Rockwell International
Rocketdyne Division

System for Anomaly and Failure Detection (SAFD) System Development

Final Report

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Task 23

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Executive Summary

The System for Anomaly and Failure Detection (SAFD) algorithm was developed as an improvement over the current redline system used in the Space Shuttle Main Engine Controller (SSMEC). Simulation tests and execution against previous hot fire tests demonstrated that the SAFD algorithm can detect engine failures as much as tens of seconds before the redline system recognized the failure. Although the current algorithm only operates during steady state conditions (engine not throttling), work is underway to expand the algorithm to work during transient conditions.

This task assignment originally specified developing a platform for executing the algorithm during hot fire tests at Technology Test Bed (TTB) and installing the SAFD algorithm on that platform. Two units were built and installed in the Hardware Simulation Lab and at the TTB in December 1991. Since that time, the task primarily entailed improvement and maintenance of the systems, additional testing to prove the feasibility of the algorithm, and support of hot fire testing. This document addresses the work done since the last report of June 1992.

The work on the System for Anomaly and Failure Detection (SAFD) during this period included improving the platform and the algorithm, testing the algorithm against previous test data and in the Hardware Simulation Lab, installing other algorithms on the system, providing support for operations at the Technology Test Bed, and providing routine maintenance.

Two new versions of the platform software and the algorithm software were delivered in fiscal year (FY) 93.

Versions 3.0 and 3.1 of the platform software were delivered in December 1992 and March 1993 respectively. The changes to the platform software added the capability to input hot fire test data obtained from Rocketdyne in Canoga Park in simulation mode, enhanced the data reduction capability, and closed most of the outstanding System Problem Reports (SPRs). During this period, Rocketdyne personnel also updated the vendor supplied system software from version 5.0 to version 6.0. This update appears to have cured most of the timing problems associated with version 5.0, including the random delay induced by the system software. Also during this period, the system at the Hardware Simulation Lab (HSL) was connected to an electronic network to allow direct electronic transfer of test data from Canoga Park. The only outstanding SPRs for the platform software at present address minor improvements to the user interface.

Versions 3.0 and 3.1 of the algorithm software were delivered in November 1992 and March 1993 respectively. In these versions the algorithm was changed to accommodate venting and repressurization and to allow the user

more flexibility in setting initial limits. Work is underway in Canoga Park to improve the algorithm to the point that it can handle power transients and to reduce the amount of adaptation data required. Work is currently being done at HSL to correct a problem in the algorithm in that it does not exclude disqualified channels of dual channel parameters from the voting for shutdown (they will never vote for shutdown even though the good channel is out of limits).

As part of algorithm validation, Rocketdyne personnel tested the algorithm against previous hot fire data, tested it against avionics type failures in the HSL, and analyzed it with respect to data from successful hot fire tests. The goal of this testing was to gain further confidence in the viability of the algorithm and to determine any weaknesses in the current implementation.

Tests were executed against three hot fire tests with engine failures. This series was performed to determine that the development algorithm at Canoga Park matched the implementation on the SAFD system, that the algorithm could detect engine failures before the redlines, and that correct adaptation data could be developed using previous test data. During this testing some discrepancies were discovered and the development algorithm was modified to match the one on the SAFD system. In the final execution of these tests, the algorithm was able to detect engine failures earlier than the redlines; in some cases as much as tens of seconds earlier. One of the failure cases was successfully executed using adaptation data generated from three earlier tests on the same engine. These tests indicated that the algorithm could detect failures earlier than redlines, but demonstrated that the adaptation data is critical to the success of the algorithm. They also demonstrated that adaptation data could be generated by analyzing data from previous tests on the same engine, but that generating this adaptation data is a complex task largely dependent on engineering judgment and experience.

The HSL tests evaluated the algorithm's response to recoverable avionics type failures including digital computer unit (DCU) power failures, input electronics (IE) and output electronics (OE) failures, and actuator failures. These tests demonstrated that these types of failures can cause erroneous shutdowns due to transients in some of the parameters monitored by SAFD. This is especially true of power and IE failures. These failures can be accommodated by expanding the limits, but expanding the limits reduces algorithm sensitivity to engine failures. These tests need further study to determine where the cross over is between erroneous shutdown and true engine failures for parameters affected by recoverable avionics failures.

In order to assess the reliability of the statistical approach used in SAFD, Rocketdyne personnel obtained data from Canoga Park for 14 tests with no venting or repressurization. The test data involved 3 engines and contained 17 usable intervals. Analysis of this data indicates that there are possibly 9

parameters monitored by SAFD for which a standard deviation calculated at 2 seconds is not a reliable indicator of the standard deviation for the entire interval. Some possible solutions for this dilemma include expanding the limits, setting fixed limits that do not depend on standard deviation, using a longer sampling time, factoring other criteria into the equations determining limits, or using an approach not involving statistics. Further studies will help determine the most appropriate solution.

Three algorithms from United Technologies Research Center (UTRC) were installed on the SAFD platform in FY93. These included a new version of the RESID algorithm and versions of the ARMA and Cluster algorithms. An older version of the RESID algorithm had been executing on the SAFD during hot fire tests at TTB since early 1992. The new algorithms have been through cursory testing in the HSL but none have yet been tested at TTB. However, plans are to execute the new RESID and the Cluster algorithms during hot fire in the future. Tests in the HSL indicate that the current SAFD hardware does not have enough processing power to accommodate the ARMA algorithm. In the coming FY NASA plans to investigate the requirements to upgrade the current system to provide more processing power for algorithms.

Since the last report, Rocketdyne personnel supported SAFD during hot fire tests TTB-033 through TTB-044. Personnel from Canoga Park supplied the adaptation data for engine tests prior to test TTB-043. Beginning with test TTB-043, NASA personnel generated the adaptation data. SAFD successfully monitored all tests except test TTB-043. A hardware failure prevented monitoring that test. However, the test data was later obtained from Canoga Park and the SAFD algorithm was executed against that data in simulate mode. NASA personnel plan to continue generating the adaptation data and operating the system. Rocketdyne now only provides support during the calibration of the system and during actual hot fire.

Two significant hardware failures occurred since the last report. A disk drive was replaced in the unit at the HSL and a power strip failed on the unit at TTB just prior to test TTB-043. The failure at TTB was isolated and repaired only minutes too late to monitor the test. During the year, hardware personnel also supported connection of the unit at HSL to the network.

1 Introduction

TTB STA 23 specified building the hardware and software to implement the algorithm being developed under STA 21. The task involved building two units: one that is installed in the HSL and one that is installed at the TTB. Rocketdyne personnel at the HSL performed the task. The effort since the last report has consisted of product improvement, testing, and maintenance.

1.1 Document Overview

This report relates in detail the approaches taken, the lessons learned, and recommendation for future efforts. The report is broken down as follows:

Section 1	Introduction
Section 2	The SAFD Platform
Section 3	The SAFD Algorithm
Section 4	Other Algorithms
Section 5	Summary

1.2 Deliverables

The following list enumerates the current documentation revision levels and serial numbers for deliverables.

Item	ID	Description
Doc	RHF-0032-001 Rev B	System Specification
Doc	RHF-0032-005	System Development Plan
Doc	RHF-0032-007 Rev B	User Guide
HW	SAFD serial # 1	SAFD Hardware
HW	SAFD serial # 2	SAFD Hardware
Doc	N/A	SAFD Hardware Drawings
SW	Platform v3.1	Platform Software
Doc	RHF-0032-003 Rev C	Platform Software Requirements
Doc	RHF-0032-007 Rev B	Platform Software Design
Doc	RHF-0032-011 Rev C	Platform Test Plan
Doc	RHF-0032-013 Rev C	Platform Test Description
Doc	RHF-0032-015 Rev C	Platform Test Report
Doc	Dated 3/30/93	Platform Version Description Doc
SW	Algorithm v3.1	Algorithm Software
Doc	RHF-0032-020 Rev C	Algorithm Software Requirements
Doc	RHF-0032-021 Rev C	Algorithm Software Design
Doc	RHF-0032-022 Rev C	Algorithm Test Plan
Doc	RHF-0032-023 Rev C	Algorithm Test Description
Doc	RHF-0032-024 Rev C	Algorithm Test Report
Doc	Dated 3/25/93	Algorithm Version Description Doc

1.3 Environment

SAFD is designed to operate in the SSME TTB environment. The system obtains Vehicle Data Table (VDT) input from a spare VDT output in the Command and Data Simulator (CADS), facility measurements from the facility Signal Interface Units (SIUs), and Greenwich Mean Time (GMT) from the facility GMT lines. It generates a cut signal by closing a relay connected to the facility cutoff panel. Figure 1 illustrates the configuration of SAFD at the TTB.

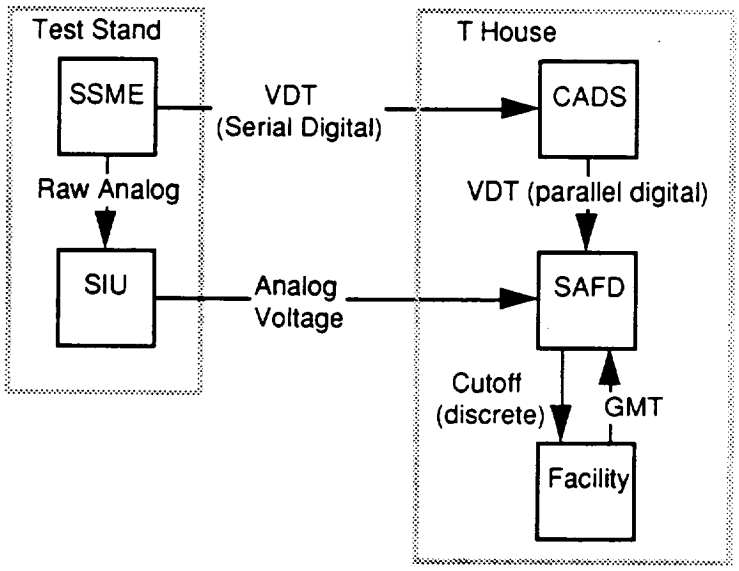


Figure 1 - SAFD TTB Configuration

1.4 System Overview

During the system definition phase, NASA and Rocketdyne agreed that it would be cost effective to separate the platform, which included the system hardware and those software functions not directly associated with the algorithm, from the algorithm implementation. The reasoning behind the decision was that the SAFD algorithm was being expanded to include transients and that at least two other efforts were underway to develop algorithms. This decision led to a system which allows multiple algorithms executing simultaneously and allows updating existing algorithms or creating new algorithms without modification of the platform software or hardware.

This modular approach led to a system where the platform handles all input/output, scaling, scheduling, recording/playback, display, and user interface as these functions are common to all algorithms. Isolating these function from the algorithms yields a stable platform upon which the

algorithms can be executed. Since the algorithms do not contain generic functions, only the code directly required to implement a particular monitoring approach need be contained in the algorithm. The algorithms are thus isolated from the user and the hardware environment. Since the developer need not worry about the generic functions handled by the platform, it is easier to change existing algorithms and to create and integrate new algorithms. Figure 2 illustrates the concept.

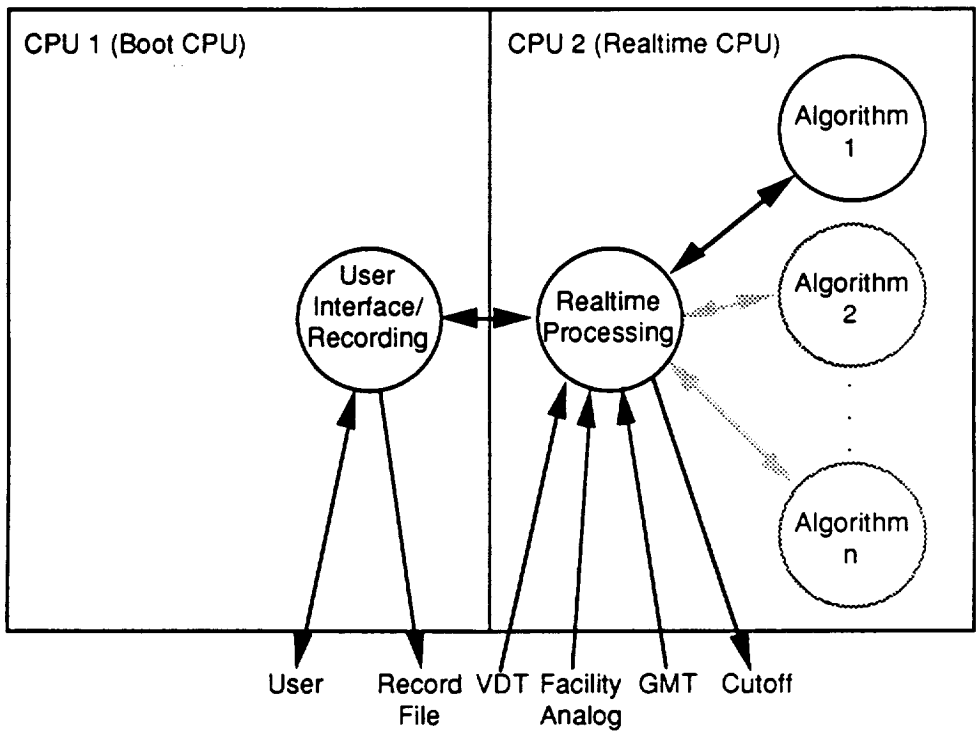


Figure 2 - SAFD System Architecture

RSS-8825-51

2 SAFD Platform

The platform includes all hardware and software components except the algorithm software. During this period there were no significant modifications to the hardware, but new versions of all of the software were installed.

2.1 SAFD Platform Hardware

The SAFD platform hardware includes all hardware purchased or developed under the task. The hardware is built around a Concurrent 6450 computer using off-the-shelf components where available. Rocketdyne built custom hardware for those components not available off-the-shelf. Figure 3 shows a block diagram of the SAFD system.

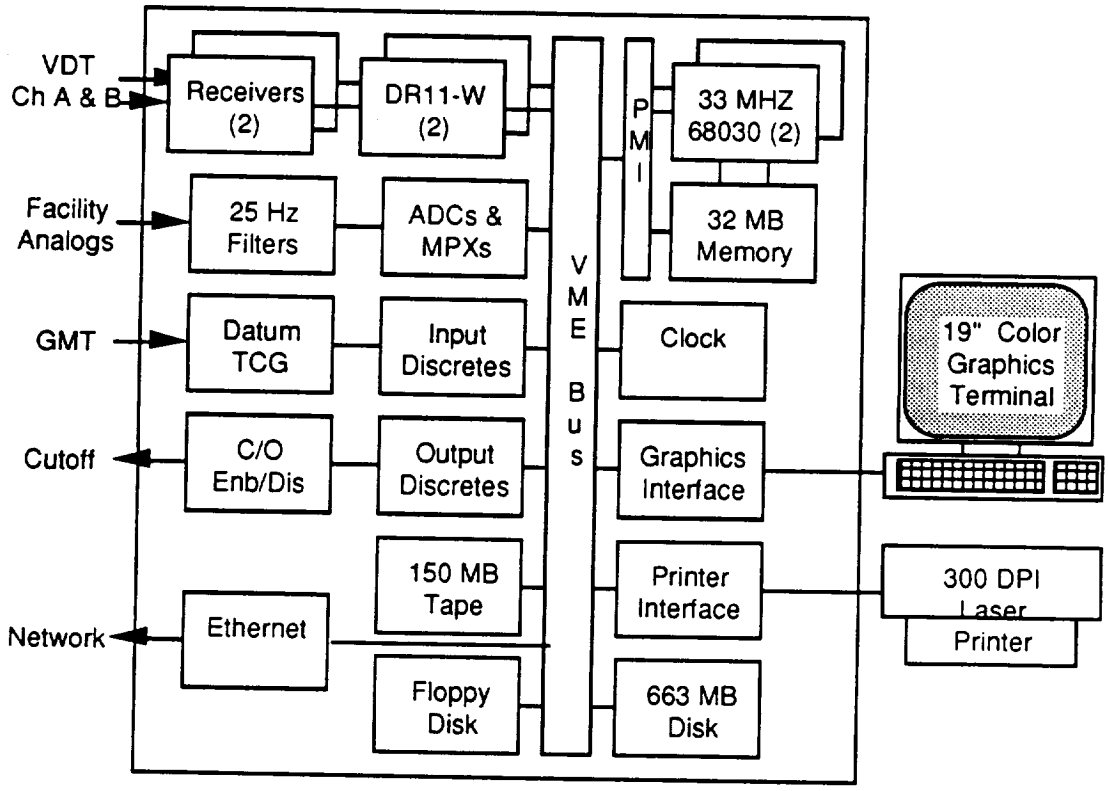


Figure 3 - SAFD Block Diagram

The major hardware components include the following:

Concurrent 6450 computer and peripherals
VDT interface
Facility analog interface
GMT Time Code Generator (TCG) and interface
Cutoff logic

2.1.1 SAFD Platform Hardware Changes

The only hardware change made since the last report has been the connection of the unit at the HSL to an Ethernet network. This network connection allows electronic transfer of hot fire data from Canoga Park.

2.1.2 SAFD Platform Hardware Open SPRs

The following SPR is open against the hardware:

2902 Facility interface detects erroneous cutoff
When the Cutoff Enable switch on the SAFD cabinet is toggled from "disabled" to "enabled" it sends a cutoff signal to the facility cutoff box. This is potentially dangerous because toggling the switch during a hot fire test would prematurely shutdown the engine. Normally, this switch would never be moved during a hot fire test. This will be corrected.

2.2 SAFD Platform Software

The SAFD platform software includes all software not directly associated with an algorithm. Functions not requiring realtime response are executed on the boot processor (CPU1). Those requiring realtime response and the algorithms are executed on the realtime processor (CPU2). Figure 4 illustrates the software/hardware mapping for the system. The following paragraphs document changes in off-the-shelf vendor supplied software and in the Rocketdyne supplied software.

2.2.1 SAFD Vendor Supplied Software

The SAFD system included off-the-shelf software from two vendors; Concurrent Computer Corporation, who supplies the basic operating system and utilities, and VI Corporation who supplies the display software. Both were updated during this period.

The operating system (supplied by Concurrent) was upgraded from version 5.0 to version 6.0. This upgrade appears to have solved the problem of the random, greater than 80ms delays that would occasionally occur under version 5.0. This enabled closing SPR 2808 which documented the "system delay" problem.

When the operating system was updated, the Data Views software from VI Corporation was also updated. Although this update was required for compatibility, it did include improvements in the user interface for the view editor.

The TCP/IP networking software, supplied by Concurrent was installed and configured for the unit in the HSL to enable electronic transfer of hot fire data from Canoga Park.

2.2.2 SAFD Rocketdyne Supplied Software

Versions 3.0 and 3.1 of this software were delivered in December 1992 and March 1993 respectively. Both closed outstanding SPRs and version 3.0 added significant additional capability.

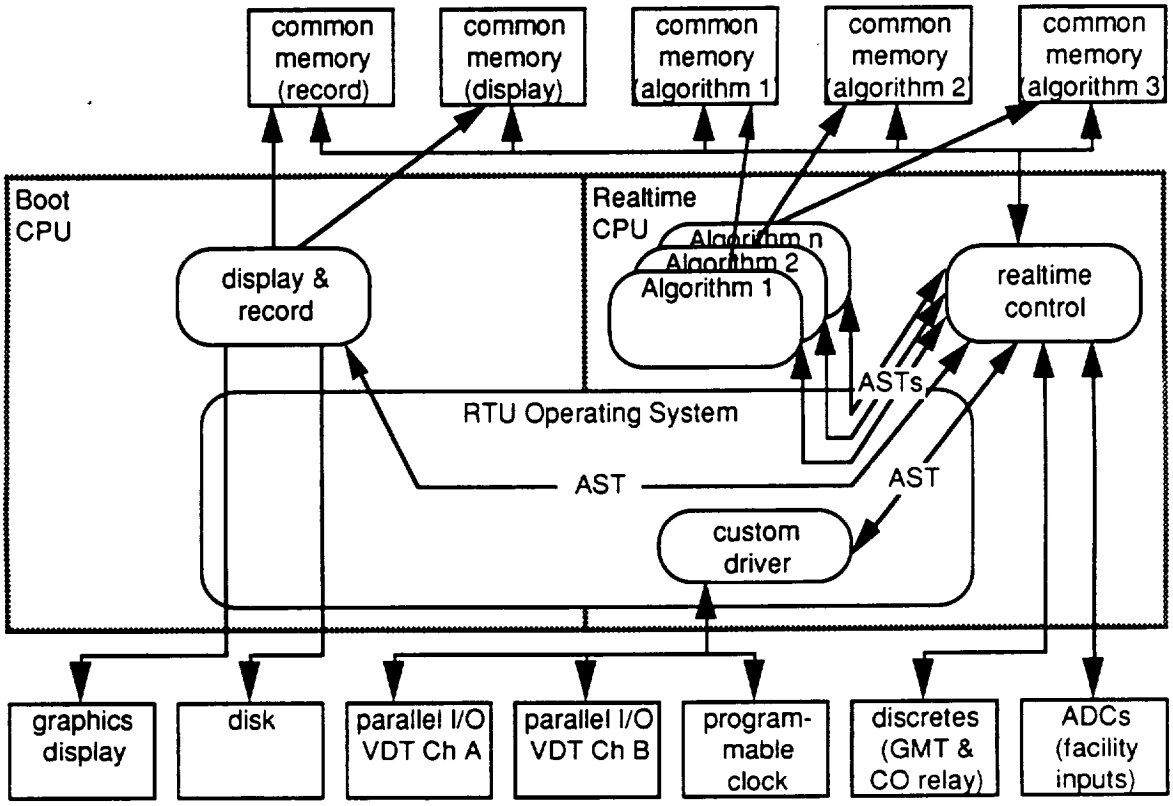


Figure 4 - Software/Hardware Mapping

2.2.2.1 SAFD Platform Version 3.0

Version 3.0 closed the following SPRs:

2841 Wrong response for algorithm overrun.
2869 Display algorithm map function inconsistent.
2873 Recording does not automatically stop for engine "off".
2876 Record does not wait 10 sec. when going from manual to 10 sec.
2877 System can hang due to not checking number of parameters.
2880 Data Input checkout checks too many facility channels.
2881 Data Input checkout allows execution when no inputs selected.

2882 VDT checkout not consistent with requirements.
2883 Can only graph outputs from last scheduled algorithm.
2885 Facility checkout reports failures for good parameters.
2886 SW passes bad VDT to algorithms rather than last good values.
2887 Calibration does not save C0 values for EUR checks
2888 Graphing for two algorithms does not work properly.
2889 "Double" calibration of parameters yields bad coefficients.
2890 System hangs when more than 7 digit graphs w/ 5 params are used.
2891 Need capability to generate out of limits report.
2892 Need capability to import hot fire data from Canoga system.

2.2.2.2 SAFD Platform Version 3.1

Version 3.1 closed the following SPRs:

2820 Get controller FIDs in start
2863 Display function for parameter map not consistent.
2867 System can hang in "View Editor" mode.
2884 Facility checkout report does not give channel no.
2894 SAFD hangs on algorithm initialization failure
2897 Test Setup and Simulation modes use same keyboard accelerators
2900 Data Input Checkout for facility analogs failed
2901 In Data Recording Checkout mode, overwrites existing report file
2903 In Cutoff Checkout mode, overwrites existing report file
2904 In View Editor Mode, system accepts view file with no test ID
2905 In Test_Setup, inconsistent handling of the Select, Print and Delete functions
2906 Incomplete test definition saved
2908 Cutoff Status in test control panel inaccurate
2909 Parameter Map syntax error detected when no facility parameters specified
2910 Algorithm outputs ranged checked before being passed to another algorithm
2911 Test execution terminated with multiple algorithms scheduled
2912 Cutoff discrete always active
2913 Fast Forward updates display every 25 frames in Playback Mode
2916 TREF displayed in octal in test control panel - seconds preferred
2917 Simulate and Playback functions do not approach real-time speeds

2.2.3 SAFD Platform Software Open SPRs

The following SPRs remain open against the SAFD platform software.

2842 Algorithm can tie up system.
The operating system call to kill a task is non-deterministic. Therefore, during realtime operations, the vendor recommends against using it. This should not be a problem if algorithms are tested adequately prior to being made active on a hot fire test.

2870 Does not verify parameter map/algorithm inputs on test save.
The software does not verify that all parameters required by algorithms are in the parameter map prior to saving a test configuration. It does notify the user when the user attempts to start the test. This is a nuisance to the user but presents no danger.

2874 Test does not abort for loss of VDT.
The software will not abort a test when VDT data is lost. This is the preferred response as algorithms may someday exist which do not require VDT data or there may be occasions where only facility data need be monitored (such as troubleshooting). The requirements will be changed in the next update.

2875 Data Errors not incremented for bad VDT.
The systems maintains the error count and marks "bad" VDTs, but does not post the count to the screen. This does not affect operation of the system.

2898 Undefined syntax errors in map files
The system posts a generic message when syntax errors are found in map files. This is a nuisance in that it makes it more difficult for the user to find the error, but it is not dangerous.

2899 Data Input Checkout active when no options selected
The button to execute data checkout is "live" when no checkout options have been selected. This allows the user to execute a checkout, but nothing happens. This is a nuisance but is not dangerous as the user normally checks the log file to obtain the results of the checkout. The file will indicate that no test was executed.

2907 Erroneous dialog box in Test_Setup
The "Syntax error in parameter map" error message is followed by an extraneous error message "Definition not saved." This is a nuisance but is not dangerous.

2920 When "stepping" in Playback, printed display can be 1 frame off from displayed frame.

This is a nuisance but is not dangerous.

2921 Playback takes as long as 10 minutes to initiate when there is no facility data.
Due to the requirement to synchronize data recorded at different times, the software searches for the first facility data record. If there is none, it will search the entire file. This is a nuisance but is not dangerous.

2.3 Recommendations

Rocketdyne recommends modifying the hardware to correct the cutoff arm problem (SPR 2902), but recommends no changes to the platform software at the present time as the SPRs against the platform software only recommend minor improvements. However, Rocketdyne does recommend connecting the unit at TTB to the network.

3 SAFD Algorithm

The requirements for the SAFD algorithm originated with the work done at Rocketdyne in Canoga Park, California under TTB Task 21. The SAFD algorithm was developed as an improvement over the current redline system used in the Space Shuttle Main Engine Controller (SSMEC). Simulation tests and execution against previous hot fire tests demonstrated that the SAFD algorithm can detect engine failures as much as tens of seconds before the redline system recognizes the failure. Although the current algorithm only operates during steady state conditions (engine not throttling), work is underway to expand the algorithm to work during transient conditions. Figure 5 illustrates the operation of the algorithm.

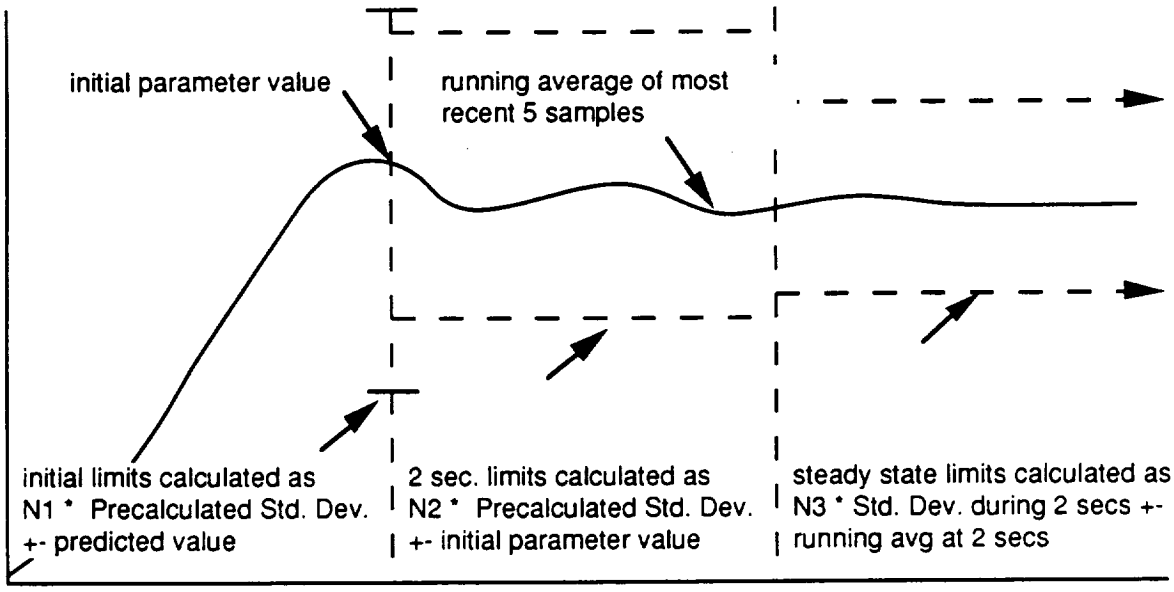


Figure 5 - SAFD Algorithm

3.1 Algorithm Updates

Versions 3.0 and 3.1 of the algorithm were delivered November 1992 and March 1993 respectively.

3.1.1 Algorithm Version 3.0

Version 3.0 of the algorithm closed SPR 2896 which enumerated the following requirements changes:

- Add logic to dynamically modify the limits based on LOX and fuel tank venting.

- Add logic to dynamically modify the limits based on the opening/closing of the GOX and fuel repressurization valves.
- Implement a "minimum" limit to use in cases where the calculated limit is less than the "minimum".
- Add logic to provide that zero or negative parameters will not be used for determining cut off (this was already in the SAFD system by virtue of data qualification limits).
- Compare accels to upper limit only (accels have no lower limit).
- Incorporate the new standard deviation approach (running calculation).

3.1.2 Algorithm Version 3.1

Version 3.1 of the algorithm closed the following SPRs:

2895 Suspend monitoring on affected parameters when LOX or fuel inlet pressures are bad.

2914 Clear the cutoff bit in the cut flag data tag when the cut flag is cleared.

2915 Add an entry to the adaptation data file to allow the user to specify whether to monitor upper, lower, or both limits for each parameter.

2918 Enable the algorithm to continue processing with bad inputs for LOX and fuel inlet pressures.

3.1.3 Algorithm Open SPRs

There is one open SPR against the algorithm. It documents the fact that the algorithm will not indicate out of limits for dual channel parameters that have a channel disqualified, even though the surviving channel indicates out of limits. This condition is being corrected and a new version of the algorithm will be released.

3.2 Off-Line Hot Fire Testing

In order to verify that the algorithm implementation on the SAFD system was the same as that used for development in Canoga Park, three hot fire test failure cases were executed against the algorithm. This testing also served to contrast the effectiveness of the algorithm with that of the redlines. Appendix A contains data from these tests.

The testing indicated discrepancies between the development algorithm in Canoga Park and the implementation on the SAFD system. The development algorithm was changed to match the implementation on the SAFD system and all of the tests were rerun. The results below are from the last execution of the tests.

3.2.1 Test 901-173

This test was cut by a redline on HPFTP TDT at 201.17 seconds. The engine failed due to a sudden failure of the main injector. The SAFD algorithm detected the failure and requested shutdown at 201.00 seconds due to out of limit conditions on the following parameters:

HPFTP Discharge Pressure (was intermittent high from 98.84 failed low at cutoff)
HPFTP Radial Accel (intermittent high from 176.16, high at cutoff)
MCC Pc (low at cutoff)
Fuel Flow (high at cutoff)

HPFTP Discharge Pressure was intermittently reading high from early in the test and appeared to drift upward from the beginning of the test. However, when the failure occurred, the parameter value decreased rapidly and exceeded the lower limits. The data for this test is included in Appendix A1.

3.2.2 Test 902-249

This test was cut by a redline on HPFTP accel at 450.57 seconds. The failure was a HPFTP blade failure with a rupture of the volute. The data indicated the failure early and SAFD requested cut at 350.32 seconds based on the following parameters:

HPOTP ISP Pressure (intermittent from 333.52)
HPFTP TDT (intermittent from 330.04)
HPFTP Coolant Liner Pressure (intermittent from 284.32)

The adaptation data for this test was generated using 902-248 data.

One could argue that HPOTP ISP Pressure did not actually reflect the failure but indicated out of limits due to too restrictive adaptation data. Discounting HPOTP ISP Pressure, SAFD would have requested a shutdown at 372.36 when FPOV Actuator Position exceeded the limit. HPFTP Coolant Liner Pressure drifted upward from early in the test, eventually exceeding the limit. If this parameter had not exceeded the limit, SAFD would have requested cut at 397.16 when HPFTP Balance Cavity Pressure exceeded the lower limit. The data from this test is included in Appendix A2.

3.2.3 Test 904-149

This test was cut by a redline on HPFTP accel at 109.86 seconds. The cause was a sudden failure of the HPOT inducer. The SAFD algorithm requested cut at 109.78 due to out of limits indications on the following parameters:

HPOTP PBP Accel (intermittent high from 96.74, high at cutoff)
HPOT ISP Pressure (intermittent high from 107.22, high at cutoff)
HPOTP SSC Pressure (intermittent high from 109.22, high at cutoff)

The plot for HPOT ISP Pressure indicates a gradual drift upward and a sudden dip at approximately 108 seconds. The dip downward may have actually been an indication of the failure rather than the fact that it failed the upper limit. The drift upward appears to be normal engine operation. The data for this test is included in Appendix A3.

3.2.4 Conclusions

These tests indicated the need to consult NASA and Rocketdyne Engine Systems personnel when evaluating the algorithm's performance against failure tests to verify that parameters indicating out of limits are actually a result of the failure and are not a result of normal engine operation. They also indicated the possibility that additional logic should be incorporated in the algorithm to accommodate parameters changing over time, such as HPOTP ISP Pressure.

3.3 Simulation Lab Testing

The algorithm was tested in the HSL to assess its response to avionics failures. The adaptation data used was the same as that used for off-line hot fire testing of test 902-249. Appendix B includes data from these tests.

3.3.1 Test Scenarios

The failure scenarios included the following:

DCUA Power Failure
DCUB Power Failure
IE Channel A Failure
IE Channel B Failure
OE Channel A Failure
OE Channel B Failure
Actuator Channel A Failure
Actuator Channel B Failure

3.3.2 Test Results

The results of the tests are documented in the following paragraphs. The results indicated below are generally repeatable, but due to the fact that different runs in the simulation lab are not exactly alike and the fact that SAFD calculates limits based on data gathered during the run, some of the parameters listed below may not register out of limits every time.

DCUA Power Failure

When DCUA power was failed, the following parameters indicated out of limits due to the transients occurring during DCUB takeover.

HPOTP PBP Discharge Pressure
MCC Pc
HPFTP TDT Channel B (power failure disqualified channel A)
FPOV Actuator Position
Fuel Flow

This test also indicated that the lower limits for shaft speed qualification were too high. The value of the shaft speed data dropped but did not fall below the zero lower limit.

DCUB Power Failure

When DCUB power was failed, the following parameters indicated out of limits due to the transients occurring during DCUB takeover.

Fuel Flow
HPFTP Discharge Pressure
HPFTP Shaft Speed

IE Channel A Failure

When IE Channel A was failed, the following parameters indicated out of limits due to the transients occurring when channel A sensors were no longer used in calculating control values.

HPFTP Shaft Speed
HPOTP TDT Channels A & B (Channel A was not disqualified)
HPFTP Discharge Pressure
FPOV Actuator Position

This test indicated that the qualification logic in SAFD is not sophisticated enough to detect IE failures. Techniques have been identified that can be used to improve the qualification of parameters.

IE Channel B Failure

When IE Channel B was failed, the following parameters indicated out of limits due to the transients occurring when channel B sensors were no longer used in calculating control values.

Fuel Flow
HPOTP TDT Channels A & B (Channel B was not disqualified)
HPFTP Discharge Pressure
FPOV Actuator Position

As with the channel A IE failure case, this test indicated a deficiency in parameter qualification.

OE Channel A Failure

No parameters indicated out of limits for this failure.

OE Channel B Failure

No parameters indicated out of limits for this failure.

Actuator Channel A Failure

No parameters indicated out of limits for this failure.

Actuator Channel B Failure

No parameters indicated out of limits for this failure.

3.3.3 Conclusions

These tests identified two areas of concern. First, DCU power and IE failures can result in erroneous out of limit indications unless this is considered when generating adaptation data. One should note however, that the limits calculated by the algorithm in the HSL are typically tighter than those that would be calculated for a real engine because the parameters in the simulation lab are "quieter." Secondly, a more sophisticated means of parameter qualification is needed to detect IE failures.

3.4 TTB Test Experience

From June 1992 through September 1993, SAFD monitored tests TTB-033 through TTB-044. These tests represented a variety of power levels and

operating conditions and demonstrated the need for accurate adaptation data. In all cases the cutoff was disabled.

In these tests, all limit exceeded indications by the SAFD algorithm for any parameter were due to faulty adaptation data. The paragraphs below indicate the results of each test.

3.4.1 TTB Test Results

TTB-033 through TTB-035

No limit exceeded indications were received for any parameters.

TTB-036

HPOTP Discharge Pressure indicated out of limits from 6.68 to 6.96 and from 41.40 to 43.36 seconds.

TTB-037

HPFTP Coolant Liner Pressure and HPFTP Shaft Speed indicated out of limits intermittently during the test.

TTB-038

The following parameters indicated out of limits intermittently during the 2 second calculation intervals:

HEX Venturi Delta Pressure
HPOTP TDT
HPFTP Shaft Speed
HPFTP Coolant Liner Pressure
Fuel Flow
HPFTP Discharge Pressure
HPOTP Discharge Pressure
HPOTP PBP Discharge Pressure
OPOV Actuator Position
HPOTP ISP Pressure
HPFTP TDT

The following parameters indicated out of limits at various times during steady state monitoring:

MCC Pc
HPOTP ISP Pressure
HPFTP Coolant Liner Pressure

HPOTP TDT
HEX Venturi Delta Pressure
OPOV Actuator Position

SAFD requested cut (cut was disabled) intermittently during the test when 3 or more of the above parameters indicated out of limits simultaneously.

The data indicates that some of the adaptation data was wrong for the two second calculation interval and/or the steady state interval for the above parameters. This resulted in the limits being set too tight.

TTB-039

The following parameters indicated out of limits intermittently during the test:

HPOTP Boost Pump Discharge Pressure
HPFTP Coolant Liner Pressure
HEX Bypass Mix Temperature
HEX Venturi Delta Pressure
FPOV Actuator Position
OPOV Actuator Position
HPFTP Discharge Pressure
Fuel Flow

Again, SAFD requested cut (cut was disabled) intermittently during the test due to the adaptation data causing the limits to be set too tight for the above parameters.

TTB-040

The following parameters indicated out of limits during the test:

HEX Venturi Delta Pressure
Fuel Flow
MCC Pc
HPFTP Discharge Pressure
HPFTP Coolant Liner Pressure
HPOTP ISP Pressure
HPOTP Discharge Pressure

During the test, only HEX Venturi Delta Pressure and HPOTP ISP Pressure were intermittently bouncing out of limits. The other parameters showed out of limits only twice; both times were during a first instance check. As a result of the parameters going out of limits,

SAFD requested cut twice during the test; both times at a first instance check.

TTB-041

As a result of the problems defining adaptation data for the first instance and two second calculation interval, the algorithm was changed to allow setting these limits independently. The new algorithm (version 3.1) was used on this test and no parameters indicated out of limits.

TTB-042

HPFTP Coolant Liner Pressure intermittently indicated out of limits during this test. SAFD did not request cut.

TTB-043

MCC Liner Cavity Pressure and HEX Bypass Mix Temperature intermittently indicated out of limits during this test. SAFD did not request cut.

TTB-044

There were problems calibrating during this test and, as a result, two of the facility parameters indicated out of limits intermittently during the test. HPOTP Secondary Seal Cavity Pressure, which is not a facility parameter, also intermittently indicated out of limits during this test. SAFD did not request cut.

3.4.2 TTB Test Conclusions

The adaptation data is critical to the operation of the algorithm. Generating the adaptation data is not yet a formal process and is based largely on engineering judgment and experience. Further testing against failure cases may show that the limits need not be adjusted as tightly as they were on the TTB tests thus making generation of adaptation data less critical.

3.5 Hot Fire Data Analysis

In order to assess the validity of the statistical approach used in the algorithm, Rocketdyne personnel examined data from successful hot fire tests. The data from this analysis is included in Appendix C.

3.5.1 Data Analyzed

Tests having no venting or repressurization and involving 3 engines were selected. From these 14 tests, 17 "steady state" intervals were identified and statistics were obtained from Canoga Park for those intervals.

The mean, standard deviation, maximum parameter value, and minimum parameter value were obtained for each parameter for the first 2 seconds of each interval and for each entire interval. .Using this data, the standard deviations for both the first 2 seconds and for the entire interval were plotted. The minimum N factor (a multiplier for the standard deviation) that would allow all points in the interval to fall within the limits were also calculated. These tables and plots are included in Appendices C1 and C2 respectively.

3.5.2 Analysis Results

Observation indicated that the standard deviation from the first 2 seconds of an interval did not represent an accurate estimate of the standard deviation over the entire interval for all parameters. The parameters where the 2 second standard deviation were not representative of the entire interval include the following:

HPFTP Radial Accel
HPOTP Discharge Pressure
HPOTP ISP Pressure
HPOTP SSC Pressure
MCC Coolant Liner Pressure
HPOTP TDT
HEX Bypass Mix Temperature
HEX Venturi Delta Pressure
OPOV Actuator Position

Currently, statistical techniques are being reviewed to determine a measure of the effectiveness of the 2 second standard deviation as an indicator of standard deviation for the entire interval for each parameter.

3.5.3 Analysis Conclusions

These parameters should be examined in more detail and other tests performed to discover if a reliable indicator for calculating limits can be found for them. It is possible that using more than a two second sample would suffice. In some cases other criteria, such as time, may have to be factored into the equation determining the limits.

3.6 Conclusions

The algorithm performed as expected in the HSL and on the TTB. However, the testing indicated three areas in which the algorithm is vulnerable.

Testing in the HSL and analysis demonstrated the algorithm's sensitivity to DCU power failures and IE failures. Several approaches to remedy this problem will be examined in future testing. This testing also revealed a need for more sophisticated parameter qualification.

Performance on the TTB indicated the critical nature of the adaptation data and emphasized the necessity of ensuring that the adaptation data is correct.

The analysis of successful hot fire tests indicated that use of the standard deviation for the first 2 seconds does not necessarily yield an accurate estimate of its value for the entire interval. For those parameters exhibiting this behavior, alternative methods for determining limits should be explored.

Rocketdyne believes that the SAFD algorithm, with some changes, represents a viable approach to engine health monitoring. It demonstrated greater sensitivity to engine anomalies than the redlines currently being used. Its ability to use and generate limits based on engine operation makes it much more flexible than the current redlines. However, based on test experience, the key to success in use of the current algorithm is in proper generation of the adaptation data.

3.7 Recommendations

Testing in the HSL and at the TTB validated the usefulness of the algorithm. However, this testing also indicated that areas exist that need further work.

Sensor qualification should be modified to guard against sensor failures that would not be caught by a simple limit check. Note that, due to the design of SAFD software, this could be implemented as an independent algorithm supplying data to other algorithms.

Currently, the adaptation data is acquired and entered in an informal fashion. If the decision is made to activate the current algorithm (enable cutoff), formal procedures should be established with the appropriate cross checks to ensure that the proper adaptation data is generated and entered for each test.

Further testing and analysis of discriminators for determining failing engines is needed. This testing should focus on factors that indicate impending catastrophic failures with the idea of continuing operation in a degraded mode. There are over 490 SSME tests with premature shutdowns. These should be analyzed to obtain a better understanding of what factors can predict engine failures. During this analysis, NASA and Rocketdyne Engine Systems personnel should be consulted to aid in evaluating the data.

4 Other Algorithms

The SAFD platform was designed to accommodate multiple algorithms. The decision to do so was based on the fact that other algorithms were being developed through LeRC and they would require a platform. Designing the platform to accommodate multiple algorithms saves money by eliminating the need for a computer system per algorithm and reduces the complexity of the facility by only requiring one connection per parameter rather than requiring one connection per parameter per algorithm.

The RESID algorithm, from UTRC, was executed on tests TTB-033 through TTB-039 with no anomalies.

In February 1993 personnel from UTRC and Rocketdyne installed an update to RESID and two additional algorithms, ARMA and Cluster, on the SAFD system in the HSL. Timing tests indicated that the RESID and Cluster algorithms could run with the SAFD algorithm in realtime. The ARMA algorithm requires more processing power than is available with the current SAFD hardware.

None of the new algorithms have been executed on TTB yet. Plans are to install the RESID and Cluster algorithms at TTB.

5 Summary

While the SAFD platform has proven capable of performing its functions, it is limited in processor power. Algorithms already exist which require more processing power than is available with the existing system. With the number and complexity of algorithms increasing, the current platform will need to be upgraded or a new one developed.

The testing has proven valuable in assessing the strengths and weaknesses of the SAFD algorithm. The information gained from this testing can be used to improve the algorithm. Development on the algorithm is continuing and testing should also continue, though it could be done selectively on the existing algorithm. When the new version is implemented, it should be tested in the same ways that the current version was tested.

Additional testing and analysis should be done to gain a better understanding of what parameters can provide indications of impending engine failure and what those indications are. NASA and Rocketdyne Engine Systems personnel should be consulted during the analysis to assist in evaluating the results of the testing and analysis.

In addition to testing and analyzing the SAFD algorithm, other available algorithms should be examined to determine whether ideas from several of the algorithms could be integrated to produce a superior solution.

6 Acronyms

DCU	Digital Computer Unit
CADS	Command And Data Simulator
CPU	Computer Processing Unit
FPOV	Fuel Preburner Oxidizer Valve
FY	Fiscal Year
GMT	Greenwich Mean Time
GOX	Gaseous Oxygen
HEX	Heat Exchanger
HPFTP	High Pressure Fuel Turbopump
HPOTP	High Pressure Oxidizer Turbopump
HSL	Hardware Simulation Laboratory
IE	Input Electronics
ISP	Intermediate Seal Purge
I/O	Input/Output
LeRC	Lewis Research Center
LOX	Liquid Oxygen
LPFTP	Low Pressure Fuel Turbopump
LPOTP	Low Pressure Oxidizer Turbopump
MB	Megabyte
MCC Pc	Main Combustion Chamber Chamber Pressure
MHz	Megahertz
MSFC	Marshall Space Flight Center
NASA	National Aeronautics and Space Administration
OE	Output Electronics
OPOV	Oxidizer Preburner Oxidizer Valve
PBP	Preburner Pump
SAFD	System for Anomaly and Failure Detection
SIU	Signal Interface Unit
SPR	System Problem Report
SSC	Secondary Seal Cavity
SSME	Space Shuttle Main Engine
SSMEC	Space Shuttle Main Engine
STA	Special Task Assignment
TCG	Time Code Generator
TDT	Turbine Discharge Temperature
TTB	Technology Test Bed
UTRC	United Technologies Research Center
VDT	Vehicle Data Table

Appendix A - Offline Hot Fire Testing

Appendix A1 - Test 901-173

SAFD SD @ 201.00
REDLINE SD @ 201.17

Analysis of safdalg_3

safdalg_3

Time	Parameter
MS:NM-98.84 to MS:NM-98.88	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-165.64 to MS:NM-165.80	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-176.16 to MS:NM-176.32	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-193.04	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-193.92 to MS:NM-193.96	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-194.20 to MS:NM-194.44	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-195.48 to MS:NM-195.68	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-196.32	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-196.84 to MS:NM-196.88	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-197.48 to MS:NM-197.52	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-198.60 to MS:NM-198.72	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-199.88 to MS:NM-199.96	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-200.00 to MS:NM-200.08	HPFTP_RADIAL_ACCEL_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-200.12 to MS:NM-200.24	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-200.92	HPFTP_RADIAL_ACCEL_RUNAVG
MS:NM-200.96	HPFTP_RADIAL_ACCEL_RUNAVG

MCC_PRESSURE_RUNAVG

MS:NM-201.00
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
MCC_PRESSURE_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FUEL_FLOWMETER_RUNAVG

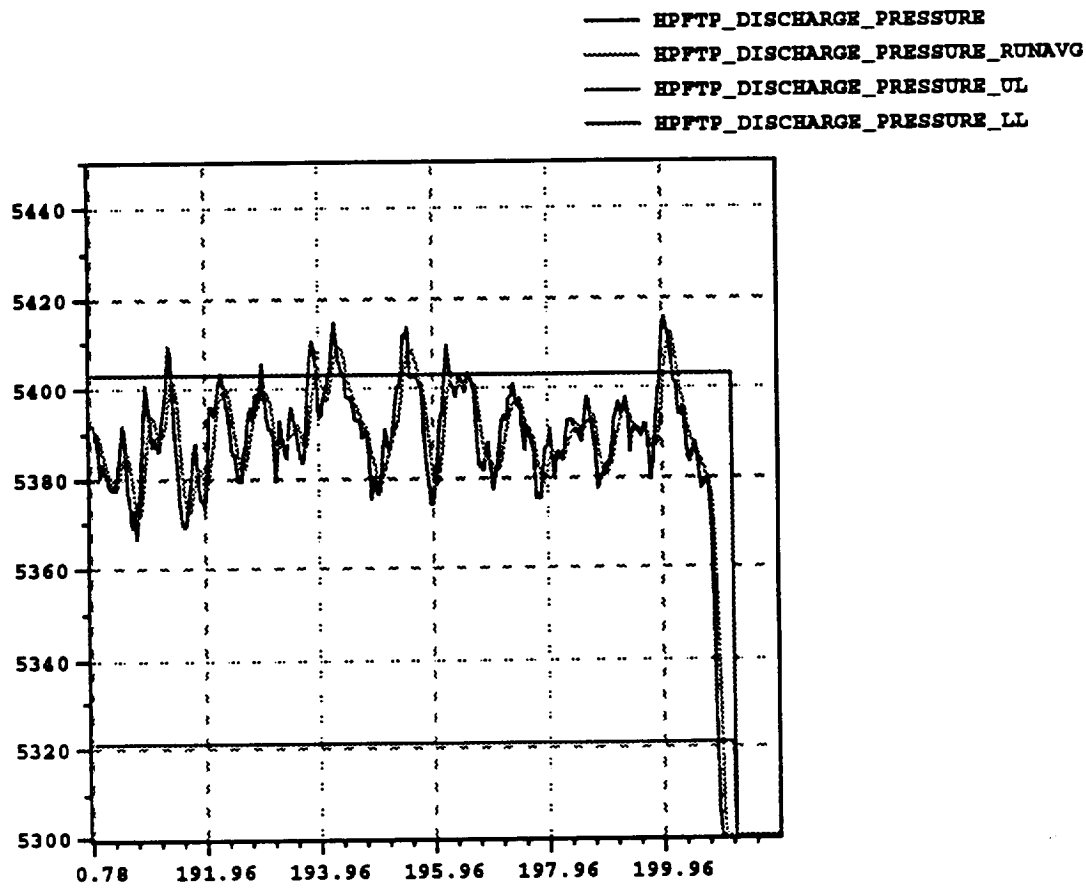
Cause of Shutdown

MS:NM-201.04
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_DISCHARGE_PRESSURE_RUNAVG
MCC_PRESSURE_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-201.08 to MS:NM-201.12
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_DISCHARGE_PRESSURE_RUNAVG
MCC_PRESSURE_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-201.16
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_DISCHARGE_PRESSURE_RUNAVG
MCC_PRESSURE_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FUEL_FLOWMETER_RUNAVG

SD:TZ- 0.02 to SD:TZ- 0.78
SAFD_CUTOFF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HPFTP_DISCHARGE_PRESSURE_LL
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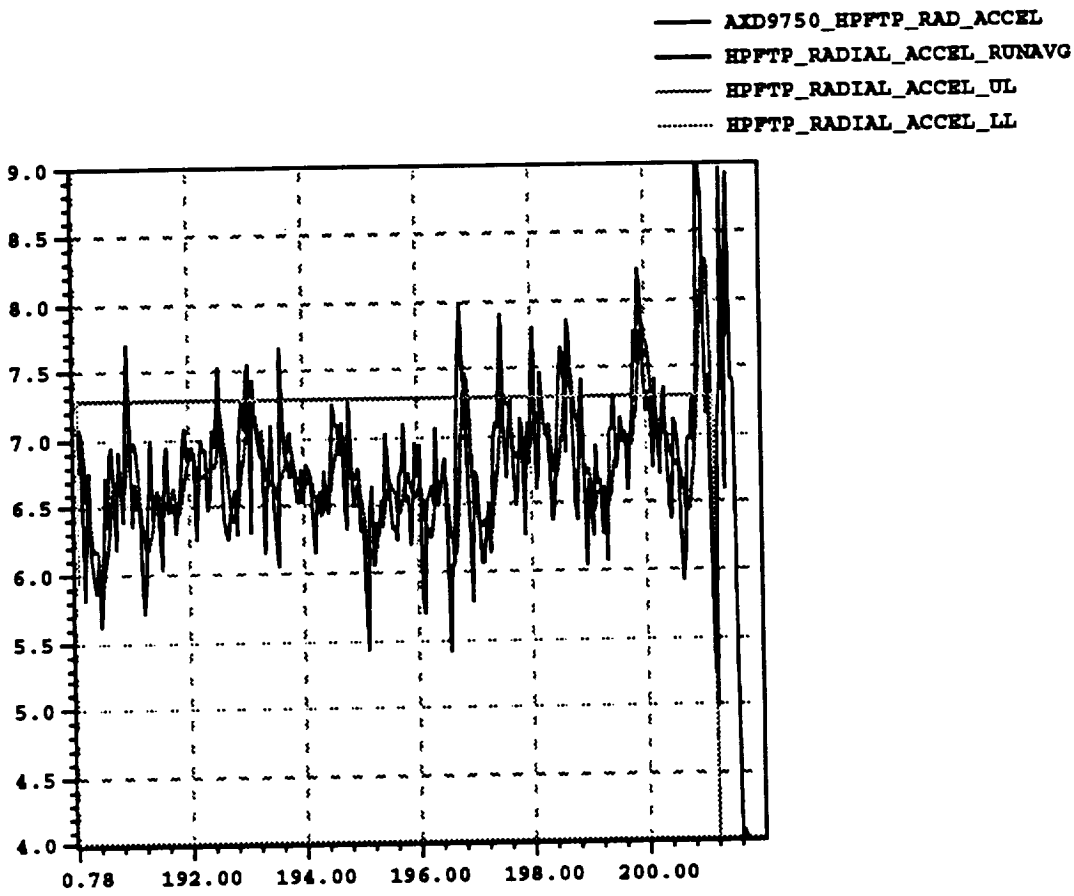
197.96
199.96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HPFTP_RADIAL_ACCEL_LL
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8.0
7.5
7.0
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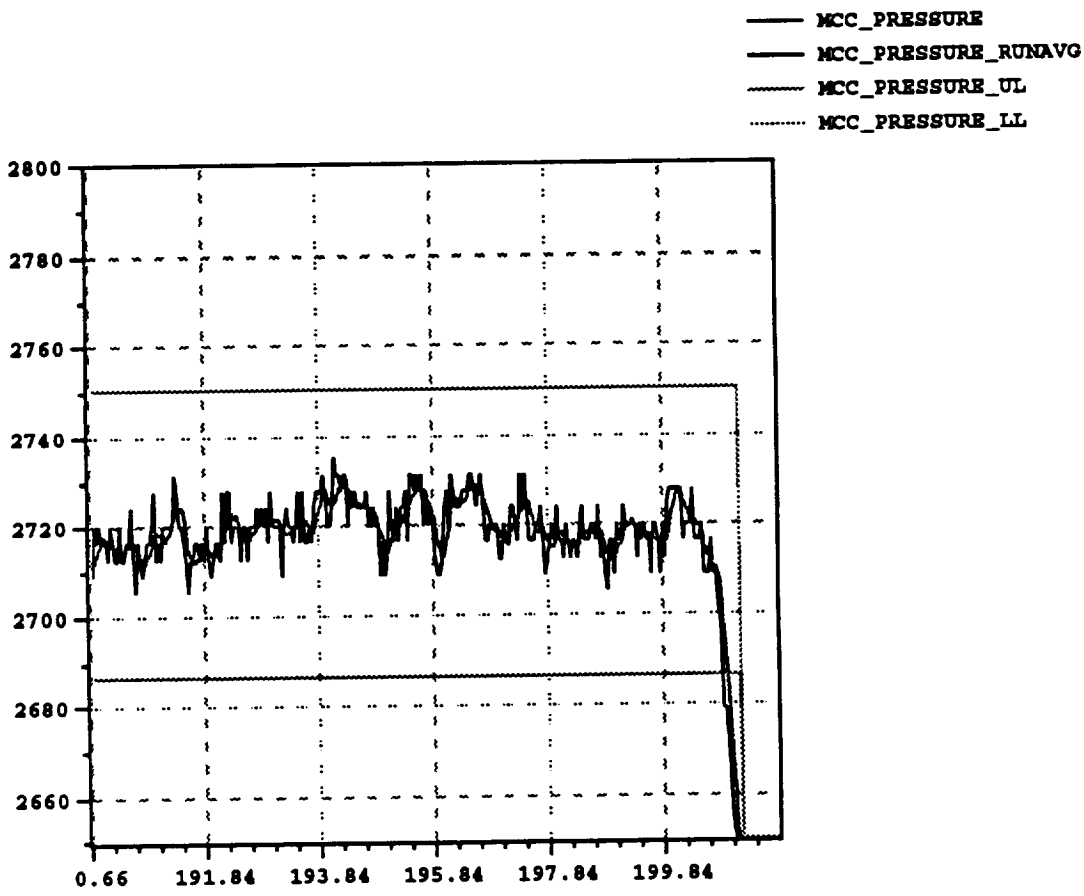
200.00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MCC_PRESSURE_UL
MCC_PRESSURE_LL
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191.84
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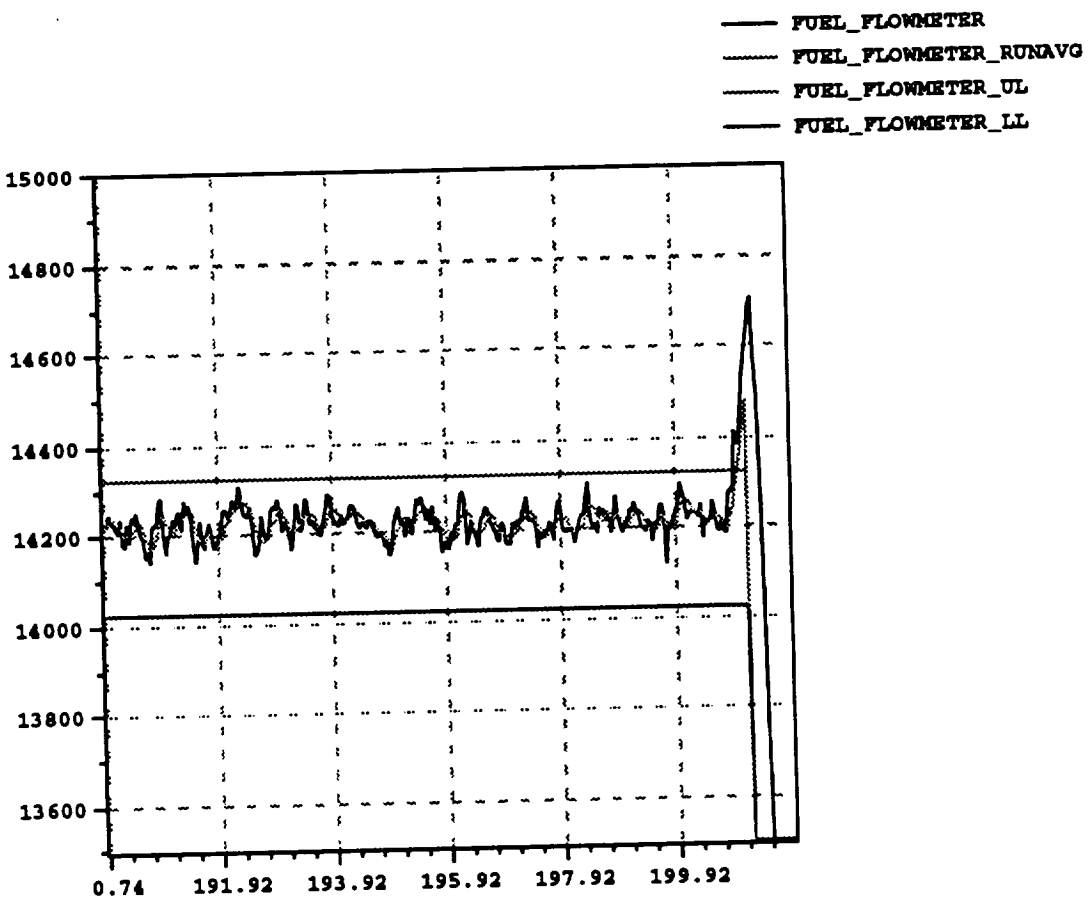
197.84
199.84


FUEL_FLOWMETER
FUEL_FLOWMETER_RUNAVG
FUEL_FLOWMETER_UL
FUEL_FLOWMETER_LL
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14800
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13800
13600
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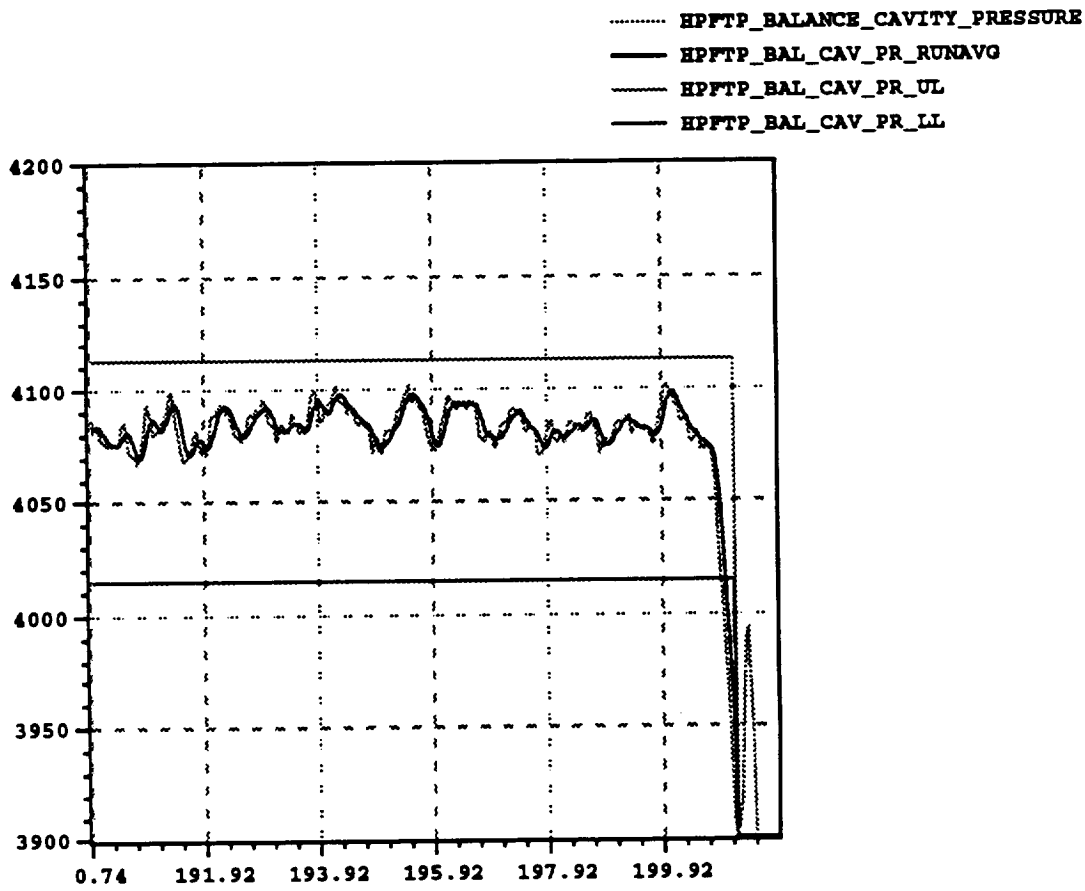
193.92
195.92
197.92
199.92

RSS-9825-51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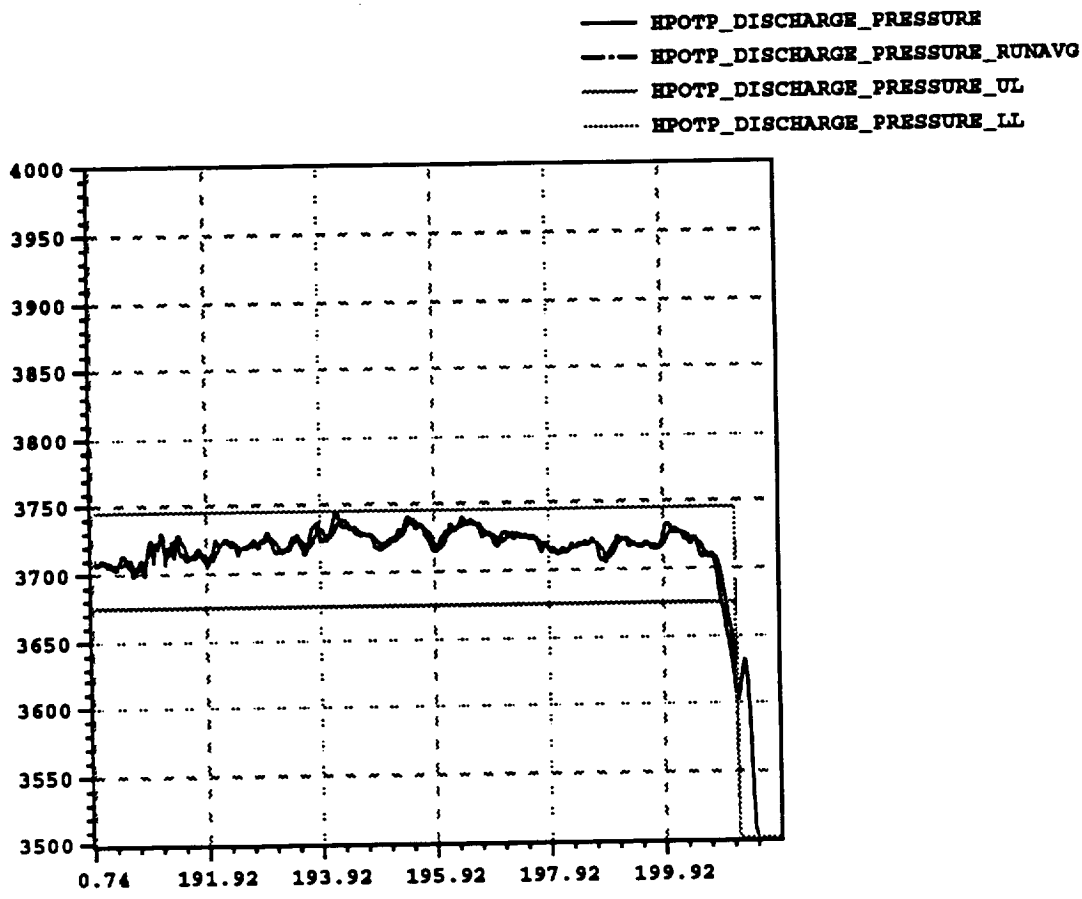
193.92
195.92
197.92
199.92

RSS-8825-51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HPOTP_DISCHARGE_PRESSURE_UL
HPOTP_DISCHARGE_PRESSURE_LL
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3900
3850
3800
3750
3700
3650
3600
3550
3500
0.74
191.92
193.92
195.92
197.92
199.92

RSS-8825-51

Appendix A2 - Test 902-249

Analysis of safdalg_3.T

safdalg_3.A

Time	Parameter
MS:NM-284.32 to MS:NM-284.48	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-285.84 to MS:NM-286.16	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-286.24 to MS:NM-286.36	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-287.72 to MS:NM-288.24	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-288.52 to MS:NM-288.72	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-289.60 to MS:NM-290.00	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-290.16 to MS:NM-291.28	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-291.64 to MS:NM-291.88	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-292.00 to MS:NM-292.28	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-292.52 to MS:NM-292.60	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-292.80 to MS:NM-293.24	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-293.48 to MS:NM-294.40	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-294.60 to MS:NM-294.72	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-295.16 to MS:NM-295.80	HPFTP_COOLANT_LINER_PR_RUNAVG
MS:NM-301.00 to MS:NM-301.04	HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-312.20 to MS:NM-313.60
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-313.68 to MS:NM-314.72
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-320.40 to MS:NM-320.60
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-329.16 to MS:NM-329.44
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-329.64 to MS:NM-330.00
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-330.04 to MS:NM-330.60
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-330.64 to MS:NM-330.96
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-331.00 to MS:NM-331.60
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-331.64 to MS:NM-331.84
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-331.88 to MS:NM-332.12
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-332.16 to MS:NM-332.24
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-332.28 to MS:NM-333.48
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-333.52 to MS:NM-333.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-333.72 to MS:NM-333.92
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-333.96 to MS:NM-334.28
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-334.32 to MS:NM-334.48
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-334.52 to MS:NM-335.20
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-335.24 to MS:NM-335.28
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-335.32 to MS:NM-335.48
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-335.52 to MS:NM-335.56
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-335.60 to MS:NM-335.88
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-335.92 to MS:NM-336.72
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-336.76 to MS:NM-337.24
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-337.28 to MS:NM-337.84
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-337.88 to MS:NM-338.04
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-338.08 to MS:NM-338.12
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-338.16 to MS:NM-338.64
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-338.68 to MS:NM-338.84
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-338.88 to MS:NM-339.16
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-339.20 to MS:NM-339.32
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-339.36 to MS:NM-339.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-339.72 to MS:NM-340.20
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-340.24 to MS:NM-340.40
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-340.44 to MS:NM-340.48
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-340.52 to MS:NM-340.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-340.72 to MS:NM-340.76
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-340.80 to MS:NM-341.00
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-341.04 to MS:NM-341.88
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-341.92 to MS:NM-342.08
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-342.12 to MS:NM-343.52
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-343.56 to MS:NM-343.72
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-343.76 to MS:NM-343.96
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-344.00 to MS:NM-344.04
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-344.08
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-344.12 to MS:NM-344.16
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-344.20 to MS:NM-345.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-345.04 to MS:NM-345.08
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-345.12 to MS:NM-345.28
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-345.32 to MS:NM-345.48
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-345.52 to MS:NM-346.92
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-346.96 to MS:NM-347.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-347.04 to MS:NM-347.12
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-347.16 to MS:NM-348.60
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-348.64 to MS:NM-348.72
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-348.76 to MS:NM-349.72
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-349.76 to MS:NM-350.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-350.04 to MS:NM-350.28
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-350.32 to MS:NM-350.48
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-350.52 to MS:NM-350.64
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-350.68
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-350.72 to MS:NM-351.00
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-351.04 to MS:NM-351.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-351.16 to MS:NM-351.32
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-351.36 to MS:NM-351.72
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-351.76 to MS:NM-351.80
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-351.84
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-351.88 to MS:NM-351.92
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-351.96 to MS:NM-352.12
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-352.16 to MS:NM-352.36
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-352.40
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-352.44 to MS:NM-352.60
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-352.64 to MS:NM-352.76
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-352.80 to MS:NM-352.88
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-352.92 to MS:NM-353.08
            SAFD_CUTOFF
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            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-353.12 to MS:NM-353.16
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-353.20 to MS:NM-353.24
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-353.28 to MS:NM-353.44
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-353.48 to MS:NM-353.88
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-353.92 to MS:NM-354.40
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-354.44
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-354.48 to MS:NM-354.56
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-354.60
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-354.64 to MS:NM-354.92
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-354.96 to MS:NM-355.00
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
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HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-355.04 to MS:NM-355.08
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-355.12 to MS:NM-355.28
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-355.32 to MS:NM-355.80
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-355.84 to MS:NM-356.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-356.04 to MS:NM-356.12
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-356.16 to MS:NM-356.36
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-356.40 to MS:NM-356.64
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-356.68 to MS:NM-356.80
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-356.84 to MS:NM-357.84
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-357.88
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-357.92 to MS:NM-358.92
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-358.96 to MS:NM-359.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-359.16 to MS:NM-359.28
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-359.32 to MS:NM-359.48
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-359.52 to MS:NM-360.32
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-360.36 to MS:NM-360.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-360.56
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-360.60 to MS:NM-360.76
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-360.80 to MS:NM-361.80
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-361.84 to MS:NM-361.92
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-361.96 to MS:NM-363.08
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-363.12 to MS:NM-363.44

HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-363.48 to MS:NM-364.80
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-364.84 to MS:NM-365.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-365.04
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-365.08 to MS:NM-365.56
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-365.60 to MS:NM-365.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-365.72 to MS:NM-365.76
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-365.80 to MS:NM-365.96
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-366.00 to MS:NM-366.32
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-366.36 to MS:NM-366.44
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-366.48 to MS:NM-366.92
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-366.96 to MS:NM-367.24
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-367.28 to MS:NM-368.20
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-368.24
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-368.28 to MS:NM-368.80
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-368.84 to MS:NM-369.00
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-369.04

HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-369.08 to MS:NM-369.24
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-369.28
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-369.32
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

MS:NM-369.36 to MS:NM-369.52
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-369.56 to MS:NM-369.60
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-369.64 to MS:NM-370.04
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-370.08
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-370.12 to MS:NM-370.28
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-370.32 to MS:NM-370.48
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-370.52 to MS:NM-370.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-370.60 to MS:NM-370.76
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

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MS:NM-370.80 to MS:NM-370.84
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-370.88 to MS:NM-370.92
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-370.96 to MS:NM-371.12
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-371.16
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-371.20 to MS:NM-371.76
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-371.80 to MS:NM-372.28
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-372.32
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-372.36
        SAFD_CUTOFF
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-372.40 to MS:NM-372.52
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-372.56
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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        FPOV_ACT_POSITION_RUNAVG

MS:NM-372.60 to MS:NM-372.72
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-372.76 to MS:NM-372.80
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-372.84 to MS:NM-372.92
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-372.96 to MS:NM-373.04
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-373.08
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-373.12 to MS:NM-373.28
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-373.32
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-373.36 to MS:NM-373.64
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-373.68 to MS:NM-374.00
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
        HPFTP_COOLANT_LINER_PR_RUNAVG
        FPOV_ACT_POSITION_RUNAVG

MS:NM-374.04 to MS:NM-374.16
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
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            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-374.20 to MS:NM-374.28
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-374.32 to MS:NM-374.40
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-374.44 to MS:NM-374.60
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-374.64 to MS:NM-374.80
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-374.84 to MS:NM-374.88
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-374.92 to MS:NM-374.96
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-375.00 to MS:NM-375.16
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-375.20 to MS:NM-375.24
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            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-375.28 to MS:NM-375.76
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-375.80 to MS:NM-376.04
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-376.08
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-376.12 to MS:NM-376.64
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-376.68 to MS:NM-376.84
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-376.88 to MS:NM-376.92
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-376.96 to MS:NM-377.32
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-377.36
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-377.40 to MS:NM-379.12
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SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-379.16 to MS:NM-379.20
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-379.24 to MS:NM-381.40
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-381.44 to MS:NM-381.76
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-381.80 to MS:NM-382.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-382.04 to MS:NM-382.52
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-382.56 to MS:NM-382.80
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-382.84 to MS:NM-383.00
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-383.04 to MS:NM-383.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-383.56 to MS:NM-383.72
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-383.76 to MS:NM-384.44
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-384.48 to MS:NM-384.64
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-384.68 to MS:NM-384.76
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-384.80 to MS:NM-384.92
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-384.96 to MS:NM-385.16
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-385.20 to MS:NM-385.24
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-385.28 to MS:NM-385.60
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-385.64 to MS:NM-385.80
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-385.84 to MS:NM-386.12
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-386.16 to MS:NM-386.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-386.72 to MS:NM-387.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-387.60 to MS:NM-387.64
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-387.68 to MS:NM-388.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-388.04 to MS:NM-388.60
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-388.64
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-388.68
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-388.72 to MS:NM-388.76
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-388.80 to MS:NM-388.84
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-388.88 to MS:NM-389.84

RSS-8825-51

SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-389.88 to MS:NM-389.96
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-390.00 to MS:NM-390.80
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-390.84 to MS:NM-390.96
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-391.00 to MS:NM-391.04
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-391.08 to MS:NM-391.44
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-391.48 to MS:NM-391.92
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-391.96 to MS:NM-392.04
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-392.08
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-392.12 to MS:NM-392.44
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-392.48 to MS:NM-393.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-393.24 to MS:NM-393.32
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-393.36 to MS:NM-393.52
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-393.56 to MS:NM-393.92
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-393.96 to MS:NM-394.60
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-394.64 to MS:NM-394.76
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-394.80 to MS:NM-395.40
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG

        MS:NM-395.44
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

        MS:NM-395.48 to MS:NM-396.40
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-396.44 to MS:NM-397.04
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-397.08 to MS:NM-397.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-397.16 to MS:NM-398.16
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-398.20 to MS:NM-398.24
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-398.28 to MS:NM-398.48
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-398.52 to MS:NM-398.60
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-398.64 to MS:NM-398.80
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-398.84 to MS:NM-399.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG

HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-399.04 to MS:NM-399.20
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-399.24 to MS:NM-399.44
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-399.48 to MS:NM-399.60
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-399.64 to MS:NM-401.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-401.16 to MS:NM-401.24
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-401.28
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-401.32 to MS:NM-401.36
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

FPOV_ACT_POSITION_RUNAVG

MS:NM-401.40 to MS:NM-401.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-401.60 to MS:NM-401.84
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-401.88 to MS:NM-402.16
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-402.20 to MS:NM-402.88
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-402.92 to MS:NM-403.12
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-403.16 to MS:NM-403.32
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-403.36 to MS:NM-403.52
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-403.56 to MS:NM-403.64
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-403.68 to MS:NM-403.72
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-403.76 to MS:NM-403.80
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-403.84 to MS:NM-404.16
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-404.20 to MS:NM-404.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-404.36 to MS:NM-404.44
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-404.48 to MS:NM-404.64
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-404.68 to MS:NM-404.80
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-404.84 to MS:NM-404.88
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-404.92 to MS:NM-405.12
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-405.16
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-405.20 to MS:NM-405.28
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-405.32 to MS:NM-405.56
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-405.60 to MS:NM-406.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-406.36 to MS:NM-406.40
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG

MS:NM-406.44 to MS:NM-406.48
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

MS:NM-406.52 to MS:NM-406.68
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-406.72
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-406.76 to MS:NM-407.00

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            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-407.04 to MS:NM-407.20
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-407.24 to MS:NM-407.56
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-407.60 to MS:NM-408.84
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-408.88 to MS:NM-409.00
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-409.04 to MS:NM-409.24
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-409.28 to MS:NM-409.36
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-409.40 to MS:NM-409.48
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
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HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-409.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-409.56 to MS:NM-409.92
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-409.96 to MS:NM-410.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-410.04 to MS:NM-410.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-410.36 to MS:NM-410.44
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-410.48 to MS:NM-410.52
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-410.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-410.60 to MS:NM-410.80
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-410.84 to MS:NM-410.88
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-410.92 to MS:NM-411.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-411.24 to MS:NM-411.32
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-411.36 to MS:NM-411.64
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-411.68 to MS:NM-411.96
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-412.00 to MS:NM-412.84
            SAFD_CUTOFF
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            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-412.88 to MS:NM-413.00
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-413.04
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-413.08 to MS:NM-413.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-413.24 to MS:NM-413.52
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-413.56 to MS:NM-413.72
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-413.76 to MS:NM-413.88
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
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            FPOV_ACT_POSITION_RUNAVG

        MS:NM-413.92 to MS:NM-414.12
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-414.16 to MS:NM-414.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-414.24 to MS:NM-414.48
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-414.52 to MS:NM-414.76
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-414.80 to MS:NM-415.16
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-415.20
            SAFD_CUTOFF
            HPOTP_DISCHARGE_PRESSURE_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-415.24
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
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            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

MS:NM-415.28 to MS:NM-415.44
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-415.48 to MS:NM-416.56
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

MS:NM-416.60 to MS:NM-416.72
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-416.76
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

MS:NM-416.80 to MS:NM-416.88
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-416.92 to MS:NM-417.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
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MS:NM-417.24 to MS:NM-417.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-417.68 to MS:NM-417.92
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-417.96 to MS:NM-418.08
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-418.12 to MS:NM-418.96
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-419.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-419.04
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-419.08
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-419.12 to MS:NM-419.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-419.36 to MS:NM-419.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-419.68
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-419.72 to MS:NM-419.92
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-419.96 to MS:NM-420.04
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-420.08 to MS:NM-420.32
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-420.36 to MS:NM-420.80

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            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-420.84 to MS:NM-420.88
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-420.92
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-420.96 to MS:NM-421.04
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-421.08 to MS:NM-421.16
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-421.20 to MS:NM-421.24
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-421.28
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
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FPOV_ACT_POSITION_RUNAVG

MS:NM-421.32
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-421.36 to MS:NM-421.48
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-421.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-421.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-421.60
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-421.64 to MS:NM-421.88
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-421.92 to MS:NM-422.16
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-422.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-422.24
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-422.28 to MS:NM-422.44
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-422.48
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-422.52
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-422.56 to MS:NM-422.76
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG
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MS:NM-422.80 to MS:NM-423.24
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-423.28 to MS:NM-423.40
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-423.44 to MS:NM-424.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-424.16 to MS:NM-424.84
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-424.88 to MS:NM-425.08
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-425.12 to MS:NM-425.48
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-425.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-425.56
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-425.60 to MS:NM-426.20
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-426.24 to MS:NM-426.28
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-426.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-426.36 to MS:NM-426.68
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-426.72 to MS:NM-426.92
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-426.96 to MS:NM-427.44

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SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-427.48 to MS:NM-427.52
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-427.56 to MS:NM-427.76
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-427.80 to MS:NM-428.12
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-428.16 to MS:NM-428.48
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-428.52 to MS:NM-428.88
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-428.92 to MS:NM-429.00
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-429.04 to MS:NM-429.20
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-429.24 to MS:NM-429.48
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-429.52 to MS:NM-429.64
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-429.68 to MS:NM-429.96
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-430.00 to MS:NM-430.08
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-430.12
            SAFD_CUTOFF
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-430.16
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-430.20
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-430.24
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-430.28 to MS:NM-430.48
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-430.52 to MS:NM-430.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-430.68 to MS:NM-430.84
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-430.88 to MS:NM-431.00
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-431.04 to MS:NM-431.20
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-431.24 to MS:NM-431.52
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-431.56 to MS:NM-431.72
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-431.76 to MS:NM-432.28
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-432.32 to MS:NM-432.44
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

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            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-432.48 to MS:NM-432.76
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-432.80
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-432.84 to MS:NM-432.96
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-433.00 to MS:NM-433.28
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-433.32 to MS:NM-434.32
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

        MS:NM-434.36
            SAFD_CUTOFF
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HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-434.40
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-434.44
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-434.48 to MS:NM-434.80
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-434.84 to MS:NM-435.04
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-435.08 to MS:NM-435.28
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

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            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-435.32 to MS:NM-435.72
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-435.76
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-435.80 to MS:NM-436.04
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-436.08 to MS:NM-436.24
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-436.28 to MS:NM-436.44
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG
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MS:NM-436.48
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-436.52 to MS:NM-436.76
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-436.80
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-436.84
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-436.88 to MS:NM-437.04
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.08 to MS:NM-437.12
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG

HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.16
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.20 to MS:NM-437.32
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.36
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.40
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.44 to MS:NM-437.72
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.76
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-437.80 to MS:NM-438.00
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-438.04 to MS:NM-438.16
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-438.20
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-438.24 to MS:NM-438.36
SAFD_CUTOFF
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

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MS:NM-438.40 to MS:NM-438.88
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-438.92 to MS:NM-439.00
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-439.04 to MS:NM-439.08
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-439.12
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-439.16 to MS:NM-439.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

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FUEL_FLOWMETER_RUNAVG

MS:NM-439.68
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-439.72 to MS:NM-439.84
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-439.88 to MS:NM-440.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-440.68
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-440.72 to MS:NM-442.88
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-442.92 to MS:NM-443.60
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-443.64
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-443.68 to MS:NM-444.12
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-444.16 to MS:NM-444.20
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-444.24 to MS:NM-444.28
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-444.32
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-444.36 to MS:NM-444.96
SAFD_CUTOFF

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            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-445.00
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-445.04 to MS:NM-445.40
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-445.44
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-445.48
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-445.52
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
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HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-445.56 to MS:NM-445.60
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-445.64 to MS:NM-445.76
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-445.80 to MS:NM-445.84
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-445.88 to MS:NM-446.16
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

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MS:NM-446.20 to MS:NM-446.64
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-446.68
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-446.72
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-446.76 to MS:NM-446.80
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_DISCHARGE_PRESSURE_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-446.84 to MS:NM-447.28
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG

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            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-447.32
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-447.36 to MS:NM-447.48
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-447.52 to MS:NM-447.56
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

MS:NM-447.60 to MS:NM-447.64
            SAFD_CUTOFF
            HPFTP_RADIAL_ACCEL_RUNAVG
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_DISCHARGE_PRESSURE_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-447.68
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-447.72
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_DISCHARGE_PRESSURE_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-447.76 to MS:NM-447.84
SAFD_CUTOFF
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-447.88 to MS:NM-448.00
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_COOLANT_LINER_PR_RUNAVG
FPOV_ACT_POSITION_RUNAVG

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```
            FUEL_FLOWMETER_RUNAVG

        MS:NM-448.04 to MS:NM-448.60
                SAFD_CUTOFF
                HPFTP_BAL_CAV_PR_RUNAVG
                HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
                LPFTP_SHAFT_SPEED_RUNAVG
                HPFTP_DISCHARGE_PRESSURE_RUNAVG
                FPOV_ACT_POSITION_RUNAVG
                FUEL_FLOWMETER_RUNAVG

        MS:NM-448.64 to MS:NM-448.76
                SAFD_CUTOFF
                HPFTP_BAL_CAV_PR_RUNAVG
                HPOTP_DISCHARGE_PRESSURE_RUNAVG
                HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
                LPFTP_SHAFT_SPEED_RUNAVG
                HPFTP_DISCHARGE_PRESSURE_RUNAVG
                FPOV_ACT_POSITION_RUNAVG
                FUEL_FLOWMETER_RUNAVG

        MS:NM-448.80 to MS:NM-449.00
                SAFD_CUTOFF
                HPFTP_BAL_CAV_PR_RUNAVG
                HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
                LPFTP_SHAFT_SPEED_RUNAVG
                HPFTP_DISCHARGE_PRESSURE_RUNAVG
                FPOV_ACT_POSITION_RUNAVG
                FUEL_FLOWMETER_RUNAVG

        MS:NM-449.04 to MS:NM-449.08
                SAFD_CUTOFF
                HPFTP_BAL_CAV_PR_RUNAVG
                HPOTP_DISCHARGE_PRESSURE_RUNAVG
                HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
                LPFTP_SHAFT_SPEED_RUNAVG
                HPFTP_DISCHARGE_PRESSURE_RUNAVG
                FPOV_ACT_POSITION_RUNAVG
                FUEL_FLOWMETER_RUNAVG

        MS:NM-449.12 to MS:NM-449.24
                SAFD_CUTOFF
                HPFTP_BAL_CAV_PR_RUNAVG
                HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
                HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
                LPFTP_SHAFT_SPEED_RUNAVG
                HPFTP_DISCHARGE_PRESSURE_RUNAVG
```

FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-449.28 to MS:NM-449.84
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-449.88 to MS:NM-449.92
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

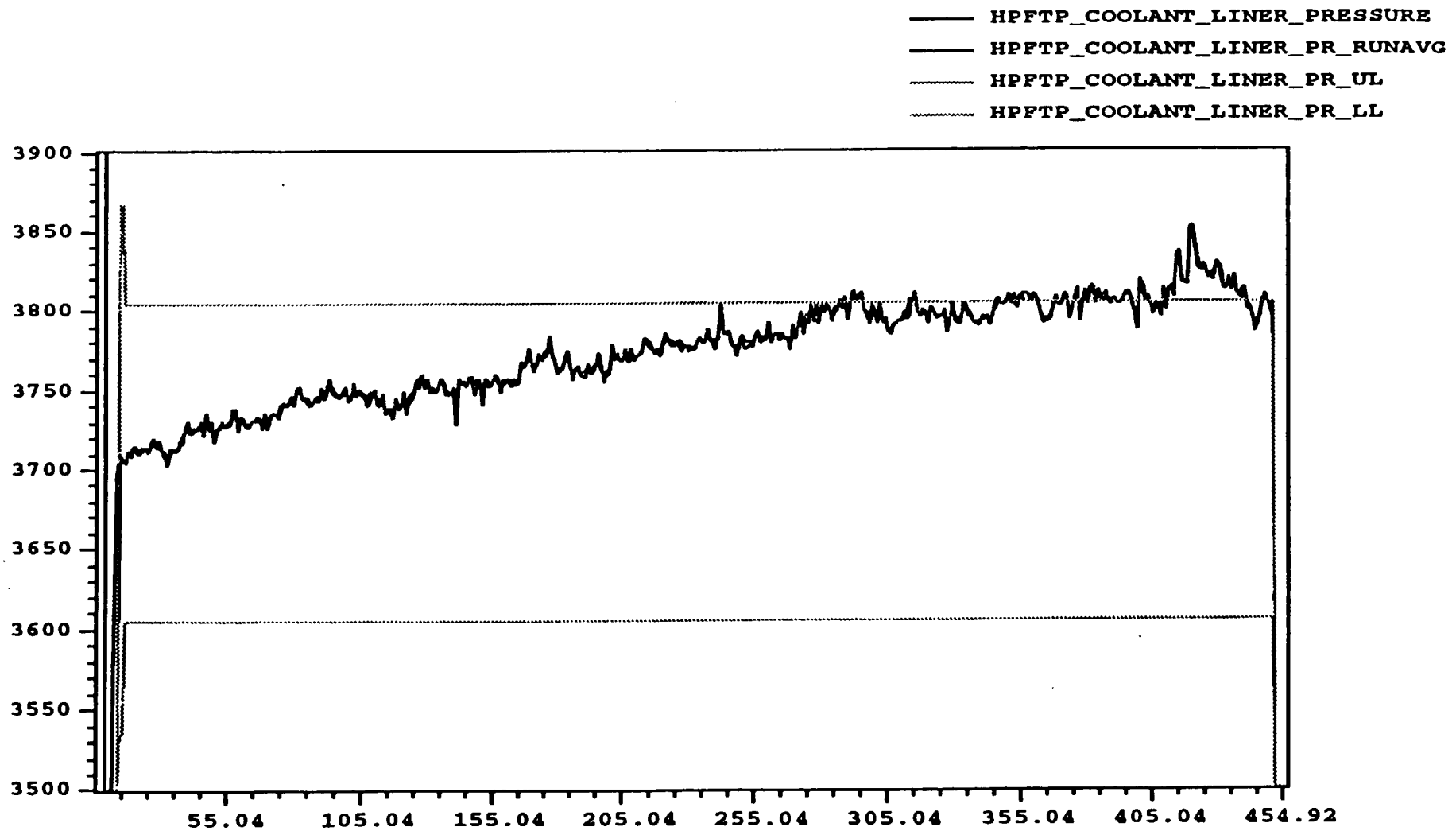
MS:NM-449.96
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-450.00 to MS:NM-450.12
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

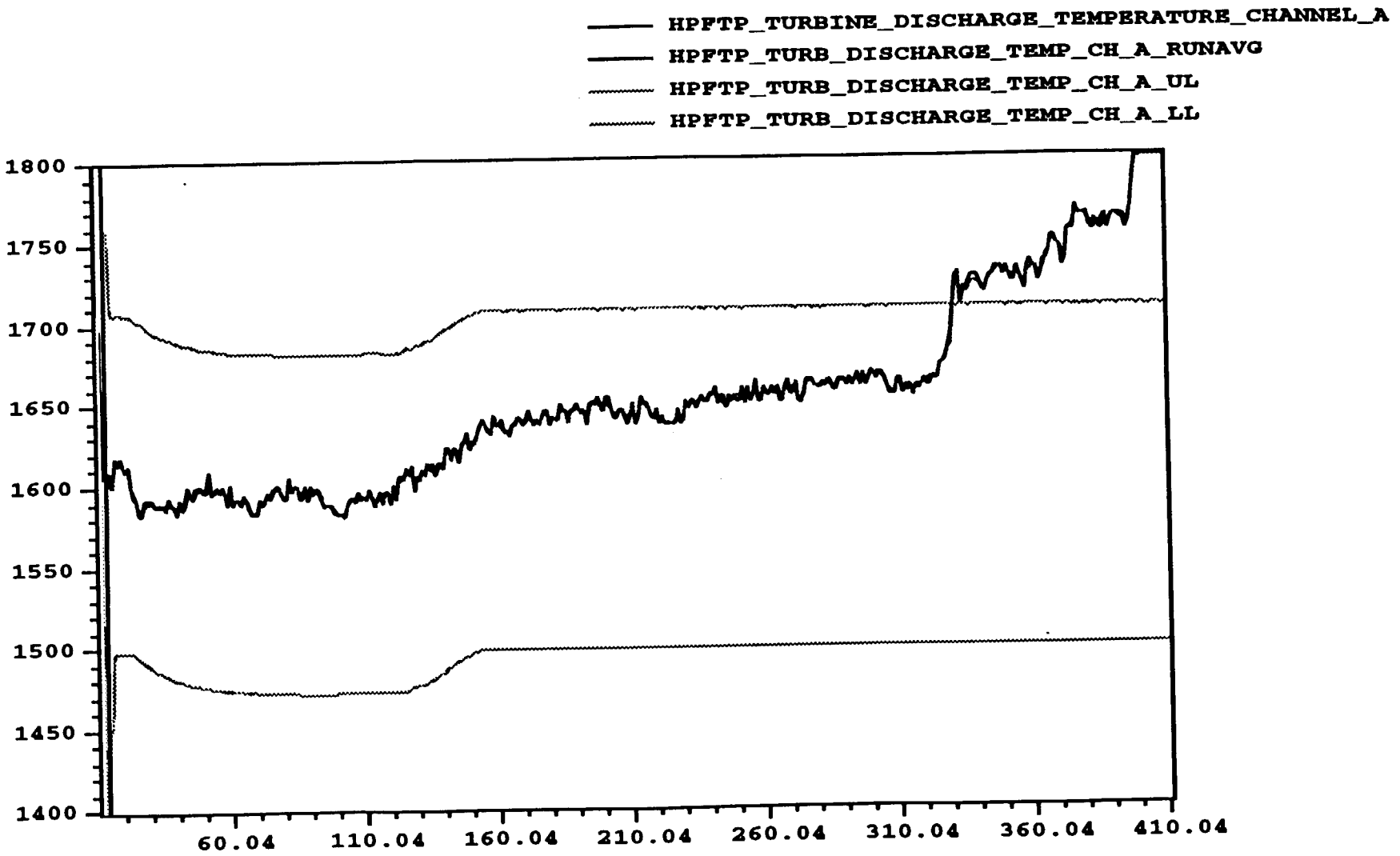
MS:NM-450.16 to MS:NM-450.44
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-450.48
SAFD_CUTOFF
HPFTP_BAL_CAV_PR_RUNAVG

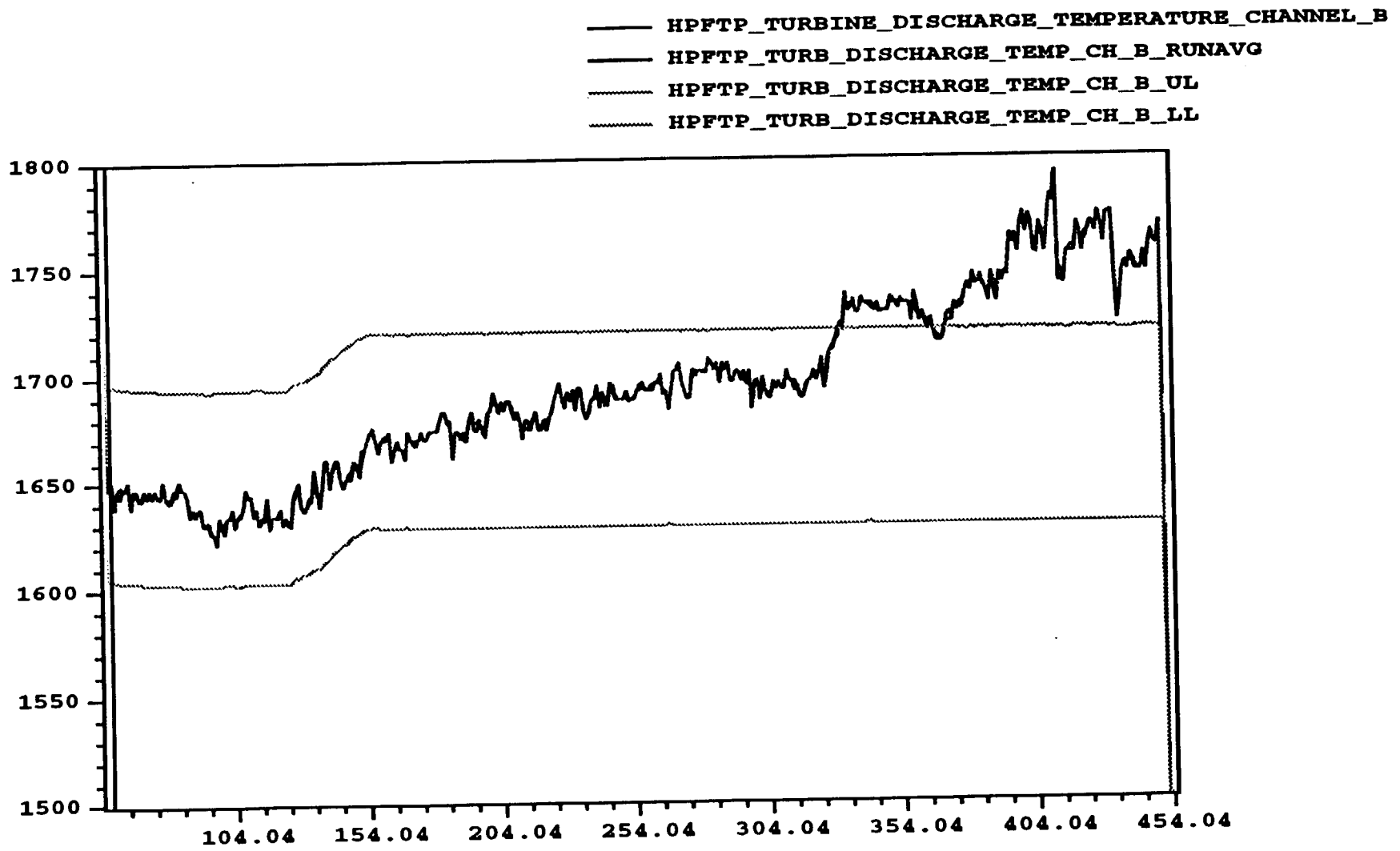
```
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-450.52
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_DISCHARGE_PRESSURE_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
            MCC_PRESSURE_RUNAVG
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG

      MS:NM-450.56
            SAFD_CUTOFF
            HPFTP_BAL_CAV_PR_RUNAVG
            HPOTP_DISCHARGE_PRESSURE_RUNAVG
            HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
            HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
            HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
            MCC_PRESSURE_RUNAVG
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            HPFTP_COOLANT_LINER_PR_RUNAVG
            FPOV_ACT_POSITION_RUNAVG
            FUEL_FLOWMETER_RUNAVG
```


HPFTP_COOLANT_LINER_PRESSURE
HPFTP_COOLANT_LINER_PR_RUNAVG
HPFTP_COOLANT_LINER_PR_UL
HPFTP_COOLANT_LINER_PR_LL
3900
3850
3800
3750
3700
3650
3600
3550
3500
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92

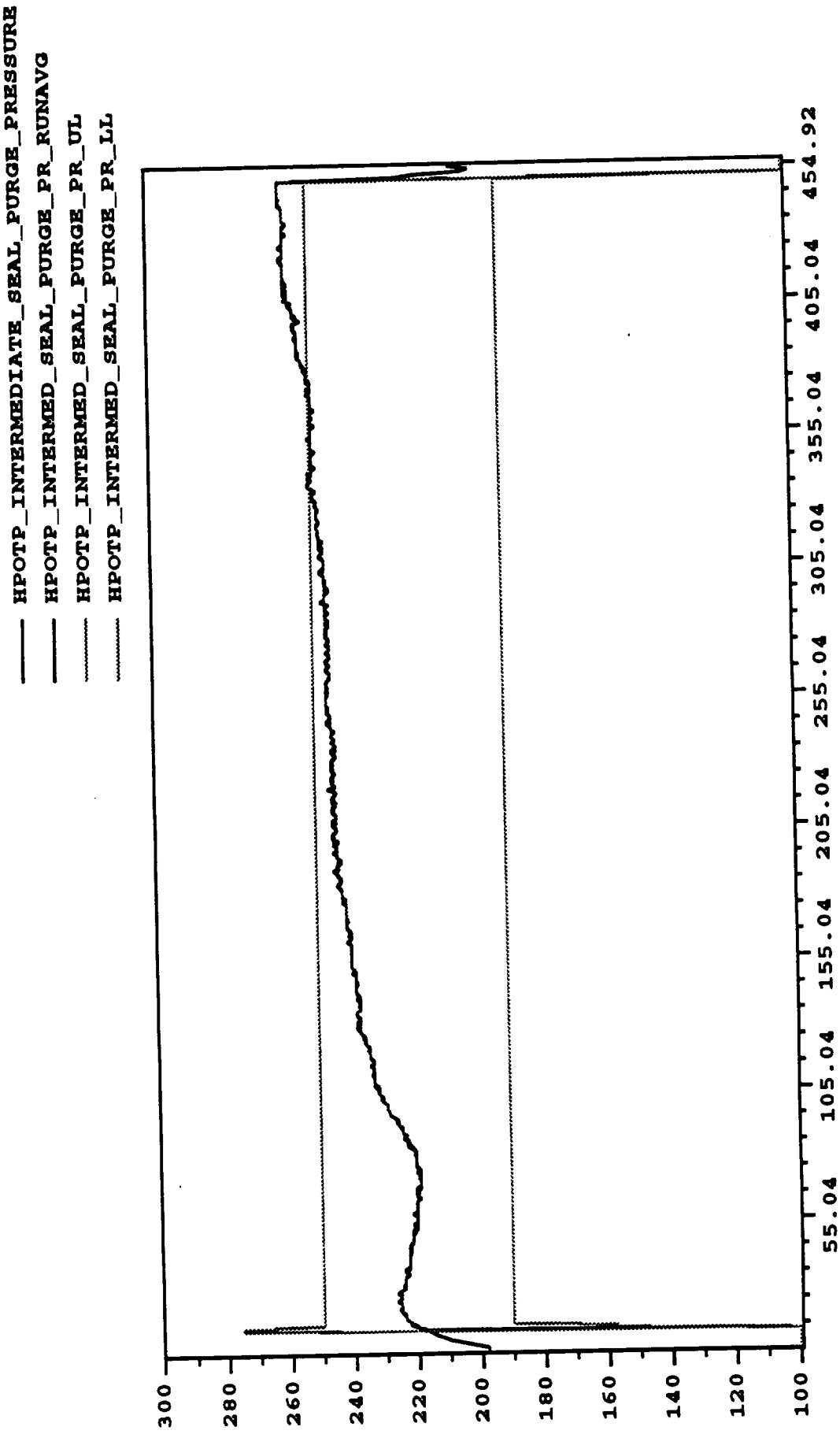
RSS-8825-51


HPFTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_A
HPFTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_A_UL
HPFTP_TURB_DISCHARGE_TEMP_CH_A_LL
1800
1750
1700
1650
1600
1550
1500
1450
1400
60.04
110.04
160.04
210.04
260.04
310.04
360.04
410.04

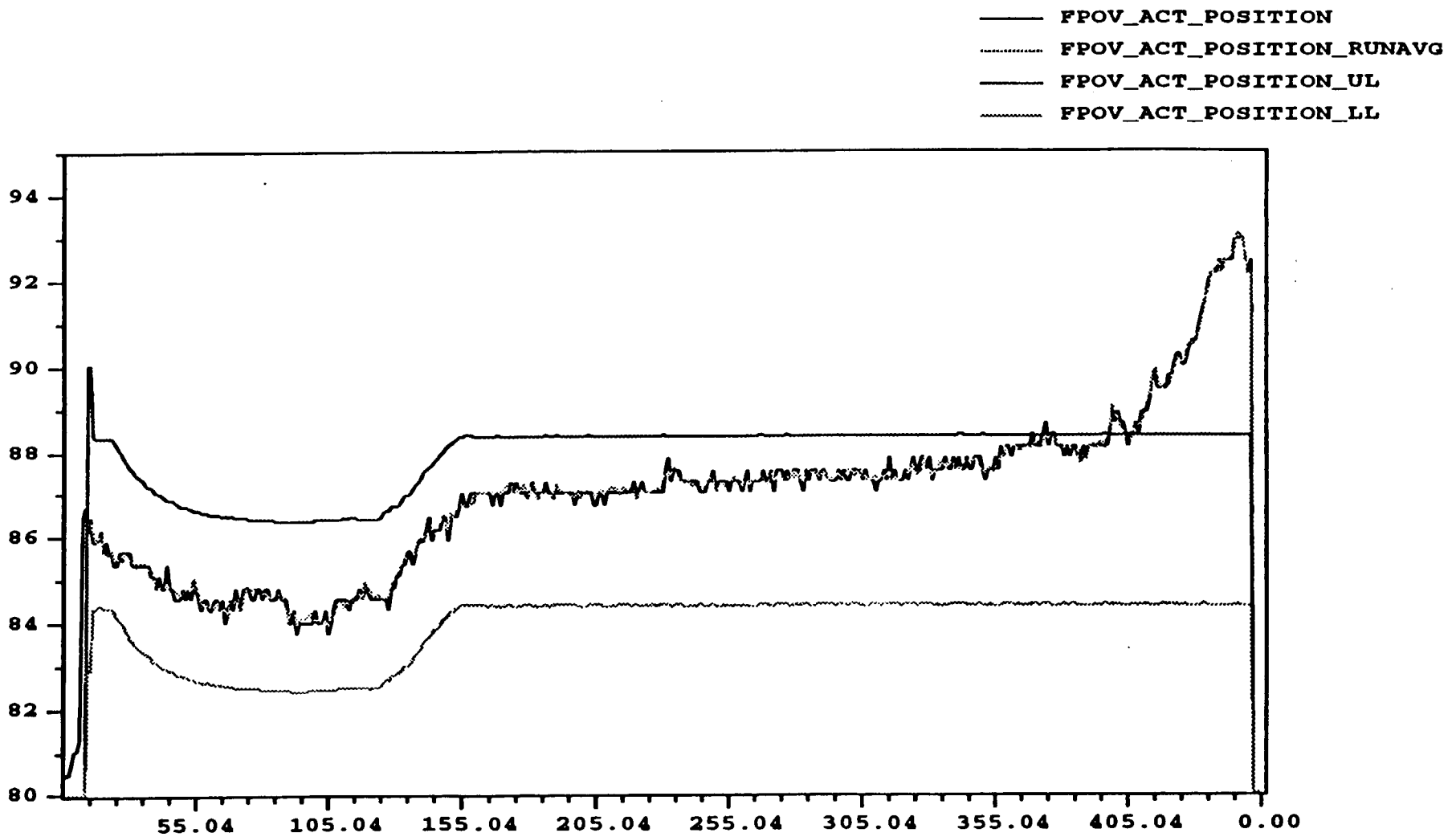
RSS-8825-51


HPFTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_B
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_UL
HPFTP_TURB_DISCHARGE_TEMP_CH_B_LL
1800
1750
1700
1650
1600
1550
1500
104.04
154.04
204.04
254.04
304.04
354.04
404.04
454.04

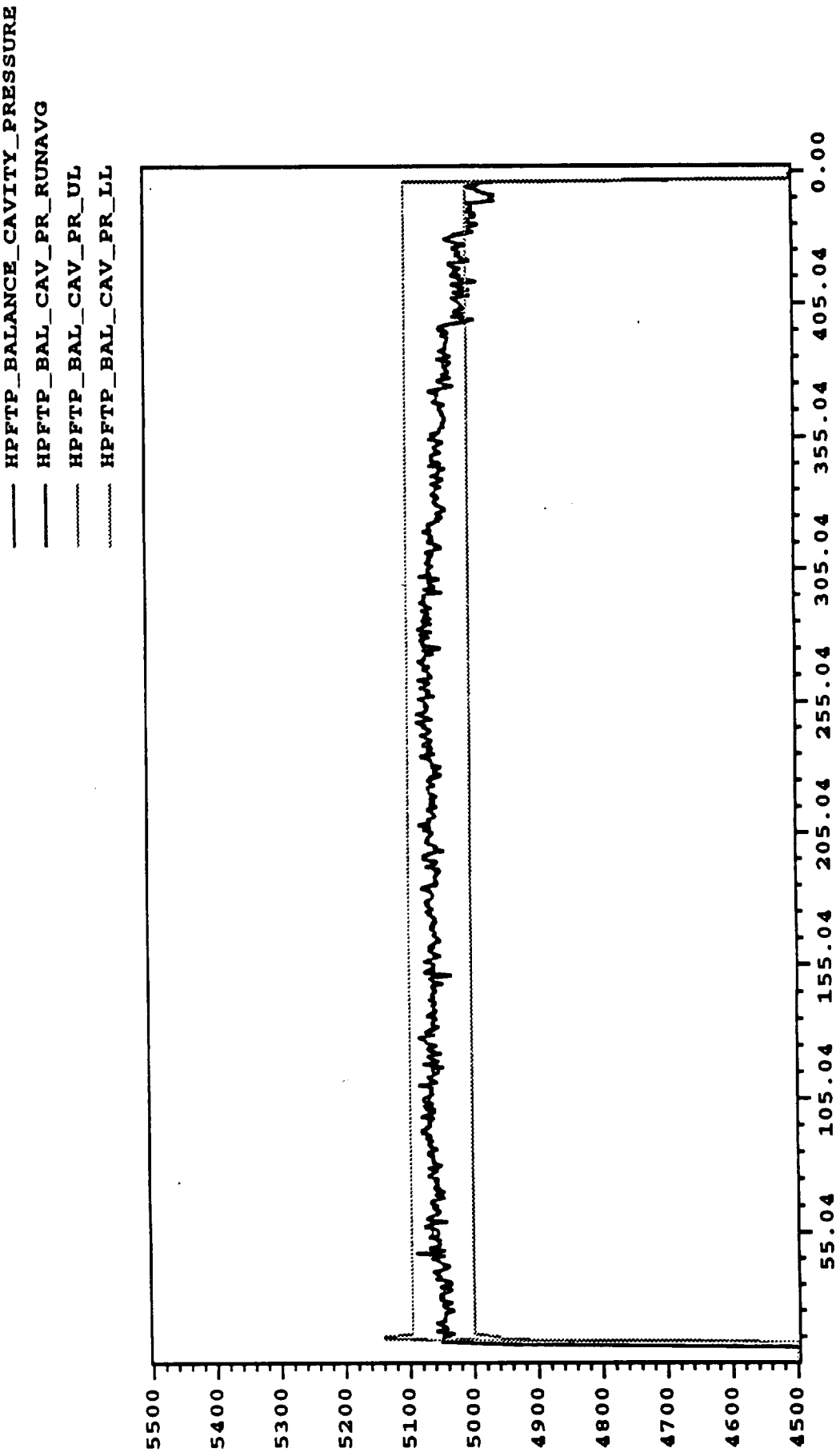
RSS-8825-51


HPOTP_INTERMEDIATE_SEAL_PURGE_PRESSURE
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_UL
HPOTP_INTERMED_SEAL_PURGE_PR_LL
300
280
260
240
220
200
180
160
140
120
100
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92

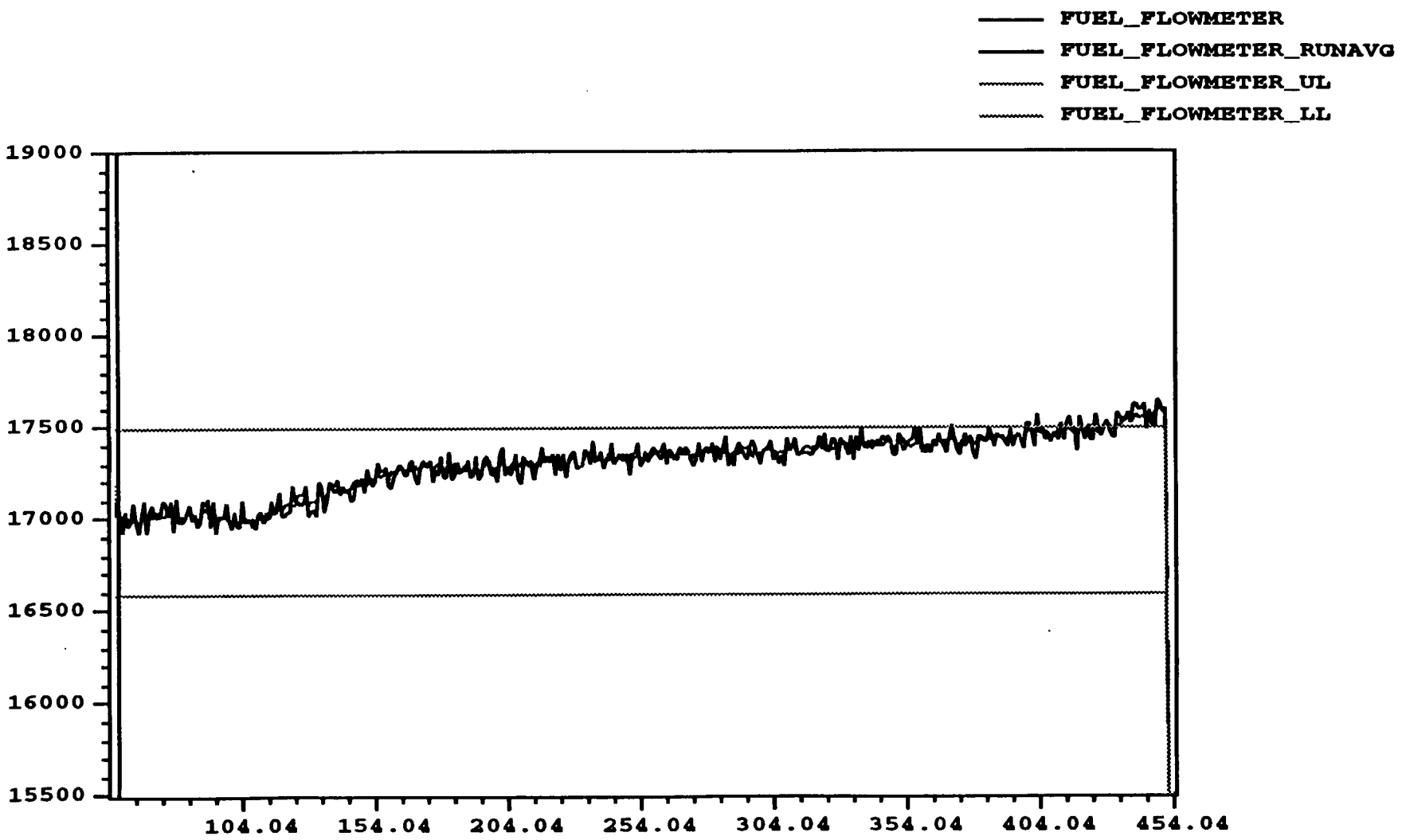
RSS-8825-51

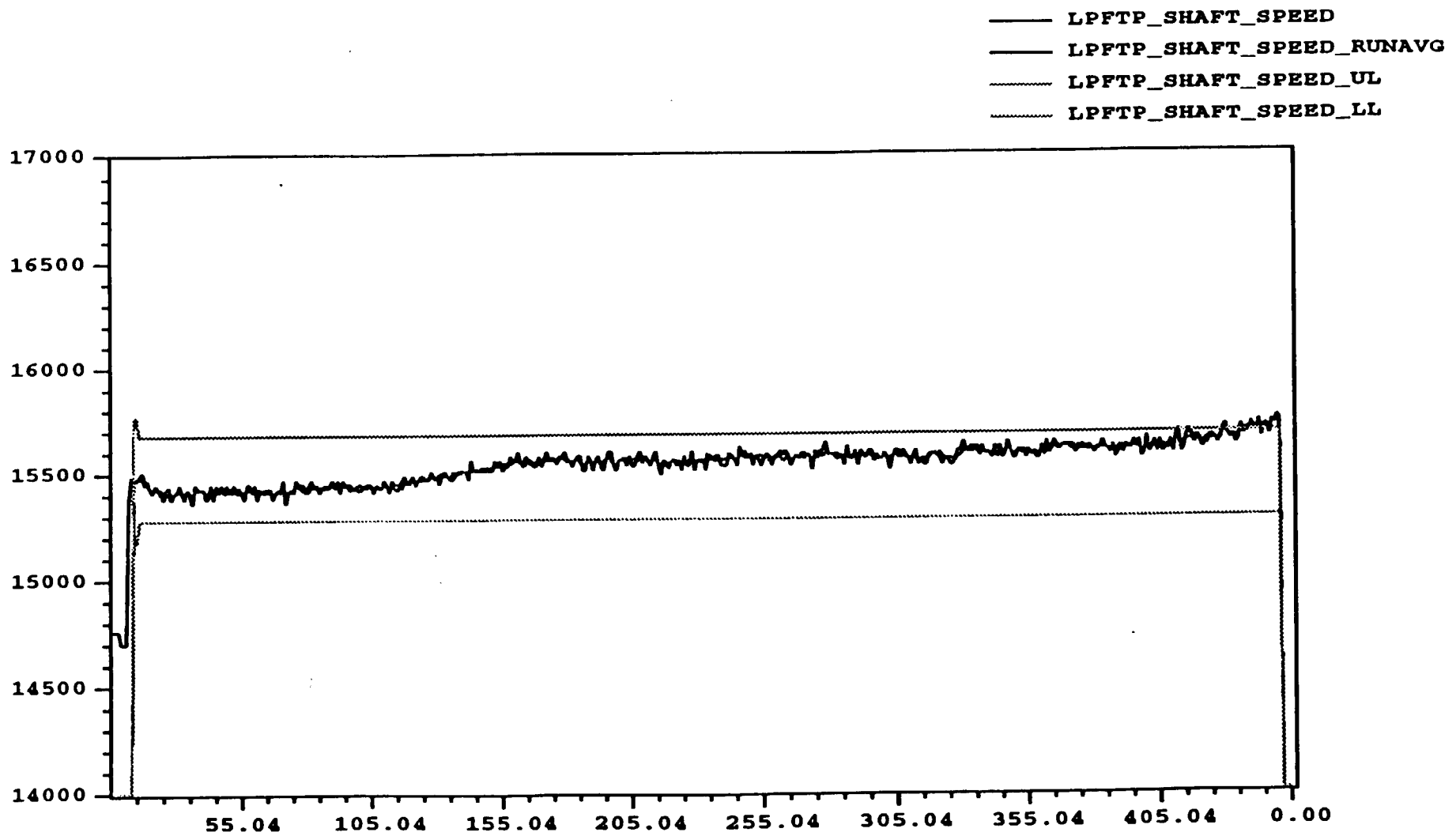

FPOV_ACT_POSITION
FPOV_ACT_POSITION_RUNAVG
FPOV_ACT_POSITION_UL
FPOV_ACT_POSITION_LL
94
92
90
88
86
84
82
80
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
0.00

RSS-8825-51

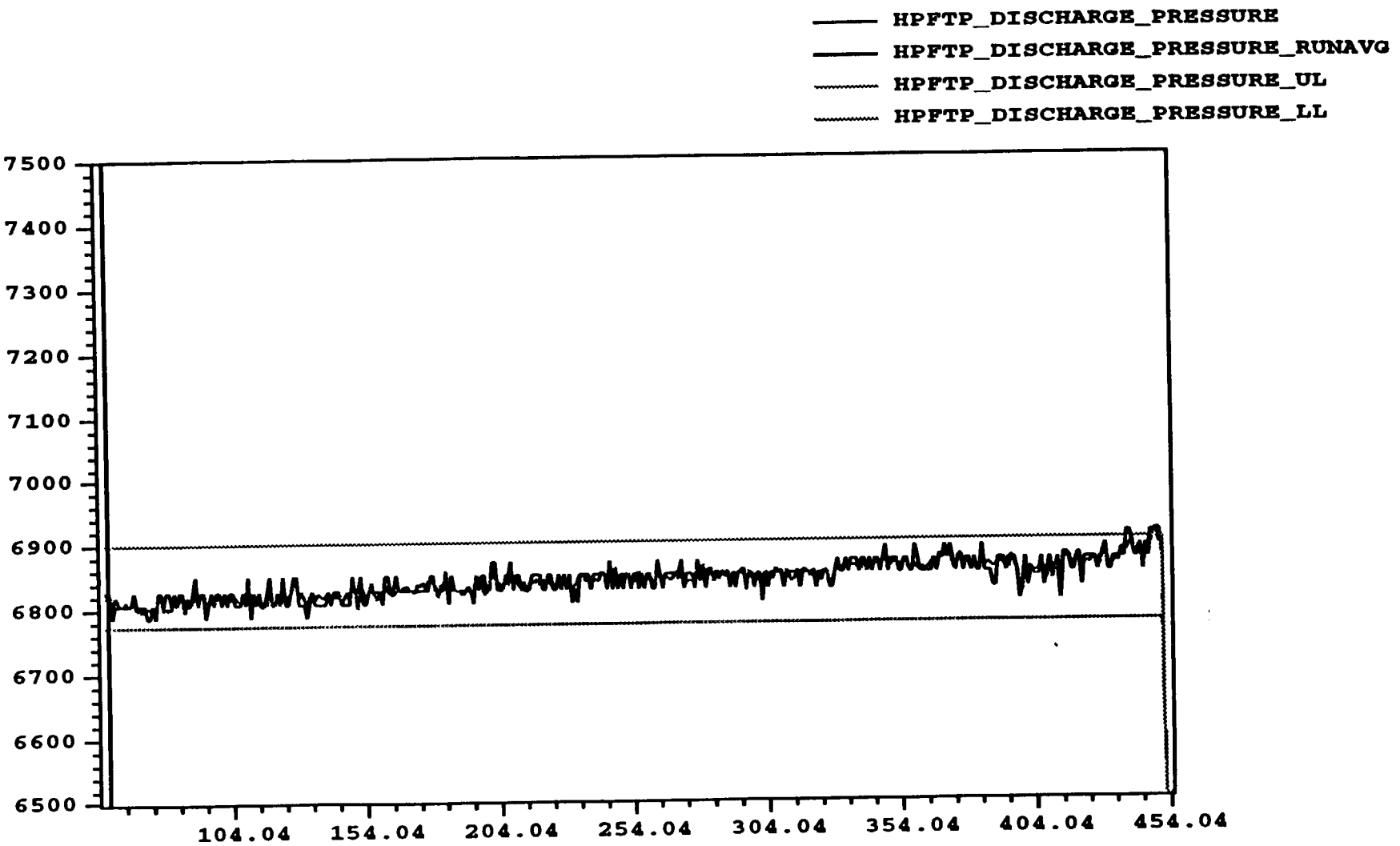

HPFTP_BALANCE_CAVITY_PRESSURE
HPFTP_BAL_CAV_PR_RUNAVG
HPFTP_BAL_CAV_PR_UL
HPFTP_BAL_CAV_PR_LL
5500
5400
5300
5200
5100
5000
4900
4800
4700
4600
4500
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
0.00

RSS-8825-51

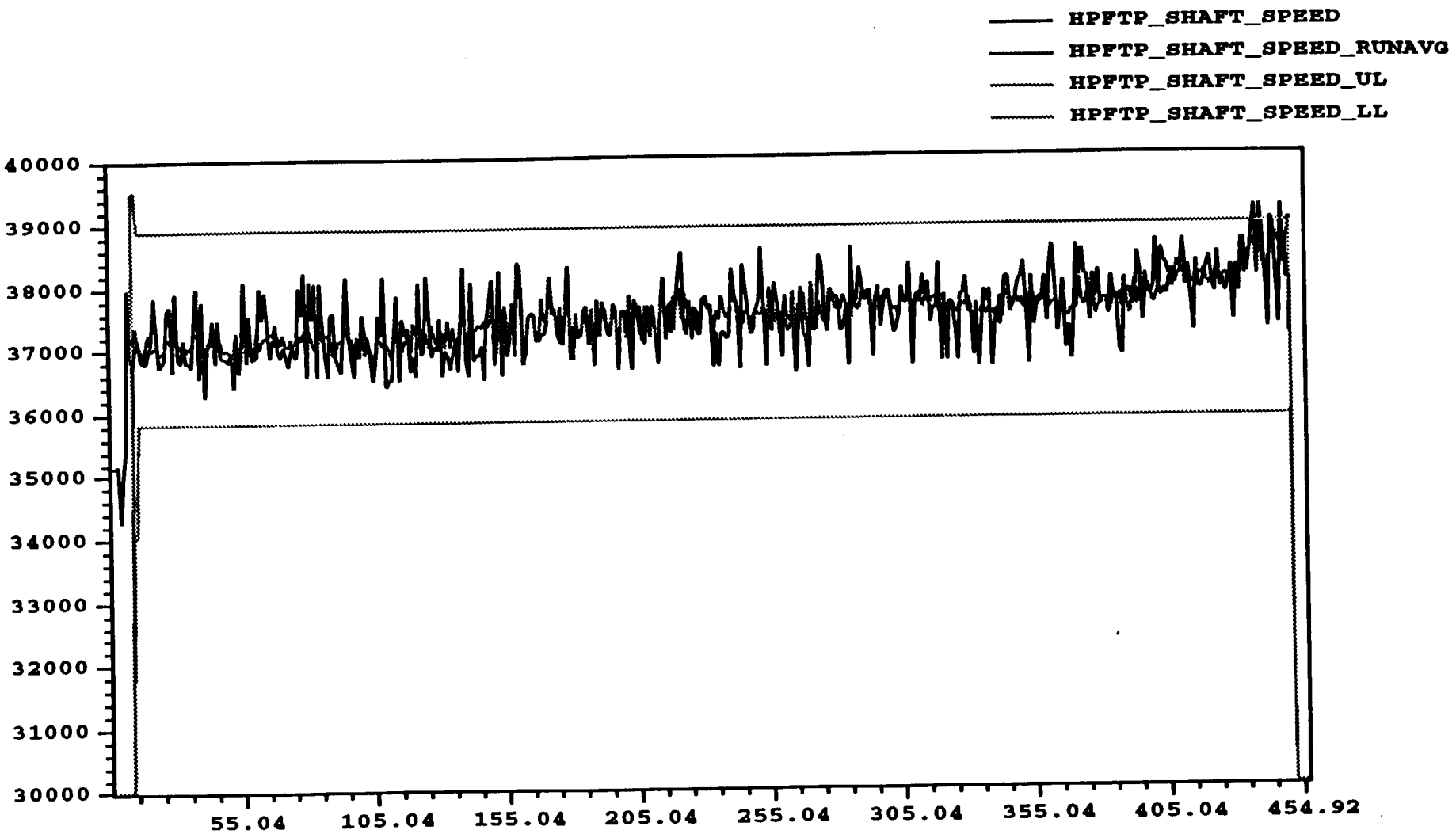

FUEL_FLOWMETER
FUEL_FLOWMETER_RUNAVG
FUEL_FLOWMETER_UL
FUEL_FLOWMETER_LL
19000
18500
18000
17500
17000
16500
16000
15500
104.04
154.04
204.04
254.04
304.04
354.04
404.04
454.04


LPFTP_SHAFT_SPEED
LPFTP_SHAFT_SPEED_RUNAVG
LPFTP_SHAFT_SPEED_UL
LPFTP_SHAFT_SPEED_LL
17000
16500
16000
15500
15000
14500
14000
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
0.00

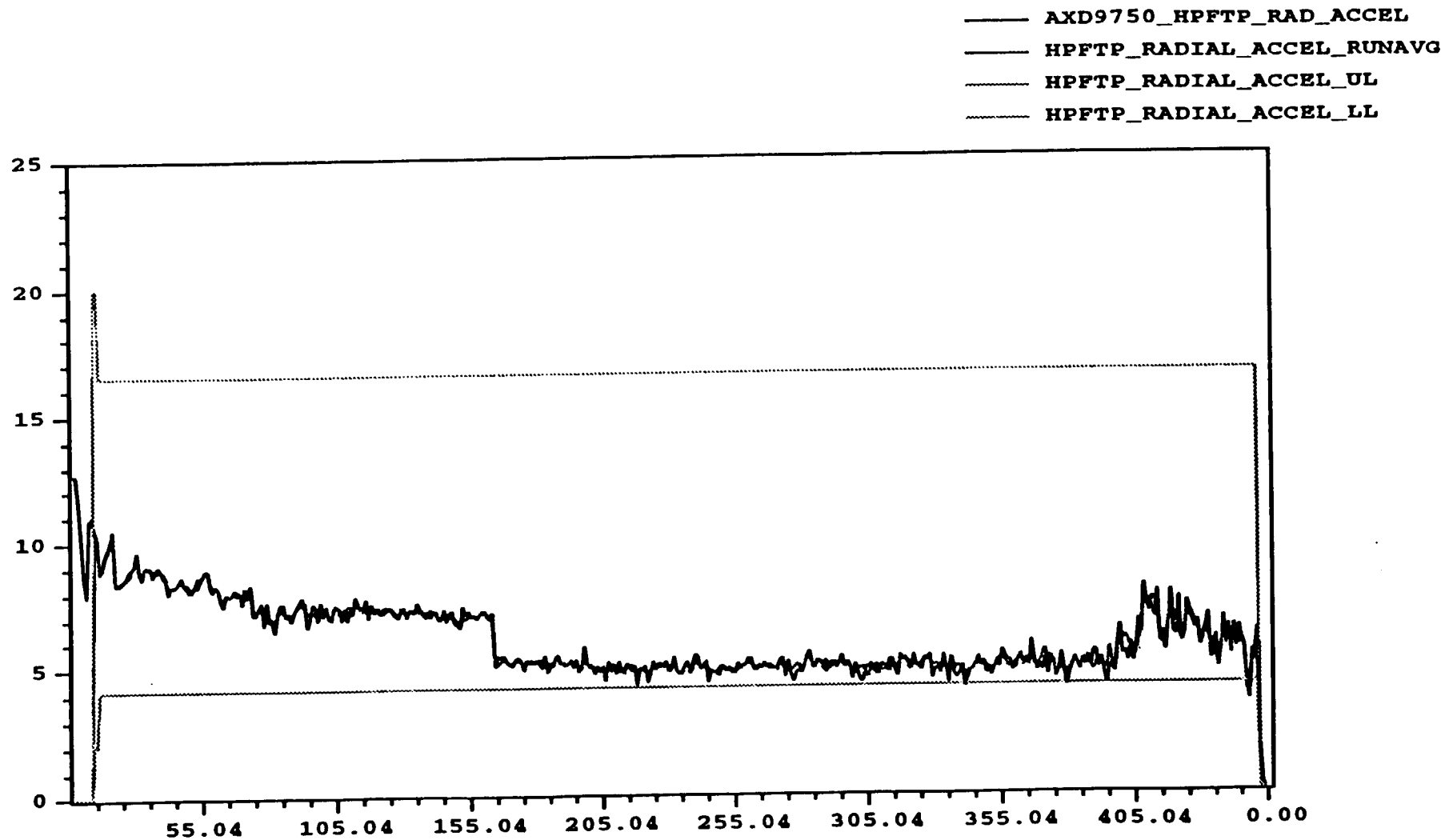
RSS-8815-57


HPFTP_DISCHARGE_PRESSURE
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_DISCHARGE_PRESSURE_UL
HPFTP_DISCHARGE_PRESSURE_LL
7500
7400
7300
7200
7100
7000
6900
6800
6700
6600
6500
104.04
154.04
204.04
254.04
304.04
354.04
404.04
454.04

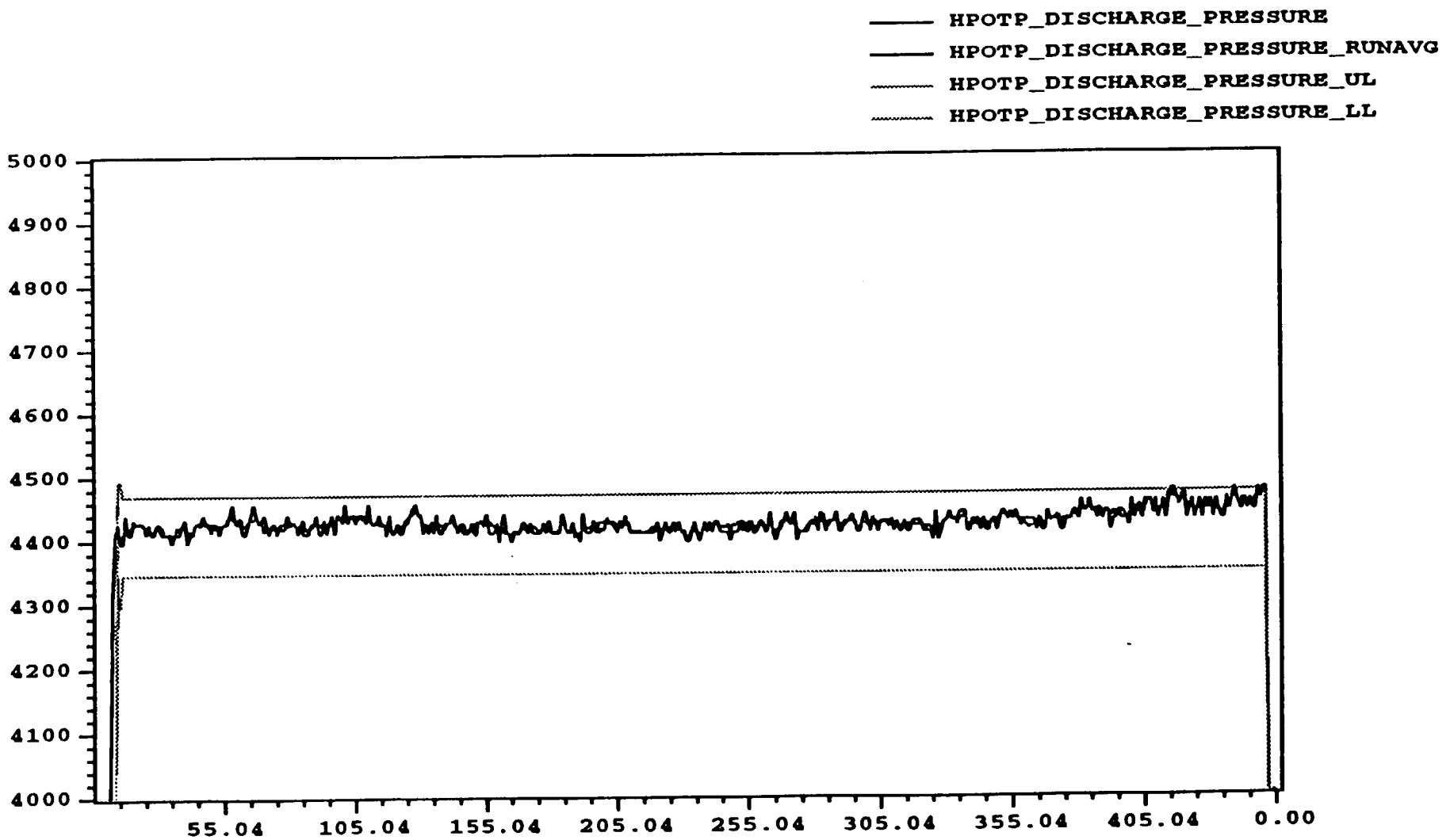
RSS-88251


HPFTP_SHAFT_SPEED
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_SHAFT_SPEED_UL
HPFTP_SHAFT_SPEED_LL
40000
39000
38000
37000
36000
35000
34000
33000
32000
31000
30000
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92

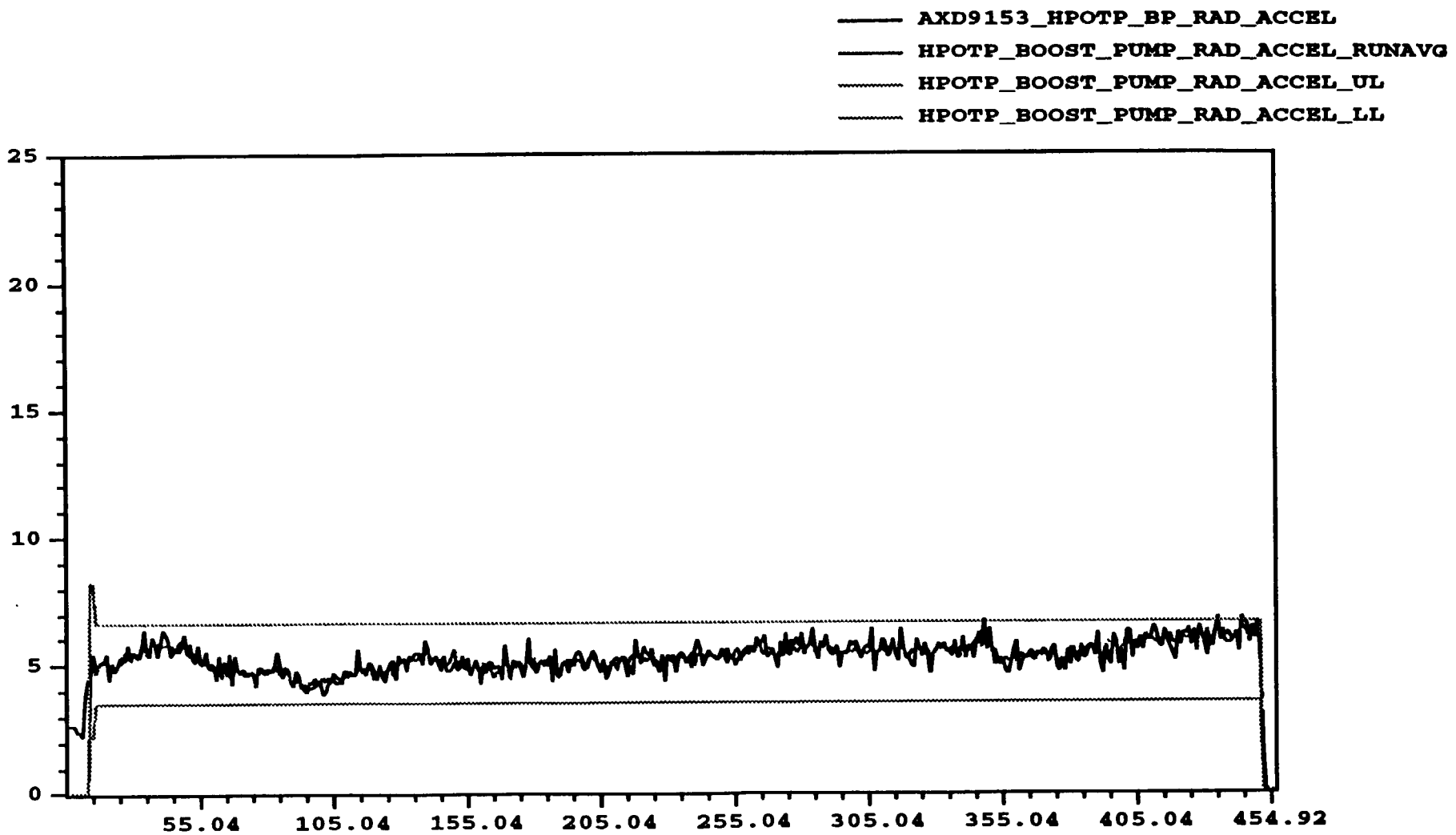
RSS-8825-51

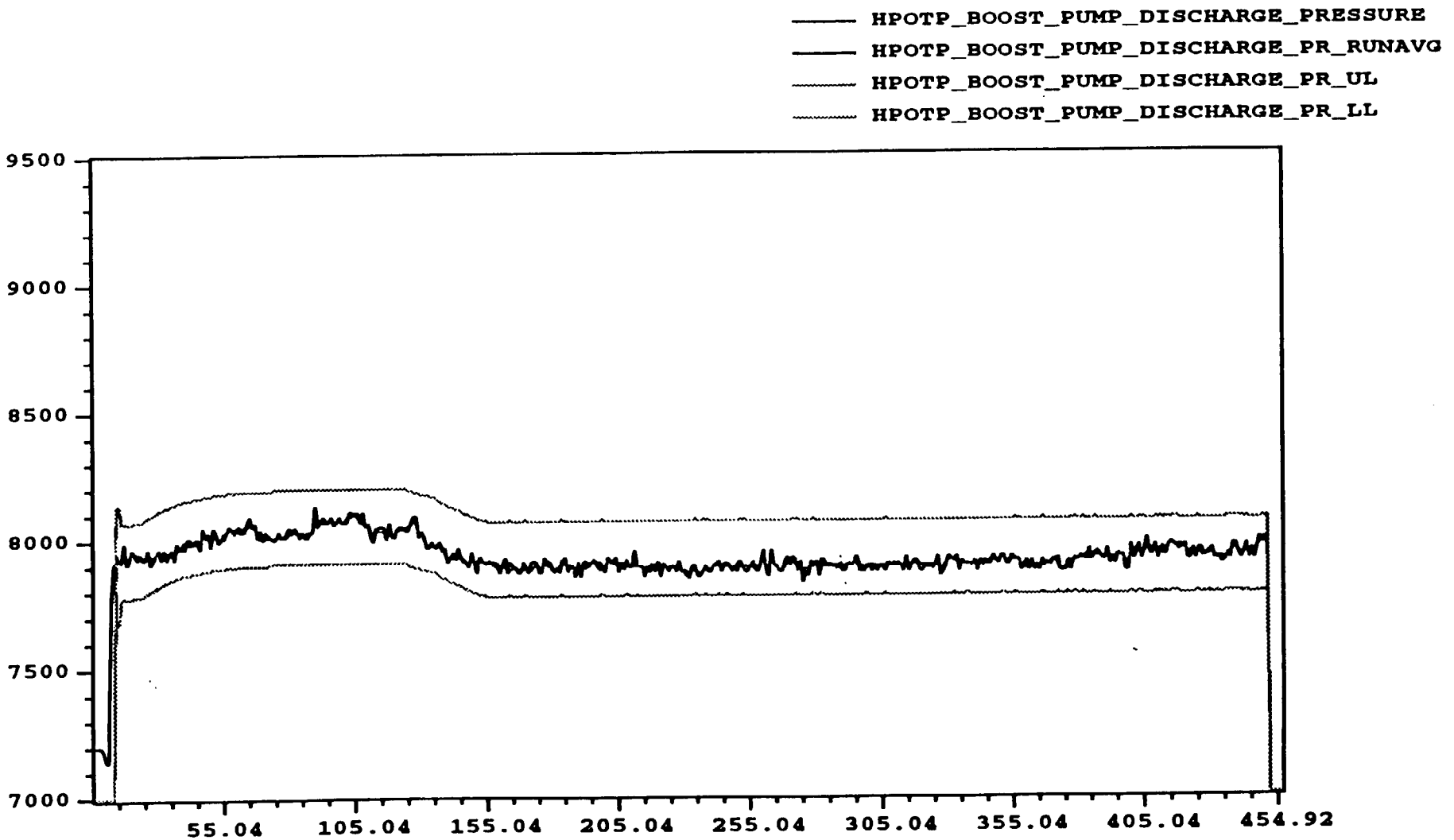

AXD9750_HPFTP_RAD_ACCEL
HPFTP_RADIAL_ACCEL_RUNAVG
HPFTP_RADIAL_ACCEL_UL
HPFTP_RADIAL_ACCEL_LL
25
20
15
10
5
0
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
0.00

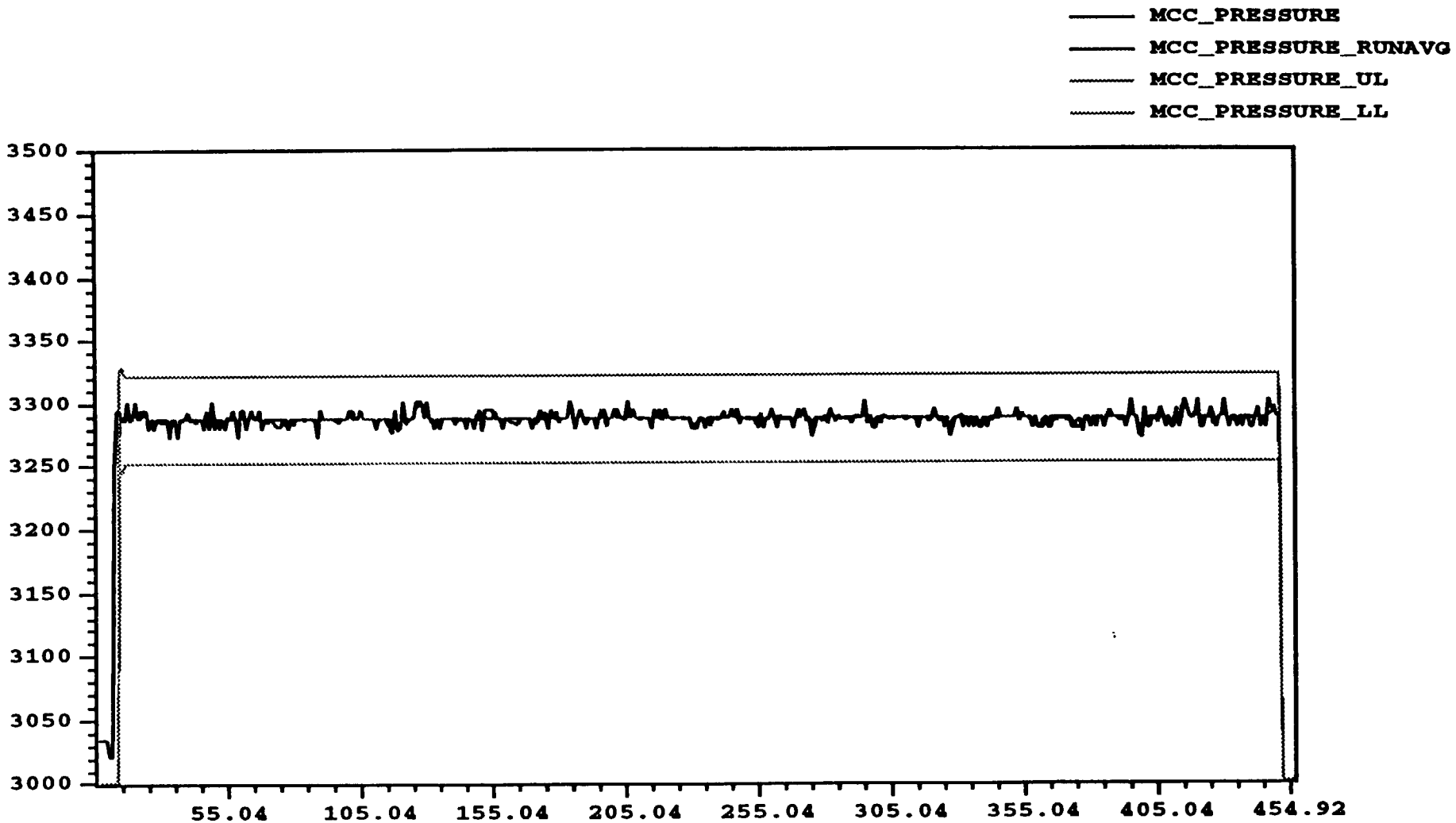
RSS8825-51


HPOTP_DISCHARGE_PRESSURE
HPOTP_DISCHARGE_PRESSURE_RUNAVG
HPOTP_DISCHARGE_PRESSURE_UL
HPOTP_DISCHARGE_PRESSURE_LL
5000
4900
4800
4700
4600
4500
4400
4300
4200
4100
4000
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
0.00

RSS 9825-57


AXD9153_HPOTP_BP_RAD_ACCEL
HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
HPOTP_BOOST_PUMP_RAD_ACCEL_UL
HPOTP_BOOST_PUMP_RAD_ACCEL_LL
25
20
15
10
5
0
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92


HPOTP_BOOST_PUMP_DISCHARGE_PRESSURE
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPOTP_BOOST_PUMP_DISCHARGE_PR_UL
HPOTP_BOOST_PUMP_DISCHARGE_PR_LL
9500
9000
8500
8000
7500
7000
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92


MCC_PRESSURE
MCC_PRESSURE_RUNAVG
MCC_PRESSURE_UL
MCC_PRESSURE_LL
3500
3450
3400
3350
3300
3250
3200
3150
3100
3050
3000
55.04
105.04
155.04
205.04
255.04
305.04
355.04
405.04
454.92

RSS-8825-51

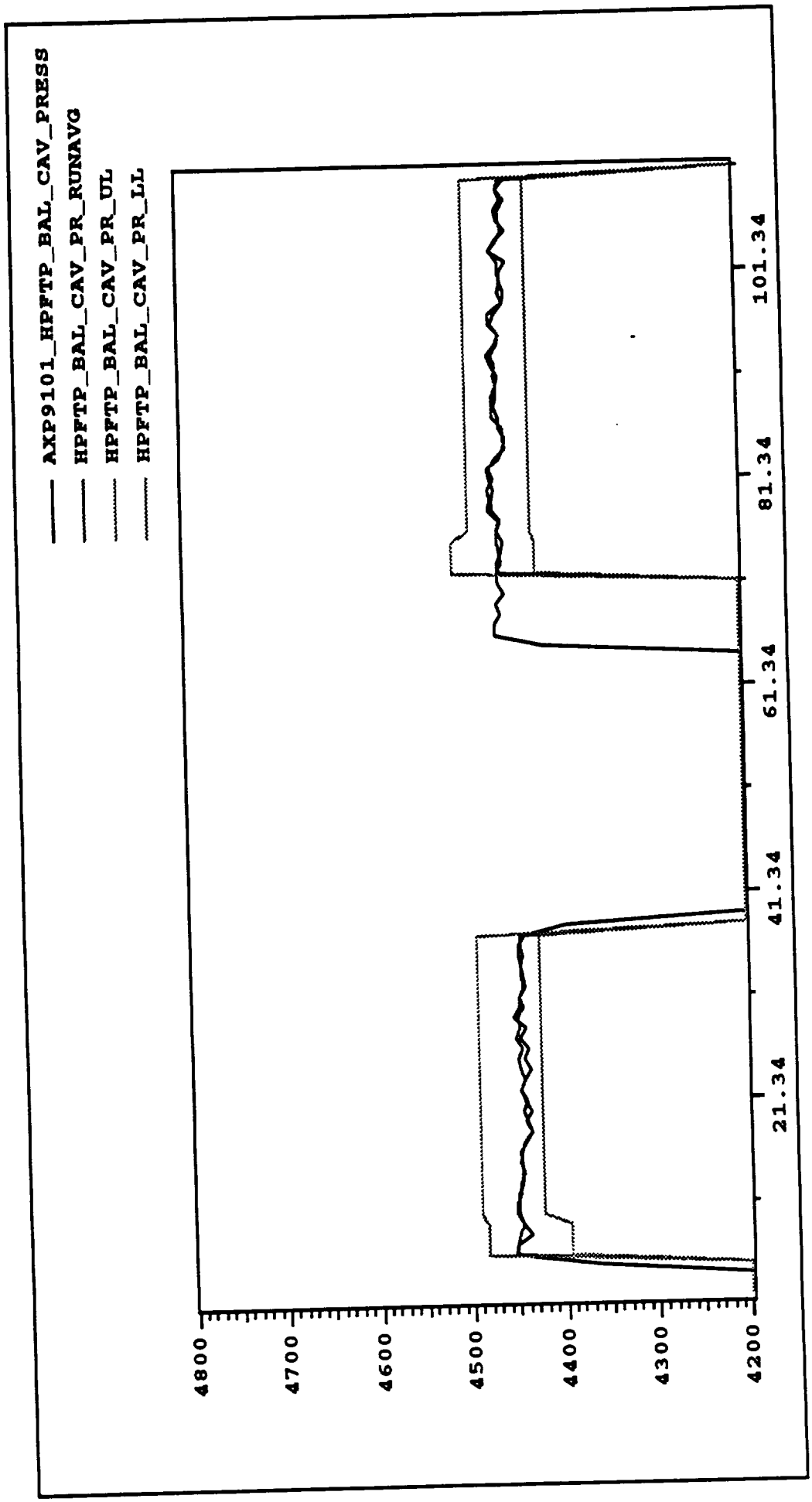
Appendix A3 - Test 904-149

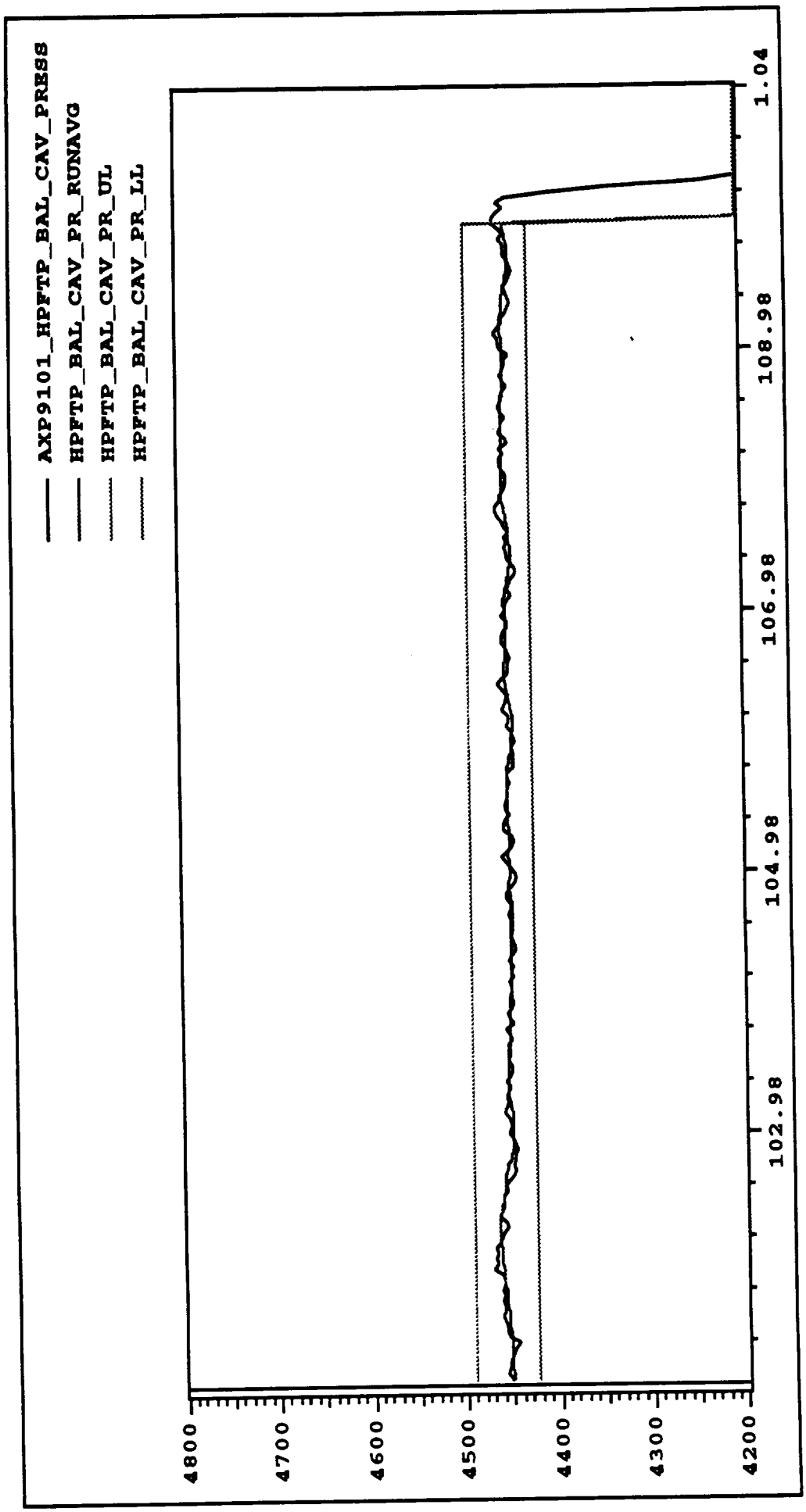
Analysis of safdalg_3

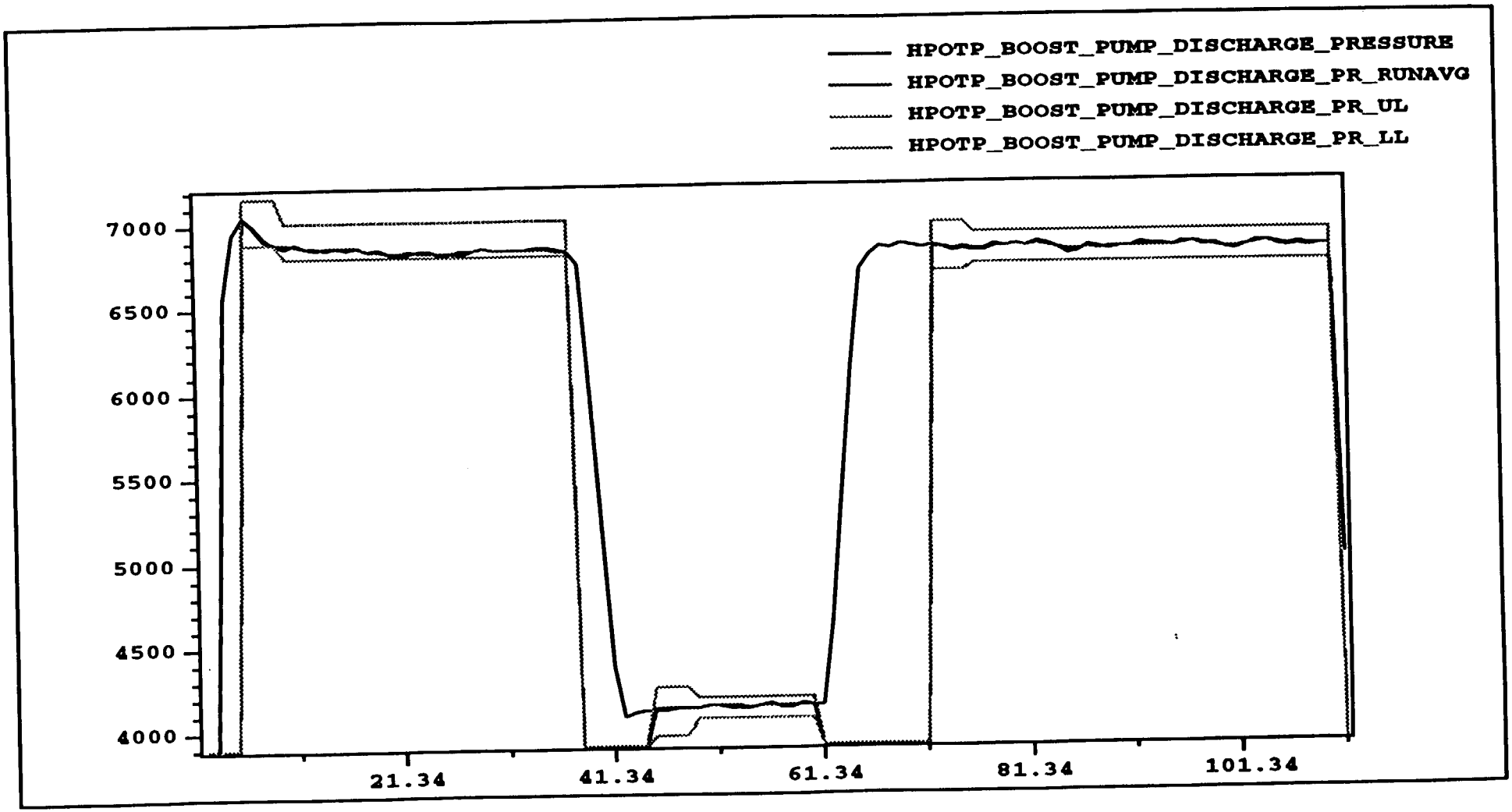
safdalg_3

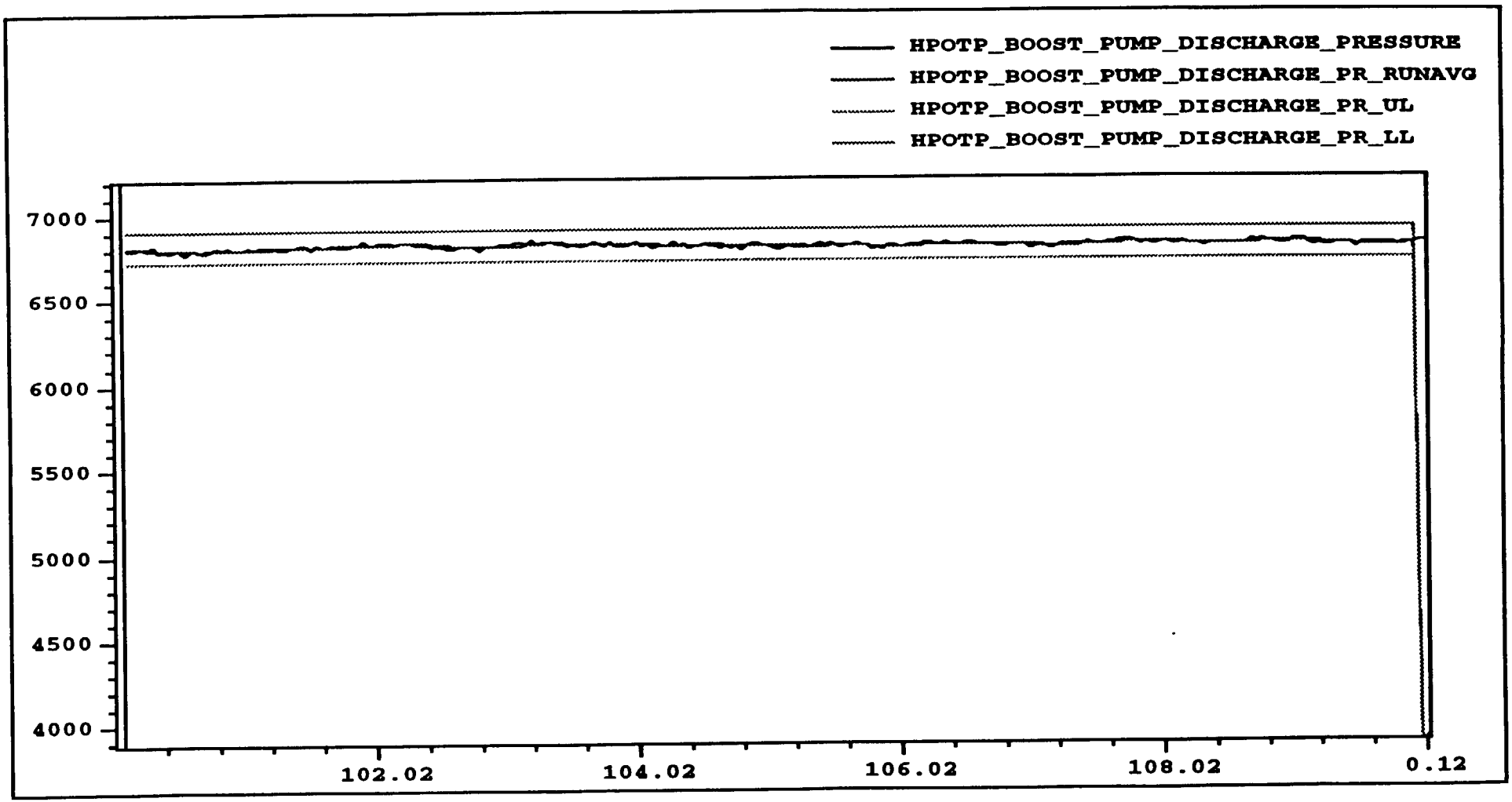
Time	Parameter
MS:NM- 5.06	SAFD_CUTOFF
	HPFTP_BAL_CAV_PR_RUNAVG
	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
	MCC_LINER_CAV_PR_RUNAVG
MS:NM- 8.50 to MS:NM- 8.58	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
MS:NM-20.90 to MS:NM-21.30	OPOV_ACT_POSITION_RUNAVG
MS:NM-21.62 to MS:NM-27.54	OPOV_ACT_POSITION_RUNAVG
MS:NM-27.62 to MS:NM-28.50	HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
	OPOV_ACT_POSITION_RUNAVG
MS:NM-28.58 to MS:NM-28.66	OPOV_ACT_POSITION_RUNAVG
MS:NM-29.46 to MS:NM-29.70	HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
MS:NM-31.78 to MS:NM-32.10	HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
MS:NM-43.54	HPFTP_BAL_CAV_PR_RUNAVG
	MCC_LINER_CAV_PR_RUNAVG
MS:NM-70.58	HPFTP_BAL_CAV_PR_RUNAVG
	MCC_LINER_CAV_PR_RUNAVG
MS:NM-96.74 to MS:NM-99.62	HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
MS:NM-102.74 to MS:NM-107.14	HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
MS:NM-107.22	HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
	HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
MS:NM-107.30 to MS:NM-107.86	HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG

```
MS:NM-107.94 to MS:NM-108.34
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG

MS:NM-108.42 to MS:NM-109.14
        HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG

MS:NM-109.22 to MS:NM-109.70
        HPOTP_SEC_SEAL_CAV_PRESS_RUNAVG
        HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG

MS:NM-109.78 to MS:NM-109.86
        SAFD_CUTOFF
        HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
        HPOTP_SEC_SEAL_CAV_PRESS_RUNAVG
        HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG

SD:TZ- 0.04 to SD:TZ- 1.08
        SAFD_CUTOFF
```


AXP9101_HPFTP_BAL_CAV_PRESS
HPFTP_BAL_CAV_PR_RUNAVG
HPFTP_BAL_CAV_PR_UL
HPFTP_BAL_CAV_PR_LL
4800
4700
4600
4500
4400
4300
4200
21.34
41.34
61.34
81.34
101.34


AXP9101_HPFTP_BAL_CAV_PRESS
HPFTP_BAL_CAV_PR_RUNAVG
HPFTP_BAL_CAV_PR_UL
HPFTP_BAL_CAV_PR_LL
4800
4700
4600
4500
4400
4300
4200
102.98
104.98
106.98
108.98
1.04


HPOTP_BOOST_PUMP_DISCHARGE_PRESSURE
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPOTP_BOOST_PUMP_DISCHARGE_PR_UL
HPOTP_BOOST_PUMP_DISCHARGE_PR_LL
7000
6500
6000
5500
5000
4500
4000
21.34
41.34
61.34
81.34
101.34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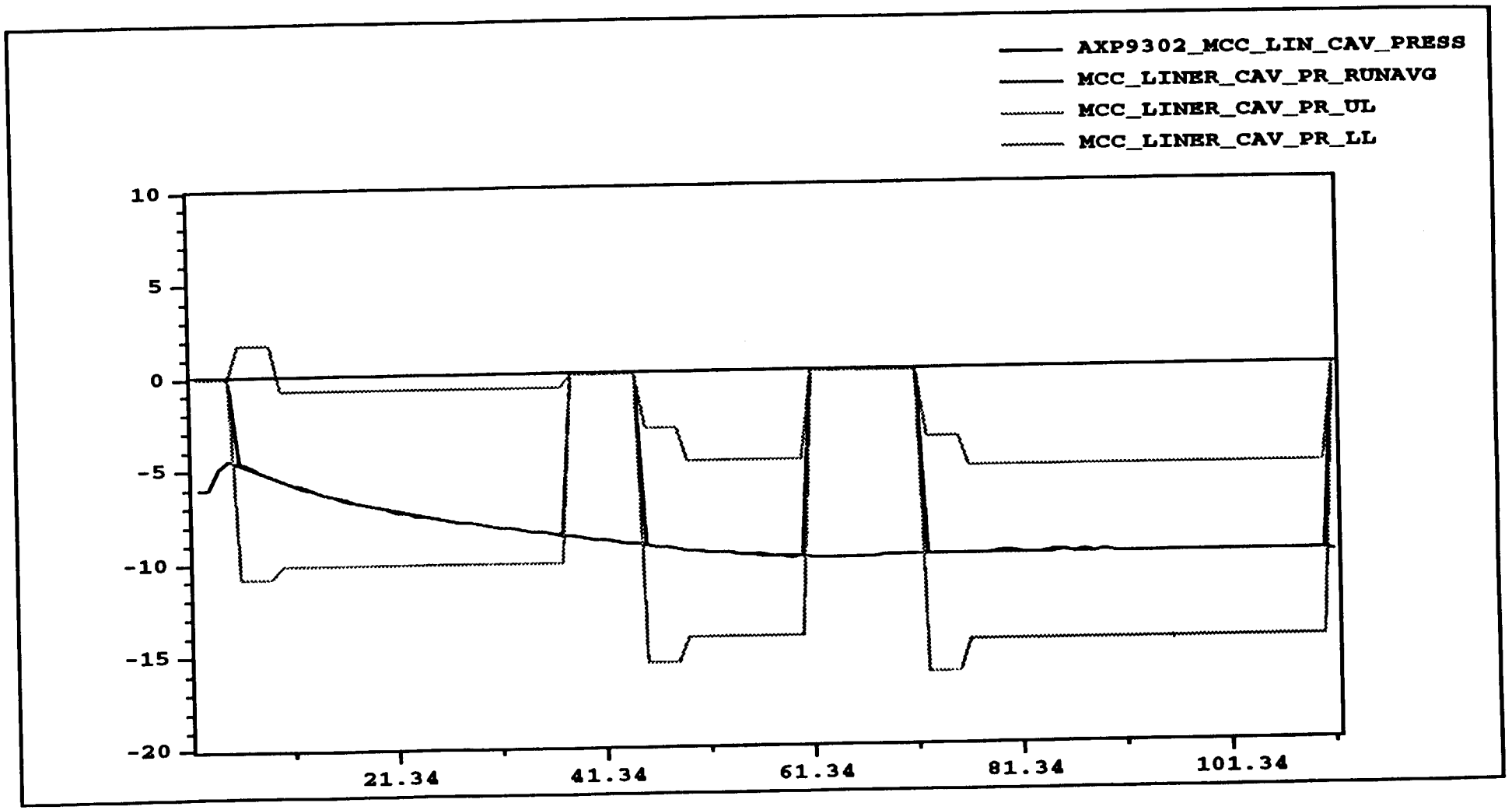
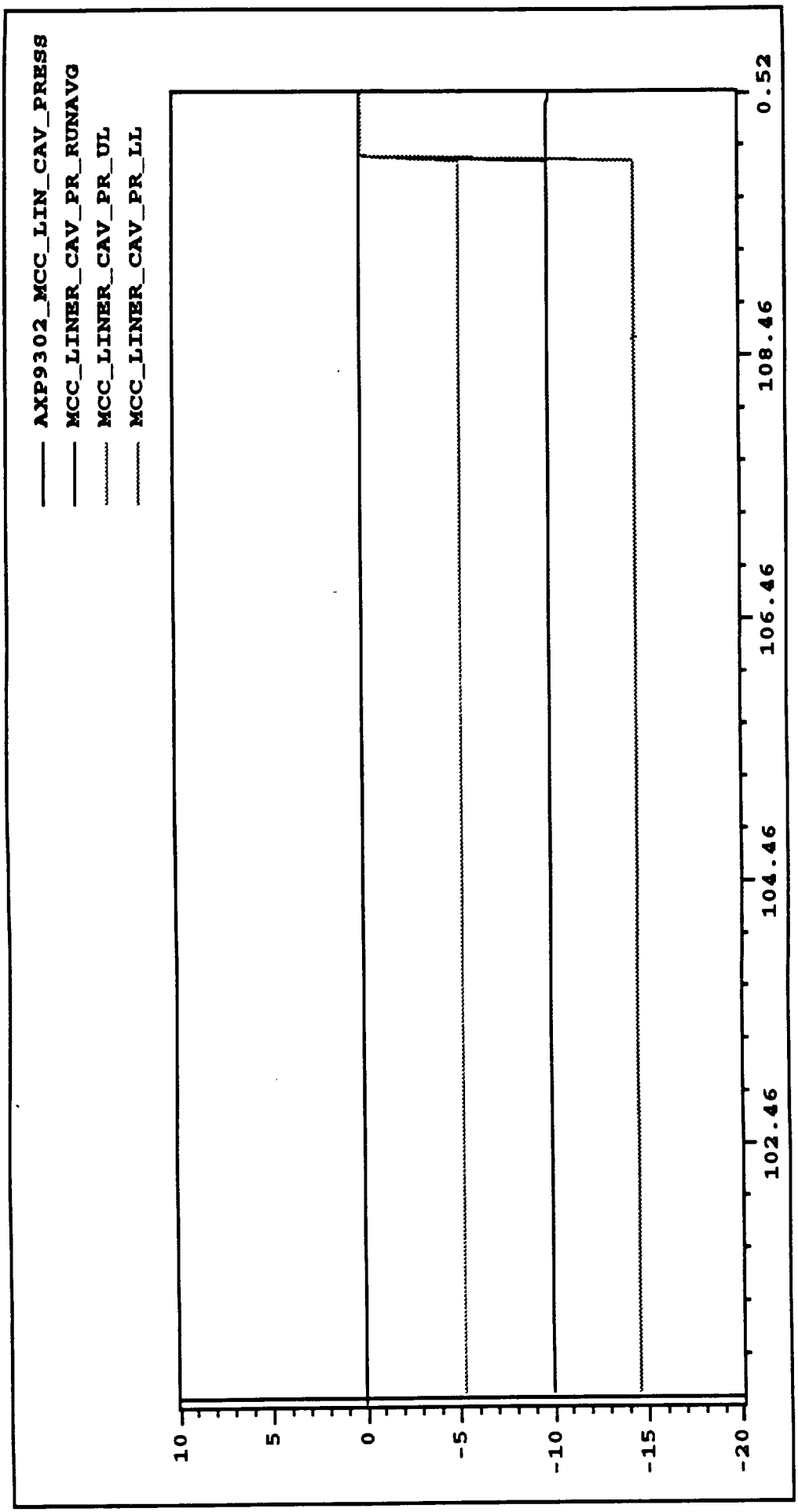
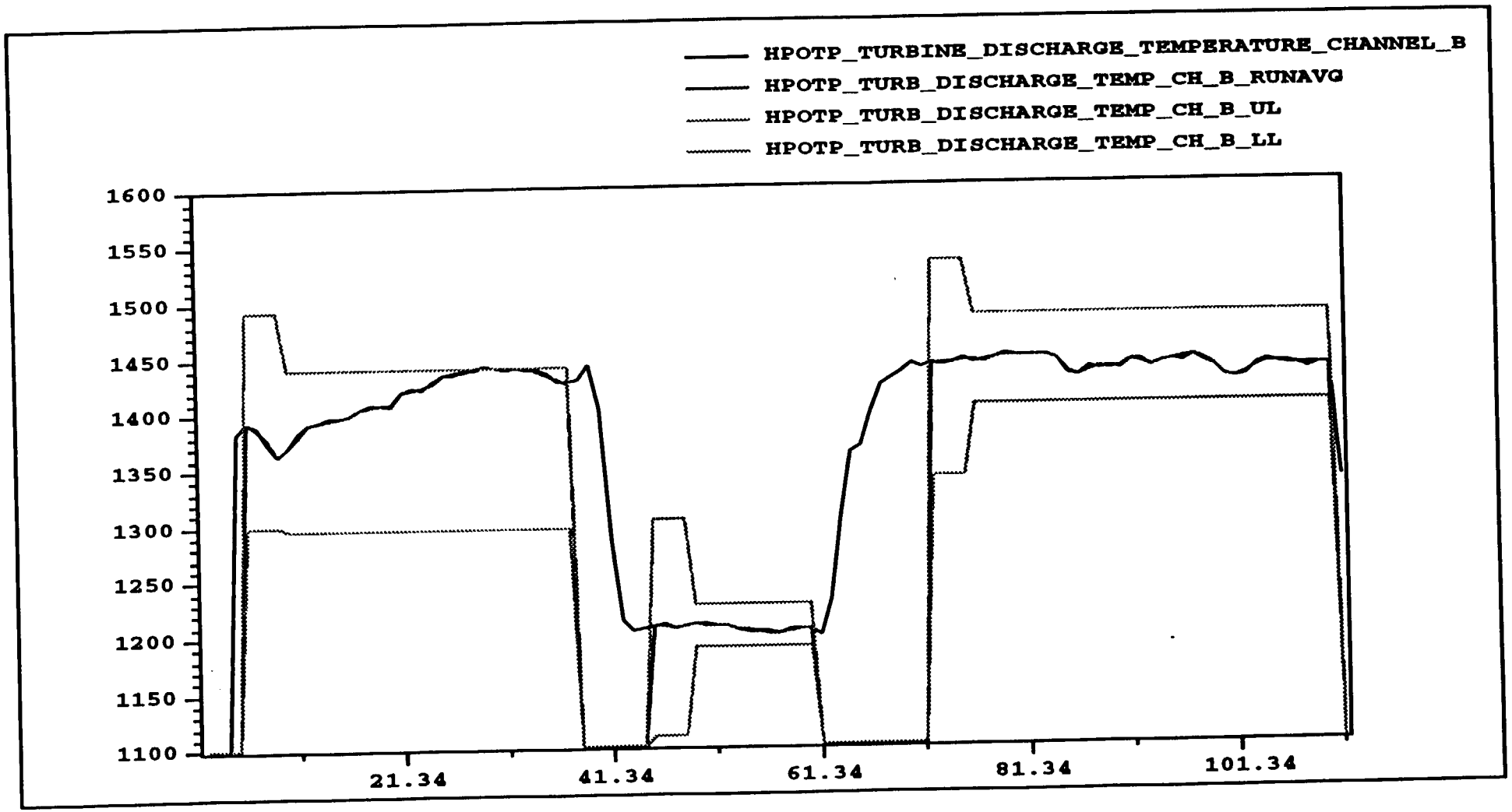
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPOTP_BOOST_PUMP_DISCHARGE_PR_UL
HPOTP_BOOST_PUMP_DISCHARGE_PR_LL
7000
6500
6000
5500
5000
4500
4000
102.02
104.02
106.02
108.02
0.12


AXP9302_MCC_LIN_CAV_PRESS
MCC_LINER_CAV_PR_RUNAVG
MCC_LINER_CAV_PR_UL
MCC_LINER_CAV_PR_LL
10
5
0
-5
-10
-15
-20
21.34
41.34
61.34
81.34
101.34


AXP9302_MCC_LIN_CAV_PRESS
MCC_LINER_CAV_PR_RUNAVG
MCC_LINER_CAV_PR_UL
MCC_LINER_CAV_PR_LL
10
5
0
-5
-10
-15
-20
102.46
104.46
106.46
108.46
0.52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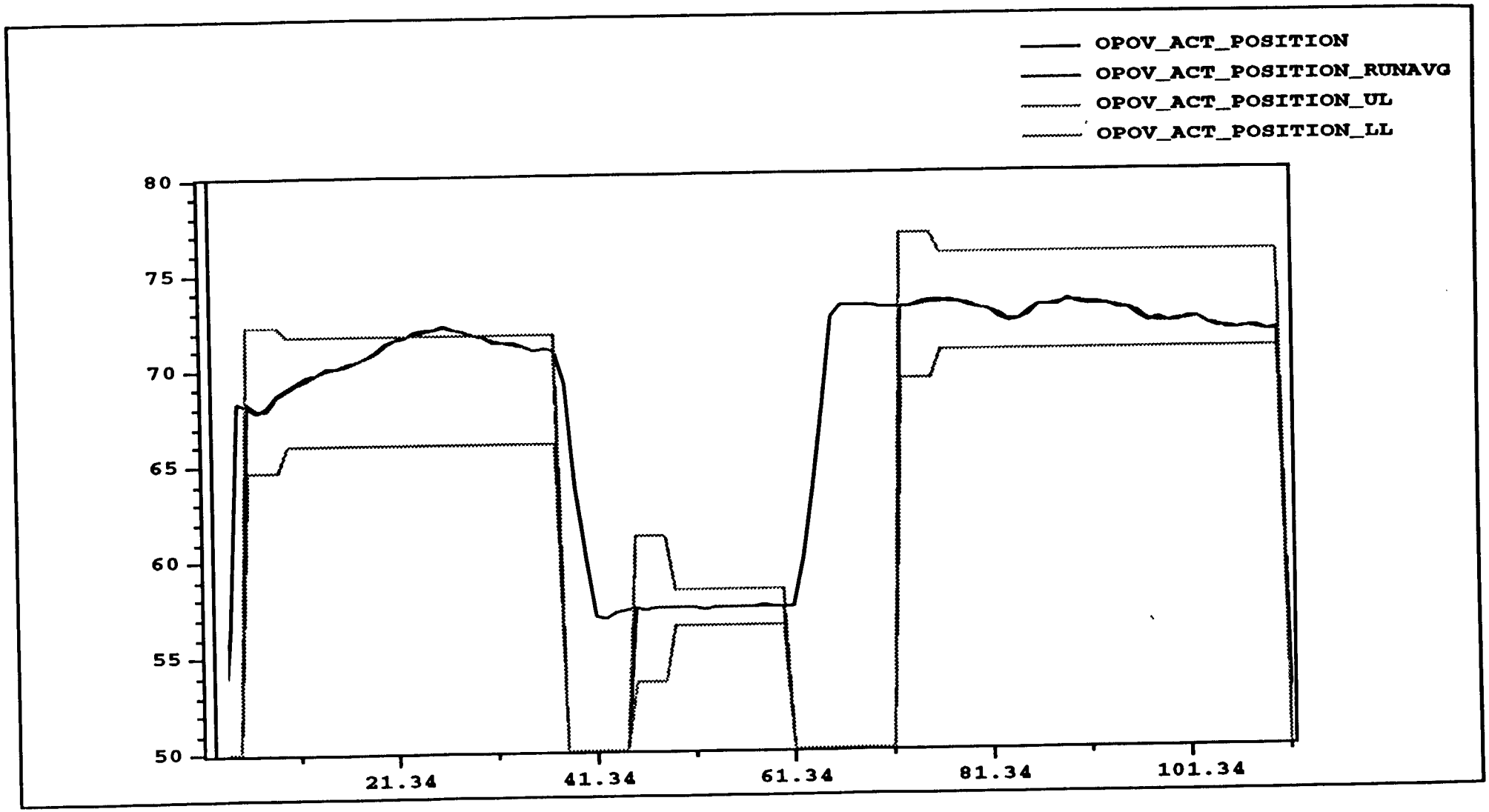
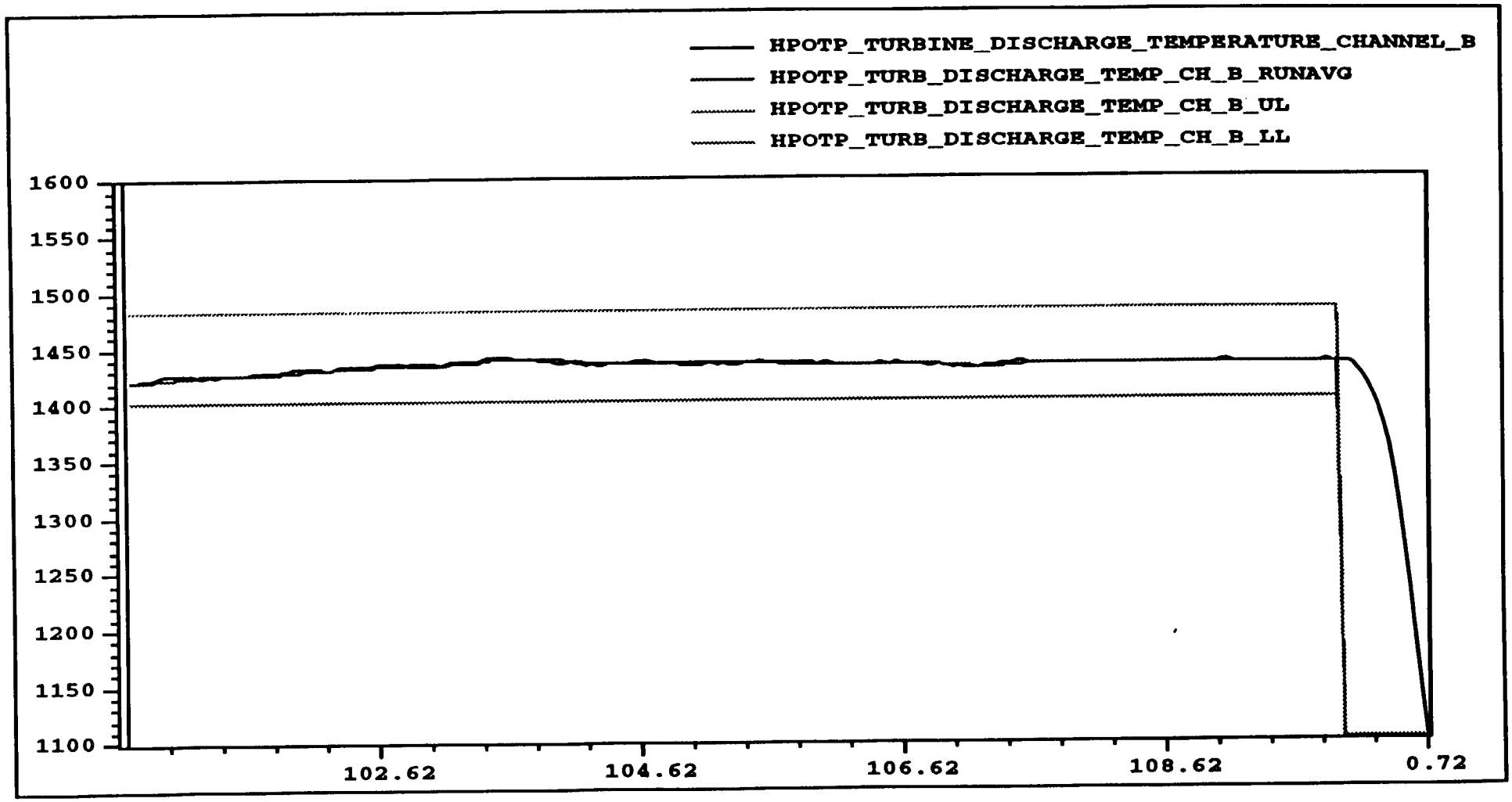
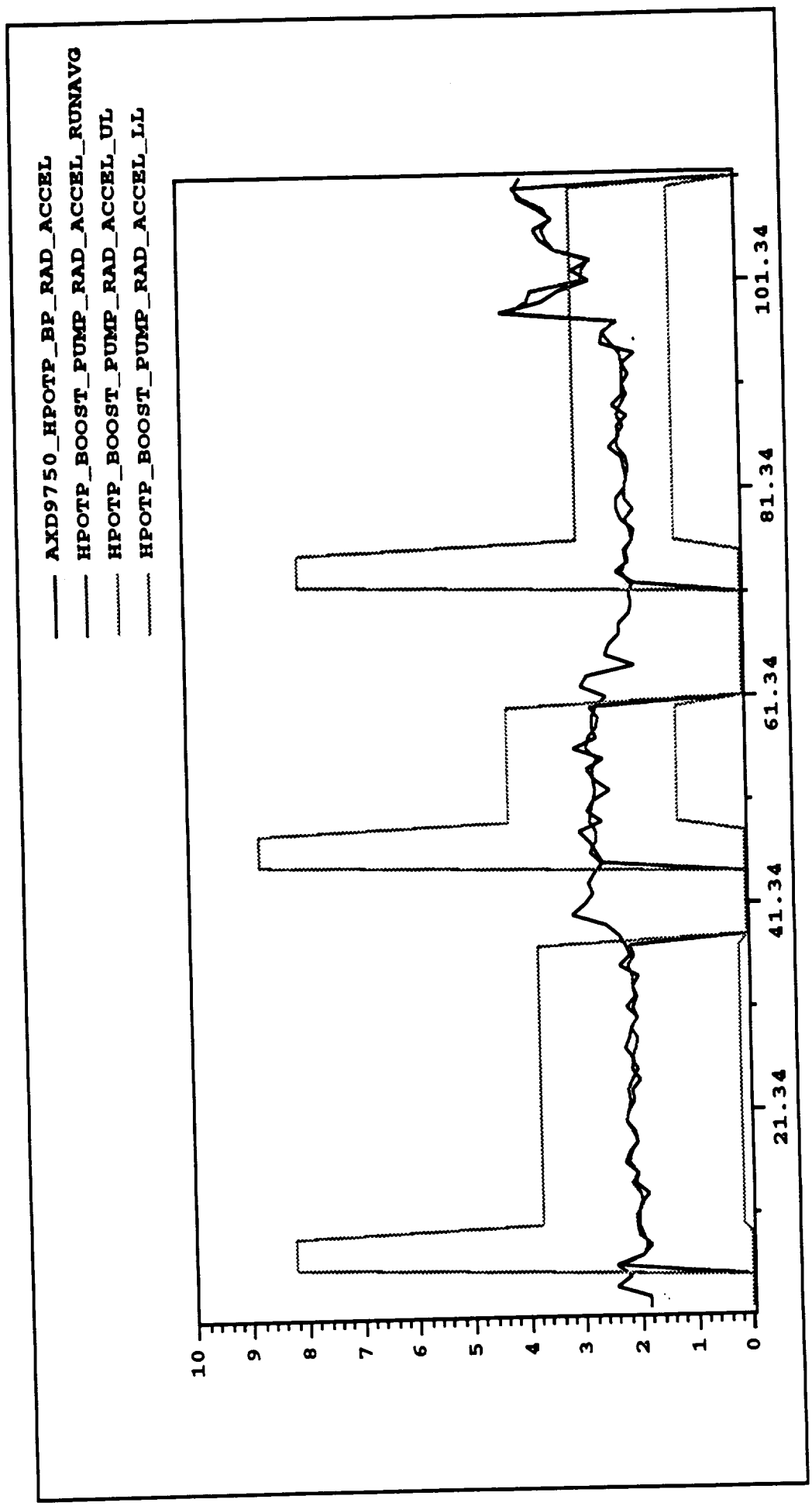
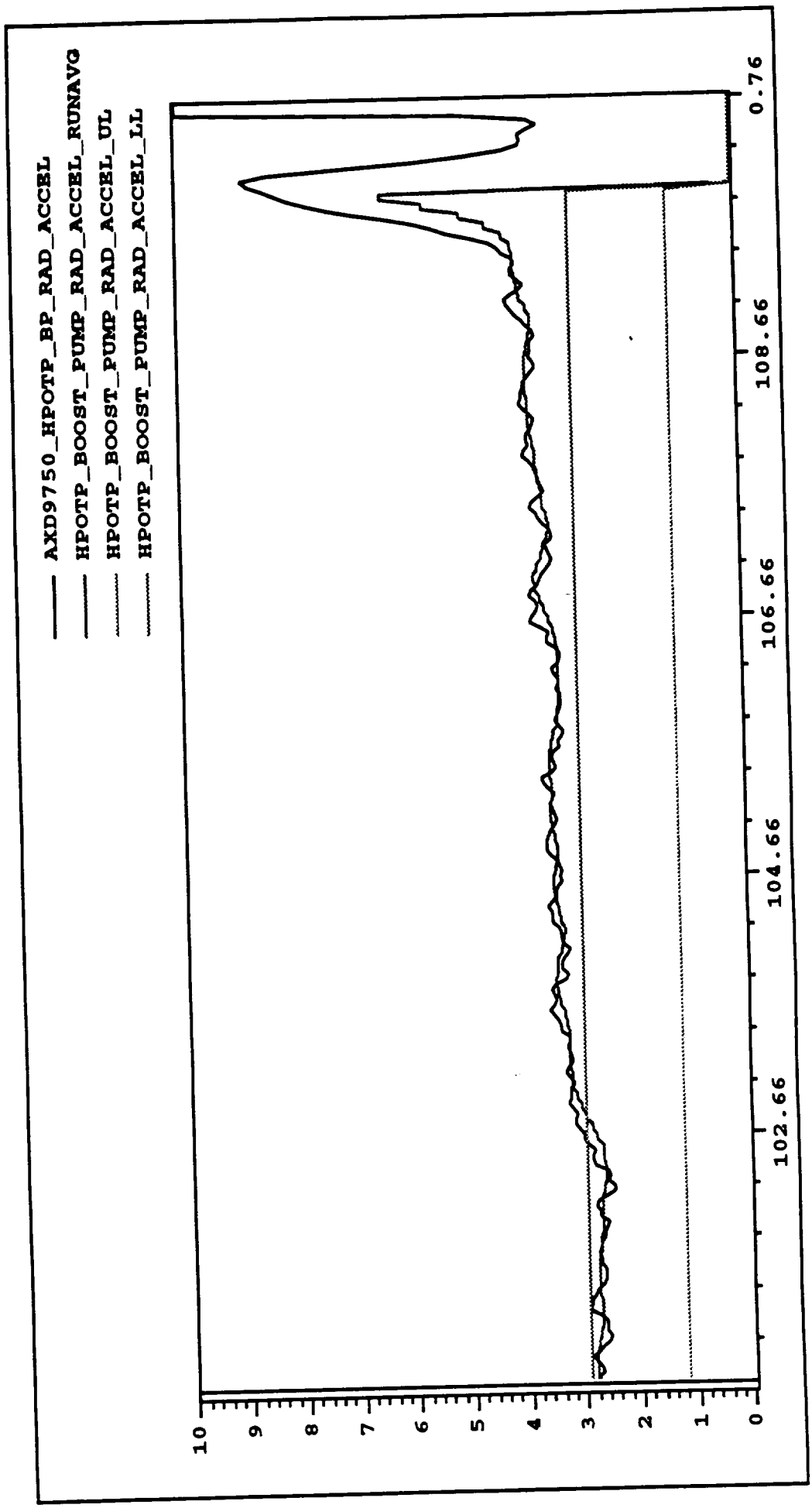
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_UL
HPOTP_TURB_DISCHARGE_TEMP_CH_B_LL
1600
1550
1500
1450
1400
1350
1300
1250
1200
1150
1100
21.34
41.34
61.34
81.34
101.34


OPOV_ACT_POSITION
OPOV_ACT_POSITION_RUNAVG
OPOV_ACT_POSITION_UL
OPOV_ACT_POSITION_LL
80
75
70
65
60
55
50
21.34
41.34
61.34
81.34
101.34


HPOTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_B
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_UL
HPOTP_TURB_DISCHARGE_TEMP_CH_B_LL
1600
1550
1500
1450
1400
1350
1300
1250
1200
1150
1100
102.62
104.62
106.62
108.62
0.72


AXD9750_HPOTP_BP_RAD_ACCEL
HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
HPOTP_BOOST_PUMP_RAD_ACCEL_UL
HPOTP_BOOST_PUMP_RAD_ACCEL_LL
10
9
8
7
6
5
4
3
2
1
0
21.34
41.34
61.34
81.34
101.34


AXD9750_HPOTP_BP_RAD_ACCEL
HPOTP_BOOST_PUMP_RAD_ACCEL_RUNAVG
HPOTP_BOOST_PUMP_RAD_ACCEL_UL
HPOTP_BOOST_PUMP_RAD_ACCEL_LL
10
9
8
7
6
5
4
3
2
1
0
102.66
104.66
106.66
108.66
0.76

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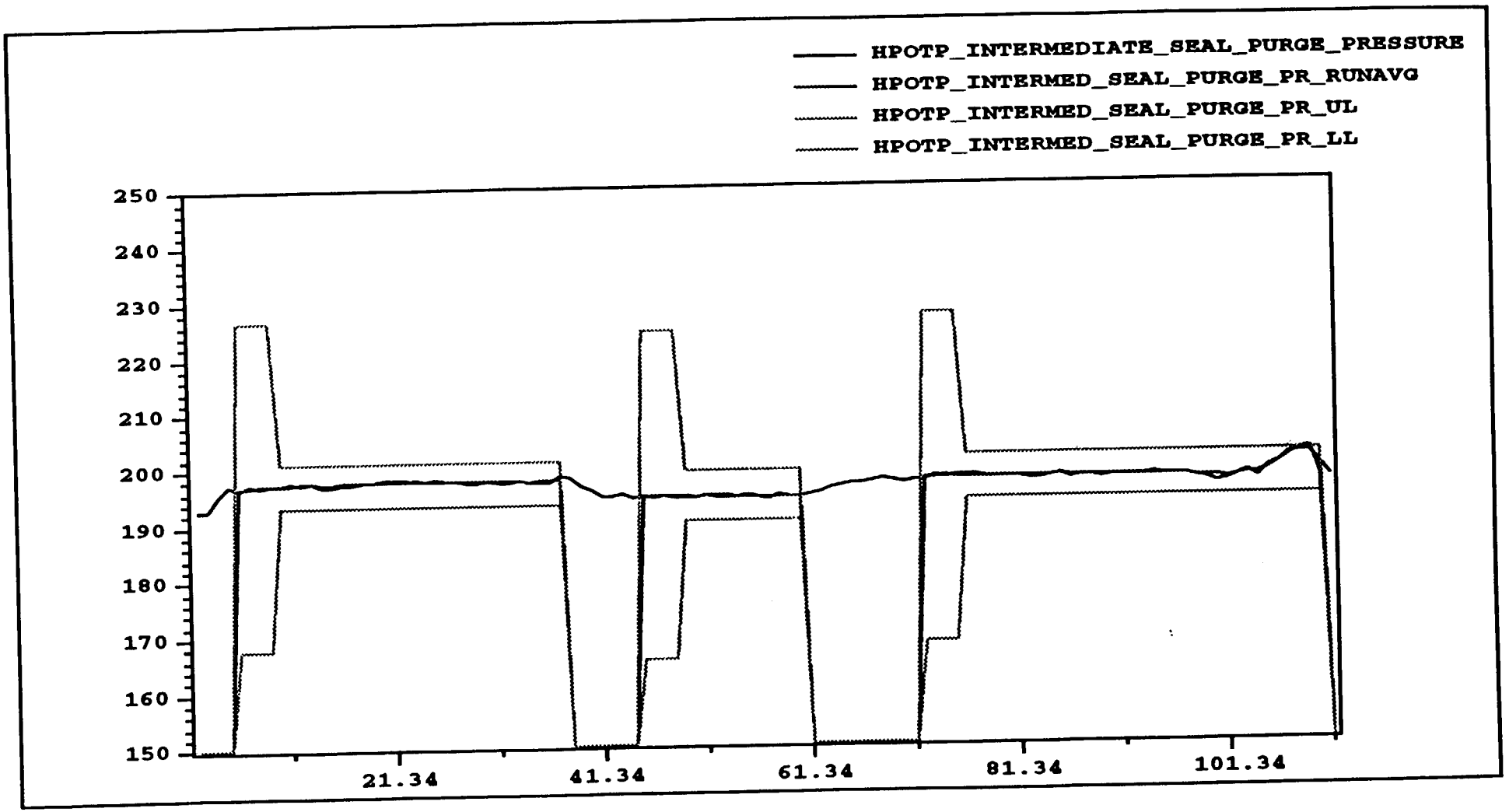
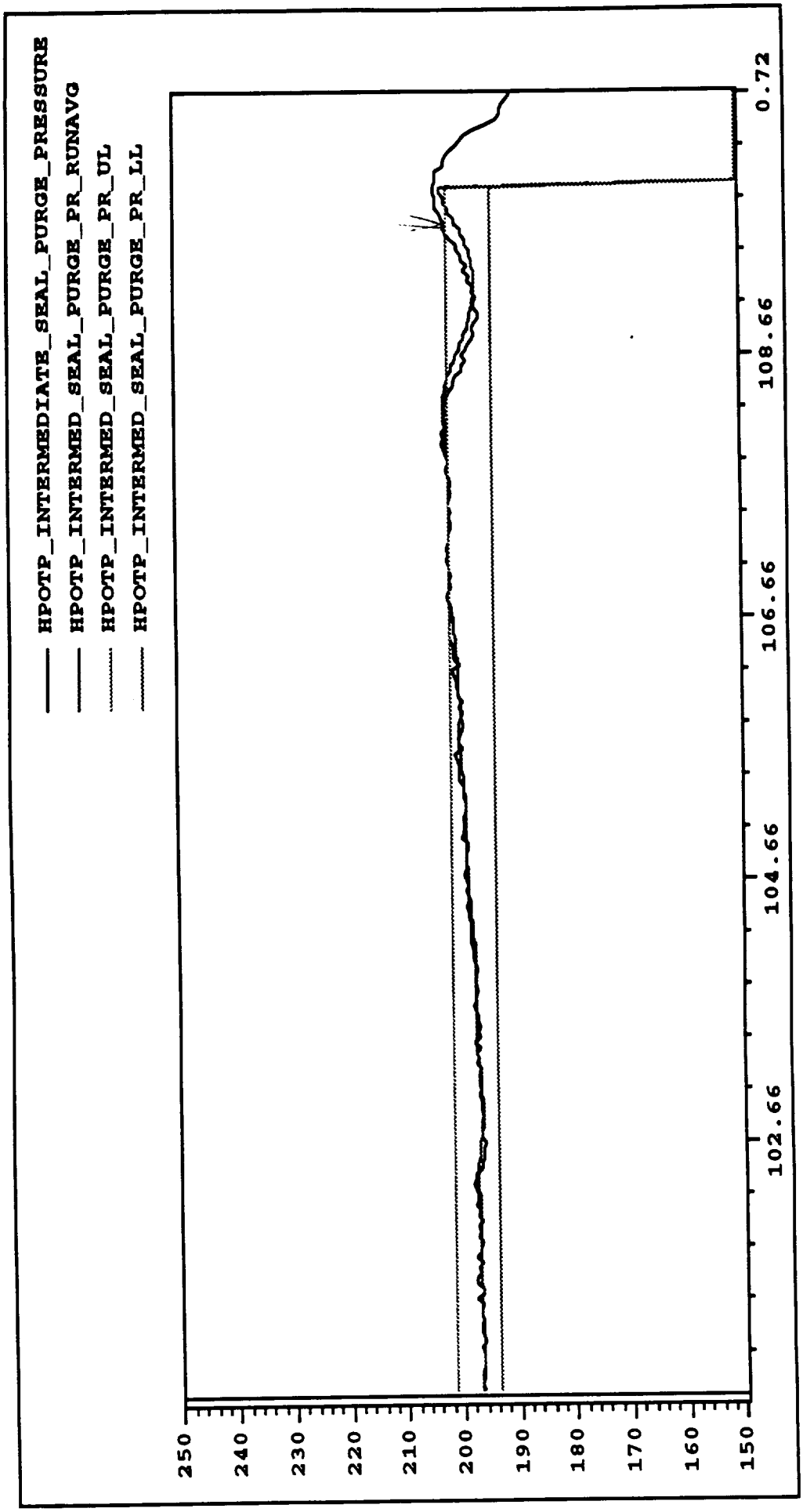

HPOTP_INTERMEDIATE_SEAL_PURGE_PRESSURE
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_UL
HPOTP_INTERMED_SEAL_PURGE_PR_LL
250
240
230
220
210
200
190
180
170
160
150
21.34
41.34
61.34
81.34
101.34


HPOTP_INTERMEDIATE_SEAL_PURGE_PRESSURE
HPOTP_INTERMED_SEAL_PURGE_PR_RUNAVG
HPOTP_INTERMED_SEAL_PURGE_PR_UL
HPOTP_INTERMED_SEAL_PURGE_PR_LL
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240
230
220
210
200
190
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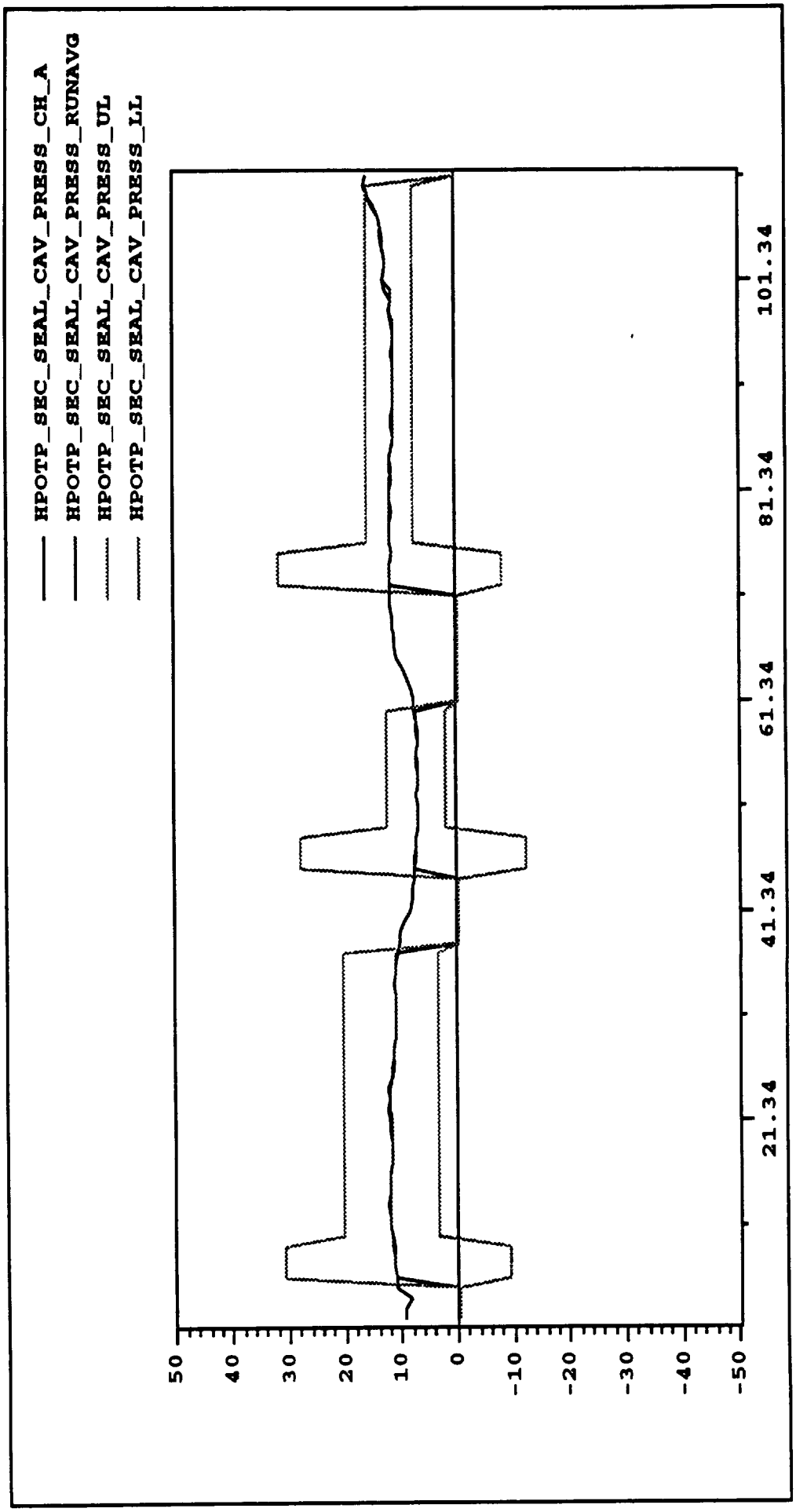
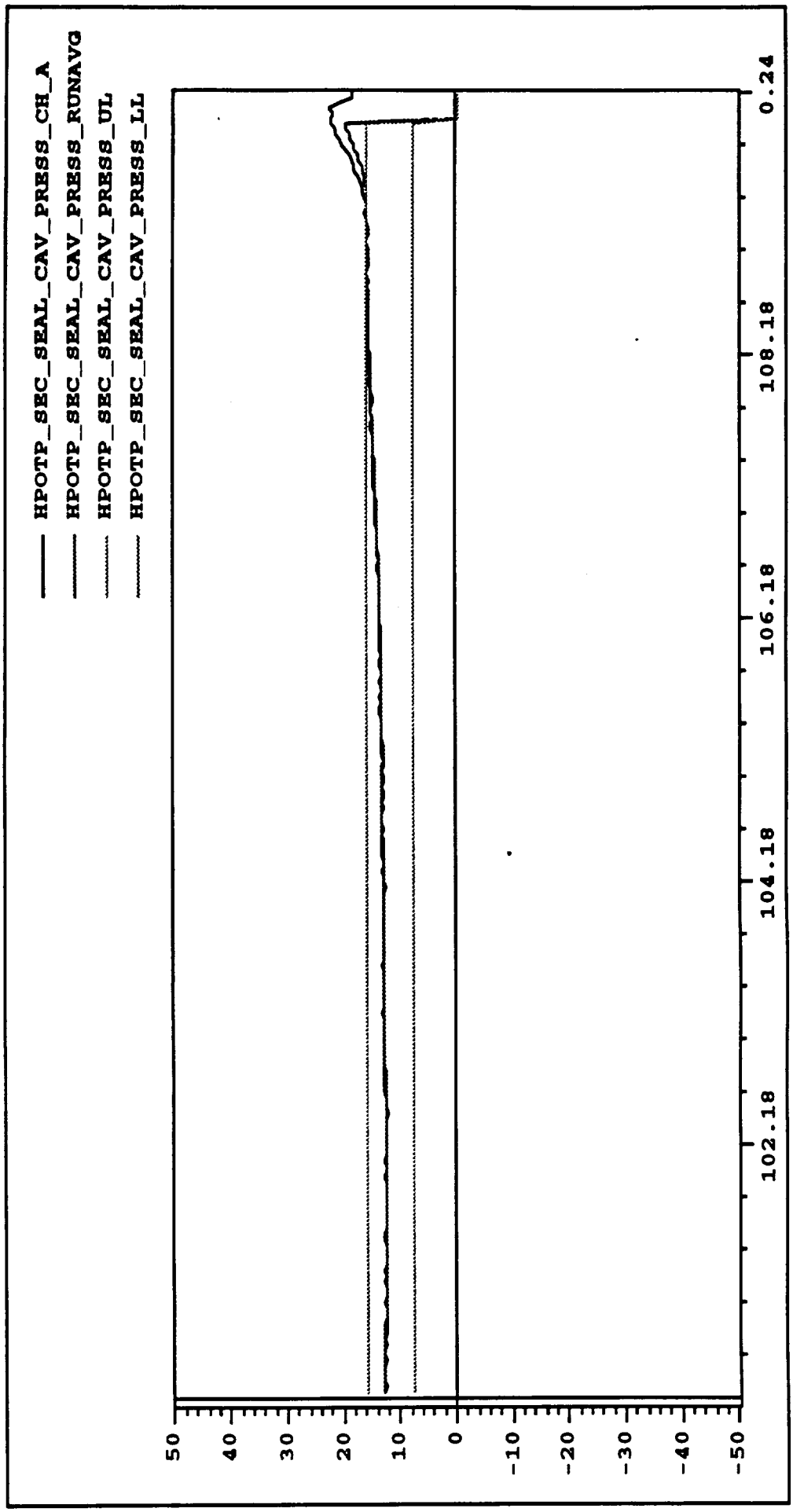
170
160
150
102.66
104.66
106.66
108.66
0.72


HPOTP_SEC_SEAL_CAV_PRESS_CH_A
HPOTP_SEC_SEAL_CAV_PRESS_RUNAVG
HPOTP_SEC_SEAL_CAV_PRESS_UL
HPOTP_SEC_SEAL_CAV_PRESS_LL
50
40
30
20
10
0
-10
-20
-30
-40
-50
21.34
41.34
61.34
81.34
101.34


HPOTP_SEC_SEAL_CAV_PRESS_CH_A
HPOTP_SEC_SEAL_CAV_PRESS_RUNAVG
HPOTP_SEC_SEAL_CAV_PRESS_UL
HPOTP_SEC_SEAL_CAV_PRESS_LL
50
40
30
20
10
0
-10
-20
-30
-40
-50
102.18
104.18
106.18
108.18
0.24

Appendix B - HSL Testing

Appendix B1 - DCUA Power Failure

Analysis of dcu_a_alg.T

safd_3_1.A

Time	Parameter
MS:NM-18.30 to MS:NM-21.50	FPOV_ACT_POSITION_RUNAVG
MS:NM-21.56	HPFTP_SHAFT_SPEED_RUNAVG
	LPFTP_SHAFT_SPEED_RUNAVG
MS:NM-21.60 to MS:NM-21.64	SAFD_CUTOFF
	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
	MCC_PRESSURE_RUNAVG
	HPFTP_SHAFT_SPEED_RUNAVG
	LPFTP_SHAFT_SPEED_RUNAVG
	FUEL_FLOWMETER_RUNAVG
MS:NM-21.68 to MS:NM-21.80	SAFD_CUTOFF
	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
	MCC_PRESSURE_RUNAVG
	HPFTP_SHAFT_SPEED_RUNAVG
	HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
	LPFTP_SHAFT_SPEED_RUNAVG
	FPOV_ACT_POSITION_RUNAVG
	FUEL_FLOWMETER_RUNAVG
MS:NM-21.84 to MS:NM-22.00	SAFD_CUTOFF
	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
	MCC_PRESSURE_RUNAVG
	HPFTP_SHAFT_SPEED_RUNAVG
	HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
	LPFTP_SHAFT_SPEED_RUNAVG
	FUEL_FLOWMETER_RUNAVG
MS:NM-22.04 to MS:NM-22.20	SAFD_CUTOFF
	HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
	MCC_PRESSURE_RUNAVG
	HPFTP_SHAFT_SPEED_RUNAVG
	LPFTP_SHAFT_SPEED_RUNAVG
	FUEL_FLOWMETER_RUNAVG
MS:NM-22.24	SAFD_CUTOFF
	MCC_PRESSURE_RUNAVG

HPFTP_SHAFT_SPEED_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-22.28 to MS:NM-22.84
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FUEL_FLOWMETER_RUNAVG

MS:NM-22.88 to MS:NM-24.04
HPFTP_SHAFT_SPEED_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-24.08 to MS:NM-24.48
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-24.52 to MS:NM-25.24
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-25.28 to MS:NM-25.48
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-25.52 to MS:NM-25.64
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-25.68 to MS:NM-25.76
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-25.80 to MS:NM-25.88
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-25.92 to MS:NM-26.36

SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-26.40
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-26.44 to MS:NM-26.64
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-26.68
SAFD_CUTOFF
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-26.72
SAFD_CUTOFF
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-26.76 to MS:NM-26.92
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-26.96 to MS:NM-27.08
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-27.12 to MS:NM-27.28
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-27.32 to MS:NM-27.52
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG

MS:NM-27.56 to MS:NM-27.64

```
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-27.68 to MS:NM-27.88
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-27.92 to MS:NM-28.08
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-28.12 to MS:NM-28.32
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-28.36 to MS:NM-28.48
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-28.52 to MS:NM-28.68
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-28.72 to MS:NM-28.84
            SAFD_CUTOFF
            HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-28.88 to MS:NM-29.00
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-29.04 to MS:NM-29.24
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-29.28 to MS:NM-29.40
            HPFTP_SHAFT_SPEED_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            LPFTP_SHAFT_SPEED_RUNAVG

    MS:NM-29.44 to MS:NM-30.00
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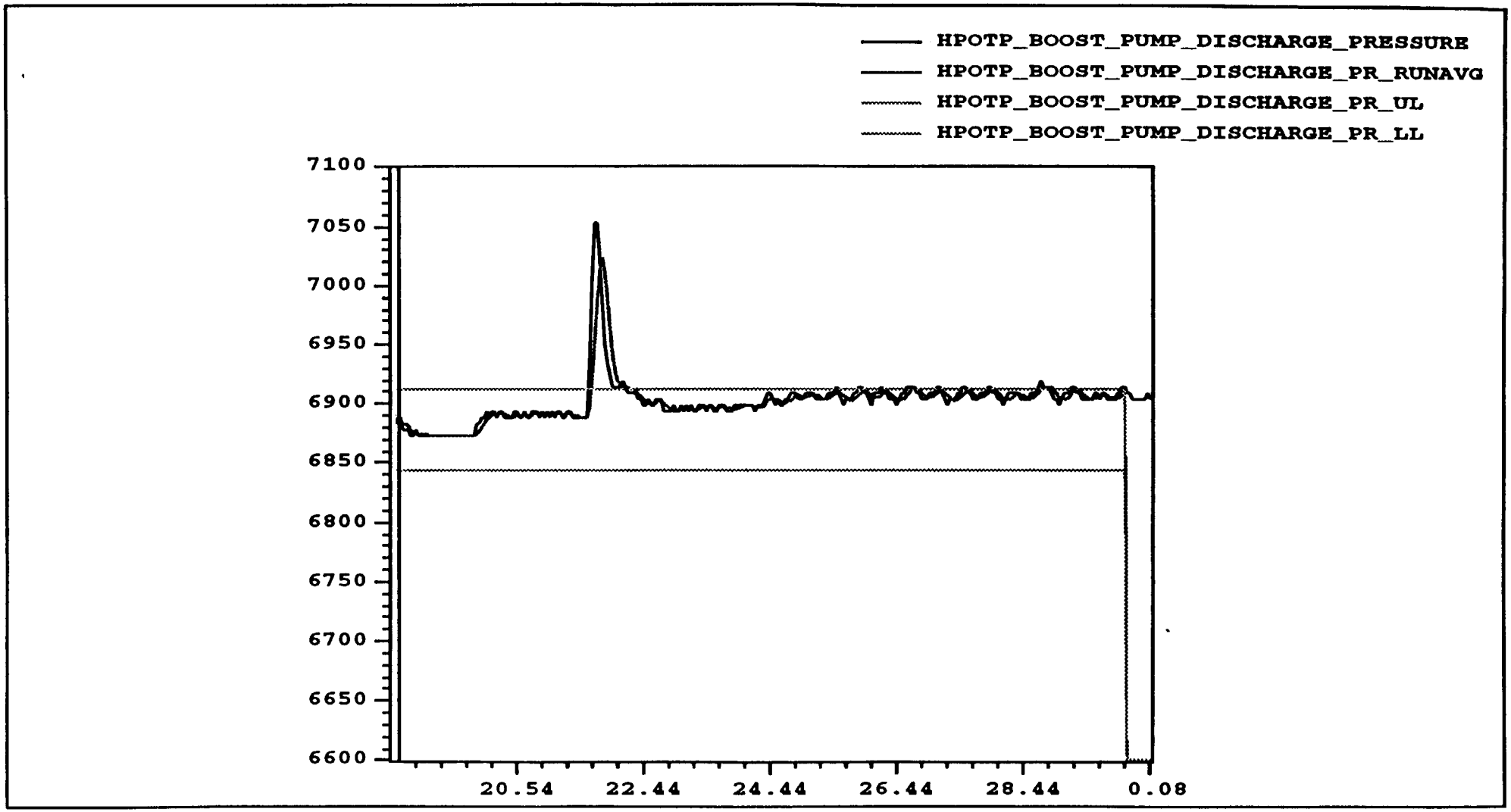
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
LPFTP_SHAFT_SPEED_RUNAVG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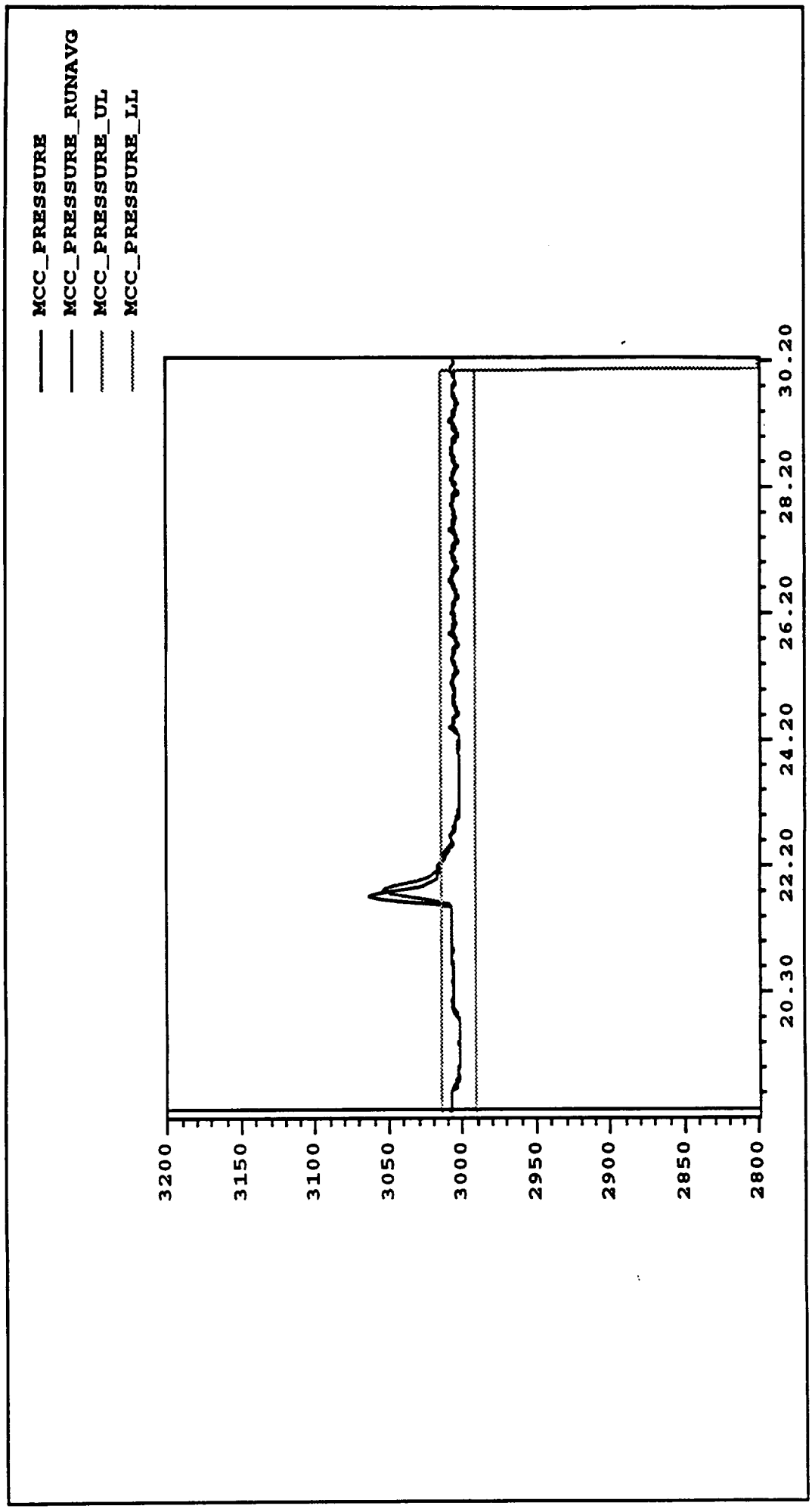
HPOTP_BOOST_PUMP_DISCHARGE_PR_RUNAVG
HPOTP_BOOST_PUMP_DISCHARGE_PR_UL
HPOTP_BOOST_PUMP_DISCHARGE_PR_LL
7100
7050
7000
6950
6900
6850
6800
6750
6700
6650
6600
20.54
22.44
24.44
26.44
28.44
0.08


MCC_PRESSURE
MCC_PRESSURE_RUNAVG
MCC_PRESSURE_UL
MCC_PRESSURE_LL
3200
3150
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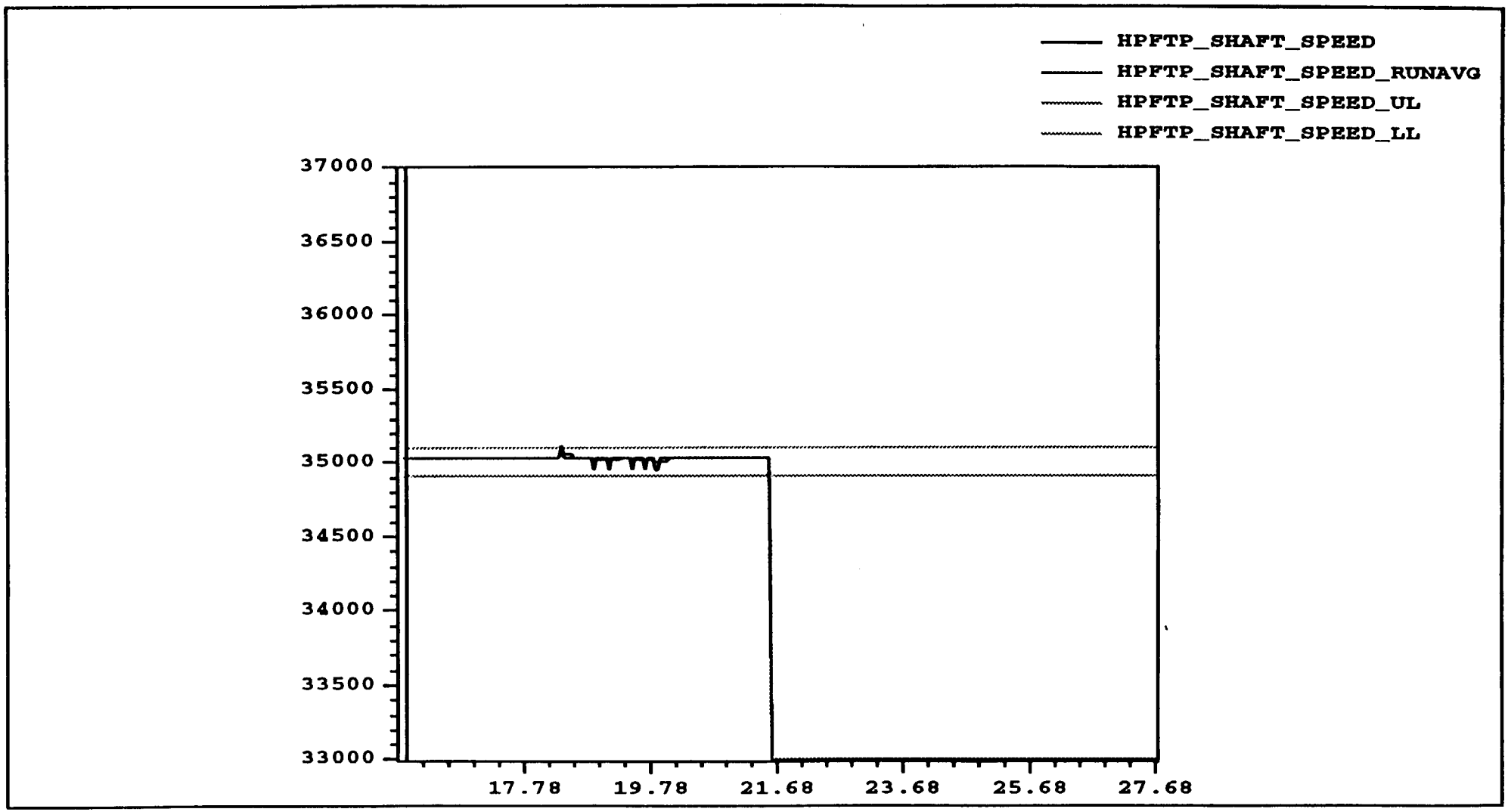
3000
2950
2900
2850
2800
20.30
22.20
24.20
26.20
28.20
30.20


HPFTP_SHAFT_SPEED
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_SHAFT_SPEED_UL
HPFTP_SHAFT_SPEED_LL
37000
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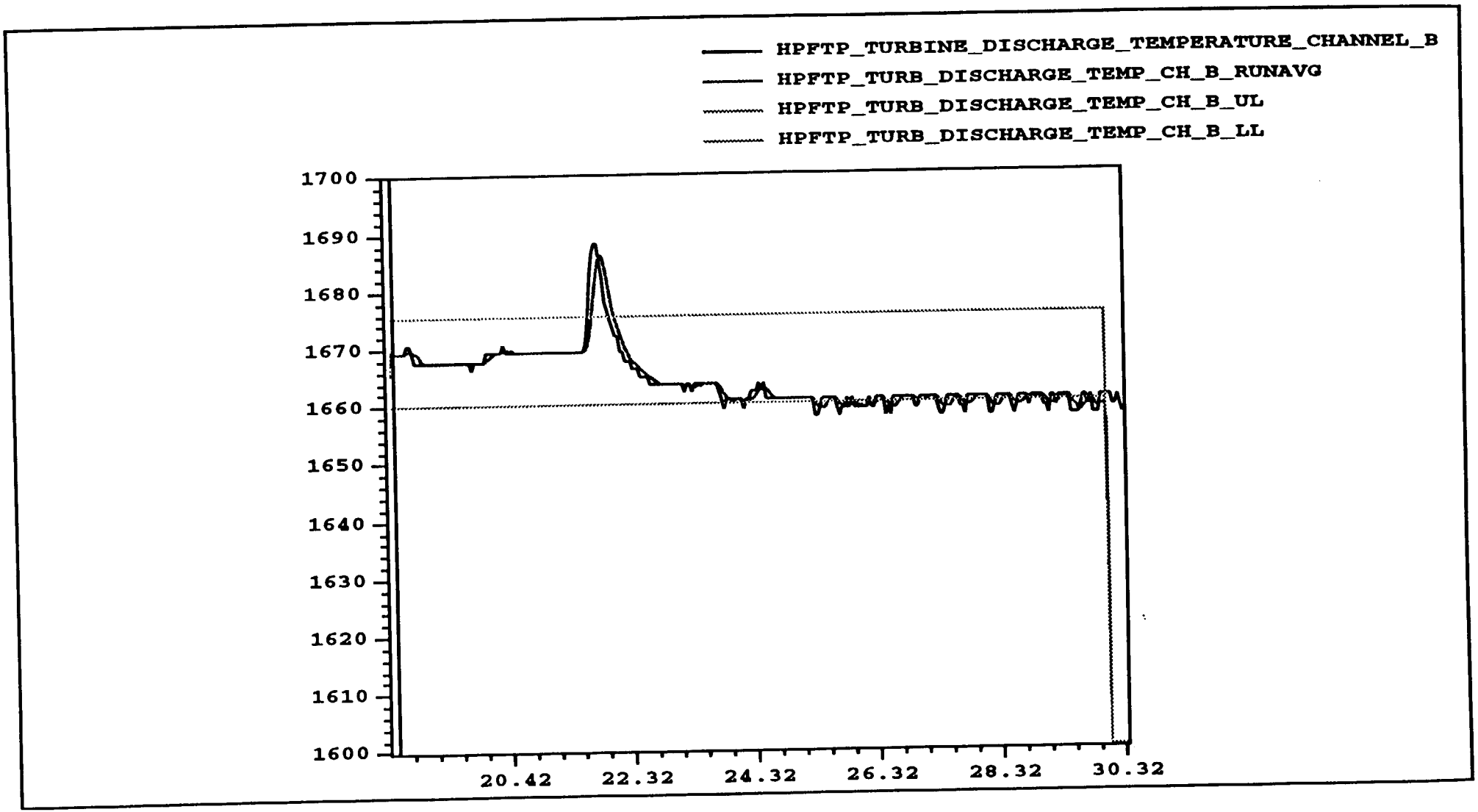
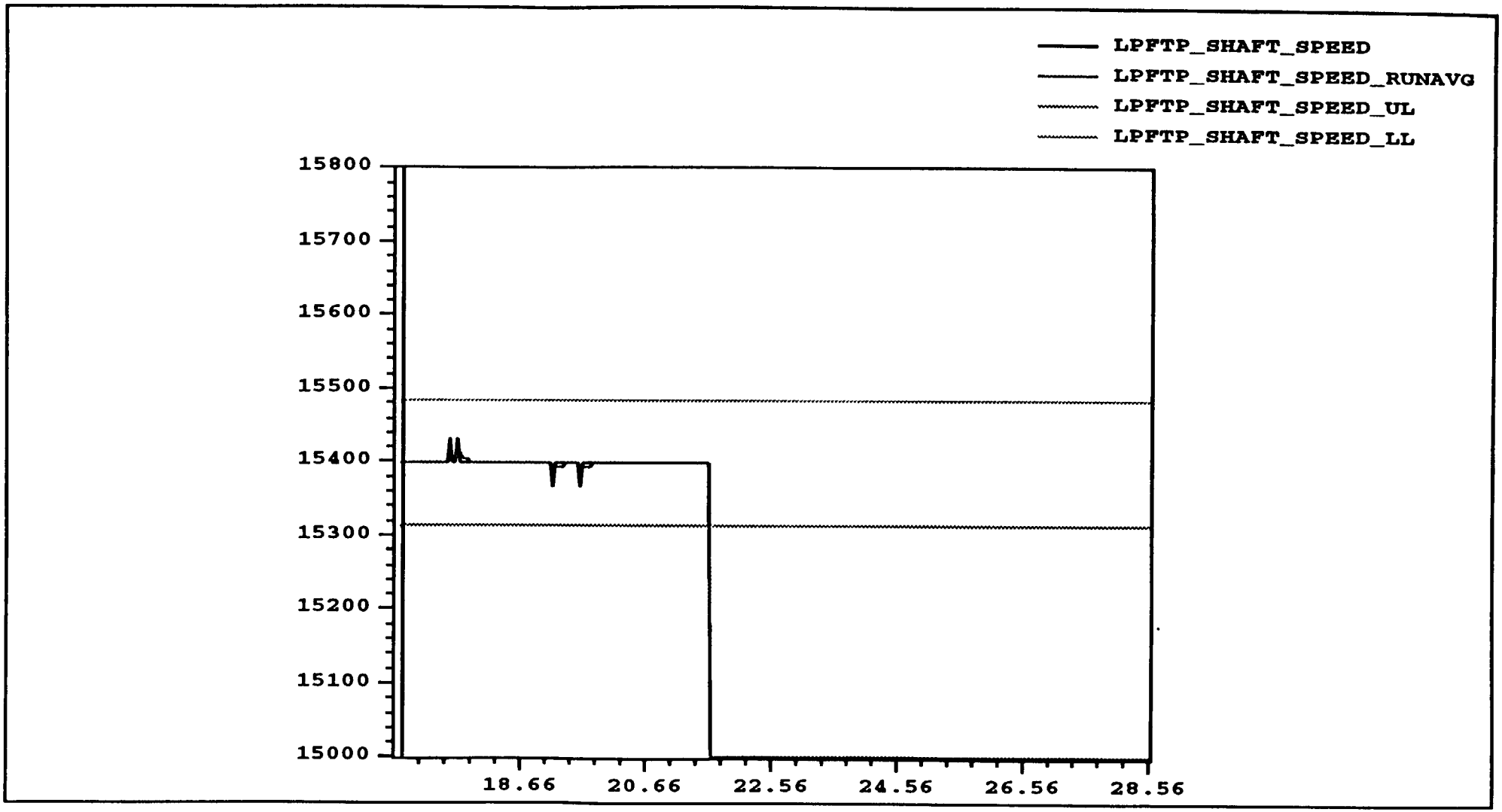
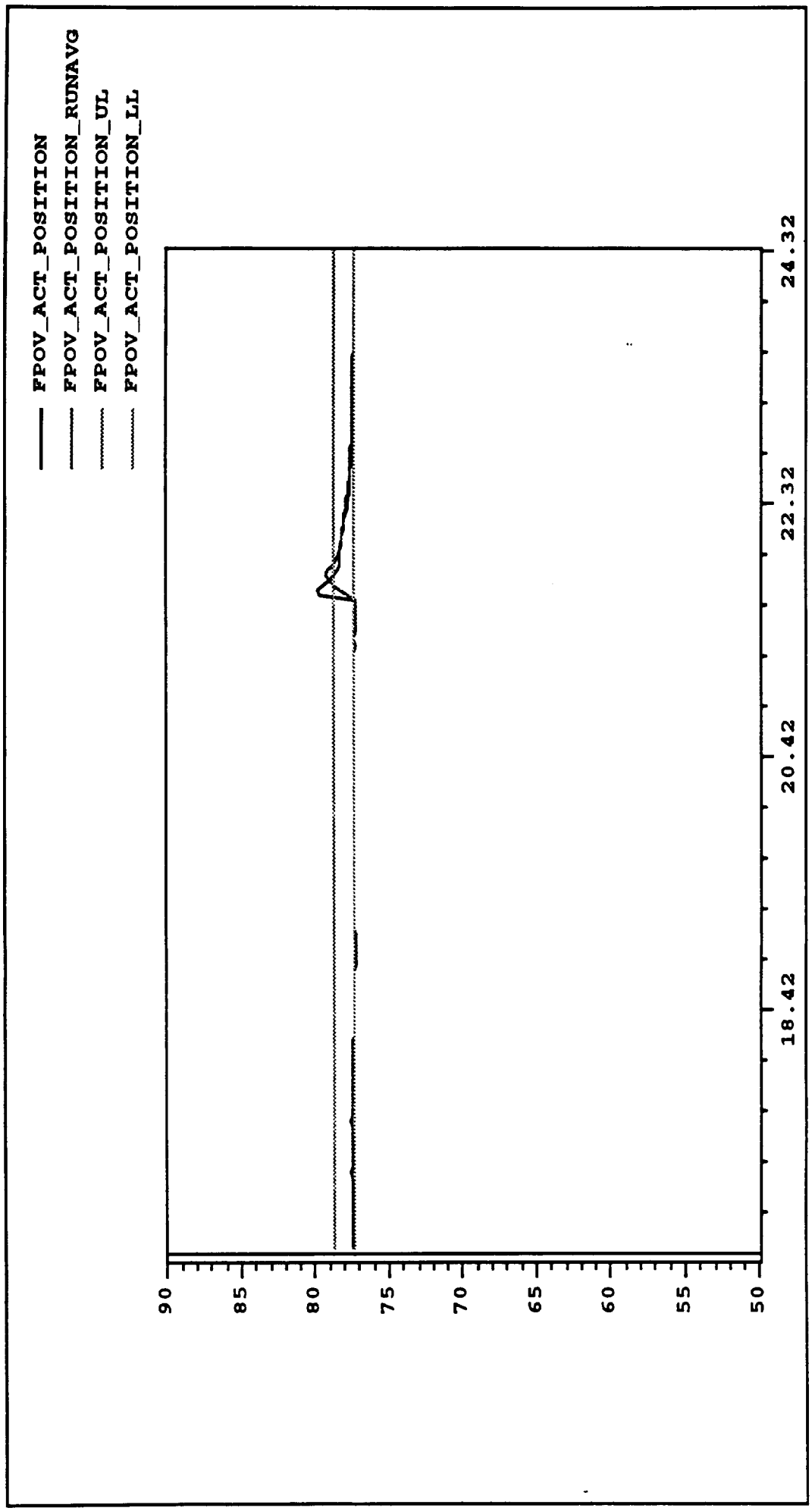
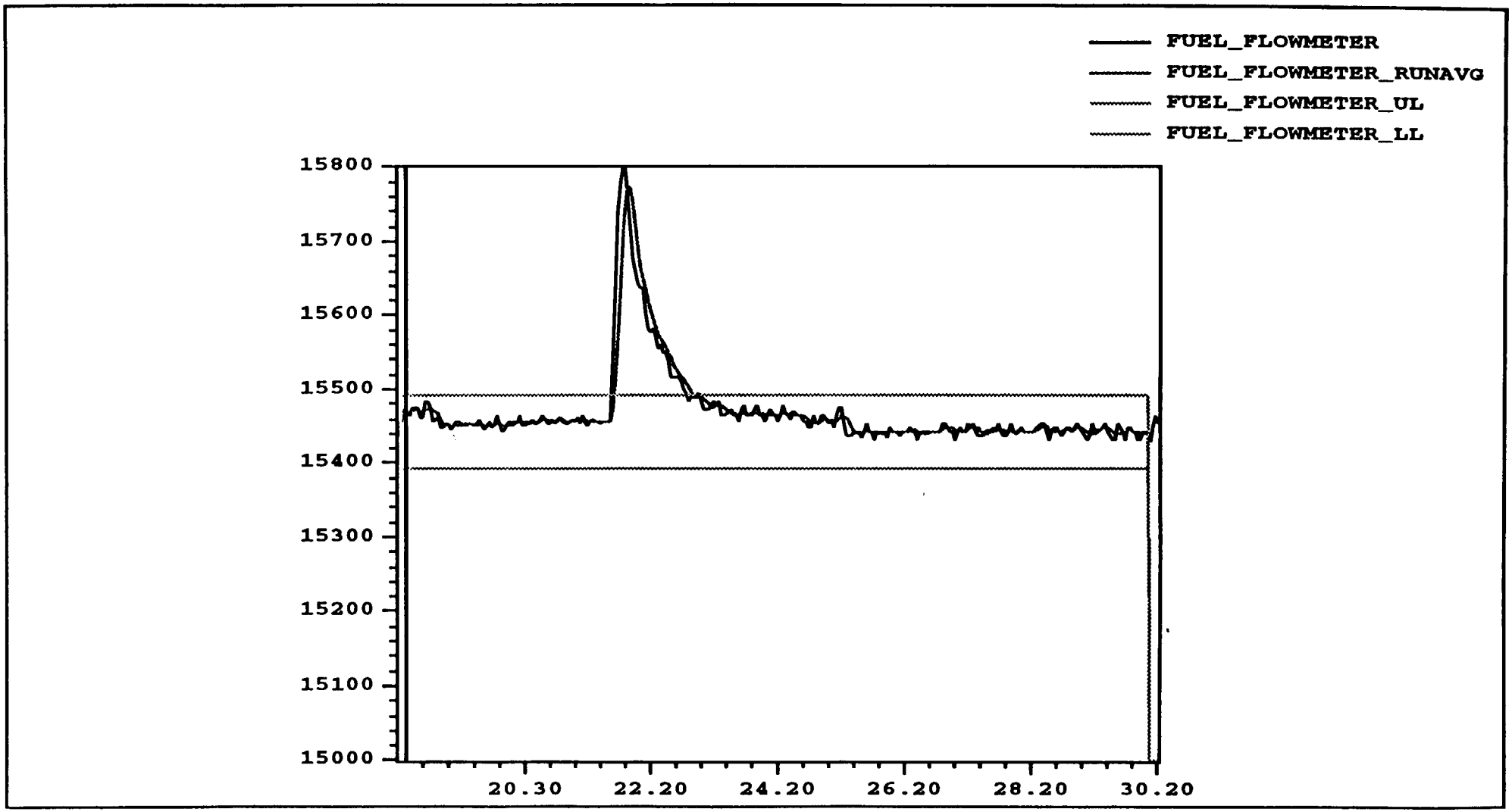
17.78
19.78
21.68
23.68
25.68
27.68


HPFTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_B
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_UL
HPFTP_TURB_DISCHARGE_TEMP_CH_B_LL
1700
1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
20.42
22.32
24.32
26.32
28.32
30.32


LPFTP_SHAFT_SPEED
LPFTP_SHAFT_SPEED_RUNAVG
LPFTP_SHAFT_SPEED_UL
LPFTP_SHAFT_SPEED_LL
15800
15700
15600
15500
15400
15300
15200
15100
15000
18.66
20.66
22.56
24.56
26.56
28.56


FPOV_ACT_POSITION
FPOV_ACT_POSITION_RUNAVG
FPOV_ACT_POSITION_UL
FPOV_ACT_POSITION_LL
90
85
80
75
70
65
60
55
50
18.42
20.42
22.32
24.32


FUEL_FLOWMETER
FUEL_FLOWMETER_RUNAVG
FUEL_FLOWMETER_UL
FUEL_FLOWMETER_LL
15800
15700
15600
15500
15400
15300
15200
15100
15000
20.30
22.20
24.20
26.20
28.20
30.20

Appendix B2 - DCUB Power Failure

Analysis of dcu_b_alg.T

safd_3_1.A

Time	Parameter
MS:NM-21.04	FUEL_FLOWMETER_RUNAVG
MS:NM-21.08	HPFTP_DISCHARGE_PRESSURE_RUNAVG FUEL_FLOWMETER_RUNAVG
MS:NM-21.12	SAFD_CUTOFF HPFTP_SHAFT_SPEED_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FUEL_FLOWMETER_RUNAVG
MS:NM-21.16	HPFTP_DISCHARGE_PRESSURE_RUNAVG FUEL_FLOWMETER_RUNAVG
MS:NM-21.20 to MS:NM-21.60	FUEL_FLOWMETER_RUNAVG
MS:NM-23.08 to MS:NM-23.16	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-23.44 to MS:NM-23.52	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-23.80 to MS:NM-23.88	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-24.08 to MS:NM-24.24	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-24.48 to MS:NM-24.56	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-24.88 to MS:NM-24.96	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-25.20 to MS:NM-25.40	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-25.52 to MS:NM-25.68	HPFTP_DISCHARGE_PRESSURE_RUNAVG
MS:NM-25.96 to MS:NM-26.08	

HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-26.28 to MS:NM-27.44
HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-27.52 to MS:NM-27.72
HPFTP_DISCHARGE_PRESSURE_RUNAVG

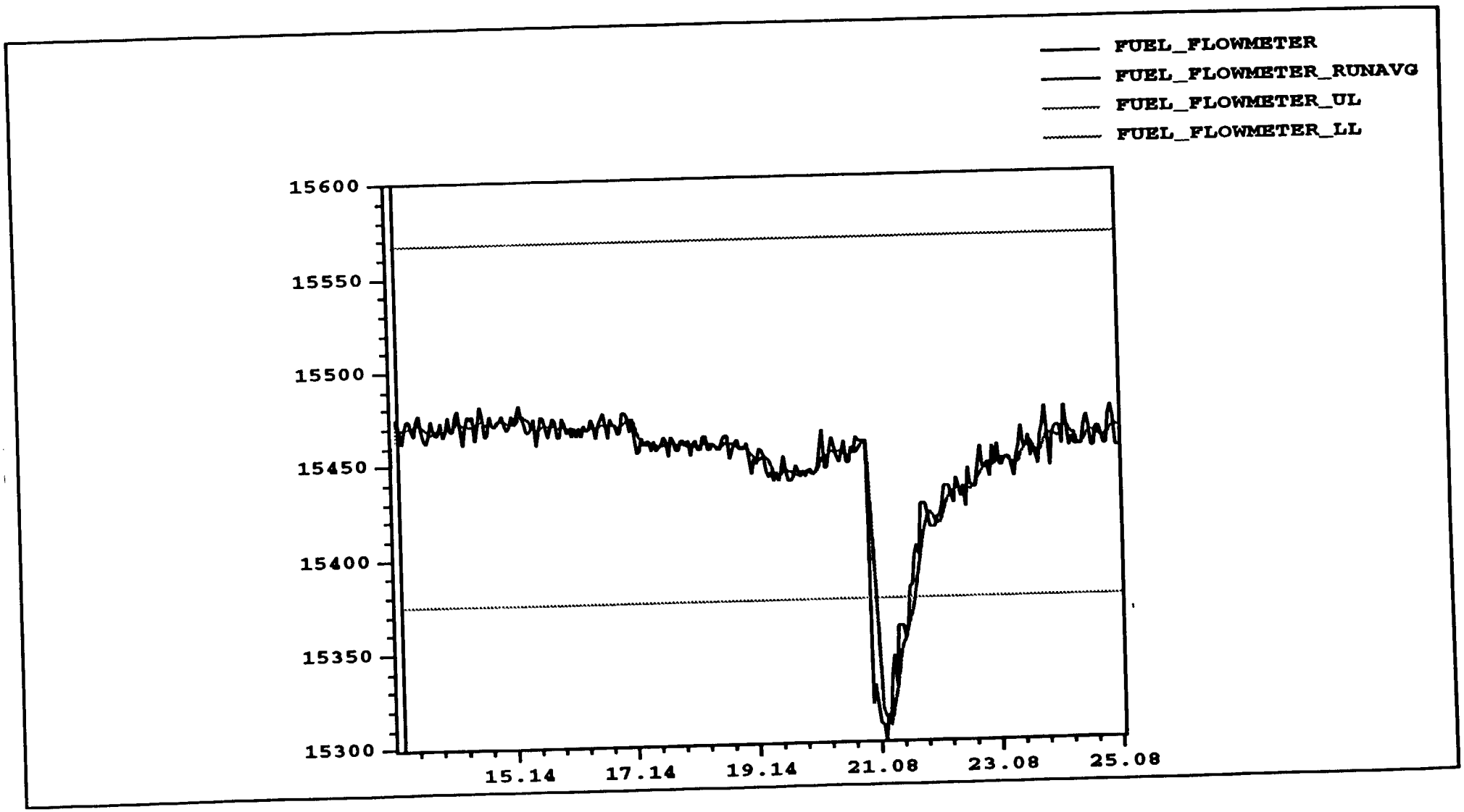
MS:NM-27.88 to MS:NM-28.20
HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-28.40 to MS:NM-29.04
HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-29.20 to MS:NM-29.60
HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-29.64 to MS:NM-29.76
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG

MS:NM-29.80
HPFTP_DISCHARGE_PRESSURE_RUNAVG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FUEL_FLOWMETER_UL
FUEL_FLOWMETER_LL
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17.14
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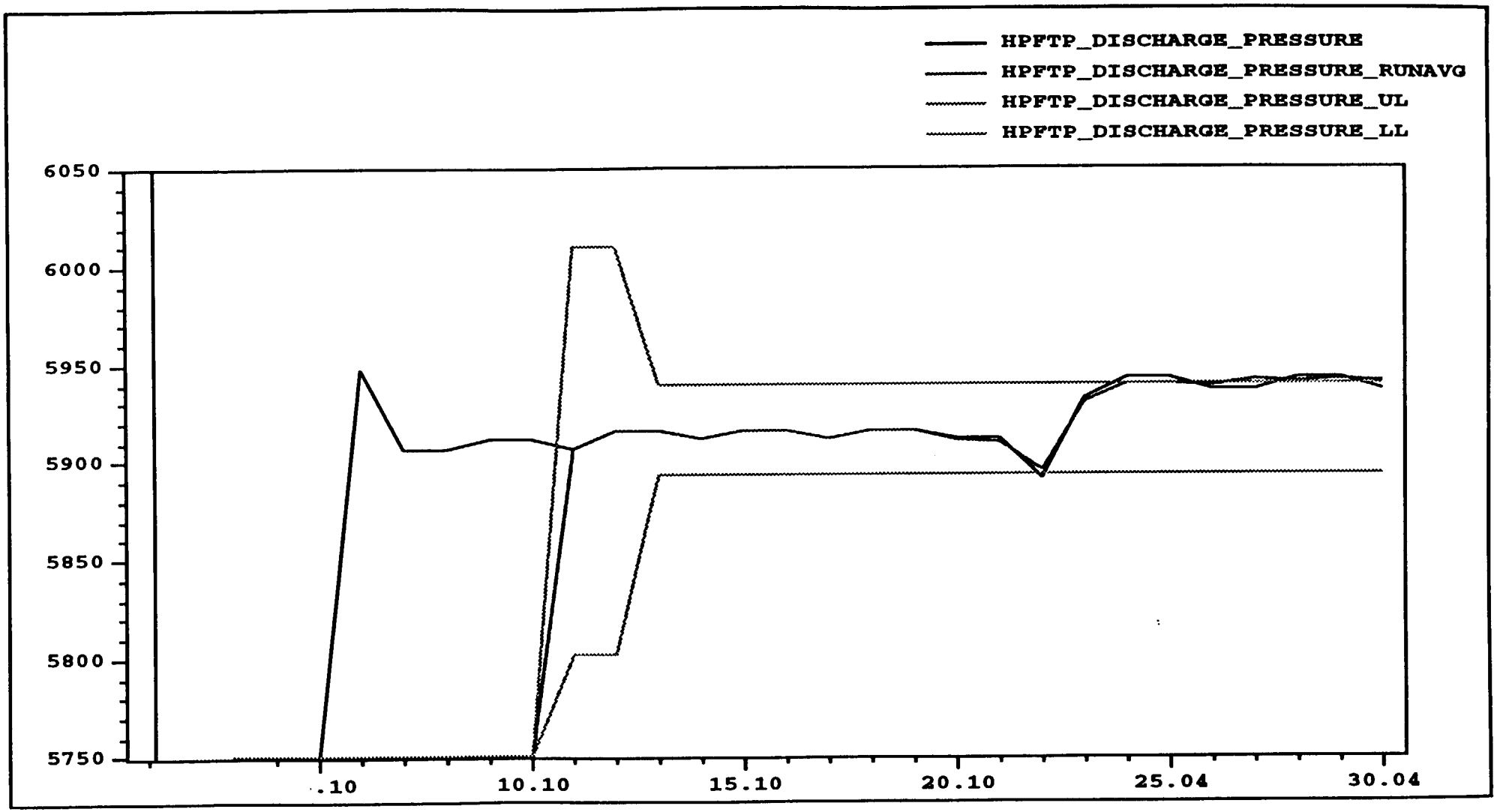
23.08
25.08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HPFTP_DISCHARGE_PRESSURE_LL
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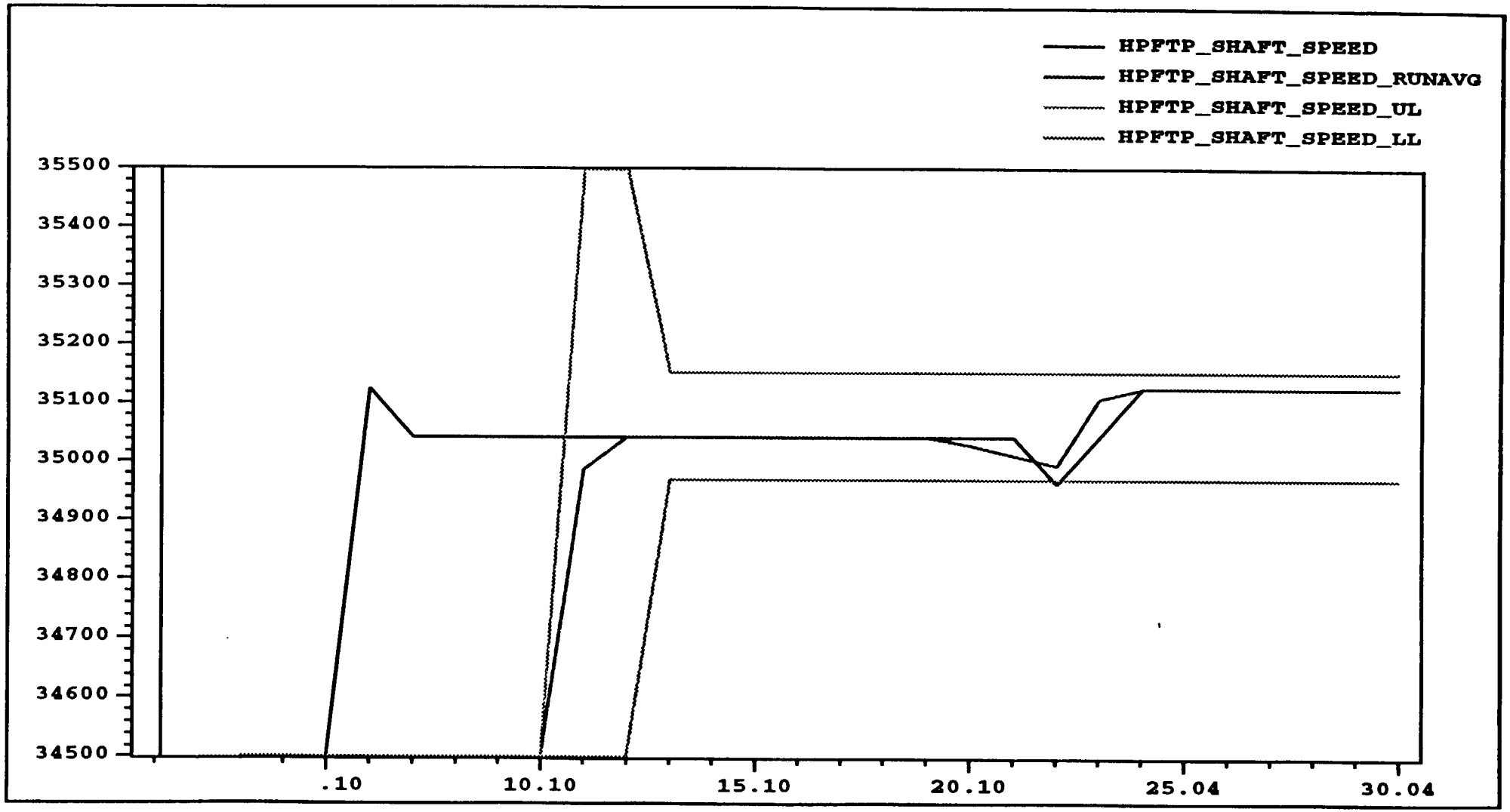
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HPFTP_SHAFT_SPEED_UL
HPFTP_SHAFT_SPEED_LL
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35300
35200
35100
35000
34900
34800
34700
34600
34500
.10
10.10
15.10
20.10
25.04
30.04

Appendix B3 - IE Channel A Failure

Analysis of ie_a_alg.T

safd_3_1.A

Time	Parameter
MS:NM-15.10 to MS:NM-15.30	FUEL_FLOWMETER_RUNAVG
MS:NM-15.34 to MS:NM-15.98	FPOV_ACT_POSITION_RUNAVG FUEL_FLOWMETER_RUNAVG
MS:NM-16.02 to MS:NM-16.62	FPOV_ACT_POSITION_RUNAVG
MS:NM-16.66 to MS:NM-16.70	HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-16.74 to MS:NM-16.90	FPOV_ACT_POSITION_RUNAVG
MS:NM-16.94 to MS:NM-17.50	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-17.54 to MS:NM-17.86	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-17.90 to MS:NM-17.94	SAFD_CUTOFF HPFTP_SHAFT_SPEED_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-17.98	SAFD_CUTOFF HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-18.02 to MS:NM-18.06	SAFD_CUTOFF HPFTP_SHAFT_SPEED_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG

HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.10 to MS:NM-18.14
SAFD_CUTOFF
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.18 to MS:NM-18.22
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.26
SAFD_CUTOFF
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.30 to MS:NM-18.50
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.54 to MS:NM-18.70
SAFD_CUTOFF
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-18.74 to MS:NM-19.10
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-19.14 to MS:NM-19.34
SAFD_CUTOFF
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-19.38 to MS:NM-19.46
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-19.50 to MS:NM-19.54
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-19.58 to MS:NM-19.90
SAFD_CUTOFF
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-19.94 to MS:NM-20.18
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-20.22 to MS:NM-20.30
SAFD_CUTOFF
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-20.34 to MS:NM-20.54
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-20.58 to MS:NM-20.90
SAFD_CUTOFF
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG

```
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-20.94 to MS:NM-21.30
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-21.34 to MS:NM-21.46
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-21.50 to MS:NM-21.70
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-21.74 to MS:NM-22.02
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-22.06 to MS:NM-22.34
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-22.38 to MS:NM-22.50
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-22.54 to MS:NM-22.90
            SAFD_CUTOFF
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            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-22.94 to MS:NM-23.22
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-23.26 to MS:NM-23.34
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-23.38 to MS:NM-23.78
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-23.82 to MS:NM-24.14
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-24.18 to MS:NM-24.38
            SAFD_CUTOFF
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            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

      MS:NM-24.42 to MS:NM-24.46
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
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            FPOV_ACT_POSITION_RUNAVG

        MS:NM-24.50 to MS:NM-24.54
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-24.58 to MS:NM-24.62
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-24.66
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-24.70 to MS:NM-25.02
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-25.06 to MS:NM-25.26
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-25.30 to MS:NM-25.54
            SAFD_CUTOFF
            HPFTP_SHAFT_SPEED_RUNAVG
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
            HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
            HPFTP_DISCHARGE_PRESSURE_RUNAVG
            FPOV_ACT_POSITION_RUNAVG

        MS:NM-25.58 to MS:NM-25.82
            SAFD_CUTOFF
            HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
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HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG

MS:NM-25.86 to MS:NM-25.94
SAFD_CUTOFF
HPFTP_SHAFT_SPEED_RUNAVG
HPFTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
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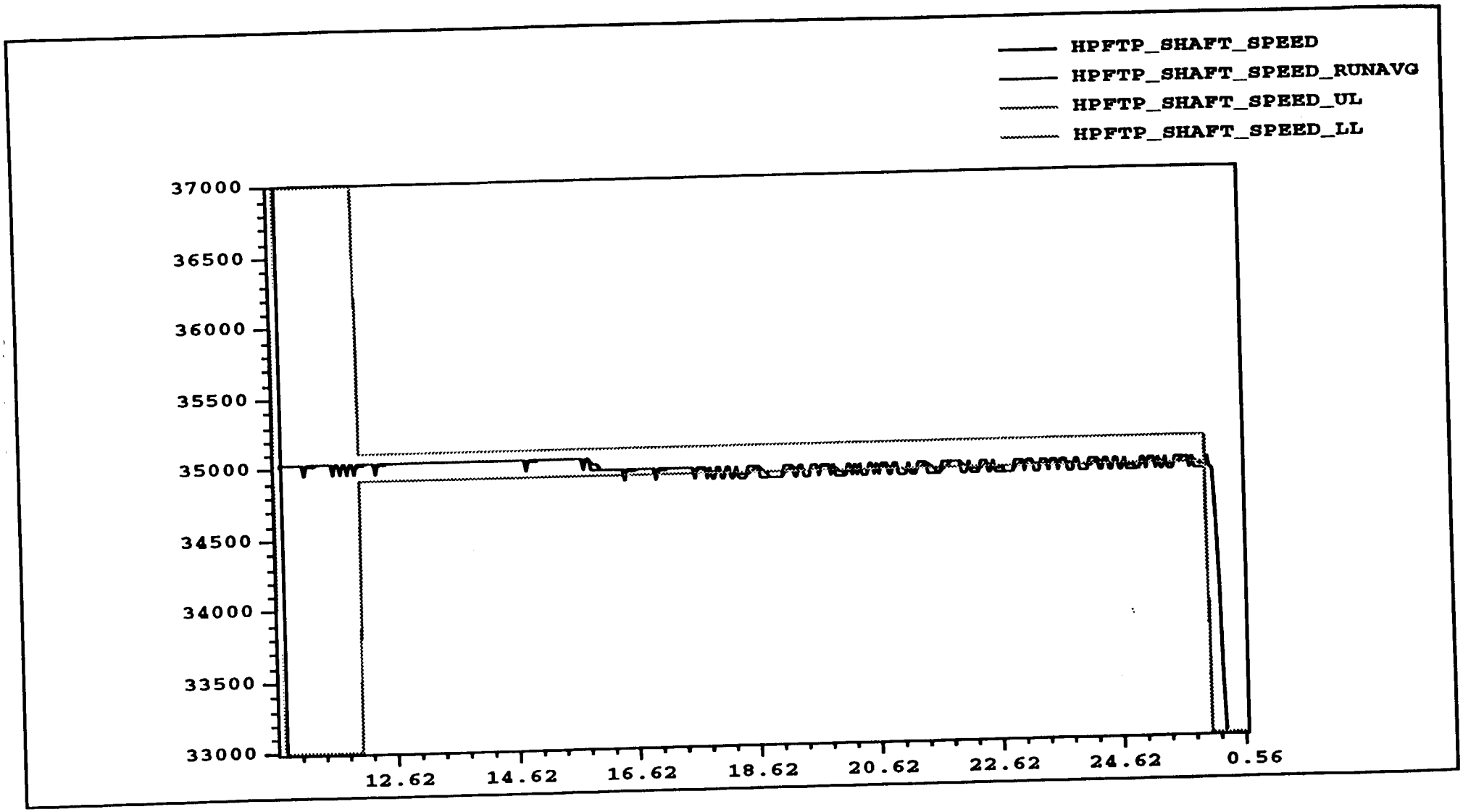
HPFTP_DISCHARGE_PRESSURE_RUNAVG
FPOV_ACT_POSITION_RUNAVG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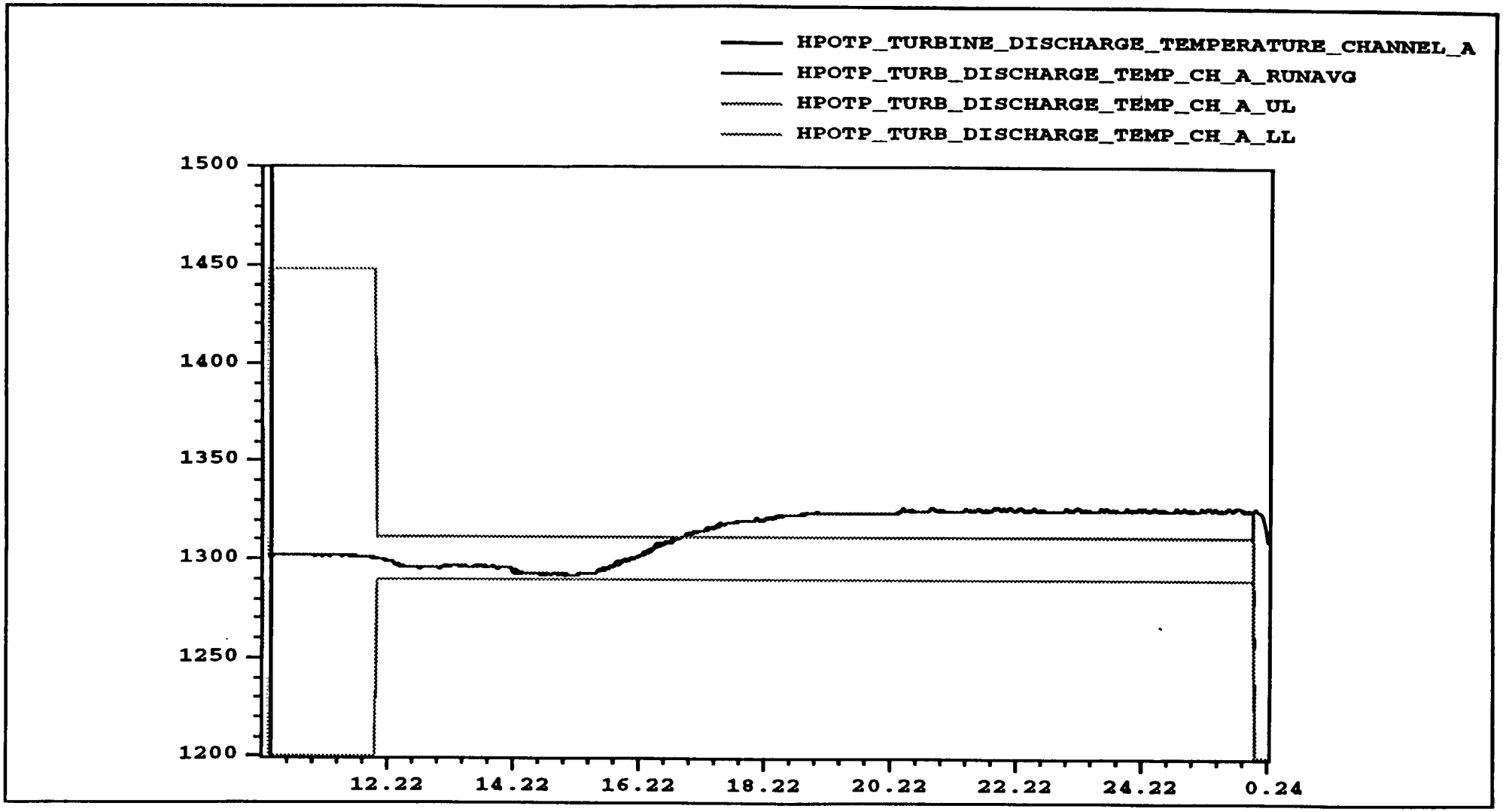
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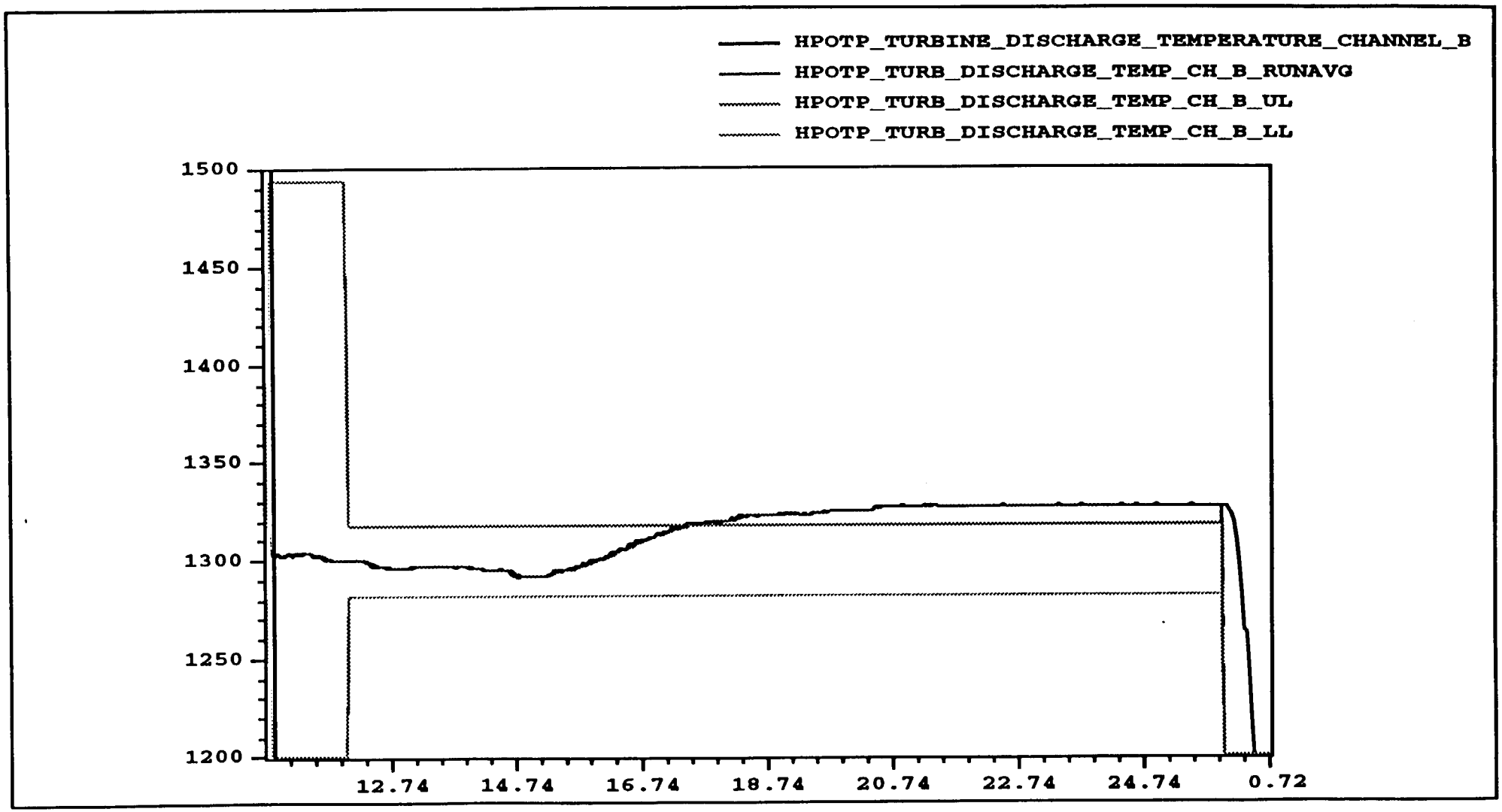
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HPOTP_TURB_DISCHARGE_TEMP_CH_B_LL
1500
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1200
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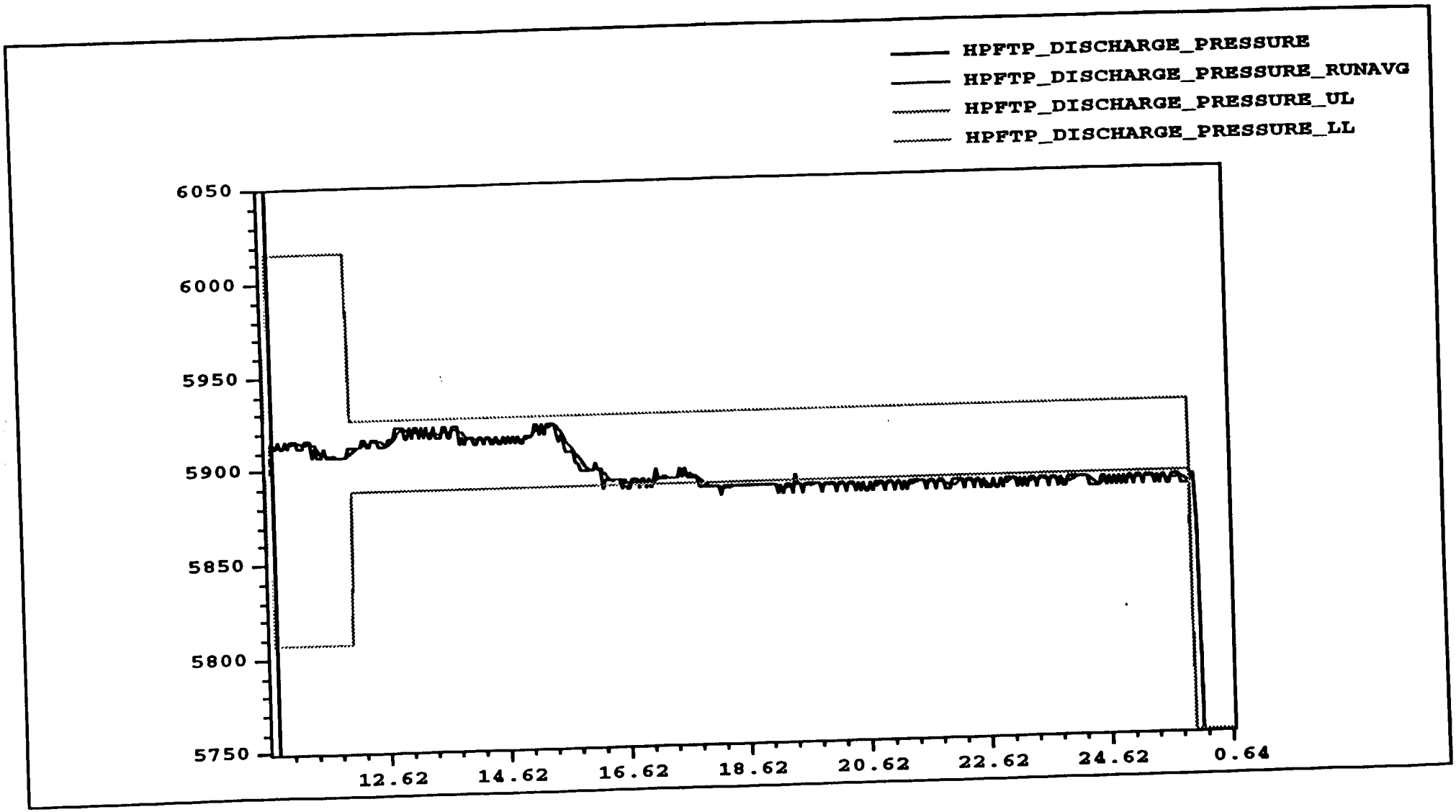
22.74
24.74
0.72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5950
5900
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5750
12.62
14.62
16.62
18.62
20.62
22.62
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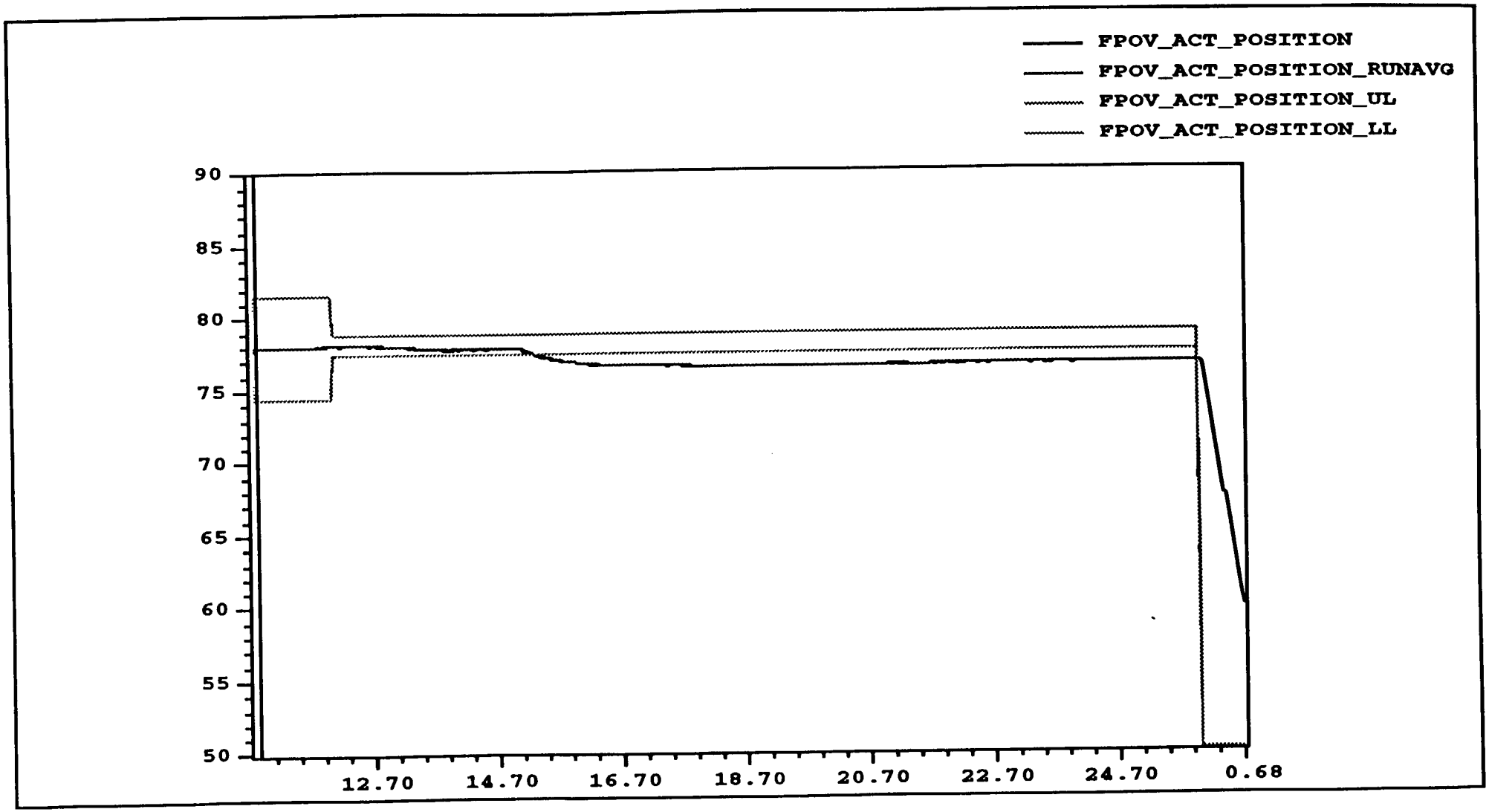
0.64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FPOV_ACT_POSITION_LL
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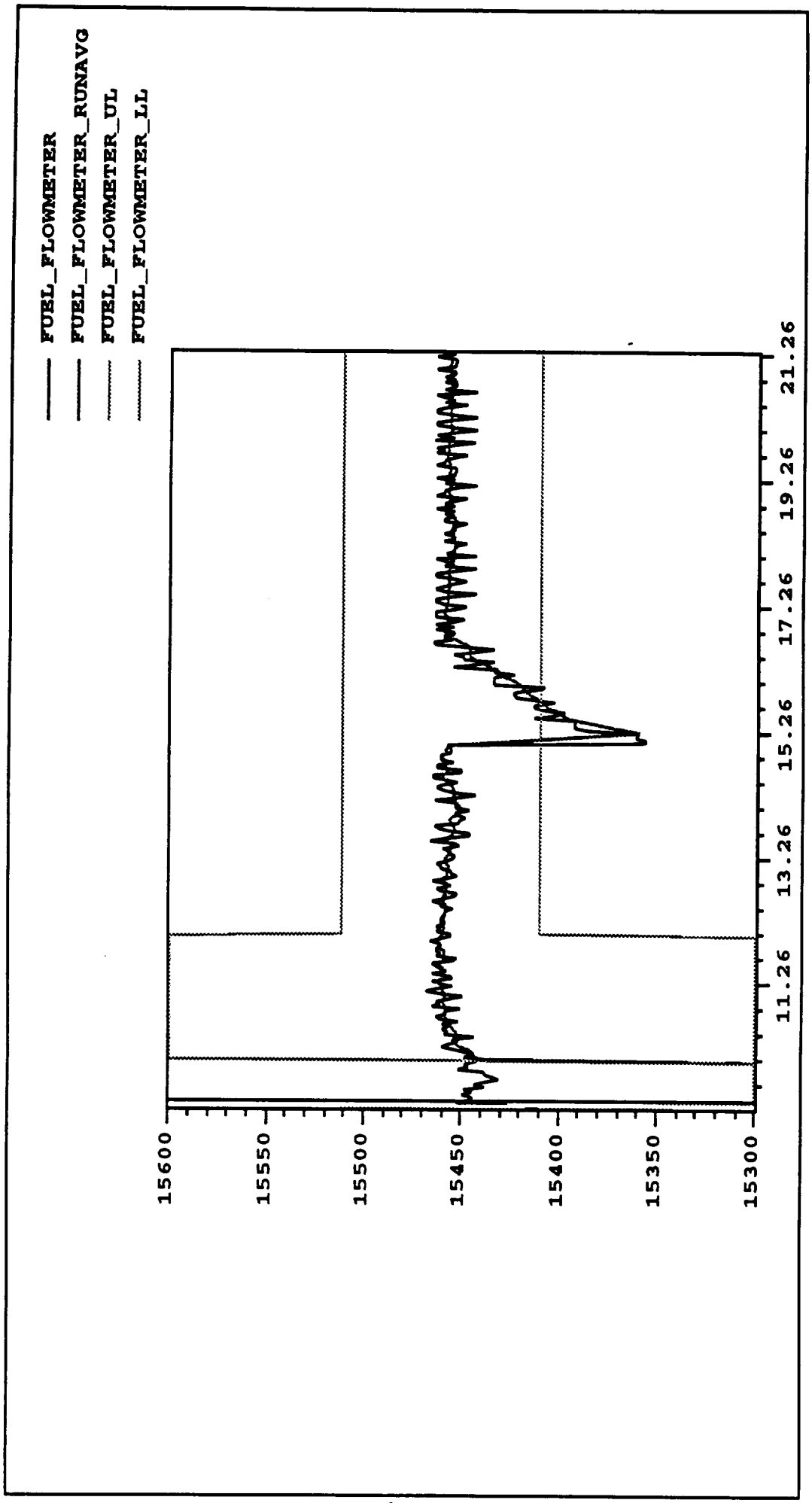
70
65
60
55
50
12.70
14.70
16.70
18.70
20.70
22.70
24.70
0.68

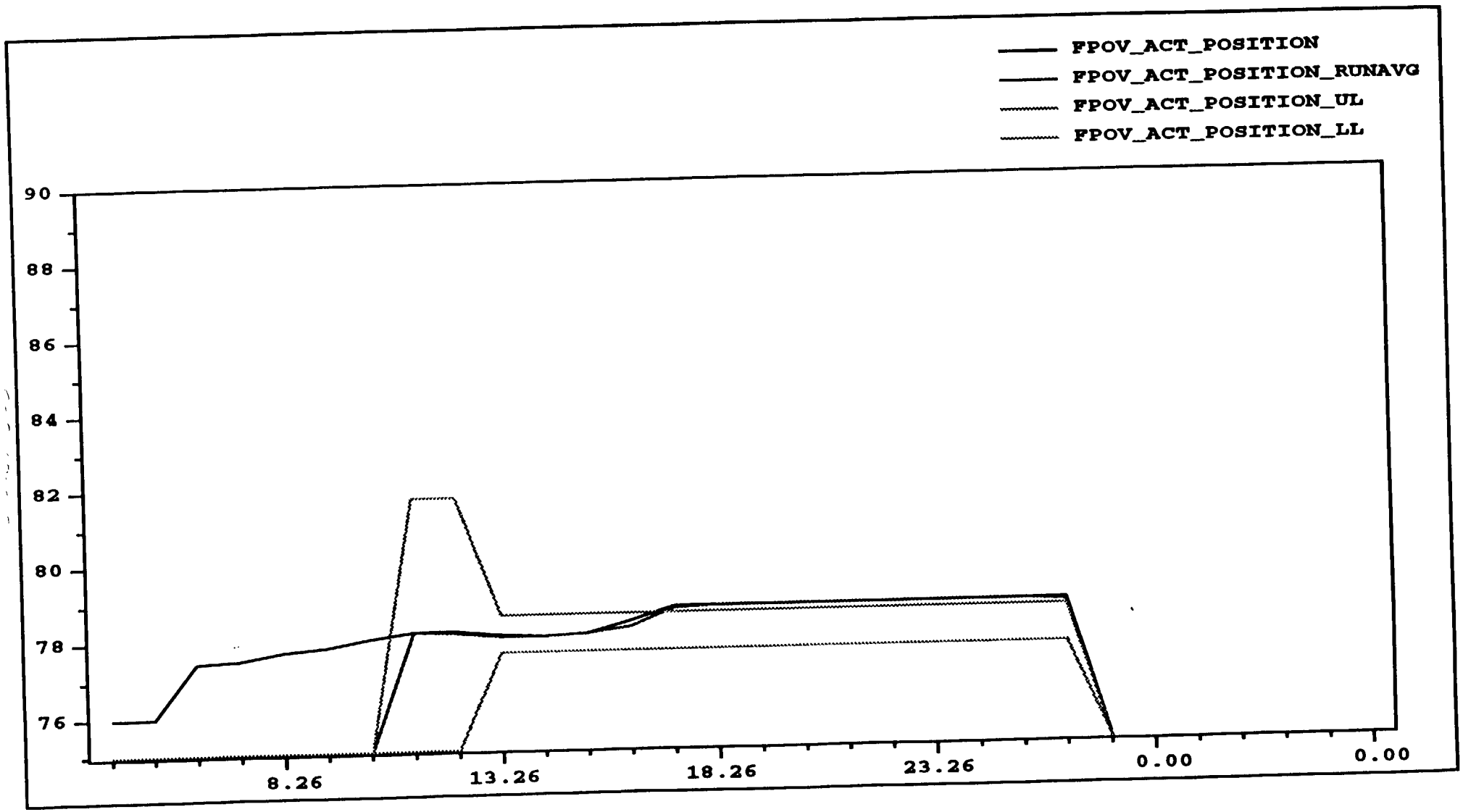
Appendix B4 - IE Channel B Failure

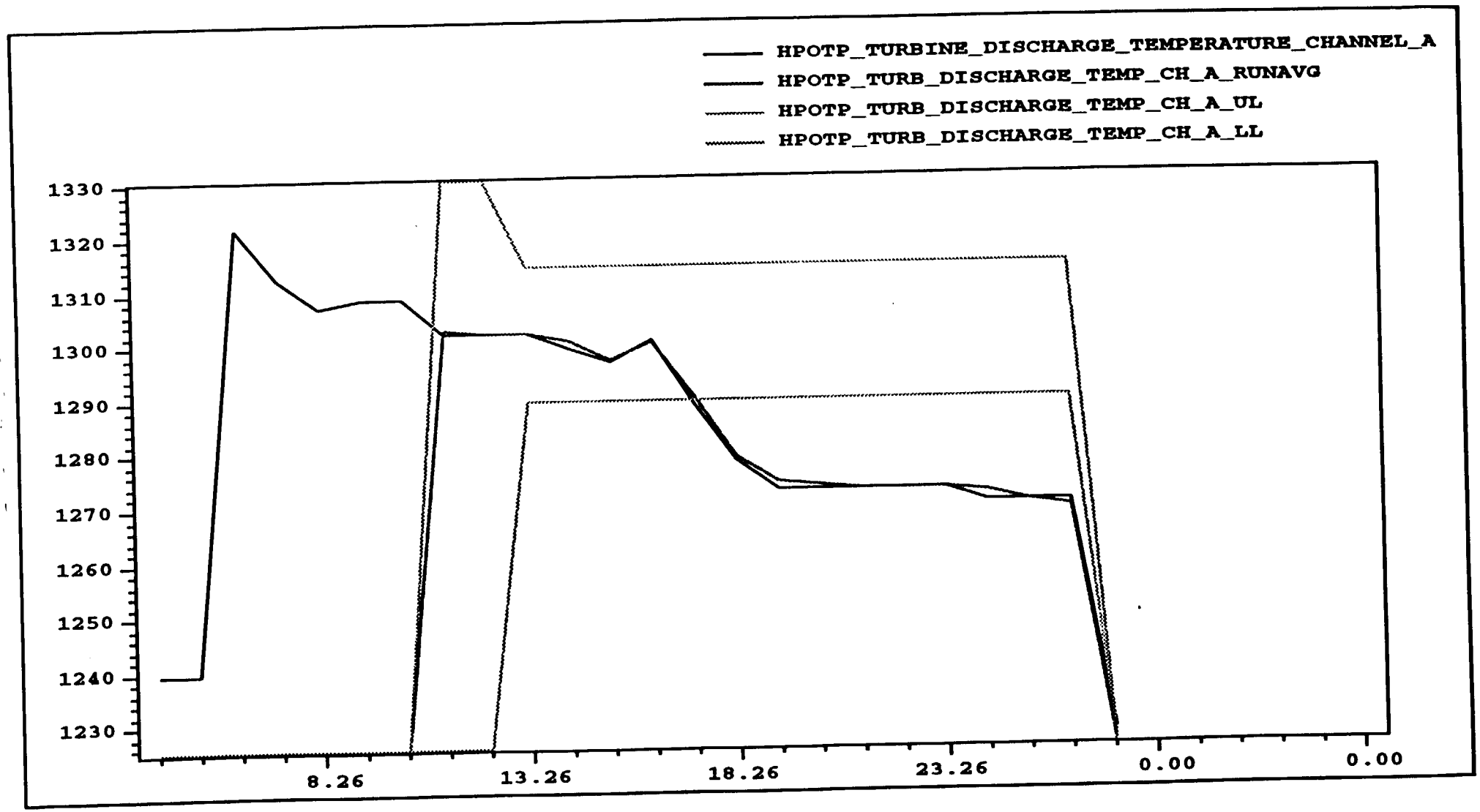
Analysis of ie_b_alg.T

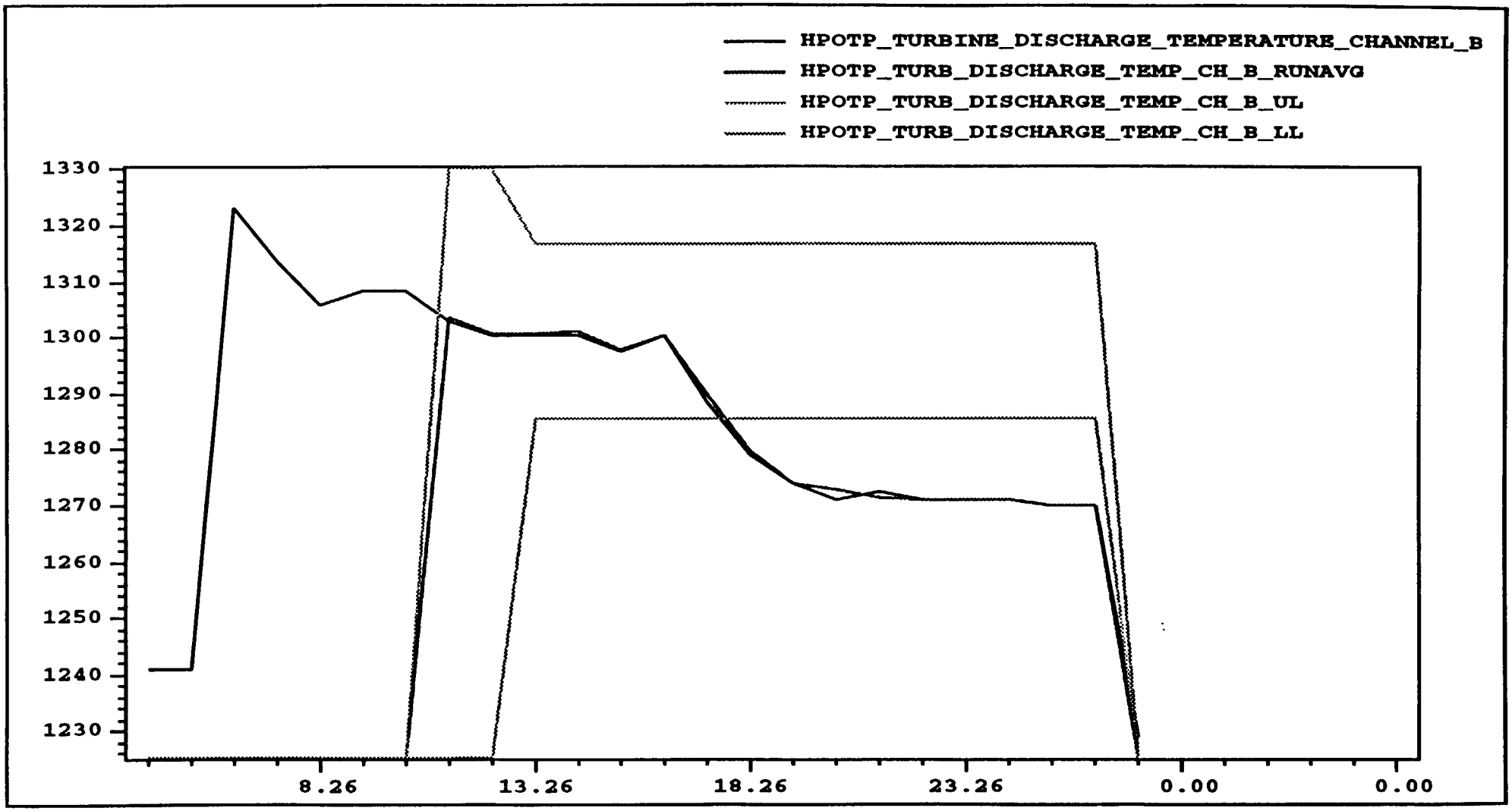
safd_3_1.A

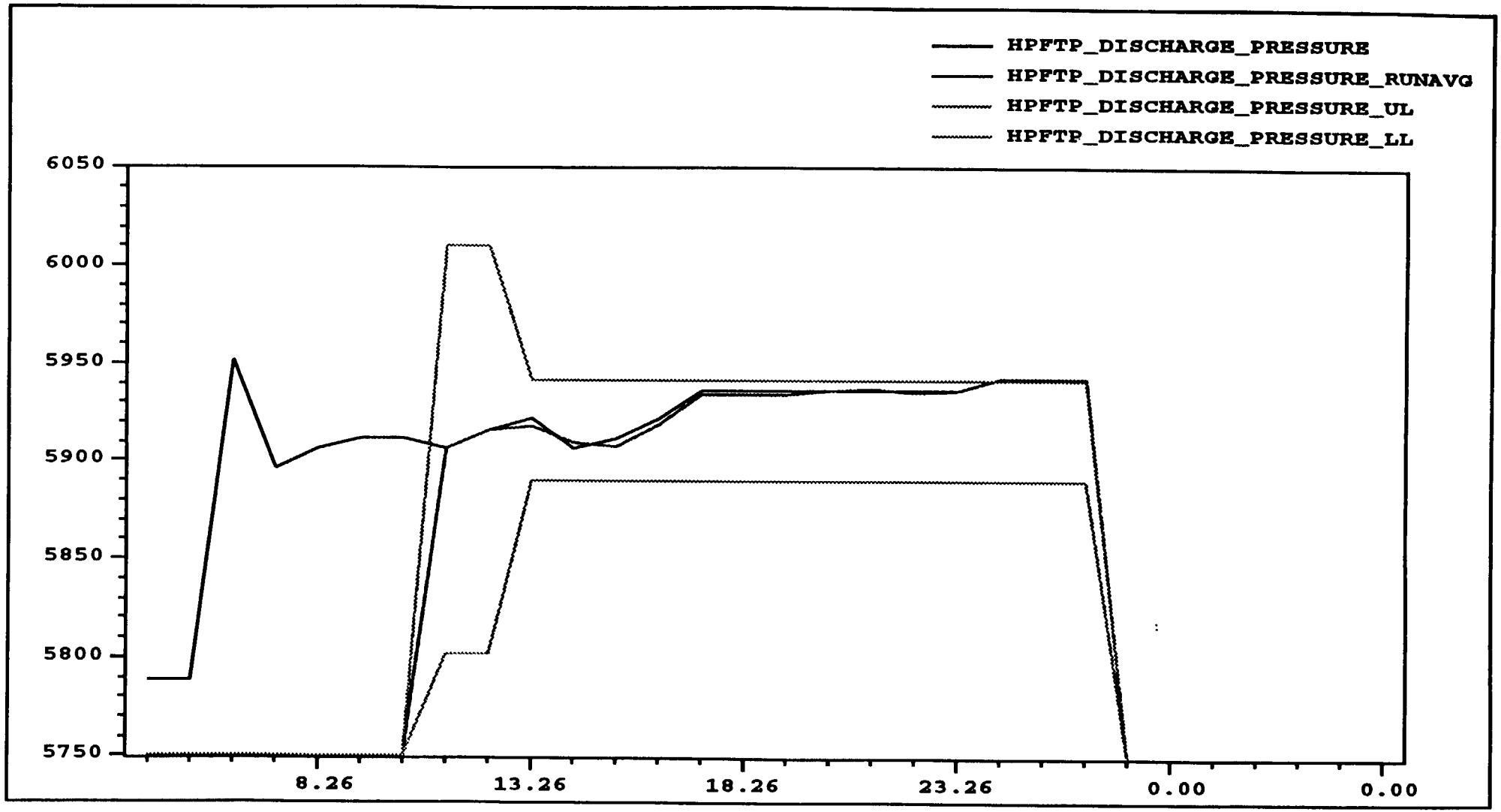
Time	Parameter
MS:NM-15.14 to MS:NM-15.70	FUEL_FLOWMETER_RUNAVG
MS:NM-15.86 to MS:NM-16.26	FPOV_ACT_POSITION_RUNAVG
MS:NM-16.30 to MS:NM-16.58	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-16.62 to MS:NM-23.06	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-23.10 to MS:NM-24.50	SAFD_CUTOFF HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-24.54 to MS:NM-24.70	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-24.74 to MS:NM-25.62	SAFD_CUTOFF HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-25.66 to MS:NM-25.82	HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG FPOV_ACT_POSITION_RUNAVG
MS:NM-25.86 to MS:NM-25.94	SAFD_CUTOFF HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG HPFTP_DISCHARGE_PRESSURE_RUNAVG FPOV_ACT_POSITION_RUNAVG


FUEL_FLOWMETER
FUEL_FLOWMETER_RUNAVG
FUEL_FLOWMETER_UL
FUEL_FLOWMETER_LL
15600
15550
15500
15450
15400
15350
15300
11.26
13.26
15.26
17.26
19.26
21.26


FPOV_ACT_POSITION
FPOV_ACT_POSITION_RUNAVG
FPOV_ACT_POSITION_UL
FPOV_ACT_POSITION_LL
90
88
86
84
82
80
78
76
8.26
13.26
18.26
23.26
0.00
0.00


HPOTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_A
HPOTP_TURB_DISCHARGE_TEMP_CH_A_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_A_UL
HPOTP_TURB_DISCHARGE_TEMP_CH_A_LL
1330
1320
1310
1300
1290
1280
1270
1260
1250
1240
1230
8.26
13.26
18.26
23.26
0.00
0.00


HPOTP_TURBINE_DISCHARGE_TEMPERATURE_CHANNEL_B
HPOTP_TURB_DISCHARGE_TEMP_CH_B_RUNAVG
HPOTP_TURB_DISCHARGE_TEMP_CH_B_UL
HPOTP_TURB_DISCHARGE_TEMP_CH_B_LL
1330
1320
1310
1300
1290
1280
1270
1260
1250
1240
1230
8.26
13.26
18.26
23.26
0.00
0.00


HPFTP_DISCHARGE_PRESSURE
HPFTP_DISCHARGE_PRESSURE_RUNAVG
HPFTP_DISCHARGE_PRESSURE_UL
HPFTP_DISCHARGE_PRESSURE_LL
6050
6000
5950
5900
5850
5800
5750
8.26
13.26
18.26
23.26
0.00
0.00

Appendix C - Hot Fire Data Analysis

Appendix C1 - Tables

	A	B			C	D	E	F	G	H	I	J	K
142					Std Dev at		Mean at		Max value at		Min val at		N
143		32 LPFP speed ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
144	213	904-0122	15.0-181.0	65%	34.3938	35.0137	12992.8	12998.4	13066	13111	12916	12871	3.70
145	213	904-0123	15.0-171.0	65%	32.6344	38.1176	12992.7	13016	13081	13142	12916	12901	3.86
146	213	904-0123	180.0-274.0	90%	25.402	28.9769	14575.8	14557.5	14629	14629	14516	14460	3.84
147	213	904-0124	15.0-104.0	100%	28.4962	36.6114	14882.7	14805	14940	14940	14822	14686	4.74
148	213	904-0133	15.0-44.0	100%	27.1877	32.1656	14930.2	14899.1	14980	14980	14861	14802	3.57
149	213	904-0134	20.0-44.0	104%	29.7712	32.1483	15332.4	15317.3	15410	15410	15243	15223	3.17
150	213	904-0135	20.0-44.0	104%	20.8323	20.2538	15297.8	15288.4	15337	15337	15243	15243	2.33
151	213	904-0136	20.0-44.0	104%									
152													
153	219	901-0711	41.0-62.0	90%	18.526	18.275	1471.87	1473	1476.3	1476.3	1467.7	1467.7	0.29
154	219	901-0712	154.0-248.0	90%	15.5012	20.1185	14739.8	14764.6	14763	14822	14705	14705	3.84
155	219	901-0711	15.0-36.0	100%	24.4011	21.1152	15274.3	15269.3	15306	15306	15243	15212	2.35
156	219	901-0711	67.0-78.0	100%	19.399	19.5583	15313.2	15305.8	15337	15337	15274	15274	1.64
157	219	901-0712	73.0-148.0	104%	18.3361	22.0282	15436.9	15457.2	15495	15527	15400	15400	3.81
158	219	901-0711	84.0-131.0	109%	19.7693	21.7961	15826.1	15808.9	15856	15889	15789	15756	4.05
159	219	901-0712	21.0-68.0	109%	19.072	24.3736	15820.8	15785.6	15856	15856	15789	15723	3.69
160													
161	2206	904-0148	45.0-60.0	65%	19.1248	23.1123	12498	12517.6	12527	12569	12458	12458	3.12
162	2206	904-0149	45.0-60.0	65%	12.7123	22.2209	12406.3	12429.5	12437	12479	12376	12376	4.21
163	2206	904-0145	15.0-240.0	100%	20.7112	29.8433	14587.6	14626.7	14629	14725	14534	14534	4.75
164	2206	904-0146	15.0-36.0	100%	17.4593	27.6682	14570.5	14598.9	14629	14686	14516	14516	4.99
165	2206	904-0147	15.0-460.0	100%	17.1667	35.7657	14632.8	14723.7	14667	14822	14591	14572	8.84
166	2206	904-0148	15.0-37.0	100%	22.2366	26.146	14562.3	14590.3	14629	14648	14516	14516	3.34
167	2206	904-0148	70.0-460.0	100%	17.7599	26.4836	14671.8	14705.8	14705	14802	14629	14610	5.42
168	2206	904-0149	15.0-37.0	100%	15.0141	22.148	14451.8	14467.7	14478	14534	14423	14423	4.42
169	2206	904-0149	70.0-105.0	100%	13.081	26.4988	14567.4	14557.3	14591	14619	14534	14478	6.06

C1-2

	A	B			C	D	E	F	G	H	I	J	K
170					Std Dev at		Mean at		Max value at		Min val at		N
171		40 OPOV act pos ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
172	213	904-0122	15.0-181.0	65%	0.093673	0.252058	54.4044	54.9253	54.4414	55.25	54.1719	54.1719	8.04
173	213	904-0123	15.0-171.0	65%	0.0989961	0.250288	54.3991	54.8781	54.4414	55.25	54.1719	54.1719	7.13
174	213	904-0123	180.0-274.0	90%	0.0855727	0.163081	61.7434	61.3891	62.0078	62.0078	61.4648	60.9258	7.23
175	213	904-0124	15.0-104.0	100%	0.134818	0.181348	65.0967	64.8503	65.25	65.25	64.9805	64.168	5.06
176	213	904-0133	15.0-44.0	100%	0.117142	0.155496	64.5018	64.2928	64.7109	64.7109	64.4375	63.8984	3.57
177	213	904-0134	20.0-44.0	104%	0.148276	0.39647	67.5443	66.6425	67.6836	67.6836	67.1406	66.0625	7.02
178	213	904-0135	20.0-44.0	104%	0.0793607	0.465391	67.4645	66.5038	67.5586	67.5586	67.2734	65.9844	13.29
179	213	904-0136	20.0-44.0	104%									
180													
181	219	901-0711	41.0-62.0	90%	0.0619942	0.0984676	59.8228	59.8552	59.9297	60.1445	59.7148	59.6406	4.67
182	219	901-0712	154.0-248.0	90%	0.0853947	0.263663	60.282	61.0035	60.4609	61.4141	60.168	60.168	9.78
183	219	901-0711	15.0-36.0	100%	0.0760492	0.187361	64.011	64.417	64.75	64.8945	64.3906	64.0313	6.28
184	219	901-0711	67.0-78.0	100%	0.0760241	0.111186	65.281	65.2287	65.4688	65.4688	65.1797	64.9648	3.47
185	219	901-0712	73.0-148.0	104%	0.0863509	0.384844	66.5827	67.4509	66.6992	67.9492	66.332	66.2578	13.82
186	219	901-0711	84.0-131.0	109%	0.0763893	0.511469	71.9501	71.1698	72.0859	72.1563	71.7969	70.5039	12.91
187	219	901-0712	21.0-68.0	109%	0.0899778	0.620419	72.6584	71.2581	72.793	72.793	72.5	70.4414	17.06
188													
189	2206	904-0148	45.0-60.0	65%	0.165408	0.168787	56.8735	56.8433	56.9766	56.9766	56.4258	56.4258	2.52
190	2206	904-0149	45.0-60.0	65%	0.0447574	0.0621234	57.38	57.4309	57.4258	57.5742	57.2813	57.2813	3.34
191	2206	904-0145	15.0-240.0	100%	0.076869	0.518678	70.4972	69.7374	70.7852	70.7852	70.2344	68.5781	15.08
192	2206	904-0146	15.0-36.0	100%	0.139388	0.578256	69.3782	70.5395	69.6797	71.6133	69.1289	69.1289	10.12
193	2206	904-0147	15.0-460.0	100%	0.186457	0.448368	69.4329	70.1741	69.6797	71.3398	69.1289	69.1289	6.25
194	2206	904-0148	15.0-37.0	100%	0.22224	0.785412	69.5999	70.887	70.2344	72.168	69.1289	69.1289	7.91
195	2206	904-0148	70.0-460.0	100%	0.154773	0.44154	71.7113	71.0564	71.8906	72.168	71.3398	70.2344	7.18
196	2206	904-0149	15.0-37.0	100%	0.109412	0.527508	70.447	71.4541	70.6211	72.3086	70.2539	70.2539	10.97
197	2206	904-0149	70.0-105.0	100%	0.0581445	0.47796	73.0831	72.7624	73.1875	73.4805	72.9688	71.6484	19.16

RSS-9825-51

C1-3

	A	B			C	D	E	F	G	H	I	J	K
198					Std Dev at		Mean at		Max value at		Min val at		N
199		42 FPOV act pos			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
200	213	904-0122	15.0-181.0	65%	0.135451	0.0997025	68.1255	68.275	68.2734	68.543	68.0039	67.7344	3.99
201	213	904-0123	15.0-171.0	65%	0.103773	0.107976	68.0515	68.2721	68.2734	68.543	68.0039	67.7344	5.18
202	213	904-0123	180.0-274.0	90%	0.151438	0.178746	74.884	74.6858	74.9883	74.9883	74.4531	74.1836	3.32
203	213	904-0124	15.0-104.0	100%	0.17583	0.322775	77.339	76.6223	77.6758	77.6758	77.1406	75.7069	5.99
204	213	904-0133	15.0-44.0	100%	0.120774	0.162518	76.8341	76.7709	77.1406	77.1406	76.6016	76.332	3.63
205	213	904-0134	20.0-44.0	104%	0.147532	0.151513	78.2096	78.1978	78.4844	78.4844	77.9453	77.6758	3.54
206	213	904-0135	20.0-44.0	104%	0.0974193	0.145245	77.2301	77.4009	77.4805	77.9063	77.0547	77.0547	5.19
207	213	904-0136	20.0-44.0	104%									
208													
209	219	901-0711	41.0-62.0	90%	0.0595101	0.109329	72.8485	73.008	72.9883	73.2813	72.6953	72.6953	5.25
210	219	901-0712	154.0-248.0	90%	0.095467	0.106483	73.2484	73.3051	73.5	73.6445	73.0625	72.9883	3.56
211	219	901-0711	15.0-36.0	100%	0.110179	0.112053	76.1864	76.0579	76.3477	76.3477	75.8359	75.6914	3.33
212	219	901-0711	67.0-78.0	100%	0.0760259	0.090717	75.9971	76.0297	76.1289	76.2773	75.8359	75.8359	3.26
213	219	901-0712	73.0-148.0	104%	0.0941767	0.118558	77.1509	77.1521	77.3711	77.5898	76.8594	76.7891	4.65
214	219	901-0711	84.0-131.0	109%	0.0994013	0.123297	79.0193	78.9847	79.1992	79.418	78.832	78.6133	4.36
215	219	901-0712	21.0-68.0	109%	0.0706055	0.153808	79.0126	78.9289	79.1992	79.3438	78.832	78.4688	6.52
216													
217	2206	904-0148	45.0-60.0	65%	0.105703	0.148796	69.4819	69.6725	69.7266	70	69.1758	69.1758	4.70
218	2206	904-0149	45.0-60.0	65%	0.0566017	0.142461	68.4224	68.6462	68.6133	68.9766	68.3242	68.3242	5.84
219	2206	904-0145	15.0-240.0	100%	0.141203	0.225649	82.5143	82.6713	82.8789	83.4258	82.332	81.7852	6.28
220	2206	904-0146	15.0-36.0	100%	0.15664	0.323399	82.9555	83.4392	83.1523	84.25	82.6055	82.6055	5.32
221	2206	904-0147	15.0-460.0	100%	0.131774	0.239516	82.9281	83.0273	83.1523	83.7031	82.6055	82.0586	7.35
222	2206	904-0148	15.0-37.0	100%	0.134829	0.195192	82.8038	82.801	82.8789	83.4258	82.332	82.332	4.63
223	2206	904-0148	70.0-460.0	100%	0.1473	0.21575	83.1792	83.1064	83.4258	83.7031	82.8789	82.332	5.26
224	2206	904-0149	15.0-37.0	100%	0.098733	0.169453	80.4958	80.6869	80.6875	81.1953	80.3242	80.3242	5.15
225	2206	904-0149	70.0-105.0	100%	0.101965	0.190792	80.7948	80.9023	81.0508	81.4883	80.543	80.3242	5.75

	A	B			C	D	E	F	G	H	I	J	K
226					Std Dev at		Mean at		Max value at		Min val at		N
227		52 HPFTP dis pr ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
228	213	904-0122	15.0-181.0	65%	13.5009	14.0721	3734.61	3737.17	3753.5	3773.5	3712.5	3712.5	2.69
229	213	904-0123	15.0-171.0	65%	15.4562	13.8365	3738.01	3746.73	3772.5	3793	3711.5	3711.5	2.99
230	213	904-0123	180.0-274.0	90%	13.1546	14.4907	5148.53	5156.66	5163	5204	5122	5122	3.60
231	213	904-0124	15.0-104.0	100%	10.35	15.4839	5699.55	5680.13	5710	5750.5	5689.5	5628	6.80
232	213	904-0133	15.0-44.0	100%	14.8273	14.2492	5699.13	5692.03	5734.5	5734.5	5673	5652.5	2.86
233	213	904-0134	20.0-44.0	104%	13.1295	13.3498	6001.01	5996.28	6019.5	6040	5978.5	5958.5	3.33
234	213	904-0135	20.0-44.0	104%	10.1041	9.19424	5996.76	5991.91	6026	6026	5979.5	5969.5	3.37
235	213	904-0136	20.0-44.0	104%									
236													
237	219	901-0711	41.0-62.0	90%	8.27324	8.56101	5160.56	5166.19	5177.5	5187.5	5141.5	5141.5	2.98
238	219	901-0712	154.0-248.0	90%	7.07612	8.78034	5167.7	5178.65	5177.5	5208	5151.5	5151.5	4.15
239	219	901-0711	15.0-36.0	100%	12.5936	10.6329	5750.19	5747.4	5777	5777	5725.5	5715.5	2.53
240	219	901-0711	67.0-78.0	100%	10.2057	10.3614	5750.83	5747.06	5772	5777	5731	5725.5	2.93
241	219	901-0712	73.0-148.0	104%	11.4018	11.0472	5980.8	5981.07	6012.5	6017.5	5966.5	5946	3.20
242	219	901-0711	84.0-131.0	109%	12.1208	11.576	6309.27	6306.86	6330.5	6340.5	6279	6269	3.12
243	219	901-0712	21.0-68.0	109%	12.6973	12.6829	6335.41	6322.42	6366	6371.5	6310	6284	3.87
244													
245	2206	904-0148	45.0-60.0	65%	13.4151	13.267	3782.38	3787.47	3806.5	3827	3745	3745	3.17
246	2206	904-0149	45.0-60.0	65%	3.23413	5.70489	3739.48	3746.39	3745.5	3761	3735	3735	4.52
247	2206	904-0145	15.0-240.0	100%	14.1796	15.5799	5796.8	5787.5	5816.5	5837	5755	5735	3.70
248	2206	904-0146	15.0-36.0	100%	14.233	17.1929	5769.67	5779.69	5795.5	5836.5	5754.5	5734	3.99
249	2206	904-0147	15.0-460.0	100%	18.5404	18.2304	5769.26	5786.45	5795.5	5836.5	5734	5713.5	3.93
250	2206	904-0148	15.0-37.0	100%	15.6071	16.4401	5795.6	5803.78	5837	5837	5775.5	5755	3.13
251	2206	904-0148	70.0-460.0	100%	12.0153	14.8667	5811.68	5808.64	5837	5857.5	5796	5755	4.46
252	2206	904-0149	15.0-37.0	100%	6.39247	8.38902	5746.25	5747.87	5761.5	5777	5730.5	5725.5	4.56
253	2206	904-0149	70.0-105.0	100%	5.96189	8.6687	5752.53	5749.63	5771.5	5777	5741	5720	4.97

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	A	B			C	D	E	F	G	H	I	J	K
254					Std Dev at		Mean at		Max value at		Min val at		N
255		53 HPFTP cool iln pr ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
256	213	904-0122	15.0-181.0	65%	10.5799	11.0358	2790.96	2784.52	2812.25	2812.25	2767	2752	3.07
257	213	904-0123	15.0-171.0	65%	10.1082	10.6967	2819.69	2810.66	2841.75	2841.75	2796.75	2781.5	3.08
258	213	904-0123	180.0-274.0	90%	10.379	10.958	3937.21	3940.45	3956.25	3971.25	3911	3896	4.28
259	213	904-0124	15.0-104.0	100%	8.21047	18.5921	4435.46	4406.8	4450.75	4450.75	4420.75	4360.5	5.64
260	213	904-0133	15.0-44.0	100%	10.9587	10.0637	4544.24	4540.48	4571.25	4571.25	4511	4511	2.81
261	213	904-0134	20.0-44.0	104%	12.0074	11.4428	4770.31	4770.29	4798.25	4798.25	4753.25	4738	2.69
262	213	904-0135	20.0-44.0	104%	6.82105	6.29649	4771.21	4772.25	4788	4788	4757.5	4753.75	2.71
263	213	904-0136	20.0-44.0	104%									
264													
265	219	901-0711	41.0-62.0	90%	3.41957	3.59356	291.454	291.549	292.225	292.725	290.775	290.525	0.34
266	219	901-0712	154.0-248.0	90%	3.04073	4.02828	2925.33	2930.17	2935	2944.5	2920.25	2917.75	4.71
267	219	901-0711	15.0-36.0	100%	4.68873	4.39381	3247.58	3247.86	3258.5	3261	3239	3234.25	2.90
268	219	901-0711	67.0-78.0	100%	3.62437	3.88326	3252.51	3250.73	3261	3263.5	3244	3241.5	3.52
269	219	901-0712	73.0-148.0	104%	4.74637	4.69401	3393.2	3394.23	3407.5	3407.5	3385.75	3380.75	2.84
270	219	901-0711	84.0-131.0	109%	4.49325	5.67552	3553.96	3561.54	3563	3580.25	3543.5	3543.5	4.16
271	219	901-0712	21.0-68.0	109%	3.73001	5.86469	3553.1	3559.03	3561	3575.75	3544	3541.5	4.70
272													
273	2206	904-0148	45.0-60.0	65%	7.4026	6.86845	2127.01	2132.83	2135	2154.5	2106	2106	3.62
274	2206	904-0149	45.0-60.0	65%	3.33853	3.69228	2126.2	2129.65	2133	2137.75	2120.75	2120.75	2.67
275	2206	904-0145	15.0-240.0	100%	6.40761	9.27295	3314.34	3324.68	3328	3357	3299	3289.25	5.53
276	2206	904-0146	15.0-36.0	100%	7.03525	7.9564	3307.51	3306.76	3319	3328.75	3290	3290	3.13
277	2206	904-0147	15.0-460.0	100%	11.1544	10.2103	3300.04	3325.18	3317	3355.75	3278.25	3278.25	4.21
278	2206	904-0148	15.0-37.0	100%	7.20368	8.75092	3307.6	3317.06	3318.5	3337.75	3299	3299	2.87
279	2206	904-0148	70.0-460.0	100%	6.31773	9.26987	3329.75	3343.68	3337.75	3376.5	3318.5	3318.5	5.19
280	2206	904-0149	15.0-37.0	100%	3.26474	6.49961	3303.99	3310.91	3312.75	3327.25	3298	3295.5	5.00
281	2206	904-0149	70.0-105.0	100%	3.0665	4.32406	3340.62	3344.47	3346.75	3356.5	3334.5	3332.25	3.98

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C1-6

	A	B			C	D	E	F	G	H	I	J	K
282					Std Dev at		Mean at		Max value at		Min val at		N
283		59 HPOTP bp dis pr ch e			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
284	213	904-0122	15.0-181.0	65%	11.4823	14.3634	4175.73	4172.98	4191	4211.5	4150	4150	3.35
285	213	904-0123	15.0-171.0	65%	16.9437	14.3297	4181.04	4177.49	4214	4214	4152.5	4152.5	2.15
286	213	904-0123	180.0-274.0	90%	10.3182	12.1515	6210.99	6213.29	6229.5	6270.5	6167.5	6167.5	5.54
287	213	904-0124	15.0-104.0	100%	16.4401	16.1355	7071.13	7076.98	7106.5	7127	7024.5	7024.5	3.19
288	213	904-0133	15.0-44.0	100%	14.7939	13.7551	7106.52	7096.63	7143.5	7143.5	7082	7061.5	3.17
289	213	904-0134	20.0-44.0	104%	16.7985	17.2391	7486.86	7478.13	7518.5	7518.5	7456.5	7415.5	3.73
290	213	904-0135	20.0-44.0	104%	13.9335	14.9941	7490.92	7486.7	7517.5	7528	7461	7445.5	2.96
291	213	904-0136	20.0-44.0	104%									
292													
293	219	901-0711	41.0-62.0	90%	14.3281	14.2076	6180.51	6181.95	6213	6223.5	6146.5	6146.5	2.90
294	219	901-0712	154.0-248.0	90%	13.371	14.4611	6185.63	6184.87	6112	6238	6160.5	6124.5	4.51
295	219	901-0711	15.0-36.0	100%	18.7073	18.4202	6999.85	7000.02	7037	7063	6960	6955	3.37
296	219	901-0711	67.0-78.0	100%	15.9879	16.9249	7001.24	6999.34	7042.5	7047.5	6970	6955	3.01
297	219	901-0712	73.0-148.0	104%	17.6736	18.1194	7354.37	7348.71	7396.5	7412	7314.5	7293.5	3.58
298	219	901-0711	84.0-131.0	109%	16.7778	18.6361	7787.66	7798.3	7830.5	7856	7753	7742.5	3.44
299	219	901-0712	21.0-68.0	109%	16.7523	19.6493	7786.32	7796.16	7814	7860	7741.5	7731.5	3.86
300													
301	2206	904-0148	45.0-60.0	65%	11.4823	11.4932	4101.27	4112.01	4127	4127	4065.5	4065.5	4.05
302	2206	904-0149	45.0-60.0	65%	6.93	7.4046	4128.34	4137.35	4145	4155.5	4104	4104	4.81
303	2206	904-0145	15.0-240.0	100%	18.0604	18.177	6815.04	6803.19	6850.5	6850.5	6769	6728	4.16
304	2206	904-0146	15.0-36.0	100%	17.3553	18.8186	6751.92	6729.39	6767.5	6767.5	6706	6665	3.71
305	2206	904-0147	15.0-460.0	100%	14.8407	14.8179	6765.36	6764.49	6808	6828.5	6726	6705.5	4.31
306	2206	904-0148	15.0-37.0	100%	12.5782	19.8109	6766.79	6757.47	6788.5	6809	6747.5	6686	5.68
307	2206	904-0148	70.0-460.0	100%	12.1923	15.1163	6762.77	6755.12	6788.5	6809	6727	6686	5.67
308	2206	904-0149	15.0-37.0	100%	12.2099	13.3966	6857.86	6844.27	6888	6888	6831	6805.5	3.58
309	2206	904-0149	70.0-105.0	100%	11.2276	15.9292	6835.31	6825.94	6852	6882.5	6810.5	6774.5	5.04

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C1-7

	A	B			C	D	E	F	G	H	I	J	K
310					Std Dev at		Mean at		Max value at		Min val at		N
311		63 MCC pr			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
312	213	904-0122	15.0-181.0	65%	3.05272	3.09876	1953.97	1953.85	1961.13	1964.88	1947.75	1944	3.61
313	213	904-0123	15.0-171.0	65%	3.90875	3.15271	1953.56	1953.5	1964.5	1964.5	1947.38	1943.63	2.81
314	213	904-0123	180.0-274.0	90%	3.15238	3.06755	2705.88	2705.6	2712.13	2715.88	2697.13	2695.13	3.32
315	213	904-0124	15.0-104.0	100%	2.33716	3.02376	3006.52	3005.9	3010.13	3017.63	3000.75	2995.13	5.02
316	213	904-0133	15.0-44.0	100%	3.59589	3.31721	3007.02	3005.85	3015.88	3015.88	3000.75	2997	2.79
317	213	904-0134	20.0-44.0	104%	2.51011	3.15813	3128.16	3126.69	3134.38	3136.25	3119.25	3115.5	4.46
318	213	904-0135	20.0-44.0	104%	2.98517	2.96615	3127.52	3127.17	3134.13	3136.5	3121.88	3119	3.13
319	213	904-0136	20.0-44.0	104%									
320													
321	219	901-0711	41.0-62.0	90%	2.80417	3.02985	2704.77	2705.08	2709.75	2713.5	2697.88	2697	3.00
322	219	901-0712	154.0-248.0	90%	2.91401	3.06573	2703.11	2705.14	2714.63	2711.25	2695.63	2696.63	2.92
323	219	901-0711	15.0-36.0	100%	4.23295	3.65561	3006.97	3006.36	3014.88	3017.25	2997.38	2996.38	2.57
324	219	901-0711	67.0-78.0	100%	3.60309	3.4492	3006.6	3006.05	301438	3015.38	2998.25	2998.25	2.59
325	219	901-0712	73.0-148.0	104%	3.93744	3.57032	3127.84	3125.98	3140.5	3140.5	3119.25	3115.38	3.69
326	219	901-0711	84.0-131.0	109%	3.92166	3.59038	3275.23	3276.68	3283.5	3288.25	3267.88	3266.5	2.95
327	219	901-0712	21.0-68.0	109%	2.76968	3.99246	3275.78	3277.16	3281.25	3289.75	3269.38	3263.63	4.89
328													
329	2206	904-0148	45.0-60.0	65%	2.6878	2.78644	1954.79	1954.17	1960.13	1962.13	1947	1945.13	3.36
330	2206	904-0149	45.0-60.0	65%	2.22449	1.92933	1953.69	1953.88	1958.88	1958.88	1948.5	1948.5	2.42
331	2206	904-0145	15.0-240.0	100%	3.24377	3.6728	3005.46	3006.15	3013.63	3019.25	3000.5	2991.13	4.63
332	2206	904-0146	15.0-36.0	100%	3.63207	3.81415	3004.5	3004.68	3011.13	3014.88	2992.13	2992.13	3.46
333	2206	904-0147	15.0-460.0	100%	4.77192	3.32958	3002.46	3005.87	3009.63	3021	2989	2989	3.54
334	2206	904-0148	15.0-37.0	100%	3.18111	4.63986	3001.95	3004.49	3007.5	3018.88	2994.38	2990.63	4.52
335	2206	904-0148	70.0-460.0	100%	2.89237	3.21065	3004.34	3005.68	3011.25	3018.88	2994.38	2990.63	5.20
336	2206	904-0149	15.0-37.0	100%	2.60648	3.43266	3003.23	3005.42	3008.5	3014.63	2998.63	2995.75	3.71
337	2206	904-0149	70.0-105.0	100%	1.85731	3.53632	3006.06	3006.47	3009.5	3017.5	3001.88	2994.75	6.31

	A	B			C	D	E	F	G	H	I	J	K
338					Std Dev at		Mean at		Max value at		Min val at		N
339		91 HPOTP sec seal cav pr			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
340	213	904-0122	15.0-181.0	65%	0.399376	1.74653	17.1661	11.6686	17.7969	17.7969	16.5	10.0469	15.34
341	213	904-0123	15.0-171.0	65%	0.395418	1.75153	16.6618	11.4898	17.0469	17.0469	15.75	9.9375	14.05
342	213	904-0123	180.0-274.0	90%	0.318423	0.604106	11.4982	10.6503	11.875	12.5156	11.2344	9.9375	5.86
343	213	904-0124	15.0-104.0	100%	0.300921	2.61906	20.1458	13.365	20.75	20.75	19.4531	9.76563	24.54
344	213	904-0133	15.0-44.0	100%	0.264289	2.08255	20.2347	16.4785	20.8125	20.8125	19.5313	13.0625	16.40
345	213	904-0134	20.0-44.0	104%	0.436157	1.60803	18.068	15.3626	18.8594	18.8594	17.5781	12.4063	8.02
346	213	904-0135	20.0-44.0	104%	0.215745	1.55458	18.4565	15.6862	18765	18.7656	18.1094	13.4063	14.27
347	213	904-0136	20.0-44.0	104%									
348													
349	219	901-0711	41.0-62.0	90%	0.0832854	0.325891	20.0735	19.4703	20.1719	20.1719	19.8438	18.875	8.42
350	219	901-0712	154.0-248.0	90%	0.0779015	0.113433	18.2156	18.3367	18.2813	18.6094	18.125	17.9531	4.92
351	219	901-0711	15.0-36.0	100%	0.152366	1.44896	25.3526	22.8685	25.6875	25.6875	25.0313	20.8125	18.50
352	219	901-0711	67.0-78.0	100%	0.0661742	0.0999244	19.1728	19.1483	19.2031	19.3594	19.0313	18.875	4.13
353	219	901-0712	73.0-148.0	104%	0.0820075	0.120208	18.7128	18.355	18.9375	18.9375	18.6094	18.125	7.10
354	219	901-0711	84.0-131.0	109%	0.0728882	0.276706	19.2365	18.8686	19.3594	19.5156	19.0313	18.3906	8.88
355	219	901-0712	21.0-68.0	109%	0.13768	1.32679	23.7203	20.8688	23.9531	23.9531	23.4688	19.0938	22.40
356													
357	2206	904-0148	45.0-60.0	65%	0.288321	0.315502	7.42279	7.23321	8.59375	8.59375	7.269688	6	4.72
358	2206	904-0149	45.0-60.0	65%	0.101214	0.159234	7.40319	7.19648	7.5625	7.5625	7.25	6.92188	3.62
359	2206	904-0145	15.0-240.0	100%	0.468534	2.41599	13.6183	19.7025	14.3594	23.3906	12.4375	12.4375	15.51
360	2206	904-0146	15.0-36.0	100%	0.45706	0.637295	11.3691	10.0827	12.3438	12.3438	11.0469	8.46875	4.95
361	2206	904-0147	15.0-460.0	100%	0.361819	1.03471	11.2197	7.98352	12.3594	12.3594	10.4219	5.90625	12.09
362	2206	904-0148	15.0-37.0	100%	0.593695	0.520016	10.4966	10.2078	11.1719	11.1719	9.875	8.59375	2.72
363	2206	904-0148	70.0-460.0	100%	0.256877	0.733966	9.96293	7.9352	10.5156	11.1719	9.23438	6.65625	12.60
364	2206	904-0149	15.0-37.0	100%	0.105698	0.485364	12.0021	11.6185	12.2656	12.5938	11.7813	10.6406	9.25
365	2206	904-0149	70.0-105.0	100%	0.11197	0.616173	11.8805	11.7097	12.1094	13.4063	11.6094	10.8125	15.15

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C1-9

	A	B			C	D	E	F	G	H	I	J	K
366					Std Dev at		Mean at		Max value at		Min val at		N
367		100 fuel flow			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
368	213	904-0122	15.0-181.0	65%	31.0013	31.1171	10050	10052.2	10123	10155	9965	9938	3.68
369	213	904-0123	15.0-171.0	65%	27.7217	31.0973	10045.8	10054.5	10097	10168	9988	9953	4.09
370	213	904-0123	180.0-274.0	90%	39.9931	36.9177	13897.9	13907	14007	14030	13802	13767	3.50
371	213	904-0124	15.0-104.0	100%	38.6309	44.9373	15489.8	15489.8	15568	15647	15388	15336	4.07
372	213	904-0133	15.0-44.0	100%	44.1926	42.7162	15493.7	15485.2	15608	15608	15412	15369	2.78
373	213	904-0134	20.0-44.0	104%	46.6156	44.7747	16116.7	16112.3	16221	16246	16013	16004	2.87
374	213	904-0135	20.0-44.0	104%	44.3133	46.7018	16113.7	16108.2	16188	16235	15995	15964	3.25
375	213	904-0136	20.0-44.0	104%									
376													
377	219	901-0711	41.0-62.0	90%	29.3485	35.1299	13972.9	13965.2	14035	14065	13917	13852	3.86
378	219	901-0712	154.0-248.0	90%	33.4422	33.533	13927.3	13938.5	14005	14041	13859	13830	3.24
379	219	901-0711	15.0-36.0	100%	52.396	55.6116	15511.9	15528	15618	15700	15393	15390	3.28
380	219	901-0711	67.0-78.0	100%	53.4741	54.3574	15551.8	15553.9	15689	15689	15406	15406	2.77
381	219	901-0712	73.0-148.0	104%	62.54	63.4322	16152.9	16157.3	16289	16363	16019	15942	3.44
382	219	901-0711	84.0-131.0	109%	65.9515	70.9945	17017.8	17012.5	17126	17228	16877	16783	3.48
383	219	901-0712	21.0-68.0	109%	66.2456	69.7615	16978.9	16957.4	17098	17142	16841	16741	3.27
384													
385	2206	904-0148	45.0-60.0	65%	57.1014	63.8753	10303.3	10312.7	10402	10468	10173	10156	2.74
386	2206	904-0149	45.0-60.0	65%	56.9073	59.7968	10100.2	10108.2	10189	10228	9987	9973	2.38
387	2206	904-0145	15.0-240.0	100%	42.1788	46.5508	15880.5	15935.5	15985	16081	15792	15755	4.28
388	2206	904-0146	15.0-36.0	100%	40.3697	50.8373	15887.3	15900.3	16004	16045	15811	15731	4.19
389	2206	904-0147	15.0-460.0	100%	42.8568	46.1787	15893.5	15974.1	15998	16156	15802	15795	4.24
390	2206	904-0148	15.0-37.0	100%	43.8957	46.7296	15891.1	15911	15994	16065	15804	15764	3.51
391	2206	904-0148	70.0-460.0	100%	43.3416	43.6896	15937.9	15952.5	16058	16110	15858	15808	3.63
392	2206	904-0149	15.0-37.0	100%	37.4408	41.7302	15555.5	15564.5	15624	15679	15475	15456	3.06
393	2206	904-0149	70.0-105.0	100%	43.7428	42.9197	15617.6	15611.9	15700	15727	15540	15489	2.81

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C1-10

	A	B			C	D	E	F	G	H	I	J	K
394					Std Dev at		Mean at		Max value at		Min val at		N
395		209 LPOTP pump dis pr ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
396	213	904-0122	15.0-181.0	65%	1.27873	1.10607	281.879	282.612	284.656	285.969	279.5	278.219	3.44
397	213	904-0123	15.0-171.0	65%	1.19642	1.19412	280.817	281.955	283.313	285.906	278.156	278.156	3.30
398	213	904-0123	180.0-274.0	90%	0.89704	1.02007	326.498	326.86	328.563	329.844	324.688	323.375	3.88
399	213	904-0124	15.0-104.0	100%	1.17131	1.1551	337.446	339.263	339.813	342.375	334.625	334.625	3.96
400	213	904-0133	15.0-44.0	100%	1.03527	1.02918	339.465	339.743	342.406	342.406	337.25	335.938	3.68
401	213	904-0134	20.0-44.0	104%	1.13913	1.03377	346.165	346.593	347.75	350.344	343.875	343.875	3.29
402	213	904-0135	20.0-44.0	104%	0.974667	0.879611	346.39	346.79	348.281	349.25	343.406	343.406	3.47
403	213	904-0136	20.0-44.0	104%									
404													
405	219	901-0711	41.0-62.0	90%	0.987655	1.11322	327.489	327.508	329.063	331	325.469	324.5	3.54
406	219	901-0712	154.0-248.0	90%	1.25584	1.10473	328.382	328.454	331.594	331.906	326.063	324.781	2.92
407	219	901-0711	15.0-36.0	100%	1.47925	1.27523	340.828	340.69	344.969	344.969	337.813	337.156	2.89
408	219	901-0711	67.0-78.0	100%	1.20834	1.19811	340.683	340.491	343	343.344	338.469	336.531	3.28
409	219	901-0712	73.0-148.0	104%	3.2086	1.4438	346.671	346.301	351.719	351.719	341.656	341	1.69
410	219	901-0711	84.0-131.0	109%	1.29967	1.19668	351.259	351.18	354.375	355.031	348.219	346.906	3.29
411	219	901-0712	21.0-68.0	109%	1.58785	3.36386	348.558	351.631	351.406	361.469	345.219	344.563	6.20
412													
413	2206	904-0148	45.0-60.0	65%	2.46343	2.42667	290.501	290.606	297.125	297.125	286.781	284.188	2.65
414	2206	904-0149	45.0-60.0	65%	2.18905	1.96203	291.324	291.174	296.563	296.563	286.5	286.156	2.46
415	2206	904-0145	15.0-240.0	100%	1.21391	1.22323	352.693	352.547	354.25	356.813	349.063	347.781	3.93
416	2206	904-0146	15.0-36.0	100%	2.54708	2.46595	353.582	353.114	357.969	360.563	347.625	346.344	2.92
417	2206	904-0147	15.0-460.0	100%	2.36929	2.46712	353.267	353.013	359.156	361.75	348.813	343.656	3.95
418	2206	904-0148	15.0-37.0	100%	2.93195	2.55132	355.176	354.433	361.844	361.844	348.906	347.625	2.53
419	2206	904-0148	70.0-460.0	100%	2.30458	2.4182	353.83	353.669	359.25	363.156	350.188	343.719	4.32
420	2206	904-0149	15.0-37.0	100%	2.07532	2.19031	353.615	353.647	358.656	359.938	348.563	345.969	3.70
421	2206	904-0149	70.0-105.0	100%	2.28077	2.10305	352.857	353.332	357.344	360.594	346.313	346.313	3.18

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C1-11

	A	B			C	D	E	F	G	H	I	J	K
422					Std Dev at		Mean at		Max value at		Min val at		N
423		211 HPOTP imsl pur pr		ch a	2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
424	213	904-0122	15.0-181.0	65%	0.781291	9.33359	218.934	234.109	220.063	248.469	217.469	217.469	21.30
425	213	904-0123	15.0-171.0	65%	0.836324	8.75066	219.632	233.934	221.344	247.156	218.75	218.75	18.16
426	213	904-0123	180.0-274.0	90%	0.878338	4.07076	255.551	262.646	257.5	270.438	253.625	253.625	10.27
427	213	904-0124	15.0-104.0	100%	0.913715	9.16002	236.636	247.541	238	263.844	234.125	234.125	17.84
428	213	904-0133	15.0-44.0	100%	0.778162	1.23679	236.631	237.245	237.938	240.5	235.344	234.063	4.18
429	213	904-0134	20.0-44.0	104%	0.850642	1.12541	237.668	237.39	239.125	240.438	236.563	233.969	4.02
430	213	904-0135	20.0-44.0	104%	0.417677	0.726105	240.963	240.741	241.75	242.406	240.125	239.5	3.99
431	213	904-0136	20.0-44.0	104%									
432													
433	219	901-0711	41.0-62.0	90%	0.418975	0.650521	220.792	219.44	222.25	222.25	219.969	218.334	6.71
434	219	901-0712	154.0-248.0	90%	0.303984	2.86198	240.569	244.789	241.031	249.813	240.063	240.063	16.53
435	219	901-0711	15.0-36.0	100%	0.694073	1.34531	223.501	226.879	224.875	228.438	221.938	221.938	7.12
436	219	901-0711	67.0-78.0	100%	0.391561	0.832946	224.563	225.787	225.5	227.469	223.875	223.875	4.88
437	219	901-0712	73.0-148.0	104%	0.248478	4.3591	229.811	236.661	230.313	244.938	229.313	229.313	33.31
438	219	901-0711	84.0-131.0	109%	0.34073	3.3533	232.8	238.393	233.656	244.719	232.031	232.031	18.67
439	219	901-0712	21.0-68.0	109%	0.447025	0.910728	230.911	233.331	231.938	235.188	229.656	229.656	8.22
440													
441	2206	904-0148	45.0-60.0	65%	0.860119	0.74707	193.214	193.22	194.875	194.875	192.281	192.281	1.92
442	2206	904-0149	45.0-60.0	65%	0.288741	0.319716	194.889	194.675	195.688	195.688	194.375	194.031	3.51
443	2206	904-0145	15.0-240.0	100%	0.837822	0.895475	198.667	198.174	200.031	201.313	197.438	194.844	3.97
444	2206	904-0146	15.0-36.0	100%	0.773424	0.841057	198.553	198.657	200.281	200.281	196.406	196.406	2.91
445	2206	904-0147	15.0-460.0	100%	0.831017	0.871587	196.563	197.119	197.688	200.25	195.094	195.094	3.77
446	2206	904-0148	15.0-37.0	100%	0.683409	0.831113	195.654	196.047	197.469	198.75	194.875	193.563	3.96
447	2206	904-0148	70.0-460.0	100%	1.01439	0.864702	195.884	195.796	197.469	198.75	193.563	192.281	3.47
448	2206	904-0149	15.0-37.0	100%	0.258917	0.284092	197.8	197.889	198.594	198.938	197.313	197.313	4.05
449	2206	904-0149	70.0-105.0	100%	0.234042	0.420859	197.545	197.571	197.938	199.906	196.969	196	9.98

	A	B			C	D	E	F	G	H	I	J	K
450					Std Dev at		Mean at		Max value at		Min val at		N
451		231 HPFTP tdt ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
452	213	904-0122	15.0-181.0	65%	1.9093	4.45492	1532.27	1535.78	1536	1548.63	1527.63	1519.25	8.66
453	213	904-0123	15.0-171.0	65%	4.48173	5.95632	1536.29	1533.03	1544.5	1548.63	1527.63	1510.88	4.94
454	213	904-0123	180.0-274.0	90%	2.64811	6.28867	1608.88	1599.05	1612.38	1616.63	1603.88	1578.25	7.85
455	213	904-0124	15.0-104.0	100%	1.99165	11.2387	1596.71	1567.17	1599.63	1603.88	1595.38	1544.5	18.43
456	213	904-0133	15.0-44.0	100%	3.10604	4.06462	1570.25	1570.52	1576.5	1580.75	1563.75	1559.5	3.55
457	213	904-0134	20.0-44.0	104%	3.24413	4.00786	1603.02	1606.52	1610.63	1614.88	1597.75	1593.5	4.01
458	213	904-0135	20.0-44.0	104%	1.88657	10.2324	1611.14	1605.78	1615.75	1620	1608.5	1575.75	15.92
459	213	904-0136	20.0-44.0	104%									
460													
461	219	901-0711	41.0-62.0	90%	3.42844	4.6745	1653.67	1658.67	1659.25	1669.25	1646.13	1646.13	3.66
462	219	901-0712	154.0-248.0	90%	3.44495	4.30222	1661	1660.51	1670.88	1672.25	1656.25	1647.63	3.74
463	219	901-0711	15.0-36.0	100%	3.86388	6.33822	1685.1	1679.88	1694.13	1695.63	1678.13	1665	4.08
464	219	901-0711	67.0-78.0	100%	2.51893	3.9265	1686.48	1685.05	1692.75	1692.75	1681	1672.25	5.08
465	219	901-0712	73.0-148.0	104%	1.60893	3.53283	1677.28	1676.71	1681	1686.88	1675.25	1665	7.28
466	219	901-0711	84.0-131.0	109%	3.13093	4.46883	1696.56	1702.83	1704.38	1720.63	1691.25	1691.25	5.69
467	219	901-0712	21.0-68.0	109%	3.29117	4.09003	1714.72	1705.96	1722.13	1722.13	1708.75	1694.13	4.91
468													
469	2206	904-0148	45.0-60.0	65%	3.56917	6.2741	1519.81	1521.61	1525.75	1538.38	1513.13	1504.88	4.70
470	2206	904-0149	45.0-60.0	65%	1.63494	4.63174	1532.04	1527.93	1536	1537.38	1529	1514.88	7.98
471	2206	904-0145	15.0-240.0	100%	3.70467	7.44729	1772.15	1781.49	1776.88	1808.13	1763.5	1763.5	7.19
472	2206	904-0146	15.0-36.0	100%	3.85099	6.75956	1781.02	1782.29	1790.25	1799.25	1772.38	1768	4.40
473	2206	904-0147	15.0-460.0	100%	3.50483	9.24276	1771.7	1777.05	1781.25	1803.63	1768	1750.13	7.68
474	2206	904-0148	15.0-37.0	100%	4.0994	5.26632	1801.2	1803.12	1808.13	1817.25	1794.75	1794.75	3.45
475	2206	904-0148	70.0-460.0	100%	3.1448	7.24657	1805.85	1807.75	1812.75	1830.75	1799.25	1785.75	7.31
476	2206	904-0149	15.0-37.0	100%	1.68348	5.31778	1776.53	1775.2	1780	1790.38	1774	1765	9.02
477	2206	904-0149	70.0-105.0	100%	2.75542	3.98378	1786.48	1779.93	1791.88	1791.88	1781.38	1768	4.34

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	A	B			C	D	E	F	G	H	I	J	K
478					Std Dev at		Mean at		Max value at		Min val at		N
479		232 HPFTP tdt ch b			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
480	213	904-0122	15.0-181.0	65%	4.35576	14.7328	1202.04	1224.22	1208.88	1259.88	1193.38	1177.88	10.64
481	213	904-0123	15.0-171.0	65%	5.28424	14.0334	1201.2	1223.25	1212.75	1263.75	1193.38	1189.5	7.66
482	213	904-0123	180.0-274.0	90%	3.88874	12.5227	1534.51	1518.36	1537.38	1541.63	1524.75	1491.13	7.00
483	213	904-0124	15.0-104.0	100%	2.19179	16.4002	1559.32	1522.32	1563	1571.5	1554.38	1495.25	22.44
484	213	904-0133	15.0-44.0	100%	2.89008	3.89955	1581.33	1580.9	1583.38	1588	1573.88	1573.88	2.46
485	213	904-0134	20.0-44.0	104%	3.36502	3.47155	1611.31	1610.17	1616.63	1621.38	1607	1597.5	3.77
486	213	904-0135	20.0-44.0	104%	2.8542	3.27491	1585.48	1587.18	1590.88	1596.63	1581	1578.13	3.31
487	213	904-0136	20.0-44.0	104%									
488													
489	219	901-0711	41.0-62.0	90%	1.99834	2.61607	1638.06	1639.8	1641.25	1647	1634.13	1632.5	3.65
490	219	901-0712	154.0-248.0	90%	2.08561	4.05827	1643.26	1646.07	1647	1658.63	1639.75	1632.5	6.51
491	219	901-0711	15.0-36.0	100%	3.52984	4.10377	1663.96	1660.27	1671.63	1671.63	1657.13	1647	3.76
492	219	901-0711	67.0-78.0	100%	2.26708	3.27047	1661.49	1660.9	1664.38	1668.75	1665.63	1651.25	4.26
493	219	901-0712	73.0-148.0	104%	3.57152	3.56338	1657.23	1658.51	1667.25	1674.63	1652.88	1651.25	4.51
494	219	901-0711	84.0-131.0	109%	2.07696	3.36168	1681.25	1679.89	1684.75	1690.5	1677.5	1668.75	5.36
495	219	901-0712	21.0-68.0	109%	2.63609	3.15983	1686.6	1679	1694.88	1694.88	1683.25	1671.63	6.02
496													
497	2206	904-0148	45.0-60.0	65%	2.30147	7.46399	1402.13	1410.13	1407.25	1429.13	1398.63	1394.38	8.26
498	2206	904-0149	45.0-60.0	65%	2.59767	13.2324	1361.39	1351.82	1366.63	1389.75	1357.13	1330.13	14.60
499	2206	904-0145	15.0-240.0	100%	3.8672	8.06092	1772.36	1769.21	1781.38	1791.88	1765.88	1740.13	7.52
500	2206	904-0146	15.0-36.0	100%	3.24794	9.30124	1744.84	1740.43	1750.38	1765.88	1740.13	1719.88	7.84
501	2206	904-0147	15.0-460.0	100%	2.9983	17.2783	1706.05	1710.24	1709.75	1755.5	1699.75	1660.13	16.71
502	2206	904-0148	15.0-37.0	100%	2.56307	8.33772	1738.62	1731.18	1740.13	1760.63	1730	1714.75	11.49
503	2206	904-0148	70.0-460.0	100%	2.05	9.43534	1740.13	1732.01	1745.25	1765.88	1735	1699.75	16.52
504	2206	904-0149	15.0-37.0	100%	1.66574	8.51579	1699.46	1683.57	1702.38	1702.38	1696.5	1663	12.35
505	2206	904-0149	70.0-105.0	100%	4.28007	9.30322	1661.56	1668.06	1667.38	1690.75	1652.88	1648.5	5.30

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C1-14

	A	B			C	D	E	F	G	H	I	J	K
506					Std Dev at		Mean at		Max value at		Min val at		N
507		233 HPOTP tdt ch s			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
508	213	904-0122	15.0-181.0	65%	2.73187	9.25499	1170.67	1134.83	1178.38	1178.38	1166.88	1120.88	15.94
509	213	904-0123	15.0-171.0	65%	2.10151	7.61883	1187.95	1154.04	1193.88	1193.88	1186.13	1143.75	18.96
510	213	904-0123	180.0-274.0	90%	1.98779	5.12551	1371.92	1365.89	1375.88	1383.88	1367.75	1355.63	9.05
511	213	904-0124	15.0-104.0	100%	3.09573	11.2318	1503.9	1475.72	1507.13	1507.13	1498.75	1449.13	10.15
512	213	904-0133	15.0-44.0	100%	5.0444	10.647	1557.25	1547.11	1561.63	1574.38	1544.75	1523.88	5.41
513	213	904-0134	20.0-44.0	104%	3.37333	14.978	1610.25	1592.77	1617	1621.25	1604.13	1557.38	10.49
514	213	904-0135	20.0-44.0	104%	5.496445	15.5874	1608.78	1592.98	1615	1622.13	1599.25	1556.5	6.64
515	213	904-0136	20.0-44.0	104%									
516													
517	219	901-0711	41.0-62.0	90%	1.18945	7.46407	1361.92	1354.85	1364.38	1367.13	1359	1337.38	14.69
518	219	901-0712	154.0-248.0	90%	3.55462	6.40377	1362.81	1364.59	1368.5	1380.63	1356.25	1349.5	4.51
519	219	901-0711	15.0-36.0	100%	4.49101	9.20615	1455.79	1442.75	1467.13	1467.13	1450.5	1425.63	5.43
520	219	901-0711	67.0-78.0	100%	2.88708	3.88723	1424.94	1430.09	1429.88	1438.13	1417.5	1417.5	4.36
521	219	901-0712	73.0-148.0	104%	2.94454	9.8607	1506.18	1499.58	1510.5	1521.63	1499.25	1474	8.69
522	219	901-0711	84.0-131.0	109%	4.96093	8.77211	1508.44	1520.91	1516	1552.75	1499.25	1499.25	6.42
523	219	901-0712	21.0-68.0	109%	3.47691	13.3974	1604.01	1591.66	1610	1617.25	1594.13	1559.88	9.14
524													
525	2206	904-0148	45.0-60.0	65%	1.87338	4.64669	1168.26	1162.29	1173.13	1173.13	1165.38	1153.75	5.79
526	2206	904-0149	45.0-60.0	65%	0.851951	1.80083	1217.94	1217.65	1220.13	1221.38	1216.13	1213.5	4.87
527	2206	904-0145	15.0-240.0	100%	2.06559	12.0025	1311.96	1307.66	1314.63	1338.63	1306.63	1282.75	14.99
528	2206	904-0146	15.0-36.0	100%	2.22197	12.9776	1347.71	1365.84	1350.75	1391.13	1342.75	1342.75	11.38
529	2206	904-0147	15.0-460.0	100%	6.32404	11.2344	1316.71	1340.18	1330.63	1383	1310.63	1310.63	6.77
530	2206	904-0148	15.0-37.0	100%	3.15254	18.3372	1336.51	1361.38	1346.75	1387	1330.63	1330.63	9.75
531	2206	904-0148	70.0-460.0	100%	2.94998	6.82193	1365.24	1349.46	1370.88	1370.88	1362.75	1330.63	7.26
532	2206	904-0149	15.0-37.0	100%	2.11757	10.3583	1390.6	1409.81	1395.13	1425.13	1386.88	1386.88	10.83
533	2206	904-0149	70.0-105.0	100%	1.7163	7.37191	1441.59	1442.02	1444.25	1453.88	1438.75	1422.38	11.44

15-5225-552

C1-15

	A	B			C	D	E	F	G	H	I	J	K
534					Std Dev at		Mean at		Max value at		Min val at		N
535		234 HPOTP tdt ch b			2 secs	full Interval	2 secs	full Interval	2 secs	full Interval	2 secs	full Interval	FACTOR
536	213	904-0122	15.0-181.0	65%	1.9564	8.98557	1161.9	1126.97	1163.88	1163.88	1160	1114.13	18.87
537	213	904-0123	15.0-171.0	65%	1.90145	10.5115	1175.91	1136.48	1179.25	1179.25	1171.5	1117.88	22.49
538	213	904-0123	180.0-274.0	90%	2.03684	7.24542	1339.88	1343.44	1344.63	1360.63	1336.5	1324.5	9.30
539	213	904-0124	15.0-104.0	100%	3.26807	9.42077	1492.25	1474.44	1496	1500.25	1487.63	1446.25	8.63
540	213	904-0133	15.0-44.0	100%	6.98298	13.7896	1530.07	1508.91	1542.25	1542.25	1517	1483.5	4.77
541	213	904-0134	20.0-44.0	104%	0.833167	9.17633	1576.08	1562.28	1576.25	1580.5	1572	1542.25	24.04
542	213	904-0135	20.0-44.0	104%	2.2152	11.1288	1576.49	1557.45	1579.88	1579.88	1572.75	1537.13	10.13
543	213	904-0136	20.0-44.0	104%									
544													
545	219	901-0711	41.0-62.0	90%	1.75582	5.34382	1313.92	1306.68	1316	1316	1310.63	1294.63	6.86
546	219	901-0712	154.0-248.0	90%	3.2685	7.16463	1293.54	1294.98	1301.38	1312	1289.38	1273.38	6.61
547	219	901-0711	15.0-36.0	100%	8.70648	5.7332	1399.11	1393.07	1415	1415	1390.38	1379.5	2.52
548	219	901-0711	67.0-78.0	100%	2.69593	6.22957	1366.58	1375.34	1370	1387.63	1363.25	1363.25	4.56
549	219	901-0712	73.0-148.0	104%	2.37606	7.54196	1408.73	1412.46	1413.63	1430	1404	1393.13	8.14
550	219	901-0711	84.0-131.0	109%	4.9295	9.16425	1483.58	1488.74	1490.88	1511.88	1471.38	1467.25	4.69
551	219	901-0712	21.0-68.0	109%	4.50353	9.29805	1477.92	1482.11	1486.75	1502.13	1471.38	1461.75	4.52
552													
553	2206	904-0148	45.0-60.0	65%	0	3.97024	1156.25	1150.29	1156.25	1156.25	1156.25	1144.75	
554	2206	904-0149	45.0-60.0	65%	1.0933	3.00352	1208.13	1205.24	1210.5	1210.5	1206.5	1200	4.81
555	2206	904-0145	15.0-240.0	100%	2.03807	9.70375	1357.5	1352.67	1360.25	1380.38	1352.25	1328.25	13.60
556	2206	904-0146	15.0-36.0	100%	3.02372	9.16302	1349.85	1359.91	1352.25	1380.38	1344.25	1344.25	6.77
557	2206	904-0147	15.0-460.0	100%	6.47455	8.45909	1321.45	1345.96	1336.25	1372.38	1312.38	1312.38	5.19
558	2206	904-0148	15.0-37.0	100%	1.66156	13.5035	1351.39	1371.36	1352.25	1392.5	1348.25	1348.25	13.91
559	2206	904-0148	70.0-460.0	100%	1.87449	6.95409	1376.45	1364.11	1380.38	1388.5	1372.38	1344.25	13.01
560	2206	904-0149	15.0-37.0	100%	2.77635	12.8426	1404.11	1427.92	1408.87	1444.25	1399.25	1399.25	10.33
561	2206	904-0149	70.0-105.0	100%	2.17055	6.50683	1438.92	1448.34	1442.75	1449.63	1436	1421	12.60

ESS-8825-51

C1-16

	A	B			C	D	E	F	G	H	I	J	K
562					Std Dev at		Mean at		Max value at		Min val at		N
563		260 HPFTP shaft sp ch a			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
564	213	904-0122	15.0-181.0	65%	65.1197	145.59	26907.5	26917.8	27042	27708	26752	26132	12.13
565	213	904-0123	15.0-171.0	65%	41.0119	47.1621	26922.9	26968.9	27042	27108	26816	26816	3.73
566	213	904-0123	180.0-274.0	90%	52.7317	66.4367	31922.1	31942.1	32050	32188	31824	31778	4.66
567	213	904-0124	15.0-104.0	100%	76.6935	82.4043	33874.5	33864.6	33986	34038	33682	33632	3.03
568	213	904-0133	15.0-44.0	100%	195.234	189.09	33906.7	33920	34298	34298	33582	33582	1.94
569	213	904-0134	20.0-44.0	104%	98.8435	84.3162	34802.4	34775	35046	35046	34668	34562	2.74
570	213	904-0135	20.0-44.0	104%	27.7744	38.3213	34878.9	34858.3	34964	34964	34802	34802	3.81
571	213	904-0136	20.0-44.0	104%									
572													
573	219	901-0711	41.0-62.0	90%	36.9273	34.4672	31879.3	31887.6	31982	31982	31846	31778	2.97
574	219	901-0712	154.0-248.0	90%	29.7517	31.5089	31833.8	31854	31914	31914	31778	31778	2.55
575	219	901-0711	15.0-36.0	100%	33.8547	37.4149	33939	33933.1	34012	34012	33860	33860	2.33
576	219	901-0711	67.0-78.0	100%	38.1932	34.8101	33952.4	33956.1	34012	34012	33860	33860	2.52
577	219	901-0712	73.0-148.0	104%	41.8042	41.2868	34707.6	34698.3	34802	34802	34642	34562	3.26
578	219	901-0711	84.0-131.0	109%	45.7612	44.7343	35860.4	35858.3	35970	35970	35798	35714	3.15
579	219	901-0712	21.0-68.0	109%	39.5211	42.4971	35806.7	35786.9	35884	35884	35714	35628	4.02
580													
581	2206	904-0148	45.0-60.0	65%	172.075	182.075	27034.2	27034	27304	27372	26722	26690	2.00
582	2206	904-0149	45.0-60.0	65%	19.9387	20.6373	26869.6	26878	26880	26928	26832	26832	2.51
583	2206	904-0145	15.0-240.0	100%	250.197	261.322	34404.5	34436.2	34882	35046	34038	33936	2.44
584	2206	904-0146	15.0-36.0	100%	211.194	224.528	34385.1	34411.6	34828	34936	34090	34038	2.48
585	2206	904-0147	15.0-460.0	100%	281.082	264.297	34397.6	34494.7	34936	35156	34038	34038	2.35
586	2206	904-0148	15.0-37.0	100%	323.37	292.085	34367.5	34417.3	34936	34936	33834	33834	1.80
587	2206	904-0148	70.0-460.0	100%	246.337	294.307	34594.4	34489.3	34828	35046	34090	33884	2.46
588	2206	904-0149	15.0-37.0	100%	37.1354	38.1305	34142	34152.6	34168	34246	34090	34090	2.52
589	2206	904-0149	70.0-105.0	100%	36.5526	38.5869	34221.5	34221.2	34246	34324	34168	34168	2.81

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C1-17

	A	B			C	D	E	F	G	H	I	J	K
1		PID PARAMETER			Std Dev at		Mean at		Max value at		Min val at		N
2	Eng. No.	test interval power level			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
3		457 HPFTP bal cav pr											
4	213	904-0122	15.0-181.0	65%	3.08261	3.22929	2936.69	2938.86	2946.3	2951.75	2931.8	2926.36	4.18
5	213	904-0123	15.0-171.0	65%	2.92132	3.30098	2988.34	2988.18	2994.37	2999.82	2982.86	2975.59	4.31
6	213	904-0123	180.0-274.0	90%	4.74049	7.06941	4111.87	4119.28	4120.84	4141.43	4102.06	4096.61	4.78
7	213	904-0124	15.0-104.0	100%	4.32264	6.97487	4574.63	4562.38	4582.87	4586.5	4563.49	4533.21	6.75
8	213	904-0133	15.0-44.0	100%	3.8371	4.67226	4381.59	4377.09	4390.47	4390.47	4373.54	4363.87	3.49
9	213	904-0134	20.0-44.0	104%	6.75128	6.75571	4601.63	4603.9	4621.16	4621.16	4587.32	4584.9	2.81
10	213	904-0135	20.0-44.0	104%	5.11414	7.02752	4613.85	4616.19	4629.07	4632.1	4601.88	4596.44	3.86
11	213	904-0136	20.0-44.0	104%	7.18033	5.54114	4622.51	4621.33	4638.5	4638.5	4608.87	4605.24	2.39
12													
13	219	901-0711	41.0-62.0	90%	4.79243	4.80243	4147.89	4150.09	4159.04	4163.85	4138.59	4134.98	3.15
14	219	901-0712	154.0-248.0	90%	4.10175	5.19857	4140.42	4146.05	4150.8	4161.63	4132.77	4127.95	4.41
15	219	901-0711	15.0-36.0	100%	7.45599	6.50576	4593.43	4589.8	4606.43	4607.4	4576.37	4571.55	2.45
16	219	901-0711	67.0-78.0	100%	6.04545	6.13665	4600.77	4598.99	4616.05	4616.05	4590.8	4584.79	2.82
17	219	901-0712	73.0-148.0	104%	6.43166	6.97842	4754.8	4758.83	4776.16	4782.18	4743.69	4737.68	3.63
18	219	901-0711	84.0-131.0	109%	7.28837	7.09228	5035.93	5034.44	5049.02	5056.23	5020.15	5011.73	3.12
19	219	901-0712	21.0-68.0	109%	6.23701	8.00799	5028.84	5022.46	5040.74	5051.56	5015.48	4998.65	4.67
20													
21	2206	904-0148	45.0-60.0	65%	2.0957	3.33977	3012.68	3013.48	3017.94	3023.39	3007.64	3004.61	4.73
22	2206	904-0149	45.0-60.0	65%	2.18773	2.65675	2972.26	2973.73	2978.79	2983.03	2967.27	2967.27	4.25
23	2206	904-0145	15.0-240.0	100%	6.79299	5.80098	4544.73	4541.7	4559.69	4562.72	4532.43	4519.71	3.24
24	2206	904-0146	15.0-36.0	100%	4.37576	6.41231	4542.42	4544.18	4552.71	4566.04	4532.73	4527.88	5.00
25	2206	904-0147	15.0-460.0	100%	6.09084	8.05397	4542.15	4551.59	4555.02	4577.43	4530.19	4522.32	4.81
26	2206	904-0148	15.0-37.0	100%	5.32102	6.6753	4533.94	4536.18	4546.71	4555.8	4520.66	4520.66	3.69
27	2206	904-0148	70.0-460.0	100%	4.45497	7.62068	4544.78	4557.32	4553.98	4583.07	4532.77	4532.17	5.78
28	2206	904-0149	15.0-37.0	100%	4.01784	5.53173	4468.45	4470.71	4477.76	4485.64	4458.98	4456.55	3.72
29	2206	904-0149	70.0-105.0	100%	3.68173	6.08749	4486.82	4483.61	4495.93	4501.39	4477.76	4463.22	5.54

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	A	B			C	D	E	F	G	H	I	J	K
114					Std Dev at		Mean at		Max value at		Min val at		N
115		1936 HPFTP Rad Accel 90			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
116	213	904-0122	15.0-181.0	65%									
117	213	904-0123	15.0-171.0	65%									
118	213	904-0123	180.0-274.0	90%									
119	213	904-0124	15.0-104.0	100%									
120	213	904-0133	15.0-44.0	100%									
121	213	904-0134	20.0-44.0	104%									
122	213	904-0135	20.0-44.0	104%									
123	213	904-0136	20.0-44.0	104%									
124													
125	219	901-0711	41.0-62.0	90%									
126	219	901-0712	154.0-248.0	90%									
127	219	901-0711	15.0-36.0	100%									
128	219	901-0711	67.0-78.0	100%									
129	219	901-0712	73.0-148.0	104%									
130	219	901-0711	84.0-131.0	109%									
131	219	901-0712	21.0-68.0	109%									
132													
133	2206	904-0148	45.0-60.0	65%	0.13617	0.177302	1.59685	1.73536	1.93246	2.32351	1.33671	1.29699	4.32
134	2206	904-0149	45.0-60.0	65%	0.176326	0.176211	1.98132	1.84034	2.35445	2.36667	1.39823	1.37379	2.98
135	2206	904-0145	15.0-240.0	100%	0.569838	1.04136	3.96983	4.85782	5.18217	10.1224	2.59137	2.36529	9.24
136	2206	904-0146	15.0-36.0	100%	0.648747	0.647444	4.40646	4.43279	5.94073	6.86938	2.97762	2.8707	3.76
137	2206	904-0147	15.0-460.0	100%	0.684394	1.15041	3.96967	5.8599	6.6037	11.2651	2.63875	2.63875	7.90
138	2206	904-0148	15.0-37.0	100%	0.457898	0.496996	3.58173	3.63759	4.9784	5.4214	2.48849	2.00578	3.90
139	2206	904-0148	70.0-460.0	100%	0.554641	0.949266	4.62026	5.50208	6.37154	9.72605	3.60666	2.794	7.62
140	2206	904-0149	15.0-37.0	100%	0.518509	0.599621	4.18312	4.47612	5.90741	6.79642	3.18846	2.82186	4.47
141	2206	904-0149	70.0-105.0	100%	0.548382	0.671988	4.31137	4.35599	5.58053	6.68338	3.06015	2.65524	4.24

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C-3

C1-19

	A	B			C	D	E	F	G	H	I	J	K
30					Std Dev at		Mean at		Max value at		Min val at		N
31		1951 MCC Liner Cavity Pr			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
32	213	904-0122	15.0-181.0	65%	0.0840073	0.792939	8.60718	5.70092	8.7651	8.7651	8.46234	5.16828	36.48
33	213	904-0123	15.0-171.0	65%	0.0859368	0.802131	8.21059	5.34679	8.36604	8.36604	8.06318	4.81651	35.13
34	213	904-0123	180.0-274.0	90%	0.0164095	0.0199295	4.796	4.80355	4.82862	4.86497	4.75594	4.74382	3.74
35	213	904-0124	15.0-104.0	100%	0.0818121	0.863739	8.45938	6.09846	8.62149	8.62149	8.30663	5.33966	30.84
36	213	904-0133	15.0-44.0	100%	0.0783401	0.70772	8.67485	7.37764	8.80983	8.80983	8.54347	4.36387	38.47
37	213	904-0134	20.0-44.0	104%	0.0684364	0.530535	7.88907	6.96412	8.02237	8.02237	7.76811	6.10939	15.46
38	213	904-0135	20.0-44.0	104%	0.0654069	0.526822	7.82375	6.90987	7.94532	7.94532	7.70314	6.03216	15.83
39	213	904-0136	20.0-44.0	104%	0.0610369	0.514512	8.44026	7.54758	8.55626	8.55626	8.31444	6.71843	16.53
40													
41	219	901-0711	41.0-62.0	90%	0.0415452	0.277464	6.15116	5.64734	6.23092	6.23092	6.06506	5.25947	14.05
42	219	901-0712	154.0-248.0	90%	0.0158836	0.0366677	5.0622	4.95733	5.09645	5.09645	5.02538	4.88323	8.76
43	219	901-0711	15.0-36.0	100%	0.0773216	0.551048	8.35281	7.39422	8.50553	8.50553	8.22122	6.51524	14.37
44	219	901-0711	67.0-78.0	100%	0.0125022	0.0149579	5.21114	5.20099	5.23577	5.23577	5.18839	5.16469	2.90
45	219	901-0712	73.0-148.0	104%	0.0170771	0.0623848	5.35751	5.18882	5404.42	5.40442	5333.35	5.09645	12.63
46	219	901-0711	84.0-131.0	109%	0.0122824	0.0191833	5.20387	5.21057	5.23577	5.25947	5.18839	5.16469	3.98
47	219	901-0712	21.0-68.0	109%	0.0575113	0.692936	7.72915	6.32573	7.84455	7.84455	7.63134	5.42812	26.41
48													
49	2206	904-0148	45.0-60.0	65%	0.0434965	0.192364	4.99974	4.6639	5.07818	5.07818	4.90885	4.38875	9.52
50	2206	904-0149	45.0-60.0	65%	0.0471055	0.198275	5.33536	4.99042	5.426	5.426	5.2446	4.7125	9.25
51	2206	904-0145	15.0-240.0	100%	0.0822896	0.66148	7.93836	5.1119	8.08702	8.08702	7.79688	4.68987	36.15
52	2206	904-0146	15.0-36.0	100%	0.0849331	0.564396	7.83053	6.84256	7.98302	7.98302	7.69289	5.97624	13.43
53	2206	904-0147	15.0-460.0	100%	0.0832599	0.525484	7.73083	4.66744	7.87051	7.87051	7.56827	4.4008	38.47
54	2206	904-0148	15.0-37.0	100%	0.0813428	0.58505	7.64059	6.60776	7.79963	7.79963	7.48515	5.70714	14.65
55	2206	904-0148	70.0-460.0	100%	0.0113274	0.0803858	4.52635	4.36116	4.54599	4.58228	4.49761	4.23151	19.52
56	2206	904-0149	15.0-37.0	100%	0.0802727	0.5966	8.01227	6.95414	8.15907	8.15907	7.84465	6.04275	15.01
57	2206	904-0149	70.0-105.0	100%	0.0143715	0.0198216	4.81511	4.83076	4.84552	4.8818	4.78506	4.76087	4.86

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C1-20

	A	B			C	D	E	F	G	H	I	J	K
58					Std Dev at		Mean at		Max value at		Min val at		N
59		1953 HPFTP Rad Accel 90			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
60	213	904-0122	15.0-181.0	65%									
61	213	904-0123	15.0-171.0	65%									
62	213	904-0123	180.0-274.0	90%									
63	213	904-0124	15.0-104.0	100%									
64	213	904-0133	15.0-44.0	100%									
65	213	904-0134	20.0-44.0	104%									
66	213	904-0135	20.0-44.0	104%									
67	213	904-0136	20.0-44.0	104%									
68													
69	219	901-0711	41.0-62.0	90%	0.274306	0.256086	2.11947	2.15931	2.90976	3.14944	1.48398	1.41637	3.61
70	219	901-0712	154.0-248.0	90%	0.24197	0.225462	2.00422	2.03718	2.69466	2.97736	1.42867	1.39179	3.89
71	219	901-0711	15.0-36.0	100%	0.261467	0.270875	2.32708	2.41557	3.06955	3.38297	1.84657	1.64376	3.70
72	219	901-0711	67.0-78.0	100%	0.265563	0.258963	2.46393	2.44479	3.20475	3.33995	1.7974	1.68678	3.37
73	219	901-0712	73.0-148.0	104%	0.416359	0.41387	3.45143	3.352	4.17576	5.44176	2.23374	2.0125	5.02
74	219	901-0711	84.0-131.0	109%	0.408615	0.468237	2.9181	3.09614	4.37856	5.07302	2.12927	1.85271	4.84
75	219	901-0712	21.0-68.0	109%	0.560999	0.973576	4.79786	6.04336	6.4312	9.63307	3.44443	3.44443	6.40
76													
77	2206	904-0148	45.0-60.0	65%	0.0963642	0.116058	1.3272	1.34754	1.55964	1.70915	1.09281	1.0745	3.75
78	2206	904-0149	45.0-60.0	65%	0.0970493	0.117431	1.79094	1.72742	2.0379	2.08062	1.56192	1.41851	3.64
79	2206	904-0145	15.0-240.0	100%	0.304573	0.387532	2.77912	3.14308	3.43242	4.78731	2.09584	1.88834	5.40
80	2206	904-0146	15.0-36.0	100%	0.243586	0.300656	2.44096	2.6934	3.06204	3.79134	2.01539	1.85672	4.51
81	2206	904-0147	15.0-460.0	100%	0.278271	0.298363	2.31989	2.54408	3.04699	4.00219	1.70422	1.48144	5.24
82	2206	904-0148	15.0-37.0	100%	0.316172	0.383725	2.87292	2.80875	3.69853	4.22029	2.0997	1.84035	4.46
83	2206	904-0148	70.0-460.0	100%	0.303798	0.33072	2.65599	2.60067	3.7504	4.23249	2.02342	1.5871	5.37
84	2206	904-0149	15.0-37.0	100%	0.214535	0.266981	3.04648	3.07061	3.63672	3.93573	2.52304	2.21487	4.03
85	2206	904-0149	70.0-105.0	100%	0.241367	0.276086	2.17309	2.24743	2.84646	3.28583	1.48258	1.37274	4.30

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	A	B			C	D	E	F	G	H	I	J	K
86					Std Dev at		Mean at		Max value at		Min val at		N
87		1994 HPOTP BP Rad Accel 45			2 secs	full interval	2 secs	full interval	2 secs	full interval	2 secs	full interval	FACTOR
88	213	904-0122	15.0-181.0	65%	0.0689945	0.0864712	0.731295	0.852185	0.941634	1.21171	0.505824	0.505824	5.21
89	213	904-0123	15.0-171.0	65%	0.071832	0.0832292	0.710095	0.834505	0.898063	1.18348	0.560474	0.54513	4.86
90	213	904-0123	180.0-274.0	90%	0.112814	0.119597	0.973907	1.01212	1.30624	1.60086	0.744614	0.692441	5.22
91	213	904-0124	15.0-104.0	100%	0.180857	0.207359	1.66009	1.64382	2.16345	2.47037	1.26415	1.06772	4.57
92	213	904-0133	15.0-44.0	100%	0.204497	0.208873	2.07805	2.03141	2.48647	2.6728	1.58845	1.45405	3.14
93	213	904-0134	20.0-44.0	104%	0.267447	0.256395	2.46621	2.35265	3.02084	3.22245	1.84477	1.56679	3.25
94	213	904-0135	20.0-44.0	104%	0.288707	0.279682	2.64673	2.53978	3.71722	3.71722	2.06767	1.72859	4.08
95	213	904-0136	20.0-44.0	104%	0.213866	0.233825	2.22155	2.16082	2.82712	2.95541	1.70303	1.49226	3.72
96													
97	219	901-0711	41.0-62.0	90%	0.183837	0.167789	1.46757	1.41628	1.98429	1.98429	1.05114	0.977469	3.09
98	219	901-0712	154.0-248.0	90%	0.171368	0.179457	1.58365	1.54099	2.00718	2.35092	1.12329	0.945278	4.73
99	219	901-0711	15.0-36.0	100%	0.264982	0.295395	3.14939	3.26381	3.91199	4.29261	2.67802	2.35264	3.88
100	219	901-0711	67.0-78.0	100%	0.281679	0.276853	3.39454	3.39843	4.34787	4.51976	2.78852	2.72713	3.98
101	219	901-0712	73.0-148.0	104%	0.323657	0.365287	3.6087	3.74271	4.65273	5.09468	2.78673	2.52279	4.18
102	219	901-0711	84.0-131.0	109%	0.265021	0.295325	3.16666	2.7335	3.9304	3.9304	2.48156	1.8124	4.52
103	219	901-0712	21.0-68.0	109%	0.243391	0.275287	2.64063	2.60956	3.52331	3.8118	2.0747	1.6695	4.94
104													
105	2206	904-0148	45.0-60.0	65%									
106	2206	904-0149	45.0-60.0	65%									
107	2206	904-0145	15.0-240.0	100%									
108	2206	904-0146	15.0-36.0	100%									
109	2206	904-0147	15.0-460.0	100%									
110	2206	904-0148	15.0-37.0	100%									
111	2206	904-0148	70.0-460.0	100%									
112	2206	904-0149	15.0-37.0	100%									
113	2206	904-0149	70.0-105.0	100%									

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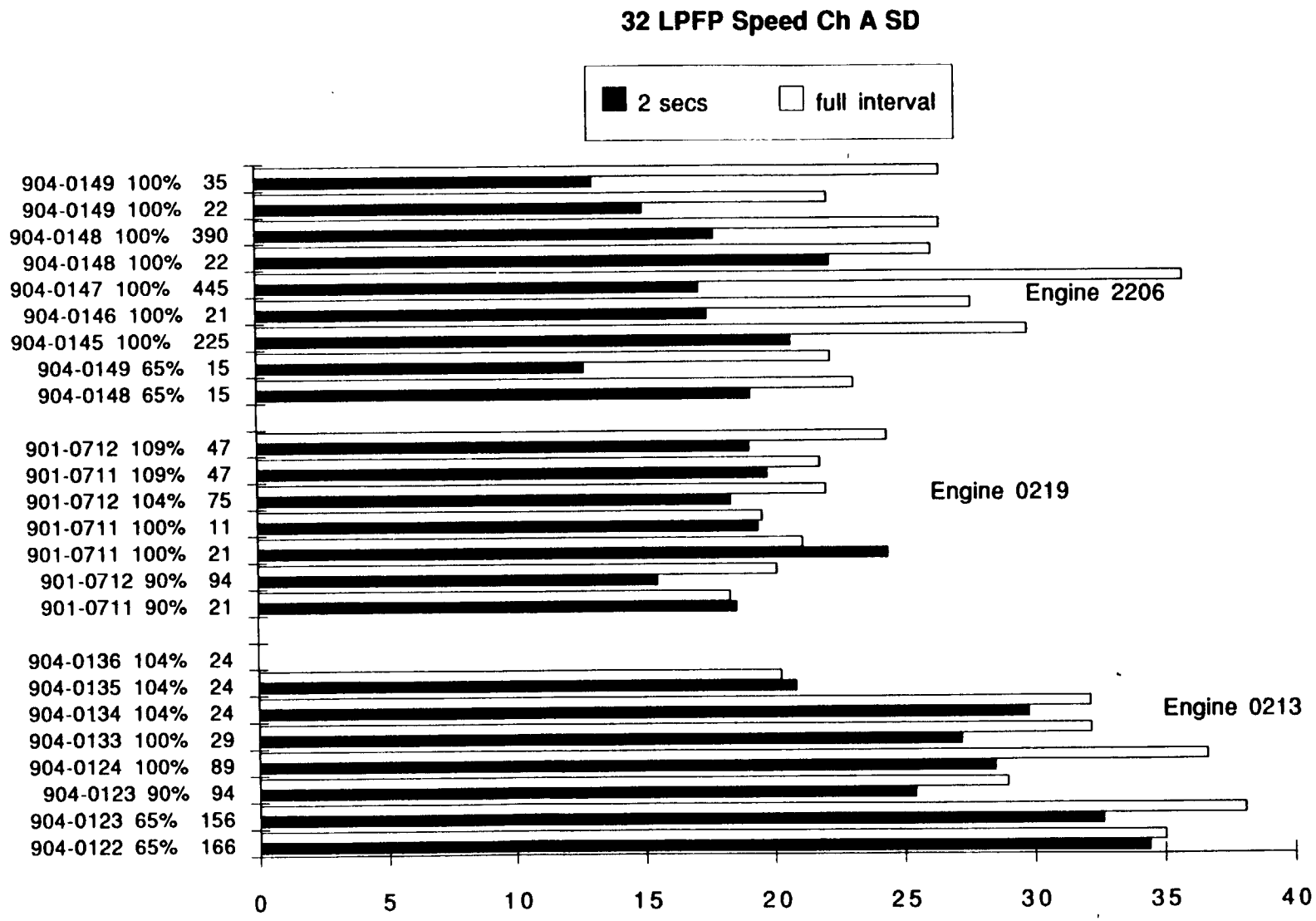
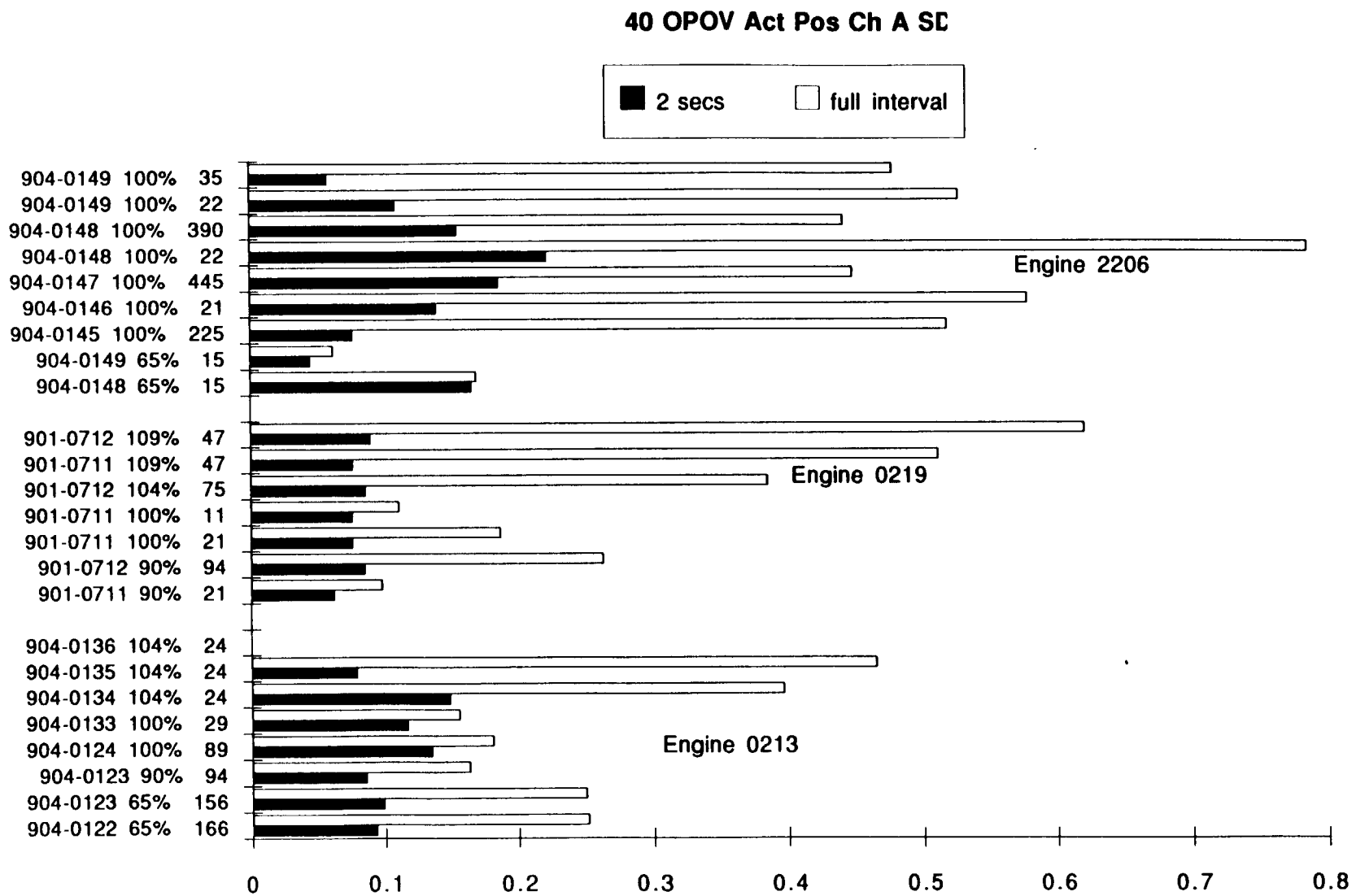
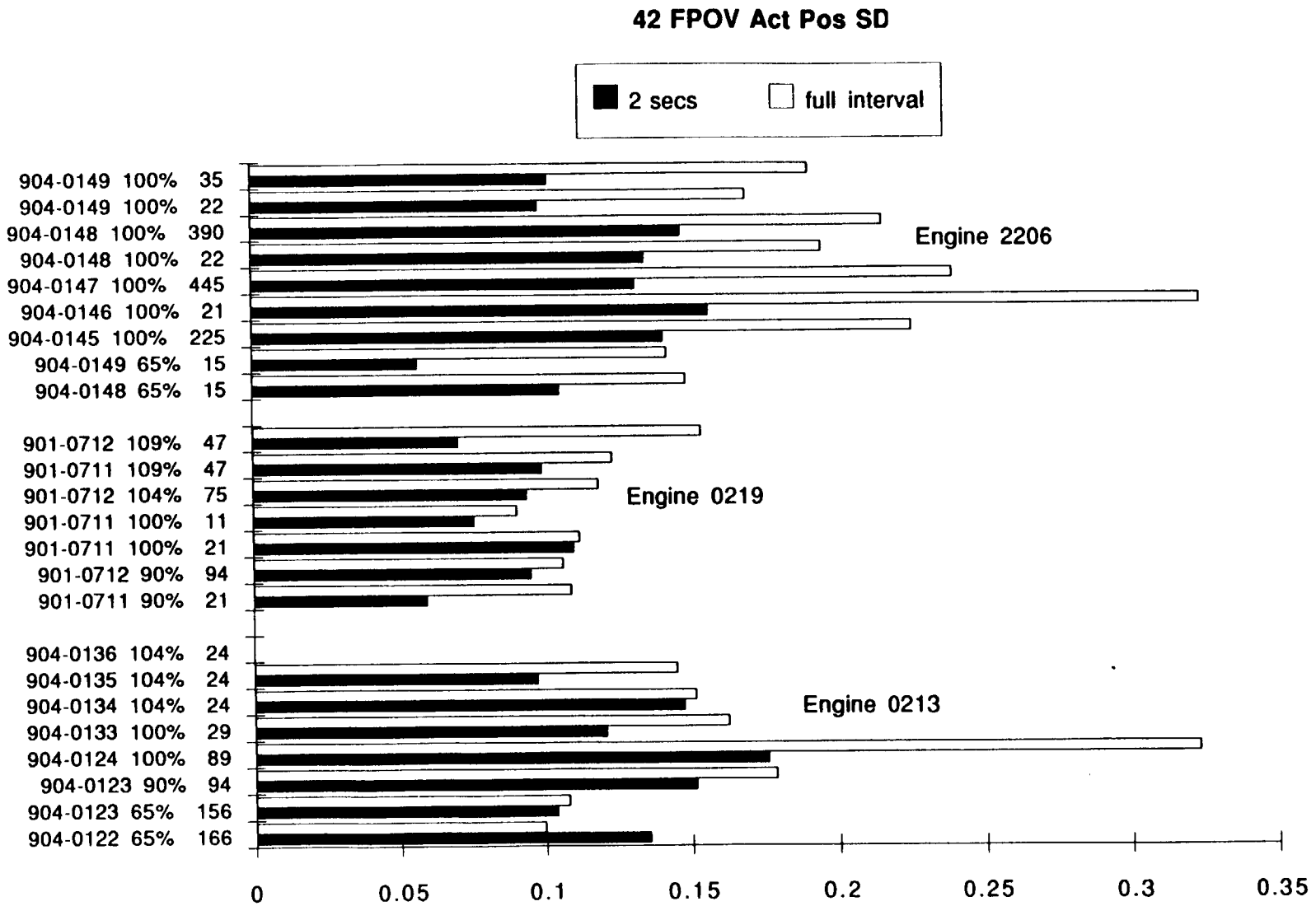
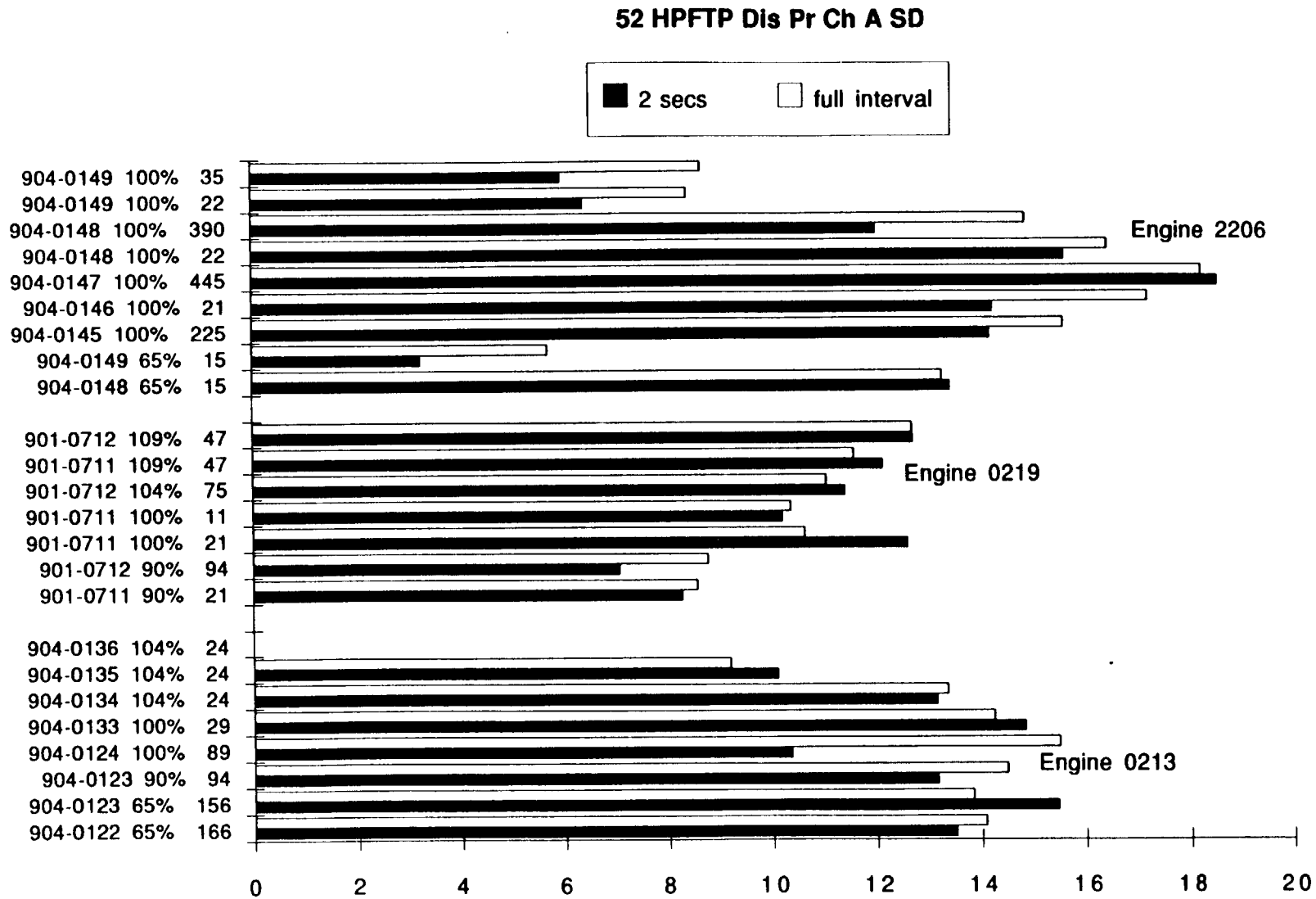
C1-22

Appendix C2 - Standard Deviation Graphs


32 LPFP Speed Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
5
10
15
20
25
30
35
40


40 OPOV Act Pos Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8


42 FPOV Act Pos SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35


52 HPFTP Dis Pr Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
2
4
6
8
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12
14
16
18
20

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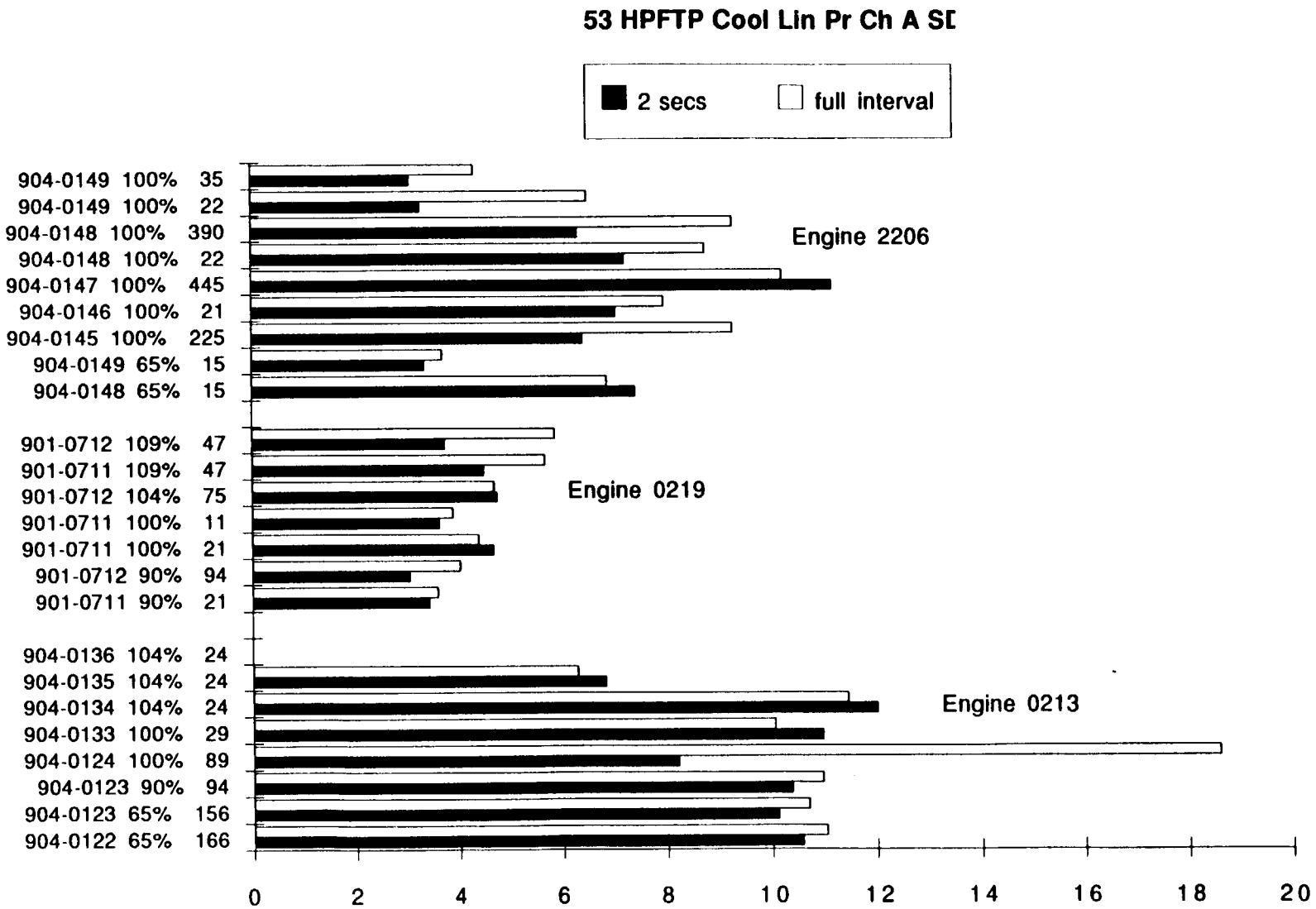
53 HPFTP Cool Lin Pr Ch A SI
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
2
4
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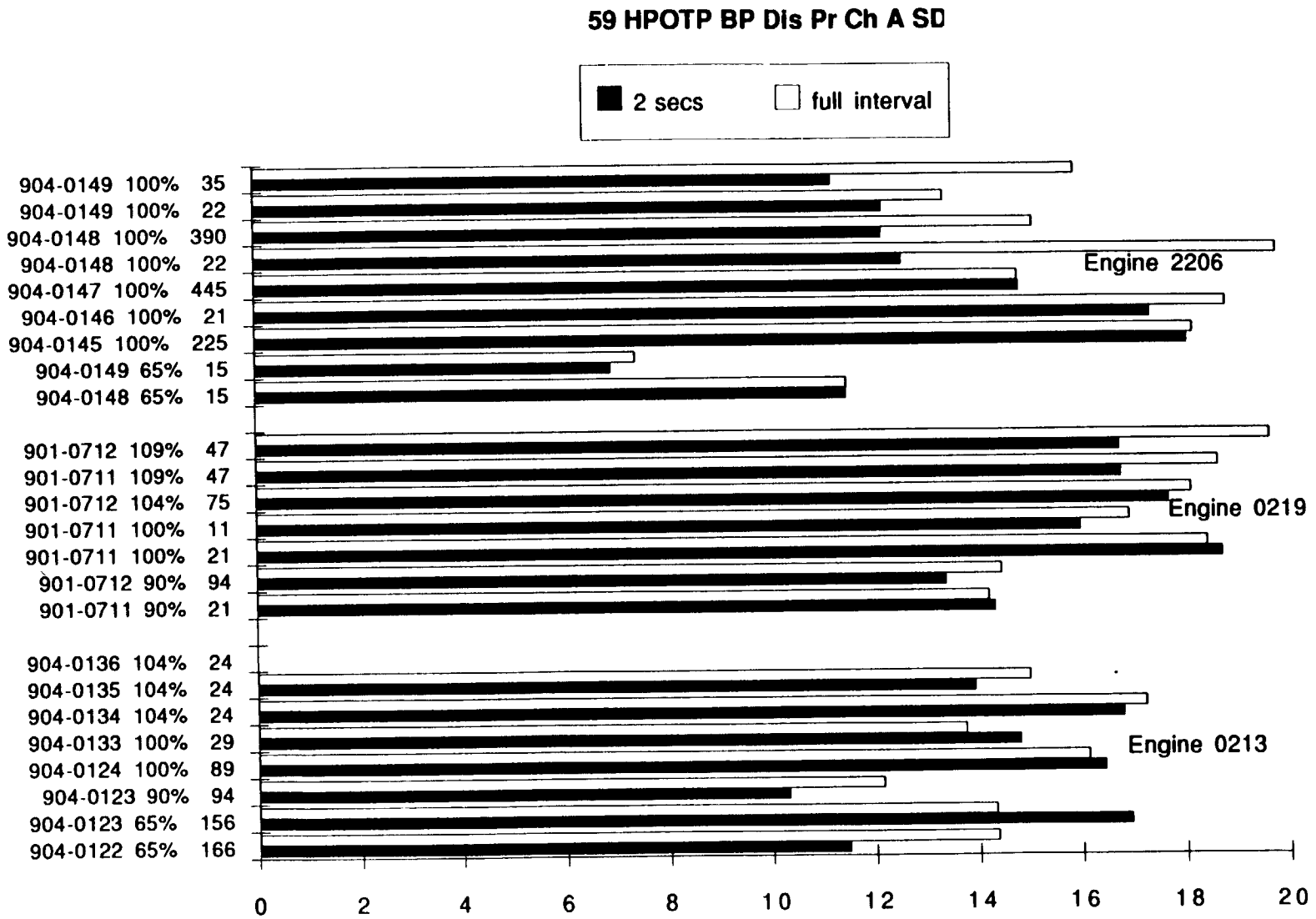
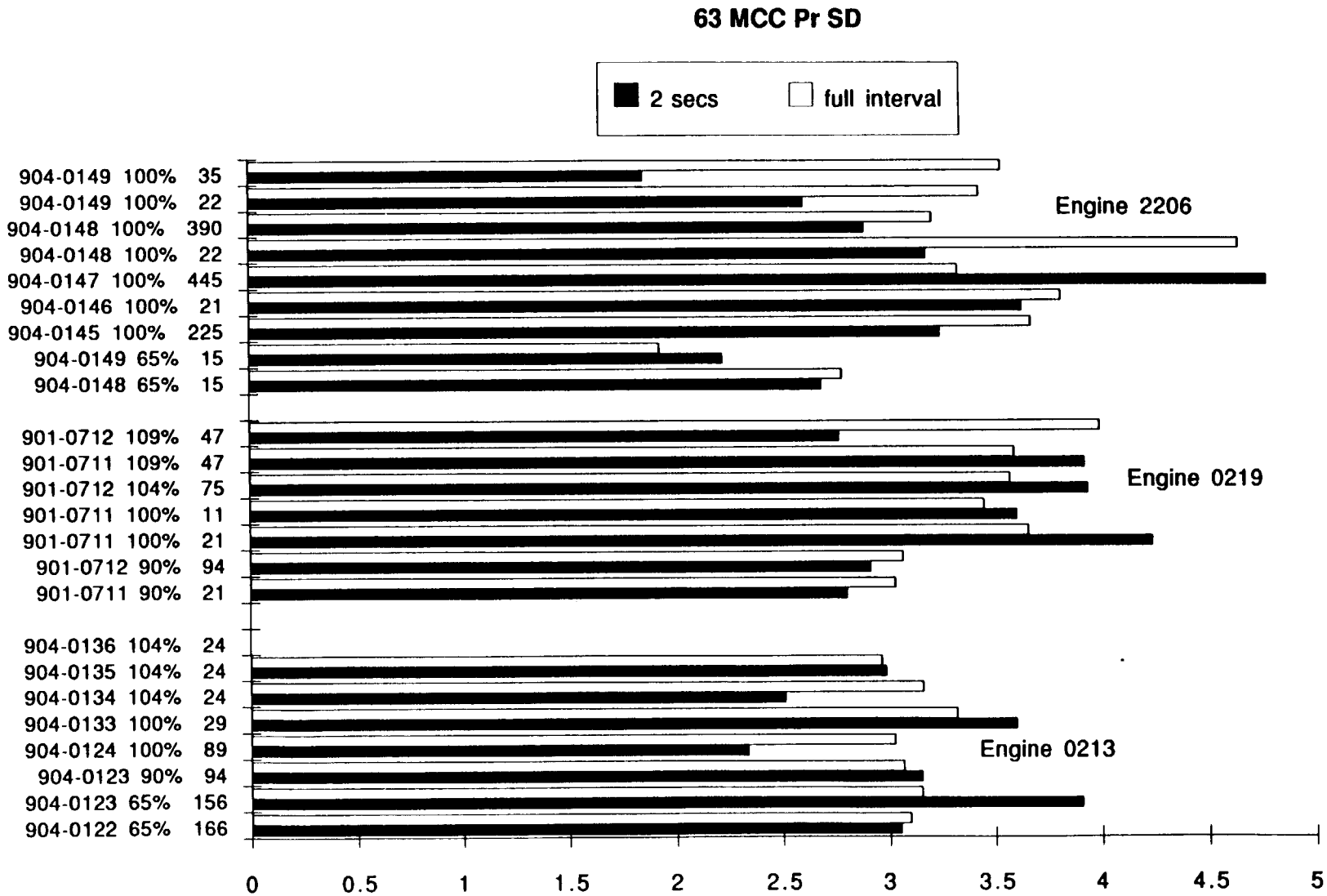
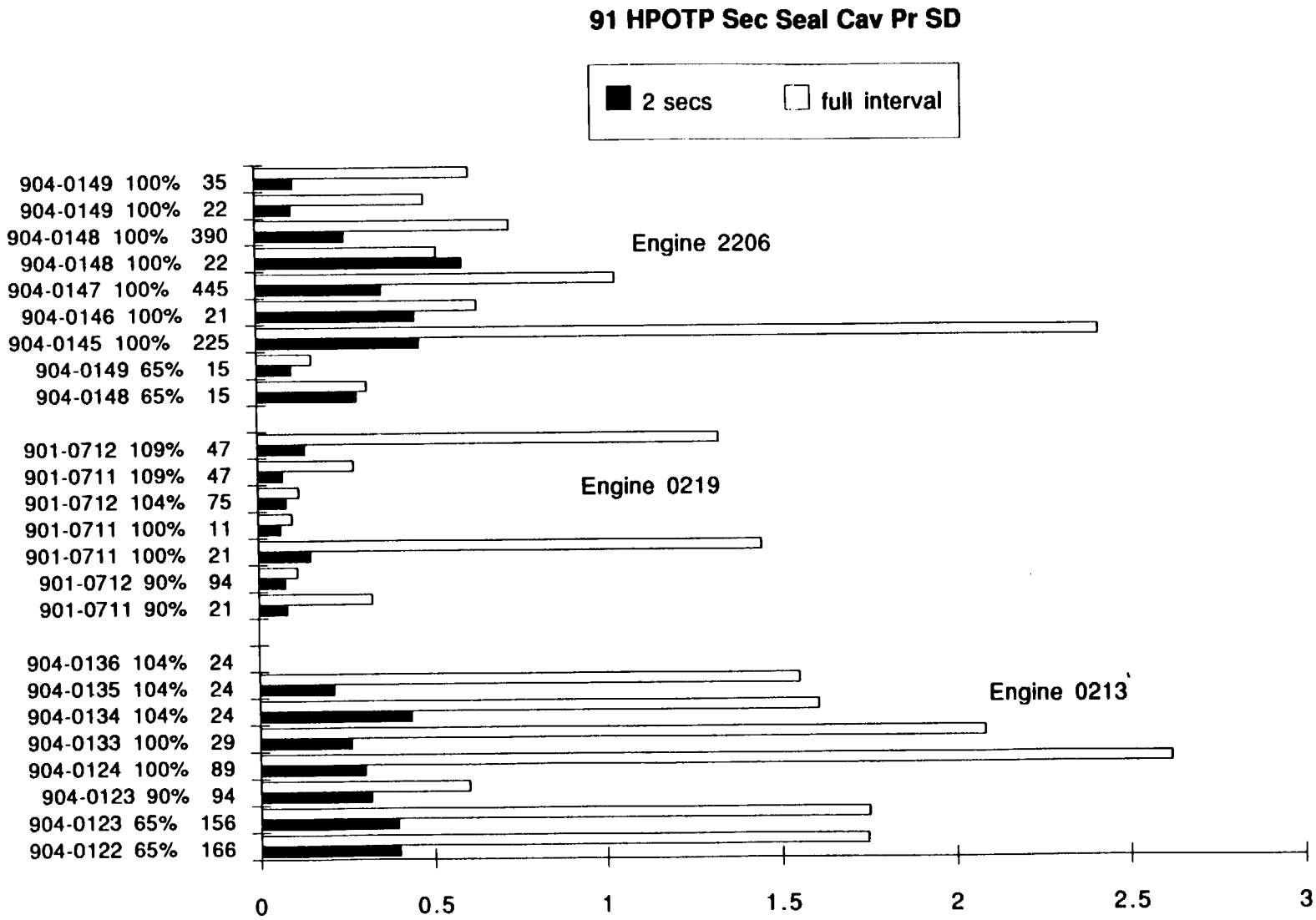
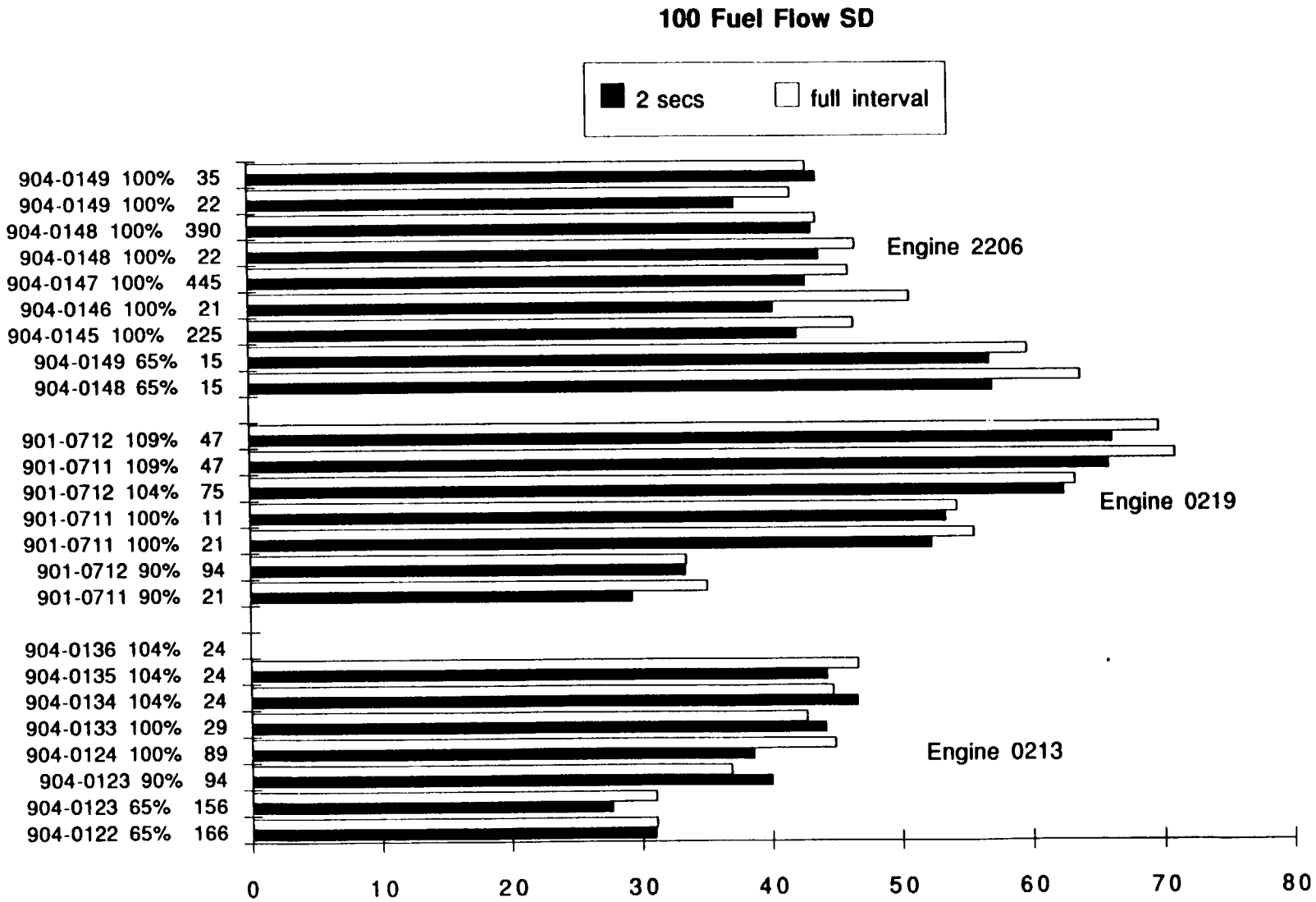
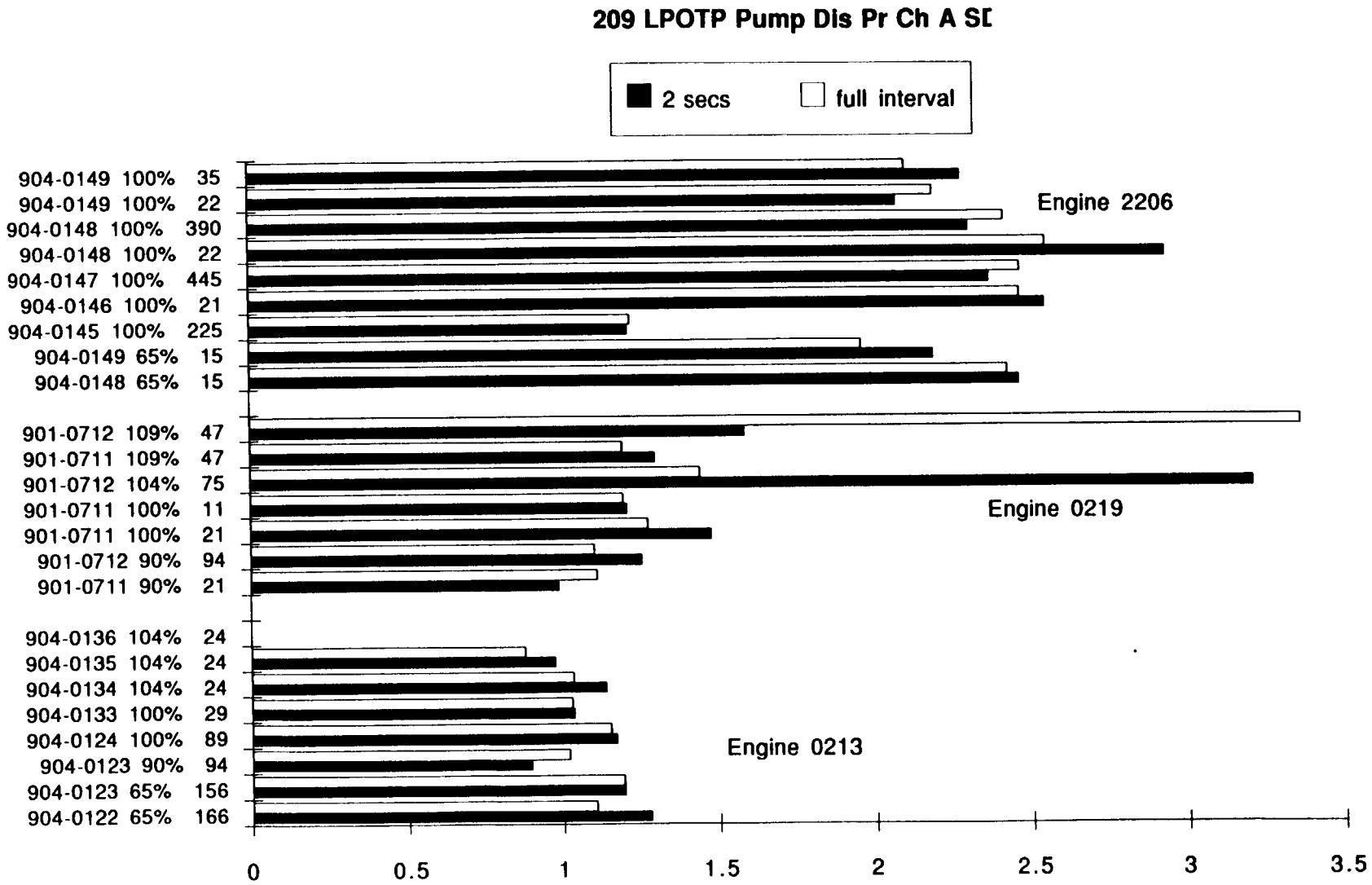
8
10
12
14
16
18
20

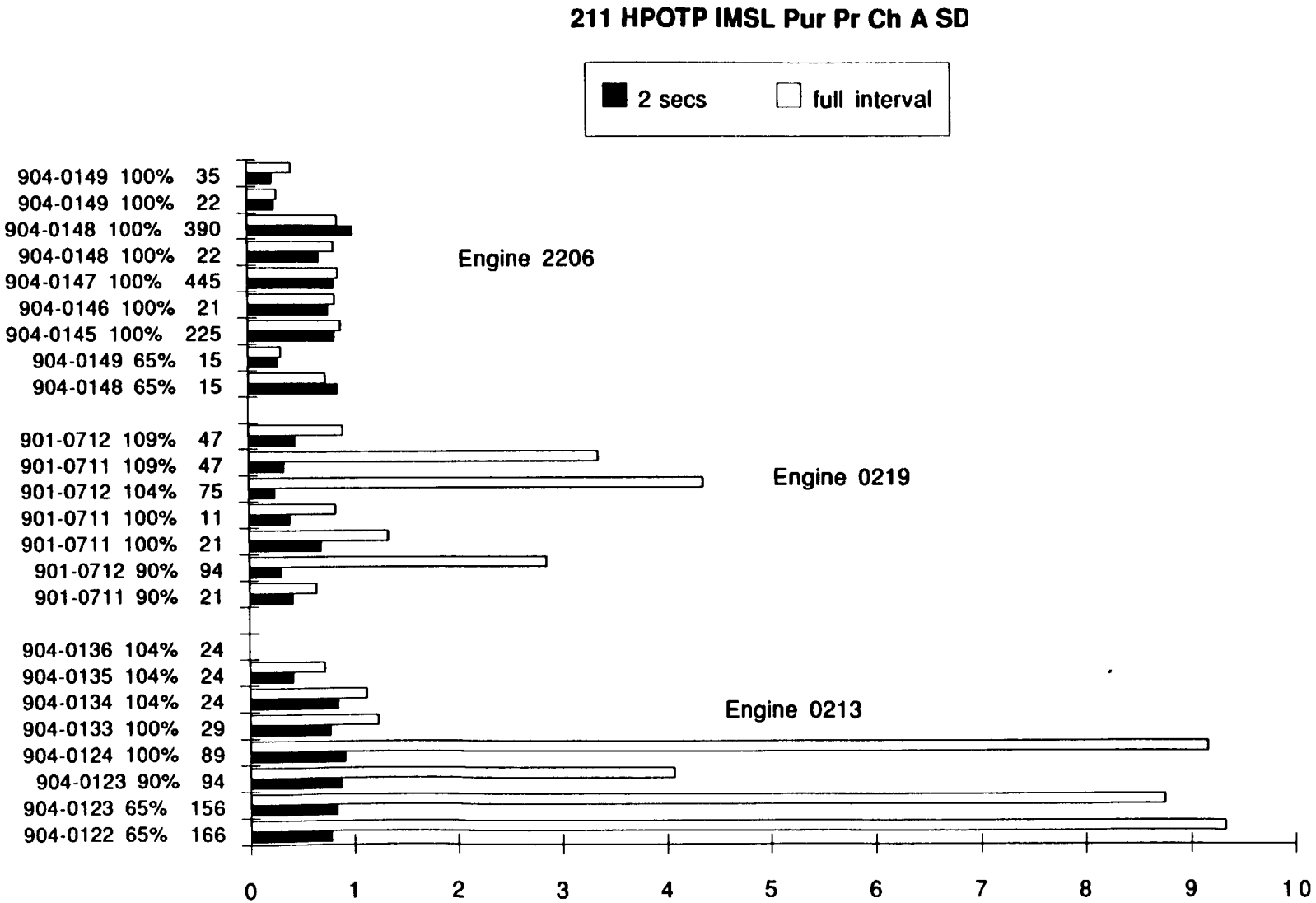

59 HPOTP BP Dis Pr Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
2
4
6
8
10
12
14
16
18
20


63 MCC Pr SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5


91 HPOTP Sec Seal Cav Pr SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.5
1
1.5
2
2.5
3


100 Fuel Flow SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
10
20
30
40
50
60
70
80


209 LPOTP Pump Dis Pr Ch A SI
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.5
1
1.5
2
2.5
3
3.5


211 HPOTP IMSL Pur Pr Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
1
2
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4
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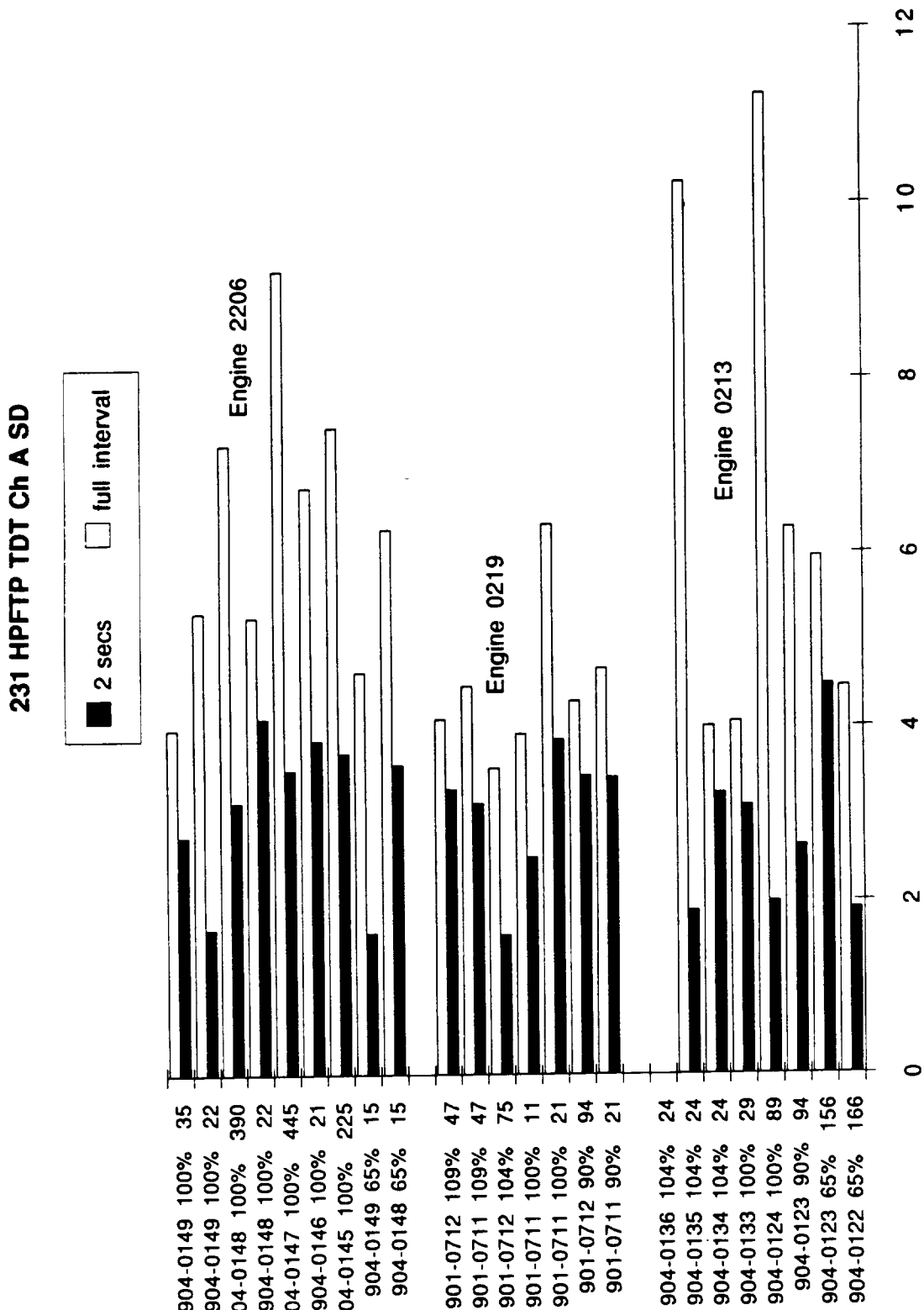
8
9
10


231 HPFTP TDT Ch A SD
2 secs
full interval
Engine 2206
Engine 0219
Engine 0213
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
0
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12

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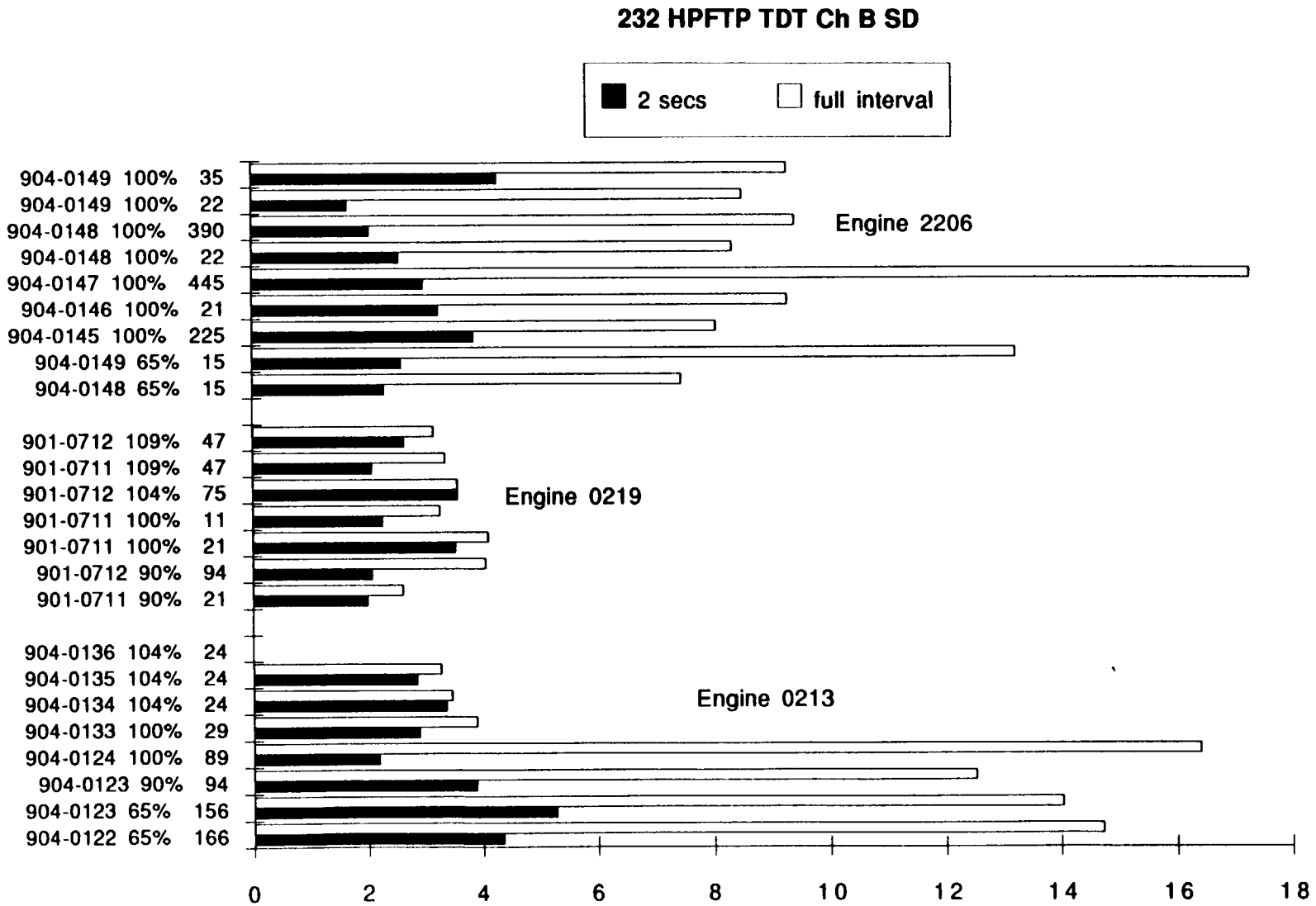
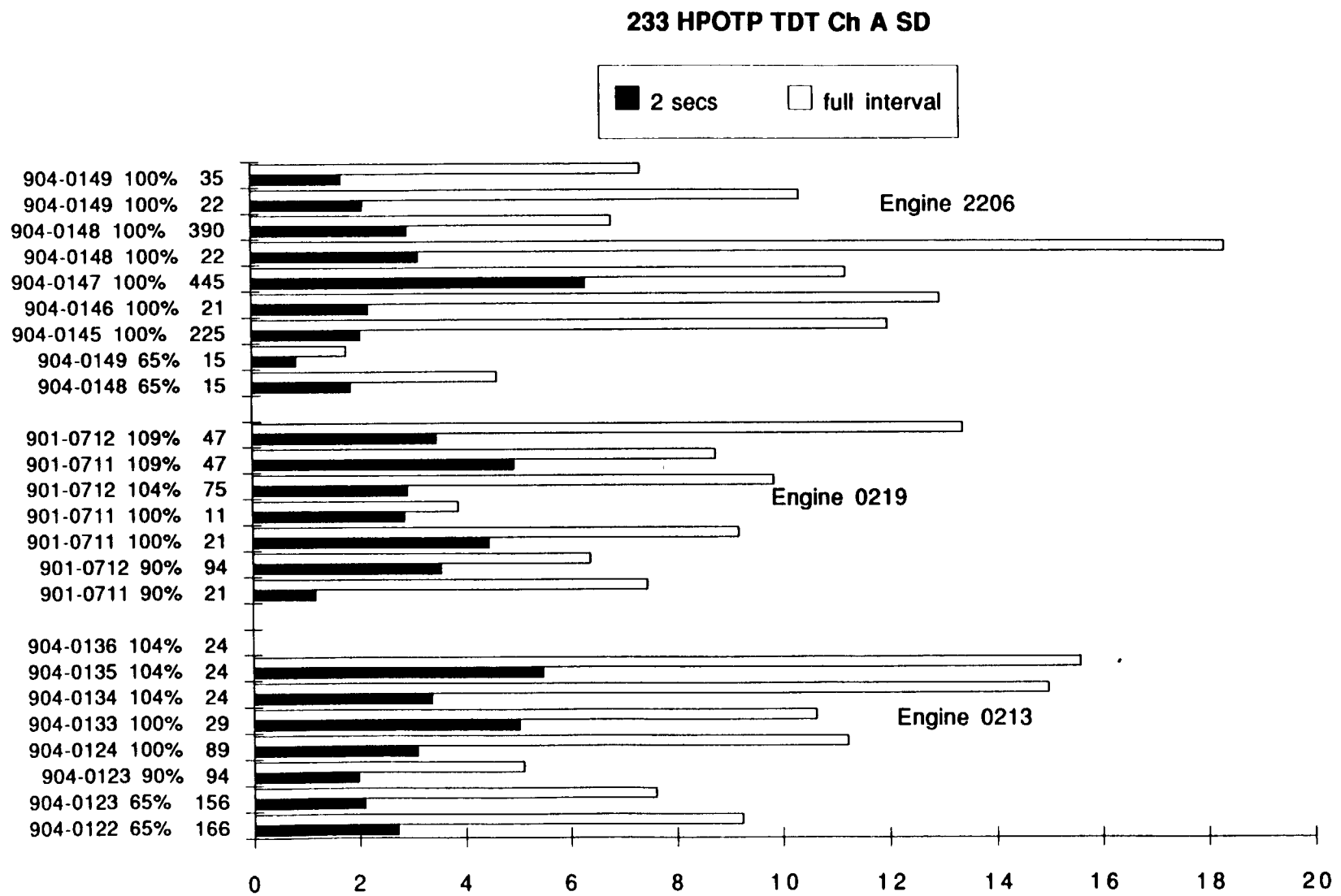

232 HPFTP TDT Ch B SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
2
4
6
8
10
12
14
16
18


233 HPOTP TDT Ch A SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
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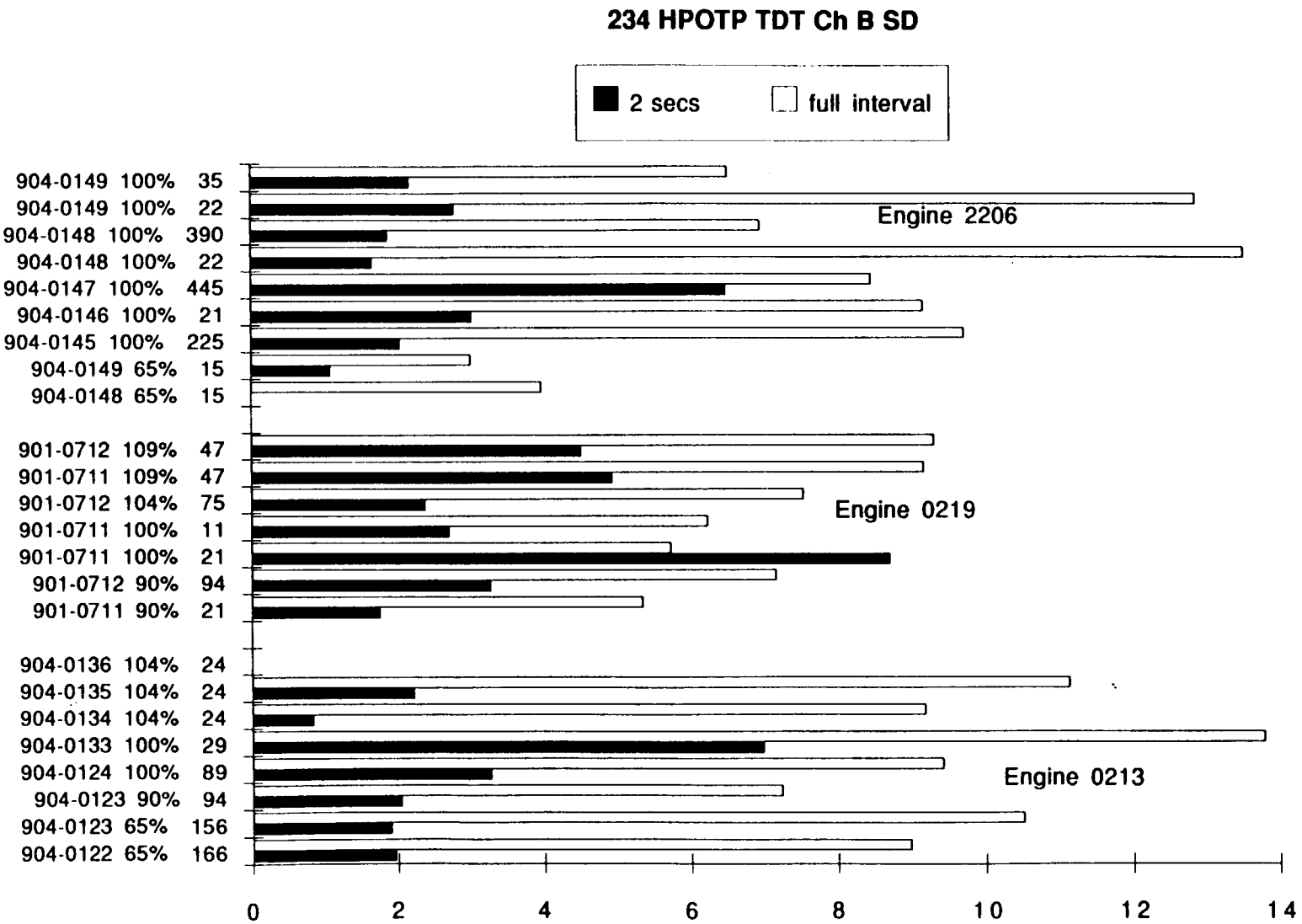
2
4
6
8
10
12
14
16
18
20


234 HPOTP TDT Ch B SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
2
4
6
8
10
12
14

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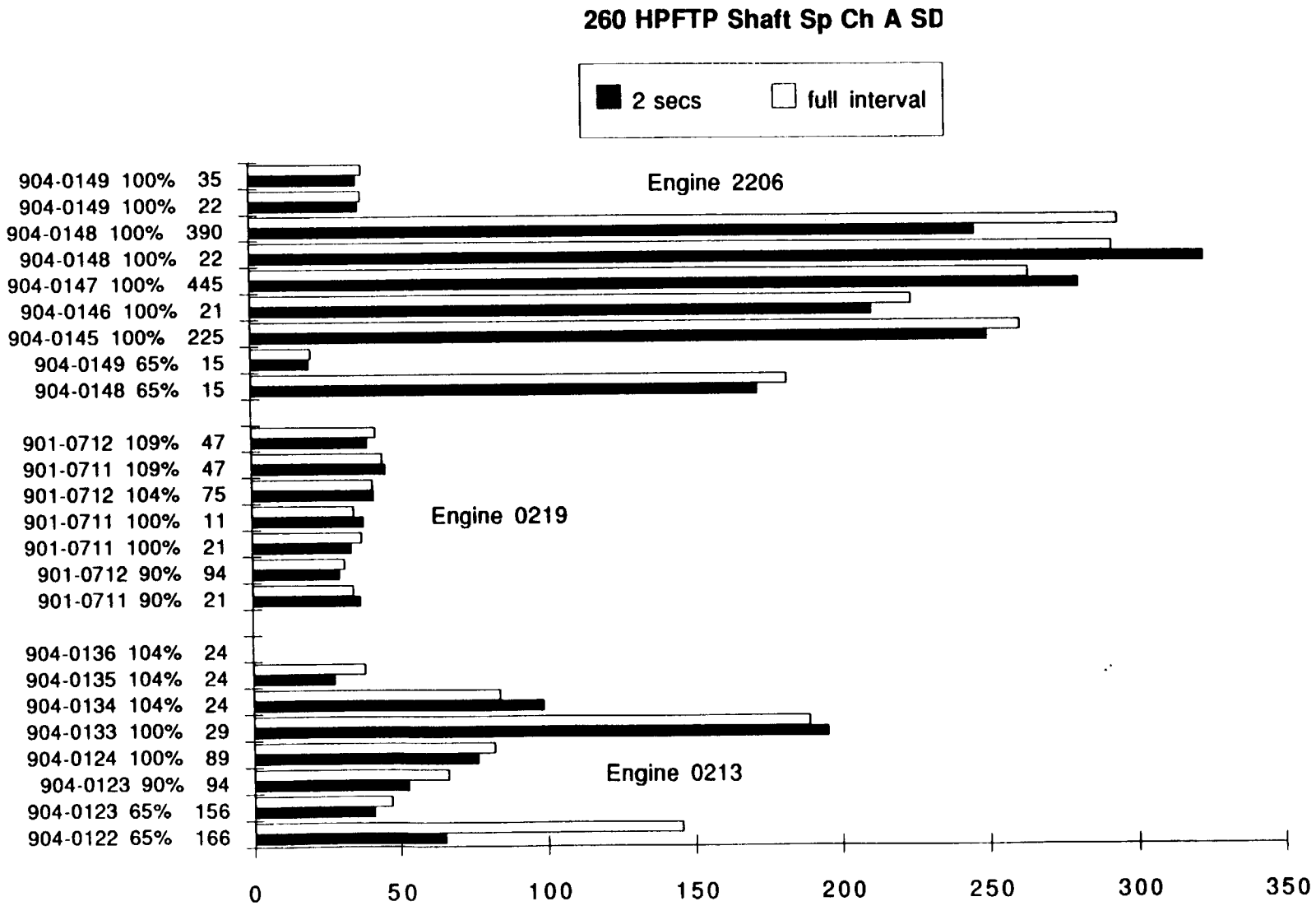
260 HPFTP Shaft Sp Ch A SD
2 secs
full interval
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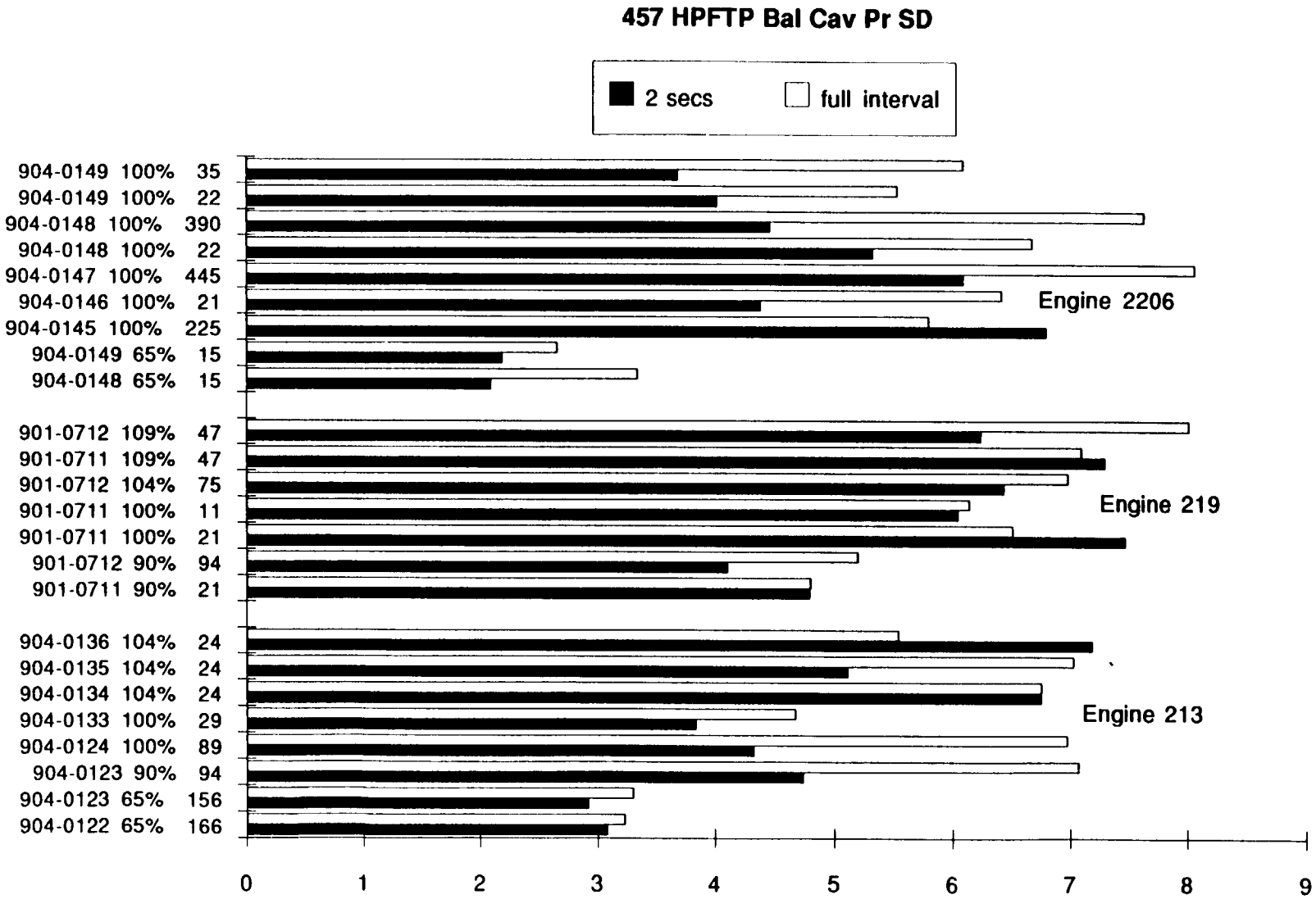
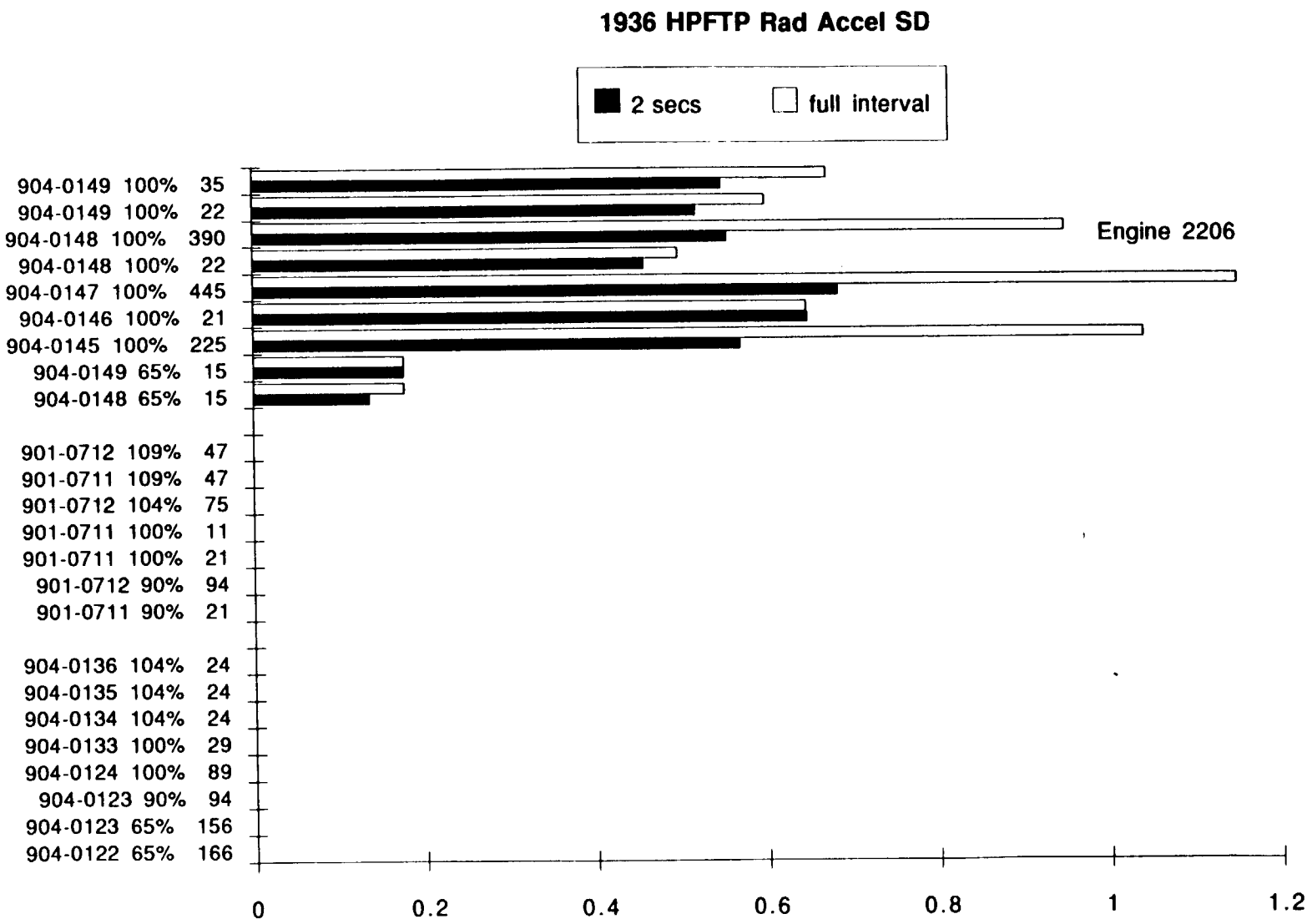
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
50
100
150
200
250
300
350


457 HPFTP Bal Cav Pr SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 213
0
1
2
3
4
5
6
7
8
9


1936 HPFTP Rad Accel SD
2 secs
full interval
Engine 2206
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
0
0.2
0.4
0.6
0.8
1
1.2

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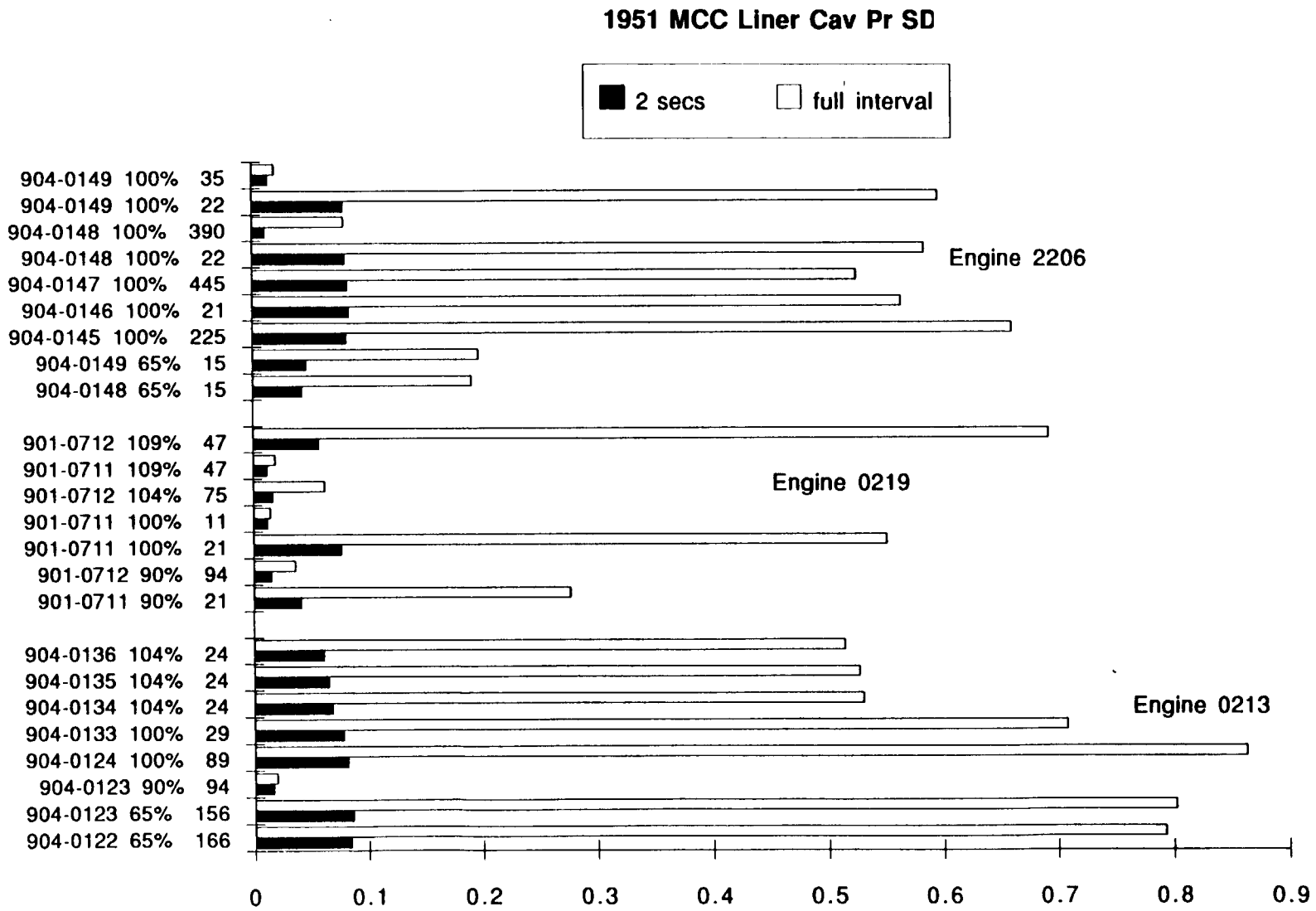
1951 MCC Liner Cav Pr SD
2 secs
full interval
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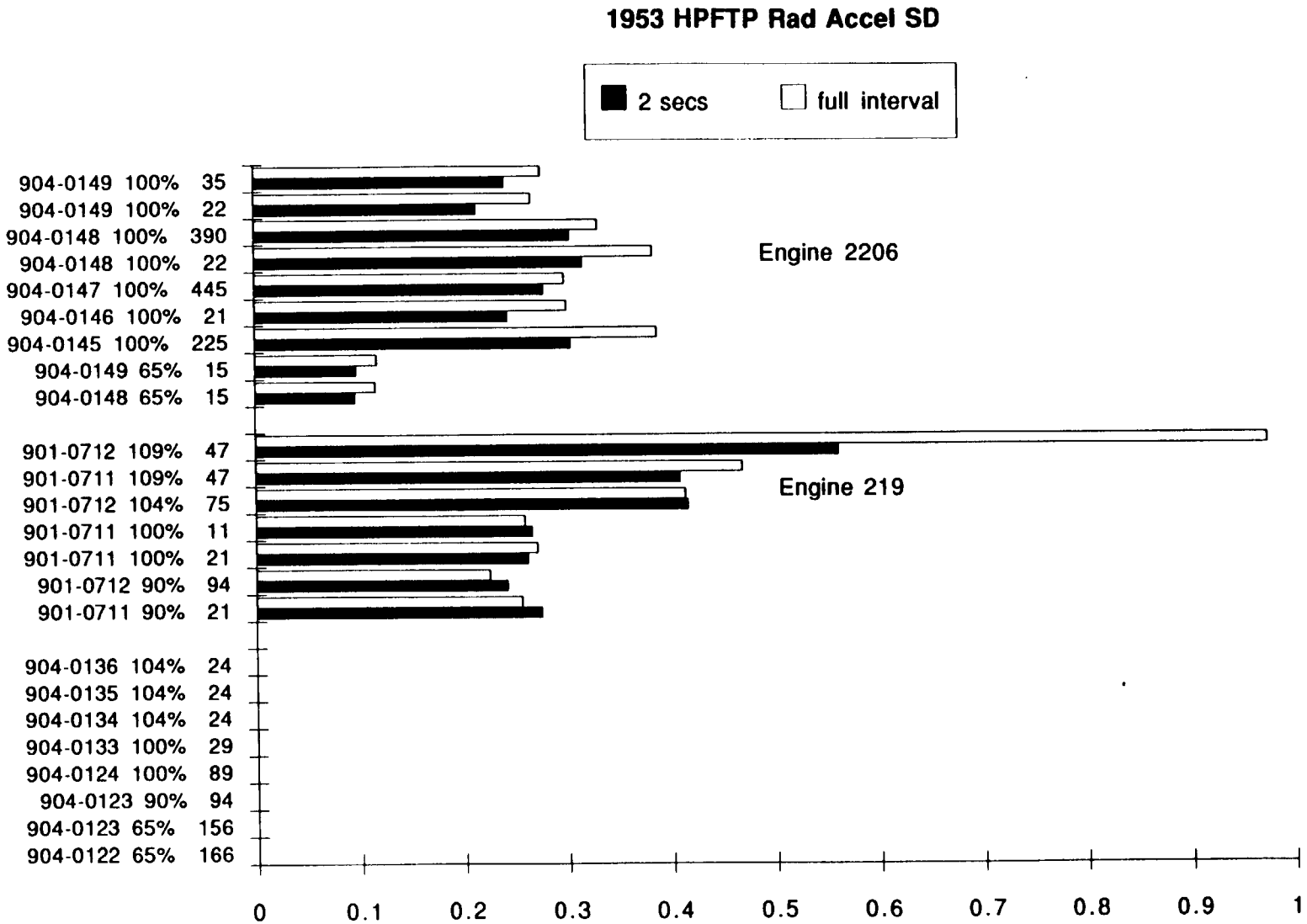
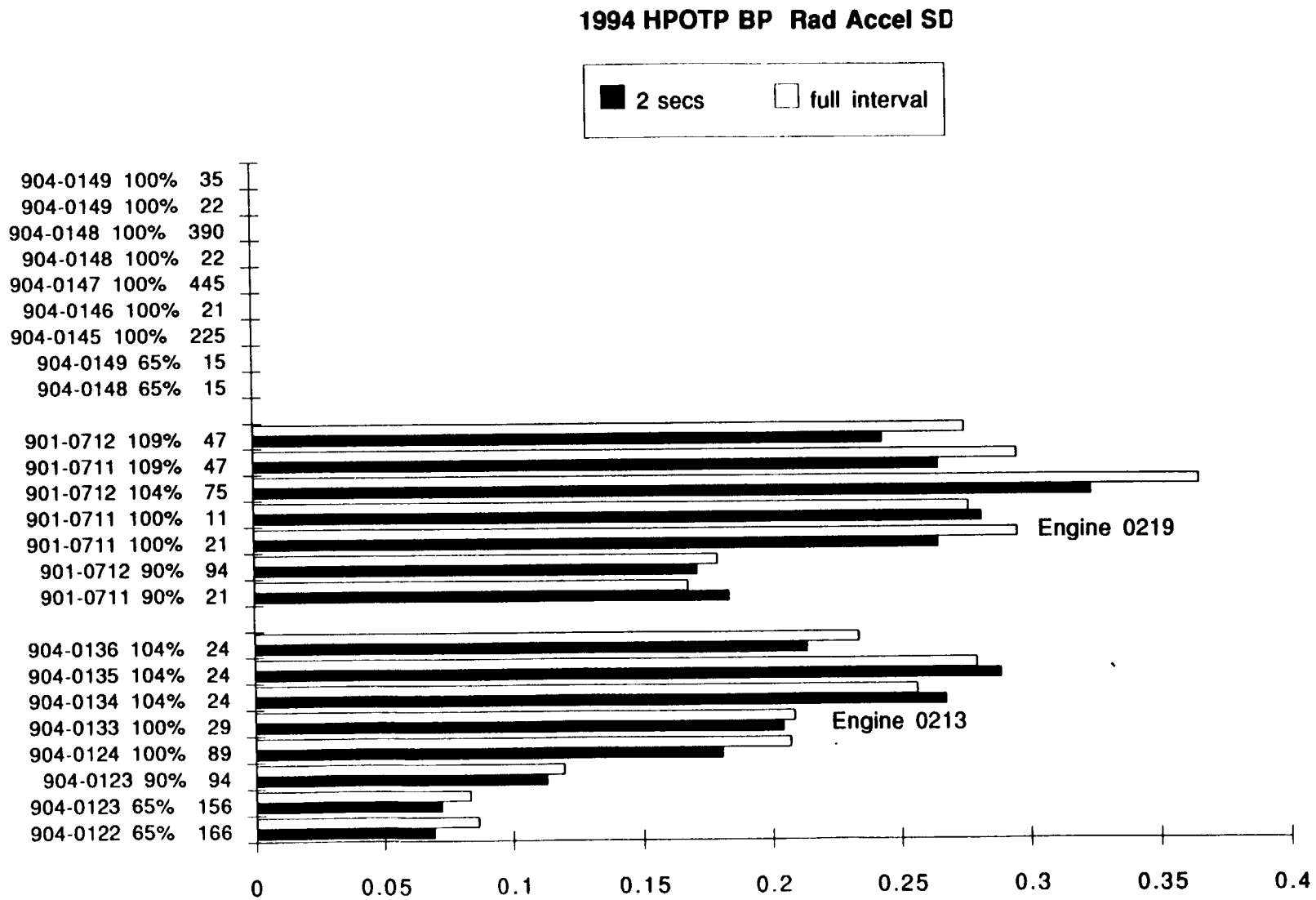
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 0219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0213
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

RSS-8825-57


1953 HPFTP Rad Accel SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
Engine 2206
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
Engine 219
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1


1994 HPOTP BP Rad Accel SD
2 secs
full interval
904-0149 100% 35
904-0149 100% 22
904-0148 100% 390
904-0148 100% 22
904-0147 100% 445
904-0146 100% 21
904-0145 100% 225
904-0149 65% 15
904-0148 65% 15
901-0712 109% 47
901-0711 109% 47
901-0712 104% 75
901-0711 100% 11
901-0711 100% 21
901-0712 90% 94
901-0711 90% 21
904-0136 104% 24
904-0135 104% 24
904-0134 104% 24
904-0133 100% 29
904-0124 100% 89
904-0123 90% 94
904-0123 65% 156
904-0122 65% 166
Engine 0219
Engine 0213
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4