READ TEST TAPE ROUTINE

A. PURPOSE:

TO PROVIDE A PROGRAM THAT WILL RUN CUSTOMER ENGINEERING TESTS FROM TAPE.

B. LOADING AND RUNNING PROCEDURES:

1. LOAD THE TAPE ON TAPE DRIVE 1. USE SAME DENSITY AS THAT IN WHICH TAPE WAS WRITTEN. TEST TAPES WRITTEN AT THE PLANT ARE WRITTEN IN LOW DENSITY 200 CHARACTERS PER INCH.

2. LOAD WORKING REEL ON TAPE DRIVE 4. USE HIGH DENSITY, 556 CHARACTERS PER INCH, FOR BLOCK NUMBER 5500 AND BLOCK NUMBER 5530. USE EITHER DENSITY FOR OTHER TESTS.

3. PRESS TAPE LOAD KEY-
AFTER LOADING THE TEST TAPE ROUTINE, THE MACHINE PROCEEDS TO A STOP AT ADDRESS LOCATION 1369.

4. IF DESIRED, PUT A HALT, C B A 8 2 1 WM, IN S87 TO STOP THE TAPE AFTER TESTS HAVE RUN AND THE TAPE HAS REWOUND.

5. SET SENSE SWITCHES, ENTER SELECTION DIGITS AND CODES AS DESIRED. PUSH START.

TO SIMPLIFY THE ENTERING OF SELECTION DIGITS, USE THE FOLLOWING PROCEDURE:

A. MANUALLY PUNCH A CARD WITH THE FOLLOWING INFORMATION.

```
        1            2            3            4            5            6            7            8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
,008015,022026M080S80BT69                              XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

SELECTION DIGITS
CARD COLUMNS 51 THROUGH 80 CORRESPOND TO
STORAGE LOCATIONS 1251 TO 1280.

B. PUSH START RESET KEY AND LOAD THE PREPARED CARD. AFTER EXECUTING THE CARD THE FIRST TEST FROM TAPE WILL BE LOADED. KEEP THIS LOAD CARD. IT CAN BE USED EVERY TIME TESTS ARE RUN FROM TAPE.

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6. RUNNING ONLY ONE TEST ASSOCIATED WITH A SPECIAL FEATURE, BY PASSING ALL OTHERS.

    IT MAY BE DESIRABLE TO RUN ONLY ONE TEST ASSOCIATED WITH A SPECIAL FEATURE.
    THIS IS DONE BY COMPARING THE BLOCK NUMBER OF THE TEST, MANUALLY ENTERED IN
    S73 THROUGH S76, TO THE BLOCK NUMBER OF THE TEST AS IT IS READ IN FROM TAPE
    IN LOCATIONS 073 THROUGH 076. WITH SENSE SWITCH F ON, AN EQUAL COMPARE
    CAUSES THE TEST TO BE EXECUTED IF THE PROPER SELECTION DIGIT HAD BEEN
    PREVIOUSLY ENTERED IN STORAGE.

    AFTER LOADING THE TEST TAPE ROUTINE, THE MACHINE STOPS.

    1. ENTER SELECTION DIGIT, IF REQUIRED BY THE TEST.
                        EXAMPLE -- 1 IN S58 FOR DIVIDE.
    2. ENTER BLOCK NUMBER IN S73 THROUGH S76.
                        EXAMPLE -- 3210 FOR DIVIDE.
    3. SET SENSE SWITCH F ON.
    4. PRESS START KEY.

    NOTE: SETTING SENSE SWITCH F OFF CAUSES ALL EQUAL COMPARES TO BE BY PASSED.
          IN THE ABOVE EXAMPLE WITH SENSE SWITCH F OFF, THE DIVIDE TEST WILL BE
          BY PASSED. ALL TESTS NOT REQUIRING A SELECTION DIGIT WILL BE EXECUTED.
          ALL TESTS REQUIRING A SELECTION DIGIT AND FOR WHICH A SELECTION DIGIT
          HAS BEEN ENTERED WILL BE EXECUTED WITH THE ONE EXCEPTION OF DIVIDE.

    NOTE ALSO, THAT WITH SENSE SWITCH F OFF AND NO BLOCK NUMBER IN S73 THROUGH S76,
          ALL TESTS NOT REQUIRING SELECTION DIGITS WILL BE EXECUTED BECAUSE OF
          THE UNEQUAL COMPARISON. AND ALL TESTS REQUIRING A SELECTION DIGIT AND
          FOR WHICH A SELECTION DIGIT HAS BEEN ENTERED, WILL BE EXECUTED.

    FURTHER NOTE THAT, FOR TESTS REQUIRING A SELECTION DIGIT, THE ABSENCE OF THE
          SELECTION DIGIT CAUSES THE TESTS TO BE BY PASSED REGARDLESS OF THE
          SETTING OF SENSE SWITCH F.

7. RUNNING MULTIPLE TESTS ASSOCIATED WITH A SPECIAL FEATURE, BY PASSING ALL OTHERS.

    IT MAY BE DESIRABLE AT TIMES TO RUN ONLY THOSE TESTS THAT ARE ASSOCIATED WITH
    A GIVEN SPECIAL FEATURE AND BY-PASS ALL OTHERS. THIS MAY BE DONE AS DESCRIBED
    IN THE FOLLOWING EXAMPLES BY COMPARING, FOR AN EQUAL CONDITION, ONLY THE TWO
    HIGH ORDER POSITIONS OF THE BLOCK NUMBERS IN 073 AND 074 TO THAT MANUALLY SET
    UP IN 1273 AND 1274. MANUALLY MODIFY THE TAPE READ ROUTINE IN STORAGE TO DO THIS.

COLUMN BINARY	MOVE AND BINARY DECODE	3000	1	IN S56
	MOVE AND BINARY CODE	3010	1	IN S56
	PUNCH COLUMN BINARY	3020	1	IN S56
	READ COLUMN BINARY	3030	1	IN S56
	BIT TEST	3040	1	IN S56
MULTIPLY-DIVIDE	MULTIPLY	3200	1	IN S58
	DIVIDE	3210	1	IN S58

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IBM

DIAGNOSTIC FUNCTION TEST
REPRODUCTION

PART NO. 451459
SHEET 3 OF 6
BLOCK NO. 5310E

AFTER LOADING THE READ TEST TAPE ROUTINE, THE MACHINE STOPS.

1. CHANGE 6 TO 4 IN LOCATIONS 1341 AND 1344.
2. ENTER I IN LOCATION 1256 FOR COLUMN BINARY, OR
   I IN 1258 FOR MULTIPLY-DIVIDE.
3. ENTER THE TWO HIGH-ORDER POSITIONS OF BLOCK NUMBERS
   30 FOR COLUMN BINARY, OR 32 FOR MULTIPLY-DIVIDE IN
   LOCATIONS 1273 AND 1274.
4. SET SENSE SWITCH F TO THE ON POSITION.
5. PRESS START KEY.

C. TEST PROCEDURE:

THIS ROUTINE MUST BE WRITTEN ON TAPE BY THE WRITE TEST TAPE ROUTINE. IT IS
CHAINED TO THE WRITE ROUTINE. TEST DECKS TO BE WRITTEN ON TAPE ARE CHAINED
BEHIND THE READ TEST TAPE ROUTINE.

BECAUSE THE READ TEST TAPE ROUTINE IS THE FIRST RECORD ON THE TEST TAPE, THE
FIRST INSTRUCTION MUST BE IN 001. THIS POSITION IS ADDRESSED FIRST WHEN THE FIRST
TAPE RECORD IS LOADED BY USE OF THE TAPE LOAD KEY.

THE WRITE TEST TAPE ROUTINE WILL HAVE TO CHANGE THE INFORMATION LEFT IN THE
READ-IN AREA BY THE TRAILER CARD OF THE READ TEST TAPE ROUTINE. BUT BEFORE THIS
OCCURS, THE TRAILER CARD MUST LOAD BS88 INTO 377 SO THAT WHEN THE READ TEST TAPE
ROUTINE FIRST CALLS FOR THE EXECUTION OF A TEST AFTER A REWIND, THE PROGRAM WILL
BRANCH TO S88 AND CALL FOR THE FIRST TEST TO BE READ. THE TRAILER CARD MUST DO
ONE OTHER THING. IT MUST CAUSE A BRANCH TO THE WRITE TEST TAPE ROUTINE.

THE FIRST THING THAT THE WRITE TEST TAPE ROUTINE DOES IS TO CHANGE THE
INSTRUCTION IN 001 TO A BRANCH TO T65. NEXT, THE RECORD IS WRITTEN ON TAPE.
NOW, WHEN THE TEST TAPE IS LOADED INTO THE 1401, THE FIRST INSTRUCTION CAUSES
A BRANCH TO T65, WHERE THE READ TEST TAPE ROUTINE STARTS.
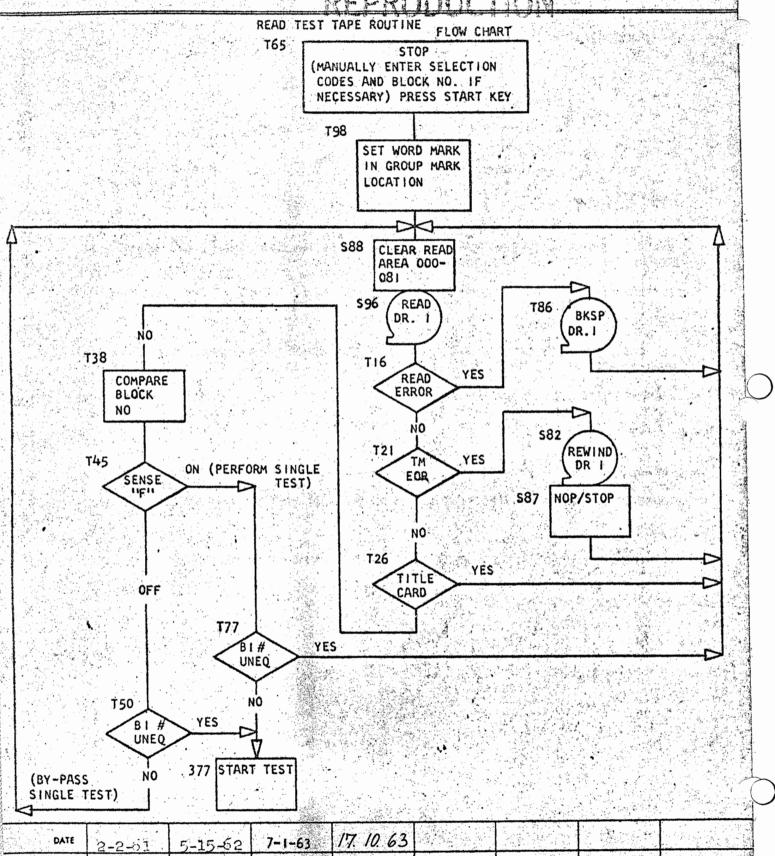
D. STOPS:

1365 IN STORAGE ADDRESS REGISTER - HALT - ENTER SELECTION DIGIT.

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READ TEST TAPE ROUTINE   FLOW CHART

T65
STOP
(MANUALLY ENTER SELECTION
CODES AND BLOCK NO. IF
NECESSARY) PRESS START KEY

T98
SET WORD MARK
IN GROUP MARK
LOCATION

S88 CLEAR READ
AREA 000-
081

S96 READ
DR. 1

T86 BKSP
DR. 1

T38
COMPARE
BLOCK
NO

NO

T16 READ
ERROR   YES

NO

T21 TM
EOR   YES

S82 REWIND
DR 1

S87 NOP/STOP

T45 SENSE
"F"   ON (PERFORM SINGLE
TEST)

OFF

T26 TITLE
CARD   YES

T77 B1#
UNEQ   YES

NO

T50 B1#
UNEQ   YES

NO

377 START TEST

(BY-PASS
SINGLE TEST)

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1401 DATA PROCESSING SYSTEM
DIAGNOSTIC FUNCTION TEST

PART NO. 451459
SHEET 5 OF 6
BLOCK NO. 5310E

PROGRAM LISTING FOR USE WITH FLOW CHART

READ TEST TAPE ROUTINE   5310E

INSTRUCTION ADDRESS	OP	A	B	REMARKS
1282	S82	U %U1	R	REWIND DRIVE 1
1287	S87	N		CHANGE TO . TO STOP BEFORE RERUN
1288	S88	/ 081		CLEAR GM-WM FROM 081
1292	S92	. S51		SETUP MOVE FOR GROUP MARK
1296	S96	L %U1	003R	READ RECORD
1304	T04	M S51		SET B-STAR TO END OF RECORD PLUS ONE
1308	T08	L T98		LOAD GM-WM IN HIGHEST READ ADDR PLUS 1
1312	T12	□ S51		
1316	T16	B T86	L	BRANCH IF READ ERROR
1321	T21	B S82	K	BRANCH IF END OF REEL
1326	T26	B S88	080A	BRANCH TO READ NEXT RECORD IF TITLE
1334	T34	. S73		SET WORD MARK IN BLOCK NUMBER
1338	T38	C 076	S76	COMPARE BLOCK NUMBERS
1345	T45	B T77	F	F ON - PERFORM ONLY IF COMPARISON EQUAL
1350	T50	B 377	/	GO PERFORM TEST
1355	T55	B S88		BYPASS TEST WITH BLOCK NO. IN S73-S76
1365	T65	. T69		STOP TO ENTER BL NO. + SELECTION CODES
1369	T69	. T98		SET WORD MARK IN GROUP MARK LOCATION
1373	T73	B S88		GO READ RECORD
1377	T77	B S88	/	GO READ RECORD
1382	T82	B 377		PERFORM TEST WITH BLOCK NO. IN S73-S76
1386	T86	U %U1	B	BACKSPACE TO RE-READ
1391	T91	B S88		GO RE-READ
1398	T98			GROUP MARK IN T98
377	377	B S88		SETUP READ FOR FIRST TEST

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DIAGNOSTIC FUNCTION TEST

PART NO. 451459

SHEET 6 OF 6

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TABLE OF UNPRINTABLE CHARACTERS

LP-LEFT PARENTHESIS	12 5 8	SE-SEMICOLON	11 6 8	DE-DELTA	11 7 8
WS-WORD SEPARATOR	0 5 8	LT-LESS THAN	12 6 8	PZ-PLUS ZERO	12 0
TS-TAPE SEGMENT MARK	0 7 8	GT-GREATER THAN	6 8	TM-TAPE MARK	7 8
GM-GROUP MARK	12 7 8	MZ-MINUS ZERO	11 0	CO-COLON	5 8
RP-RIGHT PARENTHESIS	11 5 8	AP-APOSTROPHE	0 6 8		

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#012012;015022,029033N          1C01                    READ TEST TAPE ROUTINE   5310E00A
L058T07,587S88,S92S96,T04T081001UZUIRN/081,S51LZU1001RMS51                        5310B 02
L069T44;T12T16,T21T26,T34T381001LT98mSS18T86LBS82KBS88080A,S73C076S76             5310B 03
L069T81,T50T55,T65T69,T73T7710018T77FB377/8S88          .T69,T98BS88BS88V         5310E 04
L049T98;T86T91,T95T98,T98T9810018377UZU188S88           G                         5310E 05
                                                        H
8008    L0373818V09                       8S88          READ TEST TAPE ROUTINE    5310E 06
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