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Produced by the NASA Center for Aerospace Information (CASI)
STREAM TABLE PROGRAM

USER'S MANUAL

AND

PROGRAM DOCUMENT

MAY, 1981

Prepared for:

NASA/George C. Marshall Space Flight Center
Huntsville Computer Complex

Prepared by:

Computer Sciences Corporation
Engineering Systems Department
Project Development and Systems Support Section
STREAM TABLE PROGRAM
USER'S MANUAL
AND
PROGRAM DOCUMENT
MAY, 1981

NASS-31640

Prepared by: [Signature]
Member of Technical Staff B

Reviewed by: [Signature]
Manager
Project Development and Systems Support Section

[Signature]
Manager
Engineering Systems Department
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(Organization(s) that prepared this report:)

COMPUTER SCIENCES CORPORATION
This program was designed to be an editor for the Lewis Chemical Equilibrium program input files and is used for storage, manipulation and retrieval of the large amount of data required. The files are based on the facility name, case number, and table number. The data is easily recalled by supplying the sheet number to be displayed. The retrieval basis is a "sheet" where "sheet" is defined to be all of the individual flow streams which comprise a given portion of a coal gasification system. A "sheet" may cover more than one page of output tables. The program allows for the insertion of a new table, revision of existing tables, deletion of existing tables or the printing of selected tables.

No calculations are performed. Only pointers are used to keep track of the data. The process is done interactively with a TEKTRONIX 4000 series terminal and the UNIVAC 1100/82. A copy of the program also resides on the Honeywell SIGMA V System.
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1.0 INTRODUCTION

1.1 PURPOSE

The STREAM program was developed for the purpose of quick retrieval of stored data in sheets. The retrieval basis is a "sheet" where "sheet" is defined to be all of the individual flow streams which comprise a given portion of a coal gasification system. A "sheet" may cover more than one page of output tables.

The sheets can be revised or deleted. Once a change has been made, this change is reflected in all of the flow streams.

The final results are displayed, one sheet at a time, in the form of a table. The program was written for the UNIVAC 1100/82 and the Univac control language is used in this document. To run the program on the Honeywell Sigma V, only the control cards need to be changed.

The STREAM Program was developed for the Computer Services Organization (AH53) in support of activities in the Coal Gasification Task Team (PP15) under NASA contract NAS8-31640.

1.2 MSFC FORM 3559

See the following page.
NAME OF REQUESTER (24 characters):
Tom French

TELEPHONE NUMBER:
453-4024

ORGANIZATION (4 characters):
PA01

NAME OF PROJECT (30 characters):
TVA Coal Gasification

PROJECT (UPN) (7 characters):
778-44-29

DATE OF REQUEST:
8/8/80

JOB TITLE (24 characters):
TVA Coal Gasification

JOB DESCRIPTION (300 characters):
Provide flow sheet graphics; absorption, stripping, and distillation column design; facility and equipment sizing and plant layout; startup procedure timelines; and analyses of: cost and economics, material and energy balance, combustion equilibrium for the TVA Coal Gasification facility.

FISCAL YEAR RESOURCES PLAN

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</tr>
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<td>2ND. QTR</td>
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<tr>
<td>3RD. QTR</td>
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Computer:

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<td>2ND.</td>
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<tr>
<td>3RD.</td>
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<tr>
<td>4TH.</td>
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COMPUTER IDENTIFICATION:
UNIVAC 1100

NAME OF PROGRAMMER/ANALYST (24 characters):
Mike Fagone

NAME OF MANAGER (24 characters):
Mike Fagone

NAME OF MONITOR (24 characters):
R. Martin

TELEPHONE NUMBER:
3-2294

ORGANIZATION:
653

ORGANIZATION:
AH33

COMMENTS:
Scientific/Engineering

SIGNATURE OF AUTHORIZED REQUESTER:
Bills H. Sneed

DATE RECEIVED:

OVERGUIDELINES

BEFORE COMPLETING THIS FORM, CONTACT ACO 3559.
1.3 RELATED PROJECTS

The Related Projects include the Timeline Resource Analysis Program (TRAP) and the CEC Lewis Program.
2.0 PROBLEM TASK DESCRIPTION

The STREAM Program is a bookkeeping program which allows the user easy access to a table of output.

The user has the option to define a new table. After a table has been defined, this existing table can be revised or deleted. One can also print existing tables with the option of printing one or all of the sheets dealing with a particular facility name, case number, and table number. Once the printing option has been selected, the user has the option to print more individual sheets and to print more tables with a different facility name, case and table number.
3.0 METHOD OF SOLUTION

The STREAM Program is designed with pointers used to output the tables. These pointers are used with three different files. The names of these files are 14, 16, and 20.

To add a new table, the user selects option one in the main menu. After this selection has been made, the user is asked to supply the facility name with an A8 format, the case number and the table number both in I1 formats. Then, this information is used for the different files. File 14 contains:

- NNAME - number of facilities
- ICOLM - pointer of columns
- ICHAIN - chain of column pointers
- TNAME - facility name
- NPTR - counter of pointers
- TCASE - case name
- TTABLE - table number
- TSHEET - sheet number

File 16 contains:

- IPTR - counter pointer to columns
- SYSNAM - system label
- DRAWN - drawn by
- ENGR - engineer's name
- APPR - approved by
- DATE is current date

of which DRAWN, ENGR, APPR are optional to the output page.

File 20 contains:

- COLNAM - column name or stream number
- COLDES - stream description
- COLVAR - actual numerical data for output tables
- CXTR - component name and formula
- XTR - compound molecular weight and moles/hour

To revise, the user first has to write the facility name, case and table number. The existence of the table is verified; then, the sheet number is input and verified. After that, the original data is located. The system data can be changed by choosing that option which results in the new item being keyed in. When this is completed, the entire record is written back to file 16. Column data can then be changed in a likewise manner. To change moles/hour for the compounds, the entire column of data must be keyed in for each compound. After this process is completed, the information is written
back to file 20. The user is able to edit as much as he likes without going back to the main menu.

To delete, it is the same process of adding except in reverse. The user can delete an entire case, table, sheet and column. Once the user decides which one is to be deleted, then the respective pointers are updated.

To output tables, the user must again input the facility name, case and table number to be used as pointers to sheet data. The user can output one sheet at this time or all of the sheets if desired. If more than one sheet is desired, but not all, the user must again input the sheet number to be output. The user has the option to output more tables before returning to the main menu.

One thing to keep in mind is that the pointers used start out from the largest category down to the smallest. In this case, it is the facility name, case number, table number, sheet number and finally, the column number or name.
4.0 PROGRAM DESCRIPTION

4.1 OPERATING ENVIRONMENT

4.1.1 Hardware

- The program was first written for the UNIVAC 1100-82.

- Core Requirements
  The amount of core memory required for the program to run on the UNIVAC 1100-82 is 13853.

- Magnetic Tapes
  On the UNIVAC 1100/82, the number of nine track magnetic tape units required is one.

- Mass Storage Requirements for the assignment of the files:
  (a) STREAM is catalogued:
      @CAT,P CGS, F/64/TRK/128
  (b) files 14, 16, 20 are assigned:
      @CAT,P 14,F/2/TRK/4
      @CAT,P 16, F/1/POS/2
      @CAT,P 20, F/2/POS/4
      respectively.

4.1.2 Software

- Operating System - The host operating system will be a UNIVAC 1100/82 Executive, level 9R1.

- The program is written in ASCII Fortran on the UNIVAC.

- Demand, interactive is how the processing mode used to execute

- Library Subroutines include:
  SYS$*MSFC$.

4.2 PROGRAM SPECIFICATIONS

If the user wants to retrieve information already existing, all the user needs to do is to input the facility name, case number, table number, and sheet number and the correct sheets will be displayed. But if the sheet does not exist, the user will need to define new sheet data which require stream name, stream description, moles per hour for the different compounds, special compounds, and the different totals.
4.3 SUBROUTINES

A list of all the subroutines and their main function are given below.

1) CHECK - checks for a duplicate column name and if found will flag as an error.

2) CNAME - user will input stream name, isolate multiplier and remove N, (, and).

3) COLUMN - write stream description and column data for compounds, special compounds, weight, temperature, pressure PSIA, gas molecular weight, power in kilowatts and BTU per hour.

4) CSHEET - changes sheet information which includes drawn by, engineer, approved by, and date.

5) DEFINE - reads in sheet data, column data and stores the information on the file.

6) DELETE - will delete entire facility, case, table, sheet or column data, and will update all pointers.

7) EDIT - user will select basic table, check existence of table, and used as a driver to change sheet and column data.

8) FILE - used to create a new file data to create first records, to adjust multiplier column, to write new column data and to update the chain of column pointers.

9) INIT - defines files 14, 16, 20.

10) MAIN - main driver of program

11) MENU - main menu of program to either define new table, revise existing table, delete existing table or print selected table.

12) OPDATA - used if user wishes to input drawn by, the engineer's name or approved by.

13) OUTPUT - will display all of the related output in table form.

14) PSELECT - user will determine which table, sheets to be output; an option will enable him to print more sheets and tables.
15) SELECT - user will input facility name, case and table number.

16) SHEET - user will input sheet number and system label.

17) SHTNUM - user writes the number sheets (1-16) to be printed.
5.0 OPERATING INSTRUCTIONS

5.1 DECK SETUP

This program was designed to run interactively. Here are some of the commands that make it easier for the user:

- to copy program from tape to file
  
  @RUN...
  @ASG,TF PUR., U9S, tape number
  @COPY,G PUR.,TPF$.
  @ADD,L BOOT

  After this sequence, the user is able to execute the program. BOOT will catalog file CGS,14, 16, 20, will assign them to the user's run and will copy information from tape to file.

- to get on once files are copied from tape
  
  @ADD,L GETON

  will assign files to user's run once they are cataloged.

- to make hard-copy print-out of program
  
  @ADD,L COPY

- to remap
  
  @ADD,L MAP

  will pack, prep and remap

- to make a new tape with new information
  
  @ADD,L UPDATE

  will assign a new tape, copy information to tape, and will give you a new tape number.

- to execute program
  
  @XQT XQT
5.1.1 Input

5.1.1.1 Magnetic Tapes

For file 14:

NNAME is dimensioned (1)  
ICOLM is dimensioned (1)  
ICHAIN is dimensioned (1)  
TNAME is dimensioned (2,4)

For file 16, the format is:

IPTR is dimensioned (9,2)  
SYSNAM is dimensioned (20A4)  
DRAWN is dimensioned (4A4)

For file 20, the format is:

NPTR is dimensioned (4)  
TNAME is dimensioned (2,4)  
ICOLM is dimensioned (1)  
ICHAIN is dimensioned (1)  
TNAME is dimensioned (2,4)

The assigned tape is called STREAM and was made with a TF (labeled tape) option on the assign card. The Tape Assign Card is as follows:

@ASG,TF STREAM, U9S,SAVT.04. . . CGS STREAM Table

5.1.1.2 File Requirements

The file set-up requirements are:

1) for file 14, the mass storage requirement is one record with a maximum length of 575 characters.
2) for file 16, there are 512 records, each with a maximum length of 52 characters.
3) For file 20, there are 5120 records, each with a maximum length of 74 characters.

5.1.1.3 Other

For all the input to be given by the user is explained in the reference test case

5.1.1.4 Sample Control Runstream

See the following page.
TO EXECUTE PROGRAM, LINES UNDERLINED INDICATE INPUT FROM USER.
5.1.2 Output

All of the output consists of one basic output page. This is all dependent on the facility name, case name, and table case that the user desires.

5.1.2.1 Magnetic Tapes

If the user makes changes and wants to retain the change, he can make a new tape by assigning a nine track tape and copying the files to this tape.

5.1.2.2 Sample Output

(See attached Output pages).

The number of Output pages will depend on how many the user desires. After each page is printed, a pause statement will appear and will give the user a chance to look at the Output or to make a hard copy before he continues.

5.1.2.3 Other

The output is done interactively with a TEKTRONIX 4000 series terminal. After the headings are printed, a list of components with their molecular weight and abbreviations are listed. These components are then listed with the number of these components that are needed to make up the process listed in the STREAM description.
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<tr>
<th>COMPONENT</th>
<th>FORMULA</th>
<th>MOL-UT</th>
<th>LB-ROLES/HR</th>
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</thead>
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<td>15928+05</td>
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**OTHER DATA**

- COAL
- ASH
- CARBON
- TOTAL SOLIDS
- TOTAL STREAM
- TEMPERATURE (DEG F)
- PRESSURE (PSIA)
- GAS/LIQ FLOW WEIGHT (LB/LB-MOL)
- POWER (BTU/HR)

**PAUSE 00000**

**ORIGINAL PAGE IS OF POOR QUALITY**
<table>
<thead>
<tr>
<th>NAME</th>
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<th>MOL-UT</th>
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**TOTAL DRY WATER**

\( 18.02 \text{ H₂O} \)

**TOTAL WET**

\( 60109 + 06 \)

**TOTAL GAS/LIQUID**

\( 17439 + 07 \)

**COAL ASH**

\( \text{Carbon} \)

**TOTAL SOLIDS**

\( 17430 + 07 \)

**TOTAL STREAM**

\( 57633 + 06 \)

**TEMPERATURE DEG F**

\( 6000 + 06 \)

**PRESSURE, PSIA**

\( 14700 + 02 \)

**G AS/LIQUID MOLE WEIGHT, LB/LB-MOL**

\( 28000 + 02 \)

**POWER, KW (BTU/HR)**

\( 80000 \)
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**TOTAL DAY**

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| TOTAL DRY WATER | H2O | 18.02 | 54719+04 | 10830+07 | 19080+07 | 44800+02 |
| TOTAL WET      | H2O | 18.02 | 54719+04 | 10830+07 | 19080+07 | 44800+02 |

| TOTAL GAS/LIQUID |    | 35621+06 | 35730+08 | 36800+08 | 60500+06 |

| COAL ASH CARBON | TOTAL SOLIDS | TOTAL STREAM |    | 35624+06 | 35730+08 | 36800+08 | 60500+06 |

| TEMPERATURE DEG F | 46500+03 | 88300+08 | 106000+03 | 106000+03 | 106000+03 |
| PRESSURE, PSIA   | 71470+03 | 76470+03 | 66470+03 | 66470+03 | 66470+03 |
| GAS/LIQUID WEIIGHT, LB/LB-MOL | 106000+03 | 106000+03 | 106000+03 | 106000+03 | 106000+03 |
| POWER, KW (BTU/HR) | 00000+02 | 00000+02 | 00000+02 | 00000+02 | 00000+02 |

PAUSE 00000 >
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**TOTAL GAS/LIQUID**

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**TEMPERATURE, DEG F**

10000+03

**PRESSURE, PSIA**

66470+03

**GAS/LIQUID MOLE WEIGHT, LB/LB-MOL**

19000+08

**POWER, KW (BTU/HR)**

PAUSE
**MODULE SYSTEM COMPOSITION**

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**TOTAL DRY WATER**

| H₂O 8.02 | 29024.05 |

**TOTAL WET**

| H₂O 18.02 | 29031.05 |

**TOTAL GAS/ LIQUID**

| 59549.06 |

**COAL**

| ASH |

**CARBON**

| TOTAL SOLIDS |

**TOTAL STREAM**

| 59549.06 |

| TEMPERATURE, DEG F | 10000.03 |
| PRESSURE, PSIA | 68647.02 |
| GAS/LIQE MOLE WEIGHT, LB/LB-MOL | 16000.02 |

POWER, KW (BTU/HR)

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**PAUSE 00000**
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<td>SO2</td>
<td>64.66</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>NH3</td>
<td>17.13</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Cyanide</td>
<td>HCN</td>
<td>27.67</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>HCl</td>
<td>36.46</td>
<td></td>
</tr>
<tr>
<td>Nitrous Oxide</td>
<td>NO</td>
<td>30.01</td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>Cl</td>
<td>35.45</td>
<td></td>
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<td>Ethylene</td>
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<td>28.05</td>
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<td>C2H6</td>
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<tr>
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<td>C3H8</td>
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</tr>
<tr>
<td>Sulfur</td>
<td>S</td>
<td>32.07</td>
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</tr>
</tbody>
</table>

### Total Dry Water

- **Total DRY Water**: 18.02
- **Total Net Water**: 50700+03
- **Total Gas/Liquid**: 50700+03

### Other Information

- **Total Solids**: 21544+06
- **Total Stream**: 10116+06
- **Temperature (deg F)**: 50000+03
- **Pressure (psi)**: 10000+03
- **Gas/Liq Mole Weight (lb/mol)**: 40550+04
- **Power (kW)**: 10116+06
- **Temperature (deg F)**: 34000+02

### Notes

- **Original Page Quality**: Poor
5.1.3 Test Case

To execute the program:

@XQT XQT

Once this has happened, a Stream and Utility Table Menu appears with the following options:

1) Define New Table
2) Revise Existing Table
3) Delete Existing Table
4) Print Selected Table
5) Save Revision

1) If the user chooses to define a new table, he chooses option number one. Then, the user is asked to write the facility name in an A8 format, the case number and table number, both in an I1 format. The user is then asked to write the sheet number in an I2 format with leading zeroes. If the user wants sheet number two, he must insert '02' and not just 2. A two will give user sheet number 20. The user is asked to give the data in format MM/DD/YY. The System Label is to be written in an A76 format. There are two asterisks given to define the limits of the system label.

An answer of 'YES' will allow the user to put optional data in. The optional data includes 'drawn by', 'engineer's name' and 'approved by'. A return of the carriage will allow the user to skip these questions.

Next, the stream name will be asked for in an A8 format. A stream description will be asked for in the form of four lines with a maximum of 9 characters per line. Again, the limits of the nine characters per line are indicated by two asterisks. Centering of each line is not needed for the line because the program itself will take care of the centering of lines for the user.

Finally, the user is asked for the moles per hour for the twenty-one compounds in a F-type format. If a zero is wanted, all the user has to do is to hit the carriage return. If the user wants to use special compounds, answer yes. A carriage return will allow the user to bypass the questions. If special compounds are required, the user needs to input the compound name in an A16 format, compound formula in an A8 format, the compound molecular weight in any F-type format, and moles per hour in any F-type format. This loop is continued until the user desires no more special compounds. The last information is the totals, temperature, pressure PS1A, gas molecular weight and power kilowatt BTU per hour.
At this time, the user can input more column data and the process will start over. If not, the user can input more column, sheet data or even input a new facility name, case name, and table name. If all of the answers are no, then the user returns to the main menu.

2) To revise existing tables, the user again is asked to input facility name, case number, table number, and sheet number. If the sheet number is less than 10, the user is required to use leading zeroes.

The user can then change the system name, drawn by name, engineer's name, approved by, or change the data. If none of the above require a change, the user will continue. If the user wants to change a particular column, he will insert the column number which he wants. The system will ask him to write the desired information again.

If the user wants to continue, the names of the columns are listed. The user will write the number of the column to be changed in II format. Then, the user will write the stream name in an A8 format. After a match is found, the following information is then changed: the stream description, the moles/hour for the compounds, special components, and conditions. The user does not have an option to change any part of it, but has to input all of the information.

The user has the choices to change more column data, sheet data or the change facility name/case/table.

3) To delete existing data, the user has a choice of deleting the entire facility, case, table, sheet or column. After the user has decided upon which one he desires, the program will remove name and update all of the pointers. The user will continue and can delete as many columns, sheets, tables, cases or facility names.

4) To output the tables, the user has to first input the facility name, case number, and table number. The user must know the sheet number to be printed. Again, if the sheet number is less than 10, leading zeroes must be used. If all of the sheets are to be printed dealing with that facility name, case number, and table number, the user needs to input a 99. The user has the option to print more individual sheets or to process more tables.
5.1.3.1 Test Case Listing

See the following pages.
STREAM AND UTILITY TABLE MENU

1 - DEFINE NEW TABLE
2 - REVISE EXISTING TABLE
3 - DELETE EXISTING TABLE
4 - PRINT SELECTED TABLE
5 - SAVE REVISION

PRESS RETURN TO EXIT

INPUT CHOICE IN 11 FORMAT

4
WRITE FACILITY NAME IN AB FORMAT
\"EXCO\"
WRITE CASE NUMBER IN II FORMAT
\#: WRITE TABLE NUMBER IN II FORMAT
\#: WRITE SHEET(1-16) NUMBER TO BE PRINTER IN II FORMAT. USING LEADING ZEROS
\#: USE '99 IF ALL SHEETS ARE REQUIRED

5-20
TO CHANGE EXISTING DATA: IN THIS CASE, COLUMN DATA WAS CHANGED.

CALLER PASSED 03 ARGUMENTS. SUBPROGRAM EXPECTS 04 ARGUMENTS

WRITE FACILITY NAME IN AB FORMAT
1. B
WRITE CASE NUMBER IN I1 FORMAT
2. B
WRITE TABLE NUMBER IN I1 FORMAT
3. B
WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROS
4. B
CHANGE SYSTEM NAME
5. B
CHANGE "DRAWM BY" NAME
6. B
CHANGE "ENG" NAME
7. B
CHANGE "APPR" NAME
8. B
CHANGE DATE
9. B
RETURN TO CONTINUE
10. B

641 642 643 644 645 646 647 648 0
1 1 1 1 1 1 1 1
1899
2097
SMES
4L06
5S99
6L97
7E99
8L99 1-3

WRITE NUMBER OF COLUMN TO BE CHANGED IN I1 FORMAT

WRITE STREAM NAME IN A8 FORMAT

MATCH AT 643
WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS EACH
WITHIN THE LIMITS INDICATED

10.
1P
STEAM

WRITE THE POUNDS/HR FOR THE FOLLOWING COMPOUNDS IN F-TYPE FORMAT.
ZEROES MAY BE ENTERED AS BLANKS

N2
C0
CO2
CH4
N2
O2
AR
N2
CO
CS2
C02
02
NH3
H2N
H2CL
H4
CL
C2H4
C2H6
C3H6
C3H8
S

ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED

TOTL DRY

H2O
2765
TOTL WET
2763
TOTL GAS
49738
COAL
ASH
CARBON
TOT SLDS
TOT STRM

49738
WRITE FOLLOWING CONDITIONS IN ANY F-TYPE FORMAT
ZEROS MAY BE ENTERED IF BLANKS
TEMP DEG. F

299
PRES PSIA
64
GAS MOL-UT
18
POWER KW(+ BTU/HR(-)

WRITE NUMBER OF COLUMN TO BE CHANGED IN I1 FORMAT

ANSWER YES TO EDIT MORE SHEET DATE

ANSWER YES TO EDIT NEW FACILITY NAME/CASE/TABLE
TO DELETE, IN THIS EXAMPLE AN ENTIRE COLUMN WAS DELETED.

1 - DELETE ENTIRE FACILITY
2 - DELETE ENTIRE CASE
3 - DELETE ENTIRE TABLE
4 - DELETE ENTIRE SHEET
5 - DELETE ENTIRE COLUMN
RETURN TO CONTINUE

WRITE CHANGE TYPE IN II FORMAT

WRITE FACILITY NAME IN II FORMAT

WRITE CASE NUMBER IN II FORMAT

WRITE TABLE NUMBER IN II FORMAT

WRITE SHEET NUMBER IN II FORMAT WITH LEADING ZEROS

WRITE NUMBER OF THE COLUMN TO BE DELETED USING II FORMAT

ANSWER YES TO DELETE MORE COLUMNS

WRITE CHANGE TYPE IN II FORMAT
WRITE FACILITY NAME IN AB FORMAT

WRITE CASE NUMBER IN II FORMAT

WRITE TABLE NUMBER IN II FORMAT

WRITE SHEET NUMBER IN IB FORMAT WITH LEADING ZEROS

WRITE STREAM NAME IN AB FORMAT

WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS EACH
WITHIN THE LIMITS INDICATED

> TEST
> CASE

WRITE THE MOLAR NR FOR THE FOLLOWING COMPOUNDS IN F-TYPE FORMAT.
ZEROS MAY BE ENTERED AS BLANKS

- H2
- CO
- CO2
- CH4
- N2
- O2
- H2S
- C95
- CS2
- SO2
- NH3
- HCN
- HCL
- NO
- CL
- C2H4
- C2H6
- C3H4
- C3H6
- S
ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED

WRITE COMPOUND NAME IN A8 FORMAT

WRITE COMPOUND FORMULA IN A8 FORMAT

WRITE COMPOUND MOLECULAR WEIGHT IN ANY F-TYPE FORMAT

WRITE MOLES/HP IN ANY F-TYPE FORMAT

ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED

TOLDMY

H2O

TOLDMY

TOLDMY

COAL

ASH

CARBON

TOLDAYS

TOLSTRA

WRITE FOLLOWING CONDITIONS IN ANY F-TYPE FORMAT
ZEROES MAY BE ENTERED A BLANKS

TEMP DEG. F

PRESS PSIA

GAS MOL-UT

POWER KW (+) BTU/HR (-)

651 652 653 654 655 656 657 658 659

1 1 1 1 1 1 1 1 1

65 66 67 68 69 70 71 72 73

0 0 0 0 0 0 0

ANSWER YES TO INPUT MORE COLUMN DATA

ANSWER YES TO INPUT MORE SHEET DATA

ANSWER YES TO INPUT NEW FACILITY NAME/CASE/TALE
6.0 SOURCE CODE LISTING

See the following pages.
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</tbody>
</table>
SEVIGNBINZOB CGS(1)
1 LIB SYS$*MSFCFINS.
2 IN TPFS, REWORK
3 NOT TPFS, MAIN

@HDG, P BOOT

@PRT, S BOOT
FURPUR 28RH1 136 574T11 01/14/81 08:53:35
<table>
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<td>@ACAT,P CGS,F/64/TRK/120</td>
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<td>@ACAT,P 16,F/2/TRK/4</td>
</tr>
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<td>4</td>
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</tr>
<tr>
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<td>6</td>
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</table>

APRT,S  CHECK
FURPUR 28R1H1 E36 574T11 01/14/81 08:53:37
SUBROUTINE CHECK(COLNM,TSHEET,NTABLE,ICOL,IOPT)

INTEGER TSHEET
COMMON /TSHEET/TSHEET(16,32)
COMMON /JOUT/JOUT,JIN
DIMENSION IPR(9,2)
CHARACTER BNAME*1(2)
CHARACTER COLNM*1(2)

IF (NTABLE.EQ.0) GO TO 350
IF (NTABLE.LT.0) NTABLE=-NTABLE
IF (MOD(NTABLE,2),EQ.1) GO TO 10
NTABLE=-1
NTABLE=-20
GO TO 20

10 NTABLE=NTABLE
N2=N1+1
20 DO 330 KK=N1,N2
    DO 320 J=1,16
    J3=TSHEET(I,KK)
    IF (J3.EQ.0) GO TO 320
    READ (16*,J3) IPR
    DO 310 J=1,9
    J1=IPR(J,1)
    IF (J1.EQ.0) GO TO 310
    READ (20*,J1) BNAME
    DO 316 K=1,2
    IF (BNAME(K),NE.,COLNM(K)) GO TO 318
    316 CONTINUE
    WRITE (6,9000) J1
    9000 FORMAT (1* MATCH AT*,16)
    ICOL=IPR(J,1)
    IF (ICOL.EQ.TSHEET.AND.KK.EQ.NTABLE) GO TO 340
    GO TO 350
310 CONTINUE
320 CONTINUE
330 CONTINUE
340 CONTINUE
350 GO TO 350
340 IF (IOPT.EQ.2) GO TO 350
380 WRITE (JOUT,342)
342 FORMAT (1* **** THIS COLUMN NAME ALREADY EXISTS FOR A GIVEN*,
               X' FACILITY NAME/CASE/TABLE/SHEET'
               X'BX,'USE EDIT MENU TO CHANGE*')
380 GO TO 360
350 IOP=0
360 CONTINUE
RETURN
END
CNAME

SEVGNIDIN208*G511.CNAME
1     SUBROUTINE CNAME(COLNAM,MULT)
2     COMMON /IOUT/JOUT,JIN
3     CHARACTER COLNAM*4(2)
4     CHARACTER ADUM*4(2),SDUM*8
5     EQUIVALENCE (ADUM(1),SDUM)
6     CHARACTER BLANK*1,DOUM*1,BLNK#1,NO#,N9#
7     CHARACTER IYY*1,IZZ*1
8     CHARACTER IA*1,IZ*1,IP*1,IPR*1
9     DATA BLANK"/"/BLNK"/"/
10    DATA IA"/"/IZ"/"/IP"/"/IPR"/"/NO"/"/N9"/"
11    WRITE (JOUT,10)
12    10   FORMAT (5X, 'WRITE STREAM NAME IN AB FORMAT')
13    11   READ (JIN,12,ERR=11) ADUM
14    12   FORMAT (24X)
15      C ISOLATE ANY MULTIPLIER
16      MULT=1
17      IZZ=SUBSTR(ADUM(1),1,1)
18      IF (IZZ.GE.IA.AND.IZZ.LE.I2) GO TO 30
19      IF (IZZ.LT.NO,.OR.IZZ.GT.N9) GO TO 16
20      IYY=SUBSTR(ADUM(1),1,1)
21      IF (IYY.NE.IIP) GO TO 8
22      DECODE(20,ADUM) MULT
23      20   FORMAT (11).
24      C REMOVE N1
25      SUBSTR(ADUM,1,16)=SUBSTR(ADUM,3,6)
26      SUBSTR(ADUM,7,2)=SUBSTR(BLNK,1,2)
27      C REMOVE FINAL 1
28      DO 22 I=8,1,-1
29      SDUM=SUBSTR(ADUM,I,1)
30      IF (SDUM.NE.IPR) GO TO 22
31      SUBSTR(ADUM,I,1)=SUBSTR(BLNK,1,1)
32      GO TO 30
33      22   CONTINUE
34      GO TO 8
35      30   DO 32 I=1,2
36      32   COLNAM(I)=ADUM(I)
37      RETURN
38      END

aHOG . P

COLUMN

PR,5 COLUMN
FURPUR 28RIH1 E36 STA11 01/14/81 08:53:39
SEVGNINZ2@CGS111.COLUM

SUBROUTINE COLUMN(COLDES,COLVAR,EXTR,XTR)

CHARACTER COLDES*4
DIMENSION COLDES(12)
DIMENSION COLVAR(36)
COMMON/JOUT/JOUT,JIN
CHARACTER PROMPT#8,COND#12
DIMENSION PROMPT(301),COND(45)
CHARACTER BLANK*1,DDUM*1
DIMENSION XTR(2,3)
CHARACTER CXTR*16,3
CHARACTER YES#4,YES#4
CHARACTER BDUM#1,TDUM#9
EQUIVALENCE (BDUM#1,TDUM#9)
DATA BLANK/' '/
DATA YES/'YES '/
DATA (PROMPT#1),I=1,301/
L'H2',"CO","CO2","CH4","N2","O2","AR","H2S",
L'COS","CS2","SO2","NH3","HCN","HCL","NO","Cl",
L'C2H4","C2H6","C3H8","C4H10","TOTL DRY","H2O",
L'TOTL WET","TOTL GAS","COAL","ASH","CARBON","TOT SLD",
L'TOT STRM'"
DATA (COND#1),U=1,51/
L'TEMP DEG,F',"FRES PSA","GAS MOL-WT",
L'POWER KW1","BTU/HR-1"/
DO 10 K=1,16
DO 10 J=1,3
10 CXTR(K,J)=
DO 20 K=1,2
DO 20 J=1,3
20 XTR(K,J)=0.
WRITE(JOUT,20)
20 FORMAT(5X,'WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS ' 
L'EACH/A3,'WITHIN THE LIMITS INDICATED'//IX,'*9',IX,'**')
DO 35 I=1,12,3
35 READ (JIN,J27,ERR=21) BDUM
30 FORMAT(2AN,4I)
37 IX=0
38 DO 222 K=9,1,-1
39 DDU#M=SUBSTR(TDUM,K,1)
40 IF (DDUM .NE. BLANK) GO TO 224
41 IX=IX+1
42 CONTINUE
224 IF (IX.LE.1) GO TO 227
227 IX=IX/2
228 IX=9-IX
229 SUBSTR(TDUM,IX+1,IX)=SUBSTR(TDUM,1,IX)
230 DO 225 K=1,IX
231 SUBSTR(TDUM,K,1)=SUBSTR(BLANK,1,1)
232 CONTINUE
225 CONTINUE
227 DO 228 K=1,3
228 COLDES(K+1)=BDUM(K)
229 CONTINUE
WRITE(JOUT,27)
27 FORMAT(5X,'WRITE THE MOLES/HR FOR THE FOLLOWING ' 
L"COMPOUNDS IN F-TYPE FORMAT,"/8X,"ZEROS MAY BE ' 
L"ENTERED AS BLANKS")
DO 40 I=1,10
  WRITE (JOUT,30) PROMPT
30  FORMAT(5X,A8)
31  READ (JIN,32,ERR=31) COLVAR
32  FORMAT(F15.0)
32  IF (I.NE.21) GO TO 40
34  IXX=1
40  WRITE (JOUT,41)
41  FORMAT (5X,'ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED')
43  READ (JIN,42,ERR=43) YES
44  IF (YES.NE.YES) GO TO 40
45  WRITE (JOUT,46)
46  FORMAT (5X,'WRITE COMPOUND NAME IN A16-FORMAT')
45  READ (JIN,46,ERR=45) (CXTRIII,IXX),II=1,4
46  FORMAT (4A1)
47  WRITE (JOUT,48)
48  FORMAT (5X,'WRITE COMPOUND FORMULA IN A8-FORMAT')
49  READ (JIN,50,ERR=49) (CXTRIII,IXX),II=5,6
50  FORMAT (2A4)
51  WRITE (JOUT,52)
52  FORMAT (5X,'WRITE COMPOUND MOLECULAR WEIGHT IN ANY F-TYPE FORMAT')
53  READ (JIN,52,ERR=53) XTRIII,IXX
54  WRITE (JOUT,54)
55  FORMAT (5X,'WRITE H/ATOMS/HR IN ANY F-TYPE FORMAT')
56  READ (JIN,57,ERR=56) XTR12,IXX
57  IF (IXX.LE.3) GO TO 240
58  CONTINUE
59  WRITE (JOUT,58)
60  FORMAT (5X,'WRITE FOLLOWING CONDITIONS IN ANY F-TYPE FORMAT',/6X,'ZEROES MAY BE ENTERED A BLANKS')
61  DO 70 I=1,3
62  WRITE (JOUT,60) COND(I)
63  CONTINUE
64  FORMAT(5X,A12)
65  READ (JIN,32,ERR=61) COLVAR(30+I)
66  WRITE (JOUT,80) COND(4),COND(5)
67  FORMAT(5X,A12)
68  READ (JIN,32,ERR=81) COLVAR(34)
69  RETURN
70  END

AMGP
COPY

APRT,5 COPY
FURPUR 28R1H1 E36 57ATH II 01/14/81 08:53:40
SEVIGNBINZ208#CO5(1).COPY
1  A4AT PRT.
2  BAS0,A PRT.
3  START PRINTS/PRT
4  AX01,AL SYS$MSFCS,LUSTL
5  @BRKPT PRINTS
6  @SYN PRT,1,MHSP

$HDG,P  CSHEET
SUBROUTINE CSHEET(TABLE, ISHEET, IPTR, SYSNAME, DRAWN, ENGR, APPR, DATE)
COMMON/JOUT/JOUT, JIN
INTEGER ISHEET
CHARACTER DATE(*, SYSNAME, DRAWN, ENGR, APPR)
DIMENSION DATE(2), SYSNAME(20), DRAWN(4), ENGR(4), APPR(4)
COMMON/ISHEET/ISHEET(16, 32)
DIMENSION IPTR(9, 2)
WRITE(JOUT, 10)
10 FORMAT(5X, "WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROS")
11 READ(JIN, 12, ERR=11) ISHEET
12 FORMAT(32)
13 IF(ISHEET/I$TABLE).GT.0 GO TO 20
14 WRITE(JOUT, 16)
16 C
17 C LOCATE ORIGINAL DATA
18 J3=ISHEET(I$TABLE)
19 READ (16, J3) IPTR, SYSNAME, DRAWN, ENGR, APPR, DATE
20 C
21 C FORMAT* 1 - CHANGE SYSTEM NAME*
22 E' 2 - CHANGE DRAWN BY NAME*/
23 E' 3 - CHANGE ENGR NAME*/
24 E' 4 - CHANGE APPR NAME*/
25 E' 5 - CHANGE DATE*/
26 E' 0 - RETURN TO CONTINUE*
27 IOP=0
28 READ(JIN, 34, ERR=32) IOP
29 C
30 C IF(IOP.GT.0) GO TO 32
31 IF(IOP.EQ.0) GO TO 100
32 GO TO (140, 50, 60, 70, 80), IOP
33 C
34 C SYSTEM NAME
35 WRITE(JOUT, 92)
36 C FORMAT* 15X,"WRITE SYSTEM LABEL IN A76 FORMAT WITHIN THE LIMITS"
37 E' INDICATED"/IX."*",76X,"*"
38 C
39 C READ (JIN, 44, ERR=43) SYSNAME(1), I=1, 19
40 C
41 C GO TO 24
42 C
43 C DRAWN BY
44 WRITE(JOUT, 52)
45 C FORMAT* 5X,"WRITE DRAWN BY NAME IN A16 FORMAT"
46 C
47 C READ (JIN, 54, ERR=53) DRAWN
48 C
49 C GO TO 24
50 C
51 C ENGINEER
52 WRITE(JOUT, 62)
53 C FORMAT* 5X,"WRITE ENGR NAME IN A16 FORMAT"
54 C
55 C GO TO 24
56 C
C SHEET

56. C     APPROVED
57. -70 WRITE('JOUT',72)
58. 72 FORMAT(5X,'WRITE WAPPNAME IN A16 FORMAT')
59. 73 READ (JIN,54,ERR=73) APPR
60. GO TO 24
61. C
62. C     DATE
63. 80 WRITE('JOUT',82)
64. 82 FORMAT(5X,'WRITE DATE IN MM/DD/YY FORMAT')
65. 83 READ (JIN,84,ERR=83)DATE
66. 84 FORMAT(2AN)
67. GO TO 24
68. 100 J3=TSHEET(ISHEET,NTABLE)
69. WRITE (16*J3) IPR,SYSDATE,CRAWN,ENDR,APPR,DATE
70. RETURN
71. END

END FBN 167 IBANK 429 DBANK 519 COMMON

2HDS,P DEFIN

6-13
SUBROUTINE DEFINIER

COMMON /LIMIT/ NAME, ICOLM, ICHAIN, JCOLM, JCHAIN
COMMON /ICASE/ ICASE(16)
COMMON /TNAME/ TNAME(2,4), NPTR(4)
COMMON /ITABLE/ ITABLE(32)
COMMON /TSHEET/ TSHEET(16,32)
END FTN

DEFINE FILE 19(1,575,N, JDATA)
DEFINE FILE 16(512,52,Y, JCHAIN)
DEFINE FILE 2014(172,74,Y, JCOLM)
FIND(14*1)
READ(14*1, ERR=100) NAME, ICOLM, ICHAIN, TNAME, NPTR,
ICOLM=1
ICASE, ITABLE, TSHEET
ICOLM=1
ICASE, ITABLE, TSHEET
END FTN

DEFIN, S  DEFIN,DEFIN

#HDG, P  DEFINE
DEFINE

DEFINE

!FTN.S FTN 9R1H201/14/81-08:53:120:1

1. SUBROUTINE DEFINE
2. COMMON /OUT,JOUT,JIN
3. CHARACTER NAME, ENGR, APPR
4. DIMENSION NAME, ENGR, APPR
5. CHARACTER NAME, ENGR, APPR
6. DIMENSION NAME, ENGR, APPR
7. CHARACTER NAME, COL VAR, COL DES
8. DIMENSION NAME, COL VAR, COL DES
9. DIMENSION NAME, COL VAR
10. DIMENSION NAME, COL VAR, COL DES
11. CHARACTER NAME, COL VAR, COL DES
12. CHARACTER NAME, YES, NO
13. DATA NAME /YES, NO /
14. C DETERMINE OVERALL CONDITIONS
15. CALL SELECT NAME, CASE, ITAB NO, NTABLE
16. C READ IN SHEET DATA
17. CALL SHEET, ISHEET, DATE, SYSNAM, NTABLE
18. IF (NTABLE LE 0) GO TO 30
19. C DETERMINE OPTIONAL DATA
20. CALL OPDATA, DRAWN, ENGR, APPR
21. C READ IN COLUMN DATA
22. CALL CNAME, COLNAM, MULT
23. ICOL=0
24. IOP=1
25. CALL CHECK, COLNAM, ISHEET, NTABLE, ICOL, IOP
26. IF (IOP.EQ.1) GO TO 30
27. IF (ICOL.LE.0) GO TO 32
28. CALL COLUMN, COL DES, COL VAR, CXTR, XTR
29. C STORE COLUMN DATA
30. CALL FILE NAME, CASE, ITAB NO, DRAWN, ENGR, APPR, ISHEET, NTABLE
31. CALL DATE, SYSNAM, COLNAM, COL DES, COL VAR, CXTR, XTR, ICOL, MULT
32. WRITE (JOUT, 100)
33. 100 FORMAT (5X, 'ANSWER YES TO INPUT MORE COLUMN DATA')
34. 101 READ (JIN, 102, ERR=101) YES
35. 102 FORMAT (44)
36. IF (YES EQ. YES) GO TO 30
37. WRITE (JOUT, 110)
38. 110 FORMAT (5X, 'ANSWER YES TO INPUT MORE SHEET DATA')
39. 111 READ (JIN, 102, ERR=111) YES
40. IF (YES EQ. YES) GO TO 20
41. WRITE (JOUT, 120)
42. 120 FORMAT (5X, 'ANSWER YES TO INPUT NEW FACILITY NAME/CASE/TABLE')
43. 121 READ (JIN, 102, ERR=121) YES
44. IF (YES EQ. YES) GO TO 10
45. RETURN
46. END

END FTN 60 IBANK 220 DDANK 2 COMMON

@MGDP DELETE

@PRD S DELETE
SUBROUTINE DELETE

COMMON /IOUT/ JOUT, JIN
COMMON /LIMIT/ NNAME, ICOLM, ICHAIN
CHARACTER TNAME(1:9), NAME (1:2), BLANK
INTEGER TCASE, TTABLE, TSHET
COMMON /NAME/ TNAME(2:4), NPTR(4)
COMMON /TCASE/ TCASE(1:6)
COMMON /TTABLE/ TTABLE(32)
COMMON /TSHET/ TSHET(16, 32)
DIMENSION I PTR (9, 2)
CHARACTER COLNAME(42)
CHARACTER SYNAME(20), DRAW(9), ENGREN, APPRE(4), DATE(12)
CHARACTER YES(4), YYES(4)
DATA BLANK/* */ DATA YES/* YES */
0 WRITE(JOUT, 10)
10 FORMAT(* 1 - DELETE ENTIRE FACILITY*)
  C 2 - DELETE ENTIRE CASE*/
  C 3 - DELETE ENTIRE TABLE*/
  C 4 - DELETE ENTIRE SHEET*/
  C 5 - DELETE ENTIRE COLUMN*/
  C RETURN TO CONTINUE*/
12 WRITE(JOUT, 14)
14 FORMAT(5X, 'WRITE CHANGE TYPE IN II FORMAT')
15 READ (JIN, 14, ERR=1510P)
16 FORMAT(11)
27 IF (IOP.GT.5) GO TO 12
28 IF (IOP.EQ.0) GO TO 140
C
C FACILITY NAME
20 WRITE(JOUT, 22)
22 FORMAT(5X, 'WRITE FACILITY NAME IN A8 FORMAT*)
23 READ(JIN, 24, ERR=23) NAM
24 FORMAT(2AN)
25 GO TO 26 I=1, NNAME
26 IF (NAM(1).NE.TNAME(1,1)) GO TO 26
27 IF (NAM(2).NE.TNAME(2,1)) GO TO 26
28 GO TO 20
29 CONTINUE
GO TO 20
C
C REMOVE NAME AND UPDATE ALL POINTERS
32 IF (IOP.GT.1) GO TO 40
34 TNAME(1,1)=BLANK
35 TNAME(2,1)=BLANK
36 IF (NPR(1)) IPR(I)=1
37 I=1
38 I=I+1
39 I=I+1
40 I=I+1
41 I=I+1
42 WRITE(JOUT, 22)
43 FORMAT(1P-1+I)
44 TCASE(1-I-1)=0
45 J=1
46 I=I+1
47 I=I+1
48 K=1
49 I=I+1
50 I=I+1
51 I=I+1
52 I=I+1
53 I=I+1
54 IF (I.SXEQ.0) GO TO 39
57      T$HEE(K,IR):=0
58      READ*16*15,IPTR,SYSNH,DRAWN,ENGR,APP:DATE
59      L:=1
60      IT:=IPTR{1,1)
61      IF (IT.GT.0) IPTR(I,1):=0
62      L:=1
63      IF (L.LE.9)GOTO 38
64      WRITE*16*15,IPTR,SYSNH,DRAWN,ENGR,APP:DATE
65      WRITE*16,999999,IPTR
66      K:=K+1
67      IF (K.LE.16)GOTO 36
68      J:=J+1
69      IF (J.LE.2)GOTO 34
70      I:=I+1
71      IF (I.LE.4)GOTO 32
72      IF (IOP.NE.4) GOTO 204
73      WRITE (JOUT,200)
74      200 FORMAT (5X,'ANSWER YES TO DELETE MORE SHEETS')
75      READ (JIN,202) YES
76      202 FORMAT (A4)
77      IF (YES.EQ.'YES') GOTO 80
78      GO TO 8
79      204 IF (IOP.NE.3) GOTO 208
80      WRITE (JOUT,206)
81      206 FORMAT (5X,'ANSWER YES TO DELETE MORE TABLES')
82      READ (JIN,202) YES
83      IF (YES.EQ.'YES') GOTO 60
84      GO TO 8
85      208 IF (IOP.NE.2) GOTO 8
86      WRITE (JOUT,210)
87      210 FORMAT (5X,'ANSWER YES TO DELETE MORE CASES')
88      READ (JIN,202) YES
89      IF (YES.EQ.'YES') GOTO 40
90      GO TO 8
91      C
92      C REMOVE CASE AND UPDATE ALL POINTERS
93      40 WRITE (JOUT,42)
94      42 FORMAT (5X,'WRITE CASE NUMBER IN I FORMAT')
95      43 READ (JIN,16,ERR=43) ICASE
96      NCASE:=NPtr(NPTR{1,1)+1)
97      IQ:=CASEN{CASE
98      IF (IQ.EQ.0)GOTO 40
99      IF (IOP.GT.2)GOTO 60
100     ICASE:=CASE{IQ
101     I:=4
102     GO TO 33
103     C
104     C REMOVE TABLE AND UPDATE ALL POINTERS
105     60 WRITE (JOUT,62)
106     62 FORMAT (5X,'WRITE TABLE NUMBER IN I FORMAT')
107     63 READ (JIN,16,ERR=63) ITABNO
108     NTABNO:=IQ-1+ITABNO
109     IR:=TABLE(NTABNO)
110     IF (IR.EQ.0)GOTO 60
111     IF (IOP.GT.3)GOTO 80
112     ITABLE{NTABNO}:0
113     I:=4
J=2
GO TO 35

C REMOVE SHEET AND UPDATE ALL POINTERS
80 WRITE(JOUT,82)
82 FORMAT(ISX,'WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROS')
83 READ(JIN,84,ERR=83)ISHEET
84 FORMAT(I2)
122 I=ISHEET(ISHEET,NTABNO)
123 IF(I.EQ.0)GO TO 80
124 IF(IOP.GT.4)GO TO 100
125 ISHEET(ISHEET,NTABNO)=I
126 READ(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
127 I=4
128 J=2
129 K=16
130 GO TO 37

C REMOVE COLUMN AND UPDATE POINTERS
133 READ(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
134 DO 110 M=1,9
135 J=IPTR(M,1)
136 IF(J.EQ.0)GO TO 110
137 READ(120*J)ICOLNAM
138 WRITE(JOUT,106*M,ICOLNAM)
139 106 FORMAT(IS,2A4)
140 110 CONTINUE
141 WRITE(JOUT,114)
142 FORMAT(ISX,'WRITE NUMBER OF THE COLUMN TO BE DELETED')
143 C USING I1 FORMAT
144 READ(JIN,16,ERR=115)IX
145 IF(IX.EQ.0)GO TO 120
146 IPTR(IX,1)=0
147 WRITE(JOUT,116)
148 FORMAT(ISX,'ANSWER YES TO DELETE MORE COLUMNS')
149 READ(JIN,202)YYES
150 IF(YYES.EQ.0)GO TO 112
151 WRITE(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
152 WRITE(6,900)IS,IPTR
153 900 FORMAT(ISX,'***',2(I9.5))
154 GO TO 8
155 WRITE(14*1)NNAME,ICOLM,ICHAIN,
156 X,TNAME,NPTR,TCASE,TTABLE,TSHEET
157 RETURN
158 END

@MODP EDIT
SUBROUTINE EDIT
CHARACTER NAME(28), TNAME(4)
DIMENSION NAME(2)
CHARACTER COLUMN(24), COLDES(12)
CHARACTER YES(9), YES(9)
INTEGER TCSNAMETABLE, TCSHEET
COMMON/TNAME/NAME(2,4), NPTR(4)
COMMON/TCSNAMETABLE/NAME(2)
COMMON/Tcsheet/Tcsheet(2,2,3)
COMMON/TCSHEET/TSHEET(2,6,10)
COMMON/TLIMIT/TNAME, ICSM, ICHAIN
COMMON/INPUT/OUT(10,18)
COMMON/TCSNAMETABLE/NCSAM=20, DRAWN=9, ENGR=9, APPR=9, DATE=9
DATA YES/*YES"/
CALL SELECT(1AM, ICASE, ITABNO)

C CHECK EXISTANCE OF TABLE
IER=0
DO 6 I=1, TNAME
DO 4 J=1, 2
IF(INAME(J) NE TNAME(J)) GO TO 6
CONTINUE
6 CONTINUE
IER=1
C CHANGE SHEET DATA
CALL CSHEET(NTABLE, ISHEET, IPTR, SYNAME, DRAWN, ENGR, APPR, DATE)
WRITE (6, 900) IPTR
900 FORMAT (9(9))
C CHANGE COLUMN DATA
DO 40 J=1, 9
IF(JJ, EQ, 0) GO TO 40
J=IPTR(J)
READ (20, J) COLNAME
WRITE (JOUT, 24) COLNAME
WRITE (JOUT, 24) COLNAME
CONTINUE
40 CONTINUE
WRITE (JOUT, 44)
50 FORMAT (5(9), 'WRITE NUMBER OF COLUMN TO BE CHANGED IN 11 FORMAT')
READ (JIN, 45, ERR=45) JOIOP
45 FORMAT (16, I2)
46 FORMAT (16, I2)
IF(JI0P, EQ, 0) GO TO 60
J=IPTR(J01OP)
CONTINUE
40
EDIT

CALL CNAME(COLNAM,MULT)
IPITR(IOP,2)=MULT
ICOL=0
IOP=2
CALL CHECK(COLNAM,ISHEET,NTABLE,ICOL,IOP)
CALL COLUMN(COLDES,COLVAR,CXTR,XTR)
IF (ICOL.ABSE.0) J1=ICOL
IF (MULT.EQ.1) GO TO 56
1
DO 50 I=1,30
50 COLVAR(I)=COLVAR(I)/MULT
1
DO 52 I=1,3
52 XTR(I,J)=XTR(I,J)/MULT
56 WRITE (20,J1) COLNAM,COLDES,COLVAR,CXTR,XTR
58 J3=ISHEET(ISHEET,NTABLE)
70 WRITE (16*J3) IPITR,SYSNAM,DRAWN,ENGR,APPR,DATE
71 GO TO 42
60 WRITE(JOUT,62)
62 FORMAT(5X,*ANSWER YES TO EDIT MORE SHEET DATE*)
63 READ (JIN,64,ERR=63)YES
64 FORMAT(A4)
66 IF(Y,YES.EQ.YES) GO TO 20
67 WRITE(JOUT,72)
70 FORMAT(5X,*ANSWER YES TO EDIT NEW FACILITY NAME/CASE/CTABLE*)
73 READ(JIN,64,ERR=73)YES
76 IF(Y,YES.EQ.YES) GO TO 2
80 RETURN
82 END

END FTN 195 IBANK 355 DBANK 577 COMMON

&HDG,P  FILE
SUBROUTINE FILE(INAM, ICASE, ITABNO, DRAWN, ENGR, APPR, TSHEET, NTABLE, 
DATE, SYNSAM, COLNAM, COLDES, COLVAR, CXTR, XTR, ICOL, MULT)
COMMON /IOUT/, JOUT, JIN
COMMON /NAME/, NAME(2,4), NPTR(4)
COMMON /TCASE/, TCASE(16)
COMMON /TABLE/, TABLE(32)
COMMON /TSHEET/, TSHEET(16, 32)
DIMENSION IPTR(9, 2), JPTR(9, 2)
DIMENSION XTR(2, 31)
CHARACTER CXTR*(6, 3)
IF (INAM .EQ. 0) GO TO 100
ADD SECOND AND SUBSEQUENT ENTRIES
DO 4 I = 1, INAM
IF (NAME(I) .NE. NAME(1, I)) GO TO 4
IF (NAME(2) .NE. NAME(2, I)) GO TO 4
GO TO 6
4 CONTINUE
TREAT AS A NEW NAME IF NO MATCH WITH EXISTING NAME
GO TO 100
6 INAM = NPTR(I) - 1 + ICASE
C CHECK FOR MATCHING CASE
IF (ICASE(INAM) .EQ. 0) GO TO 110
NTABILE = ICASE(INAM) + ITABNO- 1
C CHECK FOR MATCHING TABLE
IF (TABLE(INAME) .EQ. 0) GO TO 120
GO TO 124
C CREATE FIRST RECORDS
100 DO 104 I = 1, INAME
IF (NPTR(I) .NE. 0) GO TO 106
104 CONTINUE
106 NAME(1, I) = NAME(I)
NAME(2, I) = NAME(I)
IF (NPTR(I) .EQ. 0) NAME = NAME + 1
NPTR(I) = NAME(I) - 1 + 1
110 NPTR = NPTR + 1
NCASE = NPTR + ICASE - 1
TCASE = INCASE + INCASE - 1 + 2 + 1
ITPTR = ICASE(INCASE)
NTABLE = IPTR + ITABNO - 1
120 ITABLE(INTABE) = 1
C SEARCH FOR ALREADY EXISTING MATCH FOR COLUMN NAME
124 JK = 0
1 DO 126 J = 1, 9
126 JK = 1 + 2
DO 126 K = 1, 2
JPTR(K) = 0
FILE

126 J=JABS(JSHEET+1-SHEET+1)
127 IF (J#.EQ.0) GO TO 135
128 READ(J3,*,J3,JPTRS,SYSHAM,DRANK,ENG,APP,DATE
129 C NEW COLUMN ONLY
130 135 GO 136 L=1,9
131 DO 136 K=1,2
132 IF (JPTR(L) EQ 16) GO TO 138
133 CONTINUE
134 GO TO 140
135 DO 136 L=1,9
136 IF (JPTR(L) .GT. 16) GO TO 138
137 JKL=L
138 CONTINUE
139 C ADJUST MULTIPLIER COLUMN
140 IF (MULT.EQ.0,J2,J3,NE,0) GO TO 148
141 DO 147 I=1,30
142 COLVAR(I)=COLVAR(I)/MULT
143 DO 144 I=1,IX
144 XTR(I,2)=XTR(I,2)*MULT
145 C WRITE NEW COLUMN DATA
146 IF (JCOL,NE,0) GO TO 149
147 JCOL=160+INTABLE-1+10*(JSL-1)+JN
148 J1=JCOL
149 DO 149 I=1,14
150 WRITE(*,149) COL,NE,COL,NE,ColD,SHEET,1+TABLE
151 C UPDATE CHAIN OF COLUMN POINTERS
152 IF (JK,.EQ.0) THEN
153 JCHAIN=16+INTABLE-1+JSL
154 J3=JCHAIN
155 WRITE(J3,JCHAIN)*JPTRS,SYSHAM,DRANK,ENG,APP,DATE
156 JSL=162+TABLE+JSL
157 GO TO 150
158 ELSE
159 J3=TSHEET(JSL,1)-TABLE
160 WRITE(J3,J3,J3)*JPTRS,SYSHAM,DRANK,ENG,APP,DATE
161 GO TO 150
162 END IF
163 C PRINT WARNING MESSAGE
164 WRITE(JOUT,162)
165 162 FORMAT(5X,* *** ALL COLUMNS FILLED FOR THIS SHEET ***)
166 GO TO 200
167 C RETURN TO MENU LIST
168 200 CONTINUE
169 WRITE(J14,J14) JNAME,JSL,JCHAIN,JNAME,162,JPTR,TCASE,1+TABLE,TSHEET
170 WRITE(J16,J621)*JPTR
171 621 FORMAT(915)
172 WRITE(J16,J302)*TSHEET,1+TABLE,1=1,161,ISHEET,1+TABLE
173 302 FORMAT(1615)
174 RETURN
175 END
SEVIGNBIN208*CGS1).GETON
1  @ASG,A 14.
2  @ASG,A 16.
3  @ASG,A 20.
4  @FREE TPFS.
5  @USE TPFS.,CGS.

@HDG,P INIT
SUBROUTINE INIT(IER)
COMMON /LIMIT/ NNAME,ICOLM,ICHAI
CHARACTER TNAM4
INTEGER ICASE,TTABLE,TSEQ
COMMON /ICASE/ ICASE(16)
COMMON /TTABLE/ TTABLE(32)
COMMON /TSHEET/ TSHEET(16,32)
IER=0
DEFINE FILE 141,.575,1,JDAT
DEFINE FILE 141512,52,1,CHAIN
DEFINE FILE 1415120,.74,1,ICLM
FIND(141)
READ(141,IER=100) NNAME,ICOLM,ICHAI,TNAM4,NPTR,
LIST,TTABLE,TSEQ
WRITE (6,9000) NNAME,TNAME,NPTR,ICASE,TTABLE,TSEQ
9000 FORMAT (15/1X,4(16A4)/9014/1615/211615/1/32(1615/1))
RETURN
100 IER=1
RETURN
END
END FTT 33 IBANK 78 DBANK 575 COMMON
&MODP MAIN
Fortran program snippet:

```
PROGRAM MAIN
    IMPLICIT NONE
    INTEGER, PARAMETER :: N = 100
    REAL, ALLOCATABLE :: a(N), b(N)
    CALL create_array(a)
    CALL create_array(b)
    CALL copy_array(a, b)
END PROGRAM MAIN
```

Note: The snippet is a simplified representation of the original Fortran code for educational purposes. The actual code might be more complex and include other subroutines and modules as shown in the original image.
SEVIGNBIN208*CGS(11).MAP
1 @PACK CGS.
2 @PREP CGS.
3 @MAP,1 CGS,XMAP,CGS,XOT
4 LIB SYS**MSFCG.
5 @

@HD5,P MENU
SUBROUTINE MENU
COMMON /JOUT/ JOUT, JIN, UTABLE
WRITE(JOUT, 10)
WRITE(JOUT, 14)
WRITE(JOUT, 18)
WRITE(JOUT, 22)
WRITE(JOUT, 26)
WRITE(JOUT, 30)
WRITE(JOUT, 34)
WRITE(JOUT, 38)
READ (JIN, 42, ERR=40), IND
IF (IND .EQ. 5) GO TO 40
IF (IND .EQ. 0) GO TO 1000
GO TO (100, 200, 300, 400, 500), IND
DEFINE (AUD) NEW TABLES
100 CALL DEFINE
GO TO 2
C EDIT EXISTING TABLE
200 CALL EDIT
IUP=1
GO TO 2
C DELETE EXISTING TABLE
300 CALL DELETE
IUP=1
GO TO 2
C PRINT SELECTED TABLE
400 CALL PSELECT
GO TO 2
500 GO TO 2
C SAVE REVISIONS
500 IUP=1
GO TO 2
END
FIN 71 IBANK 120 DBANK 3 COMMON
AHDG P OPDATA
APRT S OPDATA
FURPUR 28R1H1 E36 574111 01/14/81 08:54:11
SUBROUTINE ODATA(DRAWN,ENGR,APPR)

CHARACTER DRAWN*,ENGR*,APPR*

DIMENSION DRAWN(1),ENGR(1),APPR(1)

COMMON /JOUT/JOUT,JIN

CHARACTER YES*,YYES*,YBLANK*

DATA YES/'YES '/BLANK/' '

DO 2 I=1,4

DRAWN(I)=BLANK

ENGR(I)=BLANK

APPR(I)=BLANK

2 CONTINUE

WRITE(JOUT,10)

10 FORMAT(5X,'ANSWER YES IF OPTIONAL DATA IS TO BE ENTERED'

11 READ(JIN,12,ERR=11) YES

12 FORMAT(44)

16 IF (YES .EQ. YYES) THEN

17 WRITE(JOUT,20)

20 FORMAT(5X,'WRITE ''DRAWN BY'' NAME IN A16 FORMAT'

21 READ(JIN,22,ERR=211) DRAWN

22 FORMAT(44)

26 WRITE(JOUT,30)

30 FORMAT(5X,'WRITE ''ENGR'' NAME IN A16 FORMAT'

31 READ(JIN,22,ERR=311) ENGR

32 WRITE(JOUT,40)

40 FORMAT(5X,'WRITE ''APPROVED BY'' NAME IN A16 FORMAT'

41 READ(JIN,22,ERR=411) APPR

ELSE CONTINUE

END IF RETURN

END
1. SUBROUTINE OUTPUT(NAM,ICASE,ITABNO,ISHEET,IER)
2. COMMON /OUT/JOUT,JIN
3. CHARACTER NAME(4)
4. DIMENSION NAME(2)
5. COMMON /LIMIT/ NAME
6. CHARACTER NAME(4)
7. INTEGER TCASE,ITABLE,TSECTION
8. COMMON /TNAME/ TNAME(2,4),NTRY(1)
9. COMMON /TCASE/ TCASE(16)
10. COMMON /ITABLE/ ITABLE(32)
11. COMMON /TSHEET/ TSHEET(16,32)
12. CHARACTER SYSTEXT,DRAWN,ENGRO,APPR,DATE
13. DIMENSION SYSTEXT(203),DRAWN,ENGRO,APPR,DATE
14. CHARACTER COLUMNS(9),COLORS(3,4),COLVAR(36,9),IPTR(9,2)
15. CHARACTER DUM(12)
16. CHARACTER SUM(8),BLANK(1)
17. EQUIVALENCE (SUM(1),COLUMNS(1,1))
18. DIMENSION XTR(2,3,9)
19. CHARACTER CTR(6,3,9),AXTRA(3,9,3)
20. CHARACTER ACOLOR#,BLANK#
21. DIMENSION ACOLOR(3,9,3)
22. CHARACTER LPAR#,RPAR#
23. DATA BLANK/*/ "/
24. DATA LPAR /* "*/RPAR /*"*/
25. DATA BLANK/*/ "/
26. DATA BLANK/*/ "/
27. DO 4 I=1,NNNAME
28. DO 2 J=1,2
29. IF (NAME(J,1).NE. NAME(J)) GO TO 4
30. CONTINUE
31. GO TO 6
32. CONTINUE
33. IER=1
34. GO TO 520
35. IF (NAME(J,1).NE. NAME(1)) GO TO 30
36. NTABLE-TCASE(INCASE)-1*ITABNO
37. ISH=0
38. DO 8 I=1,16
39. IF (TNAME(I,NTABLE).EQ.0) GO TO 8
40. CONTINUE
41. IALL=0
42. IF (TNAME(NE.,99)) GO TO 18
43. IALL=1
44. ISHEET=-1
45. IF (TNAME(NE.,99)) GO TO 18
46. IF (TNAME(NE.,99)) GO TO 18
47. IF (TNAME(NE.,99)) GO TO 18
48. READ(*J3) IPTR,SYSTEXT,DRAWN,ENGRO,APPR,DATE
49. IFNUM=0
50. DO 20 I=1,9
51. IF (IPTR(I,1).EQ.0) GO TO 20
52. IFNUM=0
53. CONTINUE
54. CONTINUE
55. DO 31 I=20,1,-1
```plaintext
105 CONTINUE
106 IF (K=8,1,-1)
107 CONTINUE
108 IF (SUBSTR(DUM(J,K),1,1).NE.BLANK) GO TO 76
109 IY=IY+1
1010 CONTINUE
110 75 CONTINUE
111 76 IS=8-IY
112 12=0
```

170. FORMAT(X, "METHANE"\ CH4 16.04", IX, 9(2A4, A3))
171. WRITE JOUT, 140 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
172. FORMAT(X, "NITROGEN"\ NZ 28.01", IX, 9(2A4, A3))
173. WRITE JOUT, 150 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
174. FORMAT(X, "OXYGEN"\ O2 32.00", IX, 9(2A4, A3))
175. WRITE JOUT, 160 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
176. FORMAT(X, "ARGON"\ AR 40.00", IX, 9(2A4, A3))
177. WRITE JOUT, 170 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
178. FORMAT(X, "HYDROGEN SULFIDE"\ H2S 34.08", IX, 9(2A4, A3))
179. WRITE JOUT, 180 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
180. FORMAT(X, "CARBONYL SULFIDE"\ COS 60.08", IX, 9(2A4, A3))
181. WRITE JOUT, 190 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
182. FORMAT(X, "CARBON DISULFIDE"\ CS2 76.14", IX, 9(2A4, A3))
183. WRITE JOUT, 200 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
184. FORMAT(X, "SULFUR DIOXIDE"\ SO2 64.06", IX, 9(2A4, A3))
185. WRITE JOUT, 210 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
186. FORMAT(X, "AMMONIA"\ NH3 17.03", IX, 9(2A4, A3))
187. WRITE JOUT, 220 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
188. FORMAT(X, "HYDROGEN CYANIDE"\ HCN 21.03", IX, 9(2A4, A3))
189. WRITE JOUT, 230 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
190. FORMAT(X, "HYDROGEN CHLORIDE"\ HCL 36.46", IX, 9(2A4, A3))
191. WRITE JOUT, 240 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
192. FORMAT(X, "NITRUS OXIDE"\ NO 30.01", IX, 9(2A4, A3))
193. WRITE JOUT, 250 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
194. FORMAT(X, "CHLORINE"\ CL 35.45", IX, 9(2A4, A3))
195. WRITE JOUT, 260 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
196. FORMAT(X, "ETHYLENE"\ CH2=CH2 26.05", IX, 9(2A4, A3))
197. WRITE JOUT, 270 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
198. FORMAT(X, "ETHANE"\ CH2=CH2 30.07", IX, 9(2A4, A3))
199. WRITE JOUT, 280 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
200. FORMAT(X, "PROPYLENE"\ CH3=CH2 42.09", IX, 9(2A4, A3))
201. WRITE JOUT, 290 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
202. FORMAT(X, "PROPANE"\ CH3=CH2 44.09", IX, 9(2A4, A3))
203. WRITE JOUT, 300 \(!ACOLYR(J, 57+4+19+10+110+5+1)\)
204. FORMAT(X, "SULFUR"\ S 32.07", IX, 9(2A4, A3))
205. FORMAT(X, "CONTINUE""
206. DO 1310 J=1, 10FNUM
207. IXX=COLYR(J, 35, J)
208. IF (IXX.EQ.0) GO TO 1310
209. IF (IXX.GT.1) JMAX=IXX
210. JMAX=IXX
211. K=IXX
212. XTR(2, K, J)=XTR(2, K, J) + IPTR(J, 2)
213. ENCODE (62, DUM) XTR(2, K, J)
214. SUBSTR(XTR(J, K, 1, 1), 1, 4)=SUBSTR(DUM, 1, 4)
215. SUBSTR(XTR(J, K, 1, 1), 1, 5)=SUBSTR(DUM, 1, 5)
216. SUBSTR(XTR(J, K, 1, 1), 1, 6)=SUBSTR(DUM, 1, 6)
217. SUBSTR(XTR(J, K, 1, 1), 1, 7)=SUBSTR(DUM, 1, 7)
218. CONTINUE
219. IF (JMAX.EQ.0) GO TO 308
220. DO 1320 I=1, JMAX
221. DO 1314 I=1, 10FNUM
222. IF (IXX(J, 1, 1).NE.BLNK) GO TO 1316
223. CONTINUE
224. CONTINUE
225. WRITE (JOUT, 111) (CSTR(J, K, 1, 1), K=1, 6, JTR(J, 1, 1, 1)
226. X (CSTR(K, J, J, 1, 1, J=1, 10FNUM)
1 227. 1312 FORMAT (1X,4A4,2X,2A4,FS,2,1X,9(2A4,A3))
1 228. 1320 CONTINUE
1 229. 308 IX=3-JMAX
1 230. DO 1322 I=1,IX
1 231. WRITE (JOUT,1324)
1 232. 1324 FORMAT (*)
1 233. 1322 CONTINUE
1 234. WRITE (JOUT,310) ((ACOLVRK,J,224),K=1,3,1,J=1,10FNUM)
1 235. WRITE (JOUT,320) ((ACOLVRK,J,231),K=1,3,1,J=1,10FNUM)
1 236. WRITE (JOUT,320) ((ACOLVRK,J,231),K=1,3,1,J=1,10FNUM)
1 237. 320 FORMAT(1X,'WATER'
1 238. WRITE (JOUT,330) ((ACOLVRK,J,241),K=1,3,1,J=1,10FNUM)
1 239. 330 FORMAT(5X,'TOTAL WET',19X,9(2A4,A3))
1 240. WRITE (JOUT,326)
1 241. 326 FORMAT(32X)
1 242. E
1 243. E
1 244. WRITE (JOUT,340) ((ACOLVRK,J,25),K=1,3,1,J=1,10FNUM)
1 245. WRITE (JOUT,350) ((ACOLVRK,J,261),K=1,3,1,J=1,10FNUM)
1 246. WRITE (JOUT,350) ((ACOLVRK,J,261),K=1,3,1,J=1,10FNUM)
1 247. 350 FORMAT(1X,'COAL',28X,9(2A4,A3))
1 248. WRITE (JOUT,360) ((ACOLVRK,J,27),K=1,3,1,J=1,10FNUM)
1 249. WRITE (JOUT,360) ((ACOLVRK,J,27),K=1,3,1,J=1,10FNUM)
1 250. WRITE (JOUT,365) ((ACOLVRK,J,26),K=1,3,1,J=1,10FNUM)
1 251. WRITE (JOUT,365) ((ACOLVRK,J,26),K=1,3,1,J=1,10FNUM)
1 252. 365 FORMAT(1X,'ASH',29X,9(2A4,A3))
1 253. WRITE (JOUT,370) ((ACOLVRK,J,291),K=1,3,1,J=1,10FNUM)
1 254. WRITE (JOUT,370) ((ACOLVRK,J,291),K=1,3,1,J=1,10FNUM)
1 255. WRITE (JOUT,370) ((ACOLVRK,J,291),K=1,3,1,J=1,10FNUM)
1 256. WRITE (JOUT,375) ((ACOLVRK,J,291),K=1,3,1,J=1,10FNUM)
1 257. 375 FORMAT(1X,'TOTAL SOLIDS',16X,9(2A4,A3))
1 258. WRITE (JOUT,380) ((ACOLVRK,J,30),K=1,3,1,J=1,10FNUM)
1 259. WRITE (JOUT,390) ((ACOLVRK,J,31),K=1,3,1,J=1,10FNUM)
1 260. WRITE (JOUT,390) ((ACOLVRK,J,31),K=1,3,1,J=1,10FNUM)
1 261. 390 FORMAT(1X,'TOTAL STREAM',11X,9(2A4,A3))
1 262. WRITE (JOUT,400) ((ACOLVRK,J,321),K=1,3,1,J=1,10FNUM)
1 263. WRITE (JOUT,400) ((ACOLVRK,J,321),K=1,3,1,J=1,10FNUM)
1 264. 400 FORMAT(1X,'TEMPERATURE,DEG F',15X,9(2A4,A3))
1 265. WRITE (JOUT,410) ((ACOLVRK,J,331),K=1,3,1,J=1,10FNUM)
1 266. WRITE (JOUT,410) ((ACOLVRK,J,331),K=1,3,1,J=1,10FNUM)
1 267. 410 FORMAT(1X,'PRESSURE,PSIA',19X,9(2A4,A3))
1 268. WRITE (JOUT,420) ((ACOLVRK,J,341),K=1,3,1,J=1,10FNUM)
1 269. 420 FORMAT(1X,'POWER,KW (BTU/HR)',14X,9(2A4,A3))
1 270. PAUSE
1 271. IF (TALL .EQ. 0) GO TO 520
1 272. ISHEET=ISHEET+1
1 273. IF (ISHEET,GT,16) GO TO 520
1 274. GO TO 16
1 275. 520 RETURN
1 276. END
SUBROUTINE PSELECT
COMMON /IOUT,JOUT,JIN
CHARACTER NAME(*)
DIMENSION NAME(2)
CHARACTER YES*, YYES*, Y*/
DATA YES*/YES */
C DETERMINE OVERALL TABLE
2 CALL SELECT(NAM,ICASE, ITABNO)
C SELECT ONE SHEET OR ALL SHEETS
4 CALL SHINUM(ISHEET)
IER=0
CALL OUTPUT(NAM, ICASE, ITABNO, ISHEET, IER)
IF (IER .EQ. 11) GO TO 2
WRITE(JOUT,10)
10 FORMAT("ANWEF YES TO PRINT MORE INDIVIDUAL SHEETS")
11 READ(JIN,12,ERR=11) YSES
12 FORMAT(A4)
IF (YES .EQ. YES) GO TO 4
WRITE(JOUT,20)
20 FORMAT(5X," NOANSWER YES TO PROCESS MORE TABLES")
21 READ(JIN,12,ERR=21) YSES
22 IF (YES .EQ. YES) GO TO 2
REturn
24 END
SUBROUTINE SELECT(NAM,ICASE,ITABNO,LTABLE)

COMMON /JOUT/JOUT,JIN
COMMON /LIMIT/NNAME
CHARACTER TNAME(*)
INTEGER TCASE,ITABLE
COMMON /NAME/TNAME(12,41),NPTR(41)
COMMON /CASE/TCASE(116)
COMMON /TABLE/ITABLE(32)
CHARACTER NAME(*)
DIMENSION NAM(2)
WRITE(/JOUT,10)
10 FORMAT('WRITE FACILITY NAME IN A8 FORMAT')
11 READ(JIN,12,ERR=11) NAM
12 FORMAT(244)
13 WRITE(/JOUT,20)
20 FORMAT('WRITE CASE NUMBER IN I1 FORMAT')
21 READ(JIN,22,ERR=21) ICASE
22 FORMAT(11)
19 WRITE(/JOUT,30)
30 FORMAT('WRITE TABLE NUMBER IN I1 FORMAT')
31 READ(JIN,32,ERR=31) ITABNO
32 FORMAT(11)
23 LTABLE=0
24 IF(INAME.EQ.0)RETURN
25 DO 36 I=1,NNAME
26 IF(INAM(I).NE.TNAME(I,1)) GO TO 36
27 IF(INAM(I).NE.TNAME(I,2)) GO TO 36
28 GO TO 38
29 CONTINUE
30 RETURN
31 NCASE=NPTR(I)-1+ICASE
32 IF(ITABLE(NCASE).EQ.0)RETURN
33 NTABLE=CASE+CASE(I)+ITABNO
34 IF(ITABLE(NTABLE).EQ.0)RETURN
35 LTABLE=TABLE
36 RETURN
37 END
<table>
<thead>
<tr>
<th>Line</th>
<th>Code</th>
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<tr>
<td>1</td>
<td>SUBROUTINE SHEET(ISHEET, DATE, SYSNUM, NTABLE)</td>
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<tr>
<td>2</td>
<td>INTEGER ISHEET</td>
</tr>
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<td>3</td>
<td>COMMON /ISHEET/TSHEET(16, 32)</td>
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<tr>
<td>4</td>
<td>CHARACTER SYSNUM(4), DATE(4)</td>
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<td>5</td>
<td>DIMENSION SYSNUM(20), DATE(2)</td>
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<td>6</td>
<td>COMMON /JOUT: JOUT: JIN</td>
</tr>
<tr>
<td>7</td>
<td>WRITE,JOUT, 10</td>
</tr>
<tr>
<td>10</td>
<td>FORMAT(15X, 'WRITE SHEET NUMBER IN 12 FORMAT WITH LEADING ZEROS')</td>
</tr>
<tr>
<td>11</td>
<td>READ,JIN,12, ERR=111 ISHEET</td>
</tr>
<tr>
<td>12</td>
<td>IF NTABLE .EQ. 0 GO TO 14</td>
</tr>
<tr>
<td>13</td>
<td>IF ISHEET(ISHEET, NTABLE), EQ.01 THEN</td>
</tr>
<tr>
<td>14</td>
<td>NTABLE = NTABLE</td>
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<tr>
<td>15</td>
<td>ELSE</td>
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<tr>
<td>16</td>
<td>RETURN</td>
</tr>
<tr>
<td>17</td>
<td>END IF</td>
</tr>
<tr>
<td>18</td>
<td>WRITE,JOUT, 20</td>
</tr>
<tr>
<td>19</td>
<td>WRITE DATE IN FORMAT MM/DD/YY*</td>
</tr>
<tr>
<td>21</td>
<td>READ,JIN, 22, ERR=21 DATE</td>
</tr>
<tr>
<td>22</td>
<td>FORMAT(2A4)</td>
</tr>
<tr>
<td>23</td>
<td>WRITE,JOUT, 30</td>
</tr>
<tr>
<td>24</td>
<td>FORMAT(5X, 'WRITE SYSTEM LABEL IN 40 FORMAT WITHIN THE LIMITS')</td>
</tr>
<tr>
<td>25</td>
<td>* INDICATED '*/IX,'<strong>,'76X,'</strong>'</td>
</tr>
<tr>
<td>26</td>
<td>READ,JIN, 32, ERR=31 IF SYSNUM(I)=I=19</td>
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<tr>
<td>27</td>
<td>FORMAT(19A1)</td>
</tr>
<tr>
<td>28</td>
<td>SYSNUM(20)= *</td>
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<tr>
<td>29</td>
<td>RETURN</td>
</tr>
<tr>
<td>30</td>
<td>END</td>
</tr>
</tbody>
</table>

END FTN 72 IBANK 137 DBANK 514 COMMON

BHDG, P  SHTNUM

BPR1, S  SHTNUM
FUPPUR 2BRIH 3057 11 01/14/81 08:54:31
SUBROUTINE SHTNUM(1SHEET)
COMMON /IOUT/ JOUT, JIN
WRITE(JOUT, 10)
10 FORMAT(5X, 'WRITE SHEET(1-16) NUMBER TO BE PRINTED IN 12 FORMAT',
     5X, 'USING LEADING ZEROS',/)
     60X, 'USE 99 IF ALL SHEETS ARE REQUIRED')
11 READ(JIN, 12, ERR=11) ISHEET
12 FORMAT(12)
RETURN
END
<table>
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<th>Update</th>
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<th>Page</th>
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<tr>
<td>1 AASG.URI STREAM,U95,SAVE04,CGS STREAM TABLE</td>
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<tr>
<td>2 ACOPY,GM CGS.STREAM.</td>
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<td>3 ACOPY,GM 14,STREAM.</td>
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<tr>
<td>4 ACOPY,GM 16,STREAM.</td>
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<td>5 ACOPY,GM 20,STREAM.</td>
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<tr>
<td>6 AXOT MIR*ADS,TPNO</td>
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<td>7 STREAM</td>
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<td>8 AFREE STREAM</td>
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<td>AHDG,P XMAP</td>
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<td>2. Table of Contents</td>
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<td>3. Abstract</td>
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<td>e. Detailed Flow Charts</td>
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(4) Magnetic Tape Save Labels
(5) Computer Time Requirements

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| Restrictions and/or Limitations |       |       |       |       |       |
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|                                |       |       |       |       |       |

| Diagnostics |       |       |       |       |       |
| Test Case   |       |       |       |       |       |

9. Symbols

10. References

11. Appendices
   a. Documentation Checklist
   b. Documentation Approval
   c. Other
APPENDIX B

DOCUMENTATION APPROVAL