9 T 0 5 A

709 TAPE INTER-RECORD AP, LOAD CHANNEL TIMING AND CREEP TEST

729-1 TEST

A. PURPOSE OF TEST

1. TO CHECK AND DISPLAY TIMMING GOVERNING TAPE STOP AND START MOTION IN FORWARD AND REVERSE DIRECTIONS.

2. THIS PROGRAM CONTAINS THREE MAJOR AND INDEPENDENT SECTIONS FOR TESTING -- 1, RESET AND LOAD CHANNEL TIMING. 2, INTER-RECORD GAP TIMING AND 3. WRITE-BACKSPACE-WRITE OPERATION TO DETERMINE THE DEGREE OF FORWARD OR BACKWARD CREEP

NOTE -- THIS PROGRAM IS DEPENDENT UPON DATA TRANSMISSION FOR THE ACCURACY OF ITS MEASUREMENTS SO IT PRESUMES THE SUCCESSFUL OPERATION OF BASIC TAPE PROGRAMS IN THIS RESPECT.

B. METHOD OF TEST

1. SECTION 1 -- RESET AND LOAD CHANNEL TIMING TEST CONSISTING OF FOUR ROUTINES.

A. TEST WRITE SELECT AT LOAD POINT.

WITH THE TAPE POSITIONED AT LOAD POINT. A WRITE SELECT IS SENT TO TAPE, AN INDEX DELAY LOOP IS CARRIED OUT IN MAIN FRAME AND THEN THE RESET AND LOAD CHANNEL INSTRUCTION IS GIVEN. THIS INDEX DELAY CORRESPONDS TO THE WRITE DELAYS SO AN I-O CHECK WILL OCCUR IF THE MACHINE TIMINGS ARE SHORT.

SENSE SWITCH 5 UP WILL PERFORM A GO-NO GO TYPE OF CHECK WITH THE INDEX DELAY EQUAL TO NOMINAL PROGRAMMING TIMING. ONLY FAILURE TO PASS THIS TIMING WILL CAUSE A PRINT OUT.

SENSE SWITCH 5 DN WILL LOOP IN ROUTINE INCREASING THE DELAY UNTIL AN I-O CHECK OCCURS AND A PRINT OUT SHOWS THE MAXIMUM SUCCESSFULL TIME BETWEEN SELECT AND RESET LOAD CHANNEL.

B. PARALLEL ROUTINE FOR READ SELECT AT LOAD POINT.

C. PARALLEL ROUTINE FOR WRITE SELECT NOT AT LOAD POINT.

D. PARALLEL ROUTINE FOR READ SELECT NOT AT LOAD POINT.

2. SECTION 2 -- INTER-RECORD GAPE TIMING TEST.

STARTING AT LOAD POINT, THIS SECTION WRITES ON TAPE A SERIES OF GROUPS OF RECORDS, WITH FOR MARKER RECORDS SURROUNDING THREE TEST GAPS IN EACH GROUP. THE GAPS ARE GENERATED UNDER VARYING CONDITIONS, THEN ALL ARE MEASURED TO DETERMINE THE EFFECTS ON THE GAPS AND DISCLOSE TAPE MOTION WEAKNESSES.

THESE GAPS ARE WRITTEN UNDER MOST ADVERSE CONDITIONS AND IN REPEATED GROUPS WHICH WOULD DEVELOP AS FOLLOWS --

R1. RECORD R1, THE FIRST RECORD, INCREASES IN LENGTH WITH EACH RECORD GROUP. THE NUMBER OF WORDS IS PROPORTIONATE TO THE NUMBER OF INDEX COUNTS USED TO GENERATE THE VARIABLE GAP, G2. ONE WORD IS WRITTEN FOR EACH TWO INDEX COUNTS OF DELAY. THE LAST WORD OF R1 CONTAINS A NUMBER CORRESPONDING TO THE NUMBER OF MILLISECONDS THE GO LINE WAS HELD DOWN BEFORE THE VARIABLE GAP, G2, WAS GENERATED. DURING READ THIS RECORD IS USED TO LOCATE POSITION ON TAPE TO FIND THE INITIAL POINT TO START MEASURING THE TEST GAPS.

G1 GAP G1, THE FIRST TEST GAP, IS GENERATED AFTER THE GO LINE HAS BEEN DOWN 10 MILSEC. THIS GAP IS A FUNCTION OF SINGLE SHOT TIMINGS USED IN STARTING TO WRITE AND START-STOP TIMING.

R2. RECORD R2 IS A ONE WORD MARKER FOR GAP G1. -10- RECORD

G2. GAP G2 IS GENERATED AFTER THE GO LINE HAS BEEN HELD DOWN A VARIABLE LENGTH OF TIME. IF TAPE GAPS VARY AS A FUNCTION OF PROGRAM, THIS GAP WILL VARY IN SIZE AS THE DELAY AND RECORD R1 INCREASE.
GO DOWN TIME WILL VARY FROM 001.00 TO 005.00 MILSECS.

R3. RECORD R3 IS A ONE WORD MARKER FOR GAP G2. -V- RECORD

G3. GAP G3 IS GENERATED WITH THE GO LINE EFFECTIVELY UP STEADILY. THIS GAP IS A FUNCTION OF SS TIMINGS ONLY AND NOT AFFECTED BY START-STOP TIME. CONSEQUENTLY IF GAP G3 IS CORRECT THEN ANY VARIATION IN GAP G1 MUST BE DUE TO START-STOP TIME.

R4. RECORD R4 IS A ONE WORD MARKER FOR GAP G3. -O- RECORD

G4. GAP G4 IS A UTILITY GAP USED AS A STOPPING POINT FOR THE TAPE. TAPE MUST BE READ IN CONTINUOUS FULL SPEED MOTION ACROSS THE TEST GAPS SO ALL CALCULATING AND PRINTING IS DONE AT THIS STOPPING POINT ON TAPE.

AFTER THIS GROUP OF RECORDS IS WRITTEN THE VARIABLE DELAY OF GO LINE DOWN IS INCREASED AND THE NEXT GROUP OF TEST GAPS AND RECORDS IS PUT ON TAPE. THIS ACTION CONTINUES UNTIL THE VARIABLE DELAY REACHES ITS MAXIMUM OF 5.01 MILSECS. - K+3 -

EACH TAPE FRAME CALLED BY 9IOM WILL WRITE THEN REWIND WHILE THE NEXT FRAME WRITES.

WHEN 168 GROUPS OF RECORDS HAVE BEEN WRITTEN, TAPE WILL REWIND AND READ ACROSS THE TEST GAPS AT FULL SPEED. THE TAPE MAY OR MAY NOT HESITATE DURING EACH FORTH GAP WITHOUT AFFECTING THE RESULTS SINCE THIS GAP IS NOT CHECKED. EACH TEST GAP IS TIMED AND THE TIME CHECKED FOR EXCESSIVE LENGTH OR SHORTNESS. IF IT EXCEEDS LIMITS THE ERROR WILL BE INDICATED AT THIS POINT -- MINIMUM GAP 008.50 MILSEC, MAXIMUM GAP 012.50 MILSEC.

EACH GAP TIME IS ALSO SUMMARIZED AND AVERAGED AND THE RESULTS OF EACH OF THE THREE KINDS OF GAP ARE PRINTED OUT AFTER THE ENTIRE SERIES OF RECORD GROUPS HAS BEEN READ.

OPTIONAL METHODS OF RUNNING UNDER SENSE SWITCH CONTROL ARE LISTED IN PARAGRAPH D2,

FOLLOWING THE GAP TEST THE TAPE WILL BACKSPACE AND RE-READ THE LAST RECORD 50 TIMES. THE TIMES MEASURED BETWEEN READ SELECT AND THE ARRIVAL OF THE FIRST WORD ARE AVERAGED AND THIS IS PRINTED OUT.

3. SECTION 3 -- WRITE-BACKSPACE-WRITE CREEP TEST

THIS SECTION WRITES FOUR RECORDS -- 1, A 24 WORD RECORD., 2, A ONE WORD RECORD. 3, A ONE WORD RECORD, AND 4, A 64 WORD RECORD.

THESE RECORDS ARE READ AND CHECKECD THE TAPE BACKSPACES TWO RECORDS AND RE-WRITES THE THIRD RECORD. NEXT THE TAPE BACKSPACES ONE FILE, READS THE TAPE MARK, FIRST AND SECOND RECORDS AND MEASURES THE GAP BETWEEN THE SECOND AND THIRD RECORDS. AFTER THE THIRD RECORD HAS BEEN READ, ONE MORE WORD, WHICH SHOULD BE AVAILABLE IN THE FOURTH RECORD, IS READ AND CHECKED FOR BEING A TAPE MARK. IF THE TAPE IS ABLE

TO DO THIS WITHOUT CREEPING FORWARD ENOUGH TO PICK UP THE TAPE MARK. THE BACKSPACE-WRITE WILL BE REPEATED 25 TIMES.

SEE ALSO SENSE SWITCH 5 UNDER PARAGRAPH D2, SENSE SWITCH CONTROL, SECTION 3.

AFTER EACH BACKSPACE-WRITE OPERATION THE GAP WHICH WAS TIMED IS CHECKED AGAINST SHORT OR LONG LIMITS AND THE READINGS ARE AVERAGED. THE AVERAGE GAP TIME, INITIAL GAP TIME, NUMBER OF WRITE-BACKSPACE-WRITE OPERATIONS COMPLETED, AND BACKWARD OR FOREWWARD CREEP ARE PRINTED OUT.

SEE PARAGRAPH D2 ALSO FOR SENSE SWITCH CONTROL TO SET UP VISUAL CHECKING OF CREEP

C. AREA OF MACHINE REQUIRED.

1. UNITS MF, CF, CR, PR, DA AND TAPE UNITS TO BE TESTED.

NOTE -- TESTS MAY BE RUN WITHOUT A PRINTER BUT SO MUCH HALTING, STORAGE DISPLAY AND TRANSLATION OF RESULTS IS INVOLVED THAT THIS IS HARDLY PRACTICAL.

CARD READER IS REQUIRED ONLY IF PROGRAM IS RED FROM CARDS.

2. STORAGE LOCATIONS

00000 TO 00027	9LD01 LOADER
00030 TO 05176	9T05 DIAGNOSTIC
05500 TO 06476	9IOM MODIFICATION ROUTINE
06500 TO 07663	9DEPR ERROR ROUTINE

D. PROGRAM CONTROL.

1. DECK

000	9LD01 LOADER
001-119	9T05 DIAGNOSTIC
120-143	9IOM MODIFICATION ROUTINE
144-172	9DEPR ERROR ROUTINE
173	TRANSFER CARD-TRA 30
174-175	BLANK CARDS

2. SENSE SWITCH CONTROL

SENSE SWITCHES 1, 2, 3 AND 4 ARE USED BY 9DEPR. SEE WRITE UP FOR 9DEPR FOR DETAILED DESCRIPTION OF THEIR USE WHICH IS BRIEFLY AS FOLLOWS.

A. SWITCH 1 UP - TEST SENSE SWITCH 4
SWITCH 1 DN - REPEAT TEST LOOP

B. SWITCH 2 UP - INDICATE ERROR - TEST SSW 3 TO
PRINT OR HALT
SWITCH 2 DN - BYPASS ERROR INDICATION - TEST SSW 1

C. SWITCH 3 UP - PRINT OUT IF SSW 2 UP THEN TEST SSW 1
SWITCH 3 DN - STOP ON ERROR IF SSW 2 IS UP, THEN
TEST SSW 1

D. SWITCH 4 UP - PROCEED TO NEXT TEST ROUTINE
SWITCH 4 DN - REPEAT SECTION N TIMES, OR IF ERROR
OCCURS GO TO NEXT SECTION

SENSE SWITCHES 1, 2, 3 AND 4 ARE ALSO USED BY THE MAIN PROGRAM OF 9T05. HERE THEY ARE USED IN MUCH THE SAME WAYS TO ACCOMPLISH SIMILAR RESULTS AS DESCRIBED BELOW.

SECTION 1 -- LOAD CHANNEL TIMING TEST

A. SWITCH 1 UP - PROCEED TO NEXT ROUTINE
SWITCH 1 DN - LOOP CONTINUOUSLY IN EACH ROUTINE.

B. SWITCH 2 - NOT USED, EXCEPT BY 9DEPR

C. SWITCH 3 UP - PRINT OUT ERROR
SWITCH 3 DN - HALT ON ERROR INSTEAD OF PRINT

D. SWITCH 4 UP - PROCEED TO INTER-RECORD GAP TEST-SECTION 2
SWITCH 4 DN - REPEAT SECTION 1 - LOAD CHANNEL TIMING TEST

E. SWITCH 5 UP - CHECK LOAD CHANNEL TIMING WITH NOMINAL TIMING
SWITCH 5 DN - CHECK LOAD CHANNEL TIMING TILL FAILURE

SECTION 2 -- INTER-RECORD GAP TIMING TEST

DURING WRITE

A. SWITCH 5 UP - CONTINUE TO WRITE READ GROUPS
SWITCH 5 DN - STOP WRITING RECORD GROUPS AND PROCEED TO NEXT
ROUTINE

NOTE -- SWITCH 5 IS CONSULTED AFTER EACH RECORD GROUP IS WRITTEN AND IF IT IS DOWN AT THIS TIME WRITING IS ENDED FOR THAT TAPE UNIT. THEREFORE IF THE WRITE ROUTINE IS ENTERED WITH SWITCH 5 DOWN ONLY ONE RECORD GROUP CAN BE WRITTEN ON THE TEST TAPE FRAME AND SO SWITCH 5 MUST BE UP BEFORE PRESSING START AT THE HALT AT 00717 OR ONLY ONE RECORD GROUP WILL BE WRITTEN ON THE NEXT TAPE FRAME AS WELL.

DURING READ

A. SWITCH 1 UP - PROCEED TO NEXT UNIT
SWITCH 1 DN - REPEAT GAP TEST ON SAME UNIT

B. SWITCH 2 UP - SET ERROR CHECK
SWITCH 2 DN - IGNORE ERROR AND PROCEED

C. SWITCH 3 UP - PRINT ON ERROR
SWITCH 3 DN - HALT ON ERROR

D. SWITCH 4 UP - PROCEED TO CREEP TEST
SWITCH 4 DN - REPEAT GAP TEST ON ALL UNITS CALLED

E. SWITCH 5 UP - PROCEED
SWITCH 5 DN - FORCE SUMMARY PRINT OUT AFTER EACH GROUP OF RECORDS READ

NOTE -- IF PROGRAM HALTS AT RDA3, 01142, CONTINUOUSLY AFTER PRESSING START, THE C.E. MAY LOWER SENSE SWITCH 5 AND BY PRESSING START TWICE WILL GO TO TEST THE NEXT UNIT.

THIS HALT OCCURS WHEN THE PROGRAM LOSES ITS PLACE IN READING A RECORD GROUP.

SECTION 3 -- BACKSPACE WRITE CREEP TEST

A. SWITCH 1 UP - SHORT MAXIMUM BACKSPACE OPERATION COUNT
SWITCH 1 DN - LONG MAXIMUM BACKSPACE OPERATION COUNT

B. SWITCH 2 UP - BYPASS VISUAL CREEP TEST
SWITCH 2 DN - PERFORM VISUAL CREEP TEST

NOTE -- SENSE SWITCHES 1 AND 5 ARE USED WITHIN THE VISUAL CREEP ROUTINE

SSW 1 UP - PROCEED TO NEXT UNIT
SSW 1 DN - REPEAT VISUAL CREEP TEST ON SAME UNIT

SSW 5 UP - HALT ON CREEP ERROR
SL 1 ON TO INDICATE BACKWARD CREEP
SL 2 ON TO INDICATE FORWARD CREEP
SSW 5 DN - SKIP HALT

SENSE SWITCHES 1 AND 5 BOTH DOWN WILL CAUSE THE TAPE FRAME TO LOOP CONTINUUSLY IN THE VISUAL CREEP ROUTINE TO ALLOW MACHANICAL ADJUSTMENT OR SCOPING

C. SWITCH 3 UP - PRINT ON ERROR
SWITCH 3 DN - HALT ON ERROR

D. SWITCH 4 UP - PROCEED TO TEST NEXT UNIT
SWITCH 4 DN - REPEAT BACKSPACE WRITE CREEP TEST ON SAME UNIT

E. SWITCH 5 UP - CONTINUE CREEP TEST ON SAME UNIT
SWITCH 5 DN - FORCE SUMMARY PRINT OUT AND CONTINUE CREEP TEST ON SAME UNIT

END OF TEST

SWITCH 6 UP - READ NEXT DIAGNOSTIC TEST
SWITCH 6 DN - REPEAT ENTIRE 9T05

E. NORMAL STOPS

INITIALIZATION --

THIS PROGRAM USES 9IOM TO ADJUST FOR CHANNELS AND UNITS DESIRED TO BE TESTED.

STOPS AT BEGINNING OF TEST TO ENTER ON KEYS THE CONTROL WORDS USED IN MODIFICATION ROUTINE 9IOM TO ADJUST CHANNEL AND UNIT. ONE, TWO OR THREE STOPS WILL OCCUR CORRESPONDING TO THE NUMBER OF DS TO BE TESTED AS SPECIFIED BY THE TAG BITS OF THE FIRST CONTROL WORD.

A TAG OF 1 SPECIFIES CHN A AND/OR B
A TAG OF 2 SPECIFIES CHN C AND/OR D
A TAG OF 4 SPECIFIES CHN E AND/OR F

IF MORE THAN ONE DS IS TO BE TESTED. THEN THE FIRST CONTROL WORD SHOULD CONTAIN A MULTIPLE TAG.

05517 ENTER CONTROL WORD FOR FIRST DS ON KEYS
TAG FOR ALL DS TO BE TESTED
PRESS START

05533 ENTER CONTROL WORD FOR CHN C AND/OR D
PRESS START

05540 ENTER CONTROL WORD FOR CHN E AND/OR F
PRESS START

05525 CONTROL WORD FAILED TO CONTAIN A TAG FOR ANY DS. RE-ENTER FIRST CONTROL WORD WITH TAG
PRESS START

SEE CONTROL WORD FORMAT

1. SECTION 1. -- LOAD CHANNEL TIMING TEST

NO NORMAL STOPS

2. SECTION 2. -- INTER-RECORD GAP TIMING TEST

00671 HALT IF SENSE SWITCHES 1, 4, AND OR 5 WERE USED IN SECTION 1 AND LEFT DOWN. SET SWITCHES FOR SECTION 2 AND PRESS START.

00717 IF SENSE SWITCH 5 IS LOWERED OR LEFT DWON DURING WRITE, TAPE WILL STOP. RAISE SENSE SWITCH 5 AND PRESS START TO GO TO WRITE GAP TEST ON NEXT UNIT.

01714 HALT IF SENSE SWITCH 3 IS DOWN TO CHECK VALUES COMPILED FOR SUMMARY PRINT OUT FOR GAP TEST. PRESS START TO TEST NEXT UNIT.

CHECK SYMBOLIC LOCATION --
R, 01064 FOR CHANNEL AND UNIT ON TEST
REC, 03760 FOR NUMBER OF RECORDS READ
GT1B+1, 03763 FOR LOW -10- GAP TIME
GT1C+1, 03765 FOR RANGE -10- GAP TIME
AV1+1, 04002 FOR AVERAGE -10-GAP TIME
GT2B+1, 03770 FOR LOW -V- GAP TIME
GT2C+1, 03772 FOR RANGE -V- GAP TIME
AV2+1, 04004 FOR AVERAGE -V- GAP TIME
GT3B+1, 03775 FOR LOW -O- GAP TIME
GT3C=1, 03777 FOR RANGE -O- GAP TIME
AV3+1, 04006 FRO AVERAGE -O- GAP TIME

EACH OF THE ABOVE TIMES IS AN OCTAL NUMBER EQUALLING THE TIME IN MILLISECONDS PLUS HUNDREDTHS. CONVERT TO DECIMAL AND POINT OFF TWO PLACES. SEE PARAGRAPH H. NORMAL PRINT OUTS FOR INTERPRETATION OF THESE FIGURES.

3. SECTION 3. -- BACKSPACE WRITE CREEP TIMING TEST

02224 HALT IF SENSE SWITCH 1, 4, AND OR 5 WERE USED IN SECTION 2 AND LEFT DOWN. SET SWITCHES FOR SECTION 3 AND PRESS START

03071 HALT IF SENSE SWITCH 3 IS DOWN TO CHECK VALUES COMPILED FOR SUMMARY PRINT OUT FOR CREEP TEST. PRESS START TO TEST NEXT UNIT.

03136 IF SENSE SWITCH 4 HAS BEEN LEFT DOWN DURING THE RUN OF SECTION 3, AFTER THE LAST UNIT CALLED HAS BEEN TESTED THIS STOP WILL OCCUR TO ALLOW SENSE SWITCH 4 TO BE RESET. UP - TO CONSULT SENSE SWITCH 6, DN - TO REPEAT CREEP TEST ON ALL UNITS CALLED. PRESS START.

F. ERROR STOPS

9DEPR ERROR INDICATION STOPS WITH SSW 3 DOWN

06517 INDEX REGISTER C CONTAINS THE TWOS COMPLIMENT OF THE ERROR EXIT ADDRESS. READ LIGHTS THAT ARE OUT + 1 AND CONSULT THAT ADDRESS IN PROGRAM LISTING FOR ERROR ANALYSIS.

06545 SAME AS ABOVE
PUSH START TO CONTINUE PROGRAM

1. SECTION 1. -- LOAD CHANNEL TIMING TEST

00217 HALT TO CHECK ERROR TIME DATA FOR WRITE SELECT TO RESET LOAD CHANNEL AT LOAD POINT. PRESS START.

IN SYMBOLIC LOCATION TYMK+2, 03415, IS AN OCTAL NUMBER OF DELAY IN MULLISECONDS PLUS HUNDREDTHS. CONVERT TO DECIMAL AND POINT OFF TWO PLACES TO FIND THE DELAY WHICH HAS EXCEEDED LOAD CHANNEL TIMINGS.

00324 HALT TO CHECK ERROR TIME DATA FOR READ SELECT TO RESET LOAD CHANNEL AT LOAD POINT. PRESS START.

SYMBOLIC LOCATION TYMK1+2, 03420

00446 HALT TO CHECK ERRROR TIME DATA FOR WRITE SELECT TO RESET LOAD CHANNEL NOT AT LOAD POINT. PRESS START.

SYMBOLIC LOCATION TYMK2+2, 03423

00347 HALT TO CHECK ERROR TIME DATA FRO READ SELECT TO RESET LOAD CHANNEL NOT AT LOAD POINT. PRESS START.

SYMBOLIC LOCATION TYMK3+2, 03426

2. SECTION 2. -- INTER-RECORD GAP TIMING TEST

DURING WRITE --

01002 I-O CHECK ERROR DURING WRITE. PRESS START TO REWIND TEST UNIT AND REWRITE FILE.

DURING READ --

01342 PROGRAM HAS LOAD ITS POSITION ON TAPE. PUT SENSE SWITCH 3 UP AND PRESS START TO TRY AGAIN TO READ THE SAME UNIT. PUT SENSE SWITCH 5 DOWN, PRESS START. RAISE SENSE SWITCH 5 AND PRESS START TO GO TO TEST NEXT UNIT.

01415 HALT TO CHECK ERROR DATA ON A GAP WRITTEN WITH THE GO LINE DOWN FOR 10 MILSECS.

SYMBOLIC LOCATION EP5, 04016, HOLDS THE READ TIME AS AN OCTAL NUMBER EQUALLING THE TIME REQUIRED TO CROSS THE GAP, IN MILLISECONDS PLUS HUNDREDTHS. CONVERT TO DECIMAL AND POINT OFF TWO PLACES.

01472 HALT TO CHECK ERROR DATA ON A GAP WRITTEN WITH THE GO LINE DOWN FOR VARIABLE MILSECS.

SYMBOLIC LOCATION EP4, 04015, HOLDS THE VARIABLE GO DOWN TIME DURING WRITE AS AN OCTAL NUMBER IN MILLI-SECONDS PLUS HUNDREDTHS. CONVERT TO DECIMAL AND POINT OFF TWO PLACES.

READ TIME IS IN SYMBOLIC LOCATION EP5 AS ABOVE.

PRESS START.

01512 HALT TO CHECK ERROR DATA ON A GAP WRITTEN WITH THE GO LINE DOWN FOR ZERO MILSECS.

READ TIME IS IN SYMBOLIC LOCATION EP5 AS ABOVE.

PRESS START.

3. SECTION 3. -- BACKSPACE WRITE CREEP TIMING TEST

02261 HALT TO INDICATE CREEP DURING VISUAL CREEP TEST.

SENSE LIGHT 1 ON - BACKWARD CREEP
SENSE LIGHT 2 ON - FORWARD CREEP

PRESS START.

02354 PROGRAM HAS LOST ITS POSITION ON TAPE. PRESS
02422 TO RE-WRITE AN READ.
02473

G. ERROR PRINT OUTS

9DEPR TYPE PRINT OUTS

SEE WRITE UP FOR 9DEPR FOR EXAMPLE AND DESCRIPTION OF PRINT OUT.

TEST LOC IS ADDRESS OF ENTRY TO ROUTINE IN WHICH ERROR OCCURRED. OPN IS THE INSTRUCTION MOST BASIC TO THE CONDITION BEING TESTED IN FAILING ROUTINE. ERROR ADR IS THE EXIT FROM THE FAILING ROUTINE TO 9DEPR.

PROGRAM ERROR PRINT OUTS

1. SECTION 1 -- LOAD CHANNEL TIMING TEST.

WITH SENSE SWITCH 5 UP IF AN I-O CHECK RESULTS FROM USING NORMAL TIME DELAYS THE FOLLOWING PRINT OUTS WILL OCCUR

A. WRITE SELECT AT LOAD POINT

MAX TIME FROM WR SEL TO RESET LD CHN AT LD PT 030.00 MILSEC

B. READ SELECT AT LOAD POINT

MAX TIME FROM RD SEL TO RESET LD CHN AT LD PT 015.00 MILSEC

C. WRITE SEL NOT AT LOAD POINT

MAX TIME FROM WR SEL TO RESET LD CHN NOT AT LD PT 004.00 MILSEC

D. READ SELECT NOT AT LOAD POINT

MAX TIME FROM RD SEL TO RESET LD CHN NOT AT LD PT 001.00 MILSEC

2. SECTION 2 -- INTER-RECORD GAP TEST

DURING READ, IF ANY ONE OF THE TEST GAPS EXCEEDS TIME LIMITS 008.5 TO 012.5 MILSECS -- THE FOLLOWING PRINT OUTS WILL OCCUR.

A. GAP FOUND TO BE IN ERROR DURING READ, THAT WAS WRITTEN WITH THE GO LINE HELD DOWN FOR 10 MILSECS.

CHN A IF 02 - GO LINE DOWN 010.00 MSEC - READ TIME 012.56 MSEC

CHECK --
FORWARD START-STOP TIME
WORN OR BINDING PARTS

B. ERROR GAP THAT WAS WRITTEN WITH THE GO LINE HELD DOWN A VARYING LENGTH OF TIME WHILE GENERATING THE GAP.

CHN B IF 01 - GO LINE DOWN 002.80 MSEC - READ TIME 012.58 MSEC

CHECK --
WRITE DELAY SINGLE SHOT
FORWARD START-STOP TIME
ADJUSTMENT OF MOVING COIL OR FORWARD REVERSE MAGNET
RECOVERY OF DRIVING CIRCUITS

C. ERROR GAP THAT WAS WRITTEN WITH THE GO LINE HELD DOWN ZERO TIME WHILE THE GAP WAS GENERATED.

CHN B TF 03 - GO LINE DOWN 000.00 MSEC - READ TIME 012.96 MSEC

CHECK --
WRITE DELAY SINGLE SHOT
DRIVE CAPSTANS

CHANNEL AND UNIT INDICATION WILL CHANGE WITH THE UNIT ON TEST. GO LINE DOWN REFERS TO THE TIME THE GO LINE WAS HELD DOWN WHEN THE GAP WAS GENERATED. THREE TYPES OF TIME VALUES CAN SHOW HERE -- 1, A 10 MILSEC TIME, 2. A VARIABLE LENGTH OF TIME RANGING FROM 01.0 TO 05.0 MILSECS, AND 3, A ZERO TIME INDICATION GHT GO LINE WAS EFFECTIVELY HELD UP STEADILY.

READ TIME REFERS TO THE TIME REQUIRED TO CROSS THE GAP DURING READ IN CONTINUOUS FORWARD MOTION.

3. SECTION 3 -- WRITE-BACKSPACE-WRITE CREEP TEST

IF BACKWARD CREEP IS PRESENT TO THE EXTENT THAT THE GAP BETWEEN THE SECOND AND THIRD RECORDS DECREASES SO THAT THE TIME REQUIRED TO CRESS THE GAP IS LESS THEN 008.50 MILSECS THE FOLLOWING TYPE OF PRINT OUT WILL OCCUR

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CHN A  TF 02 017 BACKSPACE-WRITE OPERATIONS COMPLETE   FAILURE
  INTIAL GAP 011.97 MILSEC   AVG.BACKWARD CREEP 000.21 MILSEC
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NOTE -- EVEN IF THE WORD FAILURE DOES NOT APPEAR AND 025 BACKSPACE-WRITE OPERATIONS WERE COMPLETED. ANY PRINT OUT IN WHICH THE AVERAGE CREEP IS INDICATED TO BE IN A BACKWARD DIRECTION MAY BE CONSIDERED AN ERROR PRINT OUT FOR NO CREEP BACKWARD CAN BE TOLERATED.

H. NORMAL PRINT OUTS

AS SOON AS THE PROGRAM IS READ IN, IT WILL PRINT OUT.

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 NOW PERFORMING DIAGNOSTIC TEST 9T05
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9T05 AS A STATISTICAL PROGRAM, SO THE NORMAL PRINT OUTS ARE AT LEAST AS IMPORTANT AS THE ERROR PRINT OUTS SINCE MUCH OF THE INFORMATION ABOUT TAPE MOTION IS DERIVED FROM THE INTERPRETATION OF THEM.

1. SECTION 1 -- LOAD CHANNEL TIMING TEST TERMINAL PRINT OUT

WHEN THE SERIES OF FOUR LOAD CHANNEL TEST ROUTINES IS COMPLETE ON EACH FRAME, THE FOLLOWING PRINT OUT WILL OCCUR.

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CHN A  TF 01   LD CHN TIMING TEST COMPLETE
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2. SECTION 2 -- INTER-RECORD GAP TIMING TEST

A. SUMMARY PRINT OUT

WHEN THE COMPLETE FILE OF RECORD GROUPS HAS BEEN READ, 0168 RECORDS NORMALLY, THE FOLLOWING FIVE LINES WILL PRINT OUT.

SENSE SWITCH 5 DOWN WILL CAUSE THE FIRST FOUR LINES TO PRINT AFTER EACH RECORD GROUP IS READ.

CHN B TF 05 -- 0168 RECORDS READ	LOW	RANGE	AVERAGE
GO LINE DOWN 10 MILSEC	010.56	000.81	010.96 MILSEC
GO LINE DOWN VARIABLE TIME	010.15	002.06	011.25 MILSEC
GO LINE DOWN ZERO TIME	011.40	000.43	011.61 MILSEC

50 BKSP-READ OPNS 011.52 MILSEC AVG BETWEEN RD SEL AND FIRST WORD

GO LINE DOWN TIME REFERS TO THE TIME THE GO LINE WAS HELD DOWN DURING WRITE WHILE THE GAP WAS GENERATED.

LOW IS THE TIME DURING READ REQUIRED TO CROSS THE SHORTEST OF THAT PERTICULAR TYPE OF GAP.

RANGE IS THE TIME DIFFERENCE BETWEEN THE SHORTEST SINGLE GAP AND THE LONGEST SINGLE GAP OF ANY ONE TYPE.

AVERAGE IS THE AVERAGE LENGTH OF ALL THE GAPS OF ONE TYPE.

THE FIFTH LINE IS THE RESULT OF 50 BACKSPACE READ OPERATIONS AND IS THE AVERAGE LENGTH OF TIME BETWEEN READ SELECT AND THE TIME THE FIRST WORD ARRIVES IN STORAGE.

NOTE -- THE FIFTH LINE WILL APPEAR ONLY WHEN THE TAPE MARK AT THE END OF THE FILE OF RECORD GROUPS HAS BEEN READ. SUMMARY PRINT OUTS FORCED BY SENSE SWITCH 5 DOWN CONSIST OF THE FIRST FOUR LINES.

1. FIRST LINE -- CHN B TF 05 -----

CHANNEL AND TAPE FRAME NUMBER WILL CHANGE WITH THE UNIT.

A NORMAL FULL FILE WILL CONTAIN 168 RECORD GROUPS BUT THIS MAY BE LESS IF REDUNDANCY CAUSED A READ FAILURE OF IF WRITING WAS CUT SHORT BY SENSE SWITCH 5.

2. SECOND LINE -- GO LINE DOWN 10 MILSEC -----
THE RANGE AND THE AVERAGE ARE DETERMINED BY THE WRITE DELAY SIGNLE SHOT PLUS START-STOP TIMING.

RANGE UP TO 001.00 IS GOOD

CHECK. IF ERRORS OCCUR IN THIS AREA -
START-STOP ADJUSTMENTS
WRITE DELAY SINGLE SHOT
PRESSURE PADS
A-C COUPLED INVERTORS
CONDITION OF --
- START-STOP LINKAGES
- FORWARD-REVERSE LINKAGES
- NYLON IDLER BUSHINGS
- FORKED ARM BUSHINGS

3. THIRD LINE -- GO LINE DOWN VARIABLE TIME ----
THE RANGE IS THE RESULT OF THE THINGS MENTIONED IN THE SECOND LINE PLUS THOSE IN THE FOURTH LINE. RECOVERY OF DRIVING CIRCUITS AND THE INERTIA OF THE START-STOP MECHANISM AT CRITICAL TIMINGS.

RANGE OF --
002.00 OR LESS IS GOOD
003.00 SHOULD RECEIVE PM
003.50 OR OVER MAY CAUSE TROUBLE

CHECK, IF ERRORS OCCUR IN THIS AREA -
WRITE DELAY SINGLE SHOT
DRIVE CAPSTANS
FORWARD START-STOP TIME
RECOVERY OF DRIVING CIRCUITS
CONDITION OF START-STOP MECHANISM

4. FOURTH LINE -- GO LINE DOWN ZERO TIME -----

THE LENGTH OF THE GAP IS DETERMINED BY THE WRITE DELAY SINGLE SHOT AND SOMEWHAT BY THE DRIVE CAPSTANS.

THE RANGE IS THE RESULT OF THE TAPE CONTINUOUS DRIVE MACHANISMS.

RANGE OF --
000.30 MILSEC IS VERY GOOD
000.70 IS FAIR
001.00 AND UP SHOULD RECEIVE PM
001.50 OF MORE MAY CAUSE TROUBLE

THE AVERAGE WILL BE VERY CLOSE TO THE ACTUAL WRITE DELAY SINGLE SHOT TIMING.

CHECK, IF ERRORS OCCUR IN THIS AREA -
WRITE DELAY SINGLE SHOT
BINDS, CUTS OR DIRT IN OR ON THE DRIVE CAPSTANS
GROOVING OR BAD BUSHINGS IN NYLON IDLER

5. FIFTH LINE -- 50 BKSP-READ OPNS -----

CONSIDERABLE CHANGE IN AVERAGE FROM ONE READING TO ANOTHER OR CONSIDERABLE VARIATION IN SUBSEQUENT READINGS AT ONE TIME WILL PROBABLY BE AN EARLY INDICATION OF WORN PARTS OR SLOPPY MECHANICAL ADJUSTMENTS

D. TERMINAL PRINT OUT

AFTER THE INTER-RECORD GAP TEST AND THE BACKSPACE READ TEST ARE COMPLETE THE FOLLOWING PRINT OUT WILL APPEAR

CHN A TF 04 -- GAP TEST COMPLETE

3. SECTION 3 -- WRITE-BACKSPACE-WRITE CREEP TEST

A. SUMMARY PRINT OUT

ANY ONE OR A COMBINATION OF FOUR FACTORS CAN CAUSE THIS PRINT OUT.

1. COMPLETION OF 25 WRITE-BACKSPACE-WRITE OPERATIONS

   NOTE -- WITH SENSE SWITCH 1 DOWN THIS WILL BE 100 OPERATIONS COMPLETE

2. BACKWARD CREEP HAS REDUCED THE GAP TIME TO LESS THAN 008.50 MILSECS

3. FORWARD CREEP HAS ALLOWED THE TERMINAL TAPE MARK TO BE READ

4. SENSE SWITCH 5 DOWN WILL CAUSE THE PRINT OUT AFTER EACH BACKSPACE-WRITE OPERATION

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CHN C TF 01 025  BACKSPACE-WRITE OPERATIONS COMPLETE   OK
 INITIAL GAP 011.24 MILSEC   AVG. FORWARD CREEP 000.70 MILSEC
```

OK WILL APPEAR IN THE FIRST LINE IF THE AVERAGE FORWARD CREEP DOES NOT EXCEED 001.34 DECIMAL MILSECS WHICH EQUALS 0.10 INCH

INITIAL GAP IS THE TIME REQUIRED TO CROSS THE TEST GAP BETWEEN THE SECOND AND THIRD RECORDS BEFORE ANY BACKSPACE-WRITE OPERATIONS HAVE BEEN PERFORMED.

AVERAGE CREEP IS THE CHANGE IN TIME REQUIRED TO CROSS THE RE-WRITTEN GAP PER WRITE-BACKSPACE-WRITE OPERATION AND IT IS SHOWN AS FORWARD OR BACKWARD.

025 BACKSPACE-WRITE OPERATIONS SHOULD BE COMPLETED.

ANY BACKWARD CREEP SHOULD BE ELIMINATED.

FORWARD CREEP BETWEEN 000.50 AND 000.90 MILLISECONDS SHOULD ENSURE RELIABLE OPERATION. A TAPE WILL FORWARD CREEP OVER 000.90 MILLISECONDS AVERAGE MAY LOSE COMPATIBILITY WITH A TAPE GENERATED ON OR FOR A 704 SYSTEM.

B. TERMINAL PRINT OUT

AFTER THE WRITE-BACKSPACE-WRITE TEST IS COMPLETE THE FOLLOWING PRINT OUT WILL APPEAR

```
CHN C TF 01   CREEP TEST COMPLETE
```

4. END OF TEST

AFTER ALL UNITS ENTERED FROM KEYS HAVE BEEN TESTED, THE FOLLOWING PRINT OUT WILL OCCUR.

9T05 PASS COMPLETE ALL UNITS

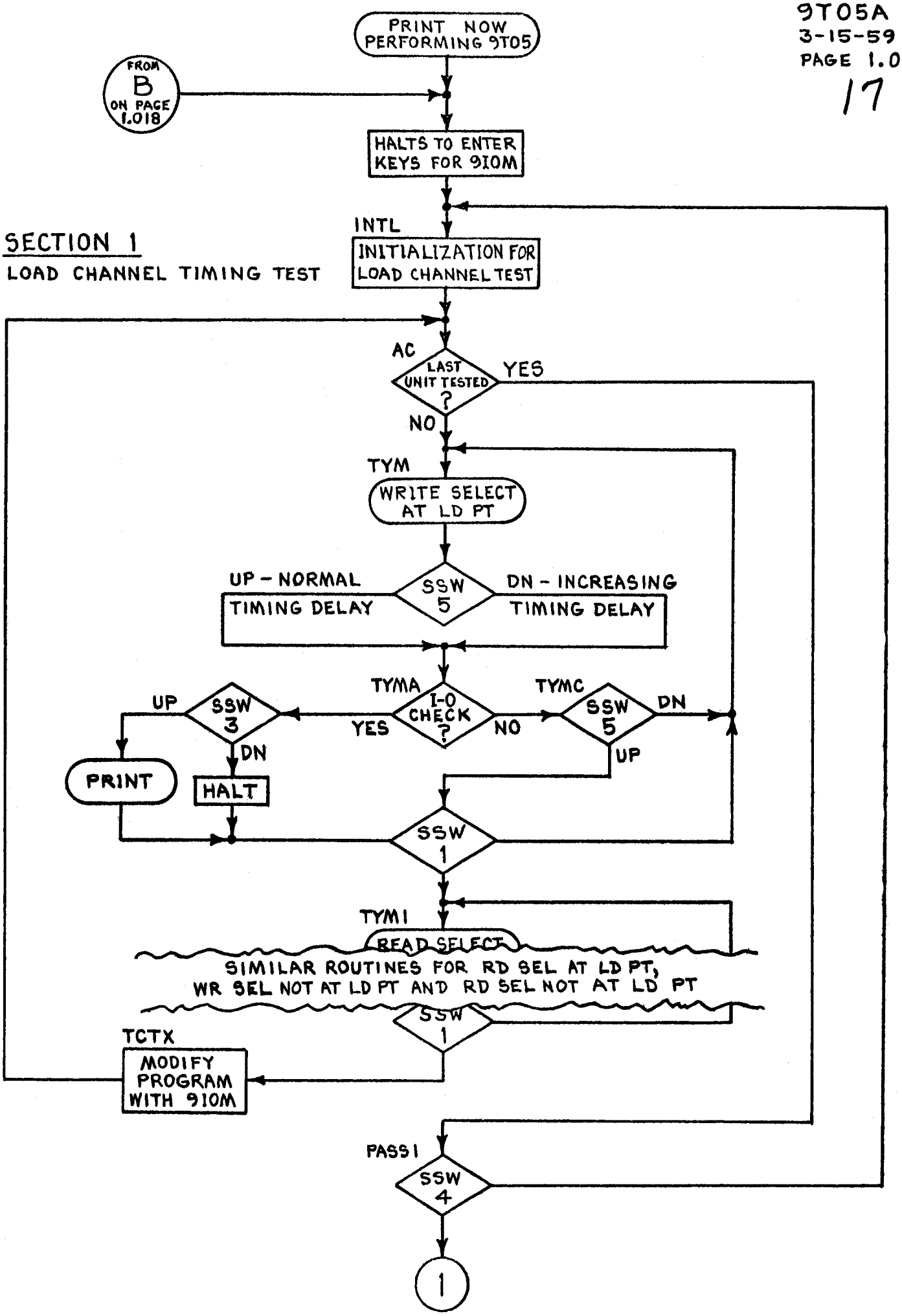
J. COMMENTS

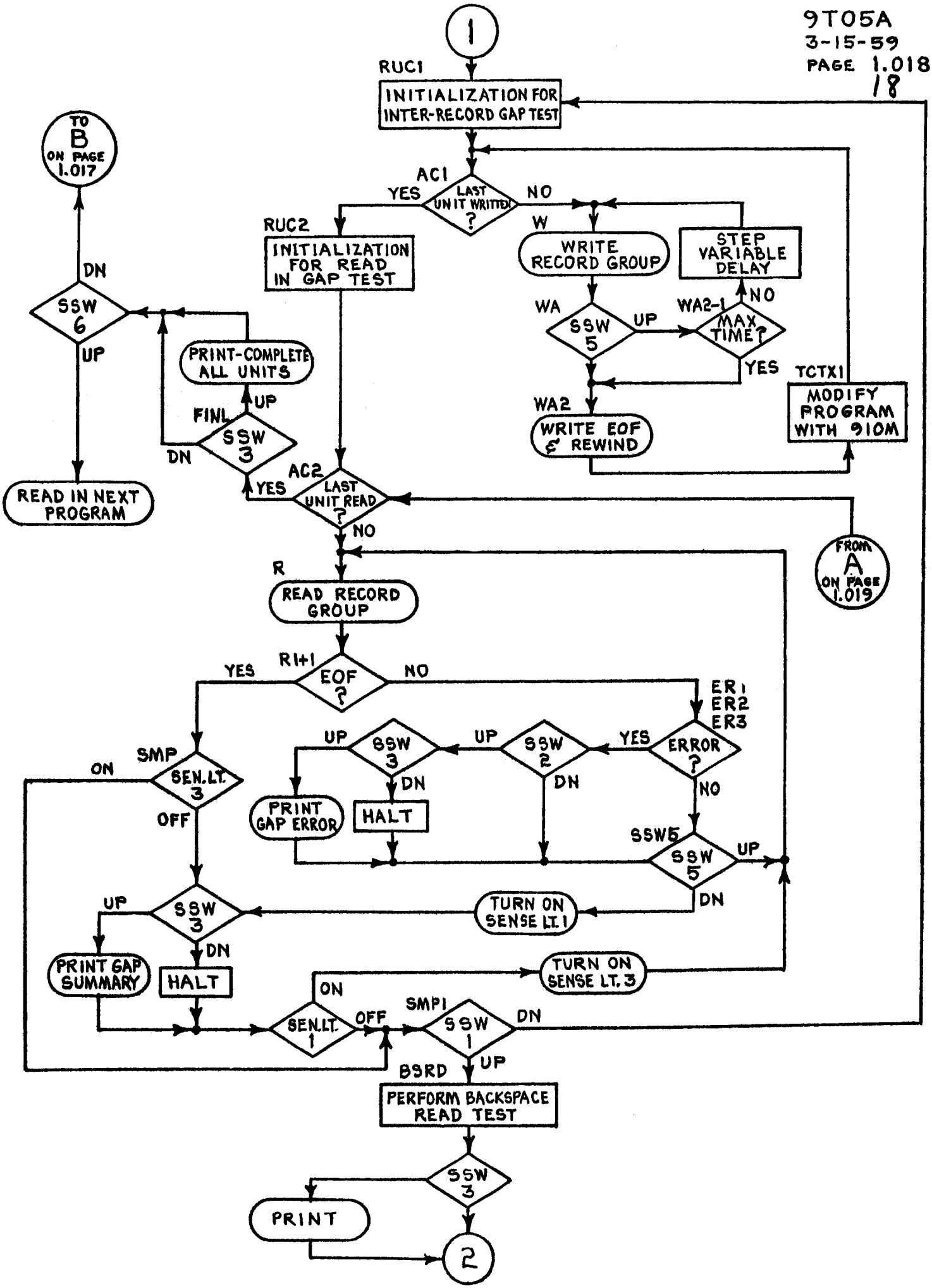
1. THE VISUAL CREEP ROUTINE MAY BE ENTERED BY LOWERING SENSE SWITCH 2 WHILE THE TAPE UNIT IS PERFORMING THE GAP TEST -- BY MANUALLY TRANSFERRING TO SYMBOLIC LOCATION CREEP - 02150

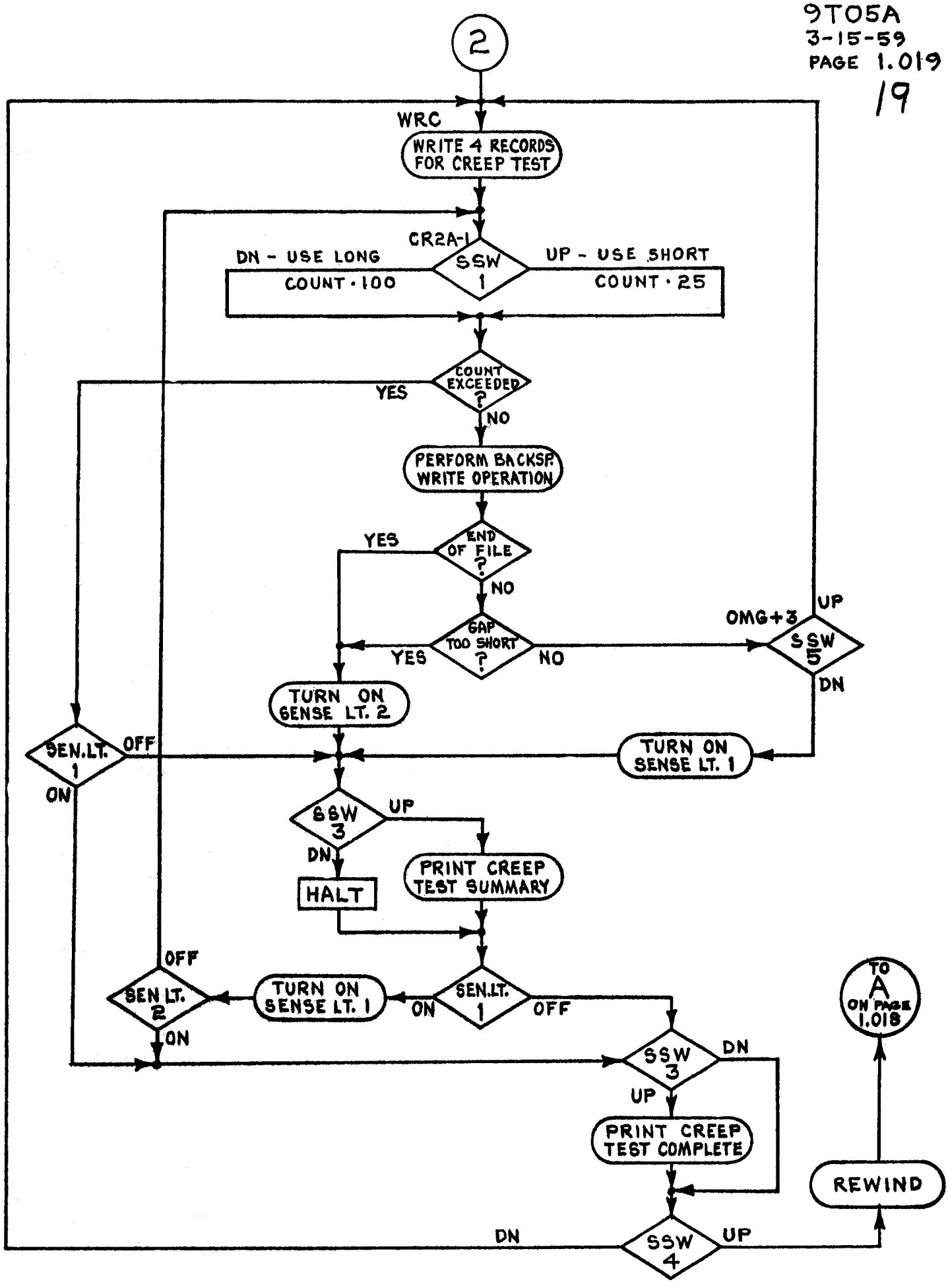
2. TIME FOR ENTIRE 9T05 IS 1 MIN. 15 SEC. PER TAPE UNIT IN MULTIPLE OPERATION. TESTING A SINGLE TAPE UNIT WILL TAKE SLIGHTLY OVER THIS TIME PER DRIVE SINCE THE PROGRAM MUST WAIT FOR TAPE TO REWIND AFTER WRITING THE INTER-RECORD GAP TEST FILE.

3. 9T05 SHOULD PROBABLY BE RUN AT LEAST ONCE A MONTH ON EACH TAPE FRAME. EACH INSTALLATION WILL HAVE TO DETERMINE ITS OWN NEEDS.

   THE PRINT OUTS FOR EACH FRAME SHOULD BE KEPT OR SOME OTHER FORM OF RUNNING RECORD MAINTAINED. COMPARISON OF READINGS WILL SHOW THE TENDENCIES OF EACH FRAME TOWARD FAILURE OR GOOD OPERATION AND SHOULD PRODUCE GOOD CONTROL OF EFFECTIVE PREVENTIVE MAINTENANCE.

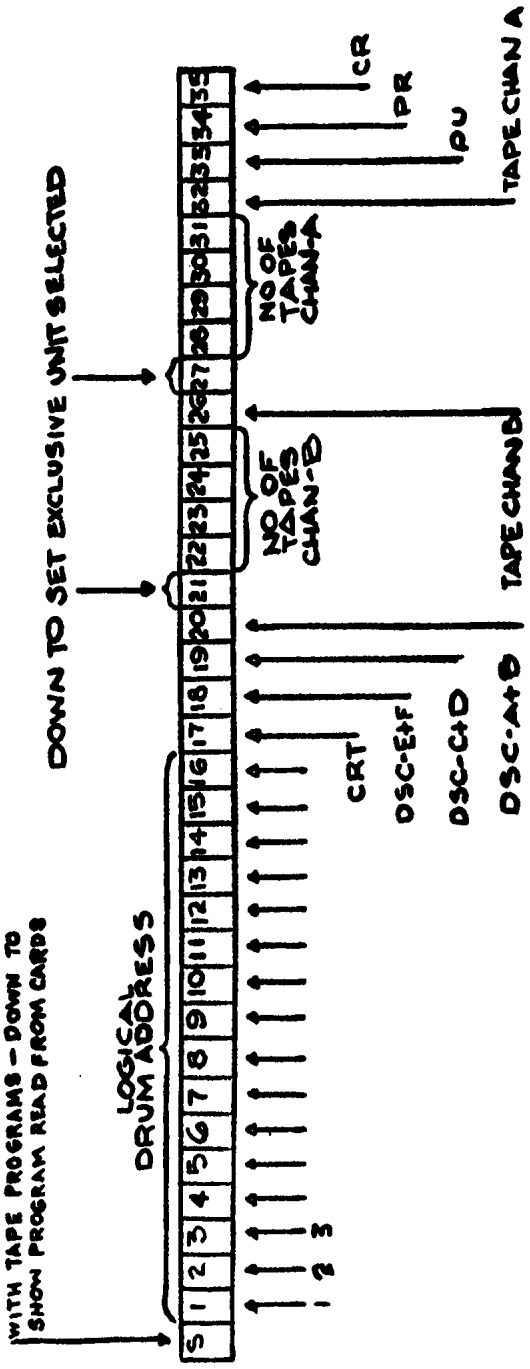

PRINT NOW PERFORMING 9T05
FROM B ON PAGE 1.018
HALTS TO ENTER KEYS FOR 910M
INTL
INITIALIZATION FOR LOAD CHANNEL TEST
SECTION 1
LOAD CHANNEL TIMING TEST
AC
LAST UNIT TESTED ?
YES
NO
TYM
WRITE SELECT AT LD PT
UP - NORMAL TIMING DELAY
SSW 5
DN - INCREASING TIMING DELAY
TYMA
I-O CHECK ?
YES
NO
TYMC
UP
SSW 3
DN
PRINT
HALT
SSW 5
UP
DN
SSW 1
TYM1
READ SELECT
SIMILAR ROUTINES FOR RD SEL AT LD PT,
WR SEL NOT AT LD PT AND RD SEL NOT AT LD PT
SSW 1
TCTX
MODIFY PROGRAM WITH 910M
PASS1
SSW 4
1


1
RUC1
INITIALIZATION FOR INTER-RECORD GAP TEST
AC1
YES
LAST UNIT WRITTEN ?
NO
W
WRITE RECORD GROUP
STEP VARIABLE DELAY
WA
SSW 5
UP
WA2-1
MAX TIME?
NO
YES
WA2
WRITE EOF & REWIND
TCTX1
MODIFY PROGRAM WITH 910M
RUC2
INITIALIZATION FOR READ IN GAP TEST
TO B ON PAGE 1.017
DN
SSW 6
UP
PRINT-COMPLETE ALL UNITS
FINL
UP
SSW 3
DN
YES
READ IN NEXT PROGRAM
AC2
LAST UNIT READ ?
NO
FROM A ON PAGE 1.019
R
READ RECORD GROUP
R1+1
EOF ?
YES
NO
ER1
ER2
ER3
ERROR ?
YES
NO
SSW 2
UP
DN
SSW 3
UP
DN
PRINT GAP ERROR
HALT
SMP
SEN.LT. 3
ON
OFF
SSW5
SSW 5
UP
DN
TURN ON SENSE LT.1
SSW 3
UP
DN
PRINT GAP SUMMARY
HALT
TURN ON SENSE LT. 3
ON
SEN.LT. 1
OFF
SMP1
SSW 1
DN
UP
BSRD
PERFORM BACKSPACE READ TEST
SSW 3
PRINT
2


2
WRC
WRITE 4 RECORDS FOR CREEP TEST
CR2A-1
SSW 1
DN - USE LONG COUNT · 100
UP - USE SHORT COUNT · 25
COUNT EXCEEDED ?
YES
NO
PERFORM BACKSP. WRITE OPERATION
END OF FILE ?
YES
NO
GAP TOO SHORT ?
YES
NO
OMG+3
SSW 5
UP
DN
TURN ON SENSE LT. 2
TURN ON SENSE LT. 1
SEN. LT. 1
OFF
ON
SSW 3
UP
DN
HALT
PRINT CREEP TEST SUMMARY
SEN LT. 2
OFF
ON
TURN ON SENSE LT. 1
SEN. LT. 1
ON
OFF
SSW 3
DN
UP
PRINT CREEP TEST COMPLETE
SSW 4
DN
UP
REWIND
TO A ON PAGE 1.018

20

I/O SELECTION FORMAT FOR CONTROL OF I/O PROGRAMS
(TO BE ENTERED INTO KEYS)



*   9 T 0 5 A

*   709 TAPE INTER-RECORD GAP,LOAD CHANNEL
*   TIMING AND CREEP TEST

*   729-1 TEST

```
*********************************************************************

*                  I N I T I A L I Z A T I O N

                  00030         ORG 24

00030  0761 00 0 00000         NOP

00031  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
00032  0074 00 4 03300  IDN    TSX PRID,4     TO PRINT OUT TEST IDENTITY

00033  0074 00 4 05514         TSX IOC,4      TO ENTER CONTROL WORDS
00034  0500 00 0 03532         CLA K21        L LDI CTRL1
00035  0601 00 0 00052         STO INTL1


*             CHECK FOR EXCLUSIVE TAPE FRAME BITS IN
*             I-O CONTROL WORD AND ESTABLISH INITIAL
*             STATUS OF UNIT ADDRESSES

00036  0500 00 0 05500  INTL   CLA CTRL1      L CHANNEL A CONTROL
00037  0120 00 0 00044         TPL *+5        CHECK IF PROGRAM READ
                                              FROM CARDS
00040  0500 00 0 03527         CLA K20+4      YES - L READ CARDS
00041  0601 00 0 03147         STO FINL1
00042  0500 00 0 03524         CLA K20+1      L WTBA 1
00043  0020 00 0 00047         TRA *+4

00044  0500 00 0 03526         CLA K20+3      NOT READ FROM CARDS --
                                              L RTBA 1
00045  0601 00 0 03147         STO FINL1
00046  0500 00 0 03525         CLA K20+2      L WTBA 2
00047  0601 00 0 03523         STO K20        SET WTBA X
00050  0621 00 0 03530         STA K20+5      SET RTBA X

00051  0074 00 4 05513  RUC    TSX IOCNT,4    TO RESET UNIT COUNT

00052  0441 00 0 05500  INTL1  LDI CTRL1      L IND WITH CHN A CONTROL
00053  0054 00  000360         RFT 00360      CHK FOR TAPE ON CHN A
00054  0020 00 0 00056         TRA *+2        YES - TAPE ON CHN A
00055  0020 00 0 00061         TRA *+4        NO TAPE ON CHN A
                                              GO TO ADJUST PROGRAM
00056  0054 00  000340         RFT 00340      CHK FOR UNITS ABOVE 1
00057  0056 00  000400         RNT 00400      YES - CHK FOR EXCLUSIVE BI
00060  0020 00 0 00073         TRA INTL2      UNIT 1 OK - GO TO
                                              ESTABLISH STATUS OF
```

```
                                                SELECT INSTRUCTIONS
00061  0500 00 0 03456          CLA TRA3        L TRA INTLA
00062  0601 00 0 00632          STO TCTX+6
00063  0020 00 0 00624          TRA TCTX

00064  0500 00 0 00144  INTLA   CLA TYM+1       L SELECT
00065  0621 00 0 03523          STA K20
00066  0621 00 0 03530          STA K20+5
00067  0500 00 0 03457          CLA TRA3+1      L TRA AC
00070  0601 00 0 00632          STO TCTX+6
00071  0500 00 0 03461          CLA TRA3+3      L TRA INTL2
00072  0601 00 0 00052          STO INTL1

00073  0500 00 0 00144  INTL2   CLA TYM+1       UNIT 1 OK -- ESTABLISH
00074  0601 00 0 03154          STO REST-1
00075  0340 00 0 03523          CAS K20         STATUS OF SELECT INSTRS
00076  0020 00 0 00100          TRA *+2
00077  0020 00 0 00115          TRA INTLB       UNIT ADDR OK - PROCEED
00100  0074 00 4 05512          TSX CTX,4       GO TO ADJUST PROGRAM
00101  0006 11 0 00123          HTR ALF,0,OMG1  MODIFICATION AREA
00102  0074 00 4 05512          TSX CTX,4       GO TO MODIFY PROGRAM
00103  0010 10 0 00750          HTR ALF1,0,OMG2  MODIFICATION AREA
00104  0074 00 4 05512          TSX CTX,4       GO TO MODIFY PROGRAM
00105  0013 00 0 01062          HTR ALF2,0,OMG3  MODIFICATION AREA
00106  0074 00 4 05512          TSX CTX,4       GO TO MODIFY PROGRAM
00107  0020 63 0 01750          HTR ALF3,0,OMG4  MODIFICATION AREA
00110  0074 00 4 05512          TSX CTX,4       GO TO MODIFY PROGRAM
00111  0026 37 0 02203          HTR ALF4,0,OMG  MODIFICATION AREA
00112  0074 00 4 05512          TSX CTX,4       GO TO MODIFY PROGRAM
00113  0031 65 0 03153          HTR REST-2,0,REST+8 MODIFICATION AREA
00114  0020 00 0 00073          TRA INTL2
00115  0761 00 0 00000  INTLB   NOP


00116  0500 00 0 05503  AC      CLA IOCT        L UNIT COUNT
00117  0100 00 0 00633          TZE PASS1       ALL UNITS CALLED CHECKED
                                                FOR RESET-LOAD CHANNEL
00120  0402 00 0 03401          SUB ONE         L +1
00121  0601 00 0 05503          STO IOCT

00122  0500 00 0 03444  AA      CLA TRA1        L TRA TYM-13
00123  0601 00 0 00000  ALF     STO 0           POST RESTART
00124  0020 00 0 00126          TRA *+2         SKIP BCD WORD


*****************************************************************

*    R E S E T - L O A D   C H A N N E L   T I M I N G T E S T    *


*            CHECK RESET-LOAD CHANNEL TIMING
*              AFTER SELECT INSTRUCTION


*            CHECK FOR WRITE AT LOAD POINT
```

```
00125  637044606060           BCD 1TYM      TEST CONDITION

00126  0074 00 4 03155        TSX REST,4    GO TO RESET INDICATORS
00127  0500 00 0 03413        CLA TYMK      L NORMINAL MAX TIME DELAY
                                             FOR WRITE AT LOAD POINT
00130  0760 00 0 00165        SWT 5         TEST SENSE SWITCH 5
00131  0020 00 0 00133        TRA *+2       UP - PROCEED
00132  0771 00 0 00001        ARS 1         DN - DIVIDE BY 2 FOR
00133  0601 00 0 03414        STO TYMK+1    REPEAT TILL FAILURE


00134 -0764 00 0 01201        BSFA 1        RETURN
00135 -0764 00 0 01201        BSFA 1        TAPE TO
00136 -0764 00 0 01201        BSFA 1        LOAD POINT
00137  0060 00 0 00137        TCOA *        DELAY
00140  0760 00 0 01000        BTTA          CHECK FOR TAPE REWOUND
00141  0020 00 0 00143        TRA *+2       ON - TAPE REWOUND TO LP
00142  0020 00 0 00135        TRA *-5       OFF - TAPE NOT YET TO LP
00143  0534 00 1 03414  TYM   LXA TYMK+1,1  L CURRENT DELAY IN XRA
00144  0766 00 0 01221        WTBA 1
00145  2 00001 1 00145        TIX *,1,1     DELAY
00146  0540 00 0 03560        RCHA CT1
00147  0074 00 4 06560        TSX RDNCK,4   REDUNDANCY ERROR CHECK
00150  0761 00 0 00126        NOP TYM-13
00151  0760 00 0 00005        IOT
00152  0020 00 0 00154  TYMA  TRA *+2       ON -  TIMING EXCEEDED
00153  0020 00 0 00221        TRA TYMC      OFF - OK

00154  0760 00 0 00165        SWT 5         TEST SENSE SWITCH 5
00155  0020 00 0 00172        TRA TYMB+4    UP - GO TO PRINT
00156  0500 00 0 03414        CLA TYMK+1    L DELAY COUNT
00157  0402 00 0 03427        SUB TYMK4     REDUCE COUNT TO LAST
00160  0601 00 0 03414        STO TYMK+1    SUCCESSFUL PASS COUNT
00161  0500 00 0 03430        CLA TYMK4+1   L ADD ONE
00162  0601 00 0 00224        STO TYMC+3
00163  0500 00 0 03431        CLA TYMK4+2   L TRA TYMB
00164  0601 00 0 00152        STO TYMA
00165  0020 00 0 00135        TRA TYM-6

00166  0500 00 0 03432  TYMB  CLA TYMK4+3   L ADD TYMK4
00167  0601 00 0 00224        STO TYMC+3
00170  0500 00 0 03433        CLA TYMK4+4   L TRA TYMA+2
00171  0601 00 0 00152        STO TYMA

00172  0760 00 0 00162        SWT 2         CHECK SENSE SWITCH 2
00173  0020 00 0 00175        TRA *+2       UP - PROCEED
00174  0020 00 0 00222        TRA TYMC+1    DN - IGNORE ERROR


*             CLEAR PRINT IMAGE 1

00175  0074 00 4 03166        TSX CLR2,4    GO TO CLEAR PRINT IMAGE 1
00176 -0500 00 0 03537        CAL MASK1     L +377540037400
00177  0320 00 1 04344        ANS PR1+21,1
```

```
*             ADJUST FOR PRINT IMAGE 1

00200  0074 00 4 03173         TSX TSP,4
00201  0020 00 0 00212         TRA *+9

00202  0560 00 0 03414         LDQ TYMK+1
00203 -0600 00 0 03415         STQ TYMK+2
00204  0774 00 2 00005         AXT 5,2        L +5 IN XRB
00205  0500 00 0 03415         CLA TYMK+2
00206  0560 00 0 03521         LDQ K11+1      L 10 FIFTH-1 IN MQ
00207  0221 00 0 03516         DVP K10+1      DIVIDE BY 10 FIFTH
00210 -0500 00 2 03741         CAL BIT8+1,2   L BIT FOR IMAGE
00211 -0602 00 1 04342         ORS PR1+19,1

00212  0772 00 0 01201         REWA 1         REWRITE RECORD
00213  0766 00 0 01221         WTBA 1         ERASE BY
00214  0540 00 0 03560         RCHA CT1       EXCESSIVE DELAY

00215  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
00216  0020 00 0 00220         TRA *+2        UP - PRINT
00217  0000 00 0 00227         HTR TYMC+6     DN - BYPASS PRINT - CHECK
                                              TYMK+2 FOR MAX TIME
00220  0074 00 2 03304         TSX PRT1,2     GO TO PRINT

00221  0760 00 0 00165  TYMC   SWT 5          TEST SENSE SWITCH 5
00222  0020 00 0 00227         TRA *+5        UP - PROCEED
00223  0500 00 0 03414         CLA TYMK+1     STEP
00224  0400 00 0 03427         ADD TYMK4      DELAY
00225  0601 00 0 03414         STO TYMK+1     COUNT
00226  0020 00 0 00135         TRA TYM-6      REPEAT TILL FAILURE

00227  0760 00 0 00161         SWT 1          TEST SENSE SWITCH 1
00230  0020 00 0 00233         TRA *+3        UP - PROCEED
00231  0020 00 0 00126         TRA TYM-13     DN - REPEAT CHECK


*             CHECK FOR READ AT LOAD POINT

00232  636644016060            BCD 1TWM1      TEST CONDITION

00233  0074 00 4 03155         TSX REST,4     GO TO RESET INDICATORS

00234  0774 00 1 00100         AXT 64,1       L +100 IN XRA
00235  0600 00 1 04267         STZ RDFD+64,1  CLEAR
00236  2 00001 1 00235         TIX *-1,1,1    READ FIELD

00237  0500 00 0 03416         CLA TYMK1      L NOMINAL MAX TIME DELAY
                                              FOR READ AT LOAD POINT
00240  0760 00 0 00165         SWT 5          TEDT SENSE SWITCH 5
00241  0020 00 0 00243         TRA *+2        UP - PROCEED
00242  0771 00 0 00001         ARS 1          DN - DIVIDE BY 2 FOR
00243  0601 00 0 03417         STO TYMK1+1    REPEAT TILL FAILURE


00244 -0764 00 0 01201         BSFA 1         RETURN
00245 -0764 00 0 01201         BSFA 1         TAPE TO
```

```
00246 -0764 00 0 01201         BSFA 1          LOAD POINT
00247  0060 00 0 00247         TCOA *          DELAY
00250  0760 00 0 01000         BTTA            CHECK FOR TAPE REWOUND
00251  0020 00 0 00253         TRA *+2         ON - TAPE REWOUND TO LP
00252  0020 00 0 00245         TRA *-5         OFF - TAPE NOT YET TO LP
00253  0534 00 1 03417  TYM1   LXA TYMK1+1,1 L CURRENT DELAY IN XRA
00254  0762 00 0 01221         RTBA 1
00255  2 00001 1 00255         TIX *,1,1       DELAY
00256  0540 00 0 03564         RCHA CT2
00257  0074 00 4 06560         TSX RDNCK,4     REDUNDANCY ERROR CHECK
00260  0761 00 0 00233         NOP TYM1-16
00261  0760 00 0 00005         IOT
00262  0020 00 0 00264  TYM1A  TRA *+2         ON - TIMING EXCEEDED
00263  0020 00 0 00326         TRA TYM1C       OFF - OK
00264  0760 00 0 00165         SWT 5           TEST SENSE SWITCH 5
00265  0020 00 0 00302         TRA TYM1B+4     UP - GO TO PRINT
00266  0500 00 0 03417         CLA TYMK1+1     DN - L DELAY COUNT
00267  0402 00 0 03427         SUB TYMK4       REDUCE COUNT TO LAST
00270  0601 00 0 03417         STO TYMK1+1     SUCCESSFUL PASS COUNT
00271  0500 00 0 03430         CLA TYMK4+1     L ADD ONE
00272  0601 00 0 00331         STO TYM1C+3
00273  0500 00 0 03434         CLA TYMK4+5     L TRA TYM1B
00274  0601 00 0 00262         STO TYM1A
00275  0020 00 0 00245         TRA TYM1-6

00276  0500 00 0 03432  TYM1B  CLA TYMK4+3     L ADD TYMK4
00277  0601 00 0 00331         STO TYM1C+3
00300  0500 00 0 03435         CLA TYMK4+6     L TRA TYM1A+2
00301  0601 00 0 00262         STO TYM1A

00302  0760 00 0 00162         SWT 2           CHECK SENSE SWITCH 2
00303  0020 00 0 00305         TRA *+2         UP - PROCEED
00304  0020 00 0 00356         TRA TYM1D       DN - IGNORE ERROR


*             CLEAR PRINT IMAGE 2

00305  0074 00 4 03166         TSX CLR2,4      GO TO CLEAR PRINT IMAGE 2
00306 -0500 00 0 03537         CAL MASK1       L +377540037400
00307  0320 00 1 04374         ANS PR2+21,1


*             ADJUST FOR PRINT IMAGE 2

00310  0074 00 4 03173         TSX TSP,4
00311  0020 00 0 00322         TRA *+9

00312  0560 00 0 03417         LDQ TYMK1+1
00313 -0600 00 0 03420         STQ TYMK1+2

00314  0774 00 2 00005         AXT 5,2         L +5 IN XRB
00315  0500 00 0 03420         CLA TYMK1+2
00316  0560 00 0 03521         LDQ K11+1       L 10 FIFTH-1 IN MQ
00317  0221 00 0 03516         DVP K10+1       DIVIDE BY 10 FIFTH
00320 -0500 00 2 03741         CAL BIT8+1,2    L BIT FOR IMAGE
00321 -0602 00 1 04372         ORS PR2+19,1
```

```
00322  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
00323  0020 00 0 00325         TRA *+2        UP - PRINT
00324  0000 00 0 00356         HTR TYM1D      DN - BYPASS PRINT - CHECK
                                              TYMK1+2 FOR MAX TIME

00325  0074 00 2 03310         TSX PRT2,2     GO TO PRINT

00326  0760 00 0 00165  TYM1C  SWT 5          TEST SENSE SWITCH 5
00327  0020 00 0 00334         TRA *+5        UP - PROCEED
00330  0500 00 0 03417         CLA TYMK1+1    STEP
00331  0400 00 0 03427         ADD TYMK4      DELAY
00332  0601 00 0 03417         STO TYMK1+1    COUNT
00333  0020 00 0 00245         TRA TYM1-6     REPEAT TILL FAILURE

00334  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
00335  0020 00 0 00340         TRA *+3        UP - SKIP BCD WORD
00336  0020 00 0 00356         TRA TYM1D      DN - BYPASS CHECK OF WORDS

*             CHECK RECORD WRITTEN

00337  516322216001            BCD 1RTBA 1    TEST INSTRUCTION
00340  0500 00 0 03402         CLA TWO        L +2
00341  0601 00 0 06557         STO RECNO
00342  0774 00 2 00001         AXT 1,2        L +1 IN XRB
00343  0500 00 0 03513         CLA K4+3       L +41
00344  0601 00 0 06556         STO WDNO
00345  0774 00 1 00040         AXT 32,1       L +40 IN XRA
00346  0500 00 1 04227         CLA RDFD+32,1  L WORD READ
00347  0340 00 1 04126         CAS FIX+32,1   COMPARE WORD GENERATED
00350  0020 00 0 00352         TRA *+2
00351  0020 00 0 00355         TRA *+4
00352  0560 00 1 04126         LDQ FIX+32,1   L WORD GENERATED IN MQ
00353  0074 00 4 06502         TSX ERROR-2,4  READ-WRITE ERROR
00354  0761 00 0 00340         NOP *-12
00355  2 00001 1 00346         TIX *-7,1,1


00356  0760 00 0 00161  TYM1D  SWT 1          TEST SENSE SWITCH 1
00357  0020 00 0 00362         TRA *+3        UP - PROCEED
00360  0020 00 0 00233         TRA TYM1-16    DN - REPEAT CHECK


*             CHECK FOR WRITE NOT AT LOAD POINT

00361  637044026060            BCD 1TYM2      TEST CONDITION

00362  0074 00 4 03155         TSX REST,4     GO TO RESET INDICATORS
00363  0500 00 0 03421         CLA TYMK2      L NOMINAL MAX TIME DELAY
                                              FOR WRITE NOT AT LP
00364  0760 00 0 00165         SWT 5          TEST SENSE SWITCH 5
00365  0020 00 0 00367         TRA *+2        UP - PROCEED
00366  0771 00 0 00001         ARS 1          DN - DIVIDE BY 2 FOR
00367  0601 00 0 03422         STO TYMK2+1    REPEAT TILL FAILURE

00370  0770 00 0 01201         WEFA 1         WRITE END OF FILE
```

```
00371  0060 00 0 00371         TCOA *         DELAY
00372  0534 00 1 03422         LXA TYMK2+1,1 L CURRENT DELAY IN XRA
00373  0766 00 0 01221  TYM2   WTBA 1
00374  2 00001 1 00374         TIX *,1,1      DELAY
00375  0540 00 0 03570         RCHA CT3
00376  0074 00 4 06560         TSX RDNCK,4    REDUNDANCY ERROR CHECK
00377  0761 00 0 00362         NOP TYM2-9
00400  0760 00 0 00005         IOT
00401  0020 00 0 00403  TYM2A  TRA *+2        ON - TIMING EXCEEDED
00402  0020 00 0 00450         TRA TYM2C      OFF - OK

00403  0760 00 0 00165         SWT 5          TEST SENSE SWITCH 5
00404  0020 00 0 00421         TRA TYM2B+4    UP - GO TO PRINT
00405  0500 00 0 03422         CLA TYMK2+1    DN - L DELAY COUNT
00406  0402 00 0 03464         SUB K+1        REDUCE COUNT TO LAST
00407  0601 00 0 03422         STO TYMK2+1    SUCCESSFUL PASS COUNT
00410  0500 00 0 03430         CLA TYMK4+1    L ADD ONE
00411  0601 00 0 00453         STO TYM2C+3
00412  0500 00 0 03436         CLA TYMK4+7    L TRA TYM2B
00413  0601 00 0 00401         STO TYM2A
00414  0020 00 0 00370         TRA TYM2-3

00415  0500 00 0 03443  TYM2B  CLA TYMK4+12  L ADD K+1
00416  0601 00 0 00453         STO TYM2C+3
00417  0500 00 0 03437         CLA TYMK4+8    L TRA TYM2A+2
00420  0601 00 0 00401         STO TYM2A

00421  0760 00 0 00162         SWT 2          CHECK SENSE SWITCH 2
00422  0020 00 0 00424         TRA *+2        UP - PROCEED
00423  0020 00 0 00451         TRA TYM2C+1    DN - IGNORE ERROR


*            CLEAR PRINT IMAGE 3

00424  0074 00 4 03166         TSX CLR2,4     GO TO CLEAR PRINT IMAGE 3
00425 -0500 00 0 03537         CAL MASK1      L +377540037400
00426  0320 00 1 04424         ANS PR3+21,1


*            ADJUST FOR PRINT IMAGE 3

00427  0074 00 4 03173         TSX TSP,4
00430  0020 00 0 00441         TRA *+9

00431  0560 00 0 03422         LDQ TYMK2+1
00432 -0600 00 0 03423         STQ TYMK2+2

00433  0774 00 2 00005         AXT 5,2        L +5 IN XRB
00434  0500 00 0 03423         CLA TYMK2+2
00435  0560 00 0 03521         LDQ K11+1      L 10 FIFTH-1 IN MQ
00436  0221 00 0 03516         DVP K10+1      DIVIDE BY 10 FIFTH
00437 -0500 00 2 03741         CAL BIT8+1,2   L BIT FOR IMAGE
00440 -0602 00 1 04422         ORS PR3+19,1

00441  0770 00 0 01201         WEFA 1         REWRITE RECORD
```

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00442  0766 00 0 01221         WTBA 1         ERASED BY
00443  0540 00 0 03570         RCHA CT3       EXCESSIVE DELAY

00444  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
00445  0020 00 0 00447         TRA *+2        UP - PRINT
00446  0000 00 0 00456         HTR TYM2C+6    DN - BYPASS PRINT - CHECK
                                              TYMK2+2FOR MAX TIME

00447  0074 00 2 03313         TSX PRT3,2     GO TO PRINT


00450  0760 00 0 00165  TYM2C  SWT 5          TEST SENSE SWITCH 5
00451  0020 00 0 00456         TRA *+5        UP - PROCEED
00452  0500 00 0 03422         CLA TYMK2+1    STEP
00453  0400 00 0 03464         ADD K+1        DELAY
00454  0601 00 0 03422         STO TYMK2+1    COUNT
00455  0020 00 0 00370         TRA TYM2-3     DN - REPEAT TILL FAILURE

00456  0760 00 0 00161         SWT 1          TEST SENSE SWITCH 1
00457  0020 00 0 00462         TRA *+3        UP - PROCEED
00460  0020 00 0 00362         TRA TYM2-9     DN - REPEAT CHECK


*             CHECK FOR READ NOT AT LOAD POINT

00461  637044036060            BCD 1TYM3      TEST CONDITION

00462  0074 00 4 03155         TSX REST,4     GO TO RESET INDICATORS

00463  0774 00 1 00100         AXT 64,1       L +100 IN XRA
00464  0600 00 1 04267         STZ RDFD+64,1  CLEAR
00465  2 00001 1 00464         TIX *-1,1,1    READ FIELD

00466  0500 00 0 03424         CLA TYMK3      L NOMINAL MAX TIME DELAY
                                              FOR READ NOT AT LP
00467  0760 00 0 00165         SWT 5          TEST SENSE SWITCH 5
00470  0020 00 0 00472         TRA *+2        UP - PROCEED
00471  0771 00 0 00001         ARS 1          DN - DIVIDE BY 2 FOR
00472  0601 00 0 03425         STO TYMK3+1    REPEAT TILL FAILURE

00473  0764 00 0 01201         BSRA 1
00474  0774 00 1 06632         AXT 3482,1     L +6632 IN XRA
00475  2 00001 1 00475         TIX *,1,1      DELAY 76 DEC MILSEC
00476  0534 00 1 03425         LXA TYMK3+1,1  L CURRENT DELAY IN XRA
00477  0762 00 0 01221  TYM3   RTBA 1
00500  2 00001 1 00500         TIX *,1,1
00501  0540 00 0 03574         RCHA CT4
00502  0074 00 4 06560         TSX RDNCK,4    REDUNDANCY ERROR CHECK
00503  0761 00 0 00462         NOP TYM3-13
00504  0760 00 0 00005         IOT
00505  0020 00 0 00507  TYM3A  TRA *+2        ON - TIMING EXCEEDED
00506  0020 00 0 00551         TRA TYM3C      OFF - OK
00507  0760 00 0 00165         SWT 5          TEST SENSE SWITCH 5
00510  0020 00 0 00525         TRA TYM3B+4    UP - GO TO PRINT
00511  0500 00 0 03425         CLA TYMK3+1    DN - L DELAY COUNT
00512  0402 00 0 03410         SUB EIGHT      REDUCE DELAY COUNT TO
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```
00513  0601 00 0 03425         STO TYMK3+1   LAST SUCCESSFUL PASS
00514  0500 00 0 03430         CLA TYMK4+1   L ADD ONE
00515  0601 00 0 00554         STO TYM3C+3
00516  0500 00 0 03440         CLA TYMK4+9   L TRA TYM3B
00517  0601 00 0 00505         STO TYM3A
00520  0020 00 0 00473         TRA TYM3-4

00521  0500 00 0 03441  TYM3B  CLA TYMK4+10  L ADD EIGHT
00522  0601 00 0 00554         STO TYM3C+3
00523  0500 00 0 03442         CLA TYMK4+11  L TRA TYM3A+2
00524  0601 00 0 00505         STO TYM3A

00525  0760 00 0 00162         SWT 2         CHECK SENSE SWITCH 2
00526  0020 00 0 00530         TRA *+2       UP - PROCEED
00527  0020 00 0 00601         TRA TYM3D     DN - IGNORE ERROR


*             CLEAR PRINT IMAGE 4

00530  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 4
00531 -0500 00 0 03537         CAL MASK1     L +377540037400
00532  0320 00 1 04454         ANS PR4+21,1


*             ADJUST FOR PRINT IAMGE 4

00533  0074 00 4 03173         TSX TSP,4
00534  0020 00 0 00545         TRA *+9

00535  0560 00 0 03425         LDQ TYMK3+1
00536 -0600 00 0 03426         STQ TYMK3+2

00537  0774 00 2 00005         AXT 5,2       L +5 IN XRB
00540  0500 00 0 03426         CLA TYMK3+2
00541  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
00542  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
00543 -0500 00 2 03741         CAL BIT8+1,2  L BIT FOR IMAGE
00544 -0602 00 1 04452         ORS PR4+19,1

00545  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
00546  0020 00 0 00550         TRA *+2       UP - PRINT
00547  0000 00 0 00601         HTR TYM3D     DON - BYPASS PRINT - CHECK
                                             TYMK3+2 FOR MAX TIME

00550  0074 00 2 03316         TSX PRT4,2    GO TO PRINT

00551  0760 00 0 00165  TYM3C  SWT 5         TEST SENSE SWITCH 5
00552  0020 00 0 00557         TRA *+5       UP - PROCEED
00553  0500 00 0 03425         CLA TYMK3+1   STEP
00554  0400 00 0 03410         ADD EIGHT     DELAY
00555  0601 00 0 03425         STO TYMK3+1   COUNT
00556  0020 00 0 00473         TRA TYM3-4    REPEAT TILL FAILURE

00557  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
00560  0020 00 0 00563         TRA *+3       UP - SKIP BCD WORD
00561  0020 00 0 00601         TRA TYM3D     DN - BYPASS CHECK OF W
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*             CHECK RECORD WRITTEN

00562  516322216001           BCD 1RTBA 1   TEST INSTRUCTION
00563  0500 00 0 03402         CLA TWO       L +2
00564  0601 00 0 06557         STO RECNO
00565  0774 00 2 00001         AXT 1,2       L +1 IN XRB
00566  0500 00 0 03513         CLA K4+3      L +41
00567  0601 00 0 06556         STO WDNO
00570  0774 00 1 00040         AXT 32,1      L +40 IN XRA
00571  0500 00 1 04267         CLA RDFD+64,1 L WORD READ
00572  0340 00 1 04166         CAS FIX+64,1  COMPRARE WORD GENERATED
00573  0020 00 0 00575         TRA *+2
00574  0020 00 0 00600         TRA *+4
00575  0560 00 1 04166         LDQ FIX+64,1
00576  0074 00 4 06502         TSX ERROR-2,4 READ-WRITE ERROR
00577  0761 00 0 00563         NOP *-12
00600  2 00001 1 00571         TIX *-7,1,1


00601  0760 00 0 00161  TYM3D  SWT 1         TEST SENSE SWITCH 1
00602  0020 00 0 00604         TRA *+2       UP - PROCEED
00603  0020 00 0 00462         TRA TYM3-13   DN - REPEAT CHECK

00604 -0520 00 0 05503         NZT IOCT      CHECK UNIT COUNT
00605  0760 00 0 00164         SWT 4         NO UNIT COUNT - CHECK SSW 4
00606  0772 00 0 01201         REWA 1        UP - OR UNIT COUNT LEFT
                                             REWIND TEST UNIT
00607  0760 00 0 00163         SWT 3         DN - CHECK SENSE SWITCH 3
00610  0020 00 0 00612         TRA *+2       UP - PRINT
00611  0020 00 0 00624  OMG1   TRA TCTX      DN - BYPASS PRINT


*             CLEAR PRINT IMAGE 5

00612  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 5
00613 -0500 00 0 03540         CAL MASK2     L +701400377777
00614  0320 00 1 04503         ANS PR5+20,1



*             ADJUST FOR PRINT IMAGE 5

00615  0074 00 4 03215         TSX UNIT,4

00616 -0500 00 0 00144         CAL TYM+1     L SELECT
00617  0500 00 0 03711         CLA BIT3      L BIT IN COL 13
00620 -0602 00 1 04501         ORS PR5+18,1
00621  0500 00 0 03710         CLA BIT2+1    L BIT IN COL 12
00622  0500 00 0 03702         CLA BIT1      L BIT IN COL  5

00623  0074 00 2 03321         TSX PRT5,2    GO TO PRINT UNIT PASS


00624 -0500 00 0 00144  TCTX   CAL TYM+1     L SELECT
00625  0602 00 0 03154         SLW REST-1
```

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00626  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
00627  0006 11 0 00123         HTR ALF,0,OMG1 MODIFICATION AREA
00630  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
00631  0031 65 0 03153         HTR REST-2,0,REST+8

00632  0020 00 0 00116         TRA AC


00633  0760 00 0 00164  PASS1  SWT 4         TEST SENSE SWITCH 4
00634  0020 00 0 00642         TRA RUC1      UP - PROCEED
00635  0020 00 0 00051         TRA RUC       DN - REPEAT LD CHN TEST


*************************************************************************

*            I N T E R - R E C O R D    G A P    T E S T              *


00636  0500 00 0 03445  GAP    CLA TRA1+1    L TRA AC1-5
00637  0601 00 0 00115         STO INTLB
00640  0601 00 0 00750         STO TCTX1+6
00641  0020 00 0 00031         TRA IDN-1

00642  0074 00 4 05513  RUC1   TSX IOCNT,4   TO RESET UNIT COUNT

00643  0500 00 0 00753  INTL3  CLA W         ESTABLISH INITIAL
00644  0601 00 0 03154         STO REST-1
00645  0340 00 0 03523         CAS K20       STATUS OF SELECT INSTRS
00646  0020 00 0 00650         TRA *+2
00647  0020 00 0 00655         TRA *+6       UNIT ADDR OK - PROCEED
00650  0074 00 4 05512         TSX CTX,4     GO TO ADJUST PROGRAM
00651  0010 10 0 00750         HTR ALF1,0,OMG2  MODIFICATION AREA
00652  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
00653  0031 65 0 03153         HTR REST-2,0,REST+8 MODIFICATION AREA
00654  0020 00 0 00643         TRA INTL3
00655  0761 00 0 00000         NOP

*             RESET SENSE SWITCHES USED IN
*                RESET-LOAD CHANNEL TEST

00656  0760 00 0 00161         SWT 1         TEST SENSE SWITCH 1
00657  0020 00 0 00661         TRA *+2       UP - PROCEED
00660  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
00661  0760 00 0 00164         SWT 4         TEST SENSE SWITCH 4
00662  0020 00 0 00664         TRA *+2       UP - PROCEED
00663  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
00664  0760 00 0 00165         SWT 5         TEST SENSE SWITCH 5
00665  0020 00 0 00667         TRA *+2       UP - PROCEED
00666  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
00667 -0760 00 0 00141         SLT 1         TEST SENSE LIGHT 1
00670  0020 00 0 00672         TRA *+2       OFF - PROCEED
00671  0000 00 0 00664         HTR *-5       ON - HALT TO ADJUST SENSE
                                             SWITCHES BEFORE PROCEEDING

00672  0500 00 0 03462         CLA NOP       L NOP
00673  0601 00 0 00115         STO INTLB
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00674  0500 00 0 03450         CLA TRA1+4    L TRA AC1-1
00675  0601 00 0 00750         STO TCTX1+6

00676  0760 00 0 00140         SLF           TURN OFF ALL SENSE LIGHTS

00677  0500 00 0 05503  AC1    CLA IOCT      L UNIT COUNT
00700  0100 00 0 01014         TZE RUC2      ALL UNITS CALLED WRITTEN
                                             - GO TO READ
00701  0402 00 0 03401         SUB ONE       L +1
00702  0601 00 0 05503         STO IOCT

00703  0500 00 0 03446  AA1    CLA TRA1+2    L TRA AA1
00704  0601 00 0 00000         STO 0         POST RESTART TO
                                             WRITE GAP TEST


00705  0522 00 0 00751         XEC W-2       REWIND TEST UNIT


00706  0500 00 0 03507  WB     CLA K3+4      L +03060500 -- RESET MIN
00707  0601 00 0 03503         STO K3        ADJUSTED VARIABLE DELAY
00710  0500 00 0 03471         CLA K+6       L +01724 --
00711  0601 00 0 03470         STO K+5       MINIMUM VARIABLE WR DELAY
                                             OF .98 MILSEC
00712  0500 00 0 03464         CLA K+1       L +0751 --
00713  0601 00 0 03463         STO K         MINIMUM VARIABLE INDEX
                                             COUNT FOR .98 DELAY

00714  0600 00 0 03760         STZ REC       RESET RECORD COUNT TO ZERO

00715  0760 00 0 00165  WA     SWT 5         TEST SENSE SWITCH 5
00716  0020 00 0 00720         TRA WA+3      UP - CONTINUE TO WRITE
00717  0000 00 0 00737         HTR WA2       DN - TAPE COMPLETE --
                                             RAISE SSW 5 AND PRESS
                                             START TO WRITE NEXT TAPE

00720  0500 00 0 03470         CLA K+5       L DELAY WRITE
00721  0400 00 0 03472         ADD K+7       L +30 -- STEP DELAY WRITE
00722  0601 00 0 03470         STO K+5       CURRENT DELAY WRITE

00723 -0500 00 0 03506  WA1    CAL K3+3      L 545050505077 --
                                              -A- RECORD MASK
00724  0320 00 0 03476         ANS K2+1      CLEAR WRITE DELAY TIME
                                             IN -A- RECORD
00725 -0500 00 0 03503         CAL K3        L CURRENT WRITE DELAY
00726  0361 00 0 03504         ACL K3+1      L 70707600 -- ADJUSTED
                                             STEP WRITE DELAY
00727 -0320 00 0 03505         ANA K3+2      L 7070770700
00730 -0602 00 0 03476         ORS K2+1      L -A- RECORD WITH
                                             WRITE DELAY
00731  0602 00 0 03503         SLW K3        SAVE CURRENT WRITE DELAY

00732  0500 00 0 03463         CLA K         L INDEX VARIABLE DELAY
00733  0400 00 0 03465         ADD K+2       L +1 --STEP INDEX DELAY
00734  0601 00 0 03463         STO K         CURRENT INDEX DELAY
00735  0402 00 0 03466         SUB K+3       L +01222 --
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                                          MAXIMUM VARIABLE INDEX
                                          COUNT FOR 5.01 DELAY
00736 -0120 00 0 00753         TMI W      CONTINUE TO WRITE ON TAPE


00737  0522 00 0 00752  WA2    XEC W-1    STOP WRITING ON TAPE X
                                          MAXIMUM DELAY EXCEEDED
00740  0060 00 0 00740         TCOA *     DELAY
00741  0522 00 0 00751         XEC W-2    REWIND TEST UNIT

00742 -0500 00 0 00753  TCTX1  CAL W      L SELECT
00743  0602 00 0 03154         SLW REST-1
00744  0074 00 4 05512         TSX CTX,4  GO TO MODIFY PROGRAM
00745  0010 10 0 00750         HTR ALF1,0,OMG2  MODIFICATION AREA
00746  0074 00 4 05512         TSX CTX,4  GO TO MODIFY PROGRAM
00747  0031 65 0 03153         HTR REST-2,0,REST+8

00750  0020 00 0 00676  ALF1   TRA AC1-1



*             WRITE TAPE

00751  0772 00 0 01201         REWA 1     DUMMY REWIND
00752  0770 00 0 01201         WEFA 1     DUMMY WRITE  END OF FILE

00753  0766 00 0 01221  W      WTBA 1
00754  0074 00 4 03155         TSX REST,4 GO TO RESET INDICATORS
00755  0500 00 0 03463         CLA K      L VARIABLE INDEX DELAY
00756  0771 00 0 00001         ARS 1      DIVIDE BY 2 TO REDUCE NO
                                          OF WORDS WRITTEN SO FIRST
                                          RECORD LENGTH IS COMPARABLE
                                          TO VARIABLE DELAY
00757  0734 00 1 00000         PAX 0,1    L ADJUST DELAY IN XRA
00760  0540 00 0 03602         RCHA CT6
00761  0544 00 0 03602         LCHA CT6
00762  2 00001 1 00761         TIX *-1,1,1
00763  0544 00 0 03610         LCHA CT7+2 WRITE 2 -A- WORDS -- END
00764  0544 00 0 03606         LCHA CT7   OF VARIABLE LENGTH RECORD

*             10 MILSEC DELAY BEFORE WRITING -10- RECORD

00765  0534 00 1 03467         LXA K+4,1  L +01067
                                          10 MILSEC INDEX DELAY PLUS
                                          3.61 DELAY FROM LCH TO
00766  2 00001 1 00766         TIX *,1,1  GO DOWN
00767  0766 00 0 01221         WTBA 1
00770  0540 00 0 03616         RCHA CT8   WRITE -10- RECORD

*             VARIABLE TIME DELAY BEFORE WRITING -V- RECORD

00771  0534 00 1 03463         LXA K,1    L +0701 INDEX DELAY FOR
00772  2 00001 1 00772         TIX *,1,1  WTB + ONE WORD TO GO DOWN
                                          PLUS VARIABLE DELAY
00773  0766 00 0 01221         WTBA 1
00774  0540 00 0 03622         RCHA CT9   WRITE -V- RECORD
```

```
*             GO LINE DOWN MINIMUM LENGTH OF TIME BEFORE
*                    WRITING -O- RECORD

00775  0766 00 0 01221         WTBA 1
00776  0540 00 0 03630         RCHA CT10     WRITE -O- RECORD
00777  0534 00 1 03512         LXA K4+2,1    L INDEX DELAY FOR
01000  2 00001 1 01000         TIX *,1,1     10 MILSEC UTILITY GAP
01001  0760 00 0 00005         IOT           TEST I-O CHECK
01002  0000 00 0 00705         HTR WB-1      ON - ERROR, TRY AGAIN
01003  0020 00 0 01006         TRA *+3       OFF - OK, SKIP BCD WORD
                                             AND DUMMY INSTRUCTION

01004  666322216001            BCD 1WTBA 1   TEST INSTRUCTION
01005  0766 00 0 01221         WTBA 1        DUMMY INSTRUCTION FOR 9IOM
01006  0500 00 0 03760         CLA REC       L NUMBER OF RECORD GROUPS
01007  0400 00 0 03401         ADD ONE       L +1
01010  0601 00 0 03760  OMG2   STO REC       SAVE NEW NUMBER

*             CHECK FOR REDUNDANCY DURING WRITE

01011  0074 00 4 06560         TSX RDNCK,4   CHECK FOR REDUNDANCY
01012  0761 00 0 01005         NOP *-5
01013  0020 00 0 00715         TRA WA        TO INCREASE DELAY


*             LOAD UNIT COUNT FROM CONTROL WORD

01014  0074 00 4 05513  RUC2   TSX IOCNT,4   TO RESET UNIT COUNT
01015  0074 00 4 03155         TSX REST,4    GO TO RESET INDICATORS

01016  0500 00 0 01064  INTL4  CLA R         ESTABLISH INITIAL
01017  0601 00 0 03154         STO REST-1
01020  0340 00 0 03530         CAS K20+5     STATUS OF SELECT INSTRS
01021  0020 00 0 01023         TRA *+2
01022  0020 00 0 01034         TRA AC2       UNIT ADDR OK - PROCEED
01023  0074 00 4 05512         TSX CTX,4     GO TO ADJUST PROGRAM
01024  0013 00 0 01062         HTR ALF2,0,OMG3  MODIFICATION AREA
01025  0074 00 4 05512         TSX CTX,4     GO TO ADJUST PROGRAM
01026  0020 63 0 01750         HTR ALF3,0,OMG4  MODIFICATION AREA
01027  0074 00 4 05512         TSX CTX,4     GO TO ADJUST PROGRAM
01030  0026 37 0 02203         HTR ALF4,0,OMG  MODIFICATION ARE
01031  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
01032  0031 65 0 03153         HTR REST-2,0,REST+8 MODIFICATION AREA
01033  0020 00 0 01016         TRA INTL4

01034  0500 00 0 05503  AC2    CLA IOCT      L UNIT COUNT
01035  0100 00 0 02077         TZE PASS2     ALL UNITS CALLED READ
01036  0402 00 0 03401         SUB ONE       L +1
01037  0601 00 0 05503         STO IOCT

01040  0500 00 0 03447  AA2    CLA TRA1+3    L TRA RB
01041  0601 00 0 00000         STO 0         POST RESTART
                                             TO READ GAP TEST

*             RESET READ GAP TIMES
```

```
01042  0500 00 0 04000  RB     CLA GT4       L +1232
01043  0601 00 0 03762         STO GT1B      RESET INITIAL
01044  0601 00 0 03767         STO GT2B      VALUES IN LOWEST
01045  0601 00 0 03774         STO GT3B      READ GAP TIMES

01046  0600 00 0 03761         STZ GT1A      RESET INITIAL
01047  0600 00 0 03766         STZ GT2A      VALUES IN HIGHEST
01050  0600 00 0 03773         STZ GT3A      READ GAP TIMES

01051  0600 00 0 03750         STZ TCP4      RESET TOTAL
01052  0600 00 0 03751         STZ TCP5      GAP TIMES
01053  0600 00 0 03752         STZ TCP6      TO ZERO

01054  0600 00 0 04001         STZ AV1       RESET AVERAGE
01055  0600 00 0 04003         STZ AV2       READ GAP TIMES
01056  0600 00 0 04005         STZ AV3       TO ZERO

01057  0600 00 0 03764         STZ GT1C      RESET RANGE
01060  0600 00 0 03771         STZ GT2C      READ GAP TIMES
01061  0600 00 0 03776         STZ GT3C      TO ZERO

01062  0600 00 0 03760  ALF2   STZ REC       RESET RECORD COUNT TO ZERO

01063  0600 00 0 04065         STZ CRLCK     RESET CREEP LOOP CHECK


*             READ TAPE

01064  0762 00 0 01221  R      RTBA 1
01065  0600 00 0 03753         STZ CP1       CLEAR TEMP STORAGE
01066  0600 00 0 03754         STZ CP2       CLEAR TEMP STORAGE
01067  0074 00 4 03155         TSX REST,4    GO RESET INDICATORS
01070  0540 00 0 03634         RCHA CT11
01071  0544 00 0 03634         LCHA CT11
01072  0544 00 0 03634  R1     LCHA CT11
01073  0030 00 0 01112         TEFA RDA-3    EOF - GO TO BACKSPACE
01074 -0060 00 0 01115         TCNA RDA      EOR - OUT OF PHASE. GO TO
                                             LOOK FOR NEXT UTILITY GAP

01075 -0500 00 0 03753         CAL CP1       L WORD READ
01076 -0340 00 0 03475         LAS K2        TEST FOR -U- WORD
01077  0020 00 0 01115         TRA RDA       SHOULD NEVER ENTER THIS ADR
01100  0020 00 0 01072         TRA R1
01101 -0320 00 0 03506         ANA K3+3      MASK TO -A- WORD
01102 -0340 00 0 03506         LAS K3+3      TEST FOR -A- WORD
01103  0020 00 0 01115         TRA RDA
01104  0020 00 0 01106         TRA *+2       IT IS AN -A- WORD
01105  0020 00 0 01115         TRA RDA
01106  0540 00 0 03644         RCHA CT12
01107 -0520 00 0 03754         NZT CP2       CHECK STG FOR ARRIVAL OF
                                             WORD FROM TAPE
01110  0020 00 0 01107         TRA *-1       NO WORD - CHECK AGAIN
01111  0020 00 0 01165         TRA RR1-3
```

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01112  0760 00 0 00005         IOT           TURN OFF IOT IND IF ON
01113  0761 00 0 00000         NOP
01114  0020 00 0 01521         TRA SMP       GO TO SUMMARY PRINT


*             RECORD OUT OF PHASE SEARCH

01115  0762 00 0 01221  RDA    RTBA 1        ERROR IN READING -U- OR -A-
01116  0540 00 0 03636         RCHA CT11+2   WORD -- SOMETHING OUT OF
01117  0060 00 0 01117         TCOA *        PHASE, FIND UTILITY GAP
01120  0500 00 0 03753         CLA CP1       AND PROCEED FROM THERE
01121  0340 00 0 03477         CAS K2+2      -10- RECORD
01122  0020 00 0 01125         TRA RDA2
01123  0020 00 0 01133         TRA RDA1-3    IS A -10- RECORD
01124  0020 00 0 01131         TRA RDA1-5    ASSUME AN -A- RECORD
01125  0340 00 0 03500  RDA2   CAS K2+3      -V- RECORD
01126  0020 00 0 01142         TRA RDA3      ASSUME -O- RECORD
01127  0020 00 0 01135         TRA RDA1-1    IS -V- RECORD
01130  0020 00 0 01135         TRA RDA1-1

01131  0534 00 1 03403         LXA THREE,1
01132  0020 00 0 01136         TRA RDA1

01133  0534 00 1 03402         LXA TWO,1
01134  0020 00 0 01136         TRA RDA1

01135  0534 00 1 03401         LXA ONE,1
01136  0762 00 0 01221  RDA1   RTBA 1
01137  0540 00 0 03636         RCHA CT11+2
01140  0060 00 0 01140         TCOA *        DELAY
01141  2 00001 1 01136         TIX RDA1,1,1
01142  0000 00 0 01143  RDA3   HTR *+1       TURN SSW 5 UP TO CONTINUE
                                             TO READ SAME UNIT -- DOWN
                                             TO GO TO READ NEXT UNIT

                                             PRESS START
01143  0760 00 0 00165         SWT 5         CHECK SENSE SWITCH 5
01144  0020 00 0 01064         TRA R         UP - CONTINUE TO READ SAME UNI
01145  0000 00 0 01146         HTR *+1       RAISE SENSE SWITCH 5

                                             PRESS START

01146  0760 00 0 00165         SWT 5         DN - RE-CHECK SENSE SWITCH 5
01147  0020 00 0 01151         TRA *+2       UP - OK, PROCEED
01150  0000 00 0 01146         HTR *-2       DN - ERROR, SSW 5 SHOULD
                                             BE UP BEFORE GOING TO TEST
                                             NEXT UNIT

*             ADJUST FOR PRINT IMAGE 11

01151  0074 00 4 03166         TSX CLR2,4
01152 -0500 00 0 03540         CAL MASK2     L +701400377777
01153  0320 00 1 05113         ANS PR11+20,1


*             SET UNIT IN PRINT IMAGE 11
```

```
01154  0074 00 4 03215         TSX UNIT,4

01155 -0500 00 0 02356         CAL RDC
01156  0500 00 0 03711         CLA BIT3       L BIT IN COL 13
01157 -0602 00 1 05111         ORS PR11+18,1
01160  0500 00 0 03710         CLA BIT2+1     L BIT IN COL 12
01161  0500 00 0 03702         CLA BIT1       L BIT IN COL 5

01162  0760 00 0 00163         SWT 3          CHECK SENSE SWITCH 3
01163  0074 00 2 03363         TSX PRT11,2    UP - GO TO PRINT
01164  0020 00 0 02064         TRA TCTX2      DN - BYPASS PRINT



01165  0500 00 0 03754         CLA CP2        L -A- WORD
01166  0601 00 0 03755         STO SS1        SAVE VARIABLE WRITE TIME
01167  0774 00 1 00014         AXT 12,1       L +12 IN XRA


*              READ -10- RECORD

01170  0762 00 0 01221  RR1    RTBA 1
01171  0600 00 0 03754         STZ CP2        CLEAR TEMP STORAGE
01172  0500 00 0 03400         CLA ZERO       CLEAR ACCUMULATOR
01173  0540 00 0 03644         RCHA CT12
01174 -0520 00 0 03754         NZT CP2        CHECK STG FOR ARRIVAL OF
                                              WORD FROM TAPE
01175  1 00002 1 01174         TXI *-1,1,2    NO WORD - STEP INDEX COUNT
01176  0634 00 1 03745         SXA TCP1,1     SAVE GAP TIME INDEX COUNT
01177  0754 00 1 00000         PXA 0,1        COMPARE MAX READ GAPE
01200  0340 00 0 03756         CAS GMAX       COMPARE MAX READ GAP
01201  0020 00 0 01206         TRA ERR1       ABOVE MAX
01202  0761 00 0 00000         NOP            INSIDE MAX READ GAP TIME
01203  0340 00 0 03757         CAS GMIN       COMPARE MIN READ GAP
01204  0020 00 0 01215         TRA OK1        INSIDE MIN READ GAP TIME
01205  0020 00 0 01215         TRA OK1        TO COPY CONTINUE
01206  0760 00 0 00162  ERR1   SWT 2          TEST SENSE SWITCH 2
01207  0020 00 0 01211         TRA ECA        UP - TO SET ERROR CONTROL
01210  0020 00 0 01215         TRA OK1        DN - IGNORE ERROR

01211  0500 00 0 03377  ECA    CLA ONES       L ALL ONES
01212  0601 00 0 04007         STO EC1        SET ERROR CONTROL
01213  0774 00 1 00017         AXT 15,1       L +17 IN XRA
01214  0020 00 0 01217         TRA RR2

01215  0600 00 0 04007  OK1    STZ EC1        SET NO ERROR CONTROL
01216  0774 00 1 00015         AXT 13,1       L +15 IN XRA


*              READ -V- RECORD

01217  0762 00 0 01221  RR2    RTBA 1
01220  0600 00 0 03754         STZ CP2        CLEAR TEMP STORAGE
01221  0500 00 0 03400         CLA ZERO       CLEAR ACCUMULATOR
01222  0540 00 0 03644         RCHA CT12
```

```
01223 -0520 00 0 03754         NZT CP2       CHECK STG FOR ARRIVAL OF
                                             WORD FROM TAPE
01224  1 00002 1 01223         TXI *-1,1,2   NO WORD - STEP INDEX COUNT
01225  0634 00 1 03746         SXA TCP2,1    SAVE GAP TIME INDEX COUNT
01226  0754 00 1 00000         PXA 0,1       L GAP TIME INDEX CONUT
01227  0340 00 0 03756         CAS GMAX      COMPARE MAX READ GAP
01230  0020 00 0 01235         TRA ERR2      ABOVE MAX
01231  0761 00 0 00000         NOP           INSIDE MAX READ GAP TIME
01232  0340 00 0 03757         CAS GMIN      COMPARE MIN READ GAP
01233  0020 00 0 01244         TRA OK2       INSIDE MIN READ GAP TIME
01234  0020 00 0 01244         TRA OK2       TO COPY CONTINUE
01235  0760 00 0 00162  ERR2   SWT 2         TEST SENSE SWITCH 2
01236  0020 00 0 01240         TRA ECB       UP - TO SET ERROR CONTROL
01237  0020 00 0 01244         TRA OK2       DN - IGNORE ERROR

01240  0500 00 0 03377  ECB    CLA ONES      L ALL ONES
01241  0601 00 0 04010         STO EC2       SET ERROR CONTROL
01242  0774 00 1 00017         AXT 15,1      L +17 IN XRA
01243  0020 00 0 01246         TRA RR3

01244  0600 00 0 04010  OK2    STZ EC2       SET NO ERROR CONTROL
01245  0774 00 1 00015         AXT 13,1      L +15 IN XRA

*             READ -O- RECORD

01246  0762 00 0 01221  RR3    RTBA 1
01247  0600 00 0 03754         STZ CP2       CLEAR TEMP STORAGE
01250  0500 00 0 03400         CLA ZERO      CLEAR ACCUMULATOR
01251  0540 00 0 03644         RCHA CT12
01252 -0520 00 0 03754         NZT CP2       CHECK STG FOR ARRIVAL OF
                                             WORD FROM TAPE
01253  1 00002 1 01252         TXI *-1,1,2   NO WORD - STEP INDEX COUNT
01254  0634 00 1 03747         SXA TCP3,1    SAVE GAP TIME INDEX COUNT
01255  0754 00 1 00000         PXA 0,1       L GAP TIME INDEX COUNT
01256  0340 00 0 03756         CAS GMAX      COMPARE MAX READ GAP
01257  0020 00 0 01264         TRA ERR3      ABOVE MAX
01260  0761 00 0 00000         NOP           INSIDE MAX READ GAP TIME
01261  0340 00 0 03757         CAS GMIN      COMPARE MIN READ GAP
01262  0020 00 0 01272         TRA OK3       INSIDE MIN READ GAP TIME
01263  0020 00 0 01272         TRA OK3       TO COPY CONTINUE
01264  0760 00 0 00162  ERR3   SWT 2         TEST SENSE SWITCH 2
01265  0020 00 0 01267         TRA ECC       UP - TO SET ERROR CONTROL
01266  0020 00 0 01272         TRA OK3       DN - IGNORE ERROR

01267  0500 00 0 03377  ECC    CLA ONES      L ALL ONES
01270  0601 00 0 04011         STO EC3       SET ERROR CONTROL

01271  0020 00 0 01276         TRA G

01272  0600 00 0 04011  OK3    STZ EC3       SET NO ERROR CONTROL
01273  0020 00 0 01276         TRA *+3       OFF - OK, SKIP BCD WORD
                                             AND DUMMY INSTRUCTION

01274  516322216001            BCD 1RTBA 1   TEST INSTRUCTION
01275  0762 00 0 01221         RTBA 1        DUMMY INSTRUCTION FOR 9IOM
01276  0500 00 0 03760  G      CLA REC       L NUMBER OF RECORD GROUPS
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01277  0400 00 0 03401         ADD ONE       STEP BY +1
01300  0601 00 0 03760  OMG3   STO REC       SAVE NO OF RECORDS

*             CHECK FOR REDUNDANCY DURING READ

01301  0074 00 4 06560         TSX RDNCK,4   CHECK FOR REDUNDANCY
01302  0761 00 0 01275         NOP *-5


*             SAVE READ GAP TIMES


*             -10- RECORD GAP TIMES

01303  0500 00 0 03745         CLA TCP1      L CURRENT -10- GAP TIME
01304  0340 00 0 03761         CAS GT1A      HIGH -10- GAP TIME
01305  0020 00 0 01310         TRA GA1
01306  0761 00 0 00000         NOP
01307  0020 00 0 01311         TRA GA2

01310  0601 00 0 03761  GA1    STO GT1A      SAVE HIGHER -10- GAP TIME
01311  0340 00 0 03762  GA2    CAS GT1B      LOWEST -10- GAP TIME
01312  0761 00 0 00000         NOP
01313  0020 00 0 01315         TRA GA3
01314  0601 00 0 03762         STO GT1B      SAVE LOWER -10- GAP TIME
01315  0500 00 0 03761  GA3    CLA GT1A      L HIGHEST -10- GAP TIME
01316  0402 00 0 03762         SUB GT1B      SUB LOWEST -10- GAP TIME
01317  0601 00 0 03764         STO GT1C      SAVE RANGE -10- GAP TIME

*             -V- RECORD GAP TIMES

01320  0500 00 0 03746         CLA TCP2      L CURRENT -V- GAP TIME
01321  0340 00 0 03766         CAS GT2A      HIGH -V- GAP TIME
01322  0020 00 0 01325         TRA GB1
01323  0761 00 0 00000         NOP
01324  0020 00 0 01326         TRA GB2

01325  0601 00 0 03766  GB1    STO GT2A      SAVE HIGHER -V- GAP TIME
01326  0340 00 0 03767  GB2    CAS GT2B      LOW -V- GAP TIME
01327  0761 00 0 00000         NOP
01330  0020 00 0 01332         TRA GB3
01331  0601 00 0 03767         STO GT2B      SAVE LOWER -V- GAP TIME
01332  0500 00 0 03766  GB3    CLA GT2A      L HIGHEST -V- GAP TIME
01333  0402 00 0 03767         SUB GT2B      SUB LOWEST -V- GAP TIME
01334  0601 00 0 03771         STO GT2C      SAVE RANGE -V- GAP TIME

*             -O- RECORD GAP TIMES

01335  0500 00 0 03747         CLA TCP3      L CURRENT -O- GAP TIME
01336  0340 00 0 03773         CAS GT3A      HIGH -O- GAP TIME
01337  0020 00 0 01342         TRA GC1
01340  0761 00 0 00000         NOP
01341  0020 00 0 01343         TRA GC2

01342  0601 00 0 03773  GC1    STO GT3A      SAVE HIGHER -O- GAP TIME
01343  0340 00 0 03774  GC2    CAS GT3B      LOW -O- GAP TIME
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01344  0761 00 0 00000         NOP
01345  0020 00 0 01347         TRA GC3
01346  0601 00 0 03774         STO GT3B      SAVE LOWER -O- GAP TIME
01347  0500 00 0 03773  GC3    CLA GT3A      L HIGHEST -O- GAP TIME
01350  0402 00 0 03774         SUB GT3B      SUB LOWEST -O- GAP TIME
01351  0601 00 0 03776         STO GT3C      SAVE RANGE -O- GAP TIME


*             DETERMINE AVERAGE READ GAP TIMES


*             AVERAGE -10- GAP TIME

01352  0500 00 0 03745         CLA TCP1      L CURRENT -10- GAP TIME
01353  0400 00 0 03750         ADD TCP4      ADD TOTAL -10- GAP TIME
01354  0601 00 0 03750         STO TCP4      SAVE NEW TOTAL TIME
01355  0760 00 0 00000         CLM           CLEAR ACC
01356  0560 00 0 03750         LDQ TCP4      L TOTAL TIME IN MQ
01357  0221 00 0 03760         DVP REC       DIV BY NO OF RECORDS
01360 -0600 00 0 04001         STQ AV1       SAVE AVERAGE -10- GAP TIME

*             AVERAGE -V- GAP TIME

01361  0500 00 0 03746         CLA TCP2      L CURRENT -V- GAP TIME
01362  0400 00 0 03751         ADD TCP5      ADD TOTAL -V- GAP TIME
01363  0601 00 0 03751         STO TCP5      SAVE NEW TOTAL TIME
01364  0760 00 0 00000         CLM           CLEAR ACC
01365  0560 00 0 03751         LDQ TCP5      L TOTAL TIME IN MQ
01366  0221 00 0 03760         DVP REC       DIV BY NO OF RECORDS
01367 -0600 00 0 04003         STQ AV2       SAVE AVERAGE -V- GAP TIME

*             AVERAGE -O- GAP TIME

01370  0500 00 0 03747         CLA TCP3      L CURRENT -O- GAP TIME
01371  0400 00 0 03752         ADD TCP6      ADD TOTAL -O- GAP TIME
01372  0601 00 0 03752         STO TCP6      SAVE NEW TOTAL TIME
01373  0760 00 0 00000         CLM           CLEAR ACC
01374  0560 00 0 03752         LDQ TCP6      L TOTAL TIME IN MQ
01375  0221 00 0 03760         DVP REC       DIV BY NO OF RECORDS
01376 -0600 00 0 04005         STQ AV3       SAVE AVERAGE -O- GAP TIME


*             ERROR PRINT OUT CHECK

01377  0500 00 0 04007  ER1    CLA EC1       L -10- ERROR INDICATOR
01400  0100 00 0 01417         TZE ER2       NO ERROR

01401  0500 00 0 04012         CLA EP1A      L -10- GO DOWN TIME
01402  0601 00 0 04015         STO EP4
01403  0500 00 0 03745         CLA TCP1      L -10- READ GAP TIME
01404  0601 00 0 04016         STO EP5       SAVE
01405  0074 00 2 02102         TSX EPR,2     GO TO CLEAR PRINT IMAGE

01406  0074 00 2 02111         TSX EPR1,2    GO TO SET CHANNEL AND UNIT

01407 -0625 00 0 03536         STL XRC
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01410  0020 00 0 02120         TRA EPR2      GO TO SET GO DOWN TIME
01411 -0625 00 0 03536         STL XRC
01412  0020 00 0 02134         TRA EPR3      GO TO SET READ GAP TIME

01413  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
01414  0020 00 0 01416         TRA *+2       PRINT
01415  0000 00 0 01417         HTR *+2       BYPASS PRINT - CHECK EP4
                                             FOR -10- GO DOWN TIME AND
                                             CHECK EP5 FOR -10- READ
                                             GAP TIME
01416  0074 00 4 03327         TSX PRT6,4    GO TO PRINT


01417  0500 00 0 04010  ER2    CLA EC2       L -V- ERROR INDICATOR
01420  0100 00 0 01474         TZE ER3       ZERO ON NO ERROR

*             SET -V- ERROR PRINT


*             ASSEMBLE GO DOWN TIME FROM -A-
*                  WORD READ FROM TAPE

01421  0500 00 0 04020         CLA EG1+1     L +7
01422  0601 00 0 04017         STO EG1
01423  0500 00 0 04022         CLA EG2+1     L +70
01424  0601 00 0 04021         STO EG2
01425  0500 00 0 04024         CLA EG3+1     L +700
01426  0601 00 0 04023         STO EG3
01427  0500 00 0 04026         CLA EG4+1     L +7000
01430  0601 00 0 04025         STO EG4

01431  0600 00 0 04013         STZ EP2A      CLEAR VARIABLE GO TIME STG
01432  0500 00 0 03755         CLA SS1       L -A- WORD
01433 -0320 00 0 03502         ANA K2+5      CLEAR TO GO DOWN TIME
01434  0771 00 0 00006         ARS 6
01435  0320 00 0 04017         ANS EG1       SAVE LAST DIGIT
01436  0771 00 0 00003         ARS 3
01437  0320 00 0 04021         ANS EG2       SAVE THIRD DIGIT
01440  0771 00 0 00003         ARS 3
01441  0320 00 0 04023         ANS EG3       SAVE SECOND DIGIT
01442  0771 00 0 00003         ARS 3
01443  0320 00 0 04025         ANS EG4       SAVE FIRST DIGIT

01444  0500 00 0 04013         CLA EP2A
01445 -0501 00 0 04017         ORA EG1       LOW ORDER DIGIT
01446 -0501 00 0 04021         ORA EG2       THIRD DIGIT
01447 -0501 00 0 04023         ORA EG3       SECOND DIGIT
01450 -0501 00 0 04025         ORA EG4       FIRST DIGIT
01451  0601 00 0 04013         STO EP2A

01452  0760 00 0 00000         CLM
01453  0560 00 0 04013         LDQ EP2A      L VARIABLE GO DOWN TIME
01454  0200 00 0 03404         MPY FOUR      RESTORE TO MICROSECONDS
01455 -0600 00 0 04013         STQ EP2A      SAVE VARIABLE GO DOWN TIME
01456  0221 00 0 03412         DVP TEN       DIVIDE BY 10 DECIMAL
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01457 -0600 00 0 04015         STQ EP4       SAVE MILSEC+100S NUMBER

01460  0500 00 0 03746         CLA TCP2      L READ TIME
01461  0601 00 0 04016         STO EP5

01462  0074 00 2 02102         TSX EPR,2     GO TO CLEAR  RINT IMAGE

01463  0074 00 2 02111         TSX EPR1,2    GO TO SET CHANNEL AND UNIT

01464 -0625 00 0 03536         STL XRC
01465  0020 00 0 02120         TRA EPR2      GO TO SET GO DOWN TIME

01466 -0625 00 0 03536         STL XRC
01467  0020 00 0 02134         TRA EPR3      GO TO SET READ GAP TIME

01470  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
01471  0020 00 0 01473         TRA *+2       PRINT
01472  0000 00 0 01474         HTR *+2       BYPASS PRINT - CHECK EP3
                                             FOR -10- GO DOWN TIME AND
                                             FOR -V- GO DOWN TIME
                                             CHECK EP5 FOR -V- READ
                                             GAP TIME
01473  0074 00 4 03327         TSX PRT6,4    GO TO PRINT


01474  0500 00 0 04011  ER3    CLA EC3       L -0- ERROR INDICATOR
01475  0100 00 0 01514         TZE SSW5-2    ZERO ON NO ERROR

*             SET -O- ERROR PRINT

01476  0500 00 0 04014         CLA EP3A      L +0 -- GO DOWN TIME
01477  0601 00 0 04015         STO EP4       SAVE
01500  0500 00 0 03747         CLA TCP3      L READ TIME
01501  0601 00 0 04016         STO EP5
01502  0074 00 2 02102         TSX EPR,2     GO TO CLEAR PRINT IMAGE

01503  0074 00 2 02111         TSX EPR1,2    GO TO SET CHANNEL AND UNIT

01504 -0625 00 0 03536         STL XRC
01505  0020 00 0 02120         TRA EPR2      GO TO SET GO DOWN TIME

01506 -0625 00 0 03536         STL XRC
01507  0020 00 0 02134         TRA EPR3      GO TO SET READ GAP TIME

01510  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
01511  0020 00 0 01513         TRA *+2       PRINT
01512  0000 00 0 01514         HTR *+2       BYPASS PRINT - CHECK EP4
                                             FOR -O- GO DOWN TIME
                                             CHECK EP5 FOR -O- READ
                                             GAP TIME
01513  0074 00 4 03327         TSX PRT6,4    GO TO PRINT


01514 -0760 00 0 00143         SLT 3         TEST SENSE LIGHT 3 AND
01515  0761 00 0 00000         NOP           TURN OFF IF ON
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01516  0760 00 0 00165  SSW5   SWT 5         TEST SENSE SWITCH 5
01517  0020 00 0 01064         TRA R         UP - TO CONTINUE READ
01520  0760 00 0 00141         SLN 1         DN - TURN ON SENSE LIGHT 1
                                             TO SHOW FORCING OF SUMMARY
                                             PRINT OUT


*             GAP SUMMARY PRINT OUT

01521 -0760 00 0 00143  SMP    SLT 3         TEST SENSE LIGHT 3
01522  0020 00 0 01524         TRA *+2       OFF - PRINT
01523  0020 00 0 01722         TRA SMP1      ON - BYPASS PRINT


*             CLEAR GAP SUMMARY PRINT IMAGES

*             CLEAR GAP SUMMARY PRINT LINE 1

01524  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 7
01525 -0500 00 0 03544         CAL MASK4     L +701400007757
01526  0320 00 1 04563         ANS PR7+20,1  CLEAR LEFT PRINT IMAGE


*             CLEAR GAP SUMMARY PRINT LINE 2

01527  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 7A
01530 -0500 00 0 03545         CAL MASK4+1   L +0000000000077
01531  0320 00 1 04614         ANS PR7A+21,1 CLEAR RIGHT PRINT IMAGE


*             CLEAR GAP SUMMARY PRINT LINE 3

01532  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 7B
01533 -0500 00 0 03545         CAL MASK4+1   L +000000000077
01534  0320 00 1 04644         ANS PR7B+21,1 CLEAR RIGHT PRINT IMAGE


*             CLEAR GAP SUMMARY PRINT LINE 4

01535  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 7C
01536 -0500 00 0 03545         CAL MASK4+1   L +000000000077
01537  0320 00 1 04674         ANS PR7C+21,1 CLEAR RIGHT PRINT IMAGE


*             ADJUST FOR PRINT IMAGE 7

*             SET UNIT AND CHANNEL IN IMAGE

01540  0074 00 4 03215         TSX UNIT,4

01541 -0500 00 0 01064         CAL R         L CURRENT SELECT
01542  0500 00 0 03711         CLA BIT3      L BIT IN COL 13
01543 -0602 00 1 04561         ORS PR7+18,1
01544  0500 00 0 03710         CLA BIT2+1    L BIT IN COL 12
01545  0500 00 0 03702         CLA BIT1      L BIT IN COL 5
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*             SET NUMBER OF RECORDS IN IMAGE

01546  0074 00 4 03177         TSX SPR,4
01547  0020 00 0 01560         TRA *+9

01550  0761 00 0 00000         NOP
01551  0761 00 0 00000         NOP

01552  0774 00 2 00004         AXT 4,2
01553  0500 00 0 03760         CLA REC
01554  0560 00 0 03520         LDQ K11       L 10 FOURTH-1 IN MQ
01555  0221 00 0 03515         DVP K10       DIVIDE BY 10 FOURTH
01556 -0500 00 2 03722         CAL BIT5+1,2  L BIT FOR IMAGE
01557 -0602 00 1 04561         ORS PR7+18,1


*             ADJUST FOR PRINT IMAGE 7A

*             SET LOW -10- READ GAP TIME

01560  0074 00 4 03173         TSX TSP,4
01561  0020 00 0 01572         TRA *+9

01562  0560 00 0 03762         LDQ GT1B
01563 -0600 00 0 03763         STQ GT1B+1

01564  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01565  0500 00 0 03763         CLA GT1B+1
01566  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01567  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01570 -0500 00 2 03710         CAL BIT2+1,2  L BIT FOR IMAGE
01571 -0602 00 1 04612         ORS PR7A+19,1


*             SET RANGE -10- READ GAP TIME

01572  0074 00 4 03173         TSX TSP,4
01573  0020 00 0 01604         TRA *+9

01574  0560 00 0 03764         LDQ GT1C
01575 -0600 00 0 03765         STQ GT1C+1

01576  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01577  0500 00 0 03765         CLA GT1C+1
01600  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01601  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01602 -0500 00 2 03717         CAL BIT4+1,2  L BIT FOR IMAGE
01603 -0602 00 1 04612         ORS PR7A+19,1


*             SET AVERAGE -10- READ GAP TIME

01604  0074 00 4 03173         TSX TSP,4
01605  0020 00 0 01616         TRA *+9
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01606  0560 00 0 04001         LDQ AV1
01607 -0600 00 0 04002         STQ AV1+1

01610  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01611  0500 00 0 04002         CLA AV1+1
01612  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01613  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01614 -0500 00 2 03727         CAL BIT6+1,2  L BIT FOR IMAGE
01615 -0602 00 1 04612         ORS PR7A+19,1


*             ADJUST FOR PRINT IMAGE 7B

*             SET LOW -V- READ GAP TIME

01616  0074 00 4 03173         TSX TSP,4
01617  0020 00 0 01630         TRA *+9

01620  0560 00 0 03767         LDQ GT2B
01621 -0600 00 0 03770         STQ GT2B+1

01622  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01623  0500 00 0 03770         CLA GT2B+1
01624  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01625  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01626 -0500 00 2 03710         CAL BIT2+1,2  L BIT FOR IMAGE
01627 -0602 00 1 04642         ORS PR7B+19,1


*             SET RANGE -V- READ GAP TIME

01630  0074 00 4 03173         TSX TSP,4
01631  0020 00 0 01642         TRA *+9

01632  0560 00 0 03771         LDQ GT2C
01633 -0600 00 0 03772         STQ GT2C+1

01634  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01635  0500 00 0 03772         CLA GT2C+1
01636  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01637  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01640 -0500 00 2 03717         CAL BIT4+1,2  L BIT FOR IMAGE
01641 -0602 00 1 04642         ORS PR7B+19,1


*             SET AVERAGE -V- READ GAP TIME

01642  0074 00 4 03173         TSX TSP,4
01643  0020 00 0 01654         TRA *+9

01644  0560 00 0 04003         LDQ AV2
01645 -0600 00 0 04004         STQ AV2+1

01646  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01647  0500 00 0 04004         CLA AV2+1
01650  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
```

```
01651  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01652 -0500 00 2 03727         CAL BIT6+1,2  L BIT FOR IMAGE
01653 -0602 00 1 04642         ORS PR7B+19,1


*             ADJUST FOR PRINT IMAGE 7C

*             SET LOW -O- READ GAP TIME

01654  0074 00 4 03173         TSX TSP,4
01655  0020 00 0 01666         TRA *+9

01656  0560 00 0 03774         LDQ GT3B
01657 -0600 00 0 03775         STQ GT3B+1

01660  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01661  0500 00 0 03775         CLA GT3B+1
01662  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01663  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01664 -0500 00 2 03710         CAL BIT2+1,2  L BIT FOR IMAGE
01665 -0602 00 1 04672         ORS PR7C+19,1


*             SET RANGE -O- READ GAP TIME

01666  0074 00 4 03173         TSX TSP,4
01667  0020 00 0 01700         TRA *+9

01670  0560 00 0 03776         LDQ GT3C
01671 -0600 00 0 03777         STQ GT3C+1

01672  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01673  0500 00 0 03777         CLA GT3C+1
01674  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01675  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01676 -0500 00 2 03717         CAL BIT4+1,2  L BIT FOR IMAGE
01677 -0602 00 1 04672         ORS PR7C+19,1


*             SET AVERAGE -O- READ GAP TIME

01700  0074 00 4 03173         TSX TSP,4
01701  0020 00 0 01712         TRA *+9

01702  0560 00 0 04005         LDQ AV3
01703 -0600 00 0 04006         STQ AV3+1

01704  0774 00 2 00005         AXT 5,2       L +5 IN XRB
01705  0500 00 0 04006         CLA AV3+1
01706  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
01707  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
01710 -0500 00 2 03727         CAL BIT6+1,2  L BIT FOR IMAGE
01711 -0602 00 1 04672         ORS PR7C+19,1


01712  0760 00 0 00163         SWT 3         TEST SENSE SWITCH 3
```

```
01713  0020 00 0 01715         TRA *+2       PRINT
01714  0000 00 0 01716         HTR *+2       BYPASS PRINT - HALT TO
                                              CHECK GAP SUMMARY VALUES
                                              SEE WRITE-UP FOR LOCATIONS

01715  0074 00 2 03332         TSX PRT7,2


*             CHECK SENSE LIGHT 1 TO SEE IF SUMMARY PRINT
*             OUT WAS FORCED BY SENSE SWITCH 5

01716 -0760 00 0 00141         SLT 1         TEST SENSE LIGTH 1
01717  0020 00 0 01722         TRA *+3       OFF
01720  0760 00 0 00143         SLN 3         ON - TURN ON SENSE LIGHT 3
                                              AFTER FORCED SUMMARY PRINT
01721  0020 00 0 01064         TRA R         CONTINUE TO READ

01722  0760 00 0 00161  SMP1   SWT 1         CHECK SENSE SWITCH 1
01723  0020 00 0 01736         TRA SMP1A     UP - PROCEED
01724  0020 00 4 02035         TRA SMP2,4    DN - GO TO PRINT UNIT PASS

01725  0760 00 0 00142         SLN 2         DN - REPEAT GAP TEST ON
                                              SAME UNIT - TURN ON SL 2
01726  0500 00 0 03523         CLA K20       L INITIAL SELECT
01727  0621 00 0 03531         STA K20A      SAVE
01730  0500 00 0 01064         CLA R         L CURRENT SELECT
01731  0621 00 0 03523         STA K20       SET UNIT IN
01732  0621 00 0 03530         STA K20+5     INITIALIZING ROUTINE
01733  0500 00 0 05503         CLA IOCT      L UNIT COUNT
01734  0601 00 0 03533         STO TEMP      SAVE
01735  0020 00 0 00642         TRA RUC1      TO REPEAT GAP TEST


01736 -0760 00 0 00142  SMP1A  SLT 2         CHECK SENSE LIGHT 2
01737  0020 00 0 01745         TRA *+6       OFF - PROCEED
01740  0500 00 0 03531         CLA K20A      RESET
01741  0621 00 0 03523         STA K20       INITIAL
01742  0621 00 0 03530         STA K20+5     SELECTS
01743  0500 00 0 03533         CLA TEMP      RESET
01744  0601 00 0 05503         STO IOCT      UNIT COUNT


*             CHECK BACKSPACE BY MEASURING FROM READ SELECT
*             FOLLOWING A BACKSPACE TO ARRIVAL OF WORD IN STORAGE

01745  0774 00 1 00002         AXT 2,1       L +2 IN XRA
01746  0600 00 0 04046         STZ TCP12     RESET
01747  0600 00 0 04047         STZ TCP12+1   BKSP-READ
01750  0600 00 0 04050  ALF3   STZ TCP12+2   TIMES
01751  0600 00 0 04060         STZ CTR2      RESET COUNTER FOR BKSPS
01752  0764 00 0 01201         BSRA 1        BACKSPACE OVER TAPE MARK
01753  0774 00 1 15136         AXT 6750,1    L +15136 IN XRA
01754  2 00001 1 01754         TIX *,1,1     DELAY FOR 162 DEC MILSEC

01755  0500 00 0 04046  BSRD   CLA TCP12     L CURRENT TIME
01756  0400 00 0 04047         ADD TCP12+1   ADD TOTAL TIME
```

```
01757  0601 00 0 04047         STO TCP12+1   SAVE NEW TOTAL TIME
01760  0500 00 0 04060         CLA CTR2
01761  0402 00 0 04051         SUB TCP13     L +62
01762  0100 00 0 02003         TZE BSRD1     BKSP-READ COMPLETE
01763  0600 00 0 03753         STZ CP1       CLEAR READ-IN AREA
01764  0764 00 0 01201         BSRA 1        BACKSPACE OVER LAST RECORD
01765  0774 00 1 04733         AXT 2523,1    L +4733 IN XRA
01766  2 00001 1 01766         TIX *,1,1     DELAY FOR 60 DEC MILSEC
01767  0762 00 0 01221         RTBA 1
01770  0774 00 1 00005         AXT 5,1       L +5 IN XRA
01771  0540 00 0 03636         RCHA CT11+2
01772  0520 00 0 03753         ZET CP1       CHECK STG FOR ARRIVAL
                                             OF WORD FROM TAPE
01773  0020 00 0 01776         TRA *+3       WORD HAS ARRIVED
01774  3 02033 1 01752         TXH BSRD-3,1,1051 WORD HAS NOT ARRIVED
                                             IF INDEX COUNT IS EXCEEDED
                                                 AFTER 25 DEC MILSEC
                                             GO TO BACKSPACE EXTRA TIME
                                             TO LOOK FOR RECORD
01775  1 00003 1 01772         TXI *-3,1,3   NO WORD - STEP TIME COUNT
01776  0634 00 1 04046         SXA TCP12,1   SAVE CURRENT TIME
01777  0500 00 0 04060         CLA CTR2      L BKSP COUNTER
02000  0400 00 0 03401         ADD ONE       L +1 - STEP COUNTER
02001  0601 00 0 04060         STO CTR2      SAVE NEW COUNT
02002  0020 00 0 01755         TRA BSRD

02003  0760 00 0 00000  BSRD1  CLM           CLEAR ADD
02004  0560 00 0 04047         LDQ TCP12+1   L TOTAL TIME IN MQ
02005  0221 00 0 04060         DVP CTR2      DIVIDE BY NO OF BKSPS
02006 -0600 00 0 04050         STQ TCP12+2   SAVE AVERAGE TIME


*             CLEAR PRINT IMAGE PR7D

02007  0074 00 4 03166         TSX CLR2,4    GO TO CLEAR PRINT IMAGE 7D
02010 -0500 00 0 03551         CAL MASK7     L 737757010773
02011  0320 00 1 04723         ANS PR7D+20,1

02012  0074 00 4 03166         TSX CLR2,4
02013 -0500 00 0 03552         CAL MASK7+1   L 577335676740
02014  0320 00 1 04724         ANS PR7D+21,1


*             ADJUST PRINT IMAGE 7D

02015  0074 00 4 03173         TSX TSP,4
02016  0020 00 0 02027         TRA *+9

02017  0560 00 0 04050         LDQ TCP12+2
02020 -0600 00 0 04050         STQ TCP12+2

02021  0774 00 2 00005         AXT 5,2       L +5 IN XRB
02022  0500 00 0 04050         CLA TCP12+2
02023  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
02024  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
02025 -0500 00 2 03745         CAL BIT9+1,2  L BIT FOR IMAGE
```

```
02026 -0602 00 1 04721         ORS PR7D+18,1


02027  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
02030  0020 00 0 02032         TRA *+2        UP - PRINT
02031  0020 00 0 02033         TRA *+2        DN - BYPASS PRINT

02032  0074 00 2 03340         TSX PRT7A,2    GO TO PRINT

02033  0074 00 4 02035         TSX SMP2,4     GO TO PRINT UNIT PASS
02034  0074 00 0 02055         TSX SMP2B

02035  0634 00 4 03536  SMP2   SXA XRC,4      SAVE XRC RETURN
02036  0760 00 0 00163         SWT 3          CHECK SENSE SWITCH 3
02037  0020 00 0 02041         TRA *+2        UP - PRINT UNIT PASS
02040  0020 00 0 02053         TRA SMP2A-1    DN - BYPASS PRINT

*             ADJUST FOR PRINT IMAGE 8

02041  0074 00 4 03166         TSX CLR2,4
02042 -0500 00 0 03540         CAL MASK2      L +701400377777
02043  0320 00 1 04753         ANS PR8+20,1


02044  0074 00 4 03215         TSX UNIT,4

02045 -0500 00 0 01064         CAL R          L SELECT
02046  0500 00 0 03711         CLA BIT3       L BIT IN COL 13
02047 -0602 00 1 04751         ORS PR8+18,1
02050  0500 00 0 03710         CLA BIT2+1     L BIT IN COL 12
02051  0500 00 0 03702         CLA BIT1       L BIT IN COL 5

02052  0074 00 2 03343         TSX PRT8,2     GO TO PRINT UNIT PASS

02053  0534 00 4 03536         LXA XRC,4      RESET XRC FOR RETURN
02054  0020 00 4 00001  SMP2A  TRA 1,4        RETURN


02055  0762 00 0 01221  SMP2B  RTBA 1         READ
02056  0540 00 0 03676         RCHA CT20      END OF FILE
02057  0060 00 0 02057         TCOA *         DELAY
02060  0030 00 0 02062         TEFA *+2       END OF FILE -- OK
02061  0770 00 0 01201         WEFA 1         WRITE END OF FILE
02062  0760 00 0 00140         SLF            TURN OF ALL SENSE LIGHTS
02063  0020 00 0 02211  OMG4   TRA AA3-12     BEGIN CREEP TEST



02064 -0500 00 0 01064  TCTX2  CAL R          L SELECT
02065  0602 00 0 03154         SLW REST-1
02066  0074 00 4 05512         TSX CTX,4      GO TO MODIFY PROGRAM
02067  0 01300 0 01062         PZE ALF2,0,OMG3 MODIFICATION AREA
02070  0074 00 4 05512         TSX CTX,4      GO TO MODIFY PROGRAM
02071  0 02063 0 01750         PZE ALF3,0,OMG4
02072  0074 00 4 05512         TSX CTX,4      GO TO MODIFY PROGRAM
```

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02073  0 02637 0 02203         PZE ALF4,0,OMG MODIFICATION AREA
02074  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
02075  0031 65 0 03153         HTR REST-2,0,REST+8
02076  0020 00 0 01034         TRA AC2


02077  0760 00 0 00164  PASS2  SWT 4         TEST SENSE SWITCH 4
02100  0020 00 0 03134         TRA PASS3     UP - PROCEED
02101  0020 00 0 00642         TRA RUC1      DN - REPEAT GAP TEST



*             CLEAR GAP ERROR PRINT IMAGE

02102  0074 00 4 03166  EPR    TSX CLR2,4    GO TO CLEAR PRINT IMAGE 4
02103 -0500 00 0 03542         CAL MASK3     L 701401573600
02104  0320 00 1 04533         ANS PR6+20,1

02105  0074 00 4 03166         TSX CLR2,4
02106 -0500 00 0 03543         CAL MASK3+1   L 360367400740
02107  0320 00 1 04534         ANS PR6+21,1
02110  0020 00 2 00001         TRA 1,2       RETURN


*             SET CHANNEL AND UNIT IN GAP
*                  ERROR PRINT IMAGE

02111  0074 00 4 03215  EPR1   TSX UNIT,4
02112 -0500 00 0 01064         CAL R         L CURRENT SELECT
02113  0500 00 0 03711         CLA BIT3      L BIT IN COL 13
02114 -0602 00 1 04531         ORS PR6+18,1
02115  0500 00 0 03710         CLA BIT2+1    L BIT IN COL 12
02116  0500 00 0 03702         CLA BIT1      L BIT IN COL 5
02117  0020 00 2 00001         TRA 1,2


*             SET GO DOWN TIME IN GAP
*                ERROR PRINT IMAGE

02120  0074 00 4 03177  EPR2   TSX SPR,4
02121  0020 00 0 02132         TRA *+9

02122  0761 00 0 00000         NOP
02123  0761 00 0 00000         NOP
02124  0774 00 2 00005         AXT 5,2       L +5 IN XRA
02125  0500 00 0 04015         CLA EP4       L GO DOWN TIME
02126  0560 00 0 03521         LDQ K11+1     L 10 FIFTH-1 IN MQ
02127  0221 00 0 03516         DVP K10+1     DIVIDE BY 10 FIFTH
02130 -0500 00 2 03734         CAL BIT7+1,2  L BIT FOR IMAGE
02131 -0602 00 1 04531         ORS PR6+18,1  INSERT BIT IN IMAGE

02132  0535 00 4 03536         LAC XRC,4
02133  0020 00 4 00001         TRA 1,4       RETURN


*             SET READ GAP TIME IN GAP
```

```
*            ERROR PRINT IMAGE

02134  0074 00 4 03173  EPR3   TSX TSP,4
02135  0020 00 0 02146         TRA *+9

02136  0560 00 0 04016         LDQ EP5       L READ GAP TIME IN MQ
02137 -0600 00 0 04016         STQ EP5

02140  0774 00 2 00005         AXT 5,2       L +5 IN XRB
02141  0500 00 0 04016         CLA EP5       L READ GAP TIME
02142  0560 00 0 03521         LDQ K11+1
02143  0221 00 0 03516         DVP K10+1
02144 -0500 00 2 03745         CAL BIT9+1,2  L BIT FOR IMAGE
02145 -0602 00 1 04532         ORS PR6+19,1
02146  0535 00 4 03536         LAC XRC,4
02147  0020 00 4 00001         TRA 1,4       RETURN



*****************************************************************

*            B A C K S P A C E   C R E E P   T E S T            *


02150  0500 00 0 03451  CREEP  CLA TRA1+5    L TRA AC3-5
02151  0601 00 0 00115         STO INTLB
02152  0601 00 0 03127         STO TCTX3+6
02153  0020 00 0 00031         TRA IDN-1

02154  0074 00 4 05513  RUC3   TSX IOCNT,4   TO RESET UNIT COUNT

02155  0500 00 0 02320  INTL5  CLA WRC       ESTABLISH INITIAL
02156  0601 00 0 03154         STO REST-1
02157  0340 00 0 03523         CAS K20       STATUS OF SELECT INSTRS
02160  0020 00 0 02162         TRA *+2
02161  0020 00 0 02173         TRA *+10      UNIT ADDR OK - PROCEED
02162  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
02163  0013 00 0 01062         HTR ALF2,0,OMG3  MODIFICATION AREA
02164  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
02165  0020 63 0 01750         HTR ALF3,0,OMG4  MODIFICATION AREA
02166  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
02167  0026 37 0 02203         HTR ALF4,0,OMG  MODIFICATION AREA
02170  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
02171  0031 65 0 03153         HTR REST-2,0,REST+8 MODIFICATION AREA
02172  0020 00 0 02155         TRA INTL5
02173  0761 00 0 00000         NOP

02174  0500 00 0 03462         CLA NOP       L NOP
02175  0601 00 0 00115         STO INTLB
02176  0500 00 0 03452         CLA TRA1+6    L TRA AC3-1
02177  0601 00 0 03127         STO TCTX3+6

02200  0760 00 0 00140         SLF           TURN OFF ALL SENSE LIGHTS
```

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02201  0500 00 0 05503  AC3    CLA IOCT      L UNIT COUNT
02202  0100 00 0 03134         TZE PASS3     ALL UNITS CALLED TESTED

02203  0402 00 0 03401  ALF4   SUB ONE       L +1
02204  0601 00 0 05503         STO IOCT
02205  0500 00 0 03377         CLA ONES      LOAD CHECK INDICATOR TO
02206  0601 00 0 04065         STO CRLCK     SHOW LOOPING IN CREEP TEST
02207  0770 00 0 01201         WEFA 1
02210  0020 00 0 02225         TRA AA3

*            RESET SENSE SWITCHES USED IN
*                INTER-RECORD GAP TEST

02211  0760 00 0 00161         SWT 1         TEST SENSE SWITCH 1
02212  0020 00 0 02214         TRA *+2       UP - PROCEED
02213  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
02214  0760 00 0 00164         SWT 4         TEST SENSE SWITCH 4
02215  0020 00 0 02217         TRA *+2       UP - PROCEED
02216  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
02217  0760 00 0 00165         SWT 5         TEST SENSE SWITCH 5
02220  0020 00 0 02222         TRA *+2       UP - PROCEED
02221  0760 00 0 00141         SLN 1         TURN ON SENSE LIGHT 1
02222 -0760 00 0 00141         SLT 1         TEST SENSE LIGHT 1
02223  0020 00 0 02225         TRA *+2       OFF - PROCEED
02224  0000 00 0 02217         HTR *-5       ON - HALT TO ADJUST SENSE
                                             SWITCHES BEFORE PROCEEDING

02225  0500 00 0 03453  AA3    CLA TRA1+7    L TRA AA3
02226  0601 00 0 00000         STO 0         POST RESTART TO BEGIN
                                             BACKSPACE CREEP TEST


*            ROUTINE FOR VISUAL CHECKING AND ADJUSTMENT OF CREEP

02227  0760 00 0 00162  CRA    SWT 2         TEST SENSE SWITCH 2
02230  0020 00 0 02271         TRA CR1
02231  0772 00 0 01201         REWA 1        REWIND TEST UNIT
02232  0766 00 0 01221         WTBA 1        WRITE 4 ONE WORD
02233  0540 00 0 03663         RCHA CT18     RECORDS FROM FIX
02234  0770 00 0 01201         WEFA 1        WRITE END OF FILE
02235  0764 00 0 01201         BSRA 1        BKSP OVER END OF FILE
02236  0764 00 0 01201  CRB    BSRA 1        BSKP OVER 4TH RECORD
02237  0764 00 0 01201         BSRA 1        BKSP OVER 3RD RECORD
02240  0774 00 1 00012         AXT 10,1      L +12 IN XRA
02241  2 00001 1 02241         TIX *,1,1     DELAY
02242  0766 00 0 01221         WTBA 1        REWRITE 3RD RECORD
02243  0540 00 0 03672         RCHA CT18+7
02244  0764 00 0 01201         BSRA 1        BKSP OVER 3RD RECORD
02245  0764 00 0 01201         BSRA 1        BKSP OVER 2ND RECORD
02246  0762 00 0 01221         RTBA 1
02247  0540 00 0 03670         RCHA CT18+5   READ 3 ONE WORD RECORDS
02250  0060 00 0 02250         TCOA *        DELAY
02251  0030 00 0 02257         TEFA *+6      EOF FROM FORWARD CREEP
02252  0760 00 0 01000         BTTA          NO END OF FILE
02253  0020 00 0 02255         TRA *+2       ON - BACKWARD CREEP
02254  0020 00 0 02236         TRA CRB       CONTINUE
```

```
02255  0760 00 0 00141         SLN 1          TURN ON SENSE LIGHT 1
02256  0020 00 0 02257         TRA *+1
02257  0760 00 0 00142         SLN 2          TURN ON SENSE LIGHT 2
02260  0760 00 0 00165         SWT 5          CHECK SENSE SWITCH 5
02261  0000 00 0 02262         HTR *+1        UP - HALT TO SHOW CREEP
                                               SL 1 ON TO SHOW BACKWARD
                                               SL 2 ON TO SHOW FORWARD
02262  0760 00 0 00140         SLF            TURN OFF ALL SENSE LIGHTS
02263  0022 00 0 02264         TRCA *+1       TURN OFF RDNCY IND IF ON
02264  0760 00 0 00161         SWT 1          CHECK SENSE SWITCH 1
02265  0020 00 0 03117         TRA TCTX3-2    UP - PROCEED TO NEXT UNIT
02266  0020 00 0 02231         TRA CRA+2


02267  0020 00 0 02271         TRA *+2
02270  0770 00 0 01201         WEFA 1         WRITE INITIAL END OF FILE

02271  0600 00 0 04027  CR1    STZ TCP7       RESET INITIAL GAP TIME
02272  0600 00 0 04031         STZ TCP8       RESET CURRENT GAP TIME
02273  0600 00 0 04032         STZ TCP8+1     RESET PREVIOUS GAP TIME
02274  0600 00 0 04033         STZ TCP8+2     RESET CURRENT FWD CREEP TIME
02275  0600 00 0 04034         STZ TCP8+3     RESET CURRENT BKWD CREEP
02276  0600 00 0 04035         STZ TCP9       RESET TOTAL GAP TIME
02277  0600 00 0 04036         STZ TCP9+1     RESET TOTAL FWD CREEP TIME
02300  0600 00 0 04037         STZ TCP9+2     RESET TOTAL BKWD CREEP TIME
02301  0600 00 0 04040         STZ TCP9+3     RESET AVG FWD CREEP TIME
02302  0600 00 0 04041         STZ TCP9+4     RESET AVG BKWD CREEP TIME
02303  0600 00 0 04042         STZ TCP10      RESET AVG. CREEP GAP TIME
02304  0600 00 0 04055         STZ CTR        RESET BACKSPACE COUNTER
02305  0600 00 0 04061         STZ CTRF       RESET FWD CREEP COUNTER
02306  0600 00 0 04062         STZ CTRB       RESET BKWD CREEP COUNTER
02307  0600 00 0 04063         STZ EFCK       CLEAR END OF FILE CHECK
02310  0600 00 0 04064         STZ CRCK       CLEAR EXCESS FWD CREEP CHK
02311  0500 00 0 04052         CLA LOC1       L ADDR OF INITIAL GAP TIME
02312  0621 00 0 02522         STA RDC3
02313  0500 00 0 04054         CLA LOC1+2     L ADDR OF PREVIOUS GAP TIME
02314  0621 00 0 02523         STA RDC3+1
02315  0030 00 0 02316         TEFA *+1       TURN OFF EOF IND IF ON
02316  0020 00 0 02320         TRA *+2        SKIP BCD WORD


*            WRITE 4 RECORDS


*            WRITE 1ST RECORD - 30 WORDS

02317  666322216001            BCD 1WTBA 1    TEST INSTRUCTION
02320  0766 00 0 01221  WRC    WTBA 1
02321  0074 00 4 03155         TSX REST,4     GO TO RESET INDICATORS
02322  0540 00 0 03650         RCHA CT13
02323  0074 00 4 06560         TSX RDNCK,4    REDUNDANCY CHECK-1ST REC
02324  0761 00 0 02320         NOP WRC

*            WRITE 2ND RECORD - 1 WORD

02325  0766 00 0 01221         WTBA 1
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02326  0540 00 0 03652         RCHA CT14
02327  0074 00 4 06560         TSX RDNCK,4   REDUNDANCY CHECK-2ND REC
02330  0761 00 0 02320         NOP WRC

*            WRITE 3RD RECORD - 1 WORD

02331  0766 00 0 01221         WTBA 1
02332  0540 00 0 03654         RCHA CT15
02333  0074 00 4 06560         TSX RDNCK,4   REDUNDANCY CHECK-3RD REC
02334  0761 00 0 02320         NOP WRC

*            WRITE 4TH RECORD - 100 WORDS

02335  0766 00 0 01221         WTBA 1
02336  0540 00 0 03656         RCHA CT16
02337  0074 00 4 06560         TSX RDNCK,4   REDUNDANCY CHECK-4TH REC
02340  0761 00 0 02320         NOP WRC

02341  0770 00 0 01201         WEFA 1

02342 -0764 00 0 01201         BSFA 1        BKSP OVER TAPE MARK


*            CLEAR READ FIELD

02343  0774 00 1 00100         AXT 64,1      L +100 IN XRA
02344  0600 00 1 04267         STZ RDFD+64,1 CLEAR
02345  2 00001 1 02344         TIX *-1,1,1   READ FIELD


02346 -0764 00 0 01201         BSFA 1        BKSP OVER 4 RECORDS
02347  0762 00 0 01221         RTBA 1        READ OVER INITIAL
02350  0540 00 0 03676         RCHA CT20     TAPE MARK
02351  0060 00 0 02351         TCOA *        DELAY
02352  0030 00 0 02356         TEFA RDC      OK
02353  0770 00 0 01201         WEFA 1        LOST PLACE
02354  0000 00 0 02271         HTR CR1       START AGAIN
                                             IF REPEATED HALTS OCCUR
                                             HERE, CHECK FOR ABILITY
                                             TO WRITE OR RECOGNIZE
                                             END OF FILE


*            READ AND CHECK FOUR RECORDS

02355  516322216001            BCD 1RTBA 1   TEST INSTRUCTION
02356  0762 00 0 01221  RDC     RTBA 1
02357  0540 00 0 03661         RCHA CT17
02360  0074 00 4 06560         TSX RDNCK,4   READ REDUNDANCY ERROR
02361  0761 00 0 02356         NOP RDC

02362  0500 00 0 03405         CLA FIVE      L +5
02363  0601 00 0 06557         STO RECNO
02364  0774 00 2 00004         AXT 4,2       L +4 IN XRB
02365  0500 00 0 03514         CLA K4+4      L +31
02366  0601 00 0 06556         STO WDNO
```

```
02367  0774 00 1 00030         AXT 24,1       L +30 IN XRA

02370  0500 00 1 04217         CLA RDFD+24,1 L WORD READ
02371  0560 00 1 04116         LDQ FIX+24,1  L WORD GENERATED IN MQ
02372  0340 00 1 04116         CAS FIX+24,1  COMPARE WORD GNERATED
02373  0020 00 0 02375         TRA *+2       ERROR
02374  0020 00 0 02377         TRA *+3       OK
02375  0074 00 4 06502         TSX ERROR-2,4 READ-WRITE ERROR
02376  0761 00 0 02356         NOP RDC
02377  2 00001 1 02370         TIX *-7,1,1
02400  2 00001 2 02401         TIX *+1,2,1

02401  0500 00 0 03402         CLA TWO       L +2
02402  0601 00 0 06556         STO WDNO
02403  0774 00 1 00001         AXT 1,1       L +1 IN XRA

02404  0500 00 2 04222         CLA RDFD+27,2 L WORD READ
02405  0560 00 2 04121         LDQ FIX+27,2  L WORD GENERATED IN MQ
02406  0340 00 2 04121         CAS FIX+27,2  COMPARE WORD GENERATED
02407  0020 00 0 02411         TRA *+2       ERROR
02410  0020 00 0 02413         TRA *+3       OK
02411  0074 00 4 06502         TSX ERROR-2,4 READ-WRITE ERROR
02412  0761 00 0 02356         NOP RDC
02413  2 00001 2 02404         TIX *-7,2,1


02414 -0764 00 0 01201  CR2    BSFA 1        BKSP OVER TAPE MARK
02415  0762 00 0 01221         RTBA 1        READ OVER INITIAL
02416  0540 00 0 03676         RCHA CT20     TAPE MARK
02417  0060 00 0 02417         TCOA *        DELAY
02420  0030 00 0 02423         TEFA *+3      OK
02421  0770 00 0 01201         WEFA 1        LOST PLACE
02422  0000 00 0 02271         HTR CR1       START AGAIN

02423 -0760 00 0 00142         SLT 2         TEST SENSE LIGHT 2
02424  0020 00 0 02426         TRA *+2       OFF - OK
02425  0020 00 0 02437         TRA CR2A      ON - BACKWARD CREEP FAILURE
                                             GO TO PRINT


02426  0500 00 0 04031         CLA TCP8      L CURRENT GAP TIME
02427  0601 00 0 04032         STO TCP8+1    SAVE AS PREVIOUS GAP TIME
02430  0500 00 0 04055         CLA CTR       L NO OF BACKSPACE OPNS
02431  0760 00 0 00161         SWT 1         TEST SENSE SWITCH 1
02432  0020 00 0 02435         TRA *+3       UP - SHORT BKSP COUNT
02433  0402 00 0 04057         SUB CTR+2     DN - LONG BKSP COUNT-L 201
02434  0020 00 0 02436         TRA *+2
02435  0402 00 0 04056         SUB CTR+1     L 31
02436 -0120 00 0 02442         TMI RDC1      BKSP COUNT INCOMPLETE

02437 -0760 00 0 00141  CR2A   SLT 1         TEST SENSE LIGHT 1
02440  0020 00 0 02645         TRA SMP3      OFF - GO TO SUMMARY PRINT
02441  0020 00 0 03100         TRA CR4       ON - GO TO PASS PRINT

*             MEASURE GAP BETWEEN 2ND AND 3RD RECORDS
```

```
02442  0762 00 0 01221  RDC1   RTBA 1
02443  0600 00 0 03753         STZ CP1        CLEAR TEMP STORAGE
02444  0074 00 4 03155         TSX REST,4     GO TO RESET INDICATORS
02445  0540 00 0 03640         RCHA CT11+4
02446  0544 00 0 03640         LCHA CT11+4
02447  0774 00 1 00000  RDC2   AXT 0,1        L +0 IN XRA
02450  0544 00 0 03640         LCHA CT11+4
02451 -0060 00 0 02455         TCNA *+4       END OF RECORD - ERROR
02452  0030 00 0 02455         TEFA *+3       END OF FILE - ERROR
02453 -0500 00 0 03753         CAL CP1        L WORD READ
02454 -0340 00 0 04114         LAS FIX+22     COMPARE 23RD WORD-1ST REC
02455  0020 00 0 02470         TRA RDC2A      OUT OF STEP - TRY AGAIN
02456  0020 00 0 02460         TRA *+2        OK-23RD WORD - 1ST REC
02457  0020 00 0 02450         TRA RDC2+1     NOT LAST WORD - CONTINUE
02460  0544 00 0 03636         LCHA CT11+2
02461  0600 00 0 03753         STZ CP1        CLEAR TEMP STORAGE
02462 -0520 00 0 03753         NZT CP1        CHECK STG FOR ARRIVAL OF
                                              WORD FROM TAPE
02463  0020 00 0 02462         TRA *-1        NO WORD - CHECK
02464 -0500 00 0 03753         CAL CP1        L WORD READ
02465 -0340 00 0 04116         LAS FIX+24     COMPARE 2ND RECORD
02466  0020 00 0 02470         TRA *+2        ERROR - BEGIN AGAIN
02467  1 00011 1 02514         TXI RDC2B,1,9  IT IS SECOND RECORD
02470  0770 00 0 01201  RDC2A  WEFA 1         ERROR - BEGIN AGAIN
02471  0000 00 0 02472         HTR *+1        ADJUST SENSE SWITCH 5
02472  0760 00 0 00165         SWT 5          CHECK SENSE SWITCH 5
02473  0000 00 0 02271         HTR CR1        UP - TRY AGAIN
02474  0000 00 0 02475         HTR *+1        ADJUST SENSE SWITCH 5
02475  0760 00 0 00165         SWT 5          DN - RE-CHECK SENSE SWITCH
02476  0020 00 0 02500         TRA *+2        UP - OK, PROCEED
02477  0000 00 0 02475         HTR *-2        DN - ERROR, SSW 5 SHOULD
                                              BE UP BEFORE GOING TO TEST
                                              NEXT UNIT

*             ADJUST FOR PRINT IMAGE 12

02500  0074 00 4 03166         TSX CLR2,4

02501 -0500 00 0 03540         CAL MASK2      L +7014003777777
02502  0320 00 1 05143         ANS PR12+20,1

*             SET UNIT IN PRINT IMAGE 12

02503  0074 00 4 03215         TSX UNIT,4

02504 -0500 00 0 02356         CAL RDC
02505  0500 00 0 03711         CLA BIT3       L BIT IN COL 13
02506 -0602 00 1 05141         ORS PR12+18,1
02507  0500 00 0 03710         CLA BIT2+1     L BIT IN COL 12
02510  0500 00 0 03702         CLA BIT1       L BIT IN COL 5


02511  0760 00 0 00163         SWT 3          CHECK SENSE SWITCH 3
02512  0074 00 2 03367         TSX PRT12,2    UP - GO TO PRINT
02513  0020 00 0 03116         TRA TCTX3-3    DN - BYPASS PRINT AND GO TO
```

TEST NEXT UNIT

```
02514  0762 00 0 01221  RDC2B  RTBA 1
02515  0500 00 0 03400         CLA ZERO       CLEAR ACCUMULATOR
02516  0600 00 0 03754         STZ CP2        CLEAR TEMP STORAGE
02517  0540 00 0 03644         RCHA CT12
02520 -0520 00 0 03754         NZT CP2        CHECK STG FOR ARRIVAL OF
                                              THIRD RECORD FROM TAPE
02521  1 00002 1 02520         TXI *-1,1,2    NO WORD - STEP INDEX COUNT
02522  0634 00 1 00000  RDC3   SXA **,1       SAVE INITIAL GAP-1ST READ
02523  0634 00 1 00000         SXA **,1       SAVE PREVIOUS GAP - 1ST READ
02524  0634 00 1 04031         SXA TCP8,1     SAVE CURRENT GAP TIME
02525  0760 00 0 00140         SLF            TURN OFF ALL SENSE LIGHTS

*             CHECK FOR BACKWARD CREEP FAILURE

02526  0754 00 1 00000         PXA 0,1        L CURRENT GAP TIME IN ACC
02527  0340 00 0 03757         CAS GMIN       COMPARE MIN READ GAP
02530  0020 00 0 02533         TRA *+3        OVER MIN - OK
02531  0020 00 0 02533         TRA *+2        EQUALS MIN - OK

02532  0760 00 0 00142         SLN 2          BELOW MIN GAP TIME - TURN
                                              ON SENSE LIGHT 2 TO SHOW
                                              FAILURE WITH BACKWARD CREEP

02533  0500 00 0 04053         CLA LOC1+1     L ADDR OF CURRENT GAP TIME
02534  0621 00 0 02522         STA RDC3
02535  0621 00 0 02523         STA RDC3+1

02536  0500 00 0 04055         CLA CTR        STEP
02537  0400 00 0 03401         ADD ONE        BACKSPACE
02540  0601 00 0 04055         STO CTR        COUNTER

*             ADJUST AVERAGE CREEP TIMES

02541  0500 00 0 04031         CLA TCP8       L CURRENT GAP
02542  0402 00 0 04032         SUB TCP8+1     SUBTRACT PREVIOUS TIME
02543  0120 00 0 02562         TPL *+15       PLUS ON FWD CREEP
02544  0500 00 0 04032         CLA TCP8+1     L PREVIOUS GAP TIME
02545  0402 00 0 04031         SUB TCP8       SUBTRACT CURRENT GAP
02546  0602 00 0 04034         SLW TCP8+3     SAVE NEW BKWD CREEP TIME
02547  0500 00 0 04034         CLA TCP8+3     L BKWD CREEP TIME
02550  0400 00 0 04037         ADD TCP9+2     ADD TOTAL BKWD CREEP TIME
02551  0601 00 0 04037         STO TCP9+2     SAVE NEW TOTAL TIME

02552  0500 00 0 04062         CLA CTRB       STEP
02553  0400 00 0 03401         ADD ONE        BKWD CREEP
02554  0601 00 0 04062         STO CTRB       COUNTER

02555  0760 00 0 00000         CLM            CLEAR ACCUMULATOR
02556  0560 00 0 04037         LDQ TCP9+2     L TOTAL BKWD CREEP IN MQ
02557  0221 00 0 04062         DVP CTRB       OBTAIN AVERAGE
02560 -0600 00 0 04041         STQ TCP9+4     SAVE AVG BKWD CREEP TIME
```

```
02561  0020 00 0 02574         TRA *+11

02562  0601 00 0 04033         STO TCP8+2    SAVE CURRENT FWD CREEP
02563  0400 00 0 04036         ADD TCP9+1    ADD TOTAL FWD CREEP TIME
02564  0601 00 0 04036         STO TCP9+1    SAVE NEW TOTAL FWD CREEP

02565  0500 00 0 04061         CLA CTRF      STEP
02566  0400 00 0 03401         ADD ONE       FWD CREEP
02567  0601 00 0 04061         STO CTRF      COUNTER

02570  0760 00 0 00000         CLM           CLEAR ACCUMULATOR
02571  0560 00 0 04036         LDQ TCP9+1    L TOTAL FWD CREEP TIME
02572  0221 00 0 04061         DVP CTRF      OBTAIN AVERAGE
02573 -0600 00 0 04040         STQ TCP9+3    SAVE AVG FWD CREEP TIME

02574  0500 00 0 04035         CLA TCP9      L TOTAL GAP TIME
02575  0400 00 0 04031         ADD TCP8      ADD CURRENT TIME
02576  0601 00 0 04035         STO TCP9      SAVE NEW TOTAL TIME
02577  0760 00 0 00000         CLM           CLEAR ACC
02600  0560 00 0 04035         LDQ TCP9      L TOTAL TIME IN MQ
02601  0221 00 0 04055         DVP CTR       DIVIDE BY NO OF BACKSPACES
02602 -0600 00 0 04045         STQ TCP11     SAVE AVERAGE GAP TIME


*             CHECK FOR BACKWARD CREEP

02603  0500 00 0 04045         CLA TCP11     L AVERAGE GAP TIME
02604  0340 00 0 04027         CAS TCP7      COMPARE INITIAL TIME
02605  0020 00 0 02613         TRA *+6       AVG GAP LONGER -- FWD CREEP
02606  0020 00 0 02613         TRA *+5       AVG GAP SAME -- OK
02607  0760 00 0 00143         SLN 3         AVG GAP SHORTER -- TURN
                                             ON SENSE LIGHT 3 TO SHOW
                                             BACKWARD CREEP

02610  0500 00 0 04041         CLA TCP9+4    L AVG BKWD CREEP TIME
02611  0601 00 0 04042         STO TCP10     SAVE FOR PRINT
02612  0020 00 0 02622         TRA *+8       GO TO BACKSPACE


*             CHECK FOR EXCESSIVE FORWARD CREEP

02613  0500 00 0 04040         CLA TCP9+3    L AVG FWD CREEP TIME
02614  0601 00 0 04042         STO TCP10     SAVE FOR PRINT
02615  0340 00 0 04044         CAS TCP10+2   COMPARE MAX AVG CREEP
02616  0020 00 0 02621         TRA *+3       AVG GAP LONGER - EXCESSIVE
02617  0020 00 0 02622         TRA *+3       AVG GAP SAME - OK
02620  0020 00 0 02622         TRA *+2       AVG GAP SHORTER - OK
02621  0760 00 0 00144         SLN 4         TURN ON SENSE LIGHT 4 TO
                                             SHOW EXCESSIVE FWD CREEP

02622  0764 00 0 01201         BSRA 1        BACKSPACE OVER 3RD REC
02623  0774 00 1 00012         AXT 10,1      L +12 IN XRA
02624  2 00001 1 02624         TIX *,1,1     DELAY
02625  0766 00 0 01221         WTBA 1        REWRITE
02626  0540 00 0 03654         RCHA CT15     THIRD RECORD
```

```
02627  0600 00 0 04063         STZ EFCK      RESET EOF CHECK
02630  0030 00 0 02631         TEFA *+1      TURN OFF EOF IND IF ON

02631  0762 00 0 01221         RTBA 1
02632  0540 00 0 03636         RCHA CT11+2
02633 -0764 00 0 01201         BSFA 1        BKSP OVER 4 RECORDS
02634  0060 00 0 02634         TCOA *        DELAY


*             CHECK FOR END OF FILE

02635  0030 00 0 02637         TEFA *+2      CREEP TEST CAN NOT CONTINUE
                                             TO READ -- GO TO PRINT
02636  0020 00 0 02642         TRA *+4       PROCEED


*             SET END OF FILE CHECK INDICATOR

02637  0500 00 0 03377  OMG    CLA ONES      L ALL ONES
02640  0601 00 0 04063         STO EFCK
02641  0020 00 0 02437         TRA CR2A      GO TO CREEP PRINT


02642  0760 00 0 00165         SWT 5         TEST SENSE SWITCH 5
02643  0020 00 0 02415         TRA CR2+1     UP - CONTINUE BKSP-WRITE
02644  0760 00 0 00141         SLN 1         DN - TURN ON SENSE LIGHT 1
                                             TO SHOW FORCING PRINT

*             BACKSPACE CREEP SUMMARY PRINT OUT

*             CLEAR PRINT IMAGE 9

02645  0074 00 4 03166  SMP3   TSX CLR2,4
02646 -0500 00 0 03540         CAL MASK2     L +701400377777
02647  0320 00 1 05003         ANS PR9+20,1

02650  0074 00 4 03166         TSX CLR2,4
02651 -0500 00 0 03546         CAL MASK5     L +777577400000
02652  0320 00 1 05004         ANS PR9+21,1

02653 -0500 00 0 03553         CAL MASK8     L 777774000000
02654  0320 00 0 05004         ANS PR9+21    CLEAR ZONES
02655  0320 00 0 05006         ANS PR9+23    COLS 20-36


*             CLEAR PRINT IMAGE 9A

02656  0074 00 4 03166         TSX CLR2,4
02657 -0500 00 0 03547         CAL MASK6     L+177341077036
02660  0320 00 1 05033         ANS PR9A+20,1

02661  0074 00 4 03166         TSX CLR2,4
02662 -0500 00 0 03550         CAL MASK6+1   L +001741077000
02663  0320 00 1 05034         ANS PR9A+21,1
02664  0774 00 1 00030         AXT 24,1      L +30 IN XRA
02665 -0500 00 0 03555         CAL MASK8+2   L 777777777776
```

```
02666  0320 00 1 05037         ANS PR9A+24,1
02667  2 00002 1 02666         TIX *-1,1,2
02670  0774 00 1 00030         AXT 24,1       L +30 IN XRA
02671 -0500 00 0 03554         CAL MASK8+1    L 577777777777
02672  0320 00 1 05040         ANS PR9A+25,1
02673  2 00002 1 02672         TIX *-1,1,2


*             ADJUST FOR PRINT IMAGE 9

02674  0074 00 4 03215         TSX UNIT,4

02675 -0500 00 0 02356         CAL RDC        L SELECT
02676  0500 00 0 03711         CLA BIT3       L BIT IN COL 13
02677 -0602 00 1 05001         ORS PR9+18,1
02700  0500 00 0 03710         CLA BIT2+1     L BIT IN COL 12
02701  0500 00 0 03702         CLA BIT1       L BIT IN COL 5


*             SET NUMBER OF BACKSPACE-WRITE
*              OPERATIONS IN PRINT IMAGE 9

02702  0074 00 4 03177         TSX SPR,4
02703  0020 00 0 02714         TRA *+9

02704  0761 00 0 00000         NOP
02705  0761 00 0 00000         NOP

02706  0774 00 2 00003         AXT 3,2        L +3 IN XRB
02707  0500 00 0 04055         CLA CTR
02710  0560 00 0 03522         LDQ K11+2      L 10 THIRD-1 IN MQ
02711  0221 00 0 03517         DVP K10+2      DIVIDE BY 10 THIRD
02712 -0500 00 2 03737         CAL BIT8-1,2   L BIT FOR IMAGE
02713 -0602 00 1 05001         ORS PR9+18,1


*             SET FAILURE IN PRINT IMAGE 9

02714 -0760 00 0 00142         SLT 2          TEST SENSE LIGHT 2
02715  0020 00 0 02745         TRA CR3        OFF - NO GAP FAILURE
02716  0760 00 0 00142         SLN 2          ON - RESET SENSE LIGHT 2
                                              ON TO SHOW GAP FAILURE
02717  0500 00 0 03726         CLA BIT6       L BIT IN COL 29
02720  0771 00 0 00001         ARS 1          SHIFT BIT
02721 -0602 00 0 05006         ORS PR9+23
02722 -0602 00 0 04766         ORS PR9+7
02723  0771 00 0 00001         ARS 1          SHIFT BIT
02724 -0602 00 0 05006         ORS PR9+23
02725 -0602 00 0 05000         ORS PR9+17
02726  0771 00 0 00001         ARS 1          SHIFT BIT
02727 -0602 00 0 05006         ORS PR9+23
02730 -0602 00 0 04760         ORS PR9+1
02731  0771 00 0 00001         ARS 1          SHIFT BIT
02732 -0602 00 0 05004         ORS PR9+21
02733 -0602 00 0 04774         ORS PR9+13
02734  0771 00 0 00001         ARS 1          SHIFT BIT
```

```
02735 -0602 00 0 05002         ORS PR9+19
02736 -0602 00 0 04772         ORS PR9+11
02737  0771 00 0 00001         ARS 1          SHIFT BIT
02740 -0602 00 0 05004         ORS PR9+21
02741 -0602 00 0 04760         ORS PR9+1
02742  0771 00 0 00001         ARS 1          SHIFT BIT
02743 -0602 00 0 05006         ORS PR9+23
02744 -0602 00 0 04770         ORS PR9+9


02745 -0760 00 0 00143  CR3    SLT 3          TEST SENSE LIGHT 3
02746  0020 00 0 03001         TRA FWD        OFF - FORWARD CREEP
02747  0760 00 0 00143         SLN 3          ON - RESET SENSE LIGHT 3
                                              ON TO SHOW BACKWARD CREEP

*             SET BACKWARD IN PRINT IMAGE 9A

02750  0500 00 0 03401         CLA ONE        L BIT IN COL 36
02751 -0602 00 0 05035         ORS PR9A+22
02752 -0602 00 0 05025         ORS PR9A+14
02753  0500 00 0 03704         CLA BIT1+2     L BIT IN COL 7
02754 -0602 00 0 05036         ORS PR9A+23
02755 -0602 00 0 05022         ORS PR9A+11
02756  0767 00 0 00001         ALS 1          SHIFT BIT
02757 -0602 00 0 05034         ORS PR9A+21
02760 -0602 00 0 05010         ORS PR9A+1
02761  0767 00 0 00001         ALS 1          SHIFT BIT
02762 -0602 00 0 05036         ORS PR9A+23
02763 -0602 00 0 05030         ORS PR9A+17
02764  0767 00 0 00001         ALS 1          SHIFT BIT
02765 -0602 00 0 05032         ORS PR9A+19
02766 -0602 00 0 05016         ORS PR9A+7
02767  0767 00 0 00001         ALS 1          SHIFT BIT
02770 -0602 00 0 05034         ORS PR9A+21
02771 -0602 00 0 05026         ORS PR9A+15
02772  0767 00 0 00001         ALS 1          SHIFT BIT
02773 -0602 00 0 05036         ORS PR9A+23
02774 -0602 00 0 05024         ORS PR9A+13
02775  0767 00 0 00001         ALS 1          SHIFT BIT
02776 -0602 00 0 05036         ORS PR9A+23
02777 -0602 00 0 05030         ORS PR9A+17
03000  0020 00 0 03043         TRA SMP4


*             SET FORWARD IN PRINT IMAGE 9A

03001  0500 00 0 03704  FWD    CLA BIT1+2     L BIT IN COL 7
03002 -0602 00 0 05036         ORS PR9A+23
03003 -0602 00 0 05022         ORS PR9A+11
03004  0767 00 0 00001         ALS 1          SHIFT BIT
03005 -0602 00 0 05034         ORS PR9A+21
03006 -0602 00 0 05010         ORS PR9A+1
03007  0767 00 0 00001         ALS 1          SHIFT BIT
03010 -0602 00 0 05036         ORS PR9A+23
03011 -0602 00 0 05030         ORS PR9A+17
03012  0767 00 0 00001         ALS 1          SHIFT BIT
```

```
03013 -0602 00 0 05032         ORS PR9A+19
03014 -0602 00 0 05016         ORS PR9A+7
03015  0767 00 0 00001         ALS 1          SHIFT BIT
03016 -0602 00 0 05034         ORS PR9A+21
03017 -0602 00 0 05010         ORS PR9A+1
03020  0767 00 0 00001         ALS 1          SHIFT BIT
03021 -0602 00 0 05034         ORS PR9A+21
03022 -0602 00 0 05016         ORS PR9A+7
03023  0767 00 0 00001         ALS 1          SHIFT BIT
03024 -0602 00 0 05036         ORS PR9A+23
03025 -0602 00 0 05016         ORS PR9A+7


03026 -0760 00 0 00144         SLT 4          TEST SENSE LIGHT 4
03027  0020 00 0 03032         TRA *+3        OFF - OK INTO IMAGE
03030  0760 00 0 00144         SLN 4          ON - RESET SENSE LIGHT 4 ON
                                              TO SHOW EXCESSIVE FWD CREEP
03031  0020 00 0 03043         TRA SMP4

03032 -0520 00 0 04063         NZT EFCK       CHECK IF EOF READ
03033  0020 00 0 03035         TRA *+2        NO END OF FILE - INSERT OK
03034  0020 00 0 03043         TRA SMP4


*             SET OK IN PRINT IMAGE 9

03035  0500 00 0 03744         CLA BIT9       L BIT IN COL 26
03036 -0602 00 0 04766         ORS PR9+7
03037 -0602 00 0 05004         ORS PR9+21
03040  0771 00 0 00001         ARS 1          SHIFT BIT TO COL 27
03041 -0602 00 0 04776         ORS PR9+15
03042 -0602 00 0 05004         ORS PR9+21


*             ADJUST FOR PRINT IMAGE 9A

*             SET INITIAL GAP TIME IN PR 9A

03043  0074 00 4 03173  SMP4   TSX TSP,4
03044  0020 00 0 03055         TRA *+9

03045  0560 00 0 04027         LDQ TCP7
03046 -0600 00 0 04030         STQ TCP7+1

03047  0774 00 2 00005         AXT 5,2        L +5 IN XRB
03050  0500 00 0 04030         CLA TCP7+1
03051  0560 00 0 03521         LDQ K11+1      L 10 FIFTH-1 IN MQ
03052  0221 00 0 03516         DVP K10+1      DIVIDE BY 10 FIFTH
03053 -0500 00 2 03717         CAL BIT4+1,2   L BIT FOR IMAGE
03054 -0602 00 1 05031         ORS PR9A+18,1  INSERT BIT IN IMAGE


*             SET AVERAGE CREEP IN PR 9A

03055  0074 00 4 03173         TSX TSP,4
03056  0020 00 0 03067         TRA *+9
```

```
03057  0560 00 0 04042         LDQ TCP10
03060 -0600 00 0 04043         STQ TCP10+1

03061  0774 00 2 00005         AXT 5,2        L +5 IN XRB
03062  0500 00 0 04043         CLA TCP10+1
03063  0560 00 0 03521         LDQ K11+1      L 10 FIFTH-1 IN MQ
03064  0221 00 0 03516         DVP K10+1      DIVIDE BY 10 FIFTH
03065 -0500 00 2 03717         CAL BIT4+1,2   L BIT FOR IMAGE
03066 -0602 00 1 05032         ORS PR9A+19,1  INSERT BIT IN IMAGE


03067  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
03070  0020 00 0 03072         TRA *+2        UP - GO TO PRINT
03071  0000 00 0 03073         HTR *+2        DN - BYPASS PRINT -- HALT
                                              TO CHECK CREEP TEST RESULTS

03072  0074 00 2 03347         TSX PRT9,2     GO TO PRINT CREEP TEST
                                              SUMMARY PRINT OUT


03073 -0760 00 0 00141         SLT 1          TEST SENSE LIGHT 1
03074  0020 00 0 03100         TRA CR4        OFF - PRINT NOT FORCED
03075  0760 00 0 00141         SLN 1          ON - RESET SENSE LIGHT 1
                                              ON TO SHOW PRINT OUT FORCED
03076 -0760 00 0 00142         SLT 2          TEST SENSE LIGHT 2
03077  0020 00 0 02415         TRA CR2+1      OFF - CONTINUE BKSP TEST
                                              ON - BACKWARD CREEP ERROR
                                              GO TO READ NEXT UNIT


*             ADJUST FOR PRINT IMAGE 10

03100  0074 00 4 03166  CR4    TSX CLR2,4
03101 -0500 00 0 03540         CAL MASK2      L +701400377777
03102  0320 00 1 05063         ANS PR10+20,1


*             SET UNIT IN PRINT IMAGE 10

03103  0074 00 4 03215         TSX UNIT,4
03104 -0500 00 0 02356         CAL RDC
03105  0500 00 0 03711         CLA BIT3       L BIT IN COL 13
03106 -0602 00 1 05061         ORS PR10+18,1
03107  0500 00 0 03710         CLA BIT2+1     L BIT IN COL 12
03110  0500 00 0 03702         CLA BIT1       L BIT IN COL 5


03111  0760 00 0 00163         SWT 3          TEST SENSE SWITCH 3
03112  0074 00 2 03355         TSX PRT10,2    UP - GO TO PRINT
                                              DN - BYPASS PRINT
03113  0760 00 0 00164         SWT 4          TEST SENSE SWITCH 4
03114  0020 00 0 03116         TRA *+2        UP - PROCEED TO NEXT UNIT
03115  0020 00 0 02270         TRA CR1-1      DN -- REPEAT BKSP-CREEP
                                              TEST ON SAME UNIT
03116  0522 00 0 02231         XEC CRA+2      REWIND TEST UNIT
```

```
03117 -0520 00 0 04065         NZT CRLCK     TEST LOOP CHECK INDICATOR
03120  0020 00 0 02064         TRA TCTX2     ZERO - PROCEED TO GAP
                                             TEST ON NEXT UNIT


03121 -0500 00 0 02356  TCTX3  CAL RDC       L SELECT
03122  0601 00 0 03154         STO REST-1
03123  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03124  0013 00 0 01062         HTR ALF2,0,OMG3  MODIFICATION AREA
03125  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03126  0020 63 0 01750         HTR ALF3,0,OMG4  MODIFICATION AREA
03127  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03130  0026 37 0 02203         HTR ALF4,0,OMG  MODIFICATION AREA
03131  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03132  0031 65 0 03153         HTR REST-2,0,REST+8 MODIFICATION AREA
03133  0020 00 0 02201         TRA AC3


03134  0760 00 0 00164  PASS3  SWT 4          TEST SENSE SWITCH 4
03135  0020 00 0 03142         TRA FINL       UP - PROCEED
03136  0000 00 0 03137         HTR *+1        DN - HALT TO SET SSW 4

03137  0760 00 0 00164         SWT 4          TEST SENSE SWITCH 4
03140  0020 00 0 03142         TRA FINL       UP - PROCEED
03141  0020 00 0 02154         TRA RUC3       DN - REPEAT CREEP TEST
                                              ON ALL UNITS CALLED

03142  0760 00 0 00163  FINL   SWT 3
03143  0074 00 4 03373         TSX PRTFN,4    UP - GO TO PRINT
03144  0760 00 0 00166         SWT 6          DN - BYPASS PRINT AND
                                              TEST SENSE SWITCH 6
03145  0020 00 0 03147         TRA *+2        UP - PROCEED TO NEXT
                                              DIAGNOSTIC TEST
03146  0020 00 0 00033         TRA IDN+1      DN - REPEAT ENTIRE 9T05
03147 +000000000000     FINL1  OCT **         SELECT
03150  0540 00 0 03153         RCHA FINLX     READ IN
03151  0544 00 0 00000         LCHA 0         NEXT
03152  0020 00 0 00001         TRA 1          PROGRAM

03153 -1 00003 0 00000  FINLX  IOCT 0,0,3

*********************************************************************

*                  U T I L I T Y   R O U T I N E S                  *


03154 +000000000000            OCT **         SELECT INSTRUCTION
03155  0760 00 0 01000  REST   BTTA
03156  0761 00 0 00000         NOP
03157 -0760 00 0 01000         ETTA
03160  0761 00 0 00000         NOP
03161  0760 00 0 00005         IOT
03162  0761 00 0 00000         NOP
03163  0022 00 0 03164         TRCA *+1
```

```
03164  0030 00 0 03165         TEFA *+1
03165  0020 00 4 00001         TRA 1,4



03166  0774 00 1 00024  CLR2   AXT 20,1      L +24 IN XRA
03167  0522 00 4 00001         XEC 1,4
03170  0522 00 4 00002         XEC 2,4
03171  2 00002 1 03170         TIX *-1,1,2
03172  0020 00 4 00003         TRA 3,4


*            CONVERT MICROSEC TO MILSEC

03173  0522 00 4 00002  TSP    XEC 2,4       L BINARY NO - INDEX COUNT
03174  0200 00 0 03511         MPY K4+1      MULTIPLY BY 24 DECIMAL
03175  0221 00 0 03412         DVP TEN       DIVIDE BY 10 DECIMAL
03176  0522 00 4 00003  TSP1   XEC 3,4       SAVE MILSEC+100S NUMBER


*            SET DECIMAL DIGITS IN PRINT IMAGE

03177  0634 00 2 03535  SPR    SXA XRB,2     SAVE XRB
03200  0522 00 4 00004         XEC 4,4       L NO OF DIGITS IN XRB
03201  0522 00 4 00005  SPR1   XEC 5,4       L TIME IN ACC
03202  0522 00 4 00006         XEC 6,4       L 10 TO X POWER-1 IN MQ
03203  0522 00 4 00007         XEC 7,4       DIVIDE BY 10 TO X PWR
03204  0200 00 0 03412  SPR2   MPY TEN       MULTIPLY BY 10 DECIMAL
03205  0767 00 0 00001         ALS 1         DOUBLE INCREMENT
03206  0734 00 1 00000         PAX 0,1
03207  0522 00 4 00010  SPR3   XEC 8,4       L ONE BIT
03210  0522 00 4 00011  SPR4   XEC 9,4       SET BIT IN PRINT IMAGE
03211  0760 00 0 00000         CLM
03212  2 00001 2 03204         TIX SPR2,2,1

03213  0534 00 2 03535         LXA XRB,2     RESET XRB
03214  0020 00 4 00001  SPR5   TRA 1,4       RETURN


*            SET CHANNEL AND UNIT IN PASS PRINT IMAGE

03215  0522 00 4 00001  UNIT   XEC 1,4       L SELECT INSTRUCTION
03216  0601 00 0 03533         STO TEMP
03217 -0320 00 0 03473         ANA K1        L +17
03220  0044 00 0 00000         PAI           L IND FROM ACC
03221  0056 00  000012        RNT 00012     CHECK FOR UNIT 10
03222  0020 00 0 03232         TRA UNIT2     NO UNIT 10
03223  0774 00 1 00000         AXT 0,1       L +0 IN XRA
03224  0522 00 4 00002         XEC 2,4       L LOW BIT
03225  0522 00 4 00003         XEC 3,4       INSERT BIT

03226  0774 00 1 00002         AXT 2,1       L +2 IN XRA
03227  0522 00 4 00004         XEC 4,4       L HIGH BIT
03230  0522 00 4 00003         XEC 3,4       INSERT BIT
03231  0020 00 0 03243         TRA UNIT3
```

```
03232 -0500 00 0 03533  UNIT2  CAL TEMP
03233 -0320 00 0 03473         ANA K1        L +17
03234  0767 00 0 00001         ALS 1         DOUBLE INCREMENT
03235  0734 00 1 00000         PAX 0,1
03236  0522 00 4 00002         XEC 2,4       L LOW BIT
03237  0522 00 4 00003         XEC 3,4       INSERT BIT

03240  0774 00 1 00000         AXT 0,1       L +0 IN XRA
03241  0522 00 4 00004         XEC 4,4       L HIGH BIT
03242  0522 00 4 00003         XEC 3,4       INSERT BIT

03243 -0500 00 0 03533  UNIT3  CAL TEMP
03244 -0320 00 0 03474         ANA K1+1      L +7000
03245  0771 00 0 00010         ARS 8         MOVE TO LOW ORDER + DOUBLE
03246  0734 00 1 00000         PAX 0,1
03247  0522 00 4 00005         XEC 5,4       L CHANNEL BIT
03250  0522 00 4 00003         XEC 3,4       INSERT BIT

03251  0020 00 4 00006         TRA 6,4       RETURN


*            ADJUST UTILITY PRINT ROUTINES FOR DESIRED CHANNEL

03252  0500 00 0 05500  ADJ    CLA CTRL1     SAVE
03253  0601 00 0 03534         STO XRA       CONTROL
03254  0500 00 0 05501         CLA CTRL2     WORDS
03255  0601 00 0 03535         STO XRB       FOR
03256  0500 00 0 05502         CLA CTRL3     ALL
03257  0601 00 0 03536         STO XRC       CHANNELS

03260  0074 00 4 05514         TSX IOC,4     ENTER CONTROL WORD FOR
                                             PRINTER ON DESIRED CHANNEL
03261  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03262  0070 62 0 07057         HTR CH14-1,0,CH14+2
03263  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03264  0074 07 0 07400         HTR WPRA-1,0,WPRA+6
03265  0074 00 4 05512         TSX CTX,4     GO TO MODIFY PROGRAM
03266  0000 00 6 03277         HTR PRID-1,PRTFN+3
03267  0761 00 0 00000         NOP
03270  0761 00 0 00000         NOP

03271  0500 00 0 03534         CLA XRA       RESET
03272  0601 00 0 05500         STO CTRL1     CONTROL
03273  0500 00 0 03535         CLA XRB       WORDS
03274  0601 00 0 05501         STO CTRL2     FOR
03275  0500 00 0 03536         CLA XRC       ALL
03276  0601 00 0 05502         STO CTRL3     CHANNELS

03277  0020 00 0 00051         TRA RUC       CONTINUE PROGRAM

*  PRINT --
* NOW PERFORMING DIAGNOSTIC TEST 9T05

03300  0766 00 0 01361  PRID   WPRA          PRINT OUT TEST IDENTITY
03301  0760 00 0 01363         SPRA 3        DOUBLE SPACE
```

```
03302  0540 00 0 03556         RCHA CTIDN
03303  0020 00 4 00001         TRA 1,4       RETURN


*  PRINT --
*MAX TIME FROM WR SEL TO RESET LD CHN AT LD PT        .   MILSEC

03304  0766 00 0 01361  PRT1   WPRA
03305  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03306  0540 00 0 03562         RCHA CT1A
03307  0020 00 2 00007         TRA 7,2       RETURN


*  PRINT --
*MAX TIME FROM RD SEL TO RESET LD CHN AT LD PT        .   MILSEC

03310  0766 00 0 01361  PRT2   WPRA
03311  0540 00 0 03566         RCHA CT2A
03312  0020 00 2 00031         TRA 25,2      RETURN


*  PRINT --
*MAX TIME FROM WR SEL TO REEST LD CHN NOT AT LD PT    .   MILSEC

03313  0766 00 0 01361  PRT3   WPRA
03314  0540 00 0 03572         RCHA CT3A
03315  0020 00 2 00007         TRA 7,2       RETURN


*  PRINT --
*MAX TIME FROM RD SEL TO RESET LD CHN NO AT LD PT     .   MILSEC

03316  0766 00 0 01361  PRT4   WPRA
03317  0540 00 0 03576         RCHA CT4A
03320  0020 00 2 00031         TRA 25,2      RETURN


*  PRINT --
*CHN +   TF         LD CHN TIMING TEST COMPLETE

03321  0766 00 0 01361  PRT5   WPRA
03322  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03323  0540 00 0 03600         RCHA CT5
03324  0766 00 0 01361         WPRA          SPACE
03325  0060 00 0 03325         TCOA *        PRINTER
03326  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF    -  GO LINE DOWN    .   MSEC  -  READ TIME     .   MSEC

03327  0766 00 0 01361  PRT6   WPRA
03330  0540 00 0 03604         RCHA CT6A
03331  0020 00 4 00001         TRA 1,4       RETURN

*  PRINT --
```

```
*CHN +   TF     --       RECORDS READ       LOW     RANGE     AVERAGE
*GO LINE DOWN 10 MILSEC                      .        .      .   MILSE
*GO LINE DOWN VARIABLE TIME                  .        .      .   MILSE
*GO LINE DOWN ZERO TIME                      .        .      .   MILSE

03332  0766 00 0 01361  PRT7   WPRA
03333  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03334  0540 00 0 03612         RCHA CT7A
03335  0766 00 0 01361         WPRA
03336  0540 00 0 03614         RCHA CT7A+2
03337  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
* 50 BKSP-READ OPNS   .  MILSEC AVG BETWEEN RD SEL AND FIRST WORD

03340  0766 00 0 01361  PRT7A  WPRA
03341  0540 00 0 03674         RCHA CT19
03342  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF         GAP TEST COMPLETE

03343  0766 00 0 01361  PRT8   WPRA
03344  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03345  0540 00 0 03620         RCHA CT8A     RETURN
03346  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF          BACKSPACE-WRITE OPERATIONS COMPLETE
*  INITIAL GAP    .   MILSEC    AVG.        CREEP    .    MILSEC

03347  0766 00 0 01361  PRT9   WPRA
03350  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03351  0540 00 0 03624         RCHA CT9A
03352  0766 00 0 01361         WPRA
03353  0540 00 0 03626         RCHA CT9A+2
03354  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF         CREEP TEST COMPLETE

03355  0766 00 0 01361  PRT10  WPRA
03356  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03357  0540 00 0 03632         RCHA CT10A
03360  0766 00 0 01361         WPRA          SPACE
03361  0060 00 0 03361         TCOA *        PRINTER
03362  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF        UNABLE TO PERFORM INTER-RECORD GAP TEST
```

```
03363  0766 00 0 01361  PRT11  WPRA
03364  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03365  0540 00 0 03642         RCHA CT11A
03366  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*CHN +   TF       UNABLE TO PERFORM BACKSPACE-WRITE CREEP TEST

03367  0766 00 0 01361  PRT12  WPRA
03370  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03371  0540 00 0 03646         RCHA CT12A
03372  0020 00 2 00001         TRA 1,2       RETURN


*  PRINT --
*9T05    PASS COMPLETE   ALL UNITS

03373  0766 00 0 01361  PRTFN  WPRA 1
03374  0760 00 0 01363         SPRA 3        DOUBLE SPACE
03375  0540 00 0 03700         RCHA CTFN
03376  0020 00 4 00001         TRA 1,4       RETURN

*********************************************************************

*                      C O N S T A N T S                            *


03377 -037777777777     ONES   OCT -37777777777
03400 +000000000000     ZERO   OCT 0
03401 +000000000001     ONE    OCT +1
03402 +000000000002     TWO    OCT +2
03403 +000000000003     THREE  OCT +3
03404 +000000000004     FOUR   OCT +4
03405 +000000000005     FIVE   OCT +5
03406 +000000000006     SIX    OCT +6
03407 +000000000007     SEVEN  OCT +7
03410 +000000000010     EIGHT  OCT +10
03411 +000000000011     NINE   OCT +11
03412 +000000000012     TEN    OCT +12


03413 +000000002342     TYMK   OCT +2342     NORMINAL DELAY FOR WRITE
                                             AT LOAD POINT - INDEX COUNT
                                             EQUALING 30 DEC MILSEC
03414 +000000000000            OCT **        CURRENT DELAY - INDEX COUNT
03415 +000000000000            OCT **        CURRENT DELAY - MILSEC+100S

03416 +000000001161     TYMK1  OCT +1161     NORMINAL DELAY FOR READ
                                             AT LOAD POINT - INDEX COUNT
                                             EQUALING 15 DEC MILSEC
03417 +000000000000            OCT **        CURRENT DELAY - INDEX COUNT
03420 +000000000000            OCT **        CURRENT DELAY - MILSEC+100S

03421 +000000000247     TYMK2  OCT +247      NORMINAL DELAY FOR WRITE NOT
```

```
                                                AT LOAD POINT - INDEX COUNT
                                                EQUALING 4 DEC MILSEC
03422 +000000000000             OCT **          CURRENT DELAY - INDEX COUNT
03423 +000000000000             OCT **          CURRENT DELAY - MILSEC+100S

03424 +000000000051     TYMK3   OCT +51         NORMINAL DELAY FOR READ NOT
                                                AT LOAD POINT - INDEX COUNT
                                                EQUALING 1 DEC MILSEC
03425 +000000000000             OCT **          CURRENT DELAY - INDEX COUNT
03426 +000000000000             OCT **          CURRENT DELAY - MILSEC+100S


03427 +000000000050     TYMK4   OCT +50
03430  0400 00 0 03401          ADD ONE
03431  0020 00 0 00166          TRA TYMB
03432  0400 00 0 03427          ADD TYMK4
03433  0020 00 0 00154          TRA TYMA+2
03434  0020 00 0 00276          TRA TYM1B
03435  0020 00 0 00264          TRA TYM1A+2
03436  0020 00 0 00415          TRA TYM2B
03437  0020 00 0 00403          TRA TYM2A+2
03440  0020 00 0 00521          TRA TYM3B
03441  0400 00 0 03410          ADD  EIGHT
03442  0020 00 0 00507          TRA TYM3A+2
03443  0400 00 0 03464          ADD K+1

03444  0020 00 0 00126  TRA1    TRA TYM-13
03445  0020 00 0 00672          TRA AC1-5
03446  0020 00 0 00703          TRA AA1
03447  0020 00 0 01042          TRA RB
03450  0020 00 0 00676          TRA AC1-1
03451  0020 00 0 02174          TRA AC3-5
03452  0020 00 0 02200          TRA AC3-1
03453  0020 00 0 00624  TRA2    TRA TCTX
03454  0020 00 0 00742          TRA TCTX1
03455  0020 00 0 03121          TRA TCTX3

03456  0020 00 0 00064  TRA3    TRA INTLA
03457  0020 00 0 00116          TRA AC
03460  0020 00 0 00061          TRA INTLA-3
03461  0020 00 0 00073          TRA INTL2

03462  0761 00 0 00000  NOP     NOP

03463 +000000000000     K       OCT **          INDEX VARIABLE DELAY
03464 +000000000751             OCT 751         INDEX MIN VARIABLE DELAY
                                                 .98 MILSEC
03465 +000000000001             OCT 1           INDEX DELAY STEP
03466 +000000001222             OCT 1222        INDEX MAX VARIABLE DELAY
                                                 5.01 MILSEC
03467 +000000001067             OCT 1067        INDEX COUNT FOR 10 MILSEC
                                                 DELAY PLUS 3.61 MILSEC TO
                                                 GO DOWN TIME
03470 +000000000000             OCT **          WRITE VARIABLE DELAY
03471 +000000001724             OCT 1724        OCT COUNT OF MICROSEC
                                                 EQUAL TO .98 MILSEC
```

```
03472 +000000000030           OCT 30        WRITE DELAY STEP

03473 +000000000017     K1    OCT +17
03474 +000000007000           OCT +7000


03475 -155550505050     K2    OCT 555550505050 -U- WORD
03476 -145050505077           OCT 545050505077 -A- WORD
03477 -135350505050           OCT 535350505050 -10- RECORD
03500 -125250505050           OCT 525250505050 -V- RECORD
03501 -105050505050           OCT 505050505050 -O- RECORD
03502 +000707070707           OCT 000707070707 GO TIME MASK

03503 +000000000000     K3    OCT **        PRINT FORM VARIABLE DELAY
03504 +000070707600           OCT 000070707600 ADJUSTED DELAY STEP
03505 +070707070700           OCT 070707070700
03506 -145050505077           OCT 545050505077 -A- WORD MASK
03507 +000003060500           OCT 000003060500  ADJUST MINIMUM
                                                VARIABLE DELAY

03510 +000027000110     K4    OCT 000027000110 +27 AND +110
03511 +000000000030           OCT 000000000030 +30
03512 +000020000616           OCT 000020000616 +20 AND +616
03513 +000000000041           OCT 000000000041 +41
03514 +000000000031           OCT 000000000031 +31

03515 +000000023420     K10   OCT 000000023420 10 FOURTH
03516 +000000303240           OCT 000000303240 10 FIFTH
03517 +000000001750           OCT 000000001750 10 THIRD

03520 +000000023417     K11   OCT 000000023417 10 FOURTH -1
03521 +000000303237           OCT 000000303237 10 FIFTH-1
03522 +000000001747           OCT 000000001747 10 THIRD-1

03523 +000000000000     K20   OCT **        TEMP STOR - WRITE TAPE
03524  0766 00 0 01221        WTBA 1
03525  0766 00 0 01222        WTBA 2
03526  0762 00 0 01221        RTBA 1
03527  0762 00 0 01321        RCDA
03530  0762 00 0 01220        RTBA **       TEMP STOR - READ TAPE

03531 +000000000000     K20A  OCT **        TEMP STOR - INITIAL SELECT
03532  0441 00 0 05500  K21   LDI CTRL1     LD INDS WITH CHN A CONTROL

03533 +000000000000     TEMP  OCT **        TEMPORARY STORAGE

03534 +000000000000     XRA   OCT **        TEMPORARY STORAGE
03535 +000000000000     XRB   OCT **        TEMPORARY STORAGE
03536 +000000000000     XRC   OCT **        TEMPORARY STORAGE


03537 +377540437400     MASK1 OCT 377540437400

03540 -301400377777     MASK2 OCT 701400377777
03541 -177400000000           OCT 577400000000
```

```
03542 -301411573604     MASK3  OCT 701411573604
03543 +362367410740            OCT 362367410740

03544 -301400007757     MASK4  OCT 701400007757
03545 +001001001077            OCT 001001001077

03546 -377577400000     MASK5  OCT 777577400000

03547 +177341077036     MASK6  OCT 177341077036
03550 +001741077000            OCT 001741077000

03551 -337757010773     MASK7  OCT 737757010773
03552 -177335676740            OCT 577335676740

03553 -377777400000     MASK8  OCT 777777400000
03554 -177777777777            OCT 577777777777
03555 -377777777776            OCT 777777777776

03556  0000 30 0 04267  CTIDN  IOCD PRIDN,0,24
03557  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03560  0000 40 0 04066  CT1    IOCD FIX,0,32
03561  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03562  0000 30 0 04317  CT1A   IOCD PR1,0,24
03563  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03564  0000 40 0 04167  CT2    IOCD RDFD,0,32
03565  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03566  0000 30 0 04347  CT2A   IOCD PR2,0,24
03567  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03570  0000 40 0 04126  CT3    IOCD FIX+32,0,32
03571  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03572  0000 30 0 04377  CT3A   IOCD PR3,0,24
03573  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03574  0000 40 0 04227  CT4    IOCD RDFD+32,0,32
03575  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03576  0000 30 0 04427  CT4A   IOCD PR4,0,24
03577  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03600  0000 30 0 04457  CT5    IOCD PR5,0,24
03601  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03602 -1 00001 0 03475  CT6    IOCT K2,0,1   INITIAL -U- WORD
03603  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03604  0000 30 0 04507  CT6A   IOCD PR6,0,24
03605  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03606  0000 01 0 03476  CT7    IOCD K2+1,0,1 CONTROL FOR -A- WORD
03607  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03610 -1 00001 0 03476         IOCT K2+1,0,1
03611  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03612  0000 30 0 04537  CT7A   IOCD PR7,0,24
03613  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03614  0001 10 0 04567         IOCD PR7A,0,72
03615  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03616  0000 01 0 03477  CT8    IOCD K2+2,0,1 CONTROL FOR -10- WORD
03617  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03620  0000 30 0 04727  CT8A   IOCD PR8,0,24
03621  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03622  0000 01 0 03500  CT9    IOCD K2+3,0,1 CONTROL FOR -V- WORD
03623  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
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```
03624  0000 30 0 04757  CT9A   IOCD PR9,0,24
03625  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03626  0000 30 0 05007         IOCD PR9A,0,24
03627  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03630  0000 01 0 03501  CT10   IOCD K2+4,0,1 CONTROL FOR -O- WORD
03631  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03632  0000 30 0 05037  CT10A  IOCD PR10,0,24
03633  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03634 -3 00001 0 03753  CT11   IOST CP1,0,1
03635  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03636  0000 01 0 03753         IOCD CP1,0,1
03637  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03640 -1 00001 0 03753          IOCT CP1,0,1
03641  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03642  0000 30 0 05067  CT11A  IOCD PR11,0,24
03643  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03644  0000 01 0 03754  CT12   IOCD CP2,0,1
03645  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03646  0000 30 0 05117  CT12A  IOCD PR12,0,24
03647  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03650  0000 30 0 04066  CT13   IOCD FIX,0,24 FIRST RECORD OF CREEP TEST
03651  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03652  0000 01 0 04116  CT14   IOCD FIX+24,0,1
03653  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03654  0000 01 0 04117  CT15   IOCD FIX+25,0,1
03655  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03656 -0000 45 0 04120  CT16   IOCP FIX+26,0,37
03657  0000 33 0 04066         IOCD FIX,0,27
03660  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03661  0000 33 0 04167  CT17   IOCD RDFD,0,27
03662  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03663 -0000 01 0 04066  CT18   IOCP FIX,0,1
03664 -0000 01 0 04067         IOCP FIX+1,0,1
03665 -0000 01 0 04070         IOCP FIX+2,0,1
03666  0000 01 0 04071         IOCD FIX+3,0,1
03667  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03670  0000 03 0 04167         IOCD RDFD,0,3
03671  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03672  0000 01 0 04070         IOCD FIX+2,0,1
03673  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03674  0000 30 0 04677  CT19   IOCD PR7D,0,24
03675  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03676  0000 01 0 03533  CT20   IOCD TEMP,0,1
03677  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC
03700  0000 30 0 05147  CTFN   IOCD PRFN,0,24
03701  0000 00 0 00000         HTR 0         PROGRAM PROTECT - I-O DISC



03702 +020000000000     BIT1   OCT 020000000000 ONE BIT IN COL 5

03703 +010000000000            OCT 010000000000 ONE BIT IN COL 6
03704 +004000000000            OCT 004000000000 ONE BIT IN COL 7
03705 +002000000000            OCT 002000000000 ONE BIT IN COL 8
03706 +000400000000            OCT 000400000000 ONE BIT IN COL 10
03707 +000200000000     BIT2   OCT 000200000000 ONE BIT IN COL 11
```

```
03710 +000100000000           OCT 000100000000 ONE BIT IN COL 12
03711 +000040000000     BIT3  OCT 000040000000 ONE BIT IN COL 13

03712 +000010000000           OCT 000010000000 ONE BIT IN COL 15
03713 +000004000000           OCT 000004000000 ONE BIT IN COL 16
03714 +000002000000           OCT 000002000000 ONE BIT IN COL 17
03715 +000000400000           OCT 000000400000 ONE BIT IN COL 19
03716 +000000200000     BIT4  OCT 000000200000 ONE BIT IN COL 20
03717 +000000100000           OCT 000000100000 ONE BIT IN COL 21
03720 +000000040000           OCT 000000040000 ONE BIT IN COL 22
03721 +000000020000     BIT5  OCT 000000020000 ONE BIT IN COL 23

03722 +000000010000           OCT 000000010000 ONE BIT IN COL 24
03723 +000000004000           OCT 000000004000 ONE BIT IN COL 25
03724 +000000002000           OCT 000000002000 ONE BIT IN COL 26
03725 +000000000400           OCT 000000000400 ONE BIT IN COL 28
03726 +000000000200     BIT6  OCT 000000000200 ONE BIT IN COL 29

03727 +000000000040           OCT 000000000040 ONE BIT IN COL 31
03730 +000000000020           OCT 000000000020 ONE BIT IN COL 32
03731 +000000000010           OCT 000000000010 ONE BIT IN COL 33
03732 +000000000002           OCT 000000000002 ONE BIT IN COL 35
03733 +000000000001     BIT7  OCT 000000000001 ONE BIT IN COL 36

03734 +000004000000           OCT 000004000000 ONE BIT IN COL 16
03735 +000002000000           OCT 000002000000 ONE BIT IN COL 17
03736 +000001000000           OCT 000001000000 ONE BIT IN COL 18
03737 +000000200000           OCT 000000200000 ONE BIT IN COL 20
03740 +000000100000     BIT8  OCT 000000100000 ONE BIT IN COL 21
03741 +000000040000           OCT 000000040000 ONE BIT IN COL 22
03742 +000000020000           OCT 000000020000 ONE BIT IN COL 23
03743 +000000004000           OCT 000000004000 ONE BIT IN COL 25
03744 +000000002000     BIT9  OCT 000000002000 ONE BIT IN COL 26

*             GAP TEST TIME DATA

03745 +000000000000     TCP1  OCT **        CURRENT -10- GAP TIME
03746 +000000000000     TCP2  OCT **        CURRENT -V- GAP TIME
03747 +000000000000     TCP3  OCT **        CURRENT -O- GAP TIME
03750 +000000000000     TCP4  OCT **        TOTAL -10- GAP TIME
03751 +000000000000     TCP5  OCT **        TOTAL -V- GAP TIME
03752 +000000000000     TCP6  OCT **        TOTAL -O- GAP TIME

03753 +000000000000     CP1   OCT **        TEMP STORAGE - WORD READ
03754 +000000000000     CP2   OCT **        TEMP STORAGE - WORD READ

03755 +000000000000     SS1   OCT **        CURRENT -A- WORD

03756 +000000001010     GMAX  OCT +1010     INDEX COUNT - MAX READ TIME
                                           FOR +2.5 MILSEC GAP TOL
                                           +.1875 INCH GAP TOL
03757 +000000000542     GMIN  OCT +542      INDEX COUNT - MIN READ TIME
                                           FOR -1.5 MILSEC GAP TOL
                                           -.1125 INCH GAP TOL

                                           +640 IN GMAX AND GMIN
```

FOR NO TOL ON READ GAP TO
PRINT ALL VARIATIONS FROM
.75 INCH GAP -- 10 MILSEC

```
03760 +000000000000     REC    OCT **        NUMBER OF GAP RECORD GROUPS

*             READ GAP TIME DATA

03761 +000000000000     GT1A   OCT **        HIGHEST -10- GAP TIME
03762 +000000000000     GT1B   OCT **        LOWEST -10- GAP TIME
03763 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
03764 +000000000000     GT1C   OCT **        RANGE -10- GAP TIME
03765 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
03766 +000000000000     GT2A   OCT **        HIGHEST -V- GAP TIME
03767 +000000000000     GT2B   OCT **        LOWEST -V- GAP TIME
03770 +000000000000            OCT **        TEMP STOR FOR RPINT IMAGE
03771 +000000000000     GT2C   OCT **        RANGE -V- GAP TIME
03772 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
03773 +000000000000     GT3A   OCT **        HIGHEST -O- GAP TIME
03774 +000000000000     GT3B   OCT **        LOWEST -O- GAP TIME
03775 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
03776 +000000000000     GT3C   OCT **        RANGE -O- GAP TIME
03777 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
04000 +000000001232     GT4    OCT +1232     RESTORE LOWEST GAP TIMES

04001 +000000000000     AV1    OCT **        AVERAGE -10- GAP TIME
04002 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
04003 +000000000000     AV2    OCT **        AVERAGE -V- GAP TIME
04004 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE
04005 +000000000000     AV3    OCT **        AVERAGE -O- GAP TIME
04006 +000000000000            OCT **        TEMP STOR FOR PRINT IMAGE


*             GAP ERROR PRINT DATA

04007 +000000000000     EC1    OCT **        -10- ERROR CHECK INDICATOR
04010 +000000000000     EC2    OCT **        -V- ERROR CHECK INDICATOR
04011 +000000000000     EC3    OCT **        -O- ERROR CHECK INDICATOR

04012 +000000001750     EP1A   OCT +1750     MILSEC GO DOWN -10-
04013 +000000000000     EP2A   OCT **        MILSEC GO DOWN -V-
04014 +000000000000     EP3A   OCT 0000000000000 MILSEC GO DOWN -O-
04015 +000000000000     EP4    OCT **        CURRENT GO DOWN TIME
04016 +000000000000     EP5    OCT **        CURRENT READ GAP TIME
*             GAP SUMMARY PRINT DATA

04017 +000000000000     EG1    OCT **
04020 +000000000007            OCT 0000000000007
04021 +000000000000     EG2    OCT **
04022 +000000000070            OCT 0000000000070
04023 +000000000000     EG3    OCT **
04024 +000000000700            OCT 0000000000700
04025 +000000000000     EG4    OCT **
04026 +000000007000            OCT 0000000007000
```

```
*             CREEP TEST TIME DATA

04027 +000000000000     TCP7   OCT **        INITIAL GAP TIME
04030 +000000000000            OCT **        MILSEC+100S
04031 +000000000000     TCP8   OCT **        CURRENT GAP TIME
04032 +000000000000            OCT **        PREVIOUS GAP TIME
04033 +000000000000            OCT **        CURRENT FWD CREEP TIME
04034 +000000000000            OCT **        CURRENT BKWD CREEP TIME
04035 +000000000000     TCP9   OCT **        TOTAL GAP TIME
04036 +000000000000            OCT **        TOTAL FWD CREEP TIME
04037 +000000000000            OCT **        TOTAL BKWD CREEP TIME
04040 +000000000000            OCT **        AVG FWD CREEP TIME
04041 +000000000000            OCT **        AVG BKWD CREEP TIME
04042 +000000000000     TCP10  OCT **        AVERAGE CREEP TIME
04043 +000000000000            OCT **        MILSEC+100S
04044 +000000000070            OCT +70       COMPARISON FOR AVG CREEP
                                             FOR MAXIMUM FWD CREEP
                                             --1.34 DEC MILSEC OR .1 INCH
04045 +000000000000     TCP11  OCT **        AVERAGE GAP TIME

04046 +000000000000     TCP12  OCT **        CURRENT BKSP-READ TIME
04047 +000000000000            OCT **        TOTAL BKSP-READ TIME
04050 +000000000000            OCT **        AVERAGE BKSP-READ TIME

04051 +000000000062     TCP13  OCT +62

04052  0000 00 0 04027  LOC1   HTR TCP7      LOC OF INITIAL GAP
04053  0000 00 0 04031         HTR TCP8      LOC OF CURRENT GAP
04054  0000 00 0 04032         HTR TCP8+1    LOC OF PREVIOUS GAP

04055 +000000000000     CTR    OCT **        CREEP TEST BKSP COUNTER
04056 +000000000031            OCT 31        +31
04057 +000000000201            OCT 201       +201
04060 +000000000000     CTR2   OCT **        COUNTER FOR BACKSPACE-READ
04061 +000000000000     CTRF   OCT **        COUNTER FOR FWD CREEP
04062 +000000000000     CTRB   OCT **        COUNTER FOR BKWD CREEP

04063 +000000000000     EFCK   OCT **        END OF FILE CHECK INDICATOR
04064 +000000000000     CRCK   OCT **        EXCESS FWD CREEP CHECK IND
04065 +000000000000     CRLCK  OCT **        CREEP TEST LOOP CHECK IND

04066 +010101010101     FIX    OCT 010101010101
04067 +020202020202            OCT 020202020202
04070 +030303030303            OCT 030303030303
04071 +040404040404            OCT 040404040404
04072 +050505050505            OCT 050505050505
04073 +060606060606            OCT 060606060606
04074 +070707070707            OCT 070707070707
04075 +101010101010            OCT 101010101010

04076 +111111111111            OCT 111111111111
04077 +121212121212            OCT 121212121212
04100 +131313131313            OCT 131313131313
04101 +141414141414            OCT 141414141414
04102 +151515151515            OCT 151515151515
```

```
04103 +161616161616           OCT 161616161616
04104 +171717171717           OCT 171717171717
04105 +202020202020           OCT 202020202020

04106 +212121212121           OCT 212121212121
04107 +222222222222           OCT 222222222222
04110 +232323232323           OCT 232323232323
04111 +242424242424           OCT 242424242424
04112 +252525252525           OCT 252525252525
04113 +262626262626           OCT 262626262626
04114 +272727272727           OCT 272727272727
04115 +303030303030           OCT 303030303030

04116 +313131313131           OCT 313131313131
04117 +323232323232           OCT 323232323232
04120 +333333333333           OCT 333333333333
04121 +343434343434           OCT 343434343434
04122 +353535353535           OCT 353535353535
04123 +363636363636           OCT 363636363636
04124 +373737373737           OCT 373737373737
04125 -004040404040           OCT 404040404040

04126 -014141414141           OCT 414141414141
04127 -024242424242           OCT 424242424242
04130 -034343434343           OCT 434343434343
04131 -044444444444           OCT 444444444444
04132 -054545454545           OCT 454545454545
04133 -064646464646           OCT 464646464646
04134 -074747474747           OCT 474747474747
04135 -105050505050           OCT 505050505050

04136 -115151515151           OCT 515151515151
04137 -125252525252           OCT 525252525252
04140 -135353535353           OCT 535353535353
04141 -145454545454           OCT 545454545454
04142 -155555555555           OCT 555555555555
04143 -165656565656           OCT 565656565656
04144 -175757575757           OCT 575757575757
04145 -206060606060           OCT 606060606060

04146 -216161616161           OCT 616161616161
04147 -226262626262           OCT 626262626262
04150 -236363636363           OCT 636363636363
04151 -246464646464           OCT 646464646464
04152 -256565656565           OCT 656565656565
04153 -266666666666           OCT 666666666666
04154 -276767676767           OCT 676767676767
04155 -307070707070           OCT 707070707070

04156 -317171717171           OCT 717171717171
04157 -327272727272           OCT 727272727272
04160 -337373737373           OCT 737373737373
04161 -347474747474           OCT 747474747474
04162 -357575757575           OCT 757575757575
04163 -367676767676           OCT 767676767676
04164 -377777777777           OCT 777777777777
```

```
04165 +010101010100            OCT 010101010100

04166 +000000000000            OCT 000000000000


                04167  RDFD   BSS 64


*  IMAGE --
* NOW PERFORMING DIAGNOSTIC TEST 9T05

04267 +002241004010     PRIDN  OCT 002241004010  9 ROW LEFT
04270 +000000000000            OCT 000000000000  9 ROW RIGHT
04271 +000000000000            OCT 000000000000  8 L
04272 +000000000000            OCT 000000000000  8 R
04273 +010010200000            OCT 010010200000  7 L
04274 +000000000000            OCT 000000000000  7 R
04275 +141400040000            OCT 141400040000  6 L
04276 +000000000000            OCT 000000000000  6 R
04277 +204020100201            OCT 204020100201  5 L
04300 +000000000000            OCT 000000000000  5 R
04301 +000102000000            OCT 000102000000  4 L
04302 +000000000000            OCT 000000000000  4 R
04303 +000000012444            OCT 000000012444  3 L
04304 +000000000000            OCT 000000000000  3 R
04305 +000000020100            OCT 000000020100  2 L
04306 +000000000000            OCT 000000000000  2 R
04307 +000000400000            OCT 000000400000  1 L
04310 +000000000000            OCT 000000000000  1 R
04311 +040000030546            OCT 040000030546  0 L
04312 +000000000000            OCT 000000000000  0 R
04313 +312720140000            OCT 312720140000  11 L
04314 +000000000000            OCT 000000000000  11 R
04315 +005053606200            OCT 005053606200  12 L
04316 +000000000000            OCT 000000000000  12 R


*  IMAGE --
*MAX TIME FROM WR SEL TO RESET LD CHN AT LD PT     .   MILSEC

04317 +010204004000     PR1    OCT 010204004000  9 ROW LEFT
04320 +000000010000            OCT 000000010000  9 ROW RIGHT
04321 +000000000002            OCT 000000000002  8 L
04322 +000000400000            OCT 000000400000  8 R
04323 +100000000000            OCT 100000000000  7 L
04324 +002000000000            OCT 002000000000  7 R
04325 +000510020000            OCT 000510020000  6 L
04326 +000000000000            OCT 000000000000  6 R
04327 +002000402401            OCT 002000402401  5 L
04330 +000000001000            OCT 000000001000  5 R
04331 -004040000020            OCT 404040000020  4 L
04332 +010000020000            OCT 010000020000  4 R
04333 +020000240244            OCT 020000240244  3 L
04334 +121000404400            OCT 121000404400  3 R
04335 +000001001000            OCT 000001001000  2 L
04336 +000000002000            OCT 000000002000  2 R
```

```
04337 +200000000000           OCT 200000000000  1 L
04340 +200000000000           OCT 200000000000  1 R
04341 +120011041200           OCT 120011041200  0 L
04342 +101000002000           OCT 101000002000  0 R
04343 -004344224041           OCT 404344224041  11 L
04344 +022000024000           OCT 022000024000  11 R
04345 +212400402426           OCT 212400402426  12 L
04346 +210000411400           OCT 210000411400  12 R


*  IMAGE --
*MAX TIME FROM RD SEL TO RESET LD CHN AT LD PT     .   MILSEC

04347 +010210004000     PR2   OCT 010210004000  9 ROW LEFT
04350 +000000010000           OCT 000000010000  9 ROW RIGHT
04351 +000000000002           OCT 000000000002  8 L
04352 +000000400000           OCT 000000400000  8 R
04353 +100000000000           OCT 100000000000  7 L
04354 +002000000000           OCT 002000000000  7 R
04355 +000500020000           OCT 000500020000  6 L
04356 +000000000000           OCT 000000000000  6 R
04357 +002000402401           OCT 002000402401  5 L
04360 +000000001000           OCT 000000001000  5 R
04361 -004044000020           OCT 404044000020  4 L
04362 +010000020000           OCT 010000020000  4 R
04363 +020000240244           OCT 020000240244  3 L
04364 +121000404400           OCT 121000404400  3 R
04365 +000001001000           OCT 000001001000  2 L
04366 +000000002000           OCT 000000002000  2 R
04367 +200000000000           OCT 200000000000  1 L
04370 +200000000000           OCT 200000000000  1 R
04371 +120001041200           OCT 120001041200  0 L
04372 +101000002000           OCT 101000002000  0 R
04373 -004350224041           OCT 404350224041  11 L
04374 +022000024000           OCT 022000024000  11 R
04375 +212404402426           OCT 212404402426  12 L
04376 +210000411400           OCT 210000411400  12 R


*  IMAGE --
*MAX TIME FROM WR SEL TO RESET LD CHN NOT AT LD PT    .   MILSEC

04377 +010204004000     PR3   OCT 010204004000   9 ROW LEFT
04400 +000000010000           OCT 000000010000   9 ROW RIGHT
04401 +000000000002           OCT 000000000002   8 L
04402 +000000400000           OCT 000000400000   8 R
04403 +100000000000           OCT 100000000000   7 L
04404 +000100000000           OCT 000100000000   7 R
04405 +000510020000           OCT 000510020000   6 L
04406 +100000000000           OCT 100000000000   6 R
04407 +002000402401           OCT 002000402401   5 L
04410 +200000001000           OCT 200000001000   5 R
04411 -004040000020           OCT 404040000020   4 L
04412 +000400020000           OCT 000400020000   4 R
04413 +020000240244           OCT 020000240244   3 L
04414 +045040404400           OCT 045040404400   3 R
```

```
04415 +000001001000           OCT 000001001000   2 L
04416 +000000002000           OCT 000000002000   2 R
04417 +200000000000           OCT 200000000000   1 L
04420 +010000000000           OCT 010000000000   1 R
04421 +120011041200           OCT 120011041200   10 L
04422 +044040002000           OCT 044040002000   10 R
04423 -004344224041           OCT 404344224041   11 L
04424 +301100024000           OCT 301100024000   11 R
04425 +212400402426           OCT 212400402426   12 L
04426 +010400411400           OCT 010400411400   12 R


*  IMAGE --
*MAX TIME FROM RD SEL TO RESET LD CHN NOT AT LD PT      .   MILSEC

04427 +010210004000     PR4   OCT 010210004000   9 ROW LEFT
04430 +000000010000           OCT 000000010000   9 ROW RIGHT
04431 +000000000002           OCT 000000000002   8 L
04432 +000000400000           OCT 000000400000   8 R
04433 +100000000000           OCT 100000000000   7 L
04434 +000100000000           OCT 000100000000   7 R
04435 +000500020000           OCT 000500020000   6 L
04436 +100000000000           OCT 100000000000   6 R
04437 +002000402401           OCT 002000402401   5 L
04440 +200000001000           OCT 200000001000   5 R
04441 -004044000020           OCT 404044000020   4 L
04442 +000400020000           OCT 000400020000   4 R
04443 +020000240244           OCT 020000240244   3 L
04444 +045040404400           OCT 045040404400   3 R
04445 +000001001000           OCT 000001001000   2 L
04446 +000000002000           OCT 000000002000   2 R
04447 +200000000000           OCT 200000000000   1 L
04450 +010000000000           OCT 010000000000   1 R
04451 +120001041200           OCT 120001041200   0 L
04452 +044040002000           OCT 044040002000   0 R
04453 -004350224041           OCT 404350224041   11 L
04454 +301100024000           OCT 301100024000   11 R
04455 +212404402426           OCT 212404402426   12 L
04456 +010400411400           OCT 010400411400   12 R


*  IMAGE --
*CHN +   TF         LD CHN TIMING TEST COMPLETE

04457 +000000000500     PR5   OCT 000000000500   9 ROW LEFT
04460 +000000000000           OCT 000000000000   9 ROW RIGHT
04461 +200000010000           OCT 200000010000   8 L
04462 +000000000000           OCT 000000000000   8 R
04463 +000000000020           OCT 000000000020   7 L
04464 +010000000000           OCT 010000000000   7 R
04465 +000400000000           OCT 000400000000   6 L
04466 +040000000000           OCT 040000000000   6 R
04467 +100000004042           OCT 100000004042   5 L
04470 +002400000000           OCT 002400000000   5 R
04471 +000000100200           OCT 000000100200   4 L
```

```
04472 +020000000000           OCT 020000000000   4 R
04473 -001000221004           OCT 401000221004   3 L
04474 -105000000000           OCT 505000000000   3 R
04475 +000000000001           OCT 000000000001   2 L
04476 +000000000000           OCT 000000000000   2 R
04477 +000000000000           OCT 000000000000   1 L
04500 +000000000000           OCT 000000000000   1 R
04501 +001000001005           OCT 001000001005   0 L
04502 -001000000000           OCT 401000000000   0 R
04503 +100000204240           OCT 100000204240   11 L
04504 +074000000000           OCT 074000000000   11 R
04505 -220400130522           OCT 620400130522   12 L
04506 +102400000000           OCT 102400000000   12 R


*  IMAGE --
*CHN +   TF    -  GO LINE DOWN   .   MSEC  -  READ TIME   .  MSEC

04507 +000000040000     PR6    OCT 000000040000    9 ROW LEFT
04510 +000202000000            OCT 000202000000    9 ROW RIGHT
04511 +200000000004            OCT 200000000004    8 L
04512 +000000010000            OCT 000000010000    8 R
04513 +000001000000            OCT 000001000000    7 L
04514 +000000000000            OCT 000000000000    7 R
04515 +000400401400            OCT 000400401400    6 L
04516 +000000000000            OCT 000000000000    6 R
04517 +100000030200            OCT 100000030200    5 L
04520 +040100400100            OCT 040100400100    5 R
04521 +000000002000            OCT 000000002000    4 L
04522 +200021000400            OCT 200021000400    4 R
04523 -001000100004            OCT 401000100004    3 L
04524 +020004010040            OCT 020004010040    3 R
04525 +000000000000            OCT 000000000000    2 L
04526 +100000000200            OCT 100000000200    2 R
04527 +000000000000            OCT 000000000000    1 L
04530 +000040000000            OCT 000040000000    1 R
04531 +001000000400            OCT 001000000400    0 L
04532 +100004000200            OCT 100004000200    0 R
04533 +100010521200            OCT 100010521200    11 L
04534 +202201000400            OCT 202201000400    11 R
04535 -220401052004            OCT 620401052004    12 L
04536 +060162410140            OCT 060162410140    12 R


*  IMAGE --
*CHN +   TF     --     RECORDS READ      LOW    RANGE     AVERAGE

04537 +000000004210     PR7    OCT 000000004210    9 ROW LEFT
04540 +000004000040            OCT 000004000040    9 ROW RIGHT
04541 +200000000000            OCT 200000000000    8 L
04542 +000000000000            OCT 000000000000    8 R
04543 +000000000000            OCT 000000000000    7 L
04544 +000000400010            OCT 000000400010    7 R
04545 +000400000400            OCT 000400000400    6 L
04546 +001400000000            OCT 001400000000    6 R
04547 +100000002004            OCT 100000002004    5 L
```

```
04550 +000001200304            OCT 000001200304    5 R
04551 +000000000101            OCT 000000000101    4 L
04552 +000000000000            OCT 000000000000    4 R
04553 -001000001000            OCT 401000001000    3 L
04554 +002000000000            OCT 002000000000    3 R
04555 +000000000040            OCT 000000000040    2 L
04556 +000000000000            OCT 000000000000    2 R
04557 +000000000002            OCT 000000000002    1 L
04560 +000002000420            OCT 000002000420    1 R
04561 +001000000040            OCT 001000000040    0 L
04562 +000400000200            OCT 000400000200    0 R
04563 +100006004610            OCT 100006004610    11 L
04564 +003005000040            OCT 003005000040    11 R
04565 -220400003107            OCT 620400003107    12 L
04566 +000002600534            OCT 000002600534    12 R


*  IMAGE --
*GO LINE DOWN 10 MILSEC             .       .       .    MILSE

04567 +020001000000     PR7A   OCT 020001000000    9 ROW LEFT
04570 +000000000020            OCT 000000000020    9 ROW RIGHT
04571 +000000000000            OCT 000000000000    8 L
04572 +001001001000            OCT 001001001000    8 R
04573 -000000000000            OCT 400000000000    7 L
04574 +000000000000            OCT 000000000000    7 R
04575 +200600000000            OCT 200600000000    6 L
04576 +000000000000            OCT 000000000000    6 R
04577 +014100100000            OCT 014100100000    5 L
04600 +000000000002            OCT 000000000002    5 R
04601 +001002000000            OCT 001002000000    4 L
04602 +000000000040            OCT 000000000040    4 R
04603 +040000440000            OCT 040000440000    3 L
04604 +001001001011            OCT 001001001011    3 R
04605 +000000200000            OCT 000000200000    2 L
04606 +000000000004            OCT 000000000004    2 R
04607 +000020000000            OCT 000020000000    1 L
04610 +000000000000            OCT 000000000000    1 R
04611 +000210200000            OCT 000210200000    0 L
04612 +000000000004            OCT 000000000004    0 R
04613 +250502400000            OCT 250502400000    11 L
04614 +000000000050            OCT 000000000050    11 R
04615 -025001140000            OCT 425001140000    12 L
04616 +001001001023            OCT 001001001023    12 R


*  IMAGE --
*GO LINE DOWN VARIABLE TIME          .      .     .   MILSE

04617 +020006010000     PR7B   OCT 020006010000    9 ROW LEFT
04620 +000000000020            OCT 000000000020    9 ROW RIGHT
04621 +000000000000            OCT 000000000000    8 L
04622 +001001001000            OCT 001001001000    8 R
04623 -000000000000            OCT 400000000000    7 L
04624 +000000000000            OCT 000000000000    7 R
04625 +200600000000            OCT 200600000000    6 L
```

```
04626 +000000000000           OCT 000000000000    6 R
04627 +014120102000           OCT 014120102000    5 L
04630 +000000000002           OCT 000000000002    5 R
04631 +001000004000           OCT 001000004000    4 L
04632 +000000000040           OCT 000000000040    4 R
04633 +040000220000           OCT 040000220000    3 L
04634 +001001001011           OCT 001001001011    3 R
04635 +000000400000           OCT 000000400000    2 L
04636 +000000000004           OCT 000000000004    2 R
04637 +000011000000           OCT 000011000000    1 L
04640 +000000000000           OCT 000000000000    1 R
04641 +000220020000           OCT 000220020000    0 L
04642 +000000000004           OCT 000000000004    0 R
04643 +250504204000           OCT 250504204000    11 L
04644 +000000000050           OCT 000000000050    11 R
04645 -025013512000           OCT 425013512000    12 L
04646 +001001001023           OCT 001001001023    12 R


*  IMAGE --
*GO LINE DOWN ZERO TIME           .       .      .   MILSE

04647 +020024200000     PR7C   OCT 020024200000    9 ROW LEFT
04650 +000000000020            OCT 000000000020    9 ROW RIGHT
04651 +000000000000            OCT 000000000000    8 L
04652 +001001001000            OCT 001001001000    8 R
04653 -000000000000            OCT 400000000000    7 L
04654 +000000000000            OCT 000000000000    7 R
04655 +200602000000            OCT 200602000000    6 L
04656 +000000000000            OCT 000000000000    6 R
04657 +014110040000            OCT 014110040000    5 L
04660 +000000000002            OCT 000000000002    5 R
04661 +001000100000            OCT 001000100000    4 L
04662 +000000000040            OCT 000000000040    4 R
04663 +040000400000            OCT 040000400000    3 L
04664 +001001001011            OCT 001001001011    3 R
04665 +000000000000            OCT 000000000000    2 L
04666 +000000000004            OCT 000000000004    2 R
04667 +000000000000            OCT 000000000000    1 L
04670 +000000000000            OCT 000000000000    1 R
04671 +000220400000            OCT 000220400000    0 L
04672 +000000000004            OCT 000000000004    0 R
04673 +250506100000            OCT 250506100000    11 L
04674 +000000000050            OCT 000000000050    11 R
04675 -025010240000            OCT 425010240000    12 L
04676 +001001001023            OCT 001001001023    12 R


*  IMAGE --
* 50 BKSP-READ OPNS    .   MILSEC AVG BETWEEN RD SEL AND FIRST WORD

04677 +000400000200     PR7D   OCT 000400000200     9 ROW LEFT
04700 +000200030100            OCT 000200030100     9 ROW RIGHT
04701 +000000010000            OCT 000000010000     8 L
04702 +000000000000            OCT 000000000000     8 R
04703 +002004000000            OCT 002004000000     7 L
```

```
04704 -000000000000           OCT 400000000000     7 R
04705 +000010000000           OCT 000010000000     6 L
04706 +010000040600           OCT 010000040600     6 R
04707 +200202000021           OCT 200202000021     5 L
04710 +047010400000           OCT 047010400000     5 R
04711 +000040000400           OCT 000040000400     4 L
04712 +000100200040           OCT 000100200040     4 R
04713 +000000010110           OCT 000000010110     3 L
04714 +020004002000           OCT 020004002000     3 R
04715 +034001000040           OCT 034001000040     2 L
04716 +100020004000           OCT 100020004000     2 R
04717 +000100000002           OCT 000100000002     1 L
04720 +000001000000           OCT 000001000000     1 R
04721 +104001000041           OCT 104001000041     0 L
04722 +030020006400           OCT 030020006400     0 R
04723 +013416000500           OCT 013416000500     11 L
04724 +001204410300           OCT 001204410300     11 R
04725 +020340010232           OCT 020340010232     12 L
04726 -146111260040           OCT 546111260040     12 R


*  IMAGE --
*CHN +   TF       GAP TEST COMPLETE

04727 +000000000000     PR8    OCT 000000000000    9 ROW LEFT
04730 +000000000000           OCT 000000000000    9 ROW RIGHT
04731 +200000000000           OCT 200000000000    8 L
04732 +000000000000           OCT 000000000000    8 R
04733 +000000240020           OCT 000000240020    7 L
04734 +000000000000           OCT 000000000000    7 R
04735 +000400000100           OCT 000400000100    6 L
04736 +000000000000           OCT 000000000000    6 R
04737 +100000004005           OCT 100000004005    5 L
04740 +000000000000           OCT 000000000000    5 R
04741 +000000000040           OCT 000000000040    4 L
04742 +000000000000           OCT 000000000000    4 R
04743 -001000011212           OCT 401000011212    3 L
04744 +000000000000           OCT 000000000000    3 R
04745 +000000002000           OCT 000000002000    2 L
04746 +000000000000           OCT 000000000000    2 R
04747 +000000100000           OCT 000000100000    1 L
04750 +000000000000           OCT 000000000000    1 R
04751 +001000013002           OCT 001000013002    0 L
04752 +000000000000           OCT 000000000000    0 R
04753 +100000040170           OCT 100000040170    11 L
04754 +000000000000           OCT 000000000000    11 R
04755 -220400304205           OCT 620400304205    12 L
04756 +000000000000           OCT 000000000000    12 R


*  IMAGE --
*CHN +    TF        BACKSPACE-WRITE OPERATIONS COMPLETE

04757 +000000000030     PR9    OCT 000000000030    9 ROW LEFT
04760 +044000000000           OCT 044000000000    9 ROW RIGHT
04761 +200000000000           OCT 200000000000    8 L
```

```
04762 +000000000000           OCT 000000000000    8 R
04763 +000000002000           OCT 000000002000    7 L
04764 +200010000000           OCT 200010000000    7 R
04765 +000400000040           OCT 000400000040    6 L
04766 -002040000000           OCT 402040000000    6 R
04767 +100000000202           OCT 100000000202    5 L
04770 +101002400000           OCT 101002400000    5 R
04771 +000000000000           OCT 000000000000    4 L
04772 +000020000000           OCT 000020000000    4 R
04773 -001000020404           OCT 401000020404    3 L
04774 +010105000000           OCT 010105000000    3 R
04775 +000000114000           OCT 000000114000    2 L
04776 +000400000000           OCT 000400000000    2 R
04777 +000000041000           OCT 000000041000    1 L
05000 +020000000000           OCT 020000000000    1 R
05001 +001000004044           OCT 001000004044    0 L
05002 +010401000000           OCT 010401000000    0 R
05003 +100000012120           OCT 100000012120    11 L
05004 -243074000000           OCT 643074000000    11 R
05005 -220400161612           OCT 620400161612    12 L
05006 +124102400000           OCT 124102400000    12 R


*  IMAGE --
*   INITIAL GAP     .   MILSEC   AVG.       CREEP       .  MILSEC

05007 +124000020000     PR9A   OCT 124000020000    9 ROW LEFT
05010 +000400020000            OCT 000400020000    9 ROW RIGHT
05011 +000001000002            OCT 000001000002    8 L
05012 +000001000000            OCT 000001000000    8 R
05013 +000240000004            OCT 000240000004    7 L
05014 +000040000000            OCT 000040000000    7 R
05015 +000000000000            OCT 000000000000    6 L
05016 +000000000000            OCT 000000000000    6 R
05017 +040000002010            OCT 040000002010    5 L
05020 +000300002000            OCT 000300002000    5 R
05021 +000000040000            OCT 000000040000    4 L
05022 +000000040000            OCT 000000040000    4 R
05023 +011001011002            OCT 011001011002    3 L
05024 +001001011000            OCT 001001011000    3 R
05025 +000000004000            OCT 000000004000    2 L
05026 +000000004000            OCT 000000004000    2 R
05027 +002100000020            OCT 002100000020    1 L
05030 +000000000000            OCT 000000000000    1 R
05031 +010000004010            OCT 010000004010    0 L
05032 +000000004000            OCT 000000004000    0 R
05033 +041040050000            OCT 041040050000    11 L
05034 +000440050000            OCT 000440050000    11 R
05035 +126301023026            OCT 126301023026    12 L
05036 +001301023000            OCT 001301023000    12 R


*  IMAGE --
*CHN +   TF       CREEP TEST COMPLETE

05037 +000000100000     PR10   OCT 000000100000    9 ROW LEFT
```

```
05040 +000000000000           OCT 000000000000    9 ROW RIGHT
05041 +200000000000           OCT 200000000000    8 L
05042 +000000000000           OCT 000000000000    8 R
05043 +000000010004           OCT 000000010004    7 L
05044 +000000000000           OCT 000000000000    7 R
05045 +000400000020           OCT 000400000020     6 L
05046 +000000000000           OCT 000000000000    6 R
05047 +100000061001           OCT 100000061001     5 L
05050 +200000000000           OCT 200000000000    5 R
05051 +000000000010           OCT 000000000010    4 L
05052 +000000000000           OCT 000000000000    4 R
05053 -001000202242           OCT 401000202242    3 L
05054 -000000000000           OCT 400000000000    3 R
05055 +000000000400           OCT 000000000400    2 L
05056 +000000000000           OCT 000000000000    2 R
05057 +000000000000           OCT 000000000000    1 L
05060 +000000000000           OCT 000000000000    1 R
05061 +001000002600           OCT 001000002600    0 L
05062 -000000000000           OCT 400000000000    0 R
05063 +100000110036           OCT 100000110036    11 L
05064 +000000000000           OCT 000000000000    11 R
05065 -220400261041           OCT 620400261041    12 L
05066 +200000000000           OCT 200000000000    12 R


*  IMAGE --
*CHN +   TF          UNABLE TO PERFORM INTER-RECORD GAP TEST

05067 +000000000022     PR11   OCT 000000000022   9 ROW LEFT
05070 +212100000000            OCT 212100000000   9 ROW RIGHT
05071 +200000000000            OCT 200000000000   8 L
05072 +000000000000            OCT 000000000000   8 R
05073 +000000000100            OCT 000000000100   7 L
05074 +000012000000            OCT 000012000000   7 R
05075 +000400000414            OCT 000400000414   6 L
05076 +000200000000            OCT 000200000000   6 R
05077 +100000104040            OCT 100000104040   5 L
05100 +121000200000            OCT 121000200000   5 R
05101 +000000200001            OCT 000000200001   4 L
05102 +000040000000            OCT 000040000000   4 R
05103 -001000011000            OCT 401000011000   3 L
05104 +040400440000            OCT 040400440000   3 R
05105 +000000020000            OCT 000000020000   2 L
05106 +000000100000            OCT 000000100000   2 R
05107 +000000040000            OCT 000000040000   1 L
05110 +000004000000            OCT 000004000000   1 R
05111 +001000201000            OCT 001000201000   0 L
05112 +040000540000            OCT 040000540000   0 R
05113 +100000110527            OCT 100000110527   11 L
05114 +116302000000            OCT 116302000000   11 R
05115 -220400064050            OCT 620400064050   12 L
05116 +221454200000            OCT 221454200000   12 R

*  IMAGE --
*CHN +   TF          UNABLE TO PERFORM BACKSPACE-WRITE CREEP TEST
```

```
05117 +000000000022     PR12   OCT 000000000022   9 ROW LEFT
05120 +000060400000            OCT 000060400000   9 ROW RIGHT
05121 +200000000000            OCT 200000000000   8 L
05122 +000000000000            OCT 000000000000   8 R
05123 +000000000100            OCT 000000000100   7 L
05124 +004000040000            OCT 004000040000   7 R
05125 +000400000414            OCT 000400000414   6 L
05126 +000100000000            OCT 000100000000   6 R
05127 +100000104040            OCT 100000104040   5 L
05130 +000404304000            OCT 000404304000   5 R
05131 +000000200001            OCT 000000200001   4 L
05132 +000000000000            OCT 000000000000   4 R
05133 -001000011000            OCT 401000011000   3 L
05134 +041011011000            OCT 041011011000   3 R
05135 +000000020000            OCT 000000020000   2 L
05136 +230000002000            OCT 230000002000   2 R
05137 +000000040000            OCT 000000040000   1 L
05140 +102000000000            OCT 102000000000   1 R
05141 +001000201000            OCT 001000201000   0 L
05142 +010110013000            OCT 010110013000   0 R
05143 +100000110527            OCT 100000110527   11 L
05144 +024240440000            OCT 024240440000   11 R
05145 -220400064050            OCT 620400064050   12 L
05146 +343425304000            OCT 343425304000   12 R

*  IMAGE --
*9T05    PASS COMPLETE   ALL UNITS

05147 -000000000020     PRFN   OCT 400000000020   9 ROW LEFT
05150 +000000000000            OCT 000000000000   9 ROW RIGHT
05151 +000000000000            OCT 000000000000   8 L
05152 +000000000000            OCT 000000000000   8 R
05153 +001002000000            OCT 001002000000   7 L
05154 +000000000000            OCT 000000000000   7 R
05155 +000010000000            OCT 000010000000   6 L
05156 +000000000000            OCT 000000000000   6 R
05157 +040000500040            OCT 040000500040   5 L
05160 +000000000000            OCT 000000000000   5 R
05161 +000004000100            OCT 000004000100   4 L
05162 +000000000000            OCT 000000000000   4 R
05163 +200021201410            OCT 200021201410   3 L
05164 +000000000000            OCT 000000000000   3 R
05165 +000300000004            OCT 000300000004   2 L
05166 +000000000000            OCT 000000000000   2 R
05167 +000400002000            OCT 000400002000   1 L
05170 +000000000000            OCT 000000000000   1 R
05171 +300300200114            OCT 300300200114   0 L
05172 +000000000000            OCT 000000000000   0 R
05173 +001017001440            OCT 001017001440   11 L
05174 +000000000000            OCT 000000000000   11 R
05175 +000420502020            OCT 000420502020   12 L
05176 +000000000000            OCT 000000000000   12 R


*      EQUIVALENT ADDRESSES
```

```
06504  ERROR  EQU 3396
06511  OK     EQU 3401
06560  RDNCK  EQU 3440
06556  WDNO   EQU 3438
06557  RECNO  EQU 3439

07060  CH14   EQU 3632
07401  WPRA   EQU 3841

05500  CTRL1  EQU 2880
05501  CTRL2  EQU 2881
05502  CTRL3  EQU 2882
05503  IOCT   EQU 2883
05512  CTX    EQU 2890
05513  IOCNT  EQU 2891
05514  IOC    EQU 2892


00000         END
```