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PROGRAM DESIGN SPECIFICATION FOR  
THE TEST CONTROL PROGRAM (JTCPZ)  
A SUB-PROGRAM OF THE JOVIAL INTERPRETER SYSTEM

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INTRODUCTION

The Test Control Program (hereinafter referred to as JTCPZ) monitors the operation of the three general functions of the JOVIAL Interpreter System:

- 1) Assembly of "Master" Communication Pool;
- 2) Assembly of the system programs onto a system master tape;
- 3) Interpretation of JOVIAL-coded programs.

During any particular test run (which may consist of the testing of several operational programs) the first two general functions, if requested through the proper control card, are performed only once, prior to the testing of the first operational program. A running log is written both on- and off-line during the system operation, indicating: (a) the system sub-program currently operating, (b) any error which might cause the particular test to be terminated, (c) the conclusion of the particular test, and (d) the conclusion of the entire test run and the disposition of the system tapes. Control of the system's operation is exercised by JTCPZ through its functions of reading into core from tape each system sub-program (along with its related data environment) in the predefined sequence of operation, transfer of control to it, and subsequent receipt of system control from the particular system sub-program upon completion of its operation.

The sequence of operation of the functions is controlled by Test Control Cards in the card reader. One control card is required to effect the operation of each general function as outlined above; each card contains the coded options peculiar to that function. The absence of any of these control cards would create a null operation of that function during the test run, i.e., either or both of the first two functions listed above may be bypassed.

Although the control cards are always read in via the card reader, the programs to be tested may be either on cards or prestored tape. A sense switch is set on the console to indicate the source of input, and JTCPZ, through the program identification of the TEST ID card, either positions the tape (to be read in by JALLZ), or indicates the card reader as source of input.

ENVIRONMENT

Sense Indicator

If an error is detected in the JOVIAL-coded program during processing by JALLZ, the latter sets Sense Indicator Bit Twelve and transfers control back to JTCPZ. A message is written indicating the presence of an error, and the particular test is terminated.

Communication Registers

TSSI: This is a register in "permanent core" which is utilized for storage of the Sense Indicator register during the operation of the First Pass of the Interpreter (JALLZ) and the Second Pass of the Interpreter (JOLLZ). The Sense Indicator register is stored here prior to the operation of the above programs, and then restored after the program's operation.

INPUTS

Sense Switches on Console

A test run will be made either from cards (in the card reader) or from prestored tape. No one run will incorporate both of these input media. When a test run is on cards, Sense Switch One on the console will be set to On (depressed). When the tests are on prestored tape, the Sense Switch will be Off, or in its normal position.

Tapes

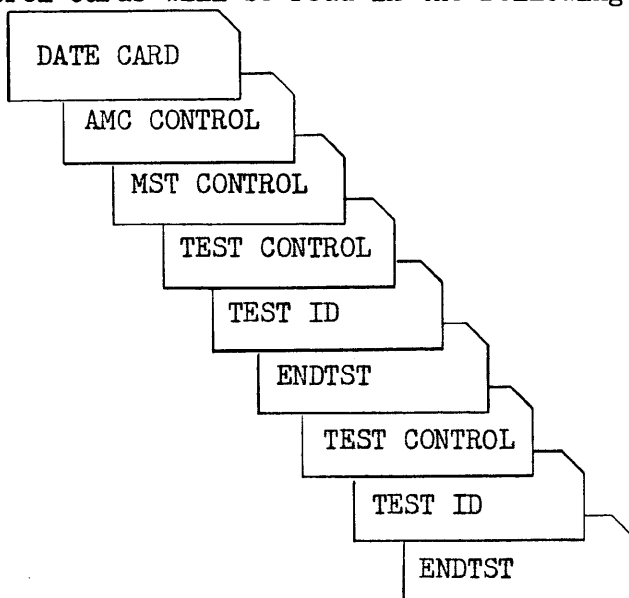
There are two tapes that serve as input to JTCPZ: the master tape, which contains the system sub-programs, and a buffer tape containing table input for JOLLZ. A SEARCH sub-routine is employed by JTCPZ to locate a particular program on the master tape; and, dependent upon the parameter set for SEARCH, the program is either read into core, or the tape is positioned to the identification record of the program (see JMSTZ for description of program identification record). The Master Communication Pool is read into core by JTCPZ after the SEARCH sub-routine positions the master tape.

Five tables of environmental data are written on a buffer tape by JALLZ. These tables are read into core by SEARCH prior to operation of JOLLZ.

Cards

Card input to JTCPZ consists of a series of control cards which define certain parameters and conditions of operation for a particular test. Although the TEST ID Card may be prestored (this occurs whenever the JOVIAL-coded programs are on prestored tape), all other control cards for the run are read in via the card reader. All control cards are based on six-character, left-justified BCD fields, and each card is punched starting in column one. All common information (i.e., the identification of each type of card) must be punched exactly as illustrated in Diagram 1. Since a test will be discontinued when a mispunch in the identification is encountered, it is imperative that care be exercised in the punching of the control cards.

The control cards will be read in the following order:



#### Date Card

The first card in the reader should be a date card. It contains "DATE" in columns 1 through 4, and the month, day, and year in columns 7 through 12. The absence of this card in any test run will merely generate "NO DATE" to be printed in the output heading of each test; its presence is not imperative to the successful operation of the system.

#### Assemble Master Compool Control Card

Only one Assemble Master Compool control card may be used per test run, and the request may not exceed three Compool assemblies.

Columns 1-5 - JAMCZ

Columns 7-12 - Ident of first Compool

Columns 13-18 - Ident of second Compool

Columns 19-24 - Ident of third Compool

Column 25 - Blank for Assemble Mode  
1-7 refers to which Compools, if any, have revisions in the card reader for the Reassemble Modes.

- 1 - card revisions to first Compool
- 2 - card revisions to second Compool
- 3 - card revisions to first and second Compools
- 4 - card revisions to third Compool
- 5 - card revisions to first and third Compools
- 6 - card revisions to second and third Compools
- 7 - card revisions to all three Compools

System Tape Loading Program Control Card

The presence of this card indicates to JTCPZ that a new system master tape is to be loaded. It will be used frequently in conjunction with an Assemble Master Compool request.

Columns 1-3 - MST, Identifies this as an AMC Control Card

Columns 4-6 - Identification code to be placed in output tape(s)

The following fields are punched if other than the preset units shown are desired. (See Program Specification for JMSTZ.)

Columns 7-12 - Binary Input Tape A-1

Columns 13-18 - Binary Input Tape A-4

Columns 19-24 - Binary Input Tape A-3

Columns 25-30 - Binary Output Tape B-3

Columns 31-36 - Binary Output Tape C-3

Columns 37-42 - Binary Output Tape D-3

Column 43 - Number of Output Tapes = 3

Test Control Card

A test is requested by use of this card which specifies those parameters necessary for the functioning of the system.

Columns 1-6 - Program Identification - the unique identification assigned by the programmer to his JOVIAL-coded program.

Columns 7-10 - TEST - card identification for recognition by JTCPZ.

Columns 13-18 - Test Number - a sequential numbering system used to identify the tests for this program.

Columns 19-24 - Compool Identification - the identification of the Compool to be used with this particular program.

Columns 25-28 - FULL or blank - type of tracing mode requested; automatic trace mode if blank.

Columns 31-36 - STAREV or blank - denotes any card revisions to table simulation input data.

Columns 37-42 - POLREV or blank - denotes any card revisions to the program to be tested.

Test ID Card

This card initiates each test, and will be prestored if the test run is to be made entirely from tape. This card is the first card of the test deck, not the revision deck.

Columns 1-6 - Program Identification - the same as appears in columns 1-6 of the Test Control Card; if these two ID's do not exactly match, the test will be terminated on an error condition.

Columns 7-12 - TESTID - card identification for recognition by JTCPZ.

Columns 13-60 - Comments by programmer - any comments which the programmer desires as an output heading, with the restriction that the programmer's name appear first: the comments will be printed exactly as written, thus necessitating the inclusion of all spacing.

End-of-Test Card

Columns 1-6      ENDTST - The "end-of-test" card is the last card of any particular test. It signifies to JTCPZ that this test has been completed.



# CONTROL CARD FORMATS FOR JTCPZ INPUT

| CC<br>CARD             | 1-6              | 7-12            | 13-18                                       | 19-24           | 25-30                 | 31-36                 | 37-42                 | 43-48 | 49-54                   | 55-60 |
|------------------------|------------------|-----------------|---|-----------------|-----------------------|-----------------------|-----------------------|-------|-------------------------|-------|
| DATE<br>CARD           | DATE             | MODAYR          |   |                 |                       |                       |                       |       |                         |       |
| AMC                    | JAMCZ            | CCMPCCL<br>ID 1 | CCMPCCL<br>ID 2                             | CCMPCCL<br>ID 3 | 1<br>(Revisions)<br>7 |                       |                       |       |                         |       |
| MST                    | MSTXXX           | INPUT<br>TAPE   | INPUT<br>TAPE                               | INPUT<br>TAPE   | OUTPUT<br>TAPE<br>1   | OUTPUT<br>TAPE<br>2   | OUTPUT<br>TAPE<br>3   | X     | # of<br>OUTPUT<br>TAPES |       |
| TEST<br>CCNTFL         | PROGRAM<br>IDENT | TEST            | TEST<br>NO.                                 | CCMPCCL<br>ID   | FULL<br>or<br>BLANK   | STAREV<br>or<br>BLANK | POLREV<br>or<br>BLANK |       |                         |       |
| TEST<br>ID             | PROGRAM<br>IDENT | TESTID          | <i>Programmer's name and comments</i> ----- |                 |                       |                       |                       |       |                         |       |
| END OF<br>TEST<br>CARD | ENDTST           |                 |   |                 |                       |                       |                       |       |                         |       |

FUNCTIONS

General

1. Monitors the operation of JAMCZ;
2. Monitors the operation of JMSTZ;
3. Operates the parameter tests of JOVIAL-coded operating programs.

Card Reading, Tape Handling, and Printing

1. Date Card - if this card is in the reader, the date is stored for printing; if not, "NO DATE" is stored, and a test is made to determine what control card was read.
2. Reads control cards from the card reader.
3. Searches for a given test:
  - a. If the test run is on tape, the tape is positioned on the basis of the program identification in the Test Control Card;
  - b. If the test run is all on cards, the program identification in the Test Control Card is matched with that in the TEST ID Card.
4. Searches and reads in from the master tape any Compool or program required in the operation of a test.
5. Prints a running log of the system operation during each test indicating successful completion or reason for termination.
6. Sets up page heading for each test and prints it on the off-line printer. The heading includes:
  - a. Program ID
  - b. Test number
  - c. Comments from TEST ID Card (programmer's name, etc.)
  - d. Compool ID
  - e. Master tape ID
  - f. Date of test
7. Rewinds system tapes at the end of each test run.
8. On the termination of a test due to an error, those cards associated with the test in question are read over, and a new test is initiated.

JTCPZ/JAMCZ

1. Reads Assemble Master Communication Pool Control Card.
2. Reads in JAMCZ program from master tape and transfers control to it.
3. Checks error indicator set by JAMCZ and sets it for subsequent JMSTZ operation.

JTCPZ/JMSTZ

1. Reads JMSTZ Control Card.
2. Communicates status of JAMCZ error indicator to JMSTZ.
3. Reads in JMSTZ program from master tape and transfers control to it.

TCP/Test Control

1. Reads Test Control Card and sets required parameters for the ensuing test.
2. Reads Test ID Card from either the card reader or prestored tape and compares the two program ID's; on an equal condition the test is inaugurated; on a mismatch the test is terminated and the next Test Control Card is read.
3. Terminates a particular test if the Test Control Card is missing.
4. Initiates the operating path of the system by reading in, and transferring control to, the system sub-programs in their predefined sequence of operation:

Set indicators for:

- a. revisions to JOVIAL-coded program in the card reader;
- b. revisions to the Table Simulation Data in the card reader.

Read in Master Communication Pool;

Read in and transfer control to JALLZ;

Test error indicator upon completion of operation of JALLZ, and

terminate test if an error was located in the JOVIAL-coded program;

Read in and transfer control to JABCZ;

Read in and transfer control to JSTRZ;

Read in five environmental tables, created by JALLZ, for operation of JOLLZ;

Read in and transfer control to JOLLZ;

Read in and transfer control to JDSYZ;

Read in and check card from reader for ENDTST card;

Initiate new test on presence of Test Control Card in card reader.

If end of test, print message signifying this and rewind system tapes.

OUTPUTS

Sense Indicator

There are two sense bits set by JTCPZ, contingent upon the status of revisions:

Sense Bit Six is set when there are revisions to the JOVIAL-coded program in the card reader; and

Sense Bit Eight is set when there are revisions to the input data of JSTRZ in the card reader.

Communication Registers

DATE, DATE+1: There are two consecutive registers in "permanent core" which contain the date of the test run. The month, day, and year (separated by the conventional slash marks) are stored, right-oriented, in these two registers for printout on the first page of each test's results. The date is also printed on the heading page for the Master Compool Program.

TRAP1, TRAP2: These are two registers in "permanent core" which are set to indicate the type of tracing mode to be utilized by JOLLZ and JDSYZ. They are set as follows (from information on the Test Control Card):

TRAP1 =  $\emptyset$ , TRAP2  $\neq \emptyset$  - Automatic trace mode;  
TRAP1  $\neq \emptyset$ , TRAP2  $\neq \emptyset$  - Full trace mode.

MESSAGE PRINTOUTS

One of the functions of JTCPZ is the on- and off-line printout of a log of the system operation and of any error which would effect the termination of a particular test prior to its normal completion. Following is a descriptive list of all messages generated by JTCPZ:

1. NO DATE

This indicates the omission of a date card in the card reader, and is printed from communication registers DATE and DATE+1.

2. ASSEMBLE MASTER COMPOOL

Printed on the first line of the Master Compool output for identification of program operation.

3. SYSTEM TAPE LOADING PROGRAM

Printed on the first line of the JMSTZ output for identification of program operation.

4. ERROR IN CARD, IMAGE BELOW

If a JTCPZ input card was not of the proper format, this message is printed out, followed by the actual card image.

5. INTERPRETER SECOND PASS

Printed on the first line of the JOLLZ output for identification of program operation.

6. TEST DECK ID DOES NOT MATCH CONTROL CARD ID

When a mismatch of program identifications between these two cards occurs, this message is written.

7. NO TEST ON TAPE CORRESPONDING TO CONTROL CARD ID

If the test (JOVIAL-coded program) is on prestored tape, and the SEARCH subroutine of JTCPZ cannot locate this program, this message is written.

8. INTERPRETER FIRST PASS

Printed on the first line of the JALLZ output for identification of program operation.

9. TEST TERMINATED BY ERROR IN POL

If, during operation of JALLZ, an error is detected in the JOVIAL-coded program, control is returned to JTCPZ, and Sense Indicator Bit Twelve indicates an error. This message is then written out prior to termination of the test.

10. ASSEMBLE BABY COMPOOL

Printed on the first line of the JABCZ output for identification of program operation.

11. DATA SIMULATION PROGRAM

Printed on the first line of the JSTRZ output for identification of program operation.

12. TAPE DISPOSITION

|                       |          |
|-----------------------|----------|
| SAVE MASTER TAPE      | DRIVE A1 |
| PRINT OFF-LINE        | DRIVE A2 |
| PRINT OFF-LINE        | DRIVE B1 |
| DISPOSE OF C1, B1, D2 |          |

This message is printed upon completion of an entire test run, and indicates to the computer operators the procedure to be followed in handling the system tapes.

13. DATA PROCESSING PROGRAM

Printed on the first line of the JDSYZ output for identification of program operation.

14. TEST COMPLETE

Printed after the conclusion of operation of JDSYZ; this denotes the successful completion of system operation on one JOVIAL-coded program.

15. TEST CONTROL RUN COMPLETE

Printed upon the completion of an entire test run.

16. UNABLE TO READ IN ABOVE PROGRAM

This message is generated when the program in question cannot be located on the tape by the SEARCH subroutine.

17. UNABLE TO LOCATE MASTER COMPOOL

This message is generated when there is a mismatch of Compool identifications between the SEARCH subroutine parameter (obtained from the Test Control Card) and the Compool on tape.

18. LOGICAL END-OF-TAPE  
TAPE UNIT UNASSIGNED  
NO READ MACRO  
THREE UNSUCCESSFUL TRIES  
ILLEGAL EOF  
TAPE NOT ASSIGNED ON WREOF  
CANNOT WRITE EOF ON DLO

The above messages will be generated by JTCPZ whenever the input-output routines are rendered non-operative. The appropriate error message will appear under that program currently operating, thus localizing to some degree the source of error.

19. TEST CONTROL CARD MISSING

Since a test cannot be initiated until a matching of program identifications occurs, this message denotes the source of error as opposed to an actual identification mismatch.

20. ENDTST CARD MISSING

Although this type of error will not affect the system operation, it nevertheless appears to denote the omission of the ENDTST card in the deck of control cards.

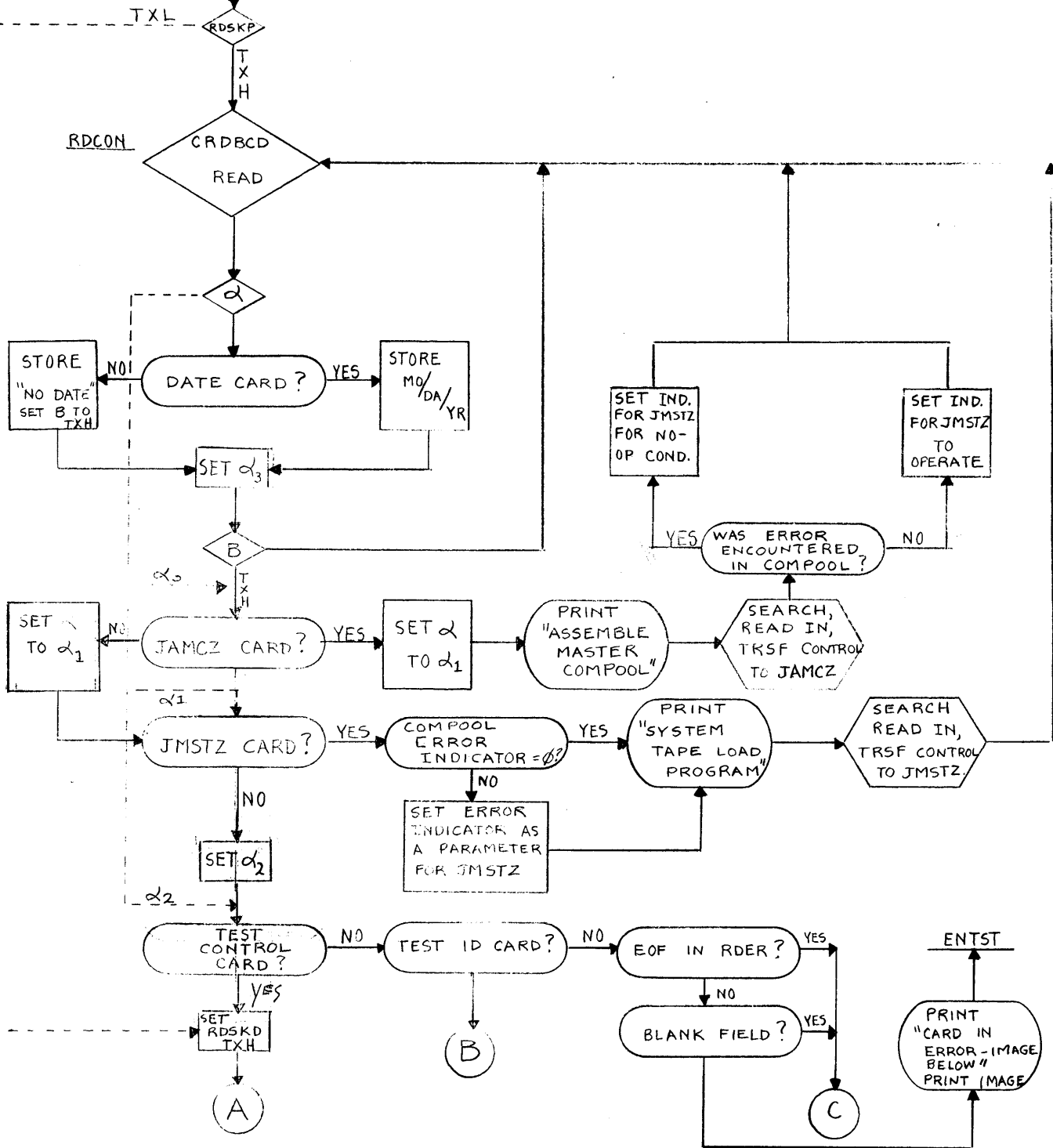
21. NO BACK MACRO  
ILLEGAL BACK OPERATION

One of these two messages is generated within the SEARCH subroutine whenever it cannot position the tape to the program identification record after having obtained a matching of program identifications.

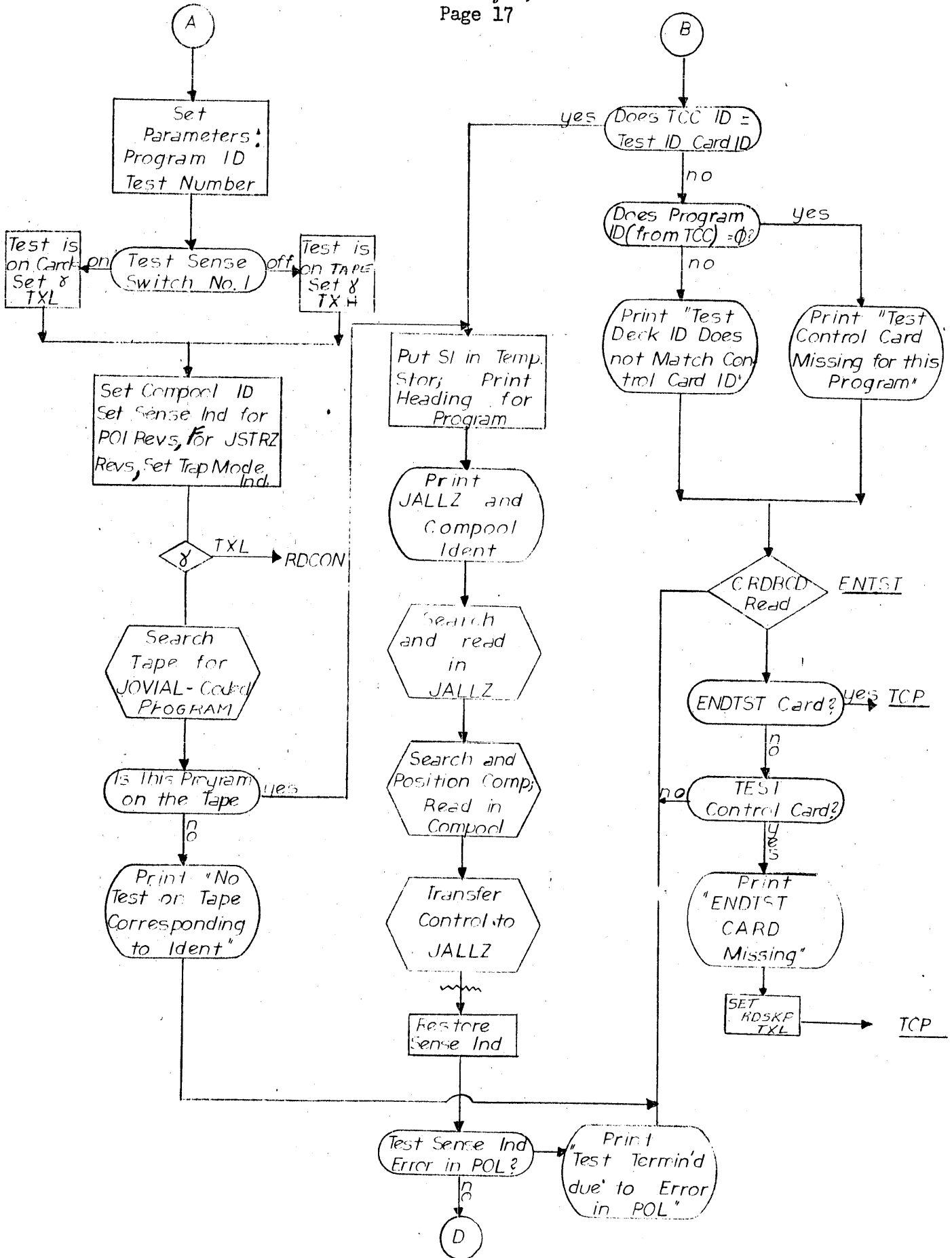
All output messages denoted above will appear both on- and off-line to facilitate tape handling by the computer operators, and to give a "permanent" message on the DLO tape as an aid in future system operation.

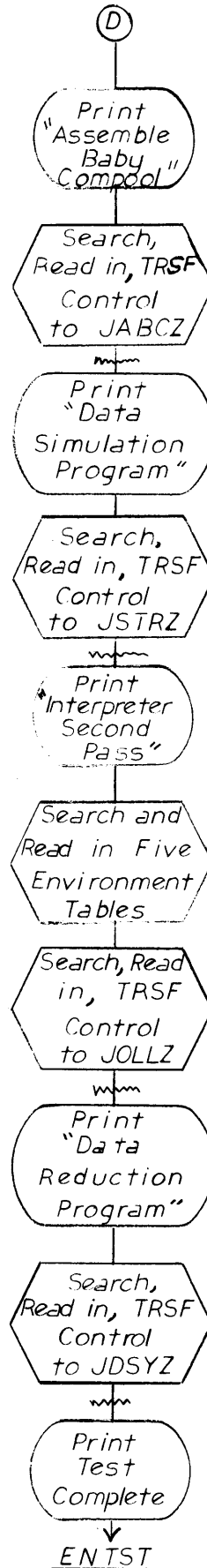
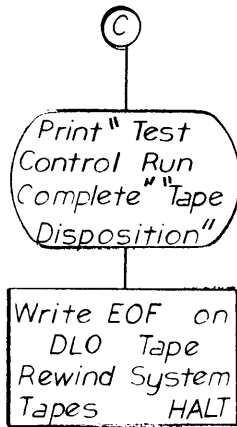
TCP INTO  
 CORE BY  
 JMSTZ

TCP  
 INITIALIZATION:  
 CLEAR INTERCOM  
 REGISTERS =  $\emptyset$   
 (TRAPZ  $\neq$  0)









A listing of the program symbolic deck will be issued as the first supplement to this document (FN-10-200, S-1).

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