1
121	Wall coolant flow rate, gal/min	3.6	3.6	3.6	3.4	3.2	3.3	3.2	3.2	3.2
121	Standard deviation	0.1	0.1	0.1	0.2	0.1	0.3	0	0.1	0.2
140	Wall coolant outlet pressure, psia	31.4	31.6	31.4	31.3	31.2	31.2	31.1	31.2	31.3
140	Standard deviation	0	0	0	0	0	0	0.1	0.1	0.1
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat trans- fer rate, Btu/hr	206330	224360	217600	234520	278770	276300	280730	284510	286350
C26	Standard deviation	5688	1943	9053	4207	2537	1950	3897	2604	8778
C27	Heat extractor heat trans- fer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	15977	17001	17135	16955	20984	19191	14056	16355	17856
C28	Standard deviation	172	338	480	980	5080	3361	1217	714	1648
C30-1	Heat transfer coeffici- ent 1, Btu/hr ft <sup>2</sup> °F	47.4	52.5	56.7	61.7	64.8	62.6	65.9	67.4	65.5
C30-1	Standard deviation	0.5	0.6	2.2	1.0	0.5	0.2	2.5	0.6	0.9
C58	Total heat transfer rate, Btu/hr	303990	392390	414110	410640	529010	591330	558120	572610	515610
C58	Standard deviation	5479	6382	13700	8465	2841	3463	18785	7560	12347
C30-2	Heat transfer coeffici- ent 2, Btu/hr ft <sup>2</sup> °F	50.8	55.2	57.3	63.2	63.8	64.4	58.8	65.2	66.8
C30-2	Standard deviation	0.8	0.5	2.4	0.7	0.3	0.2	2.7	0.6	0.9
C30-3	Heat transfer coeffici- ent 3, Btu/hr ft <sup>2</sup> °F	47.3	50.7	50.7	53.8	55.5	57.3	56.6	58.7	58.5
C30-3	Standard deviation	0.7	0.1	1.6	0.8	1.0	0.2	2.2	0.6	2.2
C30-4	Heat transfer coeffici- ent 4, Btu/hr ft <sup>2</sup> °F	54.3	59.8	61.9	66.7	68.7	71.1	71.9	73.7	73.5
C30-4	Standard deviation	0.8	0.4	2.4	1.0	1.3	0.2	2.0	0.4	0.5
C30-5	Heat transfer coeffici- ent 5, Btu/hr ft <sup>2</sup> °F	56.3	61.2	62.4	65.3	68.2	69.2	69.0	68.5	66.2
C30-5	Standard deviation	0.7	0.8	1.8	0.5	0.3	0.3	1.6	0.7	0.7
C30-6	Heat transfer coeffici- ent 6, Btu/hr ft <sup>2</sup> °F	57.6	66.0	65.6	69.2	69.9	73.3	73.7	73.4	72.5
C30-6	Standard deviation	0.9	0.4	1.9	0.8	0.4	0.4	1.1	0.5	2.6
C30-7	Heat transfer coeffici- ent 7, Btu/hr ft <sup>2</sup> °F	49.7	53.9	53.9	56.1	63.2	65.4	61.2	64.4	64.8
C30-7	Standard deviation	1.1	0.5	1.5	1.9	0.6	0.2	2.5	0.5	1.8
C30-8	Heat transfer coeffici- ent 8, Btu/hr ft <sup>2</sup> °F	68.1	73.6	76.9	80.7	84.6	88.4	89.2	90.1	88.6
C30-8	Standard deviation	0.9	1.0	2.6	0.4	0.4	0.6	1.1	0.3	0.5

<sup>b</sup> Data or results were not obtained.

2100  
158

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
051	Coolant flow rate, gal/min	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.2	2.1
051	Standard deviation	0	0	0.1	0.1	0.1	0.1	0.1	0	0.1
052	Coolant flow rate, gal/min	2.4	2.4	2.6	2.7	2.6	2.6	2.7	2.7	2.6
052	Standard deviation	0	0	0.1	0.1	0.1	0.1	0.1	0	0.1
077	Coolant inlet temperature, °F	73	70	66	66	66	63	60	64	65
077	Standard deviation	1	1	1	1	0	3	1	1	0
078	Coolant inlet pressure, psia	66.4	66.5	66.3	64.6	66.4	66.4	66.5	66.5	66.4
078	Standard deviation	0.1	0.2	0.2	2.8	0.1	0	0.2	0.2	0.3
079	Coolant flow rate, gal/min	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0
079	Standard deviation	0	0	0	0.1	0	0	0	0	0
080	Coolant outlet pressure, psia	37.1	37.0	31.4	32.2	34.2	31.8	29.0	26.0	32.5
080	Standard deviation	0.1	0	5.5	5.2	5.7	5.7	5.6	1.2	5.1
081	Outlet 1 coolant temperature, °F	131	126	123	113	127	133	135	142	151
081	Standard deviation	1	1	4	2	3	3	3	5	3
082	Outlet 2 coolant temperature, °F	137	131	126	113	127	113	111	113	118
082	Standard deviation	1	1	4	2	4	2	2	3	4
083	Outlet 3 coolant temperature, °F	143	138	133	119	135	123	121	128	141
083	Standard deviation	1	1	4	2	4	2	2	5	3
084	Outlet 4 coolant temperature, °F	127	121	116	105	118	108	105	110	120
084	Standard deviation	1	1	3	1	3	2	2	4	2
085	Outlet 5 coolant temperature, °F	128	123	117	106	116	110	109	113	121
085	Standard deviation	1	1	3	2	3	2	2	3	2
086	Outlet 6 coolant temperature, °F	139	133	129	116	129	118	115	120	133
086	Standard deviation	1	1	4	3	4	2	2	4	2
087	Outlet 7 coolant temperature, °F	143	139	133	119	132	122	120	125	137
087	Standard deviation	1	1	4	3	4	2	3	4	4
088	Outlet 8 coolant temperature, °F	121	115	111	99	110	87	88	82	74
088	Standard deviation	1	1	3	2	3	16	10	1	3
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDDOUT FRAME /

087	Outlet 7 coolant temperature, °F	143	139	133	119	132	122	120	125	137
087	Standard deviation	1	1	4	3	4	2	3	4	4
088	Outlet 8 coolant temperature, °F	121	115	111	99	110	87	88	82	74
088	Standard deviation	1	1	3	2	3	16	10	1	3
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	9.7	9.6	10.0	9.8	9.2	9.2	9.0	9.4	9.2
097	Standard deviation	0.1	0	0.6	0.4	0.6	0.6	0.5	0.1	0.5
098	Coolant outlet temperature, °F	129	123	119	108	119	110	109	113	122
098	Standard deviation	1	1	3	2	3	2	2	3	2
101	Coolant flow rate, gal/min	2.0	2.0	2.2	2.2	2.2	2.1	2.2	2.3	2.1
101	Standard deviation	0	0	0.1	0.1	0.2	0.1	0.1	0.1	0.1
102	Coolant outlet pressure, °F	13.7	13.0	12.5	12.2	12.7	13.0	14.8	15.9	14.0
102	Standard deviation	0.4	0.1	0.1	0.1	0.1	0.2	0.5	0.2	0.4
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

2174  
43 107

Table 4. - Continued

(f) Continued. Coolant system data

FOLODUT FRAME /

Data channel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.3	8.3	8.7	8.5	8.1	10.2	9.3	8.7	8.2
113	Standard deviation	0	0	0.5	0.4	0.4	0.5	0.3	0.2	0.4
114	Coolant outlet temperature, °F	74	71	67	67	67	63	62	65	66
114	Standard deviation	1	1	1	0	0	3	1	1	0
115	Wall coolant top temperature, °F	97	92	90	84	88	72	84	92	89
115	Standard deviation	1	2	3	1	1	2	3	2	3
116	Wall coolant middle temperature, °F	120	104	115	105	98	75	108	108	124
116	Standard deviation	18	11	26	16	16	13	42	22	39
117	Wall coolant bottom temperature, °F	128	125	133	146	152	133	145	152	150
117	Standard deviation	1	1	11	2	2	6	2	2	1
120	Wall coolant total	83	81	78	74	77	70	69	73	74

120	Wall coolant total temperature, °F	83	81	78	74	77	70	69	73	74
120	Standard deviation	1	1	2	1	4	2	1	2	1
121	Wall coolant flow rate, gal/min	3.2	3.2	3.3	3.1	2.9	3.0	3.0	3.1	2.9
121	Standard deviation	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
140	Wall coolant outlet pressure, psia	31.7	31.6	25.2	25.4	27.5	26.0	22.5	19.4	26.6
140	Standard deviation	0.2	0	5.9	5.8	6.4	6.2	6.2	1.3	5.8
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	274270	261910	266330	206800	247820	220060	222850	237490	266870
C26	Standard deviation	3274	3487	4432	3725	5739	6826	6859	10929	7398
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	16771	17518	19672	12721	15976	10917	12845	13616	11804
C28	Standard deviation	1295	951	5121	1005	5342	617	851	2726	1119
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	62.2	60.0	60.6	54.4	59.5	67.8	74.4	82.4	78.9
C30-1	Standard deviation	1.0	0.4	0.7	0.8	0.7	1.6	3.7	2.5	1.4
C58	Total heat transfer rate, Btu/hr	489360	554210	521620	335760	472250	378660	395610	454310	485330
C58	Standard deviation	23591	6456	6003	9400	5481	12315	9864	14714	7586
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	63.8	61.2	60.6	51.9	56.9	45.7	47.0	48.7	44.7
C30-2	Standard deviation	0.7	0.5	1.1	0.8	1.0	0.6	1.7	0.9	3.8
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	56.8	54.2	56.7	49.6	60.8	55.4	57.2	61.1	61.8
C30-3	Standard deviation	0.7	0.5	0.6	1.0	1.2	0.8	2.7	1.4	3.1
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	70.3	69.0	71.6	64.3	76.9	70.1	73.4	80.8	82.2
C30-4	Standard deviation	0.6	0.7	0.6	1.2	1.7	1.1	2.7	2.1	1.5
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	62.5	60.8	59.2	52.1	55.9	57.5	60.6	63.2	61.6
C30-5	Standard deviation	0.8	0.5	0.7	0.8	0.5	1.8	1.1	1.2	0.8
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	71.3	68.6	69.0	60.5	66.3	63.6	64.2	67.4	71.1
C30-6	Standard deviation	0.8	0.7	0.5	1.3	0.8	0.8	1.5	1.4	1.0
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	62.5	59.6	60.3	51.9	60.5	36.3	42.0	28.5	11.3
C30-7	Standard deviation	1.1	0.8	1.0	1.5	1.3	26.8	13.9	2.2	3.0
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	86.8	85.6	85.9	78.6	86.1	85.6	88.4	92.4	93.8
C30-8	Standard deviation	0.8	0.9	1.0	1.0	1.3	1.5	1.5	2.1	1.1

FOLDOUT FRAME 2

<sup>b</sup> Data or results were not obtained.

1-30-61  
160

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
051	Coolant flow rate, gal/min	2.6	2.5	2.3	2.4	2.5	2.6
051	Standard deviation	0.1	0	0.1	0.1	0.1	0.1
052	Coolant flow rate, gal/min	3.0	2.9	2.7	2.8	2.9	3.0
052	Standard deviation	0.1	0.1	0.1	0.1	0.1	0.1
077	Coolant inlet temperature, °F	67	67	67	67	67	67
077	Standard deviation	0	0	0	0	0	0
078	Coolant inlet pressure, psia	67.9	64.5	56.2	59.3	62.8	68.5
078	Standard deviation	3.5	1.7	3.1	2.6	2.5	2.2
079	Coolant flow rate, gal/min	2.2	2.2	2.0	2.1	2.2	2.4
079	Standard deviation	0.1	0.1	0.1	0.1	0.1	0.1
080	Coolant outlet pressure, psia	23.3	22.6	21.3	21.8	22.1	22.8
080	Standard deviation	0.7	0.3	0.6	0.5	0.5	0.3
081	Outlet 1 coolant tempera- ture, °F	129	132	131	130	129	126
081	Standard deviation	2	1	3	2	2	1
082	Outlet 2 coolant tempera- ture, °F	113	114	117	117	116	113
082	Standard deviation	1	1	3	2	1	1
083	Outlet 3 coolant tempera- ture, °F	127	127	128	127	125	122
083	Standard deviation	2	2	2	2	2	1
084	Outlet 4 coolant tempera- ture, °F	113	113	115	116	116	113
084	Standard deviation	2	2	3	1	1	1
085	Outlet 5 coolant tempera- ture, °F	114	115	117	115	114	111
085	Standard deviation	1	1	2	2	1	1
086	Outlet 6 coolant tempera- ture, °F	123	124	127	127	126	123
086	Standard deviation	2	1	3	2	1	1
087	Outlet 7 coolant tempera- ture, °F	124	125	127	124	123	120
087	Standard deviation	2	1	2	2	2	1
088	Outlet 8 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

FOLDDOUT FRAME



		127	128	127	124	123	120
087	Standard deviation	2	1	2	2	2	1
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.4	1.3	1.2	1.3	1.3	1.4
096	Standard deviation	0	0	0.1	0.1	0	0
097	Coolant flow rate, gal/min	11.7	11.5	10.5	10.9	11.4	12.2
097	Standard deviation	0.5	0.2	0.4	0.3	0.3	0.3
098	Coolant outlet temperature, °F	114	115	117	116	116	112
098	Standard deviation	2	1	2	2	1	1
101	Coolant flow rate, gal/min	2.6	2.5	2.2	2.3	2.5	2.7
101	Standard deviation	0.1	0.1	0.1	0.1	0.1	0.1
102	Coolant outlet pressure, °F	13.3	13.2	13.9	13.7	12.7	12.4
102	Standard deviation	0.1	0.1	0.1	0.4	0.2	0.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

115  
161

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.1	9.7	8.8	9.1	9.4	10.0
113	Standard deviation	0.4	0.2	0.3	0.2	0.3	0.2
114	Coolant outlet tempera- ture, °F	68	68	68	68	68	68
114	Standard deviation	0	0	0	0	0	0
115	Wall coolant top tempera- ture, °F	84	76	81	86	82	78
115	Standard deviation	4	3	1	2	2	0
116	Wall coolant middle temperature, °F	100	107	92	69	61	61
116	Standard deviation	22	15	24	2	2	1
117	Wall coolant bottom temperature, °F	148	141	135	131	124	116
117	Standard deviation	4	1	2	2	2	2

FOLDOUT FRAME

FOLDDOUT FRAME 2

121	Wall coolant flow rate, gal/min	3.7	3.5	3.3	3.5	3.7	4.1
121	Standard deviation	0.2	0.1	0.1	0.1	0.1	0.1
140	Wall coolant outlet pressure, psia	14.6	14.4	14.0	14.2	13.9	13.8
140	Standard deviation	0.1	0.1	0.1	0.1	0.1	0
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	279180	276620	263040	270480	279070	279630
C26	Standard deviation	6490	4899	9504	3708	5262	5116
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	14845	17215	17069	19333	19117	19397
C28	Standard deviation	3173	5847	661	2407	668	1038
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	73.4	74.5	66.7	68.5	72.6	74.5
C30-1	Standard deviation	1.8	1.1	1.1	1.7	0.8	0.7
C58	Total heat transfer rate, Btu/hr	508490	517030	503790	506390	518410	527850
C58	Standard deviation	8057	10786	13615	6038	4730	7475
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	51.3	51.0	48.3	51.1	53.3	54.8
C30-2	Standard deviation	1.2	0.6	1.3	1.5	0.8	0.8
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	64.7	61.1	56.1	60.7	63.5	65.3
C30-3	Standard deviation	1.4	2.4	2.1	1.5	0.9	0.7
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	80.7	75.8	67.3	69.5	72.3	73.4
C30-4	Standard deviation	1.6	3.1	1.5	1.5	0.9	0.5
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	65.2	63.8	59.8	60.0	61.9	62.6
C30-5	Standard deviation	0.9	1.1	0.6	0.9	0.8	0.5
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	74.1	71.8	68.4	71.0	73.2	74.1
C30-6	Standard deviation	0.8	0.8	2.1	1.4	0.7	0.8
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	2.8	0.9	7.1	5.6	(b)	(b)
C30-7	Standard deviation	1.4	0.8	3.4	1.8	(b)	(b)
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	86.8	84.6	78.9	79.0	81.3	81.4
C30-8	Standard deviation	1.2	0.9	1.4	1.2	0.8	0.5

<sup>b</sup> Data or results were not obtained.

2101  
12/15/53

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
051	Coolant flow rate, gal/min	2.2	2.3	2.2	2.3	2.3	2.3	2.5	2.7	2.7
051	Standard deviation	0	0.1	0.1	0.1	0	0	0.1	0	0
052	Coolant flow rate, gal/min	2.2	2.3	2.1	(b)	(b)	(b)	2.3	2.6	2.7
052	Standard deviation	0	0.1	0	(b)	(b)	(b)	0.1	0.1	0.1
077	Coolant inlet temperature, °F	65	65	65	65	65	66	66	65	65
077	Standard deviation	1	1	0	1	0	0	0	0	0
078	Coolant inlet pressure, psia	65.6	62.0	63.2	62.5	61.0	61.1	60.8	61.6	62.0
078	Standard deviation	0.1	2.0	2.3	2.2	0.2	0.2	0.6	1.6	1.5
079	Coolant flow rate, gal/min	2.3	2.4	2.3	2.4	2.4	2.4	2.6	2.7	2.8
079	Standard deviation	0	0.1	0.1	0.1	0	0	0.1	0.1	0
080	Coolant outlet pressure, psia	38.1	30.6	34.1	32.5	30.4	31.2	25.8	23.3	23.4
080	Standard deviation	0.1	4.8	5.0	5.4	0.9	0	1.9	0.4	0.2
081	Outlet 1 coolant tempera- ture, °F	115	111	113	106	106	106	112	109	111
081	Standard deviation	1	3	2	2	1	1	2	1	1
082	Outlet 2 coolant tempera- ture, °F	130	124	130	120	119	119	126	121	124
082	Standard deviation	1	3	3	3	1	1	2	1	2
083	Outlet 3 coolant tempera- ture, °F	142	136	142	131	130	129	136	130	133
083	Standard deviation	1	4	3	4	1	1	3	1	2
084	Outlet 4 coolant tempera- ture, °F	124	118	122	114	113	112	119	115	118
084	Standard deviation	1	3	2	3	1	0	2	1	1
085	Outlet 5 coolant tempera- ture, °F	130	125	127	120	119	119	126	123	124
085	Standard deviation	1	3	3	3	1	1	2	1	1
086	Outlet 6 coolant tempera- ture, °F	139	133	138	129	128	127	136	131	132
086	Standard deviation	1	4	3	4	1	1	2	1	2
087	Outlet 7 coolant tempera- ture, °F	139	135	138	130	131	130	136	132	133
087	Standard deviation	1	4	2	4	1	1	2	1	2
088	Outlet 8 coolant tempera- ture, °F	118	108	116	108	106	107	92	72	69
088	Standard deviation	1	7	3	3	1	0	10	1	0
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLOOUT FRAME /

.087	Standard deviation	1	4	2	4	1	1	2	1	2
088	Outlet 8 coolant temperature, °F	118	108	116	108	106	107	92	72	69
088	Standard deviation	1	7	3	3	1	0	10	1	0
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2
096	Standard deviation	0	0.1	0	0.1	0	0	0	0	0
097	Coolant flow rate, gal/min	9.9	10.4	9.9	9.9	10.0	9.9	10.9	11.4	11.5
097	Standard deviation	0.1	0.5	0.4	0.6	0.1	0	0.2	0.2	0.2
098	Coolant outlet temperature, °F	124	120	123	115	115	114	121	117	119
098	Standard deviation	1	3	2	3	1	1	2	1	1
101	Coolant flow rate, gal/min	2.0	2.1	2.0	2.0	2.0	2.0	2.2	2.4	2.4
101	Standard deviation	0	0.1	0.1	0.1	0	0	0.1	0	0.1
102	Coolant outlet pressure, °F	16.2	16.3	15.4	15.0	14.7	14.9	15.7	15.4	15.1
102	Standard deviation	0.4	0.4	0.2	0.1	0	0.1	0.1	0.1	0.0
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

2112  
32 (102)

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.0	8.5	8.2	8.4	8.5	8.4	9.1	9.4	9.5
113	Standard deviation	0	0.4	0.4	0.5	0.1	0	0.2	0.1	0.2
114	Coolant outlet temperature, °F	66	67	66	66	66	67	67	66	66
114	Standard deviation	1	1	0	1	0	0	0	0	0
115	Wall coolant top temperature, °F	81	87	78	76	71	72	79	82	82
115	Standard deviation	4	5	2	2	0	1	3	1	1
116	Wall coolant middle temperature, °F	82	102	95	106	78	68	101	80	70
116	Standard deviation	24	26	10	33	15	2	19	8	4
117	Wall coolant bottom temperature, °F	92	95	96	95	96	97	95	95	94
117	Standard deviation	2	2	1	1	0	0	2	1	0

FOLDDOUT FRAME

120	Standard deviation	0	0	0	0	0	0	0	0	0
121	Wall coolant flow rate, gal/min	3.7	3.9	3.7	3.9	3.7	3.7	4.0	4.3	4.4
121	Standard deviation	0.1	0.2	0.2	0.3	0.1	0	0.2	0.1	0.1
140	Wall coolant outlet pressure, psia	30.6	22.4	26.4	24.5	22.2	23.1	16.6	14.4	14.1
140	Standard deviation	0.1	5.4	5.7	6.1	1.0	0	1.8	0.1	0
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	294940	286830	292040	251080	252490	243840	303520	298650	314320
C26	Standard deviation	5606	7000	4594	2731	4216	2898	6825	7178	5136
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	19813	21749	20101	21280	19110	18432	20395	21783	21842
C28	Standard deviation	1887	1431	821	4428	320	344	1988	479	469
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	65.8	65.4	65.5	63.1	63.4	62.6	69.8	69.6	72.5
C30-1	Standard deviation	0.6	0.6	0.5	0.7	0.4	0.5	0.6	1.2	0.2
C58	Total heat transfer rate, Btu/hr	578940	616340	521550	418180	466410	468850	583000	628350	570770
C58	Standard deviation	15053	20310	4485	4524	3908	5370	10604	11 630	4679
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	66.4	65.6	67.8	65.3	65.6	64.4	70.0	68.0	73.1
C30-2	Standard deviation	0.6	0.7	0.5	0.7	0.6	0.1	0.8	0.8	1.0
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	60.1	58.9	59.5	56.9	57.0	55.6	62.3	62.4	66.2
C30-3	Standard deviation	0.4	1.2	0.7	0.9	0.4	0.2	1.0	0.9	0.5
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	75.0	75.0	75.8	72.5	72.9	72.4	78.6	76.3	80.4
C30-4	Standard deviation	0.6	0.9	0.7	1.4	0.5	0.2	0.5	1.2	0.5
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	73.2	73.9	73.4	72.9	71.5	71.4	79.4	80.7	81.6
C30-5	Standard deviation	0.8	1.0	0.4	0.6	0.5	0.5	0.9	1.0	0.7
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	78.6	79.8	81.6	80.4	78.9	78.2	86.9	86.6	88.4
C30-6	Standard deviation	0.7	1.1	0.7	0.6	0.7	0.6	1.1	1.0	1.0
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	61.8	52.2	60.2	(b)	(b)	(b)	31.9	8.3	4.8
C30-7	Standard deviation	1.1	6.0	1.5	(b)	(b)	(b)	11.3	1.5	0.4
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	81.7	81.9	79.6	(b)	(b)	(b)	81.8	87.4	90.5
C30-8	Standard deviation	1.2	1.2	0.7	(b)	(b)	(b)	2.3	2.2	1.3

b Data or results were not obtained.

FOLDOUT FRAME

2

104  
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Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test					
		19	110A	110B	111	112	113
051	Coolant flow rate, gal/min	2.6	2.3	2.4	2.3	2.4	2.5
051	Standard deviation	0.1	0.1	0	0.1	0	0.1
052	Coolant flow rate, gal/min	2.6	2.2	2.3	2.2	(b)	(b)
052	Standard deviation	0.1	0.1	0	0	(b)	(b)
077	Coolant inlet temperature, °F	65	65	64	66	65	66
077	Standard deviation	0	1	0	1	0	1
078	Coolant inlet pressure, psia	62.0	63.8	61.1	62.0	61.2	58.4
078	Standard deviation	1.8	2.2	0.1	1.9	0.1	4.5
079	Coolant flow rate, gal/min	2.7	2.3	2.5	2.4	2.5	2.6
079	Standard deviation	0.2	0.1	0	0.1	0	0.1
080	Coolant outlet pressure, psia	25.7	37.1	30.2	32.6	28.8	25.0
080	Standard deviation	3.3	5.5	0.1	4.7	0.8	2.4
081	Outlet 1 coolant temperature, °F	106	112	105	108	110	113
081	Standard deviation	3	2	0	2	2	2
082	Outlet 2 coolant temperature, °F	116	126	117	121	122	120
082	Standard deviation	4	2	1	3	3	5
083	Outlet 3 coolant temperature, °F	125	137	128	132	134	140
083	Standard deviation	5	3	0	4	4	4
084	Outlet 4 coolant temperature, °F	112	121	114	117	117	121
084	Standard deviation	3	2	0	2	3	3
085	Outlet 5 coolant temperature, °F	118	127	119	122	124	128
085	Standard deviation	4	3	0	3	3	4
086	Outlet 6 coolant temperature, °F	124	135	126	130	132	139
086	Standard deviation	4	3	1	4	3	4
087	Outlet 7 coolant temperature, °F	126	137	128	132	134	140
087	Standard deviation	4	3	1	4	3	4
088	Outlet 8 coolant temperature, °F	80	114	109	111	106	68
088	Standard deviation	19	3	0	2	6	3
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

RODDOUT FRAME /



087	Standard deviation	4	3	1	4	3	4
088	Outlet 8 coolant temperature, °F	80	114	109	111	106	68
088	Standard deviation	19	3	0	2	6	3
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.2	1.0	1.1	1.1	1.1	1.1
096	Standard deviation	0.1	0.1	0	0.1	0	0.1
097	Coolant flow rate, gal/min	11.2	9.4	10.1	9.8	10.2	10.5
097	Standard deviation	0.7	0.6	0.1	0.5	0.1	0.5
098	Coolant outlet temperature, °F	113	121	114	117	119	122
098	Standard deviation	3	2	0	3	3	3
101	Coolant flow rate, gal/min	2.3	2.0	2.1	2.1	2.2	2.2
101	Standard deviation	0.1	0.1	0	0.1	0	0.1
102	Coolant outlet pressure, °F	15.1	15.9	16.1	15.8	14.5	14.8
102	Standard deviation	0	0.3	0.1	0.5	0.1	0.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test					
		19	110A	110B	111	112	113
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	9.2	7.9	8.5	8.3	8.7	8.8
113	Standard deviation	0.5	0.5	0.1	0.4	0.1	0.4
114	Coolant outlet tempera- ture, °F	66	66	65	67	66	66
114	Standard deviation	0	1	0	1	0	0
115	Wall coolant top tempera- ture, °F	81	79	79	78	64	62
115	Standard deviation	2	1	1	4	2	2
116	Wall coolant middle temperature, °F	70	69	89	81	72	81
116	Standard deviation	6	3	6	9	7	23
117	Wall coolant bottom temperature, °F	94	99	97	99	91	90
117	Standard deviation	1	1	0	1	2	3

FOLDOUT FRAME /

120	Standard deviation	0.0	0.1	0.1	0.0	0.1	0.1
121	Wall coolant flow rate, gal/min	4.3	3.4	3.7	3.6	3.7	3.8
121	Standard deviation	0.3	0.3	0.1	0.2	0.1	0.1
140	Wall coolant outlet pressure, psia	16.9	30.3	22.7	25.3	20.9	16.5
140	Standard deviation	4.1	6.2	0.1	5.3	0.8	1.9
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	267690	266960	254790	255510	273250	298920
C26	Standard deviation	7583	3449	500	3387	12 841	5411
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	20092	16970	18256	18183	16342	16527
C28	Standard deviation	1162	635	560	929	2546	2469
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	71.2	71.1	68.2	67.0	73.0	71.6
C30-1	Standard deviation	0.9	1.1	0.8	0.7	2.3	1.1
C58	Total heat transfer rate, Btu/hr	488380	450990	424180	452500	511370	524700
C58	Standard deviation	12767	18889	1983	10626	14747	9399
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	69.2	70.5	68.2	68.1	71.5	63.3
C30-2	Standard deviation	1.1	0.7	0.4	0.9	1.7	5.6
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	64.3	65.7	65.0	64.3	65.5	64.2
C30-3	Standard deviation	0.7	1.1	0.6	0.6	2.1	1.2
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	78.1	79.9	78.9	78.5	82.2	81.9
C30-4	Standard deviation	1.1	0.6	0.7	0.7	2.9	1.8
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	81.7	83.5	80.6	79.4	83.1	83.0
C30-5	Standard deviation	1.5	0.5	0.3	0.7	2.0	1.5
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	86.4	89.0	86.8	86.1	90.7	93.1
C30-6	Standard deviation	1.2	0.4	0.8	0.7	2.6	1.2
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	19.0	63.5	62.3	59.1	(b)	(b)
C30-7	Standard deviation	26.6	1.0	0.3	0.7	(b)	(b)
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	86.6	87.9	82.6	79.6	(b)	(b)
C30-8	Standard deviation	2.4	0.6	0.2	0.7	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
051	Coolant flow rate, gal/min	2.0	1.9	1.9	1.9	1.8	1.8	1.8	2.1	2.0
051	Standard deviation	0	0.1	0	0	0	0	0.1	0.2	0.1
052	Coolant flow rate, gal/min	2.4	2.2	2.3	2.3	2.2	2.2	2.2	2.4	2.3
052	Standard deviation	0	0.1	0	0	0	0	0.1	0.2	0.1
077	Coolant inlet temperature, °F	66	68	66	67	56	55	56	67	66
077	Standard deviation	0	1	0	0	1	0	0	1	5
078	Coolant inlet pressure, psia	61.1	62.2	60.9	60.9	48.0	47.9	47.4	63.6	59.4
078	Standard deviation	0.2	1.8	0.2	0.2	0.6	1.0	2.3	5.8	4.4
079	Coolant flow rate, gal/min	2.6	2.4	2.4	2.4	2.3	2.3	2.3	2.5	2.4
079	Standard deviation	0	0.1	0	0	0	0	0.1	0.2	0.1
080	Coolant outlet pressure, psia	25.1	31.4	29.4	29.4	18.3	18.2	18.1	29.7	28.1
080	Standard deviation	0.8	0.9	0.1	0	0.1	0.2	0.3	3.8	5.3
081	Outlet 1 coolant tempera- ture, °F	101	106	109	113	103	103	105	107	107
081	Standard deviation	1	2	1	1	3	1	1	4	4
082	Outlet 2 coolant tempera- ture, °F	114	117	121	129	112	114	122	119	124
082	Standard deviation	2	3	1	1	3	2	2	5	5
083	Outlet 3 coolant tempera- ture, °F	119	126	131	138	127	127	130	129	131
083	Standard deviation	2	4	2	2	4	2	2	5	5
084	Outlet 4 coolant tempera- ture, °F	111	114	117	126	112	114	118	116	120
084	Standard deviation	2	3	1	1	2	2	2	5	5
085	Outlet 5 coolant tempera- ture, °F	123	129	133	139	129	129	129	122	125
085	Standard deviation	1	4	2	2	4	2	3	5	5
086	Outlet 6 coolant tempera- ture, °F	118	123	126	135	126	127	129	124	130
086	Standard deviation	2	3	2	1	4	2	3	5	5
087	Outlet 7 coolant tempera- ture, °F	124	131	136	143	132	132	134	128	133
087	Standard deviation	2	4	2	2	4	2	3	5	5
088	Outlet 8 coolant tempera- ture, °F	111	116	120	126	119	120	119	116	119
088	Standard deviation	1	3	1	1	3	2	2	4	5
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

	127	128	130	143	152	152	154	128	155
087	Standard deviation	2	4	2	2	4	2	3	5
088	Outlet 8 coolant temperature, °F	111	116	120	126	119	120	119	116
088	Standard deviation	1	3	1	1	3	2	2	4
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.3
096	Standard deviation	0	0.1	0	0	0	0	0	0.1
097	Coolant flow rate, gal/min	10.5	9.7	9.8	9.9	9.3	9.3	9.3	10.0
097	Standard deviation	0.1	0.5	0	0	0.1	0.2	0.3	0.7
098	Coolant outlet temperature, °F	110	115	118	124	114	114	117	115
098	Standard deviation	1	3	1	1	3	2	2	4
101	Coolant flow rate, gal/min	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0
101	Standard deviation	0	0.1	0	0	0	0	0.1	0.2
102	Coolant outlet pressure, °F	14.5	14.5	15.6	14.0	15.0	15.1	14.5	15.8
102	Standard deviation	0.1	0	0.1	0.6	0.3	0.1	0.1	0.2
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.9	8.2	8.4	8.4	8.0	8.0	8.0	8.6	8.2
113	Standard deviation	0.1	0.4	0	0	0.1	0.1	0.3	0.7	0.3
114	Coolant outlet tempera- ture, °F	67	68	67	68	58	57	57	68	67
114	Standard deviation	0	1	0	0	1	0	0	1	4
115	Wall coolant top tempera- ture, °F	75	76	88	77	86	89	82	86	80
115	Standard deviation	1	0	1	3	2	1	2	1	3
116	Wall coolant middle temperature, °F	93	90	105	92	82	87	78	98	102
116	Standard deviation	20	10	12	15	10	6	6	13	16
117	Wall coolant bottom temperature, °F	105	110	113	115	112	112	111	117	121
117	Standard deviation	2	2	1	0	0	1	1	4	2

DUPLICATE FRAME

117	Standard deviation	2	2	1	0	0	1	1	4	2
120	Wall coolant total temperature, °F	74	76	76	77	68	67	67	75	75
120	Standard deviation	1	1	0	1	1	0	0	1	4
121	Wall coolant flow rate, gal/min	3.6	3.3	3.4	3.4	3.2	3.2	3.3	3.4	3.2
121	Standard deviation	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1
140	Wall coolant outlet pressure, psia	18.5	25.6	23.4	23.4	13.2	13.3	13.2	23.4	22.3
140	Standard deviation	0.9	5.4	0.1	0	0.1	0	0	4.1	5.4
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	232490	232200	263070	285590	270350	278880	287400	245530	254890
C26	Standard deviation	8781	3076	6333	6907	10737	8569	3506	8435	2998
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	14474	13927	16469	16142	19202	18931	18599	14777	15372
C28	Standard deviation	1448	613	1133	1309	1162	418	421	854	3250
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	56.5	59.0	65.6	65.0	64.0	65.1	65.2	64.9	62.4
C30-1	Standard deviation	1.0	0.8	1.3	0.8	1.0	0.8	0.5	1.6	0.6
C58	Total heat transfer rate, Btu/hr	350000	419310	614650	474620	609190	623430	458050	476530	375750
C58	Standard deviation	14645	5123	13044	9613	14413	16384	5184	8133	4236
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	61.0	60.1	64.9	68.5	59.0	61.6	67.8	66.0	68.1
C30-2	Standard deviation	1.4	0.9	1.1	0.7	1.3	0.8	0.3	1.7	0.4
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	59.0	57.8	61.1	65.1	60.4	62.6	64.3	56.5	55.4
C30-3	Standard deviation	1.0	1.1	0.9	0.8	0.9	0.6	0.6	2.8	0.5
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	65.8	68.0	73.1	74.5	71.6	72.7	72.7	67.5	63.1
C30-4	Standard deviation	0.9	1.0	1.1	0.9	1.2	1.1	0.6	2.8	0.6
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	67.2	68.8	71.9	71.5	69.8	70.2	68.2	69.0	67.0
C30-5	Standard deviation	1.1	0.7	0.9	0.8	1.0	1.1	1.4	2.4	1.9
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	57.2	57.9	60.9	63.1	63.7	64.8	64.2	68.2	68.8
C30-6	Standard deviation	0.9	0.8	1.1	0.7	1.1	0.8	0.7	2.5	1.9
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	63.5	63.8	69.4	71.0	73.7	74.6	70.2	68.3	69.0
C30-7	Standard deviation	0.7	0.7	0.9	0.7	0.9	0.8	1.2	1.8	0.6
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	77.4	79.1	85.6	87.0	83.0	84.3	82.8	80.7	81.8
C30-8	Standard deviation	0.6	0.6	1.1	0.8	1.1	1.1	1.0	2.1	1.0

b Data or results were not obtained.

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Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
051	Coolant flow rate, gal/min	2.7	2.7	2.6	2.6	2.6	2.6	2.5	2.5	2.5
051	Standard deviation	0	0	0	0	0	0	0	0.1	0
052	Coolant flow rate, gal/min	2.8	2.8	2.7	2.6	2.6	2.6	2.6	2.6	2.6
052	Standard deviation	0	0	0	0	0	0	0	0.1	0
077	Coolant inlet temperature, °F	66	65	65	65	66	67	67	66	66
077	Standard deviation	0	0	0	0	0	0	0	1	0
078	Coolant inlet pressure, psia	62.4	62.4	62.5	62.6	62.5	62.7	63.3	64.0	63.5
078	Standard deviation	0.2	0.2	0.1	0.1	0.1	0.3	0.2	1.3	0.2
079	Coolant flow rate, gal/min	2.3	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3
079	Standard deviation	0	0	0	0	0	0	0	0.1	0
080	Coolant outlet pressure, psia	25.6	18.5	21.5	22.2	22.4	22.5	22.5	23.7	22.7
080	Standard deviation	0.6	0.5	0.5	0.1	0.1	0.1	0.1	3.3	0.1
081	Outlet 1 coolant tempera- ture, °F	97	101	101	100	100	101	105	105	103
081	Standard deviation	(b)	1	1	0	0	0	0	2	0
082	Outlet 2 coolant tempera- ture, °F	110	116	117	115	115	117	124	124	123
082	Standard deviation	1	0	1	1	0	1	1	3	0
083	Outlet 3 coolant tempera- ture, °F	112	124	123	121	121	124	131	132	133
083	Standard deviation	1	1	1	1	0	1	0	3	0
084	Outlet 4 coolant tempera- ture, °F	105	117	118	117	117	117	126	126	126
084	Standard deviation	1	1	1	0	1	1	1	3	0
085	Outlet 5 coolant tempera- ture, °F	108	111	109	110	110	109	116	112	115
085	Standard deviation	1	1	1	0	1	1	0	3	0
086	Outlet 6 coolant tempera- ture, °F	109	122	120	119	119	119	129	127	128
086	Standard deviation	1	1	1	1	1	1	0	3	0
087	Outlet 7 coolant tempera- ture, °F	108	116	117	116	116	116	122	122	121
087	Standard deviation	1	1	1	0	1	1	0	3	1
088	Outlet 8 coolant tempera- ture, °F	100	108	109	108	108	108	115	114	114
088	Standard deviation	1	1	1	0	1	1	0	2	1
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

OUTLET FRAME /



087	Standard deviation	1	1	1	0	1	1	0	3	1
088	Outlet 8 coolant temperature, °F	100	108	109	108	108	108	115	114	114
088	Standard deviation	1	1	1	0	1	1	0	2	1
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
096	Standard deviation	0	0	0	0	0	0	0	0.1	0
097	Coolant flow rate, gal/min	11.2	11.3	10.7	10.5	10.5	10.5	10.5	10.4	10.4
097	Standard deviation	0.1	0.1	0.1	0	0	0.1	0.1	0.4	0
098	Coolant outlet temperature, °F	103	110	110	109	109	110	116	115	115
098	Standard deviation	1	0	1	0	0	1	0	3	0
101	Coolant flow rate, gal/min	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.1	2.1
101	Standard deviation	0	0	0	0	0	0	0	0.1	0
102	Coolant outlet pressure, °F	15.1	15.0	15.2	15.7	16.0	15.9	15.9	16.0	16.7
102	Standard deviation	0.1	0.1	0.2	0.2	0.1	0	0	0.1	0.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.6	8.5	8.1	8.0	8.0	8.0	8.0	8.0	8.0
113	Standard deviation	0.1	0.1	0.1	0	0	0	0	0.3	0
114	Coolant outlet temperature, °F	66	66	66	67	67	68	68	67	67
114	Standard deviation	0	0	0	0	0	0	0	1	0
115	Wall coolant top temperature, °F	78	83	93	94	95	98	97	102	100
115	Standard deviation	4	3	1	1	1	1	0	2	1
116	Wall coolant middle temperature, °F	90	79	96	112	115	91	108	116	118
116	Standard deviation	21	3	13	17	14	7	19	6	21
117	Wall coolant bottom temperature, °F	101	92	95	98	100	99	103	103	106
117	Standard deviation	7	2	0	0	0	0	1	2	1
120	Wall coolant total	73	73	75	75	76	76	77	76	76

FOLDOUT FRAME /

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117	Standard deviation	7	2	0	0	0	0	1	2	1
120	Wall coolant total temperature, °F	73	73	75	75	76	76	77	76	76
120	Standard deviation	2	1	0	0	1	0	1	2	1
121	Wall coolant flow rate, gal/min	3.6	4.0	3.8	3.7	3.8	3.8	3.8	3.6	3.7
121	Standard deviation	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2
140	Wall coolant outlet pressure, psia	19.2	18.8	22.3	23.2	23.3	23.3	23.4	24.7	23.5
140	Standard deviation	0.7	0.6	0.6	0	0	0	0.1	3.7	0.1
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	209510	255900	244940	233180	230140	231060	261300	259480	263310
C26	Standard deviation	5429	1290	4529	1883	1827	4025	2332	5399	2541
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	13501	16766	19043	17736	18401	17281	18342	18487	18799
C28	Standard deviation	3549	1287	674	1379	2242	658	2024	1680	2576
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	44.9	52.1	51.4	50.8	50.0	51.8	50.6	53.2	50.7
C30-1	Standard deviation	0.6	0.5	0.9	0.3	0.3	0.4	0.9	1.2	0.8
C58	Total heat transfer rate, Btu/hr	339150	412380	602230	418750	347790	472650	454070	575190	446150
C58	Standard deviation	6884	2911	24243	5783	2980	20933	9500	12913	6068
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	49.0	56.7	57.3	56.3	55.6	58.3	59.0	60.9	59.4
C30-2	Standard deviation	0.8	1.0	1.0	0.4	0.2	0.5	0.7	1.2	0.8
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	54.7	63.6	63.6	63.4	63.0	63.5	66.9	68.2	65.6
C30-3	Standard deviation	0.9	0.9	0.6	0.4	0.4	0.3	0.5	1.3	1.2
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	60.4	62.4	66.2	65.6	64.3	67.8	68.4	71.5	68.8
C30-4	Standard deviation	0.9	0.4	1.2	0.4	0.3	0.5	0.8	1.1	1.6
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	64.4	63.1	60.9	65.0	65.1	63.3	65.0	61.9	65.5
C30-5	Standard deviation	0.9	0.4	1.7	0.6	0.6	0.8	1.4	1.2	1.1
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	62.1	74.7	72.7	73.6	73.5	74.2	77.7	78.1	78.1
C30-6	Standard deviation	0.9	0.6	1.0	0.7	0.4	0.5	1.2	0.9	1.0
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	55.2	63.8	64.2	63.4	63.1	63.0	65.7	67.0	66.4
C30-7	Standard deviation	0.5	0.7	0.9	0.6	0.3	0.4	0.9	1.0	1.1
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	63.1	70.7	70.9	71.6	71.1	70.9	71.8	73.1	72.9
C30-8	Standard deviation	0.9	0.7	0.8	0.4	0.4	0.4	1.6	0.8	1.4

<sup>b</sup> Data or results were not obtained.

FOLDOUT FRAME

2

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
051	Coolant flow rate, gal/min	2.5	2.5	2.8	2.5	2.5	2.4	2.8
051	Standard deviation	0	0	0.3	0.1	0	0	0.5
052	Coolant flow rate, gal/min	2.6	2.6	2.9	2.6	2.6	2.5	2.9
052	Standard deviation	0	0	0.3	0.1	0	0	0.5
077	Coolant inlet temperature, °F	66	67	67	51	52	64	65
077	Standard deviation	0	0	1	5	7	0	0
078	Coolant inlet pressure, psia	63.6	63.6	74.5	53.0	53.7	59.2	70.3
078	Standard deviation	0.2	0.2	12.7	4.1	3.9	0.2	15.5
079	Coolant flow rate, gal/min	2.3	2.3	2.5	2.2	2.2	2.1	2.4
079	Standard deviation	0	0	0.2	0.1	0	0	0.4
080	Coolant outlet pressure, psia	22.9	22.8	26.8	14.1	14.7	21.8	23.6
080	Standard deviation	0	0.1	5.7	6.5	4.5	0	3.1
081	Outlet 1 coolant tempera- ture, °F	105	101	105	90	86	105	101
081	Standard deviation	0	1	4	8	7	1	5
082	Outlet 2 coolant tempera- ture, °F	124	117	122	111	102	125	120
082	Standard deviation	0	1	6	9	7	1	7
083	Outlet 3 coolant tempera- ture, °F	135	126	129	119	110	134	125
083	Standard deviation	1	1	8	9	8	1	8
084	Outlet 4 coolant tempera- ture, °F	127	118	122	114	105	128	120
084	Standard deviation	0	1	7	9	8	1	7
085	Outlet 5 coolant tempera- ture, °F	117	111	112	101	98	116	109
085	Standard deviation	0	1	7	8	8	0	6
086	Outlet 6 coolant tempera- ture, °F	130	121	123	115	108	129	120
086	Standard deviation	0	1	7	9	7	0	8
087	Outlet 7 coolant tempera- ture, °F	122	116	120	107	104	122	116
087	Standard deviation	0	1	6	8	7	0	7
088	Outlet 8 coolant tempera- ture, °F	114	108	112	101	96	114	108
088	Standard deviation	0	1	5	8	7	0	6
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

		122	116	120	107	104	122	116
087	Outlet 7 coolant temperature, °F							
087	Standard deviation	0	1	6	8	7	0	7
088	Outlet 8 coolant temperature, °F	114	108	112	101	96	114	108
088	Standard deviation	0	1	5	8	7	0	6
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.5	1.5	1.7	1.5	1.4	1.4	1.6
096	Standard deviation	0	0	0.2	0.1	0	0	0.3
097	Coolant flow rate, gal/min	10.4	10.4	11.4	9.7	9.8	9.5	10.9
097	Standard deviation	0	0	1.1	0.5	0.1	0	1.9
098	Coolant outlet temperature, °F	116	110	113	102	97	116	110
098	Standard deviation	0	1	5	8	7	0	6
101	Coolant flow rate, gal/min	2.0	2.1	2.4	2.1	2.1	2.0	2.4
101	Standard deviation	0	0	0.3	0.1	0	0	0.5
102	Coolant outlet pressure, °F	16.6	16.3	16.5	15.8	15.9	16.4	16.6
102	Standard deviation	0.1	0.1	0.2	0.3	0.1	0	0
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.0	8.0	8.8	7.7	7.7	7.5	8.6
113	Standard deviation	0	0	0.9	0.4	0.1	0	1.5
114	Coolant outlet temperature, °F	68	69	68	53	54	65	67
114	Standard deviation	0	0	1	5	7	0	0
115	Wall coolant top temperature, °F	102	101	105	100	97	98	100
115	Standard deviation	1	0	1	2	0	0	0
116	Wall coolant middle temperature, °F	125	121	119	83	76	103	108
116	Standard deviation	19	26	23	24	5	11	16
117	Wall coolant bottom temperature, °F	109	107	102	98	96	109	106
117	Standard deviation	0	1	3	4	4	2	4
120	Wall coolant total	77	78	77	62	62	71	71

FOLDOUT FRAME

	Temperature,							
117	Standard deviation	0	1	3	4	4	2	4
120	Wall coolant total temperature, °F	77	78	77	63	63	75	75
120	Standard deviation	1	2	2	5	6	0	1
121	Wall coolant flow rate, gal/min	3.7	3.7	4.0	3.4	3.5	3.3	3.8
121	Standard deviation	0.3	0.3	0.4	0.2	0	0.1	0.7
140	Wall coolant outlet pressure, psia	23.6	23.6	26.8	15.9	16.8	23.9	24.2
140	Standard deviation	0	0	5.0	6.9	4.6	0	2.2
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	264960	226730	267190	253120	223860	252970	245160
C26	Standard deviation	2603	5339	7730	4568	3607	1629	4390
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	19654	19571	19124	20236	19122	17641	18320
C28	Standard deviation	2988	4734	1665	1965	1711	486	1840
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	51.5	50.1	53.7	49.2	46.8	48.9	47.9
C30-1	Standard deviation	0.5	0.4	1.4	1.7	0.7	0.3	0.8
C58	Total heat transfer rate, Btu/hr	440720	445510	638250	427750	387050	424260	405250
C58	Standard deviation	3173	4829	26096	9945	5712	4713	8722
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	58.8	57.0	60.7	58.6	52.7	57.0	56.7
C30-2	Standard deviation	0.4	0.4	0.7	1.6	0.7	0.2	0.6
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	63.9	60.6	66.6	67.5	62.5	66.1	65.4
C30-3	Standard deviation	0.6	0.9	2.3	1.9	1.1	0.3	2.8
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	68.4	66.1	69.9	68.9	65.2	68.1	67.8
C30-4	Standard deviation	0.7	0.9	2.1	2.3	1.0	0.3	2.8
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	65.1	63.1	64.9	64.3	63.9	62.9	62.3
C30-5	Standard deviation	0.7	0.6	2.7	1.6	1.3	0.6	1.3
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	77.5	73.7	76.5	78.3	74.6	75.0	74.0
C30-6	Standard deviation	0.5	0.5	1.8	1.9	1.0	0.6	0.6
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	65.0	62.4	66.5	66.5	62.6	64.5	62.7
C30-7	Standard deviation	0.4	0.4	1.0	1.7	0.8	0.5	0.8
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	71.5	69.6	73.0	70.5	70.2	71.4	69.4
C30-8	Standard deviation	0.3	0.5	1.3	1.5	0.9	0.5	0.7

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
051	Coolant flow rate, gal/min	1.6	2.8	1.5	(b)	(b)
051	Standard deviation	0	0	0.1	(b)	(b)
052	Coolant flow rate, gal/min	1.2	2.8	1.1	(b)	(b)
052	Standard deviation	0	0	0.1	(b)	(b)
077	Coolant inlet temperature, °F	58	62	54	59	62
077	Standard deviation	2	0	3	1	7
078	Coolant inlet pressure, psia	61.8	61.6	66.6	61.9	62.3
078	Standard deviation	0.6	2.4	7.2	0.5	3.4
079	Coolant flow rate, gal/min	1.5	2.5	1.5	(b)	(b)
079	Standard deviation	0	0.1	0.1	(b)	(b)
080	Coolant outlet pressure, psia	26.9	25.4	33.1	32.6	30.8
080	Standard deviation	3.0	2.6	5.3	0.7	2.2
081	Outlet 1 coolant tempera- ture, °F	104	93	96	(b)	(b)
081	Standard deviation	6	5	4	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	103	117	107	(b)	(b)
082	Standard deviation	6	6	5	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	105	137	110	(b)	(b)
083	Standard deviation	6	10	4	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	97	126	101	(b)	(b)
084	Standard deviation	6	8	4	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	(b)	113	(b)	(b)	(b)
085	Standard deviation	(b)	8	(b)	(b)	(b)
086	Outlet 6 coolant tempera- ture, °F	(b)	120	(b)	(b)	(b)
086	Standard deviation	(b)	8	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	117	(b)	(b)	(b)
087	Standard deviation	(b)	8	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	(b)	107	(b)	(b)	(b)
088	Standard deviation	(b)	6	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)

COOLANT PRESSURE



086	Standard deviation	(b)	8	(b)	(b)	(b)
087	Outlet 7 coolant temperature, °F	(b)	117	(b)	(b)	(b)
087	Standard deviation	(b)	8	(b)	(b)	(b)
088	Outlet 8 coolant temperature, °F	(b)	107	(b)	(b)	(b)
088	Standard deviation	(b)	6	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	1.6	(b)	(b)	(b)
096	Standard deviation	(b)	0	(b)	(b)	(b)
097	Coolant flow rate, gal/min	8.3	10.7	8.0	6.2	6.5
097	Standard deviation	0.5	0.1	0.5	0.1	0.4
098	Coolant outlet temperature, °F	87	112	88	60	63
098	Standard deviation	3	7	4	1	7
101	Coolant flow rate, gal/min	2.4	1.4	1.4	(b)	(b)
101	Standard deviation	0	0.1	0.1	(b)	(b)
102	Coolant outlet pressure, °F	12.5	15.4	13.9	12.6	14.0
102	Standard deviation	0.3	2.5	0.3	0.6	1.6
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)

12-2

FOLDDOUT FRAME

2

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(a)	(a)	(a)	(a)	(a)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.7	8.7	8.5	8.3	7.9
113	Standard deviation	0.1	0.1	0.5	0.1	0.5
114	Coolant outlet tempera- ture, °F	60	63	56	60	63
114	Standard deviation	2	0	3	1	7
115	Wall coolant top tempera- ture, °F	92	96	103	94	101
115	Standard deviation	10	11	7	13	13
116	Wall coolant middle temperature, °F	94	105	101	99	103
116	Standard deviation	20	27	21	26	20
117	Wall coolant bottom temperature, °F	98	95	102	112	107
117	Standard deviation	11	9	6	11	13
120	Wall coolant total temperature, °F	60	63	56	60	63
120	Standard deviation	2	0	3	2	7
121	Wall coolant flow rate,	3.6	3.6	3.6	3.5	3.8

FOLDOUT FRAME

120	Wall coolant total temperature, °F	60	63	56	60	63
120	Standard deviation	2	0	3	2	7
121	Wall coolant flow rate, gal/min	3.6	3.6	3.6	3.5	3.8
121	Standard deviation	0.1	0.2	0.2	0.2	0.3
140	Wall coolant outlet pressure, psia	19.1	19.3	26.8	23.1	21.2
140	Standard deviation	1.5	2.7	5.0	1.0	3.3
141	Coolant flow rate, gal/min	1.5	(b)	(b)	(b)	(b)
141	Standard deviation	0	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	125120	270090	140260	9004	8821
C26	Standard deviation	12678	36785	7128	1905	2478
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	17218	15813	21757	22856	23523
C28	Standard deviation	3803	4910	3444	5429	5131
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	28.4	63.1	34.9	(b)	(b)
C30-1	Standard deviation	2.1	3.0	1.6	(b)	(b)
C58	Total heat transfer rate, Btu/hr	310480	352160	206340	75331	76107
C58	Standard deviation	45217	46259	7105	10940	10102
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	32.0	62.8	35.3	(b)	(b)
C30-2	Standard deviation	1.4	1.9	1.5	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	22.2	81.0	25.5	(b)	(b)
C30-3	Standard deviation	1.3	3.6	0.8	(b)	(b)
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	41.2	89.7	44.1	(b)	(b)
C30-4	Standard deviation	5.0	4.4	1.4	(b)	(b)
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	(b)	76.1	(b)	(b)	(b)
C30-5	Standard deviation	(b)	6.9	(b)	(b)	(b)
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	(b)	81.9	(b)	(b)	(b)
C30-6	Standard deviation	(b)	5.7	(b)	(b)	(b)
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	(b)	66.7	(b)	(b)	(b)
C30-7	Standard deviation	(b)	4.8	(b)	(b)	(b)
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	(b)	77.1	(b)	(b)	(b)
C30-8	Standard deviation	(b)	5.4	(b)	(b)	(b)

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	2.7	2.8
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	0.1	0.1
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	2.4	2.8
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	0.1	0.1
077	Coolant inlet temperature, °F	69	72	69	74	70	67	66	65
077	Standard deviation	2	2	2	2	4	2	1	0
078	Coolant inlet pressure, psia	80.6	80.2	82.4	82.1	76.3	65.9	62.5	62.1
078	Standard deviation	9.8	4.6	0.5	0.5	7.5	7.3	1.7	3.1
079	Coolant flow rate, gal/min	(b)	(b)	(b)	2.7	2.6	2.4	2.5	2.5
079	Standard deviation	(b)	(b)	(b)	0.5	0.3	0.3	0.1	0.1
080	Coolant outlet pressure, psia	33.3	31.8	36.8	45.1	32.2	31.2	26.6	27.1
080	Standard deviation	3.0	0.2	13.5	0	6.6	5.6	4.1	2.1
081	Outlet 1 coolant temperature, °F	74	75	73	92	87	83	107	101
081	Standard deviation	5	4	6	5	5	8	7	9
082	Outlet 2 coolant temperature, °F	77	77	76	107	107	102	121	113
082	Standard deviation	8	5	11	9	10	16	9	12
083	Outlet 3 coolant temperature, °F	77	77	76	114	111	108	124	123
083	Standard deviation	8	5	12	11	10	20	10	16
084	Outlet 4 coolant temperature, °F	75	76	76	123	118	115	114	115
084	Standard deviation	5	4	13	13	11	23	8	13
085	Outlet 5 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	111	109
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	7	13
086	Outlet 6 coolant temperature, °F	78	77	77	113	111	98	119	116
086	Standard deviation	8	5	12	11	10	15	9	14
087	Outlet 7 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	131	114
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	10	14
088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	117	105
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	8	11
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME

088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	117	105
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	8	11
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	0.1	0.1	0.9	1.2	1.0	1.1	1.3	1.6
096	Standard deviation	0.1	0.1	0.8	0	0.1	0.1	0.1	0
097	Coolant flow rate, gal/min	2.5	2.4	2.9	6.6	6.2	5.4	10.7	10.9
097	Standard deviation	0.4	0.1	1.1	0.1	0.7	0.6	0.4	0.2
098	Coolant outlet temperature, °F	71	75	74	108	106	100	113	107
098	Standard deviation	2	2	10	9	9	15	8	12
101	Coolant flow rate, gal/min	0.1	0.1	0.4	2.7	2.5	2.4	2.2	2.2
101	Standard deviation	0	0	0.7	0	0.3	0.3	0.1	0.1
102	Coolant outlet pressure, °F	(b)	(b)	(b)	(b)	(b)	12.3	15.0	15.0
102	Standard deviation	(b)	(b)	(b)	(b)	(b)	0.5	0.6	1.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	9.1	9.2	9.1	9.1	9.4	9.4	8.8	8.5
113	Standard deviation	1.0	0.5	0	0.1	1.1	1.0	0.3	0.2
114	Coolant outlet tempera- ture, °F	70	73	70	74	71	68	67	66
114	Standard deviation	2	2	2	2	4	2	1	0
115	Wall coolant top tempera- ture, °F	91	91	94	97	93	80	84	88
115	Standard deviation	10	8	13	6	10	6	8	8
116	Wall coolant middle temperature, °F	89	104	94	96	98	81	96	100
116	Standard deviation	20	25	22	12	27	14	27	25
117	Wall coolant bottom temperature, °F	113	115	90	97	97	93	91	88
117	Standard deviation	15	11	7	4	8	8	4	6
120	Wall coolant total temperature, °F	81	86	80	85	85	75	75	73
120	Standard deviation	5	4	3	3	4	3	2	2
121	Wall coolant flow rate,	2.3	2.3	3.3	3.0	2.6	3.3	4.1	3.9

FOLDOUT FRAME /

	61	80	85	85	75	75	73		
120	Standard deviation	5	4	3	3	4	2	2	
121	Wall coolant flow rate, gal/min	2.3	2.3	3.3	3.0	2.6	3.3	4.1	3.9
121	Standard deviation	0.3	0.2	0.3	0.2	0.5	0.9	0.2	0.1
140	Wall coolant outlet pressure, psia	29.5	30.5	30.5	30.7	27.8	27.8	21.1	20.1
140	Standard deviation	2.6	0.3	0.2	0.1	6.9	5.8	4.6	1.9
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	heat exchanger heat trans- fer rate, Btu/hr	6996	7085	15345	117220	113700	89541	255560	231980
C26	Standard deviation	2580	2052	29395	30284	22969	40715	36923	63043
C27	Heat extractor heat trans- fer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	13611	15927	17281	17363	18337	13145	18953	15020
C28	Standard deviation	4135	4048	5529	1979	3899	5392	4647	4169
C30-1	Heat transfer coeffici- ent 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	61.6	63.1	50.9	59.9	56.3
C30-1	Standard deviation	(b)	(b)	(b)	18.3	6.8	14.7	6.4	9.7
C58	Total heat transfer rate, Btu/hr	126090	49378	66106	163440	166590	152780	347530	304610
C58	Standard deviation	60425	12074	37407	36374	26597	57870	45169	77994
C30-2	Heat transfer coeffici- ent 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	40.7	43.4	44.9	63.6	59.1
C30-2	Standard deviation	(b)	(b)	(b)	12.3	5.2	14.2	6.8	10.1
C30-3	Heat transfer coeffici- ent 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	64.2	59.8	68.3	56.6	60.8
C30-3	Standard deviation	(b)	(b)	(b)	14.4	6.5	19.2	6.5	10.5
C30-4	Heat transfer coeffici- ent 4, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	60.0	64.5	67.3
C30-4	Standard deviation	(b)	(b)	(b)	(b)	(b)	17.7	7.6	12.3
C30-5	Heat transfer coeffici- ent 5, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	64.6	68.4
C30-5	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	6.4	13.4
C30-6	Heat transfer coeffici- ent 6, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	71.8	74.3
C30-6	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	7.3	13.7
C30-7	Heat transfer coeffici- ent 7, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	66.4	60.8
C30-7	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	5.5	11.0
C30-8	Heat transfer coeffici- ent 8, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	80.2	70.6
C30-8	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	7.4	13.0

FOLDOUT FRAME 2

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
051	Coolant flow rate, gal/min	2.9	2.5	2.9	3.0	2.6	2.9	(b)	(b)
051	Standard deviation	0.3	0	0.2	0	0.2	0	(b)	(b)
052	Coolant flow rate, gal/min	2.6	2.4	2.6	2.4	2.4	2.7	(b)	(b)
052	Standard deviation	0.1	0	0.1	0.7	0.2	0	(b)	(b)
077	Coolant inlet temperature, °F	66	64	66	66	65	65	65	65
077	Standard deviation	0	1	0	0	1	0	0	0
078	Coolant inlet pressure, psia	70.0	62.3	73.8	75.5	67.2	75.7	75.9	70.3
078	Standard deviation	6.3	0.3	4.5	0.2	6.0	0.2	0.2	6.6
079	Coolant flow rate, gal/min	3.0	2.6	3.0	3.2	2.8	3.1	(b)	(b)
079	Standard deviation	0.3	0.1	0.2	0	0.2	0	(b)	(b)
080	Coolant outlet pressure, psia	25.4	27.2	27.4	26.2	28.1	25.2	22.1	24.3
080	Standard deviation	1.7	1.2	1.3	0.2	3.0	0.1	1.3	1.1
081	Outlet 1 coolant tempera- ture, °F	106	102	108	110	117	105	(b)	(b)
081	Standard deviation	5	2	3	1	4	0	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	108	106	110	112	119	105	(b)	(b)
082	Standard deviation	5	1	3	1	5	0	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	118	115	122	125	133	118	(b)	(b)
083	Standard deviation	6	2	4	2	6	0	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	100	98	102	103	108	99	(b)	(b)
084	Standard deviation	4	1	2	1	3	0	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	106	104	107	110	114	104	(b)	(b)
085	Standard deviation	4	1	3	1	3	0	(b)	(b)
086	Outlet 6 coolant tempera- ture, °F	112	112	115	115	123	110	(b)	(b)
086	Standard deviation	6	1	4	1	5	1	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	110	111	114	115	121	110	(b)	(b)
087	Standard deviation	5	2	3	1	4	1	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	102	101	104	106	111	101	(b)	(b)
088	Standard deviation	4	1	3	1	4	0	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME



FOLDOUT FRAME 2

088	Standard deviation	4	1	3	1	4	0	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	1.3	1.2	1.4	1.4	1.2	1.4	(b)	(b)
096	Standard deviation	0.1	0	0.1	0	0.1	0	(b)	(b)
097	Coolant flow rate, gal/min	12.1	10.6	12.3	12.7	11.3	12.8	5.3	4.8
097	Standard deviation	1.1	0.2	0.8	0.1	1.1	0	0.1	0.4
098	Coolant outlet temperature, °F	104	103	107	108	114	103	66	66
098	Standard deviation	4	1	3	1	4	0	0	0
101	Coolant flow rate, gal/min	2.7	2.3	2.7	2.8	2.4	2.8	(b)	(b)
101	Standard deviation	0.3	0.1	0.2	0	0.2	0	(b)	(b)
102	Coolant outlet pressure, °F	18.1	18.9	19.2	18.6	16.8	16.1	17.0	13.8
102	Standard deviation	1.5	0.7	0.9	1.1	0.3	0.3	0.6	0.2
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	9.4	8.4	9.7	10.0	8.8	10.0	9.8	9.0
113	Standard deviation	0.8	0.1	0.6	0.1	0.8	0	0.1	0.8
114	Coolant outlet tempera- ture, °F	67	66	68	67	67	66	66	66
114	Standard deviation	0	1	0	0	1	0	0	0
115	Wall coolant top tempera- ture, °F	91	98	109	110	87	96	107	77
115	Standard deviation	10	4	3	3	8	3	3	4
116	Wall coolant middle temperature, °F	100	106	101	93	104	84	103	96
116	Standard deviation	24	17	18	6	24	5	19	9
117	Wall coolant bottom temperature, °F	117	133	133	136	139	138	114	118
117	Standard deviation	11	1	2	3	3	1	3	4
120	Wall coolant total temperature, °F	75	74	76	77	76	74	75	74
120	Standard deviation	2	1	1	1	2	0	1	0
121	Wall coolant flow rate	4.0	3.5	4.1	4.2	3.7	4.2	4.4	4.1

FOLDOUT FRAME

FOLDOUT FRAME 2

	73	74	76	77	78	74	75	74	
120	temperature, °F								
120	Standard deviation	2	1	1	1	2	0	1	0
121	Wall coolant flow rate, gal/min	4.0	3.5	4.1	4.3	3.7	4.2	4.4	4.1
121	Standard deviation	0.5	0.1	0.3	0.1	0.4	0	0.1	0.3
140	Wall coolant outlet pressure, psia	16.4	19.4	18.3	16.7	19.9	15.3	17.1	20.2
140	Standard deviation	2.9	1.4	1.9	0.1	3.8	0.1	1.4	1.8
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	234830	210570	252930	273630	275610	250940	8793	5183
C26	Standard deviation	9649	7782	5068	7459	5015	2472	961	1237
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	17387	17315	19826	23091	19015	18293	21132	18358
C28	Standard deviation	3614	1389	2567	1778	3291	315	2249	1038
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	67.2	54.9	65.6	73.7	75.6	65.3	(b)	(b)
C30-1	Standard deviation	2.3	3.9	1.3	2.5	1.3	0.5	(b)	(b)
C58	Total heat transfer rate, Btu/hr	313770	249580	310690	390170	383350	304920	68463	42273
C58	Standard deviation	11167	10412	8103	4993	14629	3738	1973	1187
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	68.4	59.1	67.7	75.7	77.9	63.5	(b)	(b)
C30-2	Standard deviation	2.7	2.2	1.1	2.2	1.9	0.5	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	54.5	44.7	53.0	57.7	57.2	52.0	(b)	(b)
C30-3	Standard deviation	1.3	2.1	0.9	0.8	1.2	0.2	(b)	(b)
C30-4	Heat transfer coefficient 4, Btu/hr ft <sup>2</sup> °F	75.4	61.3	74.1	83.1	82.9	74.8	(b)	(b)
C30-4	Standard deviation	1.6	3.1	1.4	1.6	1.0	0.4	(b)	(b)
C30-5	Heat transfer coefficient 5, Btu/hr ft <sup>2</sup> °F	68.9	59.0	65.9	73.1	73.4	63.1	(b)	(b)
C30-5	Standard deviation	1.6	2.3	0.8	1.2	1.0	1.0	(b)	(b)
C30-6	Heat transfer coefficient 6, Btu/hr ft <sup>2</sup> °F	69.1	61.3	67.6	72.2	74.8	62.9	(b)	(b)
C30-6	Standard deviation	2.0	1.8	0.8	1.2	1.1	0.9	(b)	(b)
C30-7	Heat transfer coefficient 7, Btu/hr ft <sup>2</sup> °F	52.1	49.0	51.7	50.6	59.4	50.1	(b)	(b)
C30-7	Standard deviation	3.5	1.8	2.5	15.1	1.8	0.3	(b)	(b)
C30-8	Heat transfer coefficient 8, Btu/hr ft <sup>2</sup> °F	63.7	60.7	63.3	61.7	71.6	61.0	(b)	(b)
C30-8	Standard deviation	3.8	1.4	2.6	18.4	1.9	0.3	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	64	65	64	63	63	59	62	62	62
077	Standard deviation	1	0	1	0	0	8	0	0	0
078	Coolant inlet pressure, psia	62.7	75.6	66.5	61.9	65.7	66.6	61.2	62.0	61.9
078	Standard deviation	1.3	17.8	6.6	0.2	11.9	14.7	1.8	0.3	0.2
079	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	27.3	26.5	25.5	26.4	26.8	25.3	26.5	26.4	26.5
080	Standard deviation	3.3	3.0	1.1	0.1	0.9	3.5	0.2	0	0
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME

088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
098	Coolant outlet temperature, °F	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
098	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
101	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	13.9	13.2	14.1	13.5	13.8	13.3	14.8	14.9
102	Standard deviation	0.2	3.2	0.2	0.2	0.1	0.3	0.3	0.3
103	Outlet 17 coolant temperature, °F	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	7.9	9.3	8.5	7.9	8.2	8.4	7.7	7.9	7.9
113	Standard deviation	0.3	1.7	0.8	0	1.0	1.3	0.2	0	0
114	Coolant outlet tempera- ture, °F	65	66	65	64	64	60	63	64	63
114	Standard deviation	1	0	1	0	0	7	0	0	0
115	Wall coolant top tempera- ture, °F	89	98	98	85	90	83	101	103	88
115	Standard deviation	1	3	2	4	2	6	2	0	4
116	Wall coolant middle temperature, °F	96	103	120	106	111	89	84	89	110
116	Standard deviation	15	17	29	18	15	6	6	12	20
117	Wall coolant bottom temperature, °F	132	131	135	138	131	124	133	138	142
117	Standard deviation	3	8	4	0	6	7	1	3	0
120	Wall coolant total temperature, °F	76	76	77	76	74	70	74	74	75
120	Standard deviation	1	1	2	1	1	7	0	0	1
		2.7	4.1	3.8	3.4	3.6	3.7	3.4	3.4	3.4

FOLDOUT FRAME

	temperature, °F									
116	Standard deviation	15	17	29	18	15	6	6	12	20
117	Wall coolant bottom temperature, °F	132	131	135	138	131	124	133	138	142
117	Standard deviation	3	8	4	0	6	7	1	3	0
120	Wall coolant total temperature, °F	76	76	77	76	74	70	74	74	75
120	Standard deviation	1	1	2	1	1	7	0	0	1
121	Wall coolant flow rate, gal/min	3.5	4.1	3.8	3.4	3.6	3.7	3.4	3.4	3.4
121	Standard deviation	0.2	0.7	0.4	0.2	0.5	0.6	0.1	0.1	0.2
140	Wall coolant outlet pressure, psia	24.2	22.0	21.7	23.1	23.1	21.5	23.4	23.2	23.3
140	Standard deviation	3.5	3.2	1.8	0	0.1	3.3	0.3	0	0
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	6151	7177	7193	6208	6172	5848	7915	8118	8657
C26	Standard deviation	951	839	555	882	626	1223	820	684	797
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	19938	22433	24252	20912	20687	19356	19678	20536	22543
C28	Standard deviation	1984	1548	4984	1746	2207	1958	477	571	2044
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	54658	97004	98615	54559	40338	56410	63962	62490	102950
C58	Standard deviation	2764	3138	3653	3790	2667	8455	4404	1171	4895
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	67	68	68	67	68	65	68	66
077	Standard deviation	0	3	0	1	3	1	3	0
078	Coolant inlet pressure, psia	73.0	70.0	75.7	73.4	66.8	77.5	72.8	75.8
078	Standard deviation	5.7	6.0	0.2	8.1	4.6	5.2	3.5	0.2
079	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	14.6	14.5	14.5	14.4	14.3	14.0	14.0	14.1
080	Standard deviation	0	0	0	0.1	0.1	0	0	0
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME 1



FOLDOUT FRAME 2

088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	(a)	(a)	(a)	(a)	(a)	(a)	(a)
097	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
098	Coolant outlet temperature, °F	68	69	69	68	70	66	66
098	Standard deviation	0	3	1	1	3	1	3
101	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	14.6	14.0	16.8	16.4	15.7	14.4	13.5
102	Standard deviation	0.3	0.2	0.1	0.1	0.4	0.3	0.1
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data channel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
104	Outlet 18 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	10.4	9.0	10.6	9.5	8.9	10.3	9.5	10.7
113	Standard deviation	0.7	0.4	0.1	0.5	0.7	0.5	0.8	0.1
114	Coolant outlet temperature, °F	68	69	69	68	70	66	69	66
114	Standard deviation	0	3	1	1	3	1	3	0
115	Wall coolant top temperature, °F	79	79	95	100	98	85	86	80
115	Standard deviation	6	1	5	4	2	4	1	1
116	Wall coolant middle temperature, °F	95	98	101	96	118	95	114	108
116	Standard deviation	24	11	17	10	40	23	39	16
117	Wall coolant bottom temperature, °F	99	112	104	115	121	104	116	109
117	Standard deviation	7	3	6	1	4	6	5	1
120	Wall coolant total temperature, °F	76	79	77	78	81	74	79	75
120	Standard deviation	2	3	2	1	3	1	4	0

FOLDOUT FRAME

115	Standard deviation	6	1	5	4	2	4	1	1
116	Wall coolant middle temperature, °F	95	98	101	96	118	95	114	108
116	Standard deviation	24	11	17	10	40	23	39	16
117	Wall coolant bottom temperature, °F	99	112	104	115	121	104	116	109
117	Standard deviation	7	3	6	1	4	6	5	1
120	Wall coolant total temperature, °F	76	79	77	78	81	74	79	75
120	Standard deviation	2	3	2	1	3	1	4	0
121	Wall coolant flow rate, gal/min	4.6	3.9	4.5	4.1	3.8	4.1	3.8	4.4
121	Standard deviation	0.3	0.2	0.1	0.3	0.4	0.2	0.3	0.2
140	Wall coolant outlet pressure, psia	15.0	25.6	17.8	25.7	24.7	23.9	26.1	16.9
140	Standard deviation	1.5	6.0	0.8	6.2	6.4	6.5	5.8	0.7
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	8090	7692	9950	11778	8798	5473	4767	5111
C26	Standard deviation	1395	1643	1636	1681	1474	1343	1872	1141
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	20412	22055	19679	23045	23602	17553	20723	20216
C28	Standard deviation	3672	1077	2265	1450	3315	2745	4369	1704
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	75224	72923	73981	77962	55669	78158	82555	47567
C58	Standard deviation	6514	2537	6997	1868	2343	6940	3088	5298
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

b Data or results were not obtained.

Table 4. - Continued

(f) Continued. Coolant system data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
051	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
077	Coolant inlet temperature, °F	63	65	70	66	67	67	68
077	Standard deviation	3	1	2	1	2	2	2
078	Coolant inlet pressure, psia	64.6	77.8	79.0	75.4	76.1	75.3	77.9
078	Standard deviation	3.8	3.2	4.8	3.5	5.7	6.6	4.3
079	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
079	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
080	Coolant outlet pressure, psia	19.1	14.3	14.1	14.2	14.5	14.3	14.0
080	Standard deviation	1.1	0	0.1	0.4	0.1	0.1	1.2
081	Outlet 1 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
081	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Outlet 2 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
082	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Outlet 3 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
083	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Outlet 4 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
084	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Outlet 5 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
085	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Outlet 6 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
086	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Outlet 7 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
087	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Outlet 8 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME 1

088	Outlet 8 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
088	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
089	Outlet 9 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
090	Outlet 10 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
091	Outlet 11 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
092	Outlet 12 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
092	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
093	Outlet 13 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
093	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
094	Outlet 14 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
094	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
095	Outlet 15 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
095	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Outlet 16 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
096	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)
096	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
097	Coolant flow rate, gal/min	4.8	5.2	3.9	3.4	3.3	2.7
097	Standard deviation	0.3	0.2	0.3	0.7	0.6	1.1
098	Coolant outlet temperature, °F	64	66	71	67	68	69
098	Standard deviation	3	1	2	1	2	2
101	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)
101	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
102	Coolant outlet pressure, °F	15.6	16.3	17.6	14.1	16.0	16.2
102	Standard deviation	0.8	0.7	1.6	1.2	1.5	1.6
103	Outlet 17 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
103	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

Table 4. - Continued

(f) Concluded. Coolant system data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
104	Outlet 18 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
104	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Outlet 19 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
105	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Outlet 20 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
106	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Outlet 21 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
107	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Outlet 22 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
108	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Outlet 23 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
109	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Outlet 24 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
110	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Outlet 25 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
111	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Outlet 26 coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
112	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
113	Coolant flow rate, gal/min	8.7	9.8	9.6	10.8	9.1	9.0	9.6
113	Standard deviation	0.5	0.4	0.6	0.8	0.9	0.8	0.6
114	Coolant outlet tempera- ture, °F	64	66	71	67	68	69	69
114	Standard deviation	3	1	2	1	2	2	2
115	Wall coolant top tempera- ture, °F	85	92	113	93	98	107	106
115	Standard deviation	14	10	11	9	8	12	8
116	Wall coolant middle temperature, °F	93	90	110	88	103	112	113
116	Standard deviation	16	18	23	20	26	29	28
117	Wall coolant bottom temperature, °F	123	98	127	128	115	134	99
117	Standard deviation	12	9	7	13	18	27	4
120	Wall coolant total temperature, °F	75	75	83	76	79	80	82
120	Standard deviation	3	3	3	2	3	5	3
121	Wall coolant flow rate,	3.7	4.7	3.8	4.1	3.9	3.7	4.5

FOLDOUT FRAME

	93	90	110	88	103	112	115
110	Wall coolant middle temperature, °F						
116	Standard deviation	16	18	23	20	26	28
117	Wall coolant bottom temperature, °F	123	98	127	128	115	134
117	Standard deviation	12	9	7	13	18	4
120	Wall coolant total temperature, °F	75	75	83	76	79	80
120	Standard deviation	3	3	3	2	3	5
121	Wall coolant flow rate, gal/min	3.7	4.7	3.8	4.1	3.9	3.7
121	Standard deviation	0.3	0.3	0.3	0.4	0.6	0.7
140	Wall coolant outlet pressure, psia	39.5	33.3	35.9	33.6	42.2	53.7
140	Standard deviation	18.6	21.3	30.8	18.4	28.0	28.0
141	Coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)
141	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
145	Coolant outlet pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C26	Heat exchanger heat transfer rate, Btu/hr	7893	7456	10368	6972	7745	8058
C26	Standard deviation	1507	2090	1684	1734	2168	2004
C27	Heat extractor heat transfer rate, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)
C27	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C28	Wall heat transfer rate, Btu/hr	21181	22429	25839	21454	22111	24121
C28	Standard deviation	3419	5674	3699	2724	4450	9669
C30-1	Heat transfer coefficient 1, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)
C30-1	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C58	Total heat transfer rate, Btu/hr	82133	73023	87891	80021	76814	87369
C58	Standard deviation	5389	5946	7178	5602	10 668	6138
C30-2	Heat transfer coefficient 2, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)
C30-2	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Heat transfer coefficient 3, Btu/hr ft <sup>2</sup> °F	(b)	(b)	(b)	(b)	(b)	(b)
C30-3	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)

<sup>b</sup> Data or results were not obtained.

TABLE 4. - Continued.

## (g) Combustor gas system data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
122	Gas cooler 4 coolant temperature, °F	89	84	80	75	78	94	82	67	69
122	Standard deviation	1	7	8	1	5	1	13	0	1
123	Gas cooler 3 coolant temperature, °F	89	83	80	73	76	93	82	67	69
123	Standard deviation	1	7	6	3	6	2	14	1	1
124	Gas cooler 2 coolant temperature, °F	85	77	70	67	68	87	76	63	64
124	Standard deviation	1	7	7	1	6	1	12	0	1
125	Gas cooler 1 coolant temperature, °F	83	78	75	70	73	86	72	64	65
125	Standard deviation	1	7	7	1	5	1	9	1	0
126	Gas cooler 4 gas temperature, °F	614	606	655	685	702	677	701	744	757
126	Standard deviation	16	39	11	27	9	20	66	24	6
127	Gas cooler 3 gas temperature, °F	533	520	569	595	607	594	626	678	688
127	Standard deviation	14	35	10	38	20	14	60	27	7
128	Gas cooler 2 gas temperature, °F	510	447	482	528	544	539	577	609	613
128	Standard deviation	18	32	10	24	18	15	62	13	6
129	Gas cooler 1 gas temperature, °F	587	569	620	649	660	617	518	695	694
129	Standard deviation	14	35	16	28	12	11	199	14	8
130	Gas cooler total coolant temperature, °F	70	65	60	53	55	73	64	53	53
130	Standard deviation	0	8	9	0	6	0	9	0	0
132	Gas heat exchanger 4 wall temperature, °F	620	580	616	645	651	623	661	671	650
132	Standard deviation	16	28	7	20	8	27	43	46	73
133	Gas heat exchanger 3 wall temperature, °F	602	552	577	583	592	594	639	660	641
133	Standard deviation	14	21	10	40	12	28	42	46	71
134	Gas heat exchanger 2 wall temperature, °F	598	513	511	552	537	576	620	626	601
134	Standard deviation	14	35	12	29	41	26	38	43	78
135	Gas heat exchanger 1 wall temperature, °F	597	549	592	623	632	581	511	653	627
135	Standard deviation	13	26	10	28	11	17	172	41	67
142	Gas coolant flow rate, gal/min	12.18	11.59	10.92	10.99	9.84	11.42	13.13	14.70	13.64
142	Standard deviation	0.11	0.72	0.66	0.38	2.52	0.17	2.40	0.06	0.65
143	Gas cooler coolant outlet temperature, °F	88	82	77	72	75	89	77	65	67
143	Standard deviation	1	7	7	1	5	1	11	0	1

FOLDDOUT FRAME /



142	Standard deviation	0.11	0.72	0.66	0.38	2.52	0.17	2.40	0.06	0.65
143	Gas cooler coolant outlet temperature, °F	88	82	77	72	75	89	77	65	67
143	Standard deviation	1	7	7	1	5	1	11	0	1
144	Exhaust gas temperature, °F	348	301	307	303	332	304	333	332	346
144	Standard deviation	13	17	10	11	5	43	56	56	37
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	70	55	79	101	87	217	106	196	88
076	Standard deviation	24	16	29	38	31	81	4	96	37
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	89508	81672	79600	90178	82551	71746	71347	58939	69683
C29	Standard deviation	6111	10952	8733	7095	21814	2920	24593	2382	7979
C37	Exhaust gas flow rate, lb/hr	582	564	565	574	564	573	506	565	569
C37	Standard deviation	4	24	7	4	12	11	188	7	11
C38	Gas heat transfer, Btu/hr	42744	32753	33839	35749	36148	29162	32759	36538	38939
C38	Standard deviation	2064	3255	1356	1642	731	5788	12305	7883	6090
C39	Gas velocity at grid, ft/sec	4.10	3.66	3.88	4.28	4.05	4.08	3.63	3.93	3.93
C39	Standard deviation	0.07	0.22	0.06	0.41	0.11	0.08	1.35	0.05	0.08
C40	Gas velocity at 26-inch bed, ft/sec	4.09	3.71	3.94	4.28	4.02	4.08	3.61	3.97	4.00
C40	Standard deviation	0.04	0.20	0.06	0.40	0.10	0.08	1.34	0.04	0.08
C41	Gas velocity at 44-inch bed, ft/sec	1.91	1.74	1.85	2.01	1.88	1.90	1.69	1.86	1.87
C41	Standard deviation	0.02	0.09	0.03	0.19	0.05	0.04	0.62	0.02	0.04
C42	Gas velocity at 52-inch bed, ft/sec	1.49	1.36	1.45	1.58	1.48	1.49	1.32	1.46	1.47
C42	Standard deviation	0.02	0.08	0.02	0.15	0.04	0.03	0.49	0.01	0.03
C43	Gas velocity at 68-inch bed, ft/sec	(b)	(b)	(b)	(b)	(b)	1.19	1.07	1.15	1.17
C43	Standard deviation	(b)	(b)	(b)	(b)	(b)	0.02	0.40	0.02	0.02
C44	Gas velocity at 80-inch bed, ft/sec	0.98	0.89	0.96	1.04	0.97	0.88	0.81	0.88	0.90
C44	Standard deviation	0.01	0.05	0.02	0.09	0.02	0.02	0.30	0.02	0.02
C45	Gas velocity at 97-inch bed, ft/sec	0.77	0.66	0.75	0.83	0.75	0.67	0.63	0.69	0.70
C45	Standard deviation	0.01	0.05	0.02	0.08	0.02	0.01	0.23	0.01	0.01

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
122	Gas cooler 4 coolant temperature, °F	81	88	74	69	72	73	76	79
122	Standard deviation	9	9	3	2	2	1	9	1
123	Gas cooler 3 coolant temperature, °F	81	88	74	69	72	74	76	80
123	Standard deviation	8	9	3	2	2	2	9	1
124	Gas cooler 2 coolant temperature, °F	76	82	68	64	67	68	72	74
124	Standard deviation	9	8	3	2	1	1	9	1
125	Gas cooler 1 coolant temperature, °F	76	72	57	58	58	60	69	66
125	Standard deviation	7	12	4	4	5	5	11	5
126	Gas cooler 4 gas temperature, °F	759	768	761	710	764	768	630	860
126	Standard deviation	9	170	27	20	15	21	30	14
127	Gas cooler 3 gas temperature, °F	689	702	694	646	696	697	558	779
127	Standard deviation	8	149	31	21	17	24	34	15
128	Gas cooler 2 gas temperature, °F	619	644	634	592	640	648	515	727
128	Standard deviation	9	141	26	22	18	25	33	15
129	Gas cooler 1 gas temperature, °F	682	339	331	399	450	500	400	672
129	Standard deviation	19	247	268	265	287	283	262	240
130	Gas cooler total coolant temperature, °F	66	73	53	53	53	53	64	54
130	Standard deviation	10	17	0	0	0	0	11	0
132	Gas heat exchanger 4 wall temperature, °F	571	618	580	526	581	584	412	634
132	Standard deviation	16	130	41	35	31	34	55	27
133	Gas heat exchanger 3 wall temperature, °F	564	602	573	520	575	578	406	627
133	Standard deviation	14	128	39	35	29	33	53	27
134	Gas heat exchanger 2 wall temperature, °F	517	573	538	488	549	568	405	617
134	Standard deviation	16	121	38	36	27	29	53	25
135	Gas heat exchanger 1 wall temperature, °F	514	257	271	299	339	374	323	480
135	Standard deviation	34	159	181	162	183	186	183	148
142	Gas coolant flow rate, gal/min	16.2	12.6	11.3	13.7	13.7	12.8	13.2	10.3
142	Standard deviation	3.0	2.2	0.7	0.4	0.4	0.4	1.9	0.3
143	Gas cooler coolant outlet temperature, °F	78	82	68	65	67	68	73	74
143	Standard deviation	8	9	1	0	1	1	9	1

FOLDOUT FRAME /

143	Standard deviation	8	9	1	0	1	9	1
144	Exhaust gas temperature, F	319	393	333	304	328	335	225 383
144	Standard deviation	6	143	29	25	22	24	38 20
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, F	90	163	131	80	103	88	132 84
076	Standard deviation	4	114	8	53	0	63	0 0
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	70288	63504	63061	52270	74080	76893	36421 92074
C29	Standard deviation	8256	8901	1173	8345	5787	7705	11258 7026
C37	Exhaust gas flow rate, lb/hr	560	606	520	494	568	565	325 634
C37	Standard deviation	12	67	3	6	3	9	3 7
C38	Gas heat transfer, Btu/hr	32052	44317	33266	28532	36562	36187	10160 45217
C38	Standard deviation	1121	18275	3465	2793	3100	4522	3337 2390
C39	Gas velocity at grid, ft/sec	3.9	4.1	3.9	4.0	4.5	5.0	4.0 4.2
C39	Standard deviation	0.1	1.7	0	0	0.1	0.1	0.1 0
C40	Gas velocity at 26-inch bed, ft/sec	3.9	3.4	4.0	(b)	4.5	5.1	4.1 4.3
C40	Standard deviation	0.1	1.0	0	(b)	0	0.1	0.1 0
C41	Gas velocity at 44-inch bed, ft/sec	1.8	1.9	1.9	2.0	2.1	2.4	1.9 2.0
C41	Standard deviation	0	0.7	0	0	0	0	0 0
C42	Gas velocity at 52-inch bed, ft/sec	1.4	1.5	1.5	1.5	1.7	1.9	1.5 1.6
C42	Standard deviation	0	0.6	0	0	0	0	0 0
C43	Gas velocity at 68-inch bed, ft/sec	1.2	1.2	1.2	1.2	1.3	1.5	1.2 1.3
C43	Standard deviation	0	0.5	0	0	0	0	0 0
C44	Gas velocity at 80-inch bed, ft/sec	0.9	0.9	0.9	1.0	1.0	1.2	0.9 1.0
C44	Standard deviation	0	0.4	0	0	0	0	0 0
C45	Gas velocity at 97-inch bed, ft/sec	0.7	0.7	0.7	0.8	0.8	0.9	0.7 0.8
C45	Standard deviation	0	0.3	0	0	0	0	0 0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
122	Gas cooler 4 coolant temperature, °F	81	74	74	74	74	88	92
122	Standard deviation	7	1	1	1	6	2	2
123	Gas cooler 3 coolant temperature, °F	81	73	74	74	73	88	92
123	Standard deviation	6	1	1	1	6	2	2
124	Gas cooler 2 coolant temperature, °F	78	70	70	70	70	85	88
124	Standard deviation	6	1	1	1	6	2	2
125	Gas cooler 1 coolant temperature, °F	76	65	66	66	68	80	82
125	Standard deviation	9	0	1	1	6	2	1
126	Gas cooler 4 gas temperature, °F	589	731	719	733	635	772	845
126	Standard deviation	217	16	1	13	16	19	32
127	Gas cooler 3 gas temperature, °F	546	679	670	684	587	719	792
127	Standard deviation	201	16	1	13	19	18	31
128	Gas cooler 2 gas temperature, °F	524	641	631	643	547	680	748
128	Standard deviation	191	14	1	9	16	17	29
129	Gas cooler 1 gas temperature, °F	495	757	759	759	580	769	812
129	Standard deviation	198	36	8	17	49	47	78
130	Gas cooler total coolant temperature, °F	72	59	59	59	63	73	73
130	Standard deviation	8	1	1	1	7	1	0
132	Gas heat exchanger 4 wall temperature, °F	541	636	619	654	521	662	681
132	Standard deviation	234	19	2	8	21	11	10
133	Gas heat exchanger 3 wall temperature, °F	527	621	607	643	513	650	669
133	Standard deviation	228	19	2	8	21	11	10
134	Gas heat exchanger 2 wall temperature, °F	523	612	598	636	506	641	652
134	Standard deviation	230	18	2	8	22	10	11
135	Gas heat exchanger 1 wall temperature, °F	447	605	622	650	417	595	573
135	Standard deviation	215	51	13	26	69	90	149
142	Gas coolant flow rate, gal/min	14.0	12.7	12.4	13.0	13.4	14.6	13.9
142	Standard deviation	2.6	0.2	0.4	0.4	0.8	1.9	0.1
143	Gas cooler coolant outlet temperature, °F	79	70	71	71	71	85	88

FOLDOUT FRAME /

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142	Standard deviation	2.6	0.2	0.4	0.4	0.8	1.9	0.1
143	Gas cooler coolant outlet temperature, °F	79	70	71	71	71	85	88
143	Standard deviation	7	1	0	1	6	2	1
144	Exhaust gas temperature, °F	336	332	336	321	241	350	391
144	Standard deviation	30	20	6	19	30	13	8
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	168	78	74	95	72	86	91
076	Standard deviation	128	3	3	45	4	2	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	44007	58734	58442	55968	35613	58526	83690
C29	Standard deviation	16016	6641	7986	7887	9975	5410	3174
C37	Exhaust gas flow rate, lb/hr	588	586	584	597	350	588	688
C37	Standard deviation	7	4	3	7	10	7	3
C38	Gas heat transfer, Btu/hr	40033	39386	40071	39104	14756	39143	52622
C38	Standard deviation	4226	2907	561	2254	3064	1994	1212
C39	Gas velocity at grid, ft/sec	4.2	4.7	4.1	4.1	4.3	5.3	4.5
C39	Standard deviation	0.5	0	0.1	0	0.1	0.3	0.1
C40	Gas velocity at 26-inch bed, ft/sec	4.1	4.7	4.1	4.1	4.4	5.4	4.6
C40	Standard deviation	0	0	0	0	0.1	0.3	0.1
C41	Gas velocity at 44-inch bed, ft/sec	1.9	2.2	1.9	1.9	2.1	2.5	2.1
C41	Standard deviation	0.3	0	0	0	0.1	0.2	0.1
C42	Gas velocity at 52-inch bed, ft/sec	1.5	1.7	1.4	1.5	1.6	2.0	1.6
C42	Standard deviation	0.1	0	0	0	0	0.1	0
C43	Gas velocity at 68-inch bed, ft/sec	1.2	1.3	1.2	1.2	1.3	1.6	1.3
C43	Standard deviation	0.2	0	0	0	0	0.1	0
C44	Gas velocity at 80-inch bed, ft/sec	0.9	(b)	(b)	(b)	(b)	(b)	(b)
C44	Standard deviation	0.1	(b)	(b)	(b)	(b)	(b)	(b)
C45	Gas velocity at 97-inch bed, ft/sec	0.7	0.8	0.7	0.7	0.8	1.0	0.8
C45	Standard deviation	0.1	0	0	0	0	0.1	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
122	Gas cooler 4 coolant temperature, °F	90	84	(b)	82	81	91	84
122	Standard deviation	1	3	(b)	2	4	3	2
123	Gas cooler 3 coolant temperature, °F	88	83	47	82	80	91	83
123	Standard deviation	1	3	16	2	4	3	3
124	Gas cooler 2 coolant temperature, °F	85	80	(b)	80	78	88	81
124	Standard deviation	1	3	(b)	2	3	3	2
125	Gas cooler 1 coolant temperature, °F	85	80	(b)	79	78	86	80
125	Standard deviation	1	3	(b)	2	3	3	2
126	Gas cooler 4 gas temperature, °F	684	706	329	651	609	761	743
126	Standard deviation	12	8	10	2	5	8	18
127	Gas cooler 3 gas temperature, °F	648	660	304	598	553	700	700
127	Standard deviation	10	6	7	3	6	10	8
128	Gas cooler 2 gas temperature, °F	616	618	583	562	516	666	663
128	Standard deviation	10	4	10	3	3	10	5
129	Gas cooler 1 gas temperature, °F	688	699	650	649	604	766	745
129	Standard deviation	5	7	57	4	4	6	20
130	Gas cooler total coolant temperature, °F	108	111	67	68	69	70	94
130	Standard deviation	9	4	3	1	5	1	18
132	Gas heat exchanger 4 wall temperature, °F	545	543	(b)	530	453	619	600
132	Standard deviation	38	6	(b)	4	3	4	31
133	Gas heat exchanger 3 wall temperature, °F	563	551	603	533	453	618	619
133	Standard deviation	37	5	67	5	6	5	17
134	Gas heat exchanger 2 wall temperature, °F	561	549	(b)	534	454	625	618
134	Standard deviation	36	5	(b)	4	5	5	21
135	Gas heat exchanger 1 wall temperature, °F	544	532	255	531	450	627	610
135	Standard deviation	41	7	41	2	5	5	27
142	Gas coolant flow rate, gal/min	13.0	14.3	15.1	15.0	14.6	13.9	15.8
142	Standard deviation	0.1	0.8	0.9	2.7	2.4	2.1	1.2
143	Gas cooler coolant outlet temperature, °F	86	81	(b)	80	79	88	81
143	Standard deviation	1	3	(b)	2	3	3	2

FOLDOUT FRAME

142	Standard deviation	0.1	0.8	0.9	2.7	2.4	2.1	1.2
143	Gas cooler coolant outlet temperature, °F	86	81	(b)	80	79	88	81
143	Standard deviation	1	3	(b)	2	3	3	2
144	Exhaust gas temperature, °F	300	278	(b)	305	249	366	326
144	Standard deviation	9	6	(b)	8	11	20	27
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	105	85	114	88	78	83	121
076	Standard deviation	25	1	31	2	2	6	33
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	82282	90739	(b)	64269	35120	87620	69329
C29	Standard deviation	6584	6553	(b)	4998	8957	10166	20384
C37	Exhaust gas flow rate, lb/hr	598	607	587	595	452	619	587
C37	Standard deviation	5	5	6	7	10	10	8
C38	Gas heat transfer, Btu/hr	33387	31172	(b)	34226	20505	43910	34636
C38	Standard deviation	1238	880	(b)	1324	1012	4474	3836
C39	Gas velocity at grid, ft/sec	7.3	5.0	3.7	3.3	2.6	4.2	4.1
C39	Standard deviation	0.1	0	0	0	0	0.1	0.1
C40	Gas velocity at 26-inch bed, ft/sec	7.6	5.1	3.7	3.4	2.6	4.2	3.6
C40	Standard deviation	0.1	0	0	0	0.1	0.1	0.3
C41	Gas velocity at 44-inch bed, ft/sec	3.5	2.4	1.7	1.6	1.2	1.9	1.8
C41	Standard deviation	0	0	0	0	0	0	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.8	1.9	1.4	1.3	1.0	1.5	1.4
C42	Standard deviation	0	0	0	0	0	0	0.1
C43	Gas velocity at 68-inch bed, ft/sec	2.3	1.5	1.1	1.0	0.8	1.3	1.2
C43	Standard deviation	0	0	0	0	0	0	0.1
C44	Gas velocity at 80-inch bed, ft/sec	(b)	(b)	0.8	0.8	0.6	1.0	0.9
C44	Standard deviation	(b)	(b)	0	0	0	0	0.1
C45	Gas velocity at 97-inch bed, ft/sec	1.4	0.9	0.6	0.6	0.5	0.7	0.7
C45	Standard deviation	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
122	Gas cooler 4 coolant temperature, °F	84	84	86	80	77	78	87	89
122	Standard deviation	1	4	2	1	1	5	2	3
123	Gas cooler 3 coolant temperature, °F	82	83	85	79	77	78	87	89
123	Standard deviation	2	4	2	2	1	5	2	3
124	Gas cooler 2 coolant temperature, °F	81	81	83	76	74	75	83	87
124	Standard deviation	1	3	2	2	1	5	2	2
125	Gas cooler 1 coolant temperature, °F	81	79	82	73	70	73	81	86
125	Standard deviation	1	3	2	2	2	5	2	2
126	Gas cooler 4 gas temperature, °F	502	653	693	740	785	739	727	686
126	Standard deviation	298	198	90	46	24	160	7	214
127	Gas cooler 3 gas temperature, °F	460	597	629	690	705	669	678	638
127	Standard deviation	269	178	82	45	27	142	7	197
128	Gas cooler 2 gas temperature, °F	438	571	605	650	658	611	632	592
128	Standard deviation	253	170	78	40	24	129	7	181
129	Gas cooler 1 gas temperature, °F	473	624	653	712	690	687	701	660
129	Standard deviation	277	187	84	64	52	153	55	205
130	Gas cooler total coolant temperature, °F	79	75	74	64	190	188	97	81
130	Standard deviation	7	5	3	4	4	26	17	26
132	Gas heat exchanger 4 wall temperature, °F	474	569	586	621	616	559	596	569
132	Standard deviation	283	169	75	28	26	120	15	178
133	Gas heat exchanger 3 wall temperature, °F	458	548	567	614	610	551	604	578
133	Standard deviation	272	164	73	30	27	118	16	180
134	Gas heat exchanger 2 wall temperature, °F	457	549	570	603	607	538	598	559
134	Standard deviation	271	165	74	27	28	115	15	174
135	Gas heat exchanger 1 wall temperature, °F	443	546	563	586	477	487	560	546
135	Standard deviation	261	163	73	65	80	124	74	173
142	Gas coolant flow rate, gal/min	9.7	14.5	14.4	12.3	13.3	13.7	13.3	10.3
142	Standard deviation	5.0	0.8	0.8	0.9	0.6	1.3	1.4	2.8
143	Gas cooler coolant outlet temperature, °F	81	84	86	80	77	79	87	90
143	Standard deviation	5	4	2	1	1	5	2	5

FOLDOUT FRAME /



	gal/min	5.0	0.8	0.8	0.9	0.6	1.3	1.4	2.8
142	Standard deviation	5.0	0.8	0.8	0.9	0.6	1.3	1.4	2.8
143	Gas cooler coolant outlet temperature, °F	81	84	86	80	77	79	87	90
143	Standard deviation	5	4	2	1	1	5	2	5
144	Exhaust gas temperature, °F	346	348	350	354	337	323	351	318
144	Standard deviation	33	28	25	35	13	10	9	42
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	265	213	915	92	402	379	92	121
076	Standard deviation	170	154	2202	22	53	51	7	77
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	48876	68036	67651	90722	88122	88008	89121	79512
C29	Standard deviation	2069	7590	10247	14923	8591	9297	8187	12371
C37	Exhaust gas flow rate, lb/hr	571	584	572	635	655	643	625	629
C37	Standard deviation	8	12	9	31	11	14	9	116
C38	Gas heat transfer, Btu/hr	38595	39936	38821	45315	43694	39748	42016	35245
C38	Standard deviation	4746	4214	4713	7642	2462	3112	2049	7722
C39	Gas velocity at grid, ft/sec	4.0	4.1	4.0	4.0	5.8	6.3	4.0	4.2
C39	Standard deviation	0.3	0.3	0.2	0.2	0.4	0.4	0.1	1.2
C40	Gas velocity at 26-inch bed, ft/sec	(b)	(b)	(b)	4.0	5.8	6.4	3.9	4.0
C40	Standard deviation	(b)	(b)	(b)	0.2	0.4	0.4	0.1	1.0
C41	Gas velocity at 44-inch bed, ft/sec	1.9	1.9	1.9	1.9	2.7	3.0	1.8	1.9
C41	Standard deviation	0.1	0.1	0.1	0.1	0.2	0.2	0	0.5
C42	Gas velocity at 52-inch bed, ft/sec	1.5	1.5	1.5	1.5	2.1	2.4	1.4	1.5
C42	Standard deviation	0.1	0.1	0.1	0.1	0.2	0.2	0	0.3
C43	Gas velocity at 68-inch bed, ft/sec	1.2	1.2	1.2	0.7	1.8	1.9	1.2	1.2
C43	Standard deviation	0.1	0.1	0.1	0.3	0.1	0.1	0	0.3
C44	Gas velocity at 80-inch bed, ft/sec	0.9	(b)	0.9	(b)	1.4	1.5	0.9	(b)
C44	Standard deviation	0.1	(b)	0	(b)	0.1	0.1	0	(b)
C45	Gas velocity at 97-inch bed, ft/sec	0.7	0.7	0.7	0.7	1.1	1.2	0.7	0.7
C45	Standard deviation	0.1	0.1	0	0.1	0.1	0.1	0	0.2

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
122	Gas cooler 4 coolant temperature, °F	90	99	99	89	93	88	90
122	Standard deviation	1	3	3	3	4	2	1
123	Gas cooler 3 coolant temperature, °F	89	100	100	90	94	89	92
123	Standard deviation	1	3	3	3	3	2	1
124	Gas cooler 2 coolant temperature, °F	87	98	98	92	98	89	92
124	Standard deviation	1	3	3	4	4	2	1
125	Gas cooler 1 coolant temperature, °F	87	98	96	90	94	88	91
125	Standard deviation	1	4	1	3	4	2	1
126	Gas cooler 4 gas temperature, °F	753	792	769	794	773	784	793
126	Standard deviation	7	7	12	11	17	18	10
127	Gas cooler 3 gas temperature, °F	711	723	699	723	704	717	724
127	Standard deviation	4	9	9	11	18	16	10
128	Gas cooler 2 gas temperature, °F	652	680	656	685	671	703	711
128	Standard deviation	5	7	10	11	17	15	8
129	Gas cooler 1 gas temperature, °F	724	757	738	786	765	794	804
129	Standard deviation	11	6	22	14	18	14	8
130	Gas cooler total coolant temperature, °F	115	127	132	100	126	113	119
130	Standard deviation	7	7	6	8	3	7	7
132	Gas heat exchanger 4 wall temperature, °F	537	612	583	618	605	654	634
132	Standard deviation	13	9	20	11	15	15	10
133	Gas heat exchanger 3 wall temperature, °F	568	614	585	613	600	647	628
133	Standard deviation	9	9	20	12	16	14	10
134	Gas heat exchanger 2 wall temperature, °F	556	618	584	623	610	656	640
134	Standard deviation	12	10	20	11	16	13	9
135	Gas heat exchanger 1 wall temperature, °F	537	609	576	630	616	671	650
135	Standard deviation	13	8	31	13	15	14	9
142	Gas coolant flow rate, gal/min	13.9	11.6	11.2	12.6	12.2	12.3	13.8
142	Standard deviation	0.1	0.9	0.4	0.3	0.5	0.2	0.2
143	Gas cooler coolant outlet temperature, °F	90	95	96	86	90	89	92

FOLDDOT FRAME

	gal/min							
142	Standard deviation	0.1	0.9	0.4	0.3	0.5	0.2	0.2
143	Gas cooler coolant outlet temperature, F	90	95	96	86	90	89	92
143	Standard deviation	1	3	2	3	3	2	1
144	Exhaust gas temperature, F	299	341	317	322	322	359	346
144	Standard deviation	7	9	10	10	20	4	27
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	97	97	101	94	107	108	135
076	Standard deviation	5	2	6	4	25	7	44
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	90105	100500	94863	71956	69918	81239	82314
C29	Standard deviation	9159	5161	4221	19368	9199	8904	5518
C37	Exhaust gas flow rate, lb/hr	575	592	590	610	575	599	591
C37	Standard deviation	17	14	11	69	7	11	2
C38	Gas heat transfer, Btu/hr	30367	37597	34022	36682	34267	38846	37368
C38	Standard deviation	1687	1896	1155	4198	2702	1557	4556
C39	Gas velocity at grid, ft/sec	3.9	3.9	3.8	4.1	3.8	4.0	4.0
C39	Standard deviation	0.1	0.1	0.1	0.4	0.1	0	0
C40	Gas velocity at 26-inch bed, ft/sec	3.9	4.1	4.1	4.2	4.1	4.1	4.1
C40	Standard deviation	0.1	0.1	0.1	0.4	0	0	0
C41	Gas velocity at 44-inch bed, ft/sec	1.8	1.9	1.9	2.0	1.9	1.9	1.9
C41	Standard deviation	0.1	0	0	0.2	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.4	1.5	1.5	1.5	1.5	1.3	1.5
C42	Standard deviation	0.1	0	0	0.1	0	0.4	0
C43	Gas velocity at 68-inch bed, ft/sec	1.2	1.3	1.3	1.3	1.2	1.2	1.2
C43	Standard deviation	0	0	0	0.1	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	0.9	0.9	0.9	0.9	0.9	0.9	0.9
C44	Standard deviation	0	0	0	0.1	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.7	0.7	0.7	0.7	0.7	0.7	0.7
C45	Standard deviation	0	0	0	0.1	0	0	0

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		E1	E2	E3	E4	E5	E6	E9	E8
122	Gas cooler 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
122	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
123	Gas cooler 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
123	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
124	Gas cooler 2 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
124	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
125	Gas cooler 1 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
125	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
126	Gas cooler 4 gas temperature, °F	480	473	426	419	338	274	289	525
126	Standard deviation	16	5	47	38	113	114	169	17
127	Gas cooler 3 gas temperature, °F	464	475	410	422	407	349	477	510
127	Standard deviation	15	5	39	37	6	9	13	16
128	Gas cooler 2 gas temperature, °F	484	487	434	435	423	371	511	540
128	Standard deviation	17	5	48	40	7	9	14	18
129	Gas cooler 1 gas temperature, °F	384	485	430	423	421	375	480	293
129	Standard deviation	55	4	48	45	6	7	17	98
130	Gas cooler total coolant temperature, °F	67	76	75	74	67	65	63	73
130	Standard deviation	1	2	1	2	2	3	1	3
132	Gas heat exchanger 4 wall temperature, °F	405	405	348	340	265	206	186	445
132	Standard deviation	25	7	35	35	96	93	118	14
133	Gas heat exchanger 3 wall temperature, °F	402	406	349	342	328	286	351	437
133	Standard deviation	24	6	36	35	9	10	20	13
134	Gas heat exchanger 2 wall temperature, °F	418	421	364	357	345	300	369	465
134	Standard deviation	23	6	39	37	10	12	22	14
135	Gas heat exchanger 1 wall temperature, °F	217	399	328	309	322	278	278	154
135	Standard deviation	77	4	31	51	9	7	43	58
142	Gas coolant flow rate, gal/min	4.6	4.3	4.5	4.7	4.7	4.7	4.3	3.5
142	Standard deviation	0.1	0.4	0	0.1	0	0	0.5	0
143	Gas cooler coolant outlet temperature, °F	68	70	70	71	71	70	71	69
143	Standard deviation	0	0	0	0	0	0	0	0

FOLDOUT FRAME

142	Standard deviation	0.1	0.4	0	0.1	0	0	0.5	0
143	Gas cooler coolant outlet temperature, °F	68	70	70	71	71	70	71	69
143	Standard deviation	0	0	0	0	0	0	0	0
144	Exhaust gas temperature, °F	174	260	172	188	187	152	178	186
144	Standard deviation	9	13	8	9	14	5	11	25
145	Exhaust gas exit pressure, psid	79.3	76.5	80.5	37.7	57.3	79.6	78.3	71.6
145	Standard deviation	1.0	0.2	0.2	5.5	0.3	0.3	0.4	1.2
146	Exhaust gas flow rate, pph	4.7	4.4	4.7	1.0	9.1	4.6	4.4	10.3
146	Standard deviation	0.3	0.1	0.6	0.5	24.2	0.2	0.2	24.0
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	75	87	86	81	75	73	69	81
076	Standard deviation	2	2	2	2	1	2	0	5
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	7988	11003	9736	10292	9407	7646	8029	8294
C29	Standard deviation	154	465	175	326	275	538	303	337
C37	Exhaust gas flow rate, lb/hr	1011	835	1026	241	555	1040	958	832
C37	Standard deviation	33	21	59	94	32	19	26	48
C38	Gas heat transfer, Btu/hr	9988	31203	11365	6576	8084	8300	(b)	10186
C38	Standard deviation	2294	3432	2043	1465	1531	3252	(b)	5177
C39	Gas velocity at grid, ft/sec	3.8	5.6	2.8	6.6	4.5	2.5	3.1	3.8
C39	Standard deviation	0.5	0.1	0.1	0.5	0.1	0	0	0.1
C40	Gas velocity at 26-inch bed, ft/sec	6.9	5.6	6.9	6.6	4.9	6.3	6.3	5.3
C40	Standard deviation	0.2	0	0.4	0.4	0.2	0.2	0.2	0.5
C41	Gas velocity at 44-inch bed, ft/sec	3.1	2.6	3.1	3.1	2.3	2.9	2.9	2.4
C41	Standard deviation	0.1	0	0.2	0.2	0.1	0.1	0.1	0.2
C42	Gas velocity at 52-inch bed, ft/sec	2.5	2.1	2.5	2.4	1.8	2.3	2.3	1.9
C42	Standard deviation	0.1	0	0.1	0.2	0.1	0.1	0.1	0.2
C43	Gas velocity at 68-inch bed, ft/sec	2.1	1.7	2.0	2.0	1.5	1.9	1.9	1.6
C43	Standard deviation	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.6	1.3	1.6	1.6	1.1	1.4	1.4	1.2
C44	Standard deviation	0	0	0.1	0.1	0	0	0	0.1
C45	Gas velocity at 97-inch bed, ft/sec	1.2	1.1	1.3	1.3	0.9	1.1	1.1	1.0
C45	Standard deviation	0	0	0.1	0.1	0	0	0	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
122	Gas cooler 4 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
122	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
123	Gas cooler 3 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
123	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
124	Gas cooler 2 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
124	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
125	Gas cooler 1 coolant temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
125	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
126	Gas cooler 4 gas temperature, °F	320	386	207	343	425	215	398
126	Standard deviation	150	96	125	121	8	110	7
127	Gas cooler 3 gas temperature, °F	489	441	458	446	435	233	405
127	Standard deviation	37	12	4	4	8	106	7
128	Gas cooler 2 gas temperature, °F	524	461	477	461	448	406	419
128	Standard deviation	37	7	2	6	8	17	6
129	Gas cooler 1 gas temperature, °F	498	458	474	459	449	404	418
129	Standard deviation	38	7	2	9	7	15	6
130	Gas cooler total coolant temperature, °F	71	70	78	80	72	70	71
130	Standard deviation	3	3	1	2	1	1	1
132	Gas heat exchanger 4 wall temperature, °F	230	307	149	257	310	145	292
132	Standard deviation	121	81	106	100	8	78	7
133	Gas heat exchanger 3 wall temperature, °F	390	362	377	356	341	156	319
133	Standard deviation	47	12	5	2	8	90	7
134	Gas heat exchanger 2 wall temperature, °F	450	391	402	378	363	319	341
134	Standard deviation	50	6	3	3	9	17	8
135	Gas heat exchanger 1 wall temperature, °F	293	313	313	303	296	260	277
135	Standard deviation	50	9	7	5	5	12	5
142	Gas coolant flow rate, gal/min	4.1	4.6	4.6	4.6	4.6	4.6	4.6
142	Standard deviation	0.4	0	0	0	0	0	0
143	Gas cooler coolant outlet temperature, °F	74	78	78	78	77	77	76
143	Standard deviation	4	1	1	1	0	1	1

FOLDOUT FRAME /

142	Standard deviation	0.4	0	0	0	0	0
143	Gas cooler coolant outlet temperature, °F	74	78	78	78	77	76
143	Standard deviation	4	1	1	1	0	1
144	Exhaust gas temperature, °F	176	225	221	206	214	168
144	Standard deviation	22	2	9	2	8	10
145	Exhaust gas exit pressure, psid	79.1	77.7	75.5	74.8	72.3	62.7
145	Standard deviation	1.0	0.6	2.2	1.6	3.5	4.7
146	Exhaust gas flow rate, pph	0.7	1.0	1.0	1.0	0.9	1.0
146	Standard deviation	0.4	0	0	0.1	0	0
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	120	80	83	84	78	75
076	Standard deviation	55	1	1	1	1	0
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	19169	29603	29578	27163	27072	25074
C29	Standard deviation	8411	1299	2001	2164	820	2246
C37	Exhaust gas flow rate, lb/hr	432	455	440	450	419	394
C37	Standard deviation	86	7	20	27	19	30
C38	Gas heat transfer, Btu/hr	5183	12121	13027	7197	10509	2408
C38	Standard deviation	2258	592	1237	903	971	2077
C39	Gas velocity at grid, ft/sec	3.7	4.7	4.8	3.5	3.7	3.0
C39	Standard deviation	0	0.1	0	0	0.3	0.2
C40	Gas velocity at 26-inch bed, ft/sec	3.7	4.7	4.8	3.5	3.7	3.1
C40	Standard deviation	0	0.1	0	0.2	0.3	0.2
C41	Gas velocity at 44-inch bed, ft/sec	1.7	2.2	2.2	1.6	1.7	1.4
C41	Standard deviation	0	0.1	0	0	0.1	0.1
C42	Gas velocity at 52-inch bed, ft/sec	1.3	1.7	1.8	1.2	1.3	1.1
C42	Standard deviation	0	0	0	0	0.1	0.1
C43	Gas velocity at 68-inch bed, ft/sec	1.1	1.4	1.5	1.0	1.1	1.0
C43	Standard deviation	0	0	0	0	0.1	0.1
C44	Gas velocity at 80-inch bed, ft/sec	0.8	1.1	1.1	1.0	0.9	0.7
C44	Standard deviation	0	0	0	0	0.1	0
C45	Gas velocity at 97-inch bed, ft/sec	0.6	0.9	0.9	0.6	0.7	0.5
C45	Standard deviation	0	0	0	0	0	0.1

FOLDOUT FRAME 2

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
122	Gas cooler 4 coolant temperature, °F	88	93	77	79	97	123	79	83	84
122	Standard deviation	1	1	5	18	11	2	0	0	1
123	Gas cooler 3 coolant temperature, °F	94	101	95	88	105	128	90	89	89
123	Standard deviation	1	2	6	17	11	2	1	1	1
124	Gas cooler 2 coolant temperature, °F	92	102	92	88	106	127	89	87	88
124	Standard deviation	1	2	6	17	12	2	1	1	1
125	Gas cooler 1 coolant temperature, °F	84	92	84	78	98	124	86	82	82
125	Standard deviation	3	5	2	20	8	2	1	2	3
126	Gas cooler 4 gas temperature, °F	694	750	306	747	763	678	671	653	671
126	Standard deviation	9	10	235	17	14	7	5	8	7
127	Gas cooler 3 gas temperature, °F	632	692	603	688	707	621	582	621	629
127	Standard deviation	7	16	18	17	17	6	7	7	9
128	Gas cooler 2 gas temperature, °F	594	654	557	646	663	572	553	587	579
128	Standard deviation	7	14	24	20	18	8	6	9	8
129	Gas cooler 1 gas temperature, °F	647	705	577	690	715	681	626	638	628
129	Standard deviation	28	35	36	54	53	6	4	24	27
130	Gas cooler total coolant temperature, °F	72	78	84	71	89	114	89	75	75
130	Standard deviation	1	2	4	18	8	3	1	1	1
132	Gas heat exchanger 4 wall temperature, °F	643	673	296	670	633	619	465	482	616
132	Standard deviation	11	21	202	19	34	6	1	12	12
133	Gas heat exchanger 3 wall temperature, °F	623	655	599	654	622	600	501	473	611
133	Standard deviation	11	21	27	19	33	5	1	10	11
134	Gas heat exchanger 2 wall temperature, °F	640	669	608	662	629	609	525	501	628
134	Standard deviation	11	23	30	18	35	7	2	12	11
135	Gas heat exchanger 1 wall temperature, °F	476	502	350	481	452	518	388	362	467
135	Standard deviation	17	39	90	81	53	12	4	34	31
142	Gas coolant flow rate, gal/min	15.4	15.3	15.1	15.2	15.2	15.8	15.3	15.5	15.7
142	Standard deviation	0	0	0.5	0.3	0	1.4	0	0	0
143	Gas cooler coolant outlet temperature, °F	84	89	84	76	94	121	81	81	82
143	Standard deviation	0	0	2	18	10	21	0	0	0

FOLDOUT FRAME /



142	Standard deviation	0	0	0.5	0.3	0	1.4	0	0	0
143	Gas cooler coolant outlet temperature, F	84	89	84	76	94	121	81	81	82
143	Standard deviation	0	0	2	18	10	21	0	0	0
144	Exhaust gas temperature, F	284	367	221	342	321	286	257	228	270
144	Standard deviation	17	9	9	17	7	5	4	17	4
145	Exhaust gas exit pressure, psid	72.3	78.4	72.1	80.0	79.8	76.2	79.7	59.5	39.1
145	Standard deviation	1.0	0.2	6.5	0.6	0.2	2.1	0.1	0.2	0.1
146	Exhaust gas flow rate, pph	1.6	2.8	1.6	1.7	1.8	1.8	(b)	(b)	(b)
146	Standard deviation	0.2	0.4	0	0.1	0	0	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, F	75	88	89	89	88	83	95	80	78
076	Standard deviation	2	3	1	1	1	1	4	3	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	133440	166690	117710	161950	208800	423860	116460	110470	108380
C29	Standard deviation	3404	1522	13948	66495	77035	46320	1840	1499	462
C37	Exhaust gas flow rate, lb/hr	478	605	518	511	531	528	242	188	117
C37	Standard deviation	26	33	40	15	4	13	2	4	1
C38	Gas heat transfer, Btu/hr	26162	54306	15529	42545	35080	25101	25345	16125	19939
C38	Standard deviation	2413	2120	2115	3170	1032	1464	481	1895	579
C39	Gas velocity at grid, ft/sec	4.4	5.5	3.0	4.8	4.4	3.5	3.4	4.0	6.2
C39	Standard deviation	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0	0.1
C40	Gas velocity at 26-inch bed, ft/sec	4.3	5.4	3.9	4.8	4.5	3.9	3.6	4.3	6.3
C40	Standard deviation	0.1	0	0.1	0.1	0	0	0	0	0.1
C41	Gas velocity at 44-inch bed, ft/sec	2.0	2.5	1.7	2.2	2.1	1.8	1.7	2.0	3.0
C41	Standard deviation	0	0	0	0	0	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.6	2.0	1.4	1.8	1.7	1.4	1.3	1.6	2.4
C42	Standard deviation	0	0	0	0	0	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.3	1.6	1.1	1.5	1.4	1.2	1.1	1.3	2.0
C43	Standard deviation	0	0	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	1.0	1.3	0.9	1.2	1.1	0.9	0.9	1.0	1.6
C44	Standard deviation	0	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.8	1.0	0.7	0.9	0.9	0.7	0.6	0.8	1.2
C45	Standard deviation	0	0	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
122	Gas cooler 4 coolant temperature, °F	90	91	91	78	81	79	74	84
122	Standard deviation	1	3	2	2	0	3	0	1
123	Gas cooler 3 coolant temperature, °F	97	100	101	81	85	82	75	88
123	Standard deviation	1	4	3	2	0	3	0	2
124	Gas cooler 2 coolant temperature, °F	99	103	104	81	87	84	76	90
124	Standard deviation	2	6	3	3	0	3	0	2
125	Gas cooler 1 coolant temperature, °F	90	91	92	77	82	81	75	86
125	Standard deviation	3	2	5	1	0	3	1	2
126	Gas cooler 4 gas temperature, °F	755	777	803	438	535	502	348	587
126	Standard deviation	15	18	9	32	5	8	8	18
127	Gas cooler 3 gas temperature, °F	712	734	756	427	511	486	355	607
127	Standard deviation	16	20	11	24	10	10	7	10
128	Gas cooler 2 gas temperature, °F	671	690	708	458	529	497	356	633
128	Standard deviation	18	20	11	25	5	9	7	10
129	Gas cooler 1 gas temperature, °F	717	726	735	511	635	587	405	643
129	Standard deviation	26	32	39	52	10	7	19	29
130	Gas cooler total coolant temperature, °F	79	81	82	80	79	74	70	73
130	Standard deviation	1	1	1	2	2	3	1	2
132	Gas heat exchanger 4 wall temperature, °F	651	658	685	447	491	442	289	558
132	Standard deviation	22	24	17	35	5	8	5	25
133	Gas heat exchanger 3 wall temperature, °F	649	653	679	455	493	448	314	596
133	Standard deviation	21	23	16	28	7	9	6	16
134	Gas heat exchanger 2 wall temperature, °F	668	672	700	528	557	507	364	672
134	Standard deviation	22	23	16	30	4	8	6	18
135	Gas heat exchanger 1 wall temperature, °F	501	488	499	429	481	431	304	520
135	Standard deviation	42	43	49	37	13	6	20	31
142	Gas coolant flow rate, gal/min	15.6	14.4	13.1	14.0	14.7	12.5	14.6	14.0
142	Standard deviation	0	1.4	1.0	1.4	0	3.2	0.3	1.1
143	Gas cooler coolant outlet temperature, °F	87	88	88	84	89	88	77	93
143	Standard deviation	0	2	1	2	0	4	0	2

FOLDOUT FRAME /

	gal/min								
142	Standard deviation	0	1.4	1.0	1.4	0	3.2	0.3	1.1
143	Gas cooler coolant outlet temperature, F	87	88	88	84	89	88	77	93
143	Standard deviation	0	2	1	2	0	4	0	2
144	Exhaust gas temperature, F	357	356	360	232	293	238	158	350
144	Standard deviation	15	6	10	32	18	18	14	11
145	Exhaust gas exit pressure, psid	79.7	79.7	58.8	72.6	75.0	76.6	78.6	75.1
145	Standard deviation	0.2	0.2	0.3	13.3	0.3	0.3	0.3	0.4
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, F	80	82	83	124	89	83	96	88
076	Standard deviation	1	0	0	45	0	1	20	4
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	150420	148840	149870	129150	163790	135950	80115	176440
C29	Standard deviation	1234	1475	2478	7008	2035	17495	1745	3918
C37	Exhaust gas flow rate, lb/hr	212	212	156	230	218	240	278	202
C37	Standard deviation	3	1	1	45	5	6	7	3
C38	Gas heat transfer, Btu/hr	43660	43185	40806	23590	38580	19453	4102	54366
C38	Standard deviation	2316	1384	1471	4607	3678	3140	1534	2651
C39	Gas velocity at grid, ft/sec	4.7	4.7	5.8	4.2	5.0	4.0	2.8	5.9
C39	Standard deviation	0.1	0.1	0.1	1.2	0.1	0.1	0	0.1
C40	Gas velocity at 26-inch bed, ft/sec	4.8	4.7	6.1	4.4	5.2	4.1	2.9	6.2
C40	Standard deviation	0.1	0.1	0.5	1.1	0.1	0.1	0	0.1
C41	Gas velocity at 44-inch bed, ft/sec	2.2	2.2	2.9	2.0	2.4	1.9	1.3	2.9
C41	Standard deviation	0	0	0	0.5	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.8	1.8	2.3	1.6	1.9	1.5	1.0	2.3
C42	Standard deviation	0	0	0	0.4	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.5	1.5	1.9	1.3	1.6	1.2	0.8	1.2
C43	Standard deviation	0	0	0	0.3	0	0	0	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.2	1.2	1.5	1.0	1.2	0.9	0.6	1.4
C44	Standard deviation	0	0	0	0.3	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.9	0.9	1.2	0.8	1.0	0.7	0.5	1.1
C45	Standard deviation	0	0	0	0.2	0	0	0	0

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		G10	G9	G13	G12	G15A	G15B	G14	G11	G7
122	Gas cooler 4 coolant temperature, °F	82	78	76	78	76	77	75	81	74
122	Standard deviation	1	0	0	0	1	0	0	1	0
123	Gas cooler 3 coolant temperature, °F	86	80	79	79	78	79	76	84	75
123	Standard deviation	2	0	0	1	1	0	0	1	0
124	Gas cooler 2 coolant temperature, °F	88	80	78	80	78	78	76	84	75
124	Standard deviation	2	0	0	0	1	0	0	1	0
125	Gas cooler 1 coolant temperature, °F	83	77	74	76	75	76	75	80	73
125	Standard deviation	3	1	0	0	2	0	0	2	1
126	Gas cooler 4 gas temperature, °F	581	473	462	460	464	424	312	567	326
126	Standard deviation	4	21	10	10	43	7	6	15	12
127	Gas cooler 3 gas temperature, °F	581	462	450	436	459	430	318	570	331
127	Standard deviation	9	25	11	7	37	8	5	14	9
128	Gas cooler 2 gas temperature, °F	601	477	481	479	492	463	348	616	351
128	Standard deviation	8	13	8	11	27	7	6	16	7
129	Gas cooler 1 gas temperature, °F	623	504	555	498	412	426	322	523	328
129	Standard deviation	28	32	11	24	131	5	13	40	35
130	Gas cooler total coolant temperature, °F	83	89	74	68	73	77	75	76	82
130	Standard deviation	2	2	1	1	1	1	1	1	2
132	Gas heat exchanger 4 wall temperature, °F	566	436	423	424	475	458	331	603	337
132	Standard deviation	12	15	6	11	26	9	6	19	6
133	Gas heat exchanger 3 wall temperature, °F	590	448	429	428	484	467	342	616	350
133	Standard deviation	11	15	9	10	28	10	7	17	10
134	Gas heat exchanger 2 wall temperature, °F	661	514	506	498	527	504	371	653	381
134	Standard deviation	7	9	8	10	25	10	7	17	5
135	Gas heat exchanger 1 wall temperature, °F	524	408	439	383	405	428	323	500	325
135	Standard deviation	30	30	7	19	82	6	16	58	25
142	Gas coolant flow rate, gal/min	13.8	14.7	14.6	14.7	13.9	14.8	14.7	14.0	14.7
142	Standard deviation	1.6	0.1	0.3	0	1.3	0	0	0.6	0
143	Gas cooler coolant outlet temperature, °F	90	83	80	82	81	81	78	88	77
143	Standard deviation	3	0	1	0	1	0	0	1	0

FOLDOUT FRAME

	gal/min									
142	Standard deviation	1.6	0.1	0.3	0	1.3	0	0	0.6	0
143	Gas cooler coolant outlet temperature, F	90	83	80	82	81	81	78	88	77
143	Standard deviation	3	0	1	0	1	0	0	1	0
144	Exhaust gas temperature, F	354	254	259	236	259	254	176	372	182
144	Standard deviation	11	11	17	4	20	16	11	7	8
145	Exhaust gas exit pressure, psid	75.5	78.3	77.8	77.8	77.9	77.7	78.8	74.4	79.0
145	Standard deviation	0.4	0.2	0.2	0.3	0.4	0.3	0.2	0.5	0.2
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	2.64	2.05	0.48	3.96	1.34
146	Standard deviation	(b)	(b)	(b)	(b)	0.86	0.78	0.17	0.06	0.26
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, F	100	101	91	81	87	114	79	85	86
076	Standard deviation	2	1	1	0	1	22	1	3	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	165060	112770	106720	108730	102300	98475	69651	151150	74111
C29	Standard deviation	3385	4181	2317	2552	4880	2719	1463	6160	1721
C37	Exhaust gas flow rate, lb/hr	203	239	237	244	666	593	383	669	559
C37	Standard deviation	3	3	6	1	91	90	34	8	46
C38	Gas heat transfer, Btu/hr	54129	21344	25235	18469	26009	22875	6132	59026	10064
C38	Standard deviation	2359	1443	2966	631	5631	5286	1465	2233	1481
C39	Gas velocity at grid, ft/sec	5.6	3.7	3.9	3.8	3.9	3.7	2.6	5.8	2.6
C39	Standard deviation	0.1	0.1	0.1	0	0.1	0.1	0	0.1	0
C40	Gas velocity at 26-inch bed, ft/sec	5.9	3.9	4.0	3.9	4.6	4.2	2.7	6.0	3.6
C40	Standard deviation	0.1	0.1	0.1	0	0.6	0.5	0	0.1	0.3
C41	Gas velocity at 44-inch bed, ft/sec	2.7	1.8	1.9	1.8	2.1	1.9	1.2	2.8	1.6
C41	Standard deviation	0	0	0	0	0.2	0.2	0	0	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.2	1.4	1.5	1.4	1.7	1.5	1.0	2.2	1.3
C42	Standard deviation	0	0	0	0	0.2	0.2	0	0	0.1
C43	Gas velocity at 68-inch bed, ft/sec	1.8	1.1	1.2	0.8	1.4	1.3	0.8	1.8	1.1
C43	Standard deviation	0	0	0	0.3	0.2	0.2	0	0	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.4	0.9	0.9	0.9	1.0	0.9	0.6	1.4	0.8
C44	Standard deviation	0	0	0	0	0.1	0.1	0	0	0.1
C45	Gas velocity at 97-inch bed, ft/sec	1.1	0.7	0.7	0.7	0.8	0.7	0.5	1.1	0.6
C45	Standard deviation	0	0	0	0	0.1	0.1	0	0	0.1

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
122	Gas cooler 4 coolant temperature, °F	78	77	75	77	80	78	82	83
122	Standard deviation	0	0	0	0	0	0	1	1
123	Gas cooler 3 coolant temperature, °F	80	79	76	80	84	80	86	87
123	Standard deviation	0	0	0	0	0	0	2	2
124	Gas cooler 2 coolant temperature, °F	79	79	76	79	84	80	85	87
124	Standard deviation	0	0	0	0	0	0	2	2
125	Gas cooler 1 coolant temperature, °F	78	76	74	75	79	77	82	82
125	Standard deviation	0	1	0	0	2	0	1	3
126	Gas cooler 4 gas temperature, °F	456	460	375	450	510	393	465	472
126	Standard deviation	9	8	6	2	10	11	14	8
127	Gas cooler 3 gas temperature, °F	452	459	381	434	503	397	465	471
127	Standard deviation	10	8	6	2	5	11	14	7
128	Gas cooler 2 gas temperature, °F	474	484	398	481	547	431	507	513
128	Standard deviation	11	8	4	2	6	11	17	6
129	Gas cooler 1 gas temperature, °F	479	485	400	407	486	409	447	459
129	Standard deviation	8	7	5	6	47	14	24	30
130	Gas cooler total coolant temperature, °F	86	81	85	89	93	89	85	93
130	Standard deviation	2	1	1	0	2	2	1	3
132	Gas heat exchanger 4 wall temperature, °F	449	450	365	464	547	419	398	391
132	Standard deviation	12	11	4	3	6	14	21	11
133	Gas heat exchanger 3 wall temperature, °F	456	459	379	473	560	436	407	398
133	Standard deviation	13	10	4	2	10	13	19	8
134	Gas heat exchanger 2 wall temperature, °F	496	505	424	530	607	480	449	438
134	Standard deviation	14	11	3	3	5	14	20	10
135	Gas heat exchanger 1 wall temperature, °F	445	439	367	370	468	409	334	334
135	Standard deviation	9	10	4	7	64	17	35	35
142	Gas coolant flow rate, gal/min	14.7	14.7	14.2	14.1	14.3	14.9	14.5	12.6
142	Standard deviation	0	0.5	1.1	0.1	0.3	0.1	0.6	1.4
143	Gas cooler coolant outlet temperature, °F	82	81	77	81	86	82	88	89
143	Standard deviation	0	1	1	0	0	0	1	2

FOLDOUT FRAME /

142	Standard deviation	0	0.5	1.1	0.1	0.3	0.1	0.6	1.4
143	Gas cooler coolant outlet temperature, °F	82	81	77	81	86	82	88	89
143	Standard deviation	0	1	1	0	0	0	1	2
144	Exhaust gas temperature, °F	279	276	213	277	365	267	265	258
144	Standard deviation	20	12	11	2	2	13	10	5
145	Exhaust gas exit pressure, psid	77.6	77.6	79.1	77.2	75.9	78.0	77.4	77.8
145	Standard deviation	0.3	0.4	0.4	0.2	1.1	0.4	0.4	0.4
146	Exhaust gas flow rate, pph	3.99	(b)	(b)	(b)	(b)	(b)	0.19	0.28
146	Standard deviation	0.07	(b)	(b)	(b)	(b)	(b)	0.11	0.01
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	94	117	90	99	103	96	92	95
076	Standard deviation	1	28	0	0	1	3	2	2
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	103490	110140	80363	101630	142380	110970	137700	135550
C29	Standard deviation	3227	4981	4093	1814	2098	5569	2258	2263
C37	Exhaust gas flow rate, lb/hr	788	230	257	229	201	234	268	295
C37	Standard deviation	23	4	5	1	3	5	24	3
C38	Gas heat transfer, Btu/hr	34931	27041	12029	25411	53461	23791	1785	(b)
C38	Standard deviation	3335	2570	1383	574	891	2216	215	(b)
C39	Gas velocity at grid, ft/sec	3.9	4.1	2.8	3.7	5.1	3.7	4.7	4.6
C39	Standard deviation	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
C40	Gas velocity at 26-inch bed, ft/sec	5.0	4.3	2.9	3.9	5.4	3.9	4.9	4.8
C40	Standard deviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
C41	Gas velocity at 44-inch bed, ft/sec	2.3	2.0	1.3	1.8	2.5	1.8	2.3	2.2
C41	Standard deviation	0	0.1	0	0	0	0.1	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.8	1.6	1.1	1.4	2.0	1.4	1.8	1.8
C42	Standard deviation	0	0	0	0	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.5	1.3	0.8	1.2	1.6	1.2	1.5	1.5
C43	Standard deviation	0	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	1.2	1.0	0.6	0.9	1.3	0.9	1.1	1.1
C44	Standard deviation	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.9	0.8	0.5	0.7	1.0	0.7	0.9	0.9
C45	Standard deviation	0	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
122	Gas cooler 4 coolant temperature, °F	71	82	85	86	90	96	89	88	88
122	Standard deviation	1	0	2	2	2	0	1	1	1
123	Gas cooler 3 coolant temperature, °F	71	83	87	88	93	99	89	91	92
123	Standard deviation	1	0	4	1	2	0	1	1	2
124	Gas cooler 2 coolant temperature, °F	83	83	86	88	95	101	94	95	94
124	Standard deviation	2	0	2	1	2	0	2	1	1
125	Gas cooler 1 coolant temperature, °F	79	79	81	84	88	92	87	88	85
125	Standard deviation	1	1	2	3	1	0	2	3	3
126	Gas cooler 4 gas temperature, °F	107	441	473	444	499	536	548	533	490
126	Standard deviation	3	11	6	16	11	17	42	15	34
127	Gas cooler 3 gas temperature, °F	107	484	515	483	594	633	715	679	571
127	Standard deviation	3	9	15	27	6	11	45	22	22
128	Gas cooler 2 gas temperature, °F	462	475	548	516	623	683	720	704	612
128	Standard deviation	40	8	25	15	10	2	49	13	19
129	Gas cooler 1 gas temperature, °F	523	566	567	559	692	793	715	728	607
129	Standard deviation	16	18	57	47	28	3	43	49	66
130	Gas cooler total coolant temperature, °F	91	93	92	91	99	103	90	88	96
130	Standard deviation	4	1	1	1	3	0	13	4	3
132	Gas heat exchanger 4 wall temperature, °F	110	509	536	503	629	549	623	616	556
132	Standard deviation	4	7	11	27	8	27	59	19	32
133	Gas heat exchanger 3 wall temperature, °F	102	511	521	488	622	548	644	620	537
133	Standard deviation	3	7	7	26	6	29	57	16	23
134	Gas heat exchanger 2 wall temperature, °F	534	549	594	550	677	624	705	696	614
134	Standard deviation	47	6	19	21	15	25	59	13	25
135	Gas heat exchanger 1 wall temperature, °F	490	497	483	469	644	628	605	634	486
135	Standard deviation	22	21	72	63	27	28	75	68	90
142	Gas coolant flow rate, gal/min	11.6	12.1	12.1	11.7	12.0	12.0	12.1	12.0	12.0
142	Standard deviation	0.6	0	0	0.6	0	0	0	0	0
143	Gas cooler coolant outlet temperature, °F	80	87	90	92	98	105	97	98	96
143	Standard deviation	2	0	2	2	1	0	2	1	0

FOLDOUT FRAME /



142	Standard deviation	0.6	0	0	0.6	0	0	0	0	0
143	Gas cooler coolant outlet temperature, F	80	87	90	92	98	105	97	98	96
143	Standard deviation	2	0	2	2	1	0	2	1	0
144	Exhaust gas temperature, F	195	264	325	297	394	384	396	399	328
144	Standard deviation	17	16	6	20	10	17	16	12	13
145	Exhaust gas exit pressure, psid	77.1	77.5	42.8	44.6	42.0	53.1	50.4	72.1	75.7
145	Standard deviation	0.4	0.2	0.3	0.3	1.2	0.2	3.2	0.5	0.3
146	Exhaust gas flow rate, pph	0.9	3.5	10.3	6.4	17.8	22.5	21.4	10.2	6.4
146	Standard deviation	0.4	1.3	1.5	1.3	4.7	0.1	1.3	1.4	0.5
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, F	112	125	124	138	105	123	159	134	140
076	Standard deviation	21	21	24	53	2	3	55	37	55
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	53067	100640	114040	103430	147560	180780	153210	166050	134840
C29	Standard deviation	8231	1360	4582	2660	2671	2224	11415	2235	2694
C37	Exhaust gas flow rate, lb/hr	379	687	740	651	775	1006	950	990	877
C37	Standard deviation	67	107	34	52	54	8	61	57	30
C38	Gas heat transfer, Btu/hr	10513	29466	42266	32488	58049	72526	74074	76825	50374
C38	Standard deviation	2579	7057	2892	5012	4610	3946	5201	5020	3104
C39	Gas velocity at grid, ft/sec	2.7	3.9	6.3	5.5	7.7	8.3	8.4	6.4	4.9
C39	Standard deviation	0	0	0.1	0.1	0.1	0.1	0.4	0	0.1
C40	Gas velocity at 26-inch bed, ft/sec	2.9	4.6	7.7	6.9	8.9	9.3	9.3	7.2	6.3
C40	Standard deviation	0.2	0.6	0.4	0.6	0.3	0.1	0.1	0.3	0.2
C41	Gas velocity at 44-inch bed, ft/sec	1.3	2.1	3.6	3.2	4.1	4.3	4.3	3.3	2.9
C41	Standard deviation	0.1	0.3	0.2	0.3	0.1	0	0.1	0.1	0.1
C42	Gas velocity at 52-inch bed, ft/sec	1.0	1.6	2.8	2.5	3.3	3.4	3.4	2.6	2.3
C42	Standard deviation	0.1	0.2	0.1	0.2	0.1	0	0.1	0.1	0.1
C43	Gas velocity at 68-inch bed, ft/sec	0.8	1.3	2.4	2.1	2.7	2.8	2.8	2.1	1.9
C43	Standard deviation	0.1	0.2	0.1	0.2	0.1	0	0	0.1	0.1
C44	Gas velocity at 80-inch bed, ft/sec	0.6	1.0	1.9	1.7	2.1	2.2	2.2	1.7	1.5
C44	Standard deviation	0	0.1	0.1	0.1	0.1	0	0	0.1	0
C45	Gas velocity at 97-inch bed, ft/sec	0.5	0.8	1.5	1.3	1.7	1.8	1.7	1.3	1.2
C45	Standard deviation	0	0.1	0.1	0.1	0.1	0	0	0	0

FOLDOUT FRAME 2

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
122	Gas cooler 4 coolant temperature, °F	86	87	82	74	79	71	70	77	79
122	Standard deviation	2	1	2	0	1	2	1	3	1
123	Gas cooler 3 coolant temperature, °F	90	92	86	75	80	72	73	78	80
123	Standard deviation	3	1	3	1	1	2	1	2	1
124	Gas cooler 2 coolant temperature, °F	92	94	87	75	80	73	74	80	83
124	Standard deviation	4	1	2	1	1	2	1	3	1
125	Gas cooler 1 coolant temperature, °F	86	86	78	72	76	69	64	75	80
125	Standard deviation	3	3	4	1	2	2	2	3	4
126	Gas cooler 4 gas temperature, °F	480	568	502	374	515	581	599	616	573
126	Standard deviation	45	8	22	6	57	15	11	16	16
127	Gas cooler 3 gas temperature, °F	553	649	568	422	613	572	636	682	670
127	Standard deviation	56	8	17	8	18	9	14	27	17
128	Gas cooler 2 gas temperature, °F	584	691	608	445	654	569	648	679	650
128	Standard deviation	60	7	17	8	11	29	11	22	19
129	Gas cooler 1 gas temperature, °F	658	740	598	519	724	704	402	589	617
129	Standard deviation	68	56	87	26	34	35	252	94	40
130	Gas cooler total coolant temperature, °F	90	84	81	77	81	67	79	87	85
130	Standard deviation	3	1	1	1	2	2	4	2	2
132	Gas heat exchanger 4 wall temperature, °F	511	624	542	363	564	590	592	614	569
132	Standard deviation	62	12	41	8	13	30	19	30	24
133	Gas heat exchanger 3 wall temperature, °F	504	601	519	361	561	601	568	609	587
133	Standard deviation	60	8	32	7	9	38	16	27	20
134	Gas heat exchanger 2 wall temperature, °F	577	688	603	415	633	616	612	648	627
134	Standard deviation	66	9	28	8	8	25	15	28	22
135	Gas heat exchanger 1 wall temperature, °F	550	617	449	381	592	573	259	454	494
135	Standard deviation	68	74	118	25	13	30	162	124	65
142	Gas coolant flow rate, gal/min	11.9	11.9	12.9	12.8	12.6	12.6	12.9	13.1	12.3
142	Standard deviation	0.1	0.2	0.7	0.6	0.8	0.7	0.7	0.2	0.7
143	Gas cooler coolant outlet temperature, °F	94	95	89	78	85	76	76	84	88
143	Standard deviation	3	1	1	1	1	2	1	2	1

FOLDOUT FRAME /

142	Standard deviation	0.1	0.2	0.7	0.6	0.8	0.7	0.7	0.2	0.7
143	Gas cooler coolant outlet temperature, °F	94	95	89	78	85	76	76	84	88
143	Standard deviation	3	1	1	1	1	2	1	2	1
144	Exhaust gas temperature, °F	298	385	330	200	335	287	280	327	283
144	Standard deviation	28	17	9	8	7	21	12	16	7
145	Exhaust gas exit pressure, psid	76.1	72.8	75.0	77.9	74.4	76.8	44.3	41.7	42.8
145	Standard deviation	1.0	0.4	0.4	0.1	1.6	0.1	0.4	1.0	0.5
146	Exhaust gas flow rate, pph	6.5	20.4	10.4	3.2	7.2	2.1	4.4	10.1	6.7
146	Standard deviation	1.6	5.5	1.1	1.5	1.0	0.5	0.7	0.7	1.1
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	194	138	83	79	81	106	83	95	72
076	Standard deviation	113	44	6	7	13	32	3	1	4
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	125000	153600	145980	74257	122640	84990	104010	132970	140730
C29	Standard deviation	19105	9213	1492	2498	2641	9871	5847	3986	1966
C37	Exhaust gas flow rate, lb/hr	894	1250	1067	685	910	541	565	726	656
C37	Standard deviation	90	98	55	145	65	69	35	31	44
C38	Gas heat transfer, Btu/hr	45792	92281	62905	17683	55206	31418	26292	41750	31363
C38	Standard deviation	9458	12061	2166	5085	5362	4043	2705	1884	2162
C39	Gas velocity at grid, ft/sec	4.8	6.0	5.0	2.6	4.9	4.1	5.6	6.9	6.8
C39	Standard deviation	0.1	0	0	0	0.1	0	0.1	0.1	0.1
C40	Gas velocity at 26-inch bed, ft/sec	6.5	9.0	7.8	4.5	6.7	4.3	6.1	7.7	7.6
C40	Standard deviation	0.6	0.7	0.4	0.9	0.3	0	0.2	0.3	0.3
C41	Gas velocity at 44-inch bed, ft/sec	3.0	4.1	3.6	2.1	3.1	2.0	2.8	3.5	3.5
C41	Standard deviation	0.3	0.3	0.2	0.4	0.2	0	0.1	0.1	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.3	3.3	2.8	1.6	2.4	1.5	2.2	2.8	2.8
C42	Standard deviation	0.2	0.3	0.1	0.3	0.1	0	0.1	0.1	0.1
C43	Gas velocity at 68-inch bed, ft/sec	1.9	2.7	2.3	1.3	2.0	1.3	1.9	2.4	2.3
C43	Standard deviation	0.2	0.2	0.1	0.3	0.1	0	0.1	0.1	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.5	2.1	1.8	1.0	1.5	1.0	1.5	1.9	1.8
C44	Standard deviation	0.1	0.2	0.1	0.2	0.1	0	0.1	0.1	0.1
C45	Gas velocity at 97-inch bed, ft/sec	1.2	1.7	1.5	1.0	1.2	0.8	1.2	1.5	1.4
C45	Standard deviation	0.1	0.1	0.1	0.2	0.1	0	0	0.1	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
122	Gas cooler 4 coolant temperature, °F	79	80	81	81	81	80
122	Standard deviation	0	0	1	0	1	0
123	Gas cooler 3 coolant temperature, °F	80	82	83	83	83	82
123	Standard deviation	0	0	1	1	1	0
124	Gas cooler 2 coolant temperature, °F	82	84	87	86	85	85
124	Standard deviation	1	1	1	1	1	0
125	Gas cooler 1 coolant temperature, °F	78	79	81	81	80	81
125	Standard deviation	1	1	1	1	1	0
126	Gas cooler 4 gas temperature, °F	575	582	586	414	378	445
126	Standard deviation	7	14	11	87	20	63
127	Gas cooler 3 gas temperature, °F	632	644	649	569	550	565
127	Standard deviation	19	16	14	40	16	21
128	Gas cooler 2 gas temperature, °F	646	650	658	615	608	601
128	Standard deviation	10	16	10	18	14	6
129	Gas cooler 1 gas temperature, °F	685	695	715	631	576	644
129	Standard deviation	29	24	20	58	27	33
130	Gas cooler total coolant temperature, °F	84	82	84	84	79	74
130	Standard deviation	5	8	5	1	2	1
132	Gas heat exchanger 4 wall temperature, °F	562	567	571	554	548	531
132	Standard deviation	13	20	13	6	18	3
133	Gas heat exchanger 3 wall temperature, °F	569	566	576	561	554	545
133	Standard deviation	14	19	10	7	14	5
134	Gas heat exchanger 2 wall temperature, °F	629	635	648	618	607	596
134	Standard deviation	8	19	11	10	13	5
135	Gas heat exchanger 1 wall temperature, °F	563	576	603	582	542	568
135	Standard deviation	39	32	25	30	39	3
142	Gas coolant flow rate, gal/min	15.1	14.8	13.4	14.0	14.6	15.4
142	Standard deviation	0.5	0.3	0.6	0.5	0.3	0.3
143	Gas cooler coolant outlet temperature, °F	86	88	90	89	88	87
143	Standard deviation	1	0	1	1	1	0
144	Exhaust gas temperature	211	207	217	217	220	227

FOLDDOUT FRAME /

FOLDOUT FRAME 2

142	Standard deviation	0.5	0.3	0.6	0.5	0.3	0.3
143	Gas cooler coolant outlet temperature, °F	86	88	90	89	88	87
143	Standard deviation	1	0	1	1	1	0
144	Exhaust gas temperature, °F	311	307	317	317	330	337
144	Standard deviation	16	12	12	11	10	2
145	Exhaust gas exit pressure, psid	76.1	75.7	75.7	75.9	75.5	75.6
145	Standard deviation	0.2	0.4	0.2	0.2	0.2	0.2
146	Exhaust gas flow rate, pph	3.9	4.2	3.8	3.9	4.2	5.5
146	Standard deviation	1.0	1.0	1.0	1.1	1.0	0.3
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	73	87	78	81	74	68
076	Standard deviation	1	20	1	2	3	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	144770	153180	154480	149650	150940	154210
C29	Standard deviation	2435	2969	5757	2233	2287	1737
C37	Exhaust gas flow rate, lb/hr	702	728	691	697	719	818
C37	Standard deviation	75	79	83	101	75	20
C38	Gas heat transfer, Btu/hr	40131	41149	41438	42225	43831	49566
C38	Standard deviation	5752	4634	3502	3963	4084	1481
C39	Gas velocity at grid, ft/sec	4.6	4.8	4.9	4.8	4.9	4.8
C39	Standard deviation	0.1	0.1	0.1	0	0	0
C40	Gas velocity at 26-inch bed, ft/sec	5.1	5.4	5.3	5.3	5.3	5.7
C40	Standard deviation	0.3	0.4	0.2	0.3	0.2	0.1
C41	Gas velocity at 44-inch bed, ft/sec	2.4	2.5	2.4	2.5	2.5	2.6
C41	Standard deviation	0.1	0.2	0.1	0.1	0.1	0.1
C42	Gas velocity at 52-inch bed, ft/sec	1.9	2.0	2.0	2.0	2.0	2.1
C42	Standard deviation	0.1	0.1	0.1	0.1	0.1	0.1
C43	Gas velocity at 68-inch bed, ft/sec	1.5	1.7	1.6	1.6	1.6	1.8
C43	Standard deviation	0.1	0.1	0	0.1	0.1	0
C44	Gas velocity at 80-inch bed, ft/sec	1.2	1.3	1.3	1.3	1.3	1.4
C44	Standard deviation	0.1	0.1	0	0.1	0.1	0
C45	Gas velocity at 97-inch bed, ft/sec	1.0	1.0	1.0	1.0	1.0	1.1
C45	Standard deviation	0.1	0.1	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
122	Gas cooler 4 coolant temperature, °F	81	85	78	75	77	79	81	83	79
122	Standard deviation	0	2	1	1	0	0	0	0	0
123	Gas cooler 3 coolant temperature, °F	83	85	79	76	78	81	83	84	81
123	Standard deviation	0	2	1	1	0	1	0	1	0
124	Gas cooler 2 coolant temperature, °F	88	93	84	78	82	84	89	92	87
124	Standard deviation	1	3	2	1	0	1	1	1	1
125	Gas cooler 1 coolant temperature, °F	84	84	81	75	79	77	82	85	80
125	Standard deviation	0	7	1	1	1	6	3	4	2
126	Gas cooler 4 gas temperature, °F	607	619	395	310	373	408	482	615	539
126	Standard deviation	15	56	8	5	6	19	59	16	8
127	Gas cooler 3 gas temperature, °F	713	776	549	403	513	556	647	746	633
127	Standard deviation	20	30	8	18	9	24	32	20	3
128	Gas cooler 2 gas temperature, °F	713	778	572	453	544	581	660	739	623
128	Standard deviation	13	16	7	6	7	20	19	14	6
129	Gas cooler 1 gas temperature, °F	756	729	571	471	553	460	634	755	654
129	Standard deviation	18	172	10	7	10	196	24	57	34
130	Gas cooler total coolant temperature, °F	69	77	71	68	65	65	72	77	76
130	Standard deviation	4	2	2	2	0	0	2	1	1
132	Gas heat exchanger 4 wall temperature, °F	620	615	496	405	484	531	597	575	474
132	Standard deviation	11	27	23	6	10	36	5	25	17
133	Gas heat exchanger 3 wall temperature, °F	640	649	523	436	501	542	627	608	489
133	Standard deviation	11	28	23	13	12	29	6	20	15
134	Gas heat exchanger 2 wall temperature, °F	686	695	565	469	546	585	667	659	546
134	Standard deviation	10	25	22	10	9	26	4	18	13
135	Gas heat exchanger 1 wall temperature, °F	651	607	533	447	523	473	583	575	439
135	Standard deviation	9	96	23	7	8	125	60	76	63
142	Gas coolant flow rate, gal/min	12.1	12.9	12.3	12.6	12.8	12.6	13.7	14.3	14.4
142	Standard deviation	0	0.7	0.6	0.8	0.2	0	0.3	0.2	0.2
143	Gas cooler coolant outlet temperature, °F	92	95	86	80	84	85	89	93	87
143	Standard deviation	0	2	1	1	1	1	1	0	0

FOLDOUT FRAME

142	Standard deviation	0	0.7	0.6	0.8	0.2	0	0.3	0.2	0.2
143	Gas cooler coolant outlet temperature, °F	92	95	86	80	84	85	89	93	87
143	Standard deviation	0	2	1	1	1	1	1	0	0
144	Exhaust gas temperature, °F	368	404	298	241	306	324	371	394	296
144	Standard deviation	9	15	10	4	9	4	9	11	9
145	Exhaust gas exit pressure, psid	80.4	76.5	82.0	83.1	82.1	80.9	80.1	76.8	81.4
145	Standard deviation	0.5	1.4	0.2	0.3	0.1	0.5	0.3	0.6	0.4
146	Exhaust gas flow rate, pph	13.9	18.6	10.6	8.3	11.2	11.2	11.8	17.4	11.2
146	Standard deviation	0.6	0.8	0.3	0.3	0.3	0.7	1.2	2.0	0.8
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	94	88	80	72	68	70	89	82	74
076	Standard deviation	14	1	3	2	0	1	6	1	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	158510	189760	130960	93127	118420	124030	160180	193050	154550
C29	Standard deviation	7958	10932	1631	2358	1040	4127	2257	2391	1921
C37	Exhaust gas flow rate, lb/hr	1093	1142	1041	985	1060	1037	1019	1124	1062
C37	Standard deviation	16	17	9	16	10	25	39	41	25
C38	Gas heat transfer, Btu/hr	75286	89132	53167	35067	53876	59585	71164	85652	53022
C38	Standard deviation	3385	5577	3132	1369	3359	2258	4687	6019	3059
C39	Gas velocity at grid, ft/sec	5.7	7.0	4.6	3.2	4.4	4.7	5.7	7.1	5.3
C39	Standard deviation	0.1	0.1	0	0	0.1	0	0.1	0.1	0.1
C40	Gas velocity at 26-inch bed, ft/sec	7.9	8.1	7.4	6.4	7.0	6.7	7.2	7.9	7.6
C40	Standard deviation	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.1
C41	Gas velocity at 44-inch bed, ft/sec	3.6	3.7	3.4	3.0	3.2	3.1	3.3	3.7	3.5
C41	Standard deviation	0.1	0.1	0	0.1	0	0.1	0.1	0.2	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.9	3.0	2.7	2.3	2.6	2.5	2.7	2.9	2.8
C42	Standard deviation	0.1	0.1	0	0	0	0.1	0.1	0.1	0
C43	Gas velocity at 68-inch bed, ft/sec	2.4	2.5	2.2	1.9	2.1	2.1	2.2	2.4	2.3
C43	Standard deviation	0.1	0.1	0	0	0	0.1	0.1	0.1	0
C44	Gas velocity at 80-inch bed, ft/sec	1.9	1.9	1.8	1.5	1.7	1.6	1.7	1.9	1.8
C44	Standard deviation	0	0	0	0	0	0	0.1	0.1	0
C45	Gas velocity at 97-inch bed, ft/sec	1.5	1.6	1.4	1.2	1.3	1.3	1.4	1.5	1.4
C45	Standard deviation	0	0	0	0	0	0	0.1	0.1	0

FOLDOUT FRAME

2

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test					
		19	I10A	I10B	I11	I12	I13
122	Gas cooler 4 coolant temperature, °F	78	77	75	78	79	77
122	Standard deviation	1	1	0	1	0	1
123	Gas cooler 3 coolant temperature, °F	79	78	77	80	81	78
123	Standard deviation	2	1	1	1	1	1
124	Gas cooler 2 coolant temperature, °F	83	81	79	83	85	81
124	Standard deviation	2	2	1	1	1	1
125	Gas cooler 1 coolant temperature, °F	77	77	73	77	80	78
125	Standard deviation	1	1	0	1	1	1
126	Gas cooler 4 gas temperature, °F	411	334	306	341	403	325
126	Standard deviation	47	26	25	14	21	11
127	Gas cooler 3 gas temperature, °F	533	435	433	469	561	487
127	Standard deviation	32	43	16	7	17	18
128	Gas cooler 2 gas temperature, °F	565	483	473	507	605	530
128	Standard deviation	10	33	18	7	18	21
129	Gas cooler 1 gas temperature, °F	570	520	451	523	632	534
129	Standard deviation	62	31	12	33	17	21
130	Gas cooler total coolant temperature, °F	74	72	73	73	63	96
130	Standard deviation	2	1	1	2	5	2
132	Gas heat exchanger 4 wall temperature, °F	454	442	448	475	604	453
132	Standard deviation	52	27	17	14	23	15
133	Gas heat exchanger 3 wall temperature, °F	473	462	455	483	593	458
133	Standard deviation	48	24	16	13	21	20
134	Gas heat exchanger 2 wall temperature, °F	527	515	507	540	637	512
134	Standard deviation	48	28	22	8	15	24
135	Gas heat exchanger 1 wall temperature, °F	457	500	432	498	614	493
135	Standard deviation	25	25	17	40	35	25
142	Gas coolant flow rate, gal/min	13.9	11.7	12.7	12.4	13.1	13.3
142	Standard deviation	0.9	0.8	0	0.7	0.2	0.6
143	Gas cooler coolant outlet temperature, °F	84	83	80	84	86	83
143	Standard deviation	1	1	0	1	1	1

FOLDOUT FRAME /



FOLDOUT FRAME 2

142	Standard deviation	0.9	0.8	0	0.7	0.2	0.6
143	Gas cooler coolant outlet temperature, °F	84	83	80	84	86	83
143	Standard deviation	1	1	0	1	1	1
144	Exhaust gas temperature, °F	285	269	235	281	371	310
144	Standard deviation	12	18	5	14	11	12
145	Exhaust gas exit pressure, psid	82.5	83.4	83.1	82.2	72.9	76.8
145	Standard deviation	0.4	0.9	0.3	0.5	0.8	0.9
146	Exhaust gas flow rate, pph	11.5	9.7	7.5	8.7	3.7	9.8
146	Standard deviation	0.8	1.5	0.4	1.4	1.0	2.2
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	71	73	75	75	119	434
076	Standard deviation	1	1	0	2	51	11
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	127590	100630	98240	111710	133800	118060
C29	Standard deviation	4429	9649	2115	2970	4588	4056
C37	Exhaust gas flow rate, lb/hr	1087	1030	946	969	579	951
C37	Standard deviation	26	55	24	65	81	77
C38	Gas heat transfer, Btu/hr	51580	44690	32853	44519	60403	57515
C38	Standard deviation	4018	6655	1658	6756	5292	4869
C39	Gas velocity at grid, ft/sec	4.6	3.6	3.4	3.9	5.2	7.1
C39	Standard deviation	0.1	0.4	0	0	0.1	0.3
C40	Gas velocity at 26-inch bed, ft/sec	7.0	6.6	6.0	6.2	5.5	7.5
C40	Standard deviation	0.2	0.4	0.1	0.5	0.1	0.3
C41	Gas velocity at 44-inch bed, ft/sec	3.2	3.0	2.7	2.9	2.5	3.5
C41	Standard deviation	0.1	0.2	0.1	0.2	0	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.6	2.4	2.2	2.3	2.0	2.8
C42	Standard deviation	0.1	0.2	0.1	0.2	0	0.1
C43	Gas velocity at 68-inch bed, ft/sec	2.1	2.0	1.8	1.9	1.7	2.2
C43	Standard deviation	0.1	0.1	0	0.1	0	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.7	1.5	1.4	1.5	1.3	1.8
C44	Standard deviation	0	0.1	0	0.1	0	0.1
C45	Gas velocity at 97-inch bed, ft/sec	1.3	1.2	1.1	1.2	1.0	1.4
C45	Standard deviation	0	0.1	0	0.1	0	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
122	Gas cooler 4 coolant temperature, °F	79	224	187	268	262	128	261	265
122	Standard deviation	8	101	105	74	98	96	106	114
123	Gas cooler 3 coolant temperature, °F	81	222	201	285	240	126	263	265
123	Standard deviation	11	105	118	80	86	96	105	114
124	Gas cooler 2 coolant temperature, °F	80	247	200	293	277	133	265	265
124	Standard deviation	10	112	117	81	99	102	104	114
125	Gas cooler 1 coolant temperature, °F	76	232	184	276	269	125	265	264
125	Standard deviation	4	111	103	77	97	92	105	114
126	Gas cooler 4 gas temperature, °F	419	274	240	365	367	85	377	353
126	Standard deviation	202	154	156	102	143	32	210	182
127	Gas cooler 3 gas temperature, °F	368	268	229	348	310	116	378	367
127	Standard deviation	160	155	146	95	115	84	212	189
128	Gas cooler 2 gas temperature, °F	379	306	242	365	368	138	436	375
128	Standard deviation	181	158	156	102	141	115	242	194
129	Gas cooler 1 gas temperature, °F	503	284	251	383	389	130	408	388
129	Standard deviation	212	158	165	111	155	105	229	204
130	Gas cooler total coolant temperature, °F	83	90	143	111	91	87	87	88
130	Standard deviation	8	5	3	30	6	8	10	8
132	Gas heat exchanger 4 wall temperature, °F	391	263	236	358	360	144	403	374
132	Standard deviation	174	144	153	98	139	119	229	195
133	Gas heat exchanger 3 wall temperature, °F	390	268	232	351	208	121	362	364
133	Standard deviation	160	148	149	96	68	92	218	192
134	Gas heat exchanger 2 wall temperature, °F	406	302	255	384	380	155	410	377
134	Standard deviation	183	153	169	107	148	133	232	197
135	Gas heat exchanger 1 wall temperature, °F	408	255	222	340	335	145	369	366
135	Standard deviation	161	137	140	94	128	118	210	189
142	Gas coolant flow rate, gal/min	13.2	(b)	1.4	1.4	1.3	(b)	0.9	0.6
142	Standard deviation	0.5	(b)	0.2	0.3	0.5	(b)	0.8	0
143	Gas cooler coolant outlet temperature, °F	82	78	76	80	78	76	80	71
143	Standard deviation	7	3	4	2	4	3	4	6
144	Exhaust gas tempera-	208	240	255	223	254	246	247	270

FOLDOUT FRAME /

142	Standard deviation	0.5	(b)	0.2	0.3	0.5	(b)	0.6	
143	Gas cooler coolant outlet temperature, °F	82	78	76	80	78	76	80	71
143	Standard deviation	7	3	4	2	4	3	4	6
144	Exhaust gas temperature, °F	208	240	255	223	254	246	347	270
144	Standard deviation	62	60	72	35	41	84	55	50
145	Exhaust gas exit pressure, psid	109.8	37.1	42.4	34.6	35.3	39.9	42.0	34.1
145	Standard deviation	16.9	14.7	17.4	8.3	10.2	16.8	18.7	10.5
146	Exhaust gas flow rate, pph	(b)	83.8	84.1	84.6	83.2	87.1	(b)	0.1
146	Standard deviation	(b)	6.2	4.2	2.4	4.2	7.2	(b)	0
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	156	191	224	139	160	294	224	160
076	Standard deviation	71	121	135	75	94	103	173	89
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	88280	3244	5157	4697	5455	(b)	4479	581
C29	Standard deviation	44229	3747	2257	1108	2394	(b)	5434	1262
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	18207	25371	28900	23779	28380	31367	46149	36480
C38	Standard deviation	9169	11950	13049	5949	7633	14843	10637	7675
C39	Gas velocity at grid, ft/sec	4.8	5.0	5.2	4.6	4.9	6.1	4.6	5.1
C39	Standard deviation	2.1	1.6	1.6	1.2	1.5	2.9	1.0	1.5
C40	Gas velocity at 26-inch bed, ft/sec	4.8	5.0	5.3	4.7	5.1	6.1	4.8	5.1
C40	Standard deviation	1.9	1.4	1.6	1.0	1.3	2.5	0.9	1.2
C41	Gas velocity at 44-inch bed, ft/sec	2.2	2.4	2.4	2.2	2.3	2.9	2.2	2.4
C41	Standard deviation	0.8	0.6	0.7	0.4	0.6	1.1	0.4	0.5
C42	Gas velocity at 52-inch bed, ft/sec	1.8	1.9	1.9	1.7	1.9	2.3	1.8	1.9
C42	Standard deviation	0.6	0.5	0.6	0.3	0.4	0.9	0.3	0.4
C43	Gas velocity at 68-inch bed, ft/sec	1.5	1.5	1.6	1.4	1.6	1.9	1.4	1.5
C43	Standard deviation	0.5	0.4	0.5	0.3	0.4	0.7	0.3	0.4
C44	Gas velocity at 80-inch bed, ft/sec	1.1	1.2	1.2	1.1	1.2	1.4	1.1	1.2
C44	Standard deviation	0.4	0.3	0.4	0.2	0.3	0.5	0.2	0.3
C45	Gas velocity at 97-inch bed, ft/sec	0.9	0.9	0.9	0.8	0.9	1.1	0.9	0.9
C45	Standard deviation	0.3	0.3	0.3	0.2	0.2	0.4	0.2	0.2

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
122	Gas cooler 4 coolant temperature, °F	73	78	92	80	76	76	68	80	72
122	Standard deviation	1	1	1	1	1	1	0	2	5
123	Gas cooler 3 coolant temperature, °F	73	79	92	80	79	79	68	80	73
123	Standard deviation	1	1	2	1	1	2	0	2	5
124	Gas cooler 2 coolant temperature, °F	74	81	109	84	94	91	70	84	73
124	Standard deviation	1	1	3	1	3	2	0	2	5
125	Gas cooler 1 coolant temperature, °F	73	79	90	79	80	74	65	80	71
125	Standard deviation	1	2	9	1	6	3	2	2	5
126	Gas cooler 4 gas temperature, °F	440	598	568	512	670	676	511	611	566
126	Standard deviation	11	30	17	15	16	21	13	16	11
127	Gas cooler 3 gas temperature, °F	452	637	624	521	729	720	496	643	502
127	Standard deviation	14	19	21	14	16	17	18	14	8
128	Gas cooler 2 gas temperature, °F	403	562	610	543	712	721	527	660	522
128	Standard deviation	15	13	16	15	10	16	17	10	13
129	Gas cooler 1 gas temperature, °F	527	672	637	604	760	773	578	724	655
129	Standard deviation	15	25	38	18	63	68	22	15	12
130	Gas cooler total coolant temperature, °F	71	75	48	65	79	82	69	53	70
130	Standard deviation	1	2	4	9	5	2	2	6	3
132	Gas heat exchanger 4 wall temperature, °F	423	598	589	488	661	687	473	588	415
132	Standard deviation	11	29	31	17	40	37	15	15	14
133	Gas heat exchanger 3 wall temperature, °F	420	596	574	484	651	673	451	581	352
133	Standard deviation	18	30	25	18	34	29	17	14	25
134	Gas heat exchanger 2 wall temperature, °F	455	620	651	545	707	738	514	644	419
134	Standard deviation	13	32	14	15	30	26	19	13	10
135	Gas heat exchanger 1 wall temperature, °F	427	562	525	483	611	629	430	616	364
135	Standard deviation	17	27	78	28	73	83	36	13	14
142	Gas coolant flow rate, gal/min	13.3	12.2	12.5	12.4	11.9	11.9	11.7	12.9	12.3
142	Standard deviation	0.2	0.7	0	0	0.1	0.2	0.4	1.0	0.4
143	Gas cooler coolant outlet temperature, °F	77	85	102	87	90	89	74	87	76
143	Standard deviation	1	1	1	0	2	1	1	2	5

FOLDOUT FRAME /

142	Standard deviation	0.2	0.7	0	0	0.1	0.2	0.4	1.0	0.4
143	Gas cooler coolant outlet temperature, °F	77	85	102	87	90	89	74	87	76
143	Standard deviation	1	1	1	0	2	1	1	2	5
144	Exhaust gas temperature, °F	203	339	407	287	433	466	285	402	297
144	Standard deviation	9	9	11	6	19	11	3	15	11
145	Exhaust gas exit pressure, psid	78.0	75.3	70.0	76.8	69.9	69.8	77.4	74.1	77.8
145	Standard deviation	0.9	0.3	0.7	0.3	0.9	0.9	0.3	0.6	0.2
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	82	78	81	74	92	95	83	105	80
076	Standard deviation	7	2	0	2	1	1	4	32	1
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	69894	103330	222440	120770	202730	200470	105840	127130	61357
C29	Standard deviation	4199	4937	7894	1978	7065	5681	2240	3591	2728
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	9694	40766	81499	22808	86681	95441	19536	60134	18135
C38	Standard deviation	1096	1780	2975	1666	4964	3381	895	3983	1509
C39	Gas velocity at grid, ft/sec	2.5	4.3	6.5	3.6	6.8	6.7	3.2	4.9	2.5
C39	Standard deviation	0.1	0	0.1	0.1	0.2	0.1	0	0.1	0
C40	Gas velocity at 26-inch bed, ft/sec	2.6	4.5	7.0	3.7	7.1	7.2	3.2	5.1	2.5
C40	Standard deviation	0.1	0	0.1	0.1	0.1	0.2	0	0.1	0
C41	Gas velocity at 44-inch bed, ft/sec	1.2	2.1	3.2	1.7	3.3	3.3	1.5	2.3	1.2
C41	Standard deviation	0	0	0	0	0.1	0.1	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	0.9	1.6	2.6	1.3	2.6	2.7	1.2	1.9	1.0
C42	Standard deviation	0	0	0	0	0	0.1	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	0.7	1.3	2.1	1.1	2.2	2.2	0.9	1.5	0.7
C43	Standard deviation	0	0	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	0.6	1.0	1.7	0.9	1.7	1.7	0.7	1.2	0.6
C44	Standard deviation	0	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.4	0.8	1.3	0.7	1.4	1.4	0.6	1.0	0.4
C45	Standard deviation	0	0	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
122	Gas cooler 4 coolant temperature, °F	75	77	91	75	75	79	78	89	76
122	Standard deviation	1	1	1	1	0	1	1	3	0
123	Gas cooler 3 coolant temperature, °F	77	75	89	77	74	79	79	92	77
123	Standard deviation	2	1	7	1	1	1	1	3	0
124	Gas cooler 2 coolant temperature, °F	77	78	99	77	74	78	79	102	79
124	Standard deviation	1	1	2	1	1	1	1	6	0
125	Gas cooler 1 coolant temperature, °F	74	74	97	73	71	76	77	99	78
125	Standard deviation	1	1	1	1	0	1	1	7	1
126	Gas cooler 4 gas temperature, °F	421	490	545	499	625	624	534	608	502
126	Standard deviation	119	38	10	17	30	12	8	30	15
127	Gas cooler 3 gas temperature, °F	413	352	583	447	506	594	505	678	510
127	Standard deviation	99	68	35	28	12	22	15	29	17
128	Gas cooler 2 gas temperature, °F	391	471	595	501	588	692	555	654	486
128	Standard deviation	99	29	14	17	21	18	8	48	18
129	Gas cooler 1 gas temperature, °F	517	499	647	564	579	780	652	746	616
129	Standard deviation	106	81	13	17	13	41	17	60	9
130	Gas cooler total coolant temperature, °F	68	74	80	84	84	85	85	89	92
130	Standard deviation	2	2	2	1	1	1	0	2	0
132	Gas heat exchanger 4 wall temperature, °F	458	500	554	475	552	537	407	557	483
132	Standard deviation	58	32	10	33	28	13	19	24	10
133	Gas heat exchanger 3 wall temperature, °F	458	365	536	470	495	533	393	563	460
133	Standard deviation	63	21	30	41	24	23	23	19	10
134	Gas heat exchanger 2 wall temperature, °F	486	510	631	508	594	585	440	626	527
134	Standard deviation	53	26	11	29	35	15	18	28	9
135	Gas heat exchanger 1 wall temperature, °F	484	414	590	454	418	563	435	603	538
135	Standard deviation	70	45	9	35	60	57	26	41	12
142	Gas coolant flow rate, gal/min	12.2	12.6	12.1	11.8	11.8	11.8	11.9	11.8	11.8
142	Standard deviation	0.1	0.1	0.1	0	0	0.1	0	0.4	0
143	Gas cooler coolant outlet temperature, °F	78	81	101	79	76	85	84	101	83
143	Standard deviation	1	0	1	1	1	1	1	3	0

FOLDOUT FRAME

	gal/min									
142	Standard deviation	0.1	0.1	0.1	0	0	0.1	0	0.4	0
143	Gas cooler coolant outlet temperature, F	78	81	101	79	76	85	84	101	83
143	Standard deviation	1	0	1	1	1	1	1	3	0
144	Exhaust gas temperature, F	192	194	341	227	274	316	222	367	238
144	Standard deviation	27	10	19	10	17	11	17	13	15
145	Exhaust gas exit pressure, psid	16.8	19.6	40.0	78.6	78.4	75.8	78.3	71.3	78.4
145	Standard deviation	0.1	0.4	25.5	0.2	0.2	0.2	0.2	0.5	0.3
146	Exhaust gas flow rate, pph	0.08	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02
146	Standard deviation	0	0	0	0	0	0	0	0	0
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	94	78	75	78	77	80	75	80	80
076	Standard deviation	37	12	4	1	0	1	2	3	0
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	74789	102300	215750	80501	60188	108450	99784	207410	104090
C29	Standard deviation	5509	2136	6435	6861	4457	4048	7349	14256	2177
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	12914	10193	60485	12577	17159	39864	14974	67494	15920
C38	Standard deviation	5071	2540	4766	1100	1959	2141	2069	3378	675
C39	Gas velocity at grid, ft/sec	4.2	3.0	6.3	2.7	2.7	4.6	3.1	6.6	3.1
C39	Standard deviation	0.1	0.1	0.1	0	0	0	0	0.1	0
C40	Gas velocity at 26-inch bed, ft/sec	4.2	3.2	6.6	2.8	2.7	4.7	3.2	6.8	3.2
C40	Standard deviation	0.1	0.1	0.1	0	0	0	0	0.1	0
C41	Gas velocity at 44-inch bed, ft/sec	1.9	1.5	3.0	1.3	1.3	2.2	1.5	3.1	1.5
C41	Standard deviation	0	0	0	0	0	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.6	1.2	2.4	1.0	1.0	1.8	1.2	2.5	1.2
C42	Standard deviation	0	0	0	0	0	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.2	0.9	2.0	0.8	0.8	1.4	1.0	2.1	0.9
C43	Standard deviation	0	0	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	0.9	0.7	1.6	0.6	0.6	1.1	0.7	1.6	0.7
C44	Standard deviation	0	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.7	0.6	1.2	0.5	0.5	0.9	0.6	1.3	0.6
C45	Standard deviation	0	0	0	0	0	0	0	0	0

FOLDOUT FRAME 2

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
122	Gas cooler 4 coolant temperature, °F	78	80	89	62	61	75	75
122	Standard deviation	0	1	2	6	7	1	1
123	Gas cooler 3 coolant temperature, °F	79	81	94	64	63	77	78
123	Standard deviation	0	1	3	6	7	0	1
124	Gas cooler 2 coolant temperature, °F	81	83	102	65	64	78	78
124	Standard deviation	1	1	2	6	7	0	2
125	Gas cooler 1 coolant temperature, °F	78	81	105	64	62	76	77
125	Standard deviation	1	2	7	6	7	0	2
126	Gas cooler 4 gas temperature, °F	518	576	585	493	443	516	508
126	Standard deviation	9	12	31	15	19	4	5
127	Gas cooler 3 gas temperature, °F	539	598	658	519	443	521	541
127	Standard deviation	8	12	29	14	25	8	6
128	Gas cooler 2 gas temperature, °F	503	556	627	513	426	520	523
128	Standard deviation	9	17	37	9	23	4	2
129	Gas cooler 1 gas temperature, °F	602	687	713	586	536	611	604
129	Standard deviation	10	15	35	10	11	2	1
130	Gas cooler total coolant temperature, °F	91	90	91	91	88	90	93
130	Standard deviation	0	0	0	1	1	0	1
132	Gas heat exchanger 4 wall temperature, °F	499	572	589	454	433	489	476
132	Standard deviation	8	14	32	17	17	5	5
133	Gas heat exchanger 3 wall temperature, °F	488	556	617	465	442	487	488
133	Standard deviation	8	17	36	12	17	3	2
134	Gas heat exchanger 2 wall temperature, °F	548	610	663	510	462	528	529
134	Standard deviation	8	15	38	10	13	5	1
135	Gas heat exchanger 1 wall temperature, °F	503	594	646	499	465	529	526
135	Standard deviation	15	20	31	13	15	3	1
142	Gas coolant flow rate, gal/min	11.8	11.9	13.1	11.3	11.2	11.0	12.7
142	Standard deviation	0	0	1.3	1.0	0.2	0	2.2
143	Gas cooler coolant outlet temperature, °F	85	87	103	70	67	82	83
143	Standard deviation	0	1	4	6	7	1	2

FOLDOUT FRAME /



142	Standard deviation	0	0	1.3	1.0	0.2	0	2.2
143	Gas cooler coolant outlet temperature, °F	85	87	103	70	67	82	83
143	Standard deviation	0	1	4	6	7	1	2
144	Exhaust gas temperature, °F	260	323	417	269	234	287	293
144	Standard deviation	3	11	28	3	7	3	2
145	Exhaust gas exit pressure, psid	77.9	76.4	70.7	78.3	78.7	78.2	57.9
145	Standard deviation	0.3	0.3	0.7	0.2	0.1	0.2	0.2
146	Exhaust gas flow rate, pph	0.02	0.02	0.02	0.02	0.02	0.02	0.01
146	Standard deviation	0	0	0	0.01	0	0	0.01
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	77	80	89	83	77	82	83
076	Standard deviation	1	2	2	4	0	1	0
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	109320	117220	233820	108090	81593	101960	108570
C29	Standard deviation	1064	4548	16437	3243	4042	1658	3462
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	19216	36796	81222	18452	12552	21607	22166
C38	Standard deviation	905	1492	7367	886	626	574	343
C39	Gas velocity at grid, ft/sec	3.3	4.1	6.8	3.0	2.4	3.1	4.1
C39	Standard deviation	0	0.1	0.1	0	0	0	0
C40	Gas velocity at 26-inch bed, ft/sec	3.4	4.3	7.0	3.1	2.5	3.2	4.3
C40	Standard deviation	0	0.1	0.1	0	0	0	0
C41	Gas velocity at 44-inch bed, ft/sec	1.6	2.0	3.2	1.4	1.2	1.5	2.0
C41	Standard deviation	0	0	0	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.2	1.6	2.6	1.1	1.0	1.2	1.6
C42	Standard deviation	0	0	0	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.0	1.3	2.2	1.0	0.7	1.0	1.3
C43	Standard deviation	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	0.8	1.0	1.7	0.7	0.6	0.7	1.0
C44	Standard deviation	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.6	0.8	1.4	0.6	0.5	0.6	0.8
C45	Standard deviation	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
122	Gas cooler 4 coolant temperature, °F	73	298	327	310	328
122	Standard deviation	6	95	49	76	49
123	Gas cooler 3 coolant temperature, °F	75	298	328	310	328
123	Standard deviation	7	95	48	76	49
124	Gas cooler 2 coolant temperature, °F	76	298	327	310	328
124	Standard deviation	7	95	49	76	49
125	Gas cooler 1 coolant temperature, °F	73	298	325	310	328
125	Standard deviation	6	96	52	76	48
126	Gas cooler 4 gas temperature, °F	461	409	445	511	509
126	Standard deviation	121	144	75	164	107
127	Gas cooler 3 gas temperature, °F	472	431	458	524	532
127	Standard deviation	122	154	78	165	108
128	Gas cooler 2 gas temperature, °F	495	433	477	540	540
128	Standard deviation	130	154	82	173	113
129	Gas cooler 1 gas temperature, °F	555	466	485	548	580
129	Standard deviation	157	168	95	175	124
130	Gas cooler total coolant temperature, °F	64	69	58	78	84
130	Standard deviation	8	11	8	22	21
132	Gas heat exchanger 4 wall temperature, °F	440	455	432	488	495
132	Standard deviation	110	162	70	155	103
133	Gas heat exchanger 3 wall temperature, °F	452	448	425	478	485
133	Standard deviation	113	159	72	154	103
134	Gas heat exchanger 2 wall temperature, °F	501	466	453	494	509
134	Standard deviation	127	167	77	156	106
135	Gas heat exchanger 1 wall temperature, °F	466	450	410	436	496
135	Standard deviation	130	161	84	137	106
142	Gas coolant flow rate, gal/min	12.1	(b)	(b)	(b)	1.2
142	Standard deviation	1.6	(b)	(b)	(b)	0.2
143	Gas cooler coolant outlet temperature, °F	80	71	67	60	70
143	Standard deviation	3	5	2	4	2

FOLDOUT FRAME /

142	Standard deviation	1.6	(b)	(b)	(b)	0.2
143	Gas cooler coolant outlet temperature, °F	80	71	67	60	70
143	Standard deviation	3	5	2	4	3
144	Exhaust gas temperature, °F	267	287	266	276	270
144	Standard deviation	29	48	29	41	40
145	Exhaust gas exit pressure, psid	95.4	68.2	14.5	14.6	14.3
145	Standard deviation	3.3	3.0	0.1	0.2	0.3
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	0.15	0.66
146	Standard deviation	(b)	(b)	(b)	0.09	0
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	111	160	115	138	123
076	Standard deviation	80	74	58	88	60
152	Exhaust gas exit pressure, psia	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)
C29	Coolant heat transfer, Btu/hr	132750	(b)	(b)	(b)	(b)
C29	Standard deviation	17162	(b)	(b)	(b)	(b)
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	25449	42387	25391	29364	27353
C38	Standard deviation	7660	7710	8326	9199	7233
C39	Gas velocity at grid, ft/sec	4.6	4.9	4.5	4.5	4.5
C39	Standard deviation	1.3	1.3	1.1	1.4	0.6
C40	Gas velocity at 26-inch bed, ft/sec	4.8	4.9	4.7	4.7	4.6
C40	Standard deviation	1.2	1.0	1.0	1.3	0.6
C41	Gas velocity at 44-inch bed, ft/sec	2.2	2.3	2.1	2.1	2.1
C41	Standard deviation	0.5	0.5	0.4	0.6	0.3
C42	Gas velocity at 52-inch bed, ft/sec	1.8	1.8	1.7	1.7	1.7
C42	Standard deviation	0.4	0.4	0.4	0.5	0.2
C43	Gas velocity at 68-inch bed, ft/sec	1.4	1.5	1.4	1.4	1.4
C43	Standard deviation	0.4	0.3	0.3	0.4	0.2
C44	Gas velocity at 80-inch bed, ft/sec	1.1	1.1	1.1	1.1	1.0
C44	Standard deviation	0.2	0.2	0.2	0.3	0.1
C45	Gas velocity at 97-inch bed, ft/sec	0.8	0.9	0.8	0.8	0.8
C45	Standard deviation	0.2	0.2	0.2	0.2	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
122	Gas cooler 4 coolant temperature, °F	338	305	338	338	338	338	338	316
122	Standard deviation	0	19	1	0	0	0	0	8
123	Gas cooler 3 coolant temperature, °F	338	313	338	338	338	338	338	312
123	Standard deviation	0	16	1	0	0	0	0	7
124	Gas cooler 2 coolant temperature, °F	338	310	338	338	338	338	338	311
124	Standard deviation	0	16	1	0	0	0	0	7
125	Gas cooler 1 coolant temperature, °F	338	302	338	338	338	338	338	319
125	Standard deviation	0	23	1	0	0	0	0	6
126	Gas cooler 4 gas temperature, °F	532	360	566	692	560	488	490	359
126	Standard deviation	66	22	29	75	32	11	10	17
127	Gas cooler 3 gas temperature, °F	550	343	576	756	642	516	525	377
127	Standard deviation	65	16	29	52	42	15	11	16
128	Gas cooler 2 gas temperature, °F	560	339	608	782	694	522	539	385
128	Standard deviation	69	14	25	38	32	13	12	18
129	Gas cooler 1 gas temperature, °F	610	402	589	804	704	553	522	398
129	Standard deviation	62	31	44	46	34	27	21	17
130	Gas cooler total coolant temperature, °F	68	58	82	78	68	66	99	71
130	Standard deviation	13	4	9	9	9	2	11	2
132	Gas heat exchanger 4 wall temperature, °F	523	353	570	644	587	458	472	303
132	Standard deviation	68	34	31	38	27	16	11	19
133	Gas heat exchanger 3 wall temperature, °F	440	307	496	541	465	392	407	261
133	Standard deviation	62	31	26	39	21	16	9	18
134	Gas heat exchanger 2 wall temperature, °F	534	370	581	662	615	467	479	309
134	Standard deviation	73	41	32	36	27	18	10	19
135	Gas heat exchanger 1 wall temperature, °F	516	341	476	644	603	457	425	310
135	Standard deviation	60	35	67	23	32	48	41	17
142	Gas coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	74	81	82	83	85	79	73	67
143	Standard deviation	9	2	1	1	1	0	1	0
144	Exhaust gas tempera-	291	167	250	387	355	225	242	145

FOLDOUT FRAME /

		gal/min							
142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	74	81	82	83	85	79	73	67
143	Standard deviation	9	2	1	1	1	0	1	0
144	Exhaust gas temperature, °F	291	167	250	387	355	225	242	145
144	Standard deviation	22	18	25	30	33	13	10	9
145	Exhaust gas exit pressure, psid	15.0	14.8	15.0	15.1	14.7	14.6	14.6	13.9
145	Standard deviation	0.1	0.1	0.1	0.1	0.1	0	0.1	0
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	1.10	1.07	1.05	1.36	1.93	1.00	1.02	1.06
151	Standard deviation	0.07	0.08	0.07	0.72	1.35	0.03	0.04	0.09
076	Exhaust gas cooler gas temperature, °F	168	95	121	124	122	77	103	83
076	Standard deviation	95	7	31	12	48	1	5	3
152	Exhaust gas exit pressure, psia	54.9	51.4	70.6	67.2	63.9	60.9	87.5	64.5
152	Standard deviation	2.7	3.3	5.1	5.4	4.3	2.0	4.9	3.5
C29	Coolant heat transfer, Btu/hr	34	(b)	270	453	(b)	(b)	5012	1291
C29	Standard deviation	22	(b)	239	(b)	(b)	(b)	508	360
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	40141	5803	19803	71733	63853	15210	20098	3265
C38	Standard deviation	5828	2162	3328	8535	9366	1448	1659	783
C39	Gas velocity at grid, ft/sec	5.0	2.1	3.4	6.3	6.3	3.2	3.5	2.4
C39	Standard deviation	0.2	0.2	0.1	0.1	0.1	0	0.1	0.1
C40	Gas velocity at 26-inch bed, ft/sec	5.3	2.1	3.5	6.8	6.8	3.4	3.6	2.5
C40	Standard deviation	0.1	0.2	0.1	0.2	0.1	0	0.1	0.1
C41	Gas velocity at 44-inch bed, ft/sec	2.5	1.0	1.6	3.1	3.1	1.6	1.6	1.1
C41	Standard deviation	0.1	0.1	0	0.1	0.1	0	0	0.1
C42	Gas velocity at 52-inch bed, ft/sec	2.0	0.8	1.3	2.5	2.5	1.3	1.3	0.8
C42	Standard deviation	0	0.1	0	0.1	0.1	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.6	0.6	1.1	2.1	2.1	1.0	1.0	0.7
C43	Standard deviation	0	0.1	0	0	0.1	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	1.2	0.5	0.8	1.7	1.6	0.8	0.8	0.5
C44	Standard deviation	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	1.0	0.4	0.5	1.3	1.3	0.6	0.6	0.4
C45	Standard deviation	0	0	0.2	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
122	Gas cooler 4 coolant temperature, °F	336	338	338	338	308	338	338	338	338
122	Standard deviation	5	0	0	0	13	0	1	0	0
123	Gas cooler 3 coolant temperature, °F	337	338	338	338	315	338	338	338	338
123	Standard deviation	4	0	0	0	12	0	1	0	0
124	Gas cooler 2 coolant temperature, °F	337	338	338	338	311	338	338	338	338
124	Standard deviation	3	0	0	0	13	0	1	0	0
125	Gas cooler 1 coolant temperature, °F	338	338	338	338	318	338	338	338	338
125	Standard deviation	0	0	0	0	13	0	1	0	0
126	Gas cooler 4 gas temperature, °F	459	653	655	480	399	516	550	536	670
126	Standard deviation	25	13	7	7	7	14	12	15	37
127	Gas cooler 3 gas temperature, °F	487	688	695	507	418	528	563	566	682
127	Standard deviation	27	12	9	7	9	11	14	19	45
128	Gas cooler 2 gas temperature, °F	505	716	727	529	437	553	588	586	719
128	Standard deviation	28	13	7	8	9	13	14	20	44
129	Gas cooler 1 gas temperature, °F	499	717	729	524	398	576	600	570	691
129	Standard deviation	24	11	14	14	47	56	23	19	70
130	Gas cooler total coolant temperature, °F	83	78	89	85	83	73	87	84	42
130	Standard deviation	1	4	3	2	4	5	2	1	10
132	Gas heat exchanger 4 wall temperature, °F	408	618	624	428	352	443	483	479	640
132	Standard deviation	32	19	12	7	13	21	19	18	49
133	Gas heat exchanger 3 wall temperature, °F	353	519	529	368	302	394	424	423	532
133	Standard deviation	27	14	10	7	12	19	11	17	38
134	Gas heat exchanger 2 wall temperature, °F	421	624	633	435	354	448	485	493	635
134	Standard deviation	33	16	11	7	12	22	20	19	44
135	Gas heat exchanger 1 wall temperature, °F	388	592	612	401	262	441	451	427	522
135	Standard deviation	26	16	25	23	74	78	33	25	85
142	Gas coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	68	70	69	64	55	58	59	62	63
143	Standard deviation	1	1	1	4	1	6	2	0	1
		193	329	339	204	159	231	274	254	364

FOLDOUT FRAME /

142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	68	70	69	64	55	58	59	62
143	Standard deviation	1	1	1	4	1	6	2	0
144	Exhaust gas temperature, °F	193	329	339	204	159	231	274	254
144	Standard deviation	13	10	17	20	13	15	19	8
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	1.07	1.06	1.10	1.02	0.99	1.07	1.07	1.05
151	Standard deviation	0.07	0.07	0.10	0.05	0.03	0.07	0.07	0.06
076	Exhaust gas cooler gas temperature, °F	84	93	101	87	81	79	92	95
076	Standard deviation	1	4	1	6	2	1	4	1
152	Exhaust gas exit pressure, psia	76.8	67.1	81.9	75.3	75.2	68.0	81.2	78.9
152	Standard deviation	0.9	4.4	4.0	3.1	2.6	3.3	2.3	1.0
C29	Coolant heat transfer, Btu/hr	2293	3226	3446	2089	(b)	6422	(b)	(b)
C29	Standard deviation	701	673	323	955	(b)	5784	(b)	(b)
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	8849	45319	46735	9671	6087	15357	22087	16215
C38	Standard deviation	1815	2790	4267	2674	1155	1800	2672	1404
C39	Gas velocity at grid, ft/sec	3.2	5.3	5.2	3.1	2.4	3.4	3.4	3.1
C39	Standard deviation	0.1	0.2	0.1	0	0.1	0	0	0.1
C40	Gas velocity at 26-inch bed, ft/sec	3.3	5.6	5.5	3.3	2.5	3.6	3.6	3.3
C40	Standard deviation	0.1	0.2	0.1	0	0.1	0	0.1	0.1
C41	Gas velocity at 44-inch bed, ft/sec	1.5	2.6	2.5	1.5	1.1	1.7	1.7	1.5
C41	Standard deviation	0	0.1	0	0	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	1.2	2.0	2.0	1.2	0.9	1.3	1.3	1.2
C42	Standard deviation	0	0.1	0	0	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	0.9	1.7	1.7	0.9	0.7	1.0	1.0	0.9
C43	Standard deviation	0	0	0	0	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	0.7	1.3	1.3	0.7	0.5	0.8	0.8	0.7
C44	Standard deviation	0	0	0	0	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.6	1.0	1.0	0.6	0.4	0.6	0.6	0.6
C45	Standard deviation	0	0	0	0	0	0	0	0

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Continued. Combustor gas system data

Data chan- nel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
122	Gas cooler 4 coolant temperature, °F	330	338	313	338	338	336	338	338
122	Standard deviation	34	1	68	0	0	8	0	0
123	Gas cooler 3 coolant temperature, °F	330	338	311	338	338	334	338	338
123	Standard deviation	35	1	68	0	0	13	0	0
124	Gas cooler 2 coolant temperature, °F	329	338	312	338	338	334	338	338
124	Standard deviation	35	1	67	0	0	13	0	0
125	Gas cooler 1 coolant temperature, °F	330	338	314	338	338	335	338	338
125	Standard deviation	34	1	61	0	0	10	0	0
126	Gas cooler 4 gas temperature, °F	548	565	504	562	434	545	571	369
126	Standard deviation	73	6	133	5	9	36	3	14
127	Gas cooler 3 gas temperature, °F	565	570	521	584	452	561	589	369
127	Standard deviation	77	6	139	11	11	39	3	18
128	Gas cooler 2 gas temperature, °F	584	596	541	600	460	590	619	384
128	Standard deviation	79	6	141	9	13	38	2	17
129	Gas cooler 1 gas temperature, °F	611	637	560	633	500	617	646	435
129	Standard deviation	82	11	150	7	14	42	4	14
130	Gas cooler total coolant temperature, °F	76	73	86	83	88	79	78	73
130	Standard deviation	3	3	3	4	6	2	1	2
132	Gas heat exchanger 4 wall temperature, °F	522	523	479	529	396	575	606	368
132	Standard deviation	70	7	131	10	14	41	3	35
133	Gas heat exchanger 3 wall temperature, °F	420	416	386	422	328	458	485	294
133	Standard deviation	56	6	101	15	10	33	4	30
134	Gas heat exchanger 2 wall temperature, °F	518	519	476	527	394	564	594	360
134	Standard deviation	67	7	130	11	12	37	4	31
135	Gas heat exchanger 1 wall temperature, °F	516	526	475	543	421	574	599	391
135	Standard deviation	73	16	136	12	18	42	3	25
142	Gas coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	64	70	75	73	72	69	69	66
143	Standard deviation	3	2	1	1	3	1	3	1

FOLDOUT FRAME /



142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	64	70	75	73	72	69	66
143	Standard deviation	3	2	1	1	3	1	3
144	Exhaust gas temperature, °F	251	258	251	257	188	262	291
144	Standard deviation	35	11	30	9	10	34	14
145	Exhaust gas exit pressure, psid	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	4.68	7.24	4.02	(b)	(b)	(b)	17.34
151	Standard deviation	1.01	4.10	2.58	(b)	(b)	(b)	4.62
076	Exhaust gas cooler gas temperature, °F	90	69	141	91	99	116	97
076	Standard deviation	31	2	83	4	2	35	1
152	Exhaust gas exit pressure, psia	53.8	75.0	70.3	72.1	76.3	69.8	69.3
152	Standard deviation	0.7	0.5	6.3	0.7	0.5	0.4	0.3
C29	Coolant heat transfer, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C29	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	24608	24530	24260	26066	9577	33907	40105
C38	Standard deviation	4895	2735	5042	1744	1413	6389	2355
C39	Gas velocity at grid, ft/sec	5.9	4.4	4.5	4.4	3.0	4.5	4.5
C39	Standard deviation	0.1	0.1	0.2	0.1	0.1	0	0
C40	Gas velocity at 26-inch bed, ft/sec	6.2	4.7	4.7	4.6	3.1	4.7	4.7
C40	Standard deviation	0.1	0.1	0.2	0.1	0.1	0	0
C41	Gas velocity at 44-inch bed, ft/sec	2.8	2.1	2.1	2.1	1.4	2.2	2.2
C41	Standard deviation	0.1	0	0.1	0	0	0	0
C42	Gas velocity at 52-inch bed, ft/sec	2.3	1.7	1.7	1.7	1.1	1.7	1.7
C42	Standard deviation	0	0	0.1	0	0	0	0
C43	Gas velocity at 68-inch bed, ft/sec	1.9	1.4	1.4	1.4	0.9	1.4	1.4
C43	Standard deviation	0	0	0.1	0	0	0	0
C44	Gas velocity at 80-inch bed, ft/sec	1.4	1.1	1.1	1.1	0.7	1.1	1.1
C44	Standard deviation	0	0	0.1	0	0	0	0
C45	Gas velocity at 97-inch bed, ft/sec	0.4	0.3	0.3	0.4	0.2	0.3	0.5
C45	Standard deviation	0.2	0	0.1	0.2	0	0.1	0.2

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(g) Concluded. Combustor gas system data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
122	Gas cooler 4 coolant temperature, °F	328	321	336	332	326	330	337
122	Standard deviation	50	60	19	36	48	42	11
123	Gas cooler 3 coolant temperature, °F	328	321	336	332	326	330	337
123	Standard deviation	50	60	19	35	48	42	11
124	Gas cooler 2 coolant temperature, °F	328	321	336	332	326	330	337
124	Standard deviation	50	59	18	35	48	42	10
125	Gas cooler 1 coolant temperature, °F	328	321	336	332	327	331	337
125	Standard deviation	48	59	18	33	46	39	11
126	Gas cooler 4 gas temperature, °F	489	474	556	598	515	527	489
126	Standard deviation	86	112	60	79	113	92	44
127	Gas cooler 3 gas temperature, °F	511	495	499	538	497	474	442
127	Standard deviation	92	116	43	74	109	99	33
128	Gas cooler 2 gas temperature, °F	522	504	567	633	563	571	542
128	Standard deviation	94	117	57	85	125	89	39
129	Gas cooler 1 gas temperature, °F	519	521	577	636	536	498	508
129	Standard deviation	90	124	58	82	119	106	88
130	Gas cooler total coolant temperature, °F	61	82	97	82	87	94	95
130	Standard deviation	23	8	8	6	6	9	7
132	Gas heat exchanger 4 wall temperature, °F	526	460	586	614	524	611	619
132	Standard deviation	92	110	75	88	123	101	46
133	Gas heat exchanger 3 wall temperature, °F	439	379	402	382	363	434	418
133	Standard deviation	78	89	42	53	88	70	34
134	Gas heat exchanger 2 wall temperature, °F	526	460	581	587	518	609	621
134	Standard deviation	92	109	74	83	118	100	44
135	Gas heat exchanger 1 wall temperature, °F	479	438	516	539	445	432	502
135	Standard deviation	81	105	63	72	103	82	104
142	Gas coolant flow rate, gal/min	(b)	(b)	(b)	(b)	(b)	(b)	(b)
142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	67	70	79	68	73	74	73
143	Standard deviation	2	2	4	3	4	4	4

FOLDOUT FRAME /

142	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
143	Gas cooler coolant outlet temperature, °F	67	70	79	68	73	73
143	Standard deviation	2	2	4	3	4	4
144	Exhaust gas temperature, °F	253	251	295	293	267	319
144	Standard deviation	31	33	32	25	43	29
145	Exhaust gas exit pressure, psid	32.9	51.6	39.5	41.3	43.5	42.4
145	Standard deviation	11.3	9.1	9.8	14.6	11.8	8.8
146	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
151	Exhaust gas flow rate, pph	(b)	(b)	(b)	(b)	(b)	(b)
151	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
076	Exhaust gas cooler gas temperature, °F	102	133	119	121	118	125
076	Standard deviation	48	77	38	52	50	47
152	Exhaust gas exit pressure, psia	(b)	66.3	33.3	36.1	30.7	29.2
152	Standard deviation	(b)	7.8	11.1	15.6	16.4	11.5
C29	Coolant heat transfer, Btu/hr	(b)	(b)	(b)	(b)	(b)	(b)
C29	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C37	Exhaust gas flow rate, lb/hr	(b)	(b)	(b)	(b)	(b)	(b)
C37	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C38	Gas heat transfer, Btu/hr	34725	25422	34631	34463	30659	40162
C38	Standard deviation	4760	5280	5941	5270	7792	4900
C39	Gas velocity at grid, ft/sec	4.9	4.2	4.8	4.8	4.8	4.9
C39	Standard deviation	0.4	1.0	0.2	0.4	0.6	0.5
C40	Gas velocity at 26-inch bed, ft/sec	5.2	4.5	5.1	5.0	5.1	5.1
C40	Standard deviation	0.4	0.9	0.2	0.4	0.6	0.4
C41	Gas velocity at 44-inch bed, ft/sec	2.4	2.0	2.3	2.3	2.3	2.3
C41	Standard deviation	0.2	0.4	0.1	0.2	0.3	0.2
C42	Gas velocity at 52-inch bed, ft/sec	1.9	1.7	1.9	1.9	1.8	1.9
C42	Standard deviation	0.1	0.3	0.1	0.2	0.2	0.1
C43	Gas velocity at 68-inch bed, ft/sec	1.5	1.3	1.5	1.5	1.5	1.5
C43	Standard deviation	0.1	0.3	0.1	0.1	0.2	0.1
C44	Gas velocity at 80-inch bed, ft/sec	1.2	1.0	1.2	1.2	1.2	1.2
C44	Standard deviation	0.1	0.2	0.1	0.1	0.2	0.1
C45	Gas velocity at 97-inch bed, ft/sec	0.9	0.3	0.9	0.9	0.9	0.9
C45	Standard deviation	0.1	0.3	0.1	0.1	0.1	0.1

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(h) Combustion gas analysis data

Data channel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
027	Sample gas temperature, °F	63	68	70	56	61	87	85	70	66
027	Standard deviation	1	2	5	3	3	2	2	1	1
026	Sample gas pressure, psia	14.3	14.4	14.4	14.4	18.6	14.4	14.5	14.4	14.5
026	Standard deviation	0	0	0.1	0	16.1	0	0.1	0	0.1
063	Nitrogen oxides content, ppm	128	157	175	166	76	93	119	164	174
063	Standard deviation	13	24	14	14	77	34	9	5	7
064	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide content, ppm	75	28	23	19	21	30	30	28	31
065	Standard deviation	94	4	4	3	22	2	2	10	1
066	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	14	8	4	2	17	24	5	4	3
067	Standard deviation	12	9	2	1	43	22	1	1	0
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	125600	116590	109210	121720	64638	89775	98305	98221	98462
069	Standard deviation	2231	3722	8966	4543	47379	34461	5606	4907	1426
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	7.1	9.3	2.1	5.3	5.3	16.4	153.3	107.4	95.5
071	Standard deviation	3.7	10.8	2.1	7.7	4.6	12.1	79.6	42.5	10.1
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	66914	92995	92076	85552	48977	111730	84057	98533	85162
073	Standard deviation	21538	14385	5419	8817	38598	55152	6760	39130	1434
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	6.5	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	254	254	263	267	185	270	254	256	225
075	Standard deviation	8	36	10	11	70	20	20	25	2
057	Sample gas pressure, psia	29.1	27.2	29.1	29.0	28.2	29.7	27.3	29.7	29.6
057	Standard deviation	0.1	4.8	0.1	0.1	2.1	0.2	5.0	0.2	0.1
089	Sample line differential	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME ]

072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	66914	92995	92076	85552	48977	111730	84057	98533	85162
073	Standard deviation	21538	14385	5419	8817	38598	55152	6760	39130	1434
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	6.5	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	254	254	263	267	185	270	254	256	225
075	Standard deviation	8	36	10	11	70	20	20	25	2
057	Sample gas pressure, psia	29.1	27.2	29.1	29.0	28.2	29.7	27.3	29.7	29.6
057	Standard deviation	0.1	4.8	0.1	0.1	2.1	0.2	5.0	0.2	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, °F	218	218	218	217	216	216	216	216	216
146	Standard deviation	2	2	2	2	2	2	1	2	2
150	Sample line differential temperature, °F	146	146	146	146	146	146	144	146	146
150	Standard deviation	0	0	0	0	0	0	8	0	0
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	285	286	290	287	222	292	291	290	288
159	Standard deviation	1	5	1	3	46	2	3	2	0
C34	SO <sub>x</sub> concentration, ppm	6.1	9.0	2.1	5.3	2.1	16.4	167.2	107.4	95.5
C34	Standard deviation	3.4	11.6	2.1	7.7	0.9	12.1	75.5	42.5	10.1
C46	NO <sub>x</sub> concentration, lb/MBtu	0.203	0.840	0.317	0.405	0.133	0.183	0.219	0.288	0.311
C46	Standard deviation	0.043	1.565	0.057	0.296	0.134	0.074	0.029	0.025	0.062
C47	SO <sub>x</sub> concentration, lb/MBtu	0.012	0.041	0.005	0.014	0.006	0.048	0.433	0.263	0.239
C47	Standard deviation	0.006	0.041	0.005	0.017	0.006	0.042	0.213	0.109	0.058
C49	Exhaust sulfur, percent of input	0.42	1.44	0.18	0.50	0.22	1.67	15.08	9.16	8.30
C49	Standard deviation	0.03	0.25	0.02	0.08	0.03	0.20	1.05	0.53	0.29

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test							
		A8B	A7B	A6B	A5B	A3B	A16B	A12B	A17B
027	Sample gas temperature, °F	76	82	74	69	66	71	86	89
027	Standard deviation	4	2	2	1	1	6	3	1
026	Sample gas pressure, psia	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.5
026	Standard deviation	0.1	0.1	0	0.1	0.1	0	0	0.1
063	Nitrogen oxides content, ppm	176	145	172	129	5	116	163	174
063	Standard deviation	12	10	7	88	1	64	14	23
064	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide content, ppm	33	26	49	100	44	45	87	21
065	Standard deviation	2	6	5	9	2	3	9	3
066	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	2.6	2.2	3.3	6.9	3.3	2.9	10.7	7.7
067	Standard deviation	0.2	0.8	0.2	0.8	1.9	0.2	5.7	1.7
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	98390	103110	90221	91702	103350	107080	130040	104320
069	Standard deviation	2466	5990	2328	2729	7502	6261	8316	2959
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	129	149	271	464	384	312	373	72
071	Standard deviation	12	70	79	35	38	36	115	34
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	86049	82149	88774	90549	84322	86612	48814	81124
073	Standard deviation	3083	5662	2840	4952	7664	5701	8918	1847
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	5.0	5.0	5.0	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	225	233	233	219	211	270	279	270

FOLDOUT FRAME

1-111A  
19) 217

073	Oxygen content, ppm	86049	82149	88774	90549	84322	86612	48814	81124
073	Standard deviation	3083	5662	2840	4952	7664	5701	8918	1847
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	5.0	5.0	5.0	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	225	233	233	219	211	270	279	270
075	Standard deviation	3	17	13	2	5	21	8	18
057	Sample gas pressure, psia	29.6	28.2	28.9	29.3	29.5	28.7	24.8	29.3
057	Standard deviation	0	4.1	0	0.2	0.2	0.4	2.4	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, °F	216	216	215	216	216	217	216	217
146	Standard deviation	2	2	1	2	1	2	1	3
150	Sample line differential temperature, °F	146	146	146	146	146	146	146	147
150	Standard deviation	0	0	0	0	0	0	0	0
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	290	289	285	287	286	288	291	291
159	Standard deviation	1	4	5	1	1	3	2	1
C34	SO <sub>x</sub> concentration, ppm	129	161	271	464	384	312	291	72
C34	Standard deviation	12	58	79	35	38	36	125	34
C46	NO <sub>x</sub> concentration, lb/MBtu	0.300	0.254	0.298	0.167	0.008	0.190	0.209	0.305
C46	Standard deviation	0.043	0.049	0.062	0.156	0.002	0.108	0.045	0.045
C47	SO <sub>x</sub> concentration, lb/MBtu	0.308	0.384	0.674	0.962	0.938	0.704	0.570	0.194
C47	Standard deviation	0.053	0.131	0.286	0.424	0.276	0.097	0.267	0.112
C49	Exhaust sulfur, percent of input	10.70	13.35	23.43	33.44	32.63	24.47	19.83	6.73
C49	Standard deviation	0.26	0.65	1.41	2.09	1.36	0.48	1.32	0.55

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

2411A  
 (3) 2/2

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test						
		C1	C3	C8	C11	C12	C16	C17
027	Sample gas temperature, °F	59	58	53	48	62	69	71
027	Standard deviation	1	0	2	2	3	1	0
026	Sample gas pressure, psia	14.4	14.4	14.5	14.5	14.4	14.4	14.4
026	Standard deviation	0	0	0	0	0	0	0
063	Nitrogen oxides content, ppm	187	224	212	174	185	212	149
063	Standard deviation	40	11	3	66	64	8	85
064	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide content, ppm	74	43	39	32	71	59	26
065	Standard deviation	18	3	5	11	18	5	8
066	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	10.2	2.5	2.2	3.3	4.7	2.9	3.5
067	Standard deviation	1.2	0.3	0.5	0.8	2.1	0.3	0.4
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	87581	99602	90137	85746	115170	97547	73343
069	Standard deviation	5014	4893	2402	30892	28704	1919	42331
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	423	404	419	290	252	313	318
071	Standard deviation	75	27	19	65	102	16	185
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	92511	87881	97541	82499	55321	90364	120280
073	Standard deviation	4430	6450	3231	18989	6739	3584	51804
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.6	5.0	5.0
074	Standard deviation	0	0	0	0	1.7	0	0
075	Gas analyzer gas temperature, °F	222	232	229	237	256	262	281
075	Standard deviation	10	2	2	15	29	4	24

FOLDDOUT FRAME



073	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	92511	87881	97541	82499	55321	90364	120280
073	Standard deviation	4430	6450	3231	18989	6739	3584	51804
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.6	5.0	5.0
074	Standard deviation	0	0	0	0	1.7	0	0
075	Gas analyzer gas temperature, F	222	232	229	237	256	262	281
075	Standard deviation	10	2	2	15	29	4	24
057	Sample gas pressure, psia	29.1	29.2	29.2	29.3	28.8	29.0	29.2
057	Standard deviation	0	0.1	0	0.1	0.2	0.4	0.2
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, F	215	217	216	216	218	218	218
146	Standard deviation	2	2	2	1	1	2	3
150	Sample line differential temperature, F	145	145	145	145	146	146	146
150	Standard deviation	0	0	0	0	0	0	0
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	286	284	284	282	287	289	292
159	Standard deviation	0	1	0	2	3	0	2
C34	SO <sub>x</sub> concentration, ppm	75	27	19	15	108	16	185
C34	Standard deviation	4	5	4	4	4	5	5
C46	NO <sub>x</sub> concentration, lb/MBtu	0.428	0.438	0.413	0.327	0.266	0.433	0.349
C46	Standard deviation	0.179	0.124	0.047	0.140	0.094	0.035	0.213
C47	SO <sub>x</sub> concentration, lb/MBtu	1.352	1.101	1.149	0.693	0.509	0.892	1.046
C47	Standard deviation	0.531	0.294	0.193	0.130	0.262	0.090	0.672
C49	Exhaust sulfur, percent of input	46.99	38.29	39.95	24.13	17.69	31.01	36.39
C49	Standard deviation	2.61	1.44	0.95	0.64	1.29	0.44	3.30

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME 2

24/11  
 (4) 212

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test						
		D6	D7	D2	D1	D10	D3	D4
027	Sample gas temperature, °F	72	71	77	72	63	68	80
027	Standard deviation	4	0	2	3	2	7	1
026	Sample gas pressure, psia	14.5	14.6	14.6	14.6	14.6	14.6	14.5
026	Standard deviation	0	0	0	0	0	0	0.1
063	Nitrogen oxides content, ppm	94	206	205	240	236	214	238
063	Standard deviation	80	40	8	5	6	14	16
064	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide content, ppm	20	21	11	58	62	14	15
065	Standard deviation	10	6	4	9	2	5	3
066	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	12.0	1.3	2.4	4.8	3.5	0.6	3.4
067	Standard deviation	23.7	0.4	0.2	0.6	0.5	0.3	2.1
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	68606	89106	93394	70675	79712	105510	93313
069	Standard deviation	13163	4002	3785	1506	2018	16529	13072
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	114	288	329	369	360	171	242
071	Standard deviation	102	45	19	17	9	48	48
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	86424	90113	77524	122980	109310	80049	92872
073	Standard deviation	61907	17814	4075	2767	4076	8889	17073
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	200	261	297	284	286	309	309

FOLDOUT FRAME 1

072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	86424	90113	77524	122980	109310	80049	92872
073	Standard deviation	61907	17814	4075	2767	4076	8889	17073
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	200	261	297	284	286	309	309
075	Standard deviation	47	31	2	16	4	17	18
057	Sample gas pressure, psia	20.4	27.7	28.9	28.0	28.8	27.1	28.0
057	Standard deviation	6.5	3.7	0	2.2	0.1	3.8	2.2
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, °F	214	214	(b)	215	215	214	214
146	Standard deviation	0	0	(b)	1	1	1	1
150	Sample line differential temperature, F	145	146	138	146	146	146	146
150	Standard deviation	0	0	3	0	0	0	0
157	Sample port gas temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	260	261	232	265	265	271	274
159	Standard deviation	4	2	50	2	1	2	1
C34	SO <sub>x</sub> concentration, ppm	124	286	329	369	360	172	242
C34	Standard deviation	91	45	19	17	9	50	48
C46	NO <sub>x</sub> concentration, lb/MBtu	0.185	0.466	0.732	0.670	0.591	0.414	0.532
C46	Standard deviation	0.137	0.085	0.362	0.076	0.074	0.139	0.124
C47	SO <sub>x</sub> concentration, lb/MBtu	0.359	0.903	1.625	1.433	1.256	0.458	0.724
C47	Standard deviation	0.258	0.116	0.759	0.165	0.179	0.167	0.105
C49	Exhaust sulfur, percent of input	12.50	31.39	56.51	49.82	43.67	15.41	25.16
C49	Standard deviation	1.27	0.57	3.73	0.81	8.80	0.82	0.52

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
027	Sample gas temperature, °F	72	70	71	67	62	65	74	82
027	Standard deviation	1	2	7	4	3	7	8	7
026	Sample gas pressure, psia	14.4	14.4	14.4	14.3	14.5	14.5	14.5	14.5
026	Standard deviation	0	0	0.1	0.1	0.1	0.1	0.1	0.1
063	Nitrogen oxides con- tent, ppm	170	188	217	102	129	134	(b)	(b)
063	Standard deviation	6	11	8	20	46	46	(b)	(b)
064	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide con- tent, ppm	52	46	38	21	16	22	9	35
065	Standard deviation	6	8	8	11	5	17	6	0
066	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	2.6	1.8	2.0	3.3	1.4	2.5	8.3	10.0
067	Standard deviation	1.0	0.8	1.2	6.4	0.2	2.2	1.7	0
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	100860	94393	91576	102760	91383	91253	4937	(b)
069	Standard deviation	5240	5272	3685	6805	32385	29014	4695	(b)
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	170	330	495	418	505	271	15	1.5
071	Standard deviation	32	41	75	152	211	166	30	3.1
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	81058	90913	89223	77813	77494	75254	6850	212810
073	Standard deviation	6630	5157	3065	7166	27065	26233	6700	352
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	246	226	253	211	242	222	151	152
075	Standard deviation	16	9	7	35	13	49	4	7
057	Sample gas pressure, psia	29.4	29.2	29.2	26.0	28.0	23.3	15.1	15.4
057	Standard deviation	0.1	0.1	0.1	5.6	3.0	6.7	3.6	3.4
089	Sample line differential	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

FOLDOUT FRAME /

	ppm								
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	170	330	495	418	505	271	15	1.5
071	Standard deviation	32	41	75	152	211	166	30	3.1
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	81058	90913	89223	77813	77494	75254	6850	212810
073	Standard deviation	6630	5157	3065	7166	27065	26233	6700	352
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	246	226	253	211	242	222	151	152
075	Standard deviation	16	9	7	35	13	49	4	7
057	Sample gas pressure, psia	29.4	29.2	29.2	26.0	28.0	23.3	15.1	15.4
057	Standard deviation	0.1	0.1	0.1	5.6	3.0	6.7	3.6	3.4
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, °F	215	216	215	214	215	216	245	214
146	Standard deviation	1	1	1	1	0	2	14	1
150	Sample line differential temperature, °F	146	146	146	146	146	146	123	145
150	Standard deviation	0	0	0	0	0	0	11	1
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	283	281	286	277	283	280	269	258
159	Standard deviation	1	2	1	5	3	4	5	5
C34	SO <sub>x</sub> concentration, ppm	170	330	495	455	500	396	(b)	(b)
C34	Standard deviation	32	41	75	151	64	75	(b)	(b)
C46	NO <sub>x</sub> concentration, lb/MBtu	0.337	0.372	0.447	0.190	0.239	0.240	(b)	(b)
C46	Standard deviation	0.067	0.087	0.153	0.050	0.104	0.086	(b)	(b)
C47	SO <sub>x</sub> concentration, lb/MBtu	0.454	0.913	1.416	1.177	1.275	0.995	(b)	(b)
C47	Standard deviation	0.057	0.266	0.542	0.398	0.277	0.226	(b)	(b)
C49	Exhaust sulfur, percent of input	15.80	31.75	49.25	40.92	44.33	34.59	(b)	(b)
C49	Standard deviation	0.28	1.31	2.67	1.96	1.37	1.11	(b)	(b)

<sup>b</sup>Data or results were not obtained.

24114  
 (4) 215

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2G
027	Sample gas temperature, °F	80	78	81	74	79	84	88
027	Standard deviation	5	3	7	5	3	4	3
026	Sample gas pressure, psia	14.5	14.5	14.4	15.0	14.4	14.2	14.1
026	Standard deviation	0	0.1	0.1	1.6	0	0.1	0
063	Nitrogen oxides con- tent, ppm	239	305	266	207	247	190	237
063	Standard deviation	21	209	10	31	11	11	31
064	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Carbon monoxide con- tent, ppm	4	10	8	12	7	12	8
065	Standard deviation	5	4	4	2	1	1	2
066	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Hydrocarbon content, ppm	0.8	1.2	1.5	1.8	1.4	0.4	0.9
067	Standard deviation	0.5	0.5	0.4	0.1	0.4	0.4	0.4
068	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Carbon dioxide content, ppm	110590	72239	71512	81760	70504	79852	75866
069	Standard deviation	4381	10484	1716	5983	4891	3261	5147
070	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	330	192	206	252	261	393	355
071	Standard deviation	103	69	344	25	176	97	91
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	66414	111520	116840	111680	119970	107660	110100
073	Standard deviation	9012	10780	1810	2556	7506	3827	4867
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	248	240	236	232	243	243	253

FOLDOUT FRAME /

FOLDOUT FRAME 2

	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Sulfur oxide content, ppm	330	192	206	252	261	393	355
071	Standard deviation	103	69	344	25	176	97	91
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	66414	111520	116840	111680	119970	107660	110100
073	Standard deviation	9012	10780	1810	2556	7506	3827	4867
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	248	240	236	232	243	243	253
075	Standard deviation	36	15	28	7	14	8	12
057	Sample gas pressure, psia	26.5	29.2	29.2	29.3	29.2	28.9	29.0
057	Standard deviation	5.3	0.6	0.9	0.5	0.5	0.5	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
091	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Sample line temperature, °F	215	215	216	211	211	215	215
146	Standard deviation	4	2	1	4	1	1	0
150	Sample line differential temperature, °F	146	146	144	142	142	146	146
150	Standard deviation	0	0	1	4	1	0	0
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	273	273	287	278	278	284	284
159	Standard deviation	4	5	1	3	3	1	1
C34	SO <sub>x</sub> concentration, ppm	365	192	224	252	261	393	355
C34	Standard deviation	56	69	353	25	176	97	91
C46	NO <sub>x</sub> concentration, lb/MBtu	0.479	0.820	0.691	0.479	0.614	0.471	0.550
C46	Standard deviation	0.225	0.607	0.112	0.101	0.101	0.043	0.152
C47	SO <sub>x</sub> concentration, lb/MBtu	1.022	0.760	0.820	0.823	0.903	1.353	1.149
C47	Standard deviation	0.317	0.580	1.292	0.223	0.627	0.328	0.381
C49	Exhaust sulfur, percent of input	35.53	26.42	28.51	28.63	31.39	47.04	39.96
C49	Standard deviation	1.56	2.85	6.35	1.09	3.08	1.61	1.88

<sup>b</sup>Data or results were not obtained.

2411A  
 (7) (216)

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test							
		E1	E2	E3	E4	E5	E6	E9	E8
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	122	141	11	224	105	151	89	150
064	Standard deviation	15	10	5	44	49	22	6	15
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	20	20	508	55	19	44	21	36
066	Standard deviation	2	3	231	63	9	9	1	6
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	(b)	98.8	37.0	18.6	24.3	35.0	52.5	57.5
068	Standard deviation	(b)	138.7	12.7	16.0	10.5	6.3	6.2	2.5
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	141940	103180	171720	139750	120670	127890	154140	122430
070	Standard deviation	15158	1986	5374	37424	49633	2735	6799	37557
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	(b)	(b)	647	279	13	54	101	186
072	Standard deviation	(b)	(b)	168	875	22	42	27	76
073	Oxygen content, ppm	45006	92624	7996	32339	47383	56169	44768	55220
073	Standard deviation	13856	1671	3231	10842	51609	3987	7273	17339
074	SO <sub>x</sub> permissive signal	5.5	4.9	7.4	6.9	5.9	4.9	7.0	4.9
074	Standard deviation	1.6	0	2.5	2.4	2.0	0	2.5	0
075	Gas analyzer gas tempera- ture, F	161	203	177	203	216	135	205	173

FOLDOUT FRAME /



071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	(b)	(b)	647	279	13	54	101	186
072	Standard deviation	(b)	(b)	168	875	22	42	27	76
073	Oxygen content, ppm	45006	92624	7996	32339	47383	56169	44768	55220
073	Standard deviation	13856	1671	3231	10842	51609	3987	7273	17339
074	SO <sub>x</sub> permissive signal	5.5	4.9	7.4	6.9	5.9	4.9	7.0	4.9
074	Standard deviation	1.6	0	2.5	2.4	2.0	0	2.5	0
075	Gas analyzer gas temperature, °F	161	203	177	203	216	135	205	173
075	Standard deviation	14	14	10	27	26	16	5	28
057	Sample gas pressure, psia	30.1	28.0	29.4	26.0	29.5	23.0	30.4	27.4
057	Standard deviation	0.5	4.4	0.3	5.6	0.2	5.8	0.1	5.6
089	Sample line differential temperature, °F	145	145	145	144	144	144	144	145
089	Standard deviation	0.2	0.4	0.3	0.2	0.3	0.4	0.1	0.3
090	Sample line temperature, °F	214	213	214	213	214	214	214	215
090	Standard deviation	0.2	0.3	0.6	0.3	0.5	1.0	0.4	0.6
091	Sample line temperature, °F	61	71	72	67	59	65	55	68
091	Standard deviation	2	1	1	3	1	3	1	3
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	(b)	(b)	733	5	8	52	111	205
C34	Standard deviation	(b)	(b)	127	1	13	38	31	47
C46	NO <sub>x</sub> concentration, 1b/MBtu	0.301	0.259	0.045	0.275	0.174	0.702	0.243	0.308
C46	Standard deviation	0.094	0.033	0.055	0.133	0.105	0.102	0.026	0.092
C47	SO <sub>x</sub> concentration, 1b/MBtu	(b)	(b)	2.750	0.767	0.033	0.284	0.426	0.557
C47	Standard deviation	(b)	(b)	0.907	1.841	0.073	0.211	0.117	0.221
C49	Exhaust sulfur, percent of input	(b)	(b)	93.60	26.09	1.13	9.67	14.49	18.97
C49	Standard deviation	(b)	(b)	30.89	62.68	2.49	7.17	3.98	7.51

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test						
		E19	E13A	E13B	E14	E11	E12	E15
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	135	191	203	131	156	162	205
064	Standard deviation	8	15	9	6	6	22	28
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	18	19	19	13	25	38	34
066	Standard deviation	6	1	1	2	3	4	6
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	27.4	9.9	9.1	7.3	5.7	4.3	4.6
068	Standard deviation	22.1	0.7	1.8	0.8	0.6	0.9	0.4
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	128880	130940	120950	144530	115550	131820	118830
070	Standard deviation	4240	1147	5260	4043	8771	10147	9959
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	206	517	414	505	271	356	101
072	Standard deviation	93	8	10	92	94	210	82
073	Oxygen content, ppm	55629	61387	71849	48637	82343	63905	69187
073	Standard deviation	18551	1981	7233	4349	9239	8863	9207
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	6.8	4.9	4.9	4.9
074	Standard deviation	0	0	0	2.4	0	0	0
075	Gas analyzer gas tempera- ture, °F	182	185	190	166	225	181	226

FOLDOUT FRAME /

24104  
2/7

072	Standard deviation	93	8	10	92	94	210	82
073	Oxygen content, ppm	55629	61387	71849	48637	82343	63905	69187
073	Standard deviation	18551	1981	7233	4349	9239	8863	9207
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	6.8	4.9	4.9	4.9
074	Standard deviation	0	0	0	2.4	0	0	0
075	Gas analyzer gas temperature, °F	182	185	190	166	225	181	226
075	Standard deviation	8	8	3	4	1	24	6
057	Sample gas pressure, psia	29.5	29.4	27.9	29.4	29.3	29.5	29.0
057	Standard deviation	0.1	0.1	2.9	0	0.1	0.2	0.5
089	Sample line differential temperature, °F	145	145	144	144	144	144	144
089	Standard deviation	0	0	0	0	0	0	1
090	Sample line temperature, °F	214	213	213	214	214	214	214
090	Standard deviation	1	0	0	1	0	1	1
091	Sample line temperature, °F	288	288	289	289	287	287	287
091	Standard deviation	1	0	1	0	0	0	0
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	227	517	414	447	271	288	101
C34	Standard deviation	72	8	10	46	94	85	82
C46	NO <sub>x</sub> concentration, lb/MBtu	0.206	0.281	0.352	0.195	0.329	0.230	0.376
C46	Standard deviation	0.040	0.029	0.040	0.057	0.098	0.083	0.086
C47	SO <sub>x</sub> concentration, lb/MBtu	0.478	1.059	0.999	0.932	0.833	0.591	0.230
C47	Standard deviation	0.165	0.037	0.082	0.277	0.445	0.246	0.168
C49	Exhaust sulfur, percent of input	16.28	36.05	34.03	31.73	28.37	20.13	7.84
C49	Standard deviation	5.63	1.24	2.80	9.43	15.16	8.37	5.72

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test								
		F1	F2	F3	F4	F6	F5	F7	F8	F9
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	221	211	22	192	192	136	270	338	263
064	Standard deviation	28	4	2	30	14	11	17	26	18
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	72	26	390	17	14	13	36	15	21
066	Standard deviation	106	1	137	5	1	1	39	2	4
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	2.7	3.6	15.7	2.2	1.5	0.9	1.9	1.8	1.9
068	Standard deviation	0.2	0.3	6.7	0.6	0.2	0.1	0.2	0.7	0.4
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	144540	109840	162542	130220	138560	140190	118730	114690	125130
070	Standard deviation	6768	5550	3376	8565	3376	6091	4964	6226	2451
071	Sulfur oxide content, ppm	81	3	775	22	6	6	0	1	28
071	Standard deviation	210	3	61	54	4	5	0	2	45
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	42856	76835	20264	57534	48087	45329	68549	68877	56949
073	Standard deviation	7643	4709	2336	4567	2265	6753	3781	8914	2836
074	SO <sub>x</sub> permissive signal	5.5	4.9	7.6	5.7	6.8	6.3	4.9	4.9	4.9
074	Standard deviation	1.6	0	2.5	1.9	2.4	2.2	0	0	0
075	Gas analyzer gas tempera- ture, °F	213	217	213	217	211	208	193	223	220

FOLDOUT FRAME

24111A  
17-218

071	Sulfur oxide content, ppm	81	3	775	22	0	0	1	20
071	Standard deviation	210	3	61	54	4	5	0	2
072	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
073	Oxygen content, ppm	42856	76835	20264	57534	48087	45329	68549	68877
073	Standard deviation	7643	4709	2336	4567	2265	6753	3781	8914
074	SO <sub>x</sub> permissive signal	5.5	4.9	7.6	5.7	6.8	6.3	4.9	4.9
074	Standard deviation	1.6	0	2.5	1.9	2.4	2.2	0	0
075	Gas analyzer gas temperature, F	213	217	213	217	211	208	193	223
075	Standard deviation	4	4	8	6	7	7	2	2
057	Sample gas pressure, psia	25.9	22.7	26.0	25.1	26.1	26.2	27.2	26.1
057	Standard deviation	0.1	4.3	0.1	1.7	0.1	0.1	0.1	0
089	Sample line differential temperature, °F	146	146	146	146	146	145	131	146
089	Standard deviation	1	1	0	0	0	0	6	0
090	Sample line temperature, F	214	213	213	214	214	214	213	213
090	Standard deviation	1	1	1	1	2	2	1	1
091	Sample line temperature, °F	283	285	286	286	285	284	287	284
091	Standard deviation	1	1	1	1	0	0	1	0
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	6	3	731	6	5	5	0	1
C34	Standard deviation	0	3	42	4	2	5	0	2
C46	NO <sub>x</sub> concentration, lb/MBtu	0.312	0.383	0.039	0.362	0.380	0.213	0.459	0.481
C46	Standard deviation	0.064	0.035	0.011	0.191	0.232	0.023	0.028	0.107
C47	SO <sub>x</sub> concentration, lb/MBtu	0.012	0.008	1.655	0.016	0.009	0.012	0.001	0.002
C47	Standard deviation	0	0.009	0.073	0.012	0.003	0.011	0	0.004
C49	Exhaust sulfur, percent of input	0.41	0.27	56.34	0.53	0.31	0.41	0.03	0.07
C49	Standard deviation	0	0.30	2.49	0.41	0.09	0.39	0.01	0.14

<sup>b</sup>Data or results were not obtained.

2-11-11  
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TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test							
		F19	F16	F27	G2	G3	G6	G1	G5
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	205	205	359	232	185	188	201	231
064	Standard deviation	19	12	31	10	7	10	9	8
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	12	13	14	10	10	9	22	10
066	Standard deviation	2	1	2	0	3	1	1	1
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	1.4	1.1	0.5	3.8	2.3	1.4	1.7	1.8
068	Standard deviation	0.5	0.2	0.1	0.4	0.5	0.1	0.2	0.3
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	113990	115120	116520	70524	65023	67800	69796	77121
070	Standard deviation	2483	3501	1931	3044	5535	3588	2331	2954
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	1	8	25	5	82	84	18	206
072	Standard deviation	0	4	28	5	24	18	37	43
073	Oxygen content, ppm	73237	71494	62366	144530	144080	139170	125580	119120
073	Standard deviation	1825	5472	1792	3021	7809	5411	2624	3461
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	219	217	219	225	217	212	199	199

FOLDOUT FRAME

FOLDFOLD FRAME 2

072	Sulfur oxide content, ppm	1	8	25	5	82	84	18	206
072	Standard deviation	0	4	28	5	24	18	37	43
073	Oxygen content, ppm	73237	71494	62366	144530	144080	139170	125580	119120
073	Standard deviation	1825	5472	1792	3021	7809	5411	2624	3461
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	219	217	219	225	217	212	199	199
075	Standard deviation	0	1	3	9	3	4	2	2
057	Sample gas pressure, psia	26.2	26.1	25.0	31.3	33.4	33.5	28.6	28.7
057	Standard deviation	0	0.1	2.9	5.7	0.1	0.1	0.1	0.2
089	Sample line differential temperature, °F	146	146	146	146	146	146	145	145
089	Standard deviation	0	0	0	1	0	0	0	0
090	Sample line temperature, °F	214	214	214	213	213	213	213	214
090	Standard deviation	1	1	1	0	0	0	0	0
091	Sample line temperature, °F	285	285	285	266	267	263	248	247
091	Standard deviation	0	0	1	4	1	1	1	1
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	1	8	14	6	82	84	18	206
C34	Standard deviation	0	4	9	5	24	18	37	43
C46	NO <sub>x</sub> concentration, lb/MBtu	0.344	0.354	0.632	0.642	1.656	0.596	0.508	0.551
C46	Standard deviation	0.069	0.033	0.139	0.281	2.893	0.097	0.137	0.092
C47	SO <sub>x</sub> concentration, lb/MBtu	0.001	0.020	0.067	0.019	1.120	0.363	0.072	0.691
C47	Standard deviation	0.001	0.010	0.090	0.015	2.082	0.063	0.144	0.213
C49	Exhaust sulfur, percent of input	0.05	0.68	2.28	0.86	38.12	12.36	2.46	23.50
C49	Standard deviation	0.03	0.33	3.06	0.51	70.86	2.13	4.91	7.26

<sup>b</sup>Data or results were not obtained.

3411A  
252

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test								
		G10	G9	G13	G12	G15A	B15B	G14	G11	G7
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	216	197	167	213	201	194	163	194	153
064	Standard deviation	6	14	6	9	17	16	8	10	3
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	13	9	12	5	10	10	9	17	11
066	Standard deviation	1	2	3	1	2	2	2	28	3
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	3.3	1.6	1.5	0.9	1.7	1.1	0.4	1.1	1.4
068	Standard deviation	0.4	0.5	0.7	0.7	0.2	0.3	0.1	0.1	0.4
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	68851	68052	60930	75939	70390	67748	67903	72948	61277
070	Standard deviation	1670	3553	2953	3780	6095	4617	5062	4664	2543
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	182	140	182	189	150	104	91	96	29
072	Standard deviation	25	26	13	36	72	18	10	52	13
073	Oxygen content, ppm	130740	127030	138180	119310	129940	132020	132770	123170	140060
073	Standard deviation	1744	5828	3910	4526	7448	5828	5323	4162	2764
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	202	211	199	189	180	173	169	178	183
075	Standard deviation	5	4	3	3	16	3	1	3	12
057	Sample gas pressure,	28.5	28.6	28.7	28.6	28.7	28.6	28.7	27.7	28.6

FOLDOUT FRAME /



071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	182	140	182	189	150	104	91	96	29
072	Standard deviation	25	26	13	36	72	18	10	52	13
073	Oxygen content, ppm	130740	127030	138180	119310	129940	132020	132770	123170	140060
073	Standard deviation	1744	5828	3910	4526	7448	5828	5323	4162	2764
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	202	211	199	189	180	173	169	178	183
075	Standard deviation	5	4	3	3	16	3	1	3	12
057	Sample gas pressure, psia	28.5	28.6	28.7	28.6	28.7	28.6	28.7	27.7	28.6
057	Standard deviation	0.2	0.1	0	0	0	0.1	0	2.2	0
089	Sample line differential temperature, °F	145	145	145	145	145	145	145	145	145
089	Standard deviation	1	0	0	0	0	1	0	1	0
090	Sample line temperature, °F	213	213	213	213	213	213	213	213	213
090	Standard deviation	0	0	0	0	0	0	0	0	0
091	Sample line temperature, °F	252	256	245	242	248	251	246	248	251
091	Standard deviation	2	2	1	1	4	1	0	1	4
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	182	140	182	189	150	104	91	96	29
C34	Standard deviation	25	26	13	36	72	18	10	52	13
C46	NO <sub>x</sub> concentration, lb/MBtu	0.643	0.511	0.500	0.545	0.649	1.234	0.575	0.626	1.206
C46	Standard deviation	0.109	0.144	0.040	0.010	0.069	0.784	0.119	0.058	1.112
C47	SO <sub>x</sub> concentration, lb/MBtu	0.760	0.514	0.762	0.672	0.657	0.873	0.445	0.415	0.369
C47	Standard deviation	0.180	0.189	0.076	0.125	0.247	0.545	0.106	0.183	0.527
C49	Exhaust sulfur, percent of input	25.87	17.51	25.93	22.88	22.37	29.71	15.15	14.11	12.57
C49	Standard deviation	6.14	6.43	2.58	4.24	8.40	18.56	3.61	6.22	17.95

<sup>b</sup>Data or results were not obtained.

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2

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TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test							
		G8	G16	G22	G23	G24	G17	G18	G19
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	166	191	177	189	185	161	188	194
064	Standard deviation	6	9	5	8	8	8	7	5
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	13	8	10	13	8	7	9	12
066	Standard deviation	3	1	2	1	2	3	2	1
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	1.7	1.1	1.6	3.4	0.9	(b)	1.1	2.2
068	Standard deviation	0.5	0.2	0.3	0	0.3	(b)	0.3	0.1
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	61602	72362	67999	63998	69109	63216	69060	69282
070	Standard deviation	2794	4575	3011	2988	3282	4760	2494	2118
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	152	245	146	203	204	139	175	180
072	Standard deviation	11	44	17	24	33	15	25	40
073	Oxygen content, ppm	137140	127300	131440	138440	132810	141070	135960	136480
073	Standard deviation	2528	5301	3722	4533	3068	5292	2849	3745
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	202	202	198	202	183	176	185	195
075	Standard deviation	1	1	2	4	11	5	7	3

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071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	152	245	146	203	204	139	175	180
072	Standard deviation	11	44	17	24	33	15	25	40
073	Oxygen content, ppm	137140	127300	131440	138440	132810	141070	135960	136480
073	Standard deviation	2528	5301	3722	4533	3068	5292	2849	3745
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	202	202	198	202	183	176	185	195
075	Standard deviation	1	1	2	4	11	5	7	3
057	Sample gas pressure, psia	28.7	28.7	28.7	28.6	28.7	28.8	28.8	28.6
057	Standard deviation	0.1	0	0.1	0	0	0	0.1	0.1
089	Sample line differential temperature, °F	146	146	145	145	145	146	145	145
089	Standard deviation	0	0	0	0	1	1	0	1
090	Sample line temperature, °F	213	213	213	213	213	213	214	213
090	Standard deviation	0	0	0	0	0	1	1	0
091	Sample line temperature, °F	258	255	255	256	252	247	245	250
091	Standard deviation	0	0	2	2	2	1	1	2
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	152	245	146	203	204	139	175	180
C34	Standard deviation	11	44	17	24	33	15	25	40
C46	NO <sub>x</sub> concentration, lb/MBtu	1.928	0.631	1.643	0.627	0.628	0.640	0.521	0.636
C46	Standard deviation	2.976	0.078	2.437	0.102	0.076	0.265	0.185	0.126
C47	SO <sub>x</sub> concentration, lb/MBtu	2.469	1.124	1.919	0.947	0.971	0.773	0.659	0.831
C47	Standard deviation	3.814	0.248	2.977	0.218	0.073	0.333	0.230	0.274
C49	Exhaust sulfur, percent of input	84.02	38.25	65.32	32.23	33.07	26.31	22.45	28.27
C49	Standard deviation	129.82	8.45	101.3	7.42	2.48	11.35	7.82	9.34

<sup>b</sup>Data or results were not obtained.

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test								
		H1	H2	H3	H4	H5A	H5B	H6	H7	H8
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	110	168	144	94	265	260	226	219	193
064	Standard deviation	6	6	21	11	14	3	105	5	10
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	123	83	229	255	66	35	1951	23	24
066	Standard deviation	45	23	43	35	5	1	3811	3	2
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	0.6	0.9	2.5	2.3	1.1	0.9	111.3	2.0	1.7
068	Standard deviation	0.3	0.4	0.5	0.5	0.2	0.6	189.3	0.1	0.2
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	122980	105070	112030	129630	132000	116190	127740	111120	128430
070	Standard deviation	3306	2413	5430	5643	2261	1577	19231	792	3380
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	549	435	253	595	1033	792	1695	824	925
072	Standard deviation	66	22	63	91	89	25	1433	30	199
073	Oxygen content, ppm	60805	78564	77017	55758	53668	74008	58346	82779	61604
073	Standard deviation	2398	4213	5866	5370	2028	2689	28415	1261	2997
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, F	283	305	266	252	320	255	251	237	246
075	Standard deviation	4	3	35	29	1	1	22	1	23
		29.6	29.8	29.2	29.2	28.8	29.2	28.2	29.6	29.4

FOLDOUT FRAME /

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227

070	Standard deviation	3306	2413	5430	5643	2261	1577	19231	792	3380
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	549	435	253	595	1033	792	1695	824	925
072	Standard deviation	66	22	63	91	89	25	1433	30	199
073	Oxygen content, ppm	60805	78564	77017	55758	53668	74008	58346	82779	61604
073	Standard deviation	2398	4213	5866	5370	2028	2689	28415	1261	2997
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	283	305	266	252	320	255	251	237	246
075	Standard deviation	4	3	35	29	1	1	22	1	23
057	Sample gas pressure, psia	29.6	29.8	29.2	29.2	28.8	29.2	28.2	29.6	29.4
057	Standard deviation	0	0.1	0	0	0.1	0.1	2.2	0.1	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	95	100	95	94	107	117	94	100	109
090	Standard deviation	3	1	0	1	3	1	2	1	4
091	Sample line temperature, °F	258	253	249	250	255	258	252	252	256
091	Standard deviation	2	2	3	1	1	1	1	1	3
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	549	435	253	601	1033	792	979	824	925
C34	Standard deviation	66	22	63	94	89	25	73	30	199
C46	NO <sub>x</sub> concentration, lb/MBtu	0.182	0.354	0.309	0.165	0.442	0.478	0.399	0.443	0.383
C46	Standard deviation	0.011	0.063	0.074	0.014	0.022	0.011	0.198	0.060	0.052
C47	SO <sub>x</sub> concentration, lb/MBtu	1.263	1.266	0.734	1.490	2.402	2.032	2.454	2.331	2.500
C47	Standard deviation	0.141	0.139	0.139	0.367	0.253	0.051	0.300	0.400	0.416
C49	Exhaust sulfur, percent of input	42.98	43.09	24.99	50.70	81.77	69.16	83.52	79.33	85.10
C49	Standard deviation	4.79	4.73	4.74	12.48	8.63	1.73	10.20	13.63	14.16

<sup>b</sup>Data or results were not obtained.

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TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test								
		H9	H10	H11	H12	H14	H13	H15	H16	H18
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	209	233	214	139	228	167	171	201	179
064	Standard deviation	6	4	6	8	18	17	17	24	11
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	23	19	19	61	21	103	161	123	61
066	Standard deviation	4	3	4	11	3	18	17	19	13
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	1.7	1.2	0.3	0.6	0.3	7.6	8.3	5.3	0.5
068	Standard deviation	0.1	0.3	0.2	0.2	0.1	3.3	0.3	3.1	0.2
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	127320	115720	128900	129060	125200	117900	131430	117540	137580
070	Standard deviation	2759	2059	3136	4211	3221	8694	4363	5458	4852
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	830	603	680	478	528	209	37	13	612
072	Standard deviation	107	77	59	135	37	113	14	8	288
073	Oxygen content, ppm	62919	78812	62833	60565	66351	75845	52417	71140	50677
073	Standard deviation	4356	3206	3523	5116	4220	6887	4831	7456	5833
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	319	259	236	212	223	210	225	237	244

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223

070	Carbon dioxide content, ppm	127320	115720	128900	129060	125200	117900	131430	117540	137580
070	Standard deviation	2759	2059	3136	4211	3221	8694	4363	5458	4852
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	830	603	680	478	528	209	37	13	612
072	Standard deviation	107	77	59	135	37	113	14	8	288
073	Oxygen content, ppm	62919	78812	62833	60565	66351	75845	52417	71140	50677
073	Standard deviation	4356	3206	3523	5116	4220	6887	4831	7456	5833
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	319	259	236	212	223	210	225	237	244
075	Standard deviation	1	35	17	19	8	10	20	17	33
057	Sample gas pressure, psia	29.6	29.6	29.8	30.0	29.8	29.7	28.9	28.8	29.1
057	Standard deviation	0.1	0.1	0.1	0.1	0	0	0.1	0	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	107	103	98	89	95	70	86	99	100
090	Standard deviation	3	1	2	3	3	3	4	3	2
091	Sample line temperature, °F	259	257	252	248	247	249	255	259	259
091	Standard deviation	0	1	2	1	5	1	2	2	1
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	830	603	680	464	528	209	30	13	492
C34	Standard deviation	107	77	59	136	37	113	3	8	118
C46	NO <sub>x</sub> concentration, lb/MBtu	0.428	0.561	0.520	0.306	0.479	0.294	0.271	0.358	0.321
C46	Standard deviation	0.038	0.063	0.043	0.110	0.032	0.051	0.035	0.067	0.067
C47	SO <sub>x</sub> concentration, lb/MBtu	2.351	2.040	2.300	1.545	1.549	0.495	0.066	0.031	1.308
C47	Standard deviation	0.270	0.418	0.278	0.825	0.159	0.229	0.005	0.019	0.169
C49	Exhaust sulfur, percent of input	80.02	69.44	78.29	52.59	52.74	16.85	2.26	1.04	44.53
C49	Standard deviation	9.19	14.24	9.47	28.07	5.41	7.81	0.17	0.65	5.77

<sup>b</sup>Data or results were not obtained.

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 201

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test					
		H19	H20	H23	H24	H25	H26
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	139	179	361	194	189	165
064	Standard deviation	11	8	20	15	8	9
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	22	24	85	24	22	22
066	Standard deviation	4	3	0	2	2	3
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	(b)	0.8	1.3	0.5	(b)	0.1
068	Standard deviation	(b)	0.3	0.8	0.3	(b)	0
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	135250	134570	122570	126830	128530	125770
070	Standard deviation	6189	3782	13183	814	3587	3818
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	333	158	12	52	56	92
072	Standard deviation	101	70	9	44	41	49
073	Oxygen content, ppm	57483	55927	66127	58641	55632	57931
073	Standard deviation	5295	4659	15235	2356	2409	3706
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	221	223	229	143	177	202

FOLDOUT FRAME /



	135250	134570	122570	126830	128530	125770
070	Carbon dioxide content, ppm					
070	Standard deviation	6189	3782	13183	814	3587
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	333	158	12	52	56
072	Standard deviation	101	70	9	44	41
073	Oxygen content, ppm	57483	55927	66127	58641	55632
073	Standard deviation	5295	4659	15235	2356	2409
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0
075	Gas analyzer gas temperature, °F	221	223	229	143	177
075	Standard deviation	5	14	59	29	21
057	Sample gas pressure, psia	29.8	29.8	26.9	24.8	28.4
057	Standard deviation	0	0	5.7	7.1	3.2
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	94	87	90	89	76
090	Standard deviation	3	1	2	4	3
091	Sample line temperature, °F	235	223	221	231	242
091	Standard deviation	15	1	11	18	3
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	283	148	13	75	56
C34	Standard deviation	60	68	10	37	41
C46	NO <sub>x</sub> concentration, lb/MBtu	0.249	0.317	0.575	0.281	0.308
C46	Standard deviation	0.029	0.029	0.065	0.135	0.016
C47	SO <sub>x</sub> concentration, lb/MBtu	0.746	0.364	0.027	0.140	0.125
C47	Standard deviation	0.197	0.181	0.021	0.106	0.089
C49	Exhaust sulfur, percent of input	25.38	12.39	0.92	4.78	4.26
C49	Standard deviation	6.72	6.15	0.73	3.59	3.03

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

2411A  
 (16)  
 335

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test								
		I1	I2	I3	I4	I5A	I5B	I6	I7	I8
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	152	179	152	103	130	153	169	163	144
064	Standard deviation	13	7	6	8	10	5	23	6	8
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	25	17	16	99	76	83	23	15	23
066	Standard deviation	6	7	4	22	8	7	7	3	3
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	0.7	1.5	1.1	1.5	0.6	1.3	0.5	1.2	1.5
068	Standard deviation	0.3	0.3	0.3	0.2	0.2	0.8	0.5	0.2	0.9
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	129230	111510	139040	134910	121680	110200	131490	110940	131880
070	Standard deviation	3163	2852	3008	3961	4950	1972	5133	4608	5402
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	196	61	277	87	21	6	57	294	567
072	Standard deviation	79	52	52	38	14	0	102	91	140
073	Oxygen content, ppm	57184	79062	46901	51091	67940	80942	57196	77041	52281
073	Standard deviation	4462	5463	3541	4178	5156	1987	3742	4812	4123
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	125	118	108	104	106	99	103	128	111

FOLDOUT FRAME /

070	Standard deviation	3163	2852	3008	3961	4950	1972	5133	4608	5402
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	196	61	277	87	21	6	57	294	567
072	Standard deviation	79	52	52	38	14	0	102	91	140
073	Oxygen content, ppm	57184	79062	46901	51091	67940	80942	57196	77041	52281
073	Standard deviation	4462	5463	3541	4178	5156	1987	3742	4812	4123
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	125	118	108	104	106	99	103	128	111
075	Standard deviation	20	30	2	6	13	4	26	17	7
057	Sample gas pressure, psia	29.6	22.2	29.7	29.6	29.7	28.0	22.8	29.7	28.9
057	Standard deviation	0	7.0	0	0	0.1	1.5	7.0	0	1.4
089	Sample line differential temperature, °F	139	139	147	141	129	143	142	129	145
089	Standard deviation	18	21	1	8	15	3	18	21	1
090	Sample line temperature, °F	76	92	83	74	71	73	84	84	76
090	Standard deviation	7	2	3	2	0	1	1	1	1
091	Sample line temperature, °F	72	84	71	65	64	66	76	73	64
091	Standard deviation	6	3	2	2	0	1	1	2	1
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	196	84	186	75	21	6	108	294	510
C34	Standard deviation	79	38	0	37	14	0	125	91	92
C46	NO <sub>x</sub> concentration, lb/MBtu	0.348	0.329	0.364	0.314	0.371	0.397	0.322	0.328	0.313
C46	Standard deviation	0.032	0.117	0.022	0.026	0.050	0.018	0.069	0.021	0.035
C47	SO <sub>x</sub> concentration, lb/MBtu	0.620	0.202	0.645	0.320	0.084	0.021	0.176	0.825	1.566
C47	Standard deviation	0.230	0.149	0	0.156	0.054	0.002	0.293	0.257	0.268
C49	Exhaust sulfur, percent of input	21.09	6.87	21.94	10.91	2.85	0.70	5.99	28.09	53.30
C49	Standard deviation	7.83	5.07	0	5.31	1.84	0.06	9.98	8.73	9.11

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2411A  
 (17) - 236

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test					
		I9	I10A	I10B	I11	I12	I13
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	113	89	140	282	283	(b)
064	Standard deviation	6	10	16	51	44	(b)
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	126	179	140	74	30	8
066	Standard deviation	33	33	14	13	8	0
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	1.2	1.6	1.6	1.7	2.2	1.4
068	Standard deviation	0.2	0.5	0.3	0.5	0.4	0
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	111450	127510	121450	125570	119390	420
070	Standard deviation	5345	4103	7193	5695	5317	0
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	263	296	55	8	0	2
072	Standard deviation	93	121	43	5	0	1
073	Oxygen content, ppm	76345	55993	64526	62806	73940	(b)
073	Standard deviation	5241	5213	6250	5258	5863	(b)
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	104	100	110	108	79	83

FOLDOUT FRAME /

070	Standard deviation	5345	4103	7193	5695	5317	0
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	263	296	55	8	0	2
072	Standard deviation	93	121	43	5	0	1
073	Oxygen content, ppm	76345	55993	64526	62806	73940	(b)
073	Standard deviation	5241	5213	6250	5258	5863	(b)
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	104	100	110	108	79	83
075	Standard deviation	22	16	19	16	1	2
057	Sample gas pressure, psia	26.9	23.7	26.0	27.7	30.0	16.3
057	Standard deviation	4.9	5.4	6.4	4.5	0.1	5.2
089	Sample line differential temperature, °F	143	148	139	144	(b)	(b)
089	Standard deviation	18	11	11	9	(b)	(b)
090	Sample line temperature, °F	71	72	75	78	66	70
090	Standard deviation	3	1	1	1	1	3
091	Sample line temperature, °F	60	66	70	71	217	194
091	Standard deviation	2	2	1	1	2	4
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	290	352	52	8	0	(b)
C34	Standard deviation	54	29	49	6	0	(b)
C46	NO <sub>x</sub> concentration, lb/MBtu	0.296	0.283	0.375	0.762	0.520	0.177
C46	Standard deviation	0.025	0.065	0.053	0.105	0.093	0.206
C47	SO <sub>x</sub> concentration, lb/MBtu	0.982	1.403	0.224	0.032	0.001	0.004
C47	Standard deviation	0.343	0.647	0.179	0.021	0.001	0
C49	Exhaust sulfur, percent of input	33.41	47.76	7.63	1.09	0.03	0.12
C49	Standard deviation	11.66	22.01	6.08	0.72	0.02	0.01

<sup>b</sup>Data or results were not obtained.

5411A  
 227

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test								
		J1	J2	J3	J4	J5	J6	J7	J8	J9
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	68	174	200	99	250	262	46	179	47
064	Standard deviation	34	10	8	16	14	14	26	8	7
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	121	73	26	57	51	30	111	120	383
066	Standard deviation	66	18	5	13	40	4	28	19	528
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	41.2	7.1	1.5	1.6	14.5	2.2	2.2	2.3	17.0
068	Standard deviation	10.8	13.0	0.2	0.7	25.3	0.9	0.3	0.4	27.8
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	141330	105180	97948	141890	104610	107250	150960	101930	144420
070	Standard deviation	10105	4445	5382	6052	6920	6310	4016	5422	7501
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	342	276	257	1136	686	1086	2376	938	1220
072	Standard deviation	309	26	96	486	87	184	901	115	218
073	Oxygen content, ppm	41366	82203	89561	34145	80266	79934	20301	82400	27374
073	Standard deviation	13437	6812	7717	4148	8391	7801	5159	4030	4850
074	SO <sub>x</sub> permissive signal	6.7	5.0	5.0	7.2	5.0	5.0	7.5	5.0	7.1
074	Standard deviation	2.4	0	0	2.5	0	0	2.5	0	2.5
075	Gas analyzer gas temperature, °F	239	238	236	239	248	259	245	217	234

FOLDOUT FRAME /

	ppm									
070	Standard deviation	10105	4445	5382	6052	6920	6310	4016	5422	7501
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	342	276	257	1136	686	1086	2376	938	1220
072	Standard deviation	309	26	96	486	87	184	901	115	218
073	Oxygen content, ppm	41366	82203	89561	34145	80266	79934	20301	82400	27374
073	Standard deviation	13437	6812	7717	4148	8391	7801	5159	4030	4850
074	SO <sub>x</sub> permissive signal	6.7	5.0	5.0	7.2	5.0	5.0	7.5	5.0	7.1
074	Standard deviation	2.4	0	0	2.5	0	0	2.5	0	2.5
075	Gas analyzer gas temperature, F	239	238	236	239	248	259	245	217	234
075	Standard deviation	8	1	3	9	6	5	4	35	21
057	Sample gas pressure, psia	27.2	28.9	28.9	28.8	28.8	28.7	28.9	28.8	27.5
057	Standard deviation	4.6	0	0.1	0.2	0.1	0.1	0.1	0	3.9
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, F	74	81	91	80	94	100	84	83	79
090	Standard deviation	1	2	1	4	2	1	4	2	0
091	Sample line temperature, °F	240	244	240	235	242	242	238	237	240
091	Standard deviation	3	1	1	1	4	1	2	1	2
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	271	276	257	973	686	1086	1961	938	1088
C34	Standard deviation	276	27	96	287	87	184	601	115	89
C46	NO <sub>x</sub> concentration, lb/MBtu	0.080	0.302	0.382	0.126	0.496	0.457	0.053	0.313	0.052
C46	Standard deviation	0.044	0.019	0.018	0.021	0.054	0.023	0.031	0.019	0.011
C47	SO <sub>x</sub> concentration, lb/MBtu	0.457	0.670	0.679	1.697	1.899	2.638	3.097	2.319	1.744
C47	Standard deviation	0.523	0.089	0.244	0.457	0.318	0.410	0.949	0.284	0.157
C49	Exhaust sulfur, percent of input	11.19	16.39	16.60	41.51	46.47	64.54	75.76	56.73	42.66
C49	Standard deviation	12.79	2.17	5.96	11.18	7.78	10.03	23.23	6.94	3.85

<sup>b</sup>Data or results were not obtained.

2411A  
 (19)  
 288

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test								
		K1	K3	K4	K2	K7	K8	K6	K5	K9
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	178	165	240	95	94	160	63	240	83
064	Standard deviation	17	62	39	6	6	5	23	55	31
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	88	54	20	85	91	80	84	18	52
066	Standard deviation	33	33	4	20	22	10	23	2	23
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	2.3	3.6	0.9	1.3	1.4	1.4	0.8	2.8	1.2
068	Standard deviation	1.1	7.8	0.2	0.2	0.2	0.2	0.2	2.6	0.5
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	115980	155050	105440	142410	138860	107780	159480	104920	159930
070	Standard deviation	12020	4514	5436	3187	3205	3174	3114	2566	3846
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	408	1139	137	583	986	707	3351	164	1969
072	Standard deviation	208	1676	83	173	135	44	1115	165	716
073	Oxygen content, ppm	73978	30039	100500	48937	52040	90788	22528	95116	32726
073	Standard deviation	11813	7277	8515	3939	3687	4823	1762	4402	4255
074	SO <sub>x</sub> permissive signal	4.9	7.5	4.9	6.2	5.9	5.0	7.3	4.9	7.5
074	Standard deviation	0	2.5	0	2.2	1.9	0	2.9	0	2.5
075	Gas analyzer gas temperature, °F	229	235	253	230	233	233	229	217	236

FOLDOUT FRAME



069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	115980	155050	105440	142410	138860	107780	159480	104920	159930
070	Standard deviation	12020	4514	5436	3187	3205	3174	3114	2566	3846
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	408	1139	137	583	986	707	3351	164	1969
072	Standard deviation	208	1676	83	173	135	44	1115	165	716
073	Oxygen content, ppm	73978	30039	100500	48937	52040	90788	22528	95116	32726
073	Standard deviation	11813	7277	8515	3939	3687	4823	1762	4402	4255
074	SO <sub>x</sub> permissive signal	4.9	7.5	4.9	6.2	5.9	5.0	7.3	4.9	7.5
074	Standard deviation	0	2.5	0	2.2	1.9	0	2.9	0	2.5
075	Gas analyzer gas tempera- ture, °F	229	235	253	230	233	233	229	217	236
075	Standard deviation	10	6	11	5	2	2	2	47	4
057	Sample gas pressure, psia	27.7	27.9	28.5	27.9	29.2	28.8	28.8	19.3	28.1
057	Standard deviation	4.5	3.4	0.9	4.1	0.1	0.6	1.2	6.7	4.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	74	75	93	93	86	95	94	105	102
090	Standard deviation	5	4	5	2	2	3	1	5	1
091	Sample line temperature, °F	235	237	242	231	233	235	229	198	219
091	Standard deviation	2	1	1	2	1	2	1	27	1
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	357	453	137	478	941	707	3133	313	2078
C34	Standard deviation	190	392	83	173	132	44	1009	170	750
C46	NO <sub>x</sub> concentration, lb/MBtu	0.342	0.201	0.468	0.126	0.126	0.290	0.075	0.228	0.086
C46	Standard deviation	0.036	0.075	0.109	0.012	0.010	0.019	0.026	0.238	0.030
C47	SO <sub>x</sub> concentration, lb/MBtu	0.997	0.962	0.371	0.933	1.750	1.789	5.265	0.482	3.105
C47	Standard deviation	0.497	0.783	0.234	0.318	0.224	0.146	1.861	0.462	1.147
C49	Exhaust sulfur, percent of input	24.39	23.54	9.07	22.82	42.82	43.77	128.8	11.79	75.97
C49	Standard deviation	12.15	19.17	5.72	7.79	5.49	3.58	45.53	11.29	28.07

<sup>b</sup>Data or results were not obtained.

2411A  
 20  
 229

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test						
		K10	K12	K11	K14	K13	K15	K16
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	128	201	217	51	149	123	262
064	Standard deviation	12	43	12	28	47	38	22
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	37	46	12	55	82	45	43
066	Standard deviation	11	16	5	23	14	11	6
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	3.2	2.0	3.0	1.7	3.2	1.2	1.5
068	Standard deviation	5.0	1.4	1.5	0.2	1.1	0.4	0.5
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	155470	108490	83078	162110	148580	156370	148720
070	Standard deviation	2902	1511	48038	4096	5326	3145	2040
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	1724	137	105	2563	54	1846	387
072	Standard deviation	357	85	110	1279	79	816	155
073	Oxygen content, ppm	30706	88914	64827	23603	38782	26105	31583
073	Standard deviation	2391	7141	35269	4777	4495	2905	1152
074	SO <sub>x</sub> permissive signal	7.5	5.0	5.0	7.5	7.5	7.5	7.5
074	Standard deviation	2.5	0	0	2.5	2.5	2.5	2.5
075	Gas analyzer gas temperature, °F	232	227	228	230	225	231	225

FOLDOUT FRAME /

FOLDDOUT FRAME 2

071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	1724	137	105	2563	54	1846	387
072	Standard deviation	357	85	110	1279	79	816	155
073	Oxygen content, ppm	30706	88914	64827	23603	38782	26105	31583
073	Standard deviation	2391	7141	35269	4777	4495	2905	1152
074	SO <sub>x</sub> permissive signal	7.5	5.0	5.0	7.5	7.5	7.5	7.5
074	Standard deviation	2.5	0	0	2.5	2.5	2.5	2.5
075	Gas analyzer gas temperature, F	232	227	228	230	225	231	225
075	Standard deviation	2	3	43	3	2	2	4
057	Sample gas pressure, psia	29.4	26.4	21.3	29.6	29.4	29.3	28.9
057	Standard deviation	0.1	4.2	7.0	0.1	0.1	0.1	0.2
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	102	101	113	105	94	98	100
090	Standard deviation	1	0	4	5	1	1	1
091	Sample line temperature, °F	219	216	192	218	220	220	219
091	Standard deviation	1	2	19	1	2	1	0
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	1580	134	156	2299	51	1461	285
C34	Standard deviation	303	90	81	1007	74	563	73
C46	NO <sub>x</sub> concentration, lb/MBtu	0.159	0.349	0.267	0.060	0.197	0.165	0.364
C46	Standard deviation	0.017	0.073	0.166	0.033	0.065	0.065	0.031
C47	SO <sub>x</sub> concentration, lb/MBtu	2.723	0.337	0.306	3.808	0.097	2.570	0.553
C47	Standard deviation	0.514	0.206	0.284	1.664	0.141	0.901	0.142
C49	Exhaust sulfur, percent of input	66.63	8.25	7.50	93.16	2.37	62.87	13.54
C49	Standard deviation	12.58	5.03	6.94	40.72	3.45	22.04	3.48

<sup>b</sup>Data or results were not obtained.

2411A  
 (21)  
 (33)

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	192	226	180	(b)	237	(b)	163	133
064	Standard deviation	112	72	81	(b)	83	(b)	51	21
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	10.9	11.9	18.7	1.6	12.5	10.3	29.9	20.5
066	Standard deviation	6.1	7.2	26.8	1.5	9.9	0	16.3	12.9
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	6.0	1.4	3.8	0.2	0.9	6.6	0.4	1.4
068	Standard deviation	3.6	1.2	6.2	0.1	0.5	14.1	0.1	1.1
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	76637	66273	65590	210	97763	2960	108410	88600
070	Standard deviation	10148	29524	26932	13	24341	4087	47310	59748
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	166	114	168	11	264	9	370	90
072	Standard deviation	163	94	174	1	185	1	326	85
073	Oxygen content, ppm	137020	120930	127380	(b)	95193	10548	70279	110660
073	Standard deviation	40895	22111	23159	(b)	24938	10181	38696	73609
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	167	198	166	104	213	109	213	163

FOLDOUT FRAME

070	Standard deviation	10148	29524	20932	13	24341	4087	47310	59748
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	166	114	168	11	264	9	370	90
072	Standard deviation	163	94	174	1	185	1	326	85
073	Oxygen content, ppm	137020	120930	127380	(b)	95193	10548	70279	110660
073	Standard deviation	40895	22111	23159	(b)	24938	10181	38696	73609
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	167	198	166	104	213	109	213	163
075	Standard deviation	54	21	36	8	30	14	33	60
057	Sample gas pressure, psia	20.0	27.7	27.9	19.2	28.0	23.2	28.0	28.3
057	Standard deviation	6.7	2.7	4.8	7.3	3.9	7.3	2.2	3.3
089	Sample line differential temperature, °F	144	146	145	142	150	144	(b)	155
089	Standard deviation	1	1	2	3	8	0	(b)	1
090	Sample line temperature, °F	211	220	218	212	237	213	82	84
090	Standard deviation	23	5	6	0	13	1	9	8
091	Sample line temperature, °F	255	259	955	250	260	248	238	82
091	Standard deviation	32	5	208	12	4	11	6	12
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	239	133	185	(b)	275	(b)	646	94
C34	Standard deviation	149	91	93	(b)	152	(b)	166	88
C46	NO <sub>x</sub> concentration, lb/MBtu	0.467	0.863	0.601	(b)	0.499	(b)	0.230	0.187
C46	Standard deviation	0.392	1.127	0.381	(b)	0.275	(b)	0.088	0.051
C47	SO <sub>x</sub> concentration, lb/MBtu	0.703	0.613	0.789	(b)	0.837	(b)	1.318	0.226
C47	Standard deviation	0.691	0.482	0.549	(b)	0.622	(b)	0.349	0.191
C49	Exhaust sulfur, percent of input	23.93	20.86	26.85	(b)	28.49	(b)	32.24	5.53
C49	Standard deviation	23.52	16.40	18.68	(b)	21.16	(b)	8.54	4.68

<sup>b</sup>Data or results were not obtained.

2411A  
 22  
 231

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

FOLDFOUT FRAME

Data channel	Parameter	Test				
		CAS0	CAS1	CAS2	CAS3	CAS4
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	198	(b)	238	166	262
064	Standard deviation	133	(b)	57	132	47
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	15.2	(b)	28.8	13.3	10.8
066	Standard deviation	6.6	(b)	40.2	16.5	16.4
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	16.0	(b)	3.5	1.8	1.0
068	Standard deviation	71.8	(b)	6.7	2.0	0.8
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	64568	(b)	92473	45592	71153
070	Standard deviation	27295	(b)	23623	37860	16033
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	33	3	128	88	56
072	Standard deviation	104	0	148	123	79
073	Oxygen content, ppm	104420	(b)	101980	143500	135610
073	Standard deviation	38196	(b)	26840	46239	21861
074	SO <sub>x</sub> permissive signal	5.0	5.0	4.9	5.0	4.9
074	Standard deviation	0	0	0	0	0
075	Gas analyzer gas temperature, °F	233	98	212	231	250

	ppm					
070	Standard deviation	27295	(b)	23623	37860	16033
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	33	3	128	88	56
072	Standard deviation	104	0	148	123	79
073	Oxygen content, ppm	104420	(b)	101980	143500	135610
073	Standard deviation	38196	(b)	26840	46239	21861
074	SO <sub>x</sub> permissive signal	5.0	5.0	4.9	5.0	4.9
074	Standard deviation	0	0	0	0	0
075	Gas analyzer gas temperature, F	233	98	212	231	250
075	Standard deviation	38	13	27	42	29
057	Sample gas pressure, psia	30.9	14.4	29.0	34.4	29.6
057	Standard deviation	0.4	2.5	2.6	8.6	5.7
089	Sample line differential temperature, °F	131	162	158	111	(b)
089	Standard deviation	2	15	1	23	(b)
090	Sample line temperature, F	87	98	92	87	99
090	Standard deviation	9	16	7	12	18
091	Sample line temperature, F	194	92	193	153	209
091	Standard deviation	27	11	32	54	18
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, F	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, F	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	(b)	(b)	(b)	(b)	(b)
C34	Standard deviation	(b)	(b)	(b)	(b)	(b)
C46	NO <sub>x</sub> concentration, lb/MBtu	0.396	(b)	0.511	0.452	0.823
C46	Standard deviation	0.267	(b)	0.478	0.660	1.328
C47	SO <sub>x</sub> concentration, lb/MBtu	0.075	(b)	0.436	0.441	0.315
C47	Standard deviation	0.251	(b)	0.803	0.661	0.802
C49	Exhaust sulfur, percent of input	2.61	(b)	15.17	15.34	10.95
C49	Standard deviation	8.75	(b)	27.92	22.97	27.91

<sup>b</sup>Data or results were not obtained.

2411A  
 23  
 232

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

FOLDOUT FRAME /

Data chan- nel	Parameter	Test							
		L1	L2	L3	L4	L5	L6	M1	M2
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	121	23	144	203	166	(b)	128	149
064	Standard deviation	16	9	15	11	21	(b)	11	21
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	54	112	31	18	15	(b)	43	8
066	Standard deviation	37	28	5	4	4	(b)	6	5
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	5.9	1.6	1.4	1.2	0.6	(b)	2.7	0.9
068	Standard deviation	11.4	0.3	0.5	0	0.7	(b)	0.2	0.2
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	110270	154100	144980	115170	110442	(b)	64483	65970
070	Standard deviation	17446	3789	3291	2129	6295	(b)	2289	9446
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	329	1329	689	378	274	268	158	253
072	Standard deviation	173	343	280	85	106	212	93	145
073	Oxygen content, ppm	80224	22805	40869	76760	82111	(b)	136510	135880
073	Standard deviation	20962	3584	3483	5106	7544	(b)	5002	12215
074	SO <sub>x</sub> permissive signal	4.9	7.7	7.5	4.9	4.9	7.4	4.9	4.9
074	Standard deviation	0	2.5	2.5	0	0	2.5	0	0
075	Gas analyzer gas tempera-	228	209	252	204	130	190	252	220



070	Standard deviation	17446	3789	3291	2129	6295	(b)	2289	9446
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	329	1329	689	378	274	268	158	253
072	Standard deviation	173	343	280	85	106	212	93	145
073	Oxygen content, ppm	80224	22805	40869	76760	82111	(b)	136510	135880
073	Standard deviation	20962	3584	3483	5106	7544	(b)	5002	12215
074	SO <sub>x</sub> permissive signal	4.9	7.7	7.5	4.9	4.9	7.4	4.9	4.9
074	Standard deviation	0	2.5	2.5	0	0	2.5	0	0
075	Gas analyzer gas temperature, °F	228	209	252	204	130	190	252	220
075	Standard deviation	15	28	9	54	8	8	7	4
057	Sample gas pressure, psia	26.2	26.8	26.6	22.7	22.8	19.6	26.2	26.9
057	Standard deviation	0.3	0.2	0.1	3.7	5.0	0.1	0.3	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	87	91	99	113	92	83	102	80
090	Standard deviation	11	2	4	4	17	2	4	3
091	Sample line temperature, °F	213	215	224	221	199	193	163	152
091	Standard deviation	6	9	3	8	10	2	4	3
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	290	1200	658	408	315	(b)	158	253
C34	Standard deviation	135	264	311	68	90	(b)	93	145
C46	NO <sub>x</sub> concentration, lb/MBtu	0.222	0.026	0.190	0.355	0.295	0.225	0.408	0.379
C46	Standard deviation	0.031	0.011	0.031	0.035	0.030	0.019	0.080	0.073
C47	SO <sub>x</sub> concentration, lb/MBtu	0.728	1.839	1.175	0.932	0.690	0.406	0.689	0.899
C47	Standard deviation	0.323	0.567	0.523	0.218	0.229	0.252	0.394	0.483
C49	Exhaust sulfur, percent of input	17.81	44.98	28.75	22.81	16.88	9.93	16.85	22.00
C49	Standard deviation	7.90	13.88	12.78	5.34	5.60	6.18	9.63	11.82

<sup>b</sup>Data or results were not obtained.

2411A  
 244  
 233

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data chan- nel	Parameter	Test								
		M3	M4	M5	M6	M7	M8	M9	M11	M12
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides con- tent, ppm	185	194	192	180	159	159	160	202	201
064	Standard deviation	9	6	5	3	11	8	6	8	4
065	Carbon monoxide con- tent, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide con- tent, ppm	7.6	7.0	8.3	7.4	11.9	32.2	19.6	8.5	10.1
066	Standard deviation	0.6	0.8	1.0	0.5	3.2	20.6	5.5	0.8	2.3
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	0.5	0.9	1.8	0.5	0.7	8.1	1.7	1.5	1.6
068	Standard deviation	0.2	0.2	0.7	0.1	0.1	12.4	0.4	0.3	1.0
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	75034	75197	76385	73451	64614	64278	66491	76072	76083
070	Standard deviation	3527	2499	3221	2725	4299	5226	6581	4181	2445
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	511	536	651	466	319	446	380	400	432
072	Standard deviation	123	140	96	93	55	88	101	97	106
073	Oxygen content, ppm	124090	124210	124450	125900	140410	141490	145060	131100	124730
073	Standard deviation	3812	3575	2996	6447	2590	6615	10256	7179	5669
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas tempera- ture, °F	235	254	265	243	235	262	278	264	226

FOLDOUT FRAME

		75034	75197	76389	75451	64014	64278	66491	70072	70083
070	Standard deviation	3527	2499	3221	2725	4299	5226	6581	4181	2445
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	511	536	651	466	319	446	380	400	432
072	Standard deviation	123	140	96	93	55	88	101	97	106
073	Oxygen content, ppm	124090	124210	124450	125900	140410	141490	145060	131100	124730
073	Standard deviation	3812	3575	2996	6447	2590	6615	10256	7179	5669
074	SO <sub>x</sub> permissive signal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, F	235	254	265	243	235	262	278	264	226
075	Standard deviation	3	10	3	4	10	27	4	3	27
057	Sample gas pressure, psia	26.6	26.3	27.3	28.3	28.6	30.2	31.0	30.6	28.2
057	Standard deviation	0.1	3.2	0.2	0.2	0.3	1.6	0.5	1.2	1.8
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, F	86	95	106	90	83	81	95	96	94
090	Standard deviation	2	3	3	6	1	2	3	0	1
091	Sample line temperature, °F	160	151	159	149	163	152	151	155	140
091	Standard deviation	1	4	3	3	18	16	3	1	3
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	510	545	651	466	319	446	380	400	432
C34	Standard deviation	123	144	96	93	55	88	101	97	106
046	NO <sub>x</sub> concentration, lb/MBtu	0.472	0.492	0.470	0.440	0.435	0.533	0.723	0.481	0.509
C46	Standard deviation	0.044	0.071	0.059	0.025	0.067	0.152	0.908	0.062	0.055
C47	SO <sub>x</sub> concentration, lb/MBtu	1.798	1.867	2.232	1.601	1.203	2.163	2.678	1.332	1.534
C47	Standard deviation	0.421	0.363	0.457	0.366	0.246	0.986	4.271	0.384	0.461
C49	Exhaust sulfur, percent of input	43.99	45.68	54.61	39.18	29.42	52.91	65.51	32.59	37.53
C49	Standard deviation	10.31	8.87	11.17	8.95	6.03	24.13	104.5	9.40	11.28

<sup>b</sup>Data or results were not obtained.

FOLDOUT FRAME

2

2411A  
 25  
 334

TABLE 4. - Continued.

(h) Continued. Combustion gas analysis data

Data channel	Parameter	Test							
		N1	N2	N5A	N5B	N6	N55A	N55B	N7
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	265	235	245	254	234	270	252	238
064	Standard deviation	40	13	78	13	16	9	13	19
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	42.2	6.4	5.9	1.5	2.0	7.6	6.6	5.9
066	Standard deviation	49.0	2.2	4.8	0.9	1.7	1.6	0.8	1.8
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	2.2	0.2	4.5	0.8	0.4	0.6	0.2	0.4
068	Standard deviation	3.2	0.1	9.4	0.1	0.2	0.2	0.1	0.4
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	85663	73871	71327	74586	72662	79226	78283	64569
070	Standard deviation	18389	20638	22837	3851	3924	4454	3163	21644
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	244	214	225	222	158	273	258	76
072	Standard deviation	169	128	110	34	143	55	46	112
073	Oxygen content, ppm	120370	122160	129760	124570	131960	122980	128200	133680
073	Standard deviation	19249	36000	31117	4523	6373	6069	3444	8872
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	253	241	240	251	241	241	252	227

FOLDOUT FRAMES /

070	Standard deviation	18389	20638	22837	3851	3924	4454	3153	21644
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	244	214	225	222	158	273	258	76
072	Standard deviation	169	128	110	34	143	55	46	112
073	Oxygen content, ppm	120370	122160	129760	124570	131960	122980	128200	133680
073	Standard deviation	19249	36000	31117	4523	6373	6069	3444	8872
074	SO <sub>x</sub> permissive signal	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9
074	Standard deviation	0	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	253	241	240	251	241	241	252	227
075	Standard deviation	21	2	20	4	4	20	1	8
057	Sample gas pressure, psia	28.2	29.2	27.9	28.8	28.6	28.6	28.7	29.0
057	Standard deviation	0.4	0.1	3.2	0.1	0.2	0.2	0	0.1
089	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
089	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
090	Sample line temperature, °F	80	69	85	92	93	85	89	79
090	Standard deviation	7	2	7	1	2	7	1	3
091	Sample line temperature, °F	214	195	206	199	220	202	219	215
091	Standard deviation	15	9	13	6	6	28	1	2
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	244	198	244	222	158	273	258	83
C34	Standard deviation	169	46	95	34	143	55	46	115
C46	NO <sub>x</sub> concentration, lb/MBtu	0.735	0.652	0.610	0.680	0.619	0.706	0.674	0.568
C46	Standard deviation	0.232	0.092	0.277	0.093	0.110	0.051	0.043	0.079
C47	SO <sub>x</sub> concentration, lb/MBtu	0.954	0.765	0.854	0.828	0.544	0.999	0.966	0.272
C47	Standard deviation	0.589	0.189	0.457	0.156	0.363	0.210	0.194	0.383
C49	Exhaust sulfur, percent of input	33.17	26.60	29.68	28.80	18.90	34.73	33.58	9.47
C49	Standard deviation	20.47	6.57	15.88	5.42	12.62	7.32	6.76	13.32

<sup>b</sup>Data or results were not obtained.

2411A  
 23-3

TABLE 4. - Continued.

(h) Concluded. Combustion gas analysis data

Data channel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
027	Sample gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
027	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
026	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Nitrogen oxides content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
063	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
064	Nitrogen oxides content, ppm	174	243	266	242	248	209	(b)
064	Standard deviation	39	99	34	31	52	17	(b)
065	Carbon monoxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
065	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
066	Carbon monoxide content, ppm	27.0	11.4	16.0	9.7	10.6	2.8	35.3
066	Standard deviation	19.7	8.1	11.4	5.9	18.6	1.8	0
067	Hydrocarbon content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
067	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
068	Hydrocarbon content, ppm	683	6.8	1.2	28.9	1.6	0.7	8.1
068	Standard deviation	1518	9.7	1.0	59.1	3.9	0.8	10.9
069	Carbon dioxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
069	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
070	Carbon dioxide content, ppm	52516	66274	75831	73348	73028	50497	10876
070	Standard deviation	37015	21966	10785	9544	14846	32860	0
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	22	40	231	288	306	292	212
072	Standard deviation	27	111	87	115	122	108	103
073	Oxygen content, ppm	108940	118090	126330	129710	122460	84322	39189
073	Standard deviation	36925	28716	9491	10359	16031	57599	64522
074	SO <sub>x</sub> permissive signal	4.9	4.9	5.0	4.9	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	133	246	242	263	260	254	230

FOLDCUT FRAMES

070	Standard deviation	37015	21966	10785	9544	14846	32860	0
071	Sulfur oxide content, ppm	(b)	(b)	(b)	(b)	(b)	(b)	(b)
071	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
072	Sulfur oxide content, ppm	22	40	231	288	306	292	212
072	Standard deviation	27	111	87	115	122	108	103
073	Oxygen content, ppm	108940	118090	126330	129710	122460	84322	39189
073	Standard deviation	36925	28716	9491	10359	16031	57599	64522
074	SO <sub>x</sub> permissive signal	4.9	4.9	5.0	4.9	5.0	5.0	5.0
074	Standard deviation	0	0	0	0	0	0	0
075	Gas analyzer gas temperature, °F	133	246	242	263	260	254	230
075	Standard deviation	42	9	14	17	30	49	31
057	Sample gas pressure, psia	17.2	27.9	25.7	25.5	22.8	19.5	17.8
057	Standard deviation	4.8	0.2	1.4	3.1	4.1	3.4	2.2
089	Sample line differential temperature, °F	159	(b)	(b)	(b)	99	(b)	(b)
089	Standard deviation	16	(b)	(b)	(b)	53	(b)	(b)
090	Sample line temperature, °F	84	91	103	91	95	105	106
090	Standard deviation	12	7	8	8	9	11	8
091	Sample line temperature, °F	140	219	214	209	203	200	168
091	Standard deviation	39	5	6	10	22	9	13
146	Sample line temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample line differential temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample port gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Sample line wall temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
159	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C34	SO <sub>x</sub> concentration, ppm	86	40	234	300	320	323	833
C34	Standard deviation	47	120	84	102	93	107	0
C46	NO <sub>x</sub> concentration, lb/MBtu	0.526	0.649	0.722	0.682	0.719	0.703	0.786
C46	Standard deviation	0.435	0.219	0.129	0.103	0.194	0.187	0.286
C47	SO <sub>x</sub> concentration, lb/MBtu	0.081	0.151	0.868	1.168	1.289	1.176	0.836
C47	Standard deviation	0.113	0.447	0.291	0.395	0.377	0.409	0.409
C49	Exhaust sulfur, percent of input	2.81	5.26	30.20	40.63	44.81	40.90	29.08
C49	Standard deviation	3.94	15.53	10.12	13.72	13.13	14.19	14.22

FOLDOUT FRAME

2

<sup>b</sup>Data or results were not obtained.

2 40717  
 (1) 236

Table 4. - Continued.

(i) PFB test unit data

Data chan- nel	Parameter	Test								
		A1A	A2A	A11A	A10A	A9A	A9B	A1B	A10B	A11B
051	Sample 1 temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
051	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Sample 2 temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
052	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Sample gas pressure, psia	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Sample rotation, rpm	5.5	5.5	5.4	5.0	5.1	5.7	5.7	5.4	5.3
151	Standard deviation	0.2	0.2	0.3	0.2	0.2	0.2	0.5	0.1	0.2
152	Sample coolant tempera- ture, °F	80	73	67	61	63	77	67	56	57
152	Standard deviation	0	7	8	0	6	1	10	1	0
153	Sample coolant tempera- ture, °F	56	66	66	53	63	163	208	205	213
153	Standard deviation	1	3	5	2	3	20	6	5	2
154	Sample coolant tempera- ture, °F	56	66	66	53	63	160	214	217	226
154	Standard deviation	1	3	5	2	3	26	8	4	2
155	Sample coolant tempera- ture, °F	56	65	66	53	63	(b)	(b)	(b)	(b)
155	Standard deviation	1	3	5	2	3	(b)	(b)	(b)	(b)
157	Sample exit gas tempera- ture, °F	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Sample inlet gas tempera- ture, °F	1206	1155	1211	1270	1286	1194	1250	1245	1282
158	Standard deviation	25	36	10	35	10	36	56	23	7

<sup>b</sup>Data or results were not obtained.



2407A  
 237

Table 4. - Continued.

(i) Continued. PFB test unit data

Data chan- nel	Parameter	Test							
		TB1A	TB1B	TB1C	TB1D	TB1E	TB1F	TB1G	TB1H
051	Sample 1 temperature, °F	(b)	(b)	(b)	1934	(b)	(b)	(b)	156
051	Standard deviation	(b)	(b)	(b)	2341	(b)	(b)	(b)	11
052	Sample 2 temperature, °F	(b)	(b)	(b)	1938	(b)	(b)	(b)	337
052	Standard deviation	(b)	(b)	(b)	2339	(b)	(b)	(b)	704
150	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Sample rotation, rpm	22.2	29.2	27.8	28.0	28.0	26.6	27.8	27.3
151	Standard deviation	10.2	0.6	3.0	0.1	0.1	4.9	0.2	7.1
152	Sample coolant tempera- ture, °F	83	86	88	85	82	83	92	94
152	Standard deviation	6	5	2	1	1	6	2	6
153	Sample coolant tempera- ture, °F	78	80	81	75	72	73	81	83
153	Standard deviation	4	3	1	2	1	4	2	3
154	Sample coolant tempera- ture, °F	84	88	90	88	86	86	95	95
154	Standard deviation	8	5	3	1	1	6	2	7
155	Sample coolant tempera- ture, °F	76	78	79	72	70	73	80	223
155	Standard deviation	2	2	1	1	1	4	1	43
157	Sample exit gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Sample inlet gas tempera- ture, °F	838	1129	1232	1341	1394	1342	1254	1179
158	Standard deviation	538	367	168	66	26	306	13	367

<sup>b</sup>Data or results were not obtained.

2407A  
 (3) 238

Table 4. - Continued.

(i) Continued. PFB test unit data

Data chan- nel	Parameter	Test						
		TB2A	TB2B	TB2C	TB2D	TB2E	TB2F	TB2F
051	Sample 1 temperature, °F	(b)	1403	1384	(b)	(b)	1385	1435
051	Standard deviation	(b)	26	20	(b)	(b)	44	15
052	Sample 2 temperature, °F	(b)	8961	9223	(b)	(b)	1389	1434
052	Standard deviation	(b)	2857	2458	(b)	(b)	42	14
150	Sample gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	Sample rotation, rpm	28.7	28.9	28.8	28.8	28.8	29.0	29.3
151	Standard deviation	0.2	0.1	0.1	0.2	0.1	0.1	0.1
152	Sample coolant tempera- ture, °F	88	87	89	81	85	87	90
152	Standard deviation	1	3	3	3	3	2	1
153	Sample coolant tempera- ture, °F	94	95	99	74	83	210	248
153	Standard deviation	7	4	5	4	2	21	7
154	Sample coolant tempera- ture, °F	89	88	89	83	88	88	91
154	Standard deviation	1	3	3	4	3	2	1
155	Sample coolant tempera- ture, °F	262	271	274	225	253	252	279
155	Standard deviation	5	11	5	21	4	23	6
157	Sample exit gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Sample inlet gas tempera- ture, °F	1454	1509	1493	1473	1438	1392	1438
158	Standard deviation	10	5	10	21	24	44	19

<sup>b</sup>Data or results were not obtained.

21474  
 44 (32)

Table 4. - Continued.

(i) Continued. PFB test unit data

FOLDOUT FRAME /

Data channel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
152	Sample coolant temperature, °F	92	80	81	82	79	74	70	77
152	Standard deviation	13	5	7	4	5	1	3	5
153	Sample coolant temperature, °F	84	81	81	84	81	70	71	76
153	Standard deviation	8	6	10	3	7	1	6	5
154	Sample coolant temperature, °F	83	81	81	83	80	70	71	75
154	Standard deviation	8	6	10	3	7	1	6	5
155	Sample coolant temperature, °F	83	81	80	83	80	70	71	75
155	Standard deviation	8	6	10	3	7	1	6	5
157	Sample exit gas temperature, °F	132	142	111	103	148	89	65	67
157	Standard deviation	22	23	20	15	42	10	4	7
158	Sample inlet gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Turbine stator gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Turbine exit gas pressure, psia	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
146	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
119	Turbine inlet gas wall temperature, °F	(b)	(b)	(b)	(b)	726	331	762	179
119	Standard deviation	(b)	(b)	(b)	(b)	291	324	409	1
155	Turbine exit gas temperature, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
155	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Sample 1 temperature, °F	72	70	69	72	69	57	61	65
158	Standard deviation	9	7	11	4	8	2	6	5
159	Sample 2 temperature, °F	70	68	68	71	67	55	59	63
159	Standard deviation	9	7	11	4	8	2	6	5
167	Turbine inlet gas temperature, °F	69	907	685	1112	1049	419	1071	1019
167	Standard deviation	0	541	566	354	462	493	581	615
168	Turbine inlet gas temperature, °F	109	877	681	1102	1043	413	1049	992
168	Standard deviation	9.1	521	562	354	460	482	580	600

158	Sample 1 temperature, °F	72	70	69	72	69	57	61	65
158	Standard deviation	9	7	11	4	8	2	6	5
159	Sample 2 temperature, °F	70	68	68	71	67	55	59	63
159	Standard deviation	9	7	11	4	8	2	6	5
167	Turbine inlet gas tem- perature, °F	69	907	685	1112	1049	419	1071	1019
167	Standard deviation	0	541	566	354	462	493	581	615
168	Turbine inlet gas tem- perature, °F	109	877	681	1102	1043	413	1049	992
168	Standard deviation	9.1	521	562	354	460	482	580	600
169	Turbine body wall tem- perature, °F	128	182	197	230	218	156	188	112
169	Standard deviation	5.1	26	45	28	35	19	24	6
170	Turbine blade tempera- ture, °F	1150	1192	1153	1223	1242	1119	1297	1042
170	Standard deviation	115	99	149	69	144	125	58	61
172	Turbine coolant exit temperature, °F	84	82	78	82	78	73	75	79
172	Standard deviation	7.6	4.5	4.8	2.8	4.8	2.4	4.4	4.9
177	Turbine inlet gas pres- sure, psia	14.2	69.6	65.1	70.6	69.6	53.6	70.1	65.8
177	Standard deviation	0.2	17.1	18.9	16.3	12.1	20.7	9.8	18.5
178	Turbine inside pressure, psia	13.5	55.0	52.4	53.1	52.4	49.3	39.4	46.4
178	Standard deviation	0.8	11.6	14.4	9.5	7.6	16.1	22.5	9.5
179	Turbine exit gas pres- sure, psia	13.6	44.4	48.3	40.6	42.3	45.9	48.4	40.6
179	Standard deviation	0.5	13.1	16.4	8.6	8.9	15.9	17.7	9.8
181	Turbine case pressure, psia	14.6	25.6	41.4	41.5	5.1	4.9	5.5	5.1
181	Standard deviation	0.2	13.3	0.1	0.3	0.5	0.7	0.6	0.5
182	Turbine oil flow, gpm	0.04	0.31	0.26	0.38	0.39	0.20	0.48	0.45
182	Standard deviation	0.05	0.12	0.14	0.08	0.13	0.12	0.16	0.17
183	Turbine bearing 1 tem- perature, °F	123	147	130	162	156	104	208	160
183	Standard deviation	11	39	43	25	33	31	70	57
184	Turbine bearing 2 tem- perature, °F	122	151	132	167	162	111	167	141
184	Standard deviation	12	41	45	27	36	41	48	45
185	Turbine bearing tempera- ture, °F	135	162	138	178	168	116	148	143
185	Standard deviation	11	51	54	32	42	53	47	51
186	Turbine bearing tempera- ture, °F	109	152	131	164	152	106	149	146
186	Standard deviation	14	43	46	27	33	38	46	51

<sup>b</sup>Data or results were not obtained.

2407A  
 240

Table 4. - Continued.

(i) Continued. PFB test unit data

FOLDOUT FRAME

Data channel	Parameter	Test							
		T3A	T3B	T3C	T3D	T3E	T3F	T4	T5
187	Turbine journal bearing temperature, °F	72	185	161	202	189	121	126	120
187	Standard deviation	24	61	60	40	50	56	33	33
188	Turbine journal bearing temperature, °F	69	176	149	196	187	106	123	119
188	Standard deviation	0	59	63	38	51	43	31	32
189	Turbine oil exit temperature, °F	88	150	130	166	162	103	139	129
189	Standard deviation	8	43	46	27	38	37	38	39
190	Turbine oil in temperature, °F	89	87	83	91	89	76	84	84
190	Standard deviation	9	6	7	4	6	4	7	6
191	Turbine brake air temperature, °F	88	84	82	80	82	70	61	55
191	Standard deviation	8	8	9	8	11	4	12	16
192	Turbine brake air pressure, psia	14.0	124.2	127.1	127.8	126.5	124.8	125.6	127.6
192	Standard deviation	0	7.1	3.0	2.2	4.6	6.7	5.0	5.0
193	Turbine brake air pressure differential, psid	(b)	1.73	1.11	1.82	1.42	0.68	2.45	2.16
193	Standard deviation	(b)	1.23	0.92	0.83	0.74	0.78	1.73	1.37
194	Turbine housing gas pressure differential, psid	(b)	15.9	14.8	17.0	14.9	15.3	16.1	16.6
194	Standard deviation	(b)	4.8	5.0	2.3	3.4	5.0	6.2	3.1
195	Turbine rotation 1, rpm	(b)	28129	20985	34284	32092	12071	24511	26114
195	Standard deviation	(b)	16914	18558	12674	15019	15267	17002	17000
196	Turbine rotation 2, rpm	(b)	27633	20635	33688	31476	11836	25014	27043
196	Standard deviation	(b)	16622	18256	12472	14753	14991	17329	17575
197	Turbine acceleration value	(b)	0.022	0.015	0.017	0.012	0.006	0.011	0.009
197	Standard deviation	(b)	0.007	0.007	0.006	0.005	0.006	0.004	0.003
198	Turbine acceleration value	0.007	0.081	0.098	0.097	0.048	0.007	0.015	0.046
198	Standard deviation	0.009	0.006	0.007	0.007	0.037	0.007	0.007	0.026
199	Turbine purge gas temperature, °F	161	93	88	93	96	74	96	77
199	Standard deviation	15	11	13	5	12	5	18	11

<sup>b</sup>Data or results were not obtained.

Table 4. - Continued.

(i) Continued. PFB test unit data

Data chan- nel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
152	Sample coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
153	Sample coolant tempera- ture, °F	68	77	92	75	80	90	89
153	Standard deviation	12	5	8	7	8	10	9
154	Sample coolant tempera- ture, °F	68	76	91	75	80	89	88
154	Standard deviation	12	5	8	8	8	10	9
155	Sample coolant tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
155	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
157	Sample exit gas tempera- ture, °F	76	67	85	64	72	78	76
157	Standard deviation	4	5	8	9	10	11	10
158	Sample inlet gas tempera- ture, °F	(b)	(b)	(b)	(b)	(b)	(b)	(b)
158	Standard deviation	(b)	(b)	(b)	(b)	(b)	(b)	(b)
145	Turbine stator gas pressure, psia	32.9	51.6	39.5	41.4	43.5	42.4	42.0
145	Standard deviation	11.3	9.1	9.8	14.6	11.8	8.8	4.3
146	Turbine exit gas pres- sure, psia	22.5	54.8	27.4	30.8	28.3	26.8	24.4
146	Standard deviation	8.4	7.1	9.1	12.8	12.0	9.2	3.8
119	Turbine inlet gas wall temperature, °F	825	823	878	839	830	872	888
119	Standard deviation	149	208	75	107	164	140	30
155	Turbine exit gas tempera- ture, °F	1091	591	1078	1045	1037	1060	1107
155	Standard deviation	347	617	83	131	203	161	31
158	Sample 1 temperature, °F	57	65	87	65	71	81	79
158	Standard deviation	13	6	10	10	10	12	15
159	Sample 2 temperature, °F	55	63	85	62	68	79	77
159	Standard deviation	13	6	10	10	10	12	13
167	Turbine inlet gas tem- perature, °F	1378	1314	1412	1363	1263	1289	1352
167	Standard deviation	243	325	118	181	263	193	46
168	Turbine inlet gas tem- perature, °F	1323	1279	1395	1358	1095	1351	1443
168	Standard deviation	234	321	120	181	223	198	59
169	Turbine body wall tem-	101	87	61	98	96	63	73

FOLDOUT FRAME

2401  
10-1-74

158	Sample 1 temperature, °F	57	65	87	65	71	81	79
158	Standard deviation	13	6	10	10	10	12	15
159	Sample 2 temperature, °F	55	63	85	62	68	79	77
159	Standard deviation	13	6	10	10	10	12	13
167	Turbine inlet gas temperature, °F	1378	1314	1412	1363	1263	1289	1352
167	Standard deviation	243	325	118	181	263	193	46
168	Turbine inlet gas temperature, °F	1323	1279	1395	1358	1095	1351	1443
168	Standard deviation	234	321	120	181	223	198	59
169	Turbine body wall temperature, °F	101	87	61	98	96	63	73
169	Standard deviation	10	16	32	10	13	29	26
170	Turbine blade temperature, °F	(b)	1198	1299	1230	1235	1312	1250
170	Standard deviation	(b)	74	63	69	86	58	93
172	Turbine coolant exit temperature, °F	73	75	81	73	79	77	75
172	Standard deviation	3	3	3	2	3	3	2
177	Turbine inlet gas pressure, psia	66.8	78.8	69.2	70.7	68.9	71.5	70.8
177	Standard deviation	4.7	8.4	2.4	6.4	9.8	3.9	1.6
178	Turbine inside pressure, psia	40.5	71.5	44.7	47.4	40.5	44.1	40.4
178	Standard deviation	12.1	7.5	10.1	11.4	12.4	6.9	3.9
179	Turbine exit gas pressure, psia	37.0	62.2	38.6	42.8	40.0	39.2	36.5
179	Standard deviation	8.5	9.8	9.8	12.6	14.3	9.7	4.2
181	Turbine case pressure, psia	5.6	5.4	31.2	31.8	31.9	29.0	30.8
181	Standard deviation	0.3	0.6	4.0	3.9	4.6	3.4	1.5
182	Turbine oil flow, gpm	0.56	0.49	0.58	0.51	0.51	0.56	0.59
182	Standard deviation	0.07	0.07	0.06	0.07	0.09	0.07	0.02
183	Turbine bearing 1 temperature, °F	195	187	202	210	194	220	229
183	Standard deviation	27	34	23	25	33	31	21
184	Turbine bearing 2 temperature, °F	163	157	165	160	157	165	173
184	Standard deviation	16	42	14	15	23	16	3.7
185	Turbine bearing temperature, °F	173	131	181	166	164	178	185
185	Standard deviation	22	16	21	26	33	23	7
186	Turbine bearing temperature, °F	173	131	185	172	172	187	194
186	Standard deviation	22	15	22	26	33	24	7

<sup>b</sup>Data or results were not obtained.

2401  
 242

Table 4. - Continued.

(i) Concluded. PFB test unit data

Data channel	Parameter	Test						
		T6A	T6B	T7A	T7B	T7C	T7D1	T7D2
187	Turbine journal bearing temperature, °F	142	113	151	141	136	145	148
187	Standard deviation	15	11	16	18	21	15	5
188	Turbine journal bearing temperature, °F	138	112	147	138	135	144	147
188	Standard deviation	14	10	15	17	20	15	5
189	Turbine oil exit temperature, °F	151	126	158	151	147	158	163
189	Standard deviation	17	16	16	19	24	18	4
190	Turbine oil in temperature, °F	85	83	93	87	88	91	91
190	Standard deviation	3	3	4	4	5	5	2
191	Turbine brake air temperature, °F	47	66	81	67	70	71	77
191	Standard deviation	10	8	11	11	18	14	9
192	Turbine brake air pressure, psia	119.9	121.7	121.7	126.5	130.8	122.4	124.5
192	Standard deviation	4.1	6.7	4.1	3.3	13.8	5.9	2.6
193	Turbine brake air pressure differential, psid	5.5	3.0	4.6	4.2	5.8	5.6	6.0
193	Standard deviation	1.5	1.1	1.2	1.2	1.7	1.1	0.8
194	Turbine housing gas pressure differential, psid	17.5	10.1	21.3	21.1	21.8	21.3	21.6
194	Standard deviation	3.0	2.9	0.6	0.8	1.0	0.6	0.3
195	Turbine rotation 1, rpm	37532	14027	2995	1542	30632	35535	37928
195	Standard deviation	8287	4084	4403	136	11610	8143	3070
196	Turbine rotation 2, rpm	37873	13487	35404	32050	31818	36726	38464
196	Standard deviation	9568	4367	8219	10896	12012	8276	3078
197	Turbine acceleration value	0.009	0.002	0.017	0.007	0.012	0.011	0.012
197	Standard deviation	0.002	0.002	0.009	0.005	0.006	0.003	0.002
198	Turbine acceleration value	0.012	0.002	0.024	0.015	0.024	0.025	0.028
198	Standard deviation	0.003	0.001	0.010	0.008	0.013	0.007	0.004
199	Turbine purge gas temperature, °F	88	141	145	149	138	158	132
199	Standard deviation	8	22	14	15	18	19	17