```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          IMPLICIT INTEGER*2(A-Z)
ISN 0003          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XFP,          AFP,          PH1(100),     PRINT,
                 F FSTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
                 G NXDSP
ISN 0004          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A NXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXO,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),            AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0005          COMMON/RLS/   LAST
ISN 0006          INTEGER OUT
ISN 0007          REAL MEMDLY,MXTIME
ISN 0008          REAL TIME
ISN 0009          EXTERNAL FINIS
ISN 0010          CALL ABNER(FINIS)
ISN 0011     1111 CONTINUE
ISN 0012          CALL INIT
ISN 0013          CALL JSTART(ENDRUN)
ISN 0014          CALL INTPHI
ISN 0015          IF(ENDRUN.EQ.1) STOP
            C                STEP THRU CALENDAR
ISN 0017     1000 CALL TSTEP(EVENT)
ISN 0018          IF(SSTOP.EQ.1) GO TO 1111
ISN 0020          IF(OUTLVL.EQ.0) WRITE(6,900) EVENT
ISN 0022          IF(TIME.GT.MXTIME) GO TO 999
ISN 0024          GO TO (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,
                 X 23,24,25),EVENT
ISN 0025        1 CONTINUE
ISN 0026          CALL XSTATS
ISN 0027          GO TO 1000
```

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```
ISN 0028        2 CONTINUE
ISN 0029          CALL XMXO
ISN 0030          GO TO 1000
ISN 0031        3 CONTINUE
ISN 0032          CALL XACON
ISN 0033          GO TO 1000
ISN 0034        4 CONTINUE
ISN 0035          CALL XXCON
ISN 0036          GO TO 1000
ISN 0037        5 CONTINUE
ISN 0038          CALL XAEMP
ISN 0039          GO TO 1000
ISN 0040        6 CONTINUE
ISN 0041          CALL XXEMP
ISN 0042          GO TO 1000
ISN 0043        7 CONTINUE
ISN 0044          CALL XARET
ISN 0045          GO TO 1000
ISN 0046        8 CONTINUE
ISN 0047          CALL XXRET
ISN 0048          GO TO 1000
ISN 0049        9 CONTINUE
ISN 0050          CALL XEAV
ISN 0051          GO TO 1000
ISN 0052       10 CONTINUE
ISN 0053          CALL XQCON
ISN 0054          GO TO 1000
ISN 0055       11 CONTINUE
ISN 0056          CALL XQEMP
ISN 0057          GO TO 1000
ISN 0058       12 CONTINUE
ISN 0059          CALL XMBUSY
ISN 0060          GO TO 1000
ISN 0061       13 CONTINUE
ISN 0062          CALL XMFREE
ISN 0063          GO TO 1000
ISN 0064       14 CONTINUE
ISN 0065          CALL XLOAD
ISN 0066          GO TO 1000
ISN 0067       15 CONTINUE
ISN 0068          CALL XRTN
ISN 0069          GO TO 1000
ISN 0070       16 CONTINUE
ISN 0071          GO TO 1000
ISN 0072       17 CONTINUE
ISN 0073          GO TO 1000
ISN 0074       18 CONTINUE
ISN 0075          GO TO 1000
ISN 0076       19 CONTINUE
ISN 0077          GO TO 1000
```

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```
ISN 0078        20 CONTINUE
ISN 0079           GO TO 1000
ISN 0080        21 CONTINUE
ISN 0081           GO TO 1000
ISN 0082        22 CONTINUE
ISN 0083           GO TO 1000
ISN 0084        23 CONTINUE
ISN 0085           GO TO 1000
ISN 0086        24 CONTINUE
ISN 0087           GO TO 1000
ISN 0088        25 CONTINUE
ISN 0089           GO TO 1000
ISN 0090       999 CONTINUE
ISN 0091           A=1
ISN 0092           B=20000
ISN 0093           CALL TROUBL(A,B,0)
ISN 0094           GO TO 1111
ISN 0095       900 FORMAT(I8)
ISN 0096           END
```


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COMMON PHAS1

DOTL - pointer to first entry of DO table
DOSL - pointer to next available entry - if equal to DOTL then table is full
IBCL - variable used to point to entry in IB's
HISL - variable used to point to entry in HISTORY TABLE (not used anymore)
SKXV, SKXC, SKXS, SKAV, SKAC, SKAS, } variables for skip control - not needed in Phase I
CYCL - count of cycles at end of PHASOP
KY - condition code indicating path thru exception routines (see table for KY)
SY - variable indicating X entry (231) or A entry (193) for fetch or search routine
PTR - variable set for pointer to OP ~~table~~ area for dispatching OPS
XX - indicator showing storage request was made this cycle
XIC - X instruction counter - indicates exact address of op leaving disp.
AIC - A instruction counter - indicates exact address of op leaving disp.
ASA - IB address for search routine - set before entering SEARCH
NFA - IB address of requested IB as next in sequence - may be IB address from PSC or NFA + 8
DPA - FETCH - variable ~~and~~ contains address for match with address on cards
DEN - fetch variable contains low value of position within IB being looked 0-7 for current one
DOT - variable indicating length of DO Table - usually set to 6
IBN -
XICR - holding area for XIC to keep it current for dispatcher
AICR - holding area for AIC to keep it current for dispatcher
PTJ - } pointers within OP area ~~for~~ for moving IB's to dispatch positions
PTK -
XEXT - trigger set to properly process unresolved exits that have been dispatched from X
AEXT - trigger set to properly " " " " " " " from A

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DO TABLE ENTRIES MAX 20 controlled by DOT - usually set to 6

DOTL = first entry DOSL = next available DOCL = current level

DOIB - 2 - pointer to IB table entry assigned to this level
DOST - 2 - beginning pointer of first instruction in IB (zero unless branched into)
DOAP - 2 - current pointer for A-ops (only used in DISP) - contains IB address when in X-Disp
DOXP - 2 - current pointer for X-ops (only used in Disp) - contains IB address when in A-Disp
LDEV - 1 - when on this level is valid
LDDV - 1 - " " the data for this IB is in OP area
LDCKD - 1 - " " the address is checked for proper sequence
LDSEQ - 1 - " " this IB is out of sequence - due to branch exit or PSC function
LDAW - 1 - " " A-Disp working on this level
LDAF - 1 - " " A-Disp finished with this level
LDXW - 1 - " " X-Disp working on this level
LDXF - 1 - " " X-Disp finished with this level

X-DISP = DO entries 17, 18 A-DISP = DO entries 19, 20

IB entries - 12

IBA - address (multiple of eight) of data assigned this IB
IBV - this IB valid
IBW - storage fetch in progress - turned off when fetch completed

HIST Table is a pushup with oldest IB indicated by top entry & latest by bottom entry.

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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE PH1IBS
            C
ISN 0003          IMPLICIT INTEGER*2(A-K,M-S,U-Z)
ISN 0004          IMPLICIT LOGICAL*1(L)
ISN 0005          IMPLICIT REAL (T)
            C
ISN 0006          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
            C
            C              COMMON AREA FOR PHASE 1
            C
ISN 0007          COMMON /PHAS1/ DOTL, DOSL, DOCL, IBCL, HISL,
                 A SKXV, SKXC, SKXS, SKAV, SKAC, SKAS, CYCL, KY, SY, PTR, XX,
                 C XIC, AIC, ASA, NFA, DFA, DEN, DOT, IBN,
                 D XICR, AICR, PTJ, PTK, XEXT, AEXT,
                 G DOIB(20), DOST(20), DOAP(20), DOXP(20),
                 H LDEV(20), LDDV(20), LDCKD(20), LDSEQ(20),
                 I LDAW(20), LDAF(20), LDXW(20), LDXF(20),
                 J HIST(12),  IBA(12), LIBV(12), LIBW(12),
                 K INOP(30), OP(4000), LBX(8), LBA(8),
                 L PBUF(8),
                 Y KNT(50), PHEND
            C
ISN 0008          COMMON /PSCS/ LPSV(8), PSCA(8),PSCB(8)
                 *, XEX, XEXS, XEXA, XEXB, AEX, AEXS, AEXA, AEXB,
                 *  EBA, EBXS, EBXA, EBXB
                 *,EBX
            C
            C              UPDATE DO LEVELS
ISN 0009      912 IF (LDXF(DOTL).AND.LDAF(DOTL)) GOTO 913
ISN 0011          GOTO 915
ISN 0012      913 CONTINUE
ISN 0013          LDEV(DOTL)=0
ISN 0014          IBCL=DOIB(DOTL)
ISN 0015          DOIB(DOTL)=0
ISN 0016          DOST(DOTL)=0
ISN 0017          DOAP(DOTL)=0
ISN 0018          DOXP(DOTL)=0
ISN 0019          LDDV(DOTL)=0
ISN 0020          LDAW(DOTL)=0
ISN 0021          LDXW(DOTL)=0
ISN 0022          LDAF(DOTL)=0
ISN 0023          LDXF(DOTL)=0
```

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```
ISN 0024          LDCKD(DOTL)=0
ISN 0025          LDSEQ(DOTL)=0
ISN 0026          DOTL=DOTL+1
ISN 0027          IF (DOTL.GT.DOT) DOTL=1
ISN 0029          IF (DOTL.NE.DOSL) GOTO 912
            C
            C             CHECK FOR RETURN OF REQUESTED IB
ISN 0031      915 CONTINUE
ISN 0032          IF (IFRTN.EQ.0) GOTO 925
ISN 0034          LIBW(IFRTN)=0
ISN 0035          PBUF(4)=IFRTN
ISN 0036          IFRTN=0
ISN 0037      925 CONTINUE
            C             CHECK FOR RESOLVED BRANCHES
ISN 0038          SEQ=0
ISN 0039          IF (XEX.NE.0) GOTO 941
ISN 0041          IF (AEX.NE.0) GOTO 942
ISN 0043          IF (XX.NE.0) GOTO 930
ISN 0045          IF (IFDST.NE.0) GOTO 930
ISN 0047          IF (LDEV(DOSL)) GOTO 930
ISN 0049          NNFA=NFA+8
ISN 0050          IF (NOPSC.EQ.0) GOTO 916
ISN 0052          DO 926 I=1,NOPSC
ISN 0053          IF (LPSV(I).EQ.0) GOTO 926
ISN 0055          IF (NFA.NE.PSCA(I)) GOTO 926
ISN 0057          NNFA=PSCB(I)
ISN 0058          SEQ=1
ISN 0059      926 CONTINUE
            C
ISN 0060      916 CONTINUE
ISN 0061          NFA=NNFA
            C             SCAN IB'S FOR REQUEST
ISN 0062          DO 917 I=1,I2
ISN 0063          IF (IBA(I).EQ.NFA) GOTO 920
ISN 0065      917 CONTINUE
ISN 0066          I=1
ISN 0067          IBCL=HIST(1)
            C
            C             REQUEST INDTRUCTION FETCH
            C
ISN 0068          IFADD=NFA/2
ISN 0069          IFDST=IBCL
ISN 0070          LIBW(IBCL)=5
            C             SET NEXT DO ENTRY
ISN 0071      918 CONTINUE
ISN 0072          XX=1
ISN 0073          PBUF(1)=NFA
ISN 0074          PBUF(2)=IBCL
ISN 0075          PBUF(3)=DOSL
ISN 0076          IBA(IBCL)=NFA
```

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```
ISN 0077          LIBV(IBCL)=1
ISN 0078          DO 919 J=I,11
ISN 0079      919 HIST(J)=HIST(J+1)
ISN 0080          HIST(12)=IBCL
ISN 0081          DOIB(DOSL)=IBCL
ISN 0082          LDEV(DOSL)=1
ISN 0083          LDCKD(DOSL)=0
ISN 0084          LDSEQ(DOSL)=SEQ
ISN 0085          LDDV(DOSL)=0
ISN 0086          LDAW(DOSL)=0
ISN 0087          LDAF(DOSL)=0
ISN 0088          LDXW(DOSL)=0
ISN 0089          LDXF(DOSL)=0
ISN 0090          DOSL=DOSL+1
ISN 0091          IF (DOSL.GT.DOT) DOSL=1
ISN 0093          GOTO 930
            C
            C               REQUEST IN IB'S - SET-UP
ISN 0094      920 CONTINUE
ISN 0095          IF (LIBV(I).EQ.0) GOTO 917
ISN 0097          IBCL=I
ISN 0098          DO 921 I=1,12
ISN 0099          IF (HIST(I).EQ.IBCL) GOTO 918
ISN 0101      921 CONTINUE
ISN 0102          GOTO 930
            C
ISN 0103      930 CONTINUE
ISN 0104          IF (NOPSC.LT.2) GOTO 935
ISN 0106          IF (LPSV(NOPSC).EQ.0) GOTO 935
            C               MOVE PROGRAM ENTRY INTO PSC
ISN 0108          K=1
ISN 0109          N=NOPSC-1
ISN 0110          DO 932 I=1,N
ISN 0111          IF (LPSV(I).EQ.0) K=I
ISN 0113      932 CONTINUE
ISN 0114          DO 933 I=K,N
ISN 0115          PSCA(I)=PSCA(I+1)
ISN 0116          PSCB(I)=PSCB(I+1)
ISN 0117          LPSV(I)=LPSV(I+1)
ISN 0118      933 CONTINUE
ISN 0119          LPSV(NOPSC)=0
ISN 0120          GOTO 935
            C
ISN 0121      941 CONTINUE
ISN 0122          XEX=0
ISN 0123          AEX=0
ISN 0124          EBXS=XEXS
ISN 0125          EBXA=XEXA
ISN 0126          EBXB=XEXB
ISN 0127          XAF=0
```

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```
ISN 0128          GOTO 945
            C
ISN 0129      942 CONTINUE
ISN 0130          AEX=0
ISN 0131          EBXS=AEXS
ISN 0132          EBXA=AEXA
ISN 0133          EBXB=AEXB
ISN 0134          XAF=1
ISN 0135          GOTO 945
            C
            C               SCAN PSC'S & INVALIDATE MATCHES
ISN 0136      945 CONTINUE
ISN 0137          EBA=(EBXA+8)/8*8
ISN 0138          IF(EBXS.NE.0) EBA=EBXB/8*8
ISN 0140          IF (NOPSC.EQ.0) GOTO 950
ISN 0142          N=NOPSC-1
ISN 0143          N2=NOPSC-2
ISN 0144          IF (NOPSC.LT.2) N=1
ISN 0146          DO 946 I=1,NOPSC
ISN 0147          IF (LPSV(I).EQ.0) GOTO 946
ISN 0149          IF (PSCA(I).EQ.EBXA) GOTO 955
ISN 0151      946 CONTINUE
ISN 0152          IF (EBXS.EQ.0) GOTO 950
            C               INSERT BRANCH ENTRY INTO PSC
ISN 0154      943 CONTINUE
ISN 0155          IF (N.EQ.1) GOTO 949
ISN 0157          IF (LPSV(N).EQ.0) GOTO 949
ISN 0159          K=1
ISN 0160          DO 947 I=1,N2
ISN 0161          IF (LPSV(I).EQ.0) K=I
ISN 0163      947 CONTINUE
ISN 0164          DO 948 I=K,N2
ISN 0165          PSCA(I)=PSCA(I+1)
ISN 0166          PSCB(I)=PSCB(I+1)
ISN 0167          LPSV(I)=LPSV(I+1)
ISN 0168      948 CONTINUE
ISN 0169      949 CONTINUE
ISN 0170          LPSV(N)=1
ISN 0171          PSCA(N)=EBXA
ISN 0172          PSCB(N)=EBA
ISN 0173          GOTO 950
            C
ISN 0174      955 CONTINUE
ISN 0175          IF (PSCB(I).EQ.EBA) GOTO 935
ISN 0177          LPSV(I)=0
ISN 0178          GOTO 943
            C
ISN 0179      950 CONTINUE
ISN 0180          DOCL=DOTL
ISN 0181      951 CONTINUE
```

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```
ISN 0182          IF (LDEV(DOCL).EQ.0) GOTO 952
ISN 0184          IF((LDXF(DOCL).EQ.0).AND.(XAF.EQ.0)) GO TO 953
ISN 0186          IF((LDAF(DOCL).EQ.0).AND.(XAF.EQ.1)) GO TO 953
ISN 0188      952 CONTINUE
ISN 0189          DOCL=DOCL+1
ISN 0190          IF (DOCL.GT.DOT) DOCL=1
ISN 0192          IF (DOCL.NE.DOSL) GOTO 951
            C
            C               NO AVAILABLE ENTRIES IN DO TABLE
ISN 0194          NFA=EBXA
ISN 0195          GOTO 935
            C
ISN 0196      956 CONTINUE
ISN 0197          IF (LDEV(19).EQ.0) GOTO 954
ISN 0199          IF (DOXP(19).EQ.EBA) GOTO 935
ISN 0201          IF (LDEV(20).EQ.0) GOTO 954
ISN 0203          IF (DOXP(20).EQ.EBA) GOTO 935
ISN 0205          GOTO 954
            C
ISN 0206      953 CONTINUE
ISN 0207          IF (IBA(DOIB(DOCL)).EQ.EBA) GOTO 935
ISN 0209          IF (XAF.EQ.1) GOTO 956
            C
ISN 0211          IF(LDEV(17).EQ.0) GO TO 954
ISN 0213          IF(DOAP(17).EQ.EBA) GO TO 935
ISN 0215          IF(LDEV(18).EQ.0) GO TO 954
ISN 0217          IF(DOAP(18).EQ.EBA) GO TO 935
ISN 0219      954 CONTINUE
ISN 0220          LDSEQ(DOCL)=1
ISN 0221          ASA=EBA
ISN 0222          SY=0
ISN 0223          CALL SEARCH
            C
ISN 0224      935 CONTINUE
ISN 0225          RETURN
            C
ISN 0226          END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE PHIMOP
ISN 0003          IMPLICIT INTEGER*2(A-K,M-S,U-Z)
ISN 0004          IMPLICIT LOGICAL*1(L)
ISN 0005          IMPLICIT REAL (T)
            C
ISN 0006          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PHI(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
            C
            C              COMMON AREA FOR PHASE I
            C
ISN 0007          COMMON /PHAS1/ DOTL, DOSL, DOCL, IBCL, HISL,
                 A SKXV, SKXC, SKXS, SKAV, SKAC, SKAS, CYCL, KY, SY, PTR, XX,
                 C XIC, AIC, ASA, NFA, DFA, DEN, DOT, IBN,
                 D XICR, AICR, PTJ, PTK, XEXT, AEXT,
                 G DOIB(20), DOST(20), DOAP(20), DOXP(20),
                 H LDEV(20), LDDV(20), LDCKD(20), LDSEQ(20),
                 I LDAW(20), LDAF(20), LDXW(20), LDXF(20),
                 J HIST(12),  IBA(12), LIBV(12), LIBW(12),
                 K INOP(30), OP(4000), LBX(8), LBA(8),
                 L PBUF(8),
                 Y KNT(50), PHEND
            C
ISN 0008          COMMON /PSCS/ LPSV(8), PSCA(8),PSCB(8)
                 *, XEX, XEXS, XEXA, XEXB, AEX, AEXS, AEXA, AEXB,
                 *  EBA, EBXS, EBXA, EBXB
            C
            C        OP =  (1)INSADD, (2)MNEM1, (3)MNEM2, (4)MNEM3, (5)II, (6)IJ,
            C              (7)IK, (8)ILIT, (9)SUCC, (10)SKP, (11)IEX, (12)ACCADR,
            C              (13)NXADR, (14)OPNUM, (15)LNG, (16)XOP, (17)AOP,
            C              (18)BROP, (19)SKOP, (20)SKEND, (21)SPAR1, (22)SPAR2,
            C              (23)SPAR3, (24)SKIP, (25)VALID
            C
            C
ISN 0009          ENTRY XMXO
            C
ISN 0010          MXO=2
ISN 0011          CALL CAUSE (MXO,TIME+1.0,IPAR1,IPAR2,IPAR3)
ISN 0012      711 CONTINUE
ISN 0013          XX=0
ISN 0014          NCTX=NXDSP
ISN 0015          NCTA=NADSP
ISN 0016          DO 3 I=1,8
ISN 0017          LBX(I)=0
```

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```
ISN 0018          LBA(I)=0
ISN 0019          PBUF(I)=0
ISN 0020        3 CONTINUE
            C
            C             INDEX OP FLOW
            C
            C             MOVE X-OPS TO STACK FROM DISP
            C
ISN 0021          DOCL=17
ISN 0022          XIC=XICR
ISN 0023      111 CONTINUE
ISN 0024      112 IF (LDEV(DOCL).EQ.0) GOTO 130
ISN 0026          IF (LDXF(DOCL).NE.0) GOTO 116
ISN 0028          IF (LDXW(DOCL).NE.0) GOTO 113
ISN 0030          DOXP(DOCL)=MOD(XIC,8)
ISN 0031          LDXW(DOCL)=1
ISN 0032      113 IF (DOXP(DOCL).LT.7) GOTO 20
ISN 0034          IF (DOXP(DOCL).GT.7) GOTO 115
            C
            C             CHECK FOR IB CROSSOVER
            C
ISN 0036          PTR=(DOXP(DOCL)*25)+((DOCL-1)*(25*8))  no change
ISN 0037          IF (OP(PTR+25).EQ.0) GOTO 34
ISN 0039          IF (OP(PTR+16).EQ.0) GOTO 30
ISN 0041          IF (OP(PTR+15).EQ.1) GOTO 20
ISN 0043          IF (DOCL.GT.17) GOTO 130
ISN 0045          IF (LDEV(DOCL+1).NE.0) GOTO 20
ISN 0047          GOTO 130
ISN 0048      115 LDXF(DOCL)=1
ISN 0049      116 IF (DOCL.GT.17) GOTO 130
ISN 0051          DOCL=18
ISN 0052          GOTO 112
            C
            C             CHECK OP ENTRY
            C
ISN 0053       20 PTR=(DOXP(DOCL)*25)+((DOCL-1)*(25*8))  no change
            C        BUS= 'X'
ISN 0054          BUS=231
ISN 0055          IF (OP(PTR+25).EQ.0) GOTO 34
ISN 0057          IF (OP(PTR+16).NE.0) GOTO 21
ISN 0059          GOTO 30
            C
            C             PROCESS INDEX OP
            C
ISN 0060       21 CONTINUE
ISN 0061          IF (XINPT.GT.NXBUF) GOTO 130
ISN 0063          IF (NCTX.LT.1) GOTO 130
ISN 0065          IF (OP(PTR+18).NE.0) GOTO 41
ISN 0067          IF (OP(PTR+20).NE.0) GOTO 45
            C
```

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```
                C              MOVE X-OP TO XBUF AND GO TO NEXT
                C
ISN 0069           23 CONTINUE
ISN 0070              IF (XEXT.NE.0) GOTO 25
ISN 0072              LBX(NCTX)=OP(PTR+23)
ISN 0073              XBUS(1)=OP(PTR+23)*256
ISN 0074              XBUS(2)=OP(PTR+14)
ISN 0075              XBUS(3)=OP(PTR+5)
ISN 0076              XBUS(4)=OP(PTR+6)
ISN 0077              XBUS(5)=OP(PTR+7)
ISN 0078              XBUS(6)=OP(PTR+12)
ISN 0079              XBUS(7)=OP(PTR+17)
ISN 0080              XBUS(8)=OP(PTR+16)
ISN 0081              XBUS(9)=OP(PTR+11)
ISN 0082              XBUS(10)=OP(PTR+9)
ISN 0083              XBUS(11)=OP(PTR+10)
ISN 0084              XBUS(12)=OP(PTR+18)
ISN 0085              XBUS(13)=OP(PTR+19)
ISN 0086              XBUS(14)=OP(PTR+20)
ISN 0087              NCTX=NCTX-1
ISN 0088              CALL BUSTOX
ISN 0089              IF (OP(PTR+24).NE.0) GOTO 25
ISN 0091              OP(PTR+16)=0
ISN 0092              GOTO 30
                C
ISN 0093           25 CONTINUE
ISN 0094              XEXT=1
ISN 0095              IF (OP(PTR+20).NE.0) GOTO 130
ISN 0097              XEXT=0
ISN 0098              OP(PTR+16)=0
ISN 0099              BNOP=0
ISN 0100              IF (OP(PTR+9).EQ.0) GOTO 30
ISN 0102              XIC=OP(PTR+13)
ISN 0103              LDXF(DOCL)=1
ISN 0104              GOTO 111
                C
                C              STEP BY OP LENGTH (1,2) TO NEXT ENTRY
                C
ISN 0105           30 DOXP(DOCL)=DOXP(DOCL)+OP(PTR+15)
ISN 0106              IF (DOXP(DOCL).GT.7) LDXF(DOCL)=1
ISN 0108              XIC=XIC+OP(PTR+15)
ISN 0109              GOTO 111
                C
                C              STEP OVER SPACE (1) TO NEXT ENTRY
                C
ISN 0110           34 DOXP(DOCL)=DOXP(DOCL)+1
ISN 0111              IF (DOXP(DOCL).GT.7) LDXF(DOCL)=1
ISN 0113              XIC=XIC+1
ISN 0114              GOTO 111
                C
```


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```
                C              CHECK X-BRANCH OPS
                C
ISN 0115           41 CONTINUE
ISN 0116              IF (BNOP.EQ.0) GOTO 23
ISN 0118              NCTX=NCTX-1
ISN 0119              OP(PTR+16)=0
ISN 0120              GOTO 30
                C
ISN 0121           45 CONTINUE
ISN 0122              IF (ER(BRXP).EQ.0) GOTO 23
ISN 0124              OP(PTR+20)=0
ISN 0125              IF (LDAF(DOCL).NE.0) GOTO 23
ISN 0127              XEX=1
ISN 0128              XEXS=OP(PTR+9)
ISN 0129              XEXB=OP(PTR+13)
ISN 0130              XEXA=DOAP(DOCL)
ISN 0131              GOTO 23
                C
                C
ISN 0132          130 CONTINUE
ISN 0133              XICR=XIC
                C
                C
ISN 0134          811 CONTINUE
                C
                C              ARITH OP FLOW
                C
                C              MOVE A-OPS TO STACK FROM DISP
                C
ISN 0135              DOCL=19
ISN 0136              AIC=AICR
ISN 0137          211 CONTINUE
ISN 0138          212 IF (LDEV(DOCL).EQ.0) GOTO 230
ISN 0140              IF (LDAF(DOCL).NE.0) GOTO 216
ISN 0142              IF (LDAW(DOCL).NE.0) GOTO 213
ISN 0144              DOAP(DOCL)=MOD(AIC,8)
ISN 0145              LDAW(DOCL)=1
ISN 0146          213 IF (DOAP(DOCL).LT.7) GOTO 70
ISN 0148              IF (DOAP(DOCL).GT.7) GOTO 215
                C
                C              CHECK FOR IB CROSSOVER
                C
ISN 0150              PTR=(DOAP(DOCL)*25)+((DOCL-1)*(25*8))  no change
ISN 0151              IF (OP(PTR+25).EQ.0) GOTO 84
ISN 0153              IF (OP(PTR+17).EQ.0) GOTO 80
ISN 0155              IF (OP(PTR+15).EQ.1) GOTO 70
ISN 0157              IF (DOCL.GT.19) GOTO 230
ISN 0159              IF (LDEV(DOCL+1).NE.0) GOTO 70
ISN 0161              GO TO 230
ISN 0162          215 LDAF(DOCL)=1
```

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```
ISN 0163      216 IF (DOCL.GT.19) GOTO 230
ISN 0165          DOCL=20
ISN 0166          GOTO 212
            C              CHECK OP ENTRY
            C
ISN 0167       70 PTR=(DOAP(DOCL)*25)+((DOCL-1)*(25*8))  no change
            C         BUS= 'A'
ISN 0168          BUS=193
ISN 0169          IF (OP(PTR+25).EQ.0) GOTO 84
ISN 0171          IF (OP(PTR+17).NE.0) GOTO 71
ISN 0173          GOTO 80
            C
            C              PROCESS ARITH OP
            C
ISN 0174       71 CONTINUE
ISN 0175          IF (AINPT.GT.NABUF) GOTO 230
ISN 0177          IF (NCTA.LT.1) GOTO 230
ISN 0179          IF (OP(PTR+20).NE.0) GOTO 85
ISN 0181          IF(OP(PTR+24).NE.0) GO TO 75
            C
            C              MOVE A-OP TO ABUF AND GO TO NEXT
            C
ISN 0183       73 CONTINUE
ISN 0184          IF (AEXT.NE.0) GOTO 75
ISN 0186          LBA(NCTA)=OP(PTR+23)
ISN 0187          ABUS(1)=OP(PTR+23)*256
ISN 0188          ABUS(2)=OP(PTR+14)
ISN 0189          ABUS(3)=OP(PTR+5)
ISN 0190          ABUS(4)=OP(PTR+6)
ISN 0191          ABUS(5)=OP(PTR+7)
ISN 0192          ABUS(6)=OP(PTR+12)
ISN 0193          ABUS(7)=OP(PTR+17)
ISN 0194          ABUS(8)=OP(PTR+16)
ISN 0195          ABUS(9)=OP(PTR+11)
ISN 0196          ABUS(10)=OP(PTR+9)
ISN 0197          ABUS(11)=OP(PTR+10)
ISN 0198          ABUS(12)=OP(PTR+18)
ISN 0199          ABUS(13)=OP(PTR+19)
ISN 0200          ABUS(14)=OP(PTR+20)
ISN 0201          NCTA=NCTA-1
ISN 0202          CALL BUSTOA
ISN 0203          IF (OP(PTR+24).NE.0) GOTO 75
ISN 0205          OP(PTR+17)=0
ISN 0206          GOTO 80
            C
ISN 0207       75 CONTINUE
ISN 0208          AEXT=1
ISN 0209          IF (OP(PTR+20).NE.0) GOTO 230
ISN 0211          AEXT=0
ISN 0212          OP(PTR+17)=0
```


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```
ISN 0213          IF (OP(PTR+9).EQ.0) GOTO 80
ISN 0215          AIC=OP(PTR+13)
ISN 0216          LDAF(DOCL)=1
ISN 0217          GOTO 211
            C.
            C
            C              STEP BY OP LENGTH (1,2) TO NEXT ENTRY
            C
ISN 0218       80 DOAP(DOCL)=DOAP(DOCL)+OP(PTR+15)
ISN 0219          IF (DOAP(DOCL).GT.7) LDAF(DOCL)=1
ISN 0221          AIC=AIC+OP(PTR+15)
ISN 0222          GOTO 211
            C
            C              STEP OVER SPACE (1) TO NEXT ENTRY
            C
ISN 0223       84 DOAP(DOCL)=DOAP(DOCL)+1
ISN 0224          IF (DOAP(DOCL).GT.7) LDAF(DOCL)=1
ISN 0226          AIC=AIC+1
ISN 0227          GOTO 211
            C
ISN 0228       85 CONTINUE
ISN 0229          IF (ER(BRAP).EQ.0) GOTO 73
ISN 0231          OP(PTR+20)=0
ISN 0232          IF (LDXF(DOCL).NE.0) GOTO 75
ISN 0234          AEX=1
ISN 0235          AEXS=OP(PTR+9)
ISN 0236          AEXB=OP(PTR+13)
ISN 0237          AEXA=DOXP(DOCL)
ISN 0238          GO TO 75
            C
            C
ISN 0239      230 CONTINUE
ISN 0240          AICR=AIC
ISN 0241          IF ((AEP.NE.0).AND.(ER(BRAP).NE.0)) AEP=0
            C
            C
            C              UPDATE DISP  A-FLOW
ISN 0243          IF (LDEV(19).EQ.0) GOTO 620
ISN 0245          IF (LDAF(19).EQ.0) GOTO 640
ISN 0247          IF (LDEV(20).EQ.0) GOTO 620
ISN 0249          IF (LDAF(20).EQ.0) GOTO 630
ISN 0251      620 CONTINUE
ISN 0252          AFIL=NDBUS
ISN 0253          ADSP=19
ISN 0254          LDEV(19)=0
ISN 0255          LDEV(20)=0
ISN 0256          GOTO 60
ISN 0257      630 CONTINUE
ISN 0258          J=19
ISN 0259          K=20
```


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```
ISN 0260          DOIB(J)=DOIB(K)
ISN 0261          DOST(J)=DOST(K)
ISN 0262          DOAP(J)=DOAP(K)
ISN 0263          DOXP(J)=DOXP(K)
ISN 0264          LDEV(J)=LDEV(K)
ISN 0265          LDDV(J)=LDDV(K)
ISN 0266          LDAW(J)=LDAW(K)
ISN 0267          LDAF(J)=LDAF(K)
ISN 0268          LDXW(J)=LDXW(K)
ISN 0269          LDXF(J)=LDXF(K)
ISN 0270          LDCKD(J)=LDCKD(K)
ISN 0271          LDSEQ(J)=LDSEQ(K)
ISN 0272          PTJ=(J-1)*200
ISN 0273          PTK=(K-1)*200
ISN 0274          DO 633 I=1,200
ISN 0275      633 OP(PTJ+I)=OP(PTK+I)
ISN 0276      635 CONTINUE
ISN 0277          AIC=AIC/8*8+8
ISN 0278          AFIL=1
ISN 0279          ADSP=20
ISN 0280          LDEV(20)=0
ISN 0281          GOTO 60
ISN 0282      640 CONTINUE
ISN 0283          IF (LDEV(20).NE.0) GOTO 210
ISN 0285          GOTO 635
            C             MOVE IB TO DISP PER DO ENTRY
            C
            C             CHECK THE DEC ORDER LEVEL
            C
ISN 0286       60 DOCL=DOTL
ISN 0287          IF ((AEP.NE.0).OR.(AHOLDT.NE.0)) GOTO 210
ISN 0289       61 IF (LDEV(DOCL).EQ.0) GOTO 62
ISN 0291          IF (LDAF(DOCL).EQ.0) GOTO 63
ISN 0293       62 DOCL=DOCL+1
ISN 0294          IF (DOCL.GT.DOT) DOCL=1
ISN 0296          IF (DOCL.NE.DOSL) GOTO 61
ISN 0298          GOTO 210
            C
            C             CHECK ADDRESS FOR LEVEL
            C
ISN 0299       63 CONTINUE
ISN 0300          IF (LDCKD(DOCL).NE.0) GOTO 67
ISN 0302          IBCL=DOIB(DOCL)
ISN 0303          IF ((AIC/8).EQ.(IBA(IBCL)/8)) GOTO 67
ISN 0305          IF (LDSEQ(DOCL).NE.0) GOTO 67
ISN 0307          GOTO 210
            C
            C             DATA ADDRESS CHECKED
            C
ISN 0308       67 LDCKD(DOCL)=1
```

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```
ISN 0309          DOST(DOCL)=0
ISN 0310          DOAP(DOCL)=DOST(DOCL)
ISN 0311          IBCL=DOIB(DOCL)
            C
            C              CHECK IB WAIT & LIMIT
            C
ISN 0312          IF (LIBW(IBCL).NE.0) GOTO 210
            C
            C              CHECK IF DATA VALID
            C
ISN 0314          IF (LDDV(DOCL).NE.0) GOTO 68
ISN 0316          LDDV(DOCL)=1
ISN 0317          SY=193
ISN 0318          CALL FETCH
            C
ISN 0319          IF (KNT(9).NE.0) GOTO 210
ISN 0321          IF (LDDV(DOCL).EQ.0) GOTO 210
ISN 0323       68 LDAW(DOCL)=1
ISN 0324          LDAF(DOCL)=1
            C
ISN 0325          J=ADSP
ISN 0326          K=DOCL
ISN 0327          DOIB(J)=DOIB(K)
ISN 0328          DOAP(J)=DOST(K)
ISN 0329          DOST(J)=K
ISN 0330          DOXP(J)=IBA(DOIB(K))
ISN 0331          LDEV(J)=LDEV(K)
ISN 0332          LDDV(J)=LDDV(K)
ISN 0333          LDAW(J)=0
ISN 0334          LDAF(J)=0
ISN 0335          LDXW(J)=LDXW(K)
ISN 0336          LDXF(J)=LDXF(K)
ISN 0337          LDCKD(J)=LDCKD(K)
ISN 0338          LDSEQ(J)=LDSEQ(K)
ISN 0339          PTJ=(J-1)*200
ISN 0340          PTK=(K-1)*200
ISN 0341          DO 69 I=1,200
ISN 0342       69 OP(PTJ+I)=OP(PTK+I)
ISN 0343          AFIL=AFIL-1
ISN 0344          ADSP=ADSP+1
ISN 0345          AIC=AIC+8
ISN 0346          DO 66 I=20,200,25
ISN 0347       66 IF (OP(PTJ+I).NE.0) GOTO 210
ISN 0349          IF (AFIL.NE.0) GOTO 62
            C
ISN 0351      210 CONTINUE
ISN 0352          J=19
ISN 0353      703 CONTINUE
ISN 0354          IF (LDEV(J).EQ.0) GOTO 705
ISN 0356          IF (LDAF(J).NE.0) GOTO 705
```

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```
ISN 0358          K=(J-1)*200
ISN 0359          DO 702 I=1,8
ISN 0360          IF (OP(K+17).EQ.0) GOTO 701
ISN 0362          IF (OP(K+20).NE.0) GOTO 709
ISN 0364      701 K=K+25
ISN 0365      702 CONTINUE
ISN 0366      705 CONTINUE
ISN 0367          J=J+1
ISN 0368          IF (J.EQ.20) GOTO 703
ISN 0370          GOTO 712
ISN 0371      709 IF (OP(K+24).NE.0) GOTO 710
ISN 0373          AEP=1
ISN 0374          OP(K+24)=1
ISN 0375      710 IF (AEP.NE.0) GOTO 712
ISN 0377          OP(K+20)=0
ISN 0378          IF (LDXF(J).NE.0) GOTO 712
ISN 0380          AEX=1
ISN 0381          AEXS=OP(K+9)
ISN 0382          AEXB=OP(K+13)
ISN 0383          AEXA=DOXP(J)
ISN 0384      712 CONTINUE
ISN 0385          IF ((XEP.NE.0).AND.(ER(BRXP).NE.0)) XEP=0
            C
            C
            C             UPDATE DISP  X-FLOW
ISN 0387          IF (LDEV(17).EQ.0) GOTO 420
ISN 0389          IF (LDXF(17).EQ.0) GOTO 440
ISN 0391          IF (LDEV(18).EQ.0) GOTO 420
ISN 0393          IF (LDXF(18).EQ.0) GOTO 430
ISN 0395      420 CONTINUE
ISN 0396          XFIL=NDBUS
ISN 0397          XDSP=17
ISN 0398          LDEV(17)=0
ISN 0399          LDEV(18)=0
ISN 0400          GOTO 10
ISN 0401      430 CONTINUE
ISN 0402          J=17
ISN 0403          K=18
ISN 0404          DOIB(J)=DOIB(K)
ISN 0405          DOST(J)=DOST(K)
ISN 0406          DOAP(J)=DOAP(K)
ISN 0407          DOXP(J)=DOXP(K)
ISN 0408          LDEV(J)=LDEV(K)
ISN 0409          LDDV(J)=LDDV(K)
ISN 0410          LDAW(J)=LDAW(K)
ISN 0411          LDAF(J)=LDAF(K)
ISN 0412          LDXW(J)=LDXW(K)
ISN 0413          LDXF(J)=LDXF(K)
ISN 0414          LDCKD(J)=LDCKD(K)
ISN 0415          LDSEQ(J)=LDSEQ(K)
```

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```
ISN 0416          PTJ=(J-1)*200
ISN 0417          PTK=(K-1)*200
ISN 0418          DO 433 I=1,200
ISN 0419      433 OP(PTJ+I)=OP(PTK+I)
ISN 0420      435 CONTINUE
ISN 0421          XIC=XIC/8*8+8
ISN 0422          XFIL=1
ISN 0423          XDSP=18
ISN 0424          LDEV(18)=0
ISN 0425          GOTO 10
ISN 0426      440 CONTINUE
ISN 0427          IF (LDEV(18).NE.0) GOTO 110
ISN 0429          GOTO 435
            C
            C             MOVE IB TO DISP PER DO ENTRY
            C
            C             CHECK THE DEC ORDER LEVEL
            C
ISN 0430       10 DOCL=DOTL
ISN 0431          IF ((XEP.NE.0).OR.(XHOLDT.NE.0)) GOTO 110
ISN 0433       11 IF (LDEV(DOCL).EQ.0) GOTO 12
ISN 0435          IF (LDXF(DOCL).EQ.0) GOTO 13
ISN 0437       12 DOCL=DOCL+1
ISN 0438          IF (DOCL.GT.DOT) DOCL=1
ISN 0440          IF (DOCL.NE.DOSL) GOTO 11
ISN 0442          GOTO 110
            C
            C             CHECK ADDRESS FOR LEVEL
            C
ISN 0443       13 CONTINUE
ISN 0444          IF (LDCKD(DOCL).NE.0) GOTO 17
ISN 0446          IBCL=DOIB(DOCL)
ISN 0447          IF ((XIC/8).EQ.(IBA(IBCL)/8)) GOTO 17
ISN 0449          IF (LDSEQ(DOCL).NE.0) GOTO 17
ISN 0451          LDSEQ(DOCL)=1
ISN 0452          ASA=XIC
ISN 0453          SY=231
ISN 0454          CALL SEARCH
ISN 0455          GOTO 110
            C
            C             DATA ADDRESS CHECKED
            C
ISN 0456       17 LDCKD(DOCL)=1
ISN 0457          DOST(DOCL)=0
ISN 0458          DOXP(DOCL)=DOST(DOCL)
ISN 0459          IBCL=DOIB(DOCL)
            C
            C             CHECK IB WAIT & LIMIT
            C
ISN 0460          IF (LIBW(IBCL).NE.0) GOTO 110
```

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```
                C
                C              CHECK IF DATA VALID
                C
ISN 0462              IF (LDDV(DOCL).NE.0) GOTO 18
ISN 0464              LDDV(DOCL)=1
ISN 0465              SY=231
ISN 0466              CALL FETCH
                C
ISN 0467              IF (KNT(8).NE.0) GOTO 110
ISN 0469              IF (LDDV(DOCL).EQ.0) GOTO 110
ISN 0471           18 LDXW(DOCL)=1
ISN 0472              LDXF(DOCL)=1
                C
ISN 0473              J=XDSP
ISN 0474              K=DOCL
ISN 0475              DOIB(J)=DOIB(K)
ISN 0476              DOXP(J)=DOST(K)
ISN 0477              DOST(J)=K
ISN 0478              DOAP(J)=IBA(DOIB(K))
ISN 0479              LDEV(J)=LDEV(K)
ISN 0480              LDDV(J)=LDDV(K)
ISN 0481              LDAW(J)=LDAW(K)
ISN 0482              LDAF(J)=LDAF(K)
ISN 0483              LDXW(J)=0
ISN 0484              LDXF(J)=0
ISN 0485              LDCKD(J)=LDCKD(K)
ISN 0486              LDSEQ(J)=LDSEQ(K)
ISN 0487              PTJ=(J-1)*200
ISN 0488              PTK=(K-1)*200
ISN 0489              DO 19 I=1,200
ISN 0490           19 OP(PTJ+I)=OP(PTK+I)
ISN 0491              XFIL=XFIL-1
ISN 0492              XDSP=XDSP+1
ISN 0493              XIC=XIC+8
ISN 0494              DO 16 I=20,200,25
ISN 0495           16 IF (OP(PTJ+I).NE.0) GOTO 110
ISN 0497              IF (XFIL.NE.0) GOTO 12
                C
                C
ISN 0499          110 CONTINUE
ISN 0500              BOSC=0
ISN 0501              J=17
ISN 0502          505 CONTINUE
ISN 0503              IF (LDEV(J).EQ.0) GOTO 510
ISN 0505              IF (LDXF(J).NE.0) GOTO 510
ISN 0507              K=(J-1)*200
ISN 0508              DO 504 I=1,8
ISN 0509              IF (OP(K+16).EQ.0) GOTO 503
ISN 0511              IF (OP(K+20).NE.0) GOTO 515
ISN 0513              IF (OP(K+18).EQ.0) GOTO 503
```

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```
ISN 0515          IF (BNOP.EQ.0) GOTO 502
ISN 0517          OP(K+16)=0
ISN 0518          GOTO 503
ISN 0519      502 BOSC=1
ISN 0520      503 K=K+25
ISN 0521      504 CONTINUE
ISN 0522      510 CONTINUE
ISN 0523          J=J+1
ISN 0524          IF (J.EQ.18) GOTO 505
ISN 0526          GOTO 520
ISN 0527      515 IF (OP(K+24).NE.0) GOTO 516
ISN 0529          XEP=1
ISN 0530          OP(K+24)=1
ISN 0531      516 IF (XEP.NE.0) GOTO 520
ISN 0533          OP(K+20)=0
ISN 0534          IF (LDAF(J).NE.0) GOTO 520
ISN 0536          XEX=1
ISN 0537          XEXS=OP(K+9)
ISN 0538          XEXB=OP(K+13)
ISN 0539          XEXA=DOAP(J)
ISN 0540      520 CONTINUE
            C
ISN 0541      911 CONTINUE
            C                LOAD IB'S
            C
ISN 0542          IF (PHEND.GT.0) GOTO 930
ISN 0544          CALL PHIIBS
ISN 0545      930 CONTINUE
ISN 0546          CYCL=CYCL+1
ISN 0547          DO 999 I=1,100
ISN 0548      999 PHI(I)=0
ISN 0549          PHI(100)=PHEND
ISN 0550          IF (PHEND.GT.1) GOTO 931
ISN 0552          CALL PHIMAP
            C
ISN 0553      931 CONTINUE
ISN 0554          IF ((KNT(8).EQ.0).OR(KNT(9).EQ.0)) GOTO 932
ISN 0556          IF (LDEV(17).OR.LDEV(18).OR.LDEV(19).OR.LDEV(20)) GOTO 932
ISN 0558          PHEND=2
ISN 0559      932 CONTINUE
ISN 0560          RETURN
ISN 0561          END
```

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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE PH1SPT
            C             SUPPORT SUBROUTINES - PHASE I
            C
ISN 0003          IMPLICIT INTEGER*2(A-K,M-S,U-Z)
ISN 0004          IMPLICIT LOGICAL*1(L)
ISN 0005          IMPLICIT REAL (T)
            C
ISN 0006          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
            C
            C             COMMON AREA FOR PHASE I
            C
ISN 0007          COMMON /PHAS1/ DOTL, DOSL, DOCL, IBCL, HISL,
                 A SKXV, SKXC, SKXS, SKAV, SKAC, SKAS, CYCL, KY, SY, PTR, XX,
                 C XIC, AIC, ASA, NFA, DFA, DEN, DOT, IBN,
                 D XICR, AICR, PTJ, PTK, XEXT, AEXT,
                 G DOIB(20), DOST(20), DOAP(20), DOXP(20),
                 H LDFV(20), LDDV(20), LDCKD(20), LDSEQ(20),
                 I LDAW(20), LDAF(20), LDXW(20), LDXF(20),
                 J HIST(12),  IBA(12), LIBV(12), LIBW(12),
                 K INOP(30), OP(4000), LBX(8), LBA(8),
                 L PBUF(8),
                 Y KNT(50), PHEND
            C
            C
            C        OP =  (1)INSADD, (2)MNEM1, (3)MNEM2, (4)MNEM3, (5)II, (6)IJ,
            C              (7)IK, (8)ILIT, (9)SUCC, (10)SKP, (11)IEX, (12)ACCADR,
            C              (13)NXADR, (14)OPNUM, (15)LNG, (16)XOP, (17)AOP,
            C              (18)BROP, (19)SKOP, (20)SKEND, (21)SPAR1, (22)SPAR2,
            C              (23)SPAR3, (24)SKIP, (25)VALID
            C
            C
ISN 0008          COMMON /TAGS/ D(256,70)
            C
ISN 0009          COMMON /PSCS/ PSC(50)
            C
ISN 0010          COMMON/PROG/JTRACE(1000,30),INSLOC
ISN 0011          DIMENSION LETTER(36)
ISN 0012          DIMENSION INT(4300)
ISN 0013          DIMENSION LETR(38)
ISN 0014          DIMENSION LPSV(8)
ISN 0015          DATA LETR/38H0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ**/
ISN 0016          DATA LETTER/36HABCDEFGHIJKLMNOPQRSTUVWXYZ 123456789/
```

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```
ISN 0017          DATA SCT,FCT/0,0/
ISN 0018          DIMENSION TABLE(199)
ISN 0019          DATA TABLE /1,2,4,5,0,9,10,12,13,4*0,19,20,21,22,0,23,0,24,0,25,
                 A 0,26,10*0,38,39,3*0,42,155,156,4*0,47,48,49,50,3*0,83,84,99,100,
                 B 118,119,89,90,91,0,93,0,95,96,97,98,106,107,108,109,112,113,
                 C 114,115,123,124,127,128,2*0,131,132,134,135,133,136,21*0,170,
                 D 171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,195,
                 E 196,194,8*0,202,203,204,205,206,207,208,209,215,216,217,218,219,
                 F 220,221,222,11*0,56,0,58,0,60,0,62,0,64,0,66,0,68,0,0,70,0,72,0,
                 G 0,76,0,0,78,9*0,212/
ISN 0020          INTEGER*4 WRT(50)
ISN 0021          EQUIVALENCE (LPSV(1),PSC(1))
ISN 0022          EQUIVALENCE (INT(1),DOTL)
ISN 0023      801 FORMAT (1XI5,1X3A2,1X,3(1XI2),2XI5,4X3I1,3XI5,2XI5,2XI3,2X,16I1)
ISN 0024      802 FORMAT(10XA2,1XI5,1X6A1,3(1XI2),1XI5,4X3I1,1XI5,1XI5,2XI3,2X,
                 X   3I1,3XA2)
            C
            C
            C
            C                FETCH ROUTINE
            C                    TO FETCH OPS INTO IB BUFFER
            C
ISN 0025          ENTRY FETCH
            C
ISN 0026          FCT=FCT+1
ISN 0027          IBCL=DOIB(DOCL)
ISN 0028          DEN = DOST(DOCL)
ISN 0029          DFA=(IBA(IBCL)/8*8)+DEN
            C
            C                CLEAR IB OP AREA
            C
ISN 0030          PTS=((DOCL-1)*(25*8))
ISN 0031          PTR=PTS
ISN 0032          DO 115 I=1,8
ISN 0033          DO 114 J=1,25
ISN 0034          OP(PTR+J)=0
ISN 0035      114 CONTINUE
ISN 0036          PTR=PTR+25
ISN 0037      115 CONTINUE
ISN 0038          PAR=0
ISN 0039          PDL=LETR(DOIB(DOCL)+1)
            C
            C                CHECK OP INPUT
            C
ISN 0040      120 IF (INOP(25).NE.0) GOTO 121
            C
            C                READ OP CARD
            C
            C     READ(5,801,END=150)(INOP(I),I=1,30)
            C
```

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```
                C
                C              TO USE UNROLLER OUTPUT, SET INOP FROM JTRACE
ISN 0042              DO 131 I=1,15
ISN 0043              INOP(I)=JTRACE(INSLOC,I)
ISN 0044          131 CONTINUE
ISN 0045              MN1=JTRACE(INSLOC,21)
ISN 0046              MN2=JTRACE(INSLOC,22)
ISN 0047              MN3=JTRACE(INSLOC,23)
ISN 0048              MN4=JTRACE(INSLOC,24)
ISN 0049              MN5=JTRACE(INSLOC,25)
ISN 0050              MN6=JTRACE(INSLOC,26)
                C
                C
ISN 0051              INSLOC=INSLOC+1
ISN 0052              INOP(25)=1
ISN 0053              IF (INOP(14).EQ.999) GOTO 123
ISN 0055              INOP(16)=0
ISN 0056              INOP(17)=0
ISN 0057              INOP(18)=0
ISN 0058              INOP(19)=0
ISN 0059              INOP(20)=0
ISN 0060              INOP(16)=D(INOP(14),1)
ISN 0061              INOP(17)=D(INOP(14),2)
ISN 0062              INOP(18)=D(INOP(14),3)
ISN 0063              INOP(19)=D(INOP(14),29)
ISN 0064              INOP(20)=D(INOP(14),31)
ISN 0065              IF (INOP(10).NE.1) INOP(10)=0
ISN 0067              PNT=MOD(INOP(1),26)+1
ISN 0068              INOP(23)=LETTER(PNT)
ISN 0069          123 CONTINUE
ISN 0070              IF(PRINT.GT.1) GO TO 121
ISN 0072              WRITE(6,802)INOP(23),INOP(1),MN1,MN2,MN3,MN4,MN5,MN6,
                     X  (INOP(I),I=5,17),PDL
ISN 0073          121 CONTINUE
ISN 0074              IF (INOP(14).EQ.999) GOTO 152
ISN 0076              IF (INOP(1).NE.DFA) GOTO 125
ISN 0078          126 CONTINUE
ISN 0079              PTR=PTS+(DEN*25)
ISN 0080              DO 122 I=1,25
ISN 0081              OP(PTR+I)=INOP(I)
ISN 0082              INOP(I)=0
ISN 0083          122 CONTINUE
ISN 0084              INOP(25)=0
ISN 0085              PAR=PAR+1
ISN 0086              DEN=DEN+OP(PTR+15)
ISN 0087              DFA=DFA+OP(PTR+15)
ISN 0088              IF (DEN.LE.7) GOTO 120
ISN 0090              RETURN
                C
                C
```


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```
                C               ERROR - OP CARD ADDRESS IS NOT MATCH
                C               CHECK FOR SKIPS
                C
ISN 0091          125 CONTINUE
ISN 0092              DFA1=DFA/8*8
ISN 0093              DFA2=DFA1+8
ISN 0094              IF (INOP(1).LT.DFA1) GOTO 127
ISN 0096              IF (INOP(1).GE.DFA2) GOTO 127
ISN 0098              DFA=INOP(1)                    IF (PAR.NE.Ø) RETURN
ISN 0099              DEN=MOD(DFA,8)
ISN 0100              GOTO 126
                C
ISN 0101          127 CONTINUE
ISN 0102              KY=3
ISN 0103              KNT(3)=KNT(3)+1
ISN 0104          128 CONTINUE
ISN 0105              IF (PAR.NE.0) RETURN
ISN 0107              LDCKD(DOCL)=0
ISN 0108              LDDV(DOCL)=0
ISN 0109              LDSEQ(DOCL)=0
ISN 0110              RETURN
                C
                C               END OF INPUT DATA
                C
ISN 0111          150 CONTINUE
ISN 0112              KY = 10
ISN 0113              GOTO 2000
ISN 0114          152 CONTINUE
ISN 0115              IF (SY.EQ.231) GOTO 153
ISN 0117              IF (SY.EQ.193) GOTO 154
ISN 0119              KY=6
ISN 0120              GOTO 128
ISN 0121          153 KNT(8)=1
ISN 0122              KY=4
ISN 0123              GOTO 128
ISN 0124          154 KNT(9)=1
ISN 0125              KY=5
ISN 0126              GOTO 128
                C
                C
                C               SEARCH ROUTINE
                C                   SEARCH IB'S FOR ADDRESS
                C
ISN 0127              ENTRY SEARCH
                C
ISN 0128              KY=9
ISN 0129              SCT=SCT+1
ISN 0130              ASH=ASA/8*8
ISN 0131              DO 201 I=1,12
ISN 0132              IF (ASH.EQ.IBA(I)) GOTO 210
```

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```
ISN 0134        201 CONTINUE
                C
                C               ADDRESS NOT IN IB'S - GET NEXT AVAILABLE IB
                C
ISN 0135            IBCL=HIST(1)
ISN 0136            DO 202 I=1,11
ISN 0137        202 HIST(I)=HIST(I+1)
ISN 0138            HIST(12)=IBCL
                C
                C               REQUEST INSTRUCTION FETCH
                C
ISN 0139            IFDST2=IFDST
ISN 0140            IF (IFDST2.NE.0) LIBV(IFDST2)=0
ISN 0142            LIBV(IBCL)=1
ISN 0143            LIBW(IBCL)=5
ISN 0144            IBA(IBCL)=ASA/8*8
ISN 0145            IFADD=ASA/2
ISN 0146            IFDST=IBCL
ISN 0147            PBUF(1)=ASA
ISN 0148            PBUF(2)=IBCL
ISN 0149            PBUF(3)=DOCL
                C
ISN 0150        206 CONTINUE
ISN 0151            XX=1
ISN 0152            NFA=IBA(IBCL)
ISN 0153            IF (LDXW(DOCL).OR.LDAW(DOCL)) GOTO 205
ISN 0155            DOIB(DOCL)=IBCL
ISN 0156            LODV(DOCL)=0
ISN 0157            LDEV(DOCL)=1
ISN 0158            DOSL=DOCL
ISN 0159        203 CONTINUE
ISN 0160            DOSL=DOSL+1
ISN 0161            IF (DOSL.GT.DOT) DOSL=1
ISN 0163            IF (DOSL.EQ.DOTL) GOTO 204
ISN 0165            LDEV(DOSL)=0
ISN 0166            GOTO 203
ISN 0167        204 CONTINUE
ISN 0168            DOSL=DOCL+1
ISN 0169            IF (DOSL.GT.DOT) DOSL=1
ISN 0171            RETURN
                C
ISN 0172        205 CONTINUE
ISN 0173            KY = 15
ISN 0174            GOTO 2000
                C
                C               FOUR-WORD ADDRESS MATCH - SET POINTER TO ENTRY
                C
ISN 0175        210 CONTINUE
ISN 0176            IF (LIBV(I).EQ.0) GOTO 201
ISN 0178            IF (LDXW(DOCL).OR.LDAW(DOCL)) GOTO 215
```


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```
ISN 0180          IBCL=I
ISN 0181          IF (IBCL.EQ.HIST(12)) GOTO 214
ISN 0183          DO 211 I=1,11
ISN 0184          IF (IBCL.EQ.HIST(I)) GOTO 212
ISN 0186      211 CONTINUE
ISN 0187      212 CONTINUE
ISN 0188          DO 213 J=I,11
ISN 0189      213 HIST(J)=HIST(J+1)
ISN 0190          HIST(12)=IBCL
ISN 0191      214 CONTINUE
ISN 0192          GOTO 206
ISN 0193
ISN 0193      215 CONTINUE
ISN 0194          KY = 14
ISN 0195          GOTO 2000
            C
            C
            C
ISN 0196          ENTRY INTPH1
            C
            C                INITIALIZE PHAS1 COMMON
ISN 0197          DO 10 I=1,4300
ISN 0198       10 INT(I)=0
ISN 0199          DO 12 I=1,50
ISN 0200          KNT(I)=0
ISN 0201          PSC(I)=0
ISN 0202       12 CONTINUE
ISN 0203          PHEND=0
            C
            C                SET INITIAL VALUES
ISN 0204          DOTL=1
ISN 0205          DOSL=1
ISN 0206          DOT=6
ISN 0207          IF (NODOT.NE.0) DOT=NODOT
            C
            C                AND SET XIC, AIC, ETC.
ISN 0209          PNT=1
ISN 0210          AIC=ESTADD
ISN 0211          XIC=AIC
ISN 0212          NEA=AIC
ISN 0213          AICR=AIC
ISN 0214          XICR=XIC
ISN 0215          IBA(1)=NEA
ISN 0216          LIBV(1)=1
ISN 0217          LIBW(1)=5
ISN 0218          LDEV(1)=1
ISN 0219          DOIB(1)=1
ISN 0220          DOSL=2
ISN 0221          IFADD=NEA/2
ISN 0222          IFDST=1
```


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```
                C
ISN 0223              J=1
ISN 0224              DO 11 I=1,12
ISN 0225              J=J+1
ISN 0226              IF (J.GT.12) J=1
ISN 0228           11 HIST(I)=J
ISN 0229              RETURN
                C
                C
                C                ROUTINE TO DUMP VARIABLES AND BUFFERS
                C
ISN 0230              ENTRY BUFR
                C
ISN 0231              GOTO 2000
                C
ISN 0232         2011 FORMAT ('0KY='I2,' DOT='I2,' DOTL='I2,' DOSL='I2,' DOCL='I2,
                     * ' IBCL='I2,' HISL='I2,2X,'XIC='I6,4(1XI1),' AIC='I6,4(1XI1),
                     *' ASA='I6)
ISN 0233         2012 FORMAT (' DO=',3(2X,4(1XI2),8(1XI1)))
ISN 0234         2013 FORMAT ('0IBA=',12(1XI6,1XI1,I1))
ISN 0235         2014 FORMAT ('      ',12(6XI1))
ISN 0236         2015 FORMAT ('0BR=',8(3(1XI1),1XI6))
ISN 0237         2016 FORMAT (' **', 9(1XI6),/)
ISN 0238         2017 FORMAT ('0     CYCL  XINPT  NXBUF  AINPT  NABUF     SY    SCT',
                     * '    FCT    PTR')
ISN 0239         2018 FORMAT ('  IB,ST,AP,XP,  EV,CKD,SEQ,DV,AW,AF,XW,XF')
ISN 0240         2020 FORMAT ('0 KNT= ',10(1XI6))
                C
ISN 0241         2000 CONTINUE
ISN 0242              WRITE (6,2011) KY, DOT,DOTL,DOSL,DOCL,IBCL,HISL,XIC,BRXP,SKXV,
                     * SKXC,SKXS,AIC,BRAP,SKAV,SKAC,SKAS,ASA
ISN 0243              WRITE (6,2017)
ISN 0244              WRITE (6,2016) CYCL, XINPT, NXBUF, AINPT, NABUF,SY,SCT,FCT,PTR
ISN 0245              WRITE (6,2020)(KNT(I),I=1,10)
                C
ISN 0246              J=1
ISN 0247              DO 2003 I=1,12
ISN 0248              WRT(J)  = IBA(I)
ISN 0249              WRT(J+1)=LIBV(I)
ISN 0250              WRT(J+2)=LIBW(I)
ISN 0251              J=J+3
ISN 0252         2003 CONTINUE
ISN 0253              WRITE (6,2013)(WRT(J),J=1,36)
                C
ISN 0254              I=DOTL-1
ISN 0255              WRITE (6,2018)
ISN 0256              DO 2001 N=1,DOT,3
ISN 0257              DO 2002 K=1,36,12
ISN 0258              I=I+1
ISN 0259              IF (I.GT.DOT) I=1
```

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```
ISN 0261          WRT(K)   = DOIB(I)
ISN 0262          WRT(K+1) = DOST(I)
ISN 0263          WRT(K+2) = DOAP(I)
ISN 0264          WRT(K+3) = DOXP(I)
ISN 0265          WRT(K+4) = LDEV(I)
ISN 0266          WRT(K+5) = LDCKD(I)
ISN 0267          WRT(K+6) = LDSEQ(I)
ISN 0268          WRT(K+7) = LDDV(I)
ISN 0269          WRT(K+8) = LDAW(I)
ISN 0270          WRT(K+9) = LDAF(I)
ISN 0271          WRT(K+10)= LDXW(I)
ISN 0272          WRT(K+11)= LDXF(I)
ISN 0273     2002 CONTINUE
ISN 0274          WRITE (6,2012)(WRT(J),J=1,36)
ISN 0275     2001 CONTINUE
            C
ISN 0276     2098 CONTINUE
ISN 0277          CALL PDUMP (DOTL,INOP(1),0)
ISN 0278          IF (KY.LT.10) GOTO 2099
ISN 0280          PHEND=PHEND+2
ISN 0281     2099 CONTINUE
ISN 0282          GOTO 1000
            C
ISN 0283          ENTRY PH1MAP
            C
ISN 0284     1000 CONTINUE
ISN 0285          IF (LDEV(17).EQ.0) GOTO 1002
ISN 0287          IF (LDXF(17).NE.0) GOTO 1002
ISN 0289          PH1(1)=LETR(DOIB(17)+1)
ISN 0290          PH1(2)=LETR(DOST(17)+1)
ISN 0291          K=3200
ISN 0292          DO 1001 J=3,10
ISN 0293          IF (OP(K+16).EQ.0) GOTO 1001
ISN 0295          PH1(J)=OP(K+23)
ISN 0296          IF (OP(K+15).EQ.1) GOTO 1001
ISN 0298          PH1(J+1)=PH1(J)
ISN 0299     1001 K=K+25
ISN 0300     1002 CONTINUE
ISN 0301          PH1(13)=PH1(11)
ISN 0302          PH1(11)=0
ISN 0303          IF (LDEV(18).EQ.0) GOTO 1004
ISN 0305          IF (LDXF(18).NE.0) GOTO 1004
ISN 0307          PH1(11)=LETR(DOIB(18)+1)
ISN 0308          PH1(12)=LETR(DOST(18)+1)
ISN 0309          K=3400
ISN 0310          DO 1003 J=13,20
ISN 0311          IF (OP(K+16).EQ.0) GOTO 1003
ISN 0313          PH1(J)=OP(K+23)
ISN 0314          IF (OP(K+15).EQ.1) GOTO 1003
ISN 0316          PH1(J+1)=PH1(J)
```


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```
ISN 0317      1003 K=K+25
ISN 0318      1004 CONTINUE
ISN 0319           PH1(21)=0
ISN 0320           IF (LDEV(19).EQ.0) GOTO 1006
ISN 0322           IF (LDAF(19).NE.0) GOTO 1006
ISN 0324           PH1(21)=LETR(DOIB(19)+1)
ISN 0325           PH1(22)=LETR(DOST(19)+1)
ISN 0326           K=3600
ISN 0327           DO 1005 J=23,30
ISN 0328           IF (OP(K+17).EQ.0) GOTO 1005
ISN 0330           PH1(J)=OP(K+23)
ISN 0331           IF (OP(K+15).EQ.1) GOTO 1005
ISN 0333           PH1(J+1)=PH1(J)
ISN 0334      1005 K=K+25
ISN 0335      1006 CONTINUE
ISN 0336           PH1(33)=PH1(31)
ISN 0337           PH1(31)=0
ISN 0338           IF (LDEV(20).EQ.0) GOTO 1008
ISN 0340           IF (LDAF(20).NE.0) GOTO 1008
ISN 0342           PH1(31)=LETR(DOIB(20)+1)
ISN 0343           PH1(32)=LETR(DOST(20)+1)
ISN 0344           K=3800
ISN 0345           DO 1007 J=33,40
ISN 0346           IF (OP(K+17).EQ.0) GOTO 1007
ISN 0348           PH1(J)=OP(K+23)
ISN 0349           IF (OP(K+15).EQ.1) GOTO 1007
ISN 0351           PH1(J+1)=PH1(J)
ISN 0352      1007 K=K+25
ISN 0353      1008 CONTINUE
ISN 0354           PH1(41)=0
ISN 0355           DO 1009 J=1,12
ISN 0356           PH1(J+40)=LETR(HIST(J)+1)
ISN 0357      1009 CONTINUE
ISN 0358           PH1(54)=LETR(DOTL+1)
ISN 0359           PH1(55)=LETR(DOSL+1)
ISN 0360           DO 1010 J=1,DOT
ISN 0361           IF (LDEV(J).NE.0) PH1(J+56)=LETR(DOIB(J)+1)
ISN 0363      1010 CONTINUE
ISN 0364           PBUF(8)=KY
ISN 0365           KY=0
ISN 0366           J=66
ISN 0367           PH1(J+1)=LETR(PBUF(2)+1)
ISN 0368           PH1(J+2)=LETR(PBUF(3)+1)
ISN 0369           PH1(J+4)=LETR(PBUF(4)+1)
ISN 0370           PH1(J+5)=LETR(PBUF(8)+1)
ISN 0371           J=71
ISN 0372           DO 1012 I=1,9
ISN 0373           IF (LPSV(I)) PH1(J+I)=LETR(38)
ISN 0375      1012 CONTINUE
ISN 0376           J=80
```


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```
ISN 0377          PH1(J+1)=LBX(4)
ISN 0378          PH1(J+2)=LBX(3)
ISN 0379          PH1(J+3)=LBX(2)
ISN 0380          PH1(J+4)=LBX(1)
ISN 0381          PH1(J+6)=LBA(4)
ISN 0382          PH1(J+7)=LBA(3)
ISN 0383          PH1(J+8)=LBA(2)
ISN 0384          PH1(J+9)=LBA(1)
ISN 0385          PH1(J+11)=LETR(BDSC+1)
ISN 0386          PH1(J+12)=LETR(XEP+1)
ISN 0387          PH1(J+13)=LETR(AEP+1)
ISN 0388          DO 1011 K=1,100
ISN 0389     1011 PH1(K)=PH1(K)*256
ISN 0390          IF (PRINT.NE.0) RETURN
ISN 0392          WRITE (6,810) CYCL,(PH1(I),I=1,100)
ISN 0393      810 FORMAT ('0PH1 'I4,4(1X2A1,1X8A1),1X40A1,1X20A1)
            C
ISN 0394          RETURN
            C
            C
            C
ISN 0395          END
```

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COMPILER OPTIONS - NAME= MAIN,OPT=00,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

```
ISN 0002          SUBROUTINE UNROLL
ISN 0003          IMPLICIT  INTEGER*2(J)
ISN 0004          IMPLICIT INTEGER*2(R)
ISN 0005          DIMENSION          JSMTAB (200,8), KSYMAD (200)
ISN 0006          DIMENSION  JABSOP (300), JCDTYP (300), JASTCL  (300)
ISN 0007          DIMENSION  LCARDN (300), LACSLC (300), JROWNM (300)
ISN 0008          DIMENSION JCOLP  (300)
ISN 0009          DIMENSION  JSIDBB (300)
ISN 0010          DIMENSION  JIN (300,80)
ISN 0011          DIMENSION JTEMP(6),JEND(4)
ISN 0012          DIMENSION JTEMP4 (7)
ISN 0013          DIMENSION JIREG(2), JJREG(2), JKREG(2)
ISN 0014          DIMENSION JHFLD (5)
ISN 0015          DIMENSION JSTOP(6)
ISN 0016          DATA JSTOP/'S','T','O','P',' ',' '/
ISN 0017          DATA JZERO/'0'/
ISN 0018          DATA  JEND/'E',  'N', 'D', ' '/
ISN 0019          DATA   JBLANK,JSMCLN/' ', ':'/
ISN 0020          DATA JASTER/'*'/
ISN 0021          DATA JLPARN, JRPARN, JCOMMA/'(',')',','/
ISN 0022          COMMON /AREA2/ JNB(36), JOPCDE (6,256), JSIDB (256),
                 *JITYPE  (256),  JEXITF (300)
ISN 0023          DIMENSION ROWTOT(200),RCNUSF(200),RLPNTR(200),
                 X ROWCRT(200),RSFTYP(200),RNUMSF(200),JACDNO(200)
ISN 0024          COMMON/AREA4/JN(80),I,IJ
ISN 0025          COMMON/PROG/JTRACE(1000,30),INSLOC
ISN 0026          INTEGER*2 INSLOC
ISN 0027          DIMENSION JRNUM(10)
ISN 0028          DATA JRNUM/'0','1','2','3','4','5','6','7','8','9'/
            C              INITIALIZE PROG TRACE AREA TO 0
ISN 0029          DO 2000 LLL=1,1000
ISN 0030          DO 2000 LK=1,30
ISN 0031     2000 JTRACE(LLL,LK)=0
ISN 0032          INTR=1
ISN 0033          INSLOC=1
ISN 0034          WRITE(6,3000)
ISN 0035          WRITE(6,3001)
ISN 0036          JDECK=1
            C
            C
            C     INITIALIZE ONE ENTRY IN JSMTAB
ISN 0037          III = 1
ISN 0038          DO  60  LJJ  = 1,8
ISN 0039       60 JSMTAB (III,LJJ) = JBLANK
            C     INITIALIZE
ISN 0040          IJK=0
ISN 0041          LOC=0
ISN 0042          M  = 1
ISN 0043          MM =  1
```

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```
ISN 0044          KSKPST = 0
ISN 0045          KBRSTT = 0
ISN 0046          NN = 1
            C               INITIALIZE WORKING AREAS
ISN 0047          DO 2005 LLL=1,200
ISN 0048          JACDNO(LLL)=0
ISN 0049          ROWTOT(LLL)=0
ISN 0050          RCNUSF(LLL)=0
ISN 0051          RLPNTR(LLL)=0
ISN 0052          ROWCRT(LLL)=1
ISN 0053          RSFTYP(LLL)=1
ISN 0054          RNUMSF(LLL)=1
ISN 0055     2005 CONTINUE
ISN 0056          DO 2006 LLL=1,300
ISN 0057          JEXITF(LLL)=0
ISN 0058     2006 CONTINUE
            C
            C
ISN 0059    10    IJK=IJK+1
ISN 0060          IF(IJK.LT.300) GO TO 11
ISN 0062          WRITE(6,3)
ISN 0063          STOP
ISN 0064       11 LCARDN (IJK)  =  IJK
            C     CHECK FOR COMMENT CARD
ISN 0065       12 READ  (5,1)  JN
ISN 0066          IF  (JN(1) .EQ. JASTER )  GO TO 12
ISN 0068          I = 1
ISN 0069          CALL BLNKCK(I,INT)
ISN 0070          I= INT
ISN 0071       20 KCOUNT = 0
ISN 0072          LACSLC(IJK)  =  LOC
            C     SCAN TO PICK UP WORD
ISN 0073       28 KCOL = I
ISN 0074       30 I = I+1
ISN 0075          DO 35 L = 1,36
ISN 0076          IF (JN(I)  .EQ. JNB(L)) GO TO 30
ISN 0078       35 CONTINUE
            C     SAVE LENGTH OF WORD
ISN 0079          KSUM = I-KCOL
ISN 0080          KCOLL = I-1
            C     CHECK FOR BLANK OR SEMICOLON
ISN 0081          IF ( JN(I) .EQ.  JASTER)  GO TO  98
ISN 0083          IF (JN(I) .EQ. JBLANK) GO TO 100
ISN 0085          IF (JN(I) .EQ. JSMCLN) GO TO 40
            C     BRANCH  TO SEARCH SYMBOL TABLE
ISN 0087       40 ASSIGN  205  TO  IA
ISN 0088          GO TO  250
ISN 0089      205 GO TO (210),IB
            C     LABEL WAS IN SYMBOL TABLE
            C     STORE  CURRENT  LOCATION
```


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```
ISN 0090          KSYMAD(MX-1) = LOC
            C     STORE  CURRENT  CARD NUMBER
ISN 0091          JACDNO (MX-1) = LCARDN(IJK)
ISN 0092          GO TO  215
            C     LABEL  NOT IN SYMBOL TABLE
ISN 0093      210 KSYMAD(III -1) = LOC
            C     STORE CURRENT CARD NUMBER
ISN 0094          JACDNO(III -1) = LCARDN(IJK)
ISN 0095      215 I = I + 1
ISN 0096          CALL BLNKCK (I,INT)
ISN 0097          I = INT
ISN 0098          IF (I - 80)  28,990,990
ISN 0099       98 JEXITF(IJK) =  1
ISN 0100          I  =  I  +  1
            C     CHECK FOR END CARD OR OP CODE
ISN 0101      100 L = 1
ISN 0102          DO 105 IJ = KCOL,KCOLL
ISN 0103          IF (JN (IJ) .EQ. JEND(L)) GO TO 105
ISN 0105          GO TO 130
ISN 0106      105 L = L + 1
            C     END CARD
ISN 0107          JCDTYP(IJK)  = 12
ISN 0108          WRITE  (6,6)  JN
            C     MOVE CURRENT CARD TO FILE
ISN 0109          DO 106  N = 1,80
ISN 0110      106 JIN (IJK,N) = JN(N)
ISN 0111          GO TO 699
ISN 0112      990 WRITE (6,7)
ISN 0113          GO TO   180
ISN 0114      993 WRITE  (6,4)
ISN 0115          GO TO 708
            C     **
            C     CHECK FOR OP-CODE
ISN 0116      130 JASTCL  (IJK)  = I
            C     SAVE  STARTING COLUMN OF  OP-CODE
ISN 0117          JCOLP(IJK)  =  KCOL
            C     CLEAR JTEMP
ISN 0118          DO 132 K=1,6
ISN 0119      132 JTEMP(K) = JBLANK
ISN 0120          L = 0
ISN 0121          DO 135 II = KCOL,KCOLL
ISN 0122          L = L+1
ISN 0123      135 JTEMP(L) = JN(II)
ISN 0124          KTOTAL = KCOLL - KCOL + 1
            C     SEARCH OP CODE TABLE
ISN 0125          DO 140 II=1,256
ISN 0126          DO 139 L=1,6
ISN 0127          IF(JOPCDE(L,II).NE.JTEMP(L)) GO TO 140
ISN 0129      139 CONTINUE
ISN 0130          GO TO 160
```


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```
ISN 0131      140   CONTINUE
              C     UNSUCCESSFUL SEARCH
ISN 0132            WRITE(6,8)
ISN 0133            GO TO 180
              C     SUCCESSFUL SEARCH
ISN 0134        160 CONTINUE
ISN 0135        161 JABSOP(IJK)=II
ISN 0136            IF(II.EQ.256) JABSOP(IJK)=999
ISN 0138            JCDTYP(IJK)=JITYPE(II)
ISN 0139            JSIDBB(IJK)=JSIDB(II)
ISN 0140            IF(JSIDB(II)-1) 165,165,170
ISN 0141        165 LOC = LOC + 1
ISN 0142            GO TO 175
ISN 0143        170 LOC = LOC + 2
ISN 0144        175 K = JCDTYP(IJK)
ISN 0145            GO TO (185,185), K
ISN 0146        180 WRITE  (6,2)   LACSLC (IJK),  JN
              C     MOVE CURRENT CARD TO FILE
ISN 0147            DO  107  N = 1,80
ISN 0148        107 JIN(IJK,N) = JN(N)
ISN 0149            GO TO 10
              C     SCAN TO A LEFT PAREN
ISN 0150        185 IK = JASTCL (IJK)
ISN 0151            DO 187 I = IK, 80
ISN 0152            IF (JN (I) .EQ. JLPARN) GO TO 300
ISN 0154        187 CONTINUE
ISN 0155            GO TO 180
              C     SCAN THE BRANCH AND/OR SKIP PARAMETERS
ISN 0156        300 JROWNM (IJK)  =  NN
ISN 0157            NNN  =  NN
ISN 0158        304 CONTINUE
ISN 0159        302 I = I + 1
ISN 0160        303 IF (JN(I) .EQ. JASTER) GO TO 320
ISN 0162            IF (JN(I) .EQ. JCOMMA) GO TO 340
ISN 0164            IF (JN(I) .EQ. JRPARN) GO TO 330
              C     CHECK FOR NUMERIC
ISN 0166            DO 305 J = 27,36
ISN 0167            IF (JN (I) .EQ. JNB(J)) GO TO 350
ISN 0169        305 CONTINUE
              C     IF CHARACTER IS NONE OF ABOVE-ASSUME TO BE LETTER
              C     COLLECT THE LABEL
ISN 0170        360 KCOL = I
ISN 0171        365 I = I + 1
ISN 0172            DO 370 L = 1,36
ISN 0173            IF (JN(I) .EQ. JNB (L)) GO TO 365
ISN 0175        370 CONTINUE
              C     CHECK FOR SKIP INSTRUCTION AND
              C     BYPASS SEARCH OF SYMBOL TABLE IF SKIP
ISN 0176        371 IF (JCDTYP(IJK) - 2)   372, 303, 372
ISN 0177        372 KSUM = I - KCOL
```


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```
ISN 0178          KCOLL = I - 1
ISN 0179          KK = 0
            C     SEARCH  SYMBOL  TABLE
            C     BRANCH  INSTRUCTION
ISN 0180      400 ASSIGN  405 TO IA
ISN 0181          GO TO 250
ISN 0182      405 GO TO (410),IB
            C     LABEL WAS IN SYMBOL TABLE
            C     STORE INDEX  IN  POINTER
ISN 0183          RLPNTR(NN)  = MX - 1
ISN 0184          GO TO 303
            C     LABEL  NOT IN SYMBOL TABLE
ISN 0185      410 RLPNTR(NN) =  III - 1
ISN 0186          GO TO 303
            C     ASTERISK
ISN 0187      320 RSFTYP(NN) = 2
ISN 0188          GO TO 304
            C     RIGHT PAREN
ISN 0189      330 ROWTOT (NNN) =  ROWTOT (NNN) + 1
ISN 0190          NN = NN +1
ISN 0191          GO TO 180
            C     NUMBER
ISN 0192      350 RNUMSF(NN) = J - 27
ISN 0193          I = I + 1
ISN 0194          DO 307  J = 27,36
ISN 0195          IF (JN(I) .EQ. JNB(J))  GO TO 351
ISN 0197      307 CONTINUE
ISN 0198          GO TO 303
            C     TWO DIGIT PARAMETER
ISN 0199      351 RNUMSF(NN)  = 10*RNUMSF(NN)  + J - 27
ISN 0200          GO TO 302
            C     COMMA
ISN 0201      340 ROWTOT (NNN) =  ROWTOT (NNN) + 1
ISN 0202          NN = NN + 1
ISN 0203          GO TO 302
            C
            C
            C     SECOND PASS. UNROLL LOOPS AND PRODUCE FINAL OUTPUT
ISN 0204      699 K  = 1
ISN 0205          KN = 1
ISN 0206      700 K = KN
ISN 0207     7059 DO  7069  NI = 1,2
ISN 0208          JIREG(NI)     =   JZERO
ISN 0209          JJREG(NI)     =   JZERO
ISN 0210     7069 JKREG(NI)     =   JZERO
ISN 0211          DO 1719 L = 1,5
ISN 0212     1719 JHFLD(L) = JZERO
            C     CHECK  FOR   END  CARD
ISN 0213          IF (JCDTYP(K)  - 12 )  701,715,715
ISN 0214      701 KK = JCDTYP(K)
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```
ISN 0215            GO TO ( 704,790,705) , KK
ISN 0216        725 KN  = KN + 1
ISN 0217            GO TO 730
                C   BRANCH INSTRUCTION
ISN 0218        704 IF (JEXITF(K) - 1 ) 703,7725,7725
ISN 0219       7725 IF (KSKPST - 1 ) 703,725,725
                C   SKIP  INSTRUCTION
ISN 0220        790 IF  (KSKPST - 1 ) 703, 7911,7911
ISN 0221       7911 IF  (JEXITF(K) - 1)791,725,725
ISN 0222        791 MM =2
                C   BRANCH OR SKIP INSTRUCTION
ISN 0223        703 JTYPE  = JCDTYP(K)
ISN 0224            N  =  JROWNM(K)
ISN 0225            GO TO 800
                C   ANALYZE I,J,K, AND H FIELDS
ISN 0226        730 I  =  JASTCL(K)
ISN 0227            DO 190 IM = 1,80
ISN 0228        190 JN(IM) = JIN (K,IM)
ISN 0229            CALL BLNKCK (I,INT)
ISN 0230            I = INT
ISN 0231            IF (I-80) 158,708,708
ISN 0232        158 IF (KK -7)  1589,708,708
ISN 0233       1589 IF (JN(I) .EQ. JCOMMA)  GO TO 157
ISN 0235            CALL ANIJK (JIREG)
ISN 0236            GO TO (993),IJ
ISN 0237        151 IF (KK - 6)  1519,155,155
ISN 0238       1519 IF (JN(I)  .NE. JCOMMA )  GO TO 993
ISN 0240            I = I+1
ISN 0241            IF (JN(I) .EQ. JCOMMA) GO TO 1539
ISN 0243            CALL ANIJK (JJREG)
ISN 0244            GO TO (993),IJ
ISN 0245            IF (KK - 5 )  153,155,155
ISN 0246        153 IF (JN(I)  .NE. JCOMMA) GO TO 159
ISN 0248       1539 I = I+1
ISN 0249            IF (JN(I)  .EQ. JCOMMA) GO TO 154
ISN 0251            CALL ANIJK (JKREG)
ISN 0252            GO TO (993),IJ
ISN 0253        155 IF  (JN(I)  .NE. JCOMMA )  GO TO 708
ISN 0255            I = I + 1
ISN 0256            IF (JN(I) .EQ. JCOMMA) GO TO 708
ISN 0258            DO 152 L = 1,26
ISN 0259        152 IF (JN(I) .EQ. JNB(L)) GO TO 708
ISN 0261            DO 172 L = 27,36
ISN 0262            IF (JN(I) .EQ. JNB(L)) GO TO 173
ISN 0264        172 CONTINUE
ISN 0265            GO TO 993
ISN 0266        173 KI = 0
ISN 0267            IA = I
ISN 0268        174 I = I + 1
ISN 0269            KI = KI + 1
```


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```
ISN 0270          DO 176 L = 27,36
ISN 0271          IF (JN(I) .EQ. JN8(L))  GO TO 174
ISN 0273      176 CONTINUE
ISN 0274          J = 5
ISN 0275          KK =KI - 1
ISN 0276          DO 177 LL = 1,KI
ISN 0277          JHFLD(J) = JN(IA+KK)
ISN 0278          J = J - 1
ISN 0279      177 KK = KK-1
ISN 0280          GO TO 708
ISN 0281      157 I = I +1
ISN 0282          IF (JN(I)  .NE. JCOMMA)  GO TO 993
ISN 0284          GO TO 151
ISN 0285      159 IF (JN(I) .EQ. JBLANK)  GO TO 708
ISN 0287          GO TO 993
ISN 0288      154 I = I+1
ISN 0289          GO TO 155
            C     EXIT INSTRUCTION
ISN 0290      705 IF  (KBRSTT - 1 ) 707,720,720
ISN 0291      707 KN = KN + 1
ISN 0292          GO TO 708
            C     BRANCH STATE IS ACTIVE
ISN 0293      720 KN = JACDNO(KX)
ISN 0294          M = 2
ISN 0295          JNXTLC = KSYMAD(KX)
ISN 0296          GO TO  770
ISN 0297      708 CONTINUE
ISN 0298          IF(JSIDBB (K) - 1)  760, 760,765
ISN 0299      760 JNXTLC  = LACSLC (K)  + 1
ISN 0300          GO TO 770
ISN 0301      765 JNXTLC  = LACSLC (K) +  2
ISN 0302      770 LIN = JCOLP(K)
ISN 0303          LIN1 = JASTCL(K) -1
ISN 0304          DO 785 J = 1,7
ISN 0305      785 JTEMP4 (J) = JBLANK
ISN 0306          JJ  =  0
ISN 0307          DO 786  J =  LIN, LIN1
ISN 0308          JJ = JJ + 1
ISN 0309      786 JTEMP4 (JJ) = JIN (K,J)
            C
            C
            C               IF INPUT PARAM JDECK=1, PRINT-PUNCH CARD OF TRACE
ISN 0310          IF(JDECK.NE.1) GO TO 2900
            C     PRINT OUTPUT
ISN 0312      797 WRITE (6,950)  LACSLC(K),  (JTEMP4(J), J = 1,7),
                 *(JIREG(I), I =1,2), (JJREG(I),I=1,2),(JKREG(I), I = 1,2),
                 *(JHFLD(I), I = 1,5), KBRSTT,
                 *   KSKPST,JEXITF(K), (JHFLD(I), I = 1,5), JNXTLC,
                 *                JABSOP(K), JSIDBB(K)
            C
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```
                C
                C              PLACE INST INTO TRACE
ISN 0313         2900 CONTINUE
ISN 0314              JTRACE(INTR,1)=LACSLC(K)
ISN 0315              JIR=0
ISN 0316              JJR=0
ISN 0317              JKR=0
ISN 0318              DO 2960 LK=1,10
ISN 0319              IF(JIREG(1).EQ.JRNUM(LK)) JIR=JIR+10*(LK-1)
ISN 0321              IF(JIREG(2).EQ.JRNUM(LK)) JIR=JIR+LK-1
ISN 0323              IF(JJREG(1).EQ.JRNUM(LK)) JJR=JJR+10*(LK-1)
ISN 0325              IF(JJREG(2).EQ.JRNUM(LK)) JJR=JJR+LK-1
ISN 0327              IF(JKREG(1).EQ.JRNUM(LK)) JKR=JKR+10*(LK-1)
ISN 0329              IF(JKREG(2).EQ.JRNUM(LK)) JKR=JKR+LK-1
ISN 0331         2960 CONTINUE
ISN 0332              JTRACE(INTR,5)=JIR
ISN 0333              JTRACE(INTR,6)=JJR
ISN 0334              JTRACE(INTR,7)=JKR
ISN 0335              JHTEMP=0
ISN 0336              DO 2961 LK=1,10
ISN 0337              IF(JHFLD(5).EQ.JRNUM(LK)) JHTEMP=JHTEMP+LK-1
ISN 0339              IF(JHFLD(4).EQ.JRNUM(LK)) JHTEMP=JHTEMP+10*(LK-1)
ISN 0341              IF(JHFLD(3).EQ.JRNUM(LK)) JHTEMP=JHTEMP+100*(LK-1)
ISN 0343              IF(JHFLD(2).EQ.JRNUM(LK)) JHTEMP=JHTEMP+1000*(LK-1)
ISN 0345              IF(JHFLD(1).EQ.JRNUM(LK)) JHTEMP=JHTEMP+10000*(LK-1)
ISN 0347         2961 CONTINUE
ISN 0348              JTRACE(INTR,8)=JHTEMP
ISN 0349              JTRACE(INTR,9)=KBRSTT
ISN 0350              JTRACE(INTR,10)=KSKPST
ISN 0351              JTRACE(INTR,11)=JEXITF(K)
ISN 0352              JTRACE(INTR,12)=JHTEMP
ISN 0353              JTRACE(INTR,13)=JNXTLC
ISN 0354              JTRACE(INTR,14)=JABSOP(K)
ISN 0355              JTRACE(INTR,15)=JSIDBB(K)
ISN 0356              DO 2977 LK=1,6
ISN 0357              JTRACE(INTR,LK+20)=JTEMP4(LK)
ISN 0358         2977 CONTINUE
                C
                C
                C              INCR. TRACE INPUT POINTER
ISN 0359              INTR=INTR+1
ISN 0360              IF(INTR.LE.1000) GO TO 2950
ISN 0362              WRITE(6,2910)
ISN 0363              RETURN
ISN 0364         2950 CONTINUE
ISN 0365              GO TO (781,780), M
ISN 0366          780 M = 1
ISN 0367              KBRSTT  = 0
ISN 0368          781 GO TO (796, 793, 795), MM
ISN 0369          793 KSKPST  =  0
```

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```
ISN 0370          MM = 1
ISN 0371          GO TO  796
ISN 0372      795 KSKPST  =  1
ISN 0373          MM = 1
ISN 0374      796 GO TO 700
ISN 0375      715 CONTINUE
ISN 0376          JTRACE(INTR,1)=LACSLC(K)
ISN 0377          JTRACE(INTR,14)=JABSOP(K)
ISN 0378          JTRACE(INTR,15)=JSIDBB(K)
ISN 0379          DO 2978 LK=1,6
ISN 0380          JTRACE(INTR,LK+20)=JSTOP(LK)
ISN 0381     2978 CONTINUE
ISN 0382          WRITE(6,3002)
ISN 0383          RETURN
            C
            C
            C     ANALYZE BRANCH OR SKIP ENTRY IN TABLE
ISN 0384      800 GO TO (802,803),JTYPE
            C     EXIT IF BRANCH STATE ACTIVE
ISN 0385      802 IF (KBRSTT - 1) 803,725, 725
ISN 0386      803 IF (ROWCRT (N)  - ROWTOT(N)) 801, 801, 725
            C     PROCESS NEXT ROW
ISN 0387      801 KL = ROWCRT (N)
ISN 0388          KL = KL + N - 1
ISN 0389          L  = RSFTYP (KL)
ISN 0390          GO TO (819,830), JTYPE
ISN 0391      819 GO TO  (820,830), L
            C     SUCCESS
ISN 0392      820 KX = RLPNTR(KL)
            C     FAILURE
ISN 0393      830 RCNUSF (KL) = RCNUSF (KL)  + 1
ISN 0394          IF (RCNUSF (KL)- RNUMSF (KL)) 850,840, 840
ISN 0395      840 ROWCRT(N) = ROWCRT (N) + 1
ISN 0396      850 GO TO (860,880),L
ISN 0397      860 GO TO (870,890),JTYPE
ISN 0398      870 KBRSTT = 1
ISN 0399      880 GO TO 725
ISN 0400      890 MM  = 3
ISN 0401          GO TO 725
            C     SEARCH  SYMBOL TABLE  ROUTINE
ISN 0402      250 IB = 1
ISN 0403          KKCNT =  0
ISN 0404          DO  260  MX =  1,III
ISN 0405          IF (KKCNT - KSUM) 255,225,255
ISN 0406      255 KKCNT = 0
ISN 0407          J = 0
ISN 0408          DO 260  L = KCOL,KCOLL
ISN 0409          J = J + 1
ISN 0410          IF (JSMTAB(MX,J) .EQ.  JN(L))
                 *KKCNT = KKCNT + 1
```


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```
ISN 0412        260 CONTINUE
              C     LABEL  NOT  IN  SYMBOL TABLE
              C     STORE  LABEL
ISN 0413            L = 1
ISN 0414            DO  265  II  = KCOL,KCOLL
ISN 0415            JSMTAB(III,L) = JN(II)
ISN 0416        265 L = L + 1
              C     INITIALIZE NEXT SYMBOLIC  LOCATION TO  BLANKS
ISN 0417            III  = III + 1
ISN 0418            DO 268  LJJ = 1,8
ISN 0419        268 JSMTAB  (III,LJJ) = JBLANK
ISN 0420            GO TO  IA,(205,405)
              C     LABEL WAS IN SYMBOL TABLE
              C     DOUBLE CHECK FOR CORRECT MATCH
ISN 0421        225 IF (KSUM - 8) 226,230,990
ISN 0422        226 IF (JSMTAB(MX-1,J+1) .NE. JBLANK)  GO TO 255
ISN 0424        230 IB = 2
ISN 0425            GO TO  IA,(205,405)
ISN 0426          1 FORMAT (80A1)
ISN 0427          2 FORMAT  (' ',  I10,  80A1)
ISN 0428          3 FORMAT   (' ','TOO MANY INPUT  CARDS')
ISN 0429          4 FORMAT  (' ', 'OPERAND FIELD ERROR')
ISN 0430          6 FORMAT(' ',10X,80A1)
ISN 0431          7 FORMAT  (' ERROR ON FOLLOWING CARD')
ISN 0432          8 FORMAT  (' ','OP CODE  ON NEXT CARD  NOT  IMPLEMENTED')
ISN 0433        950 FORMAT  (' ',I6,1X,7A1,1X,2(2A1,1X),2A1,2X,5A1,4X,3I1,
                  *3X,5A1,2X,I5,2X,I3,2X,I1)
ISN 0434       2910 FORMAT(' TRACE EXCEEDS 1000 INSTRUCTIONS - - - TERM.UNROLL')
ISN 0435       3000 FORMAT(' - - - - - UNROLLER INPUT PROGRAM - - - - -')
ISN 0436       3001 FORMAT(1H0)
ISN 0437       3002 FORMAT(1H1)
ISN 0438            END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=56,SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,XREF
ISN 0002          SUBROUTINE BLNKCK (N,INN)
ISN 0003          IMPLICIT  INTEGER*2(J)
ISN 0004          INTEGER*2 N,INN
ISN 0005          DATA  JBLANK/' '/
ISN 0006          COMMON/AREA4/JN(80),II,IJ
ISN 0007          DO 10 I = N,80
ISN 0008          IF (JN(I) .EQ. JBLANK) GO TO 10
ISN 0010          INN=I
ISN 0011          RETURN
ISN 0012       10 CONTINUE
ISN 0013          INN= 80
ISN 0014          RETURN
ISN 0015          END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=56,SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,XREF
ISN 0002            SUBROUTINE ANIJK (JANS)
ISN 0003            IMPLICIT INTEGER*2(J)
ISN 0004            INTEGER*2 JANS
ISN 0005            DATA JZERO/'0'/
ISN 0006            COMMON /AREA2/ JNB(36), JOPCDE (6,256), JSIDB (256),
                   *JITYPE  (256),  JEXITF (300)
ISN 0007            COMMON/AREA4/JN(80),I,IJ
ISN 0008            DIMENSION JANS(2)
ISN 0009            IJ = 2
ISN 0010            DO 10 L = 1,26
ISN 0011            IF (JN(I)  .EQ. JNB(L))  GO TO 40
ISN 0013         10 CONTINUE
ISN 0014         15 DO 20 L= 27,36
ISN 0015            IF (JN(I) .EQ. JNB(L)) GO TO 25
ISN 0017         20 CONTINUE
ISN 0018            IJ = 1
ISN 0019            RETURN
ISN 0020         25 I = I + 1
ISN 0021            DO 30 L = 27,36
ISN 0022            IF (JN(I) .EQ. JNB(L)) GO TO 35
ISN 0024         30 CONTINUE
ISN 0025            JANS(1) = JZERO
ISN 0026            JANS(2) = JN(I-1)
ISN 0027            RETURN
ISN 0028         35 JANS(1) = JN (I-1)
ISN 0029            JANS(2) = JN (I)
ISN 0030            I = I + 1
ISN 0031            RETURN
ISN 0032         40 I = I + 1
ISN 0033            GO TO 15
ISN 0034            END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          BLOCK DATA
ISN 0003          IMPLICIT INTEGER*2(A-Z)
            C
            C           FORM THE DECODE TABLE HERE WITH DATA STATEMENTS
ISN 0004          COMMON/TAGS/
                 X          T01(256),T02(256),T03(256),T04(256),T05(256),T06(256),
                 X T07(256),T08(256),T09(256),T10(256),T11(256),T12(256),T13(256),
                 X T14(256),T15(256),T16(256),T17(256),T18(256),T19(256),T20(256),
                 X T21(256),T22(256),T23(256),T24(256),T25(256),T26(256),T27(256),
                 X T28(256),T29(256),T30(256),T31(256),T32(256),T33(256),T34(256),
                 X T35(256),T36(256),T37(256),T38(256),T39(256),T40(256),T41(256),
                 X T42(256),T43(256),T44(256),T45(256),T46(256),T47(256),T48(256),
                 X T49(256),T50(256),T51(256),T52(256),T53(256),T54(256),T55(256),
                 X T56(256),T57(256),T58(256),T59(256),T60(256),T61(256),T62(256),
                 X T63(256),T64(256),T65(256),T66(256),T67(256),T68(256),T69(256),
                 X T70(256)
ISN 0005          DATA T01/1,1,0,1,1,3*0,1,1,0,1,1,5*0,8*1,11*0,1,0,3*1,4*0,4*1,
                 X 55*0,14*1,3*0,1,1,0,0,1,1,0,0,10*1,0,1,5*0,1,0,1,5*0,1,0,1,0,1,
                 Y 0,1,0,1,13*0,16*1,3*0,1,1,3*0,8*1,0,3*1,0,8*1,0,1,32*0/
ISN 0006          DATA T02/8*0,1,1,0,1,1,5*0,8*1,11*0,1,0,1,1,7*0,1,1,5*0,1,0,1,0,
                 X 1,0,1,0,1,0,1,0,1,0,1,0,1,0,0,0,1,0,1,4*0,4*1,0,0,3*1,0,1,0,8*1,
                 Y 20*0,1,1,0,0,1,1,0,0,3*1,6*0,1,6*0,1,0,1,5*0,1,0,1,0,1,0,1,0,1,
                 Z 6*0,8*1,16*0,3*1,14*0,3*1,0,8*1,0,1,32*0/
ISN 0007          DATA T03/201*0,8*1,47*0/
ISN 0008          DATA T04/11*0,1,1,7*0,1,1,0,0,1,1,122*0,1,5*0,1,0,1,5*0,1,93*0/
ISN 0009          DATA T05/8*0,1,1,8*0,1,1,0,0,1,1,13*0,1,0,1,1,14*0,1,0,1,0,1,0,
                 X 1,0,1,0,1,0,1,0,1,0,1,3*0,1,0,1,4*0,4*1,0,0,3*1,0,1,0,8*1,44*0,
                 Y 1,0,1,5*0,1,0,1,0,1,0,1,0,1,6*0,8*1,16*0,3*1,60*0/
ISN 0010          DATA T06/256*0/
ISN 0011          DATA T07/256*0/
ISN 0012          DATA T08/48*0,1,1,5*0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,3*0,1,0,
                 X 1,4*0,4*1,0,0,3*1,0,1,0,8*1,20*0,1,1,0,0,1,1,0,0,3*1,6*0,1,6*0,
                 Y 1,7*0,1,0,1,0,1,0,1,8*0,8*1,16*0,3*1,60*0/
ISN 0013          DATA T09/154*0,1,101*0/
ISN 0014          DATA T10/256*0/
ISN 0015          DATA T11/55*0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,3*0,1,0,1,10*0,
                 X 3*1,0,1,0,4*1,24*0,1,1,0,0,1,1,0,0,3*1,6*0,1,6*0,1,9*0,1,0,1,0,
                 Y 1,8*0,8*1,17*0,2*1,60*0/
ISN 0016          DATA T12/256*0/
ISN 0017          DATA T13/256*0/
ISN 0018          DATA T14/256*0/
ISN 0019          DATA T15/48*0,1,1,72*0,1,1,0,0,1,1,0,0,3*1,6*0,1,116*0/
ISN 0020          DATA T16/3*0,1,1,42*0,1,101*0,1,5*0,1,0,1,5*0,1,92*0/
ISN 0021          DATA T17/1,1,39*0,1,5*0,1,57*0,14*1,28*0,1,0,1,5*0,1,0,1,0,1,0,
                 X 1,0,1,13*0,8*1,11*0,1,1,13*0,1,1,43*0/
ISN 0022          DATA T18/256*0/
ISN 0023          DATA T19/108*0,1,5*0,1,141*0/
ISN 0024          DATA T20/1,1,0,1,1,3*0,1,1,0,1,1,5*0,8*1,11*0,1,8*0,1,58*0,14*1,
                 X 14*0,6*1,0,0,1,5*0,1,7*0,1,0,1,0,1,0,1,15*0,8*1,11*0,1,1,14*0,
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                 Y 1,43*0/
ISN 0025          DATA T21/155*0,1,100*0/
ISN 0026          DATA T22/1,1,0,1,1,3*0,1,1,0,1,1,5*0,8*1,11*0,1,67*0,6*1,22*0,
                 X 3*1,5*0,1,5*0,1,9*0,1,0,1,0,1,15*0,8*1,11*0,1,1,3*0,8*1,47*0/
ISN 0027          DATA T23/8*0,1,1,8*0,1,1,0,0,1,1,13*0,1,0,1,1,215*0/
ISN 0028          DATA T24/201*0,8*1,5*0,8*1,34*0/
ISN 0029          DATA T25/46*0,1,0,1,1,72*0,1,1,0,0,1,1,0,0,10*1,0,1,43*0,8*1,63*0/
ISN 0030          DATA T26/47*0,1,137*0,8*1,8*0,8*1,5*0,8*1,34*0/
ISN 0031          DATA T27/1,1,6*0,1,1,8*0,1,1,0,0,1,1,232*0/
ISN 0032          DATA T28/3*0,1,1,6*0,1,1,7*0,1,1,0,0,1,1,230*0/
ISN 0033          DATA T29/214*0,8*1,34*0/
ISN 0034          DATA T30/0,0,1,0,0,3*1,0,0,1,0,0,5*1,8*0,11*1,0,1,3*0,4*1,4*0,
                 X 5*1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,3*1,0,1,0,4*1,4*0,1,1,
                 Y 3*0,1,0,1,8*0,3*1,14*0,3*1,0,0,1,1,0,0,1,1,10*0,1,0,4*1,4*0,
                 Z 4*1,10*0,5*1,29*0,3*1,8*0,1,3*0,1,8*0,1,0,32*1/
ISN 0035          DATA T31/210*0,3*1,43*0/
ISN 0036          DATA T32/48*0,1,1,72*0,1,1,0,0,1,1,0,0,3*1,6*0,1,116*0/
ISN 0037          DATA T33/8*0,1,1,8*0,1,1,0,0,1,1,13*0,1,0,1,1,215*0/
ISN 0038          DATA T34/185*0,8*1,63*0/
ISN 0039          DATA T35/256*0/
ISN 0040          DATA T36/256*0/
ISN 0041          DATA T37/256*0/
ISN 0042          DATA T38/256*0/
ISN 0043          DATA T39/256*0/
ISN 0044          DATA T40/256*0/
ISN 0045          DATA T41/2,2,0,2,2,3*0,2,2,0,2,2,5*0,8*2,230*0/
ISN 0046          DATA T42/2,2,0,2,2,3*0,2,2,0,2,2,5*0,8*2,230*0/
ISN 0047          DATA T43/41*0,1,63*0,1,1,4*0,1,1,4*0,1,1,58*0,8*1,11*0,1,1,3*0,
                 X 8*1,0,0,1,1,43*0/
ISN 0048          DATA T44/147*0,1,0,1,5*0,1,0,1,0,1,0,1,0,1,92*0/
ISN 0049          DATA T45/107*0,1,5*0,1,142*0/
ISN 0050          DATA T46/108*0,3*1,3*0,3*1,139*0/
ISN 0051          DATA T47/37*0,1,0,1,1,5*0,1,209*0/
ISN 0052          DATA T48/133*0,6*1,0,0,1,114*0/
ISN 0053          DATA T49/47*0,1,137*0,8*1,63*0/
ISN 0054          DATA T50/256*0/
ISN 0055          DATA T51/256*0/
ISN 0056          DATA T52/256*0/
ISN 0057          DATA T53/256*0/
ISN 0058          DATA T54/256*0/
ISN 0059          DATA T55/256*0/
ISN 0060          DATA T56/55*0,2,0,2,0,2,0,2,0,2,0,2,190*0/
ISN 0061          DATA T57/55*0,2,0,2,0,2,0,2,0,2,0,2,34*0,1,1,154*0/
ISN 0062          DATA T58/67*0,1,0,1,0,1,184*0/
ISN 0063          DATA T59/75*0,1,0,1,178*0/
ISN 0064          DATA T60/88*0,1,1,4*0,1,1,1,1,1,1,93*0,3*1,60*0/
ISN 0065          DATA T61/90*0,1,165*0/
ISN 0066          DATA T62/92*0,1,163*0/
ISN 0067          DATA T63/48*0,1,1,72*0,1,1,0,0,1,1,0,0,3*1,6*0,1,116*0/
ISN 0068          DATA T64/82*0,1,1,85*0,8*1,79*0/
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ISN 0069          DATA T65/84*0,1,1,60*0,1,0,1,5*0,1,0,1,0,1,0,1,0,1,93*0/
ISN 0070          DATA T66/256*0/
ISN 0071          DATA T67/256*0/
ISN 0072          DATA T68/256*0/
ISN 0073          DATA T69/256*0/
ISN 0074          DATA T70/256*0/
            C
            C
            C
            C             UNROLLER DATA
            C
ISN 0075          DIMENSION JNB(36),  JITYPE  (256)
ISN 0076          DIMENSION  JOPCDE  (6,256), JSIDB  (256)
ISN 0077          DIMENSION J1(96),J2(96),J3(96),J4(96),J5(96),J6(96),J7(96),J8(96),
                 XJ9(96),J10(96),J11(96),J12(96),J13(96),J14(96),J15(96),J16(96)
ISN 0078          EQUIVALENCE (J1,JOPCDE(1,1)   ),
                 X            (J2,JOPCDE(1,17)  ),
                 X            (J3,JOPCDE(1,33)  ),
                 X            (J4,JOPCDE(1,49)  ),
                 X            (J5,JOPCDE(1,65)  ),
                 X            (J6,JOPCDE(1,81)  ),
                 X            (J7,JOPCDE(1,97)  ),
                 X            (J8,JOPCDE(1,113) ),
                 X            (J9,JOPCDE(1,129) ),
                 X            (J10,JOPCDE(1,145)),
                 X            (J11,JOPCDE(1,161)),
                 X            (J12,JOPCDE(1,177)),
                 X            (J13,JOPCDE(1,193)),
                 X            (J14,JOPCDE(1,209)),
                 X            (J15,JOPCDE(1,225)),
                 X            (J16,JOPCDE(1,241))
ISN 0079          DATA  J1/192HL X H       L X        L X A      S T H H     S T X
                 A       S T X A    L X C      L X C A    L A H       L A
                 B L A A       S T A H    S T A      S T A A    L D H       L D
                 C       /
ISN 0080          DATA  J2/192HS T D H     S T D      L A T H    L A T       S T A
                 A T H   S T A T    L L        L R        S T L       S T R
                 B L M X       S T M X    L M A      S T M A    L M S       S T M
                 C S     /
ISN 0081          DATA  J3/192HS T M Z     S T M Z A
                 A       M X A      M A X      M K L      M K R       M L X
                 B M X S       M S X      M S X Z    M X S O    M X C       M C X
                 C       /
ISN 0082          DATA  J4/192HM L C       M R C      M X P      M K P
                 A                          A N        A D N      A R
                 B A D R       A U        A D U      S N        S D N       S R
                 C       /
ISN 0083          DATA  J5/192HS D R       S U        S D U      M N         M D N
                 A       M R        M D R      M U        M D U      M M N
                 B M M U       D N        D D N      D R        D D R       D M N
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                C        /
ISN 0084         DATA  J6/192HD M R       R N D       S P F       S N F       C V S
                A       C V F                                 A I         S I
                B M I         M M I      D I         D M I       A C L       S C L
                C        /
ISN 0085         DATA  J7/192HA C H       S C H       S P I       S N I       C V N
                A       C V I                                             A X
                B S X         M X        D R X       D X         R X         A X C
                C        /
ISN 0086         DATA  J8/192HA X K       M X K       D R X K     D X K       R X K
                A       S P X       S N X
                B C G E N     C E Q N    C G E D     C E Q D     C M G E N   C M E
                C Q N    /
ISN 0087         DATA  J9/192HC M G E D   C M E Q D   C G E I     C E Q I     C U G
                A E I   C G E X     C E Q X     C U G E X   C G E X K   C E Q X K
                B C U G E X K C B A      C B M A     C B X       C B M X
                C        /
ISN 0088         DATA J10/192H                        S H A       S H X       S H A
                A C     S H X C     S H D       S H D X     S H D C     S H D X C
                B S W A       S W X      I F A       I F X       I F Z A     I F Z
                C X      /
ISN 0089         DATA J11/192HS I A       S I X       S I A C     S I X C     S I D
                A       S I D C                                           A N D A
                B T A F A     F A F A    O R A       T O F A     F O F A     E Q A
                C        /
ISN 0090         DATA J12/192HX O R A     A N D X     T A F X     F A F X     O R X
                A       T O F X     F O F X     E Q X       X O R X     A N D C
                B T A F C     F A F C    O R C       T O F C     F O F C     E Q C
                C        /
ISN 0091         DATA J13/192HX O R C     C N T T     C N T A A   C N T D A   C N T
                A A X   C N T D X                                         B A N D
                B B T A F     B F A F    B O R       B T O F     B F O F     B E Q
                C        /
ISN 0092         DATA J14/192HB X O R     B U         E X I T     E X I T L   E X I
                A T A   E X I T P   S K A N D   S K T A F   S K F A F   S K O R
                B S K T O F   S K F O F   S K E Q     S K X O R   I V I B     N O P
                C        /
ISN 0093         DATA J15/192HP A U S E   P I         S C A N     S V C       S V R
                A       I C         I R
                B S I O       H I O      T C H       M T X       M X T       M Z T
                C        /
ISN 0094         DATA J16/192HM O T       I T U M A   I T U M P   I D A       L D A
                A       L D H A A   L D H B A   L D H C A   L D H D A   S T D H A A
                B S T D H B A S T D H C A S T D H D A                       S T O
                C P      /
ISN 0095         DATA   JNB/  'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J',
                *   'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V',
                *   'W', 'X', 'Y', 'Z', '0', '1', '2', '3', '4', '5', '6', '7',
                *   '8', '9'/
ISN 0096         DATA JSIDB/1,2,2,1,4*2,1,2,2,1,2,2,1,2,1,2,1,2,1,11*2,
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                 2        2,2,0,0,0,1,1,2,2,10*1,2,0,0,0,9*1,
                 3        22*1,0,0,8*1,
                 4        6*1,0,0,0,7*1,5*2,1,1,0,0,0,6*1,
                 5        8*1,3*2,4*1,0,0,0,14*1,
                 6        6*1,0,0,0,23*1,
                 7        6*1,0,0,0,8*2,4*1,2,8*1,2,1,
                 8        1,1,2,1,2,1,1,0,0,0,2,18*1,0,0,1/
ISN 0097          DATA JITYPE/201*4,9*1,4*3,8*2,33*4,12/
ISN 0098          COMMON /AREA2/  JNB,JOPCDE,JSIDB,JITYPE,JEXITF
ISN 0099          END
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COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE INIT
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          DIMENSION COM(300)
ISN 0005          DIMENSION SAV(20000)
ISN 0006          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XEP,          AEP,          PH1(100),     PRINT,
                 F ESTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
                 G NXDSP
ISN 0007          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A NXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXO,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),             AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0008          COMMON/RLS/   LAST
ISN 0009          INTEGER OUT
ISN 0010          REAL MEMDLY,MXTIME
ISN 0011          REAL TIME
ISN 0012          COMMON /CALNDR/             ISL,          ITL,          LINK(200),
                 A CTIME(200),  NEVENT(200), KOL1(200),    KOL2(200),    KOL3(200)
ISN 0013          REAL CTIME
ISN 0014          REAL X
ISN 0015          INTEGER I
ISN 0016          COMMON/TAGS/D(256,70)
ISN 0017          EQUIVALENCE(COM(1),TIME),(X,CTIME(1))
ISN 0018          EQUIVALENCE(SAV(1),FIRST)
            C
            C
            C               ZERO ALL COMMON
ISN 0019          DO 520 I=1,300
ISN 0020      520 COM(I)=0
ISN 0021          DO 525 I=1,20000
```

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ISN 0022        525 SAV(I)=0
ISN 0023        526 CONTINUE
                C
                C
                C                INITIALIZE THE CALENDAR
ISN 0024            DO 92 ITL=2,199
ISN 0025         92 LINK(ITL)=ITL+1
ISN 0026            ISL=2
ISN 0027            ITL=1
ISN 0028            X=1.0E30
ISN 0029            TIME=0.0
                C
                C
                C                INITIALIZE THE EVENT NUMBERS
ISN 0030            STATS=1
ISN 0031            MXO=2
ISN 0032            ACON=3
ISN 0033            XCON=4
ISN 0034            AEMP=5
ISN 0035            XEMP=6
ISN 0036            ARET=7
ISN 0037            XRET=8
ISN 0038            EAV=9
ISN 0039            QCON=10
ISN 0040            QEMP=11
ISN 0041            MBUSY=12
ISN 0042            MFREE=13
ISN 0043            LOAD=14
ISN 0044            RTN=15
                C
                C
                C                SET UP STARTING EVENTS
ISN 0045            CALL CAUSE(STATS,TIME+0.0,0,0,0)
ISN 0046            CALL CAUSE( ACON,TIME+0.1,0,0,0)
ISN 0047            CALL CAUSE( XCON,TIME+0.1,0,0,0)
ISN 0048            CALL CAUSE( QCON,TIME+0.1,0,0,0)
ISN 0049            CALL CAUSE( MXO ,TIME+0.6,0,0,0)
                C
                C
                C                INITIALIZE THE MACHINE PARAMETERS
ISN 0050            BRXP=1
ISN 0051            BRAP=1
ISN 0052            SKXP=1
ISN 0053            SKAP=1
ISN 0054            NAREGS=90
ISN 0055            NXREGS=90
ISN 0056            AINPT=1
ISN 0057            QINPT=1
ISN 0058            XINPT=1
ISN 0059            DO 50 I=1,32
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ISN 0060          ABUPS(I)=1
ISN 0061       50 XBUPS(I)=0
ISN 0062          DO 51 I=33,89
ISN 0063          ABUPS(I)=0
ISN 0064       51 XBUPS(I)=1
ISN 0065          NSLOT=15
            C              INITIALIZE AFAC TABLES
ISN 0066          NABUS=6
ISN 0067          NAFAC=10
ISN 0068          DO 10 I=1,10
ISN 0069       10 AFSLOT(I,3)=1
ISN 0070          DO 9 J=4,9
ISN 0071        9 AFSLOT(4,J)=1
ISN 0072          AFSLOT(6,4)=1
ISN 0073          DO 8 J=4,12
ISN 0074        8 AFSLOT(7,J)=1
ISN 0075          AFDLY(1)=3
ISN 0076          AFDLY(2)=4
ISN 0077          AFDLY(3)=3
ISN 0078          AFDLY(4)=9
ISN 0079          AFDLY(5)=2
ISN 0080          AFDLY(6)=5
ISN 0081          AFDLY(7)=15
ISN 0082          AFDLY(8)=1
ISN 0083          AFDLY(9)=1
ISN 0084           AFDLY(10)=1
ISN 0085          AFIBUS(1)=2
ISN 0086          AFIBUS(2)=1
ISN 0087          AFIBUS(3)=3
ISN 0088          AFIBUS(4)=1
ISN 0089          AFIBUS(5)=1
ISN 0090          AFIBUS(6)=2
ISN 0091          AFIBUS(7)=2
ISN 0092          AFIBUS(8)=1
ISN 0093          AFIBUS(9)=2
ISN 0094          AFIBUS(10)=3
ISN 0095          AFOBUS(1)=2
ISN 0096          AFOBUS(2)=1
ISN 0097          AFOBUS(3)=4
ISN 0098          AFOBUS(4)=3
ISN 0099          AFOBUS(5)=2
ISN 0100          AFOBUS(6)=4
ISN 0101          AFOBUS(7)=4
ISN 0102          AFOBUS(8)=6
ISN 0103          AFOBUS(9)=1
ISN 0104          AFOBUS(10)=3
ISN 0105          ABOX(1)=1
ISN 0106          ABOX(2)=2
ISN 0107          ABOX(3)=3
ISN 0108          ABOX(4)=4
```


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```
ISN 0109          ABOX(5)=2
ISN 0110          ABOX(6)=4
ISN 0111          ABOX(7)=4
ISN 0112          ABOX(8)=5
ISN 0113          ABOX(9)=6
ISN 0114          ABOX(10)=7
            C              INITIALIZE XFAC TABLES
ISN 0115          NXBUS=10
ISN 0116          NXFAC=9
ISN 0117          DO 11 I=1,9
ISN 0118       11 XFSLOT(I,2)=1
ISN 0119          XFSLOT(5,3)=1
ISN 0120          DO 12 I=3,9
ISN 0121       12 XFSLOT(6,I)=1
ISN 0122          XFDLY(1)=1
ISN 0123          XFDLY(2)=1
ISN 0124          XFDLY(3)=1
ISN 0125          XFDLY(4)=1
ISN 0126          XFDLY(5)=4
ISN 0127          XFDLY(6)=8
ISN 0128          XFDLY(7)=1
ISN 0129          XFDLY(8)=1
ISN 0130          XFDLY(9)=1
ISN 0131          XFOBUS(1)=5
ISN 0132          XFOBUS(2)=6
ISN 0133          XFOBUS(3)=1
ISN 0134          XFOBUS(4)=3
ISN 0135          XFOBUS(5)=2
ISN 0136          XFOBUS(6)=2
ISN 0137          XFOBUS(7)=7
ISN 0138          XFOBUS(8)=10
ISN 0139          XFOBUS(9)=8
ISN 0140          XBOX(1)=1
ISN 0141          XBOX(2)=2
ISN 0142          XBOX(3)=3
ISN 0143          XBOX(4)=4
ISN 0144          XBOX(5)=5
ISN 0145          XBOX(6)=5
ISN 0146          XBOX(7)=6
ISN 0147          XBOX(8)=7
ISN 0148          XBOX(9)=8
ISN 0149          NAFAC=11
ISN 0150          NABUS=7
ISN 0151          AFDLY(11)=1
ISN 0152          AFIBUS(11)=1
ISN 0153          AFOBUS(11)=7
ISN 0154          ABOX(11)=8
ISN 0155          AFSLOT(11,3)=1
ISN 0156          D(39,1)=1
ISN 0157          D(39,2)=1
```

Temp. fix to allow MAX of

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```
ISN 0158        D(39,11)=1
ISN 0159        D(39,13)=1
ISN 0160        D(39,17)=1
ISN 0161        D(39,30)=0
ISN 0162        D(39,32)=1
ISN 0163        D(39,66)=1
ISN 0164        RETURN
ISN 0165        END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XACON
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        EK(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XEP,          AEP,          PH1(100),     PRINT,
                 F ESTADD,      NODOUT,       NOPSC,        NOBUS,        NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A NXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXC,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),            AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I ADBUS(12,10),XDBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      AFUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        MQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      DBTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R BEMCNT(16),  ABOX(15),     AOXBSY(10),   XBOX(15),     X3XBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          DIMENSION SORBSY(200),DESBSY(200)
ISN 0009          REAL MEMDLY,MXTIME
ISN 0010          REAL TIME
ISN 0011          CALL CAUSE(ACON,TIME+1.0,0,0,0)
ISN 0012          CALL CAUSE(AEMP,TIME+0.7,0,0,0)
ISN 0013          CALL CAUSE(ARET,TIME+0.8,0,0,0)
ISN 0014          NGO=0
ISN 0015          STORE=0
ISN 0016          DO 1 I=1,NABUF
ISN 0017        1 AGO(I)=0
            C- - - - - - - IF SKIP TAKEN,NOP ALL STARRED OPS UP TO 1ST EXEC SKIP - -
ISN 0018          DO 80 I=1,NABUF
ISN 0019          IF(ABUFF(I,13).EQ.0) GO TO 79
ISN 0021          IF(ABUFF(I, 9).EQ.0) GO TO 84
ISN 0023          IF(ABUFF(I,11).EQ.0) GO TO 84
ISN 0025       79 CONTINUE
ISN 0026          IF(ABUFF(I,11).EQ.0) GO TO 80
ISN 0028          IF(ABUFF(I,9).EQ.0) GO TO 80
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```
ISN 0030          DO 81 K=1,NAREGS
ISN 0031          ASOR(I,K)=0
ISN 0032       81 ADEST(I,K)=0
ISN 0033          DO 82 K=1,NAFAC
ISN 0034          AFAC(I,K)=0
ISN 0035       82 ADBUS(I,K)=0
ISN 0036          ABUFF(I,2)=0
ISN 0037          DO 83 K=9,15
ISN 0038       83 ABUFF(I,K)=0
ISN 0039       80 CONTINUE
ISN 0040       84 CONTINUE
            C- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C                THIS EVENT SCANS ABUFF FOR INST WHICH CAN GO
            C                SCAN FOR NAGO OUT OF NATEST
ISN 0041          DO 10 REG=1,NAREGS
ISN 0042          SORBSY(REG)=0
ISN 0043       10 DESBSY(REG)=ABUSY(REG)
ISN 0044          DO 100 INS=1,NATEST
ISN 0045          IF(AFULL(INS).EQ.0) GO TO 100
ISN 0047          IF(INS.EQ.1) GO TO 21
ISN 0049          DO 11 REG=1,NAREGS
ISN 0050          SORBSY(REG)=SORBSY(REG)+ASOR(INS-1,REG)
ISN 0051       11 DESBSY(REG)=DESBSY(REG)+ADEST(INS-1,REG)
ISN 0052          INSM1=INS-1
ISN 0053          DO 20 I=1,INSM1
            C                PREV EXIT INTLKS ALL CODE BELOW
ISN 0054          IF(ABUFF(I,14).EQ.1) GO TO 100
            C                PREV SKIP INTLKS ALL STARRED CODE BELOW
            C                AND ALL SKIPS BELOW
ISN 0055          IF(ABUFF(I,13).EQ.0) GO TO 20
ISN 0058          IF((ABUFF(INS,13).EQ.1).OR.(ABUFF(INS,9).EQ.1)) GO TO 100
ISN 0060       20 CONTINUE
ISN 0061       21 CONTINUE
            C                IF EXIT,INTLK AGAINST ER
ISN 0062          IF(ABUFF(INS,14).NE.1) GO TO 28
ISN 0064          IF(ER(BRAP).NE.1) GO TO 100
            C                EXIT PART OF OP GOES, MARK GO EXIT.
ISN 0066          ABUFF(INS,15)=1
ISN 0067       28 CONTINUE
ISN 0068          DO 22 REG=1,NAREGS
ISN 0069          IF((ASOR(INS,REG).EQ.1).AND.(DESBSY(REG).NE.0)) GO TO 100
ISN 0071          IF((ADEST(INS,REG).EQ.1).AND.(SORBSY(REG).NE.0)) GO TO 100
ISN 0073          IF(REG.EQ.89) GO TO 22
ISN 0075          IF((ADEST(INS,REG).EQ.1).AND.(DESBSY(REG).NE.0)) GO TO 100
ISN 0077       22 CONTINUE
            C                FIND FAC USED
ISN 0078          DO 25 FAC=1,NAFAC
ISN 0079          IF(AFAC(INS,FAC).NE.0) GO TO 26
ISN 0081       25 CONTINUE
            C                NO FAC USED. ISSUE OP
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ISN 0082          FAC=0
ISN 0083       26 CONTINUE
            C - - - - - - - - TEST FOR SPECIAL OPS HERE - - - - - - - - - - - - - - -
ISN 0084          SPEC=0
            C                 IF STORE A, TEST AVAIL OF INBUS (STORE BUS)
            C                 IF AVAIL, SET BUSY. IF NOT, GO TO 100
ISN 0085          IF(ADEST(INS,89).NE.1) GO TO 27
ISN 0087          SPEC=1
            C                 PREV NOGO STORE INTLKS
ISN 0088          IF(INS.EQ.1) GO TO 18
ISN 0090          DO 16 I=1,INSM1
ISN 0091          IF((ADEST(I,89).EQ.1).AND.(AGO(I).EQ.0)) GO TO 100
ISN 0093       16 CONTINUE
ISN 0094       18 CONTINUE
ISN 0095          IF(AIBBSY(3).EQ.1) GO TO 17
ISN 0097          AIBBSY(3)=1
ISN 0098          STORE=1
ISN 0099          GO TO 27
ISN 0100       17 IF(STORE.NE.1) GO TO 100
ISN 0102          STORE=2
ISN 0103       27 CONTINUE
            C                 IF SKIP,INTLK AGAINST PREV NOGO STARRED OPS,SHT RESOLVED.
ISN 0104          IF(ABUFF(INS,13).NE.1) GO TO 132
ISN 0106          IF(SK(SKAP).NE.1) GO TO 100
ISN 0108          IF(INS.EQ.1) GO TO 131
ISN 0110          DO 130 I=1,INSM1
ISN 0111          IF((ABUFF(I,9).EQ.1).AND.(AGO(I).NE.1)) GO TO 100
ISN 0113      130 CONTINUE
ISN 0114      131 SPEC=1
ISN 0115      132 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C                 IF NORMAL OR SPEC OP AND NGO =NAGO, DO NOT ISSUE
            C                 IF REPLACE OR NOP, CAN ISSUE ANYWAY.
ISN 0116          IF(((FAC.NE.0).OR.(SPEC.NE.0)).AND.(NGO.EQ.NAGO)) GO TO 100
            C                 IF NO FACS USED GO DIRECTLY TO 95
ISN 0118          IF(FAC.EQ.0) GO TO 95
            C                 IF MULT IDENT FAC, GO TO SPEC HANDLING
ISN 0120          IF(AFAC(INS,FAC).GT.1) GO TO 49
            C                 CHECK INBUS,FAC SLOT,OUTBUS INTLKS
ISN 0122          INBUS=AFIBUS(FAC)
ISN 0123          IF(AIBBSY(INBUS).EQ.1) GO TO 100
ISN 0125          BOX=ABOX(FAC)
ISN 0126          IF(ABXBSY(BOX).EQ.1) GO TO 100
ISN 0128          DO 30 T=1,NSLOT
ISN 0129          IF((AFSLOT(FAC,T).EQ.1).AND.(AFACSC(1,FAC,T).EQ.1)) GO TO 100
ISN 0131       30 CONTINUE
ISN 0132          OBUS=AFOBUS(FAC)
ISN 0133          DELAY=AFDLY(FAC)
ISN 0134          IF((AOBUS(INS,OBUS).NE.0).AND.(ABUSSC(1,OBUS,DELAY).NE.0))
                 X GO TO 100
```


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ISN 0136          IF((AOBUS(INS,OBUS+1).NE.0).AND.(ABUSSC(1,OBUS+1,DELAY).NE.0).AND.
                 X ((OBUS+1).LE.NABUS)) GO TO 100
                C              SUCCESS.  MARK GO AND SET SHIFT CELLS
ISN 0138       31 CONTINUE
ISN 0139          AIBBSY(INBUS)=1
ISN 0140          ABXBSY(BOX)=1
ISN 0141          ABUFF1=ABUFF(INS,1)
ISN 0142          DO 32 T=1,NSLOT
ISN 0143          IF(AFSLOT(FAC,T).EQ.0) GO TO 32
ISN 0145          AFACSC(1,FAC,T)=1
ISN 0146          AFACSC(2,FAC,T)=ABUFF1
ISN 0147       32 CONTINUE
ISN 0148          ABUSSC(1,OBUS,DELAY)=AOBUS(INS,OBUS)
ISN 0149          ABUSSC(2,OBUS,DELAY)=ABUFF(INS,1)
ISN 0150          ABUSSC(3,OBUS,DELAY)=ABUFF(INS,2)
ISN 0151          IF(AOBUS(INS,OBUS+1).EQ.0) GO TO 95
ISN 0153          IF((OBUS+1).GT.NABUS) GO TO 95
ISN 0155          ABUSSC(1,OBUS+1,DELAY)=AOBUS(INS,OBUS+1)
ISN 0156          ABUSSC(2,OBUS+1,DELAY)=ABUFF(INS,1)
ISN 0157          ABUSSC(3,OBUS+1,DELAY)=ABUFF(INS,2)
ISN 0158          GO TO 95
                C              SPEC ROUTINE TO HANDLE MULT IDENT FAC INTLK
ISN 0159       49 CONTINUE
ISN 0160          INBUS=AFIBUS(FAC)
ISN 0161          IF(AIBBSY(INBUS).EQ.1) GO TO 60
ISN 0163          BOX=ABOX(FAC)
ISN 0164          IF(ABXBSY(BOX).EQ.1) GO TO 60
ISN 0166          DO 50 T=1,NSLOT
ISN 0167          IF((AFSLOT(FAC,T).EQ.1).AND.(AFACSC(1,FAC,T).EQ.1)) GO TO 60
ISN 0169       50 CONTINUE
ISN 0170          OBUS=AFOBUS(FAC)
ISN 0171          DELAY=AFDLY(FAC)
ISN 0172          IF((AOBUS(INS,OBUS).NE.0).AND.(ABUSSC(1,OBUS,DELAY).NE.0))
                 X GO TO 60
                C              SUCCESS
ISN 0174          DO 51 BUS=1,NABUS
ISN 0175       51 IF(BUS.NE.OBUS) AOBUS(INS,BUS)=0
ISN 0177          GO TO 31
ISN 0178       60 CONTINUE
ISN 0179          FAC=FAC+1
ISN 0180          IF((FAC.GT.NAFAC).OR.(AFAC(INS,FAC).LE.1)) GO TO 100
ISN 0182          GO TO 49
ISN 0183       95 CONTINUE
ISN 0184          AGO(INS)=1
                C              IF OP USES NO FACILITIES, AND IS NOT SPECIAL OP THEN IT
                C              IS A REPLACE OP, AND GOES WITHOUT INCREMENTING NGO.
ISN 0185          IF((FAC.NE.0).OR.(SPEC.NE.0)) NGO=NGO+1
ISN 0187      100 CONTINUE
                C - - - - - - - - - - - - EXIT EXECUTION - - - - - - - - - - - - - - - - - -
                C              CHECK FOR NOGO EXITS TO SET AHOLDT
```

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ISN 0188          AHOLDT=0
ISN 0189          DO 200 I=1,NABUF
ISN 0190          IF((ABUFF(I,14).EQ.1).AND.(ABUFF(I,15).NE.1)) AHOLDT=1
ISN 0192      200 CONTINUE
            C                 CHECK FOR GO EXIT,ET
ISN 0193          AFRCT=0
ISN 0194          DO 201 I=1,NABUF
ISN 0195          IF(ABUFF(I,15).NE.1) GO TO 201
ISN 0197          IF(ABUFF(I,14).NE.1) GO TO 201
ISN 0199          ABUFF(I,14)=0
ISN 0200          ABUFF(I,15)=0
ISN 0201          IF(ABUFF(I,10).EQ.1) GO TO 202
ISN 0203      201 CONTINUE
ISN 0204          GO TO 300
            C                 FOUND GO EXIT,ET. NOP AND MARK GO ALL CODE BENEATH IT.
            C                 ALSO SET AFRCT.
ISN 0205      202 AFRCT=1
ISN 0206          IF(I.EQ.NABUF) GO TO 300
ISN 0208          I=I+1
ISN 0209          DO 203 J=I,NABUF
ISN 0210          AGO(J)=1
ISN 0211          DO 204 K=1,NAREGS
ISN 0212          ASOR(J,K)=0
ISN 0213      204 ADEST(J,K)=0
ISN 0214          DO 205 K=1,10
ISN 0215      205 ACBUS(J,K)=0
ISN 0216          ABUFF(I,2)=0
ISN 0217          DO 206 K=9,15
ISN 0218      206 ABUFF(J,K)=0
ISN 0219          DO 207 K=1,NAFAC
ISN 0220          AFAC(J,K)=0
ISN 0221      207 CONTINUE
ISN 0222      203 CONTINUE
ISN 0223      300 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C- - - - - - - IF SKIP NOT TAKEN,REMOVE FLAGS FROM ALL OPS THRU 1ST SKIP
ISN 0224          DO 85 I=1,NABUF
ISN 0225          IF(ABUFF(I,11).EQ.0) ABUFF(I,9)=0
ISN 0227          IF(ABUFF(I,13).EQ.1) GO TO 86
ISN 0229       85 CONTINUE
ISN 0230       86 CONTINUE
            C- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
ISN 0231          RETURN
ISN 0232          END
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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XAEMP
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XEP,          AEP,          PHI(100),     PRINT,
                 F FSTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
                 G MXDSP
ISN 0005          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A MXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXQ,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),            AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          COMMON/TAGS/D(256,70)
ISN 0009          REAL MEMDLY,MXTIME
ISN 0010          REAL TIME
ISN 0011          DO 100 INS=1,NABUF
ISN 0012        5 IF(AGO(INS).EQ.0) GO TO 100
ISN 0014          IF(AFULL(INS).EQ.0) GO TO 100
            C                ISSUE INS
            C - - - - - - - TEST FOR SPECIAL OPS HERE - - - - - - - - - - - - - -
            C                IF STORE A, SHIP DATA TO BUFFER OR Q DEP ON BUFFER STATE
ISN 0016          IF(ADEST(INS,89).NE.1) GO TO 7
ISN 0018          IF(SDBA(1,2).EQ.1) GO TO 2
            C                NO STA WAITING. SET DATA IN SDBA
ISN 0020          DO 3 I=1,32
ISN 0021          IF(SDBA(I,1).EQ.1) GO TO 3
ISN 0023          SDBA(I,1)=1
ISN 0024          GO TO 7
ISN 0025        3 CONTINUE
ISN 0026          A=1
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ISN 0027          B=20000
ISN 0028          C=104
ISN 0029          CALL TROUBL(A,B,C)
ISN 0030          GO TO 7
            C               STA WAITING. DATA TO Q, SHIFT SDBA
ISN 0031        2 CONTINUE
ISN 0032          DO 4 I=1,31
ISN 0033          SDBA(I,1)=SDBA(I+1,1)
ISN 0034        4 SDBA(I,2)=SDBA(I+1,2)
ISN 0035          SDBA(32,1)=0
ISN 0036          SDBA(32,2)=0
ISN 0037          DO 50 II=1,NQBUF
ISN 0038          IF(Q(II,3).NE.1) GO TO 50
ISN 0040          IF(Q(II,4).NE.1) GO TO 50
ISN 0042          IF(Q(II,9).EQ.1) GO TO 50
ISN 0044          Q(II,9)=1
ISN 0045          GO TO 7
ISN 0046       50 CONTINUE
ISN 0047          A=1
ISN 0048          B=20000
ISN 0049          C=103
ISN 0050          CALL TROUBL(A,B,C)
ISN 0051        7 CONTINUE
            C               ISSUE SKIP-RESET SR, INCR SKIP POINTER
ISN 0052          IF(ABUFF(INS,13).NE.1) GO TO 60
ISN 0054          ST(SKAP)=0
ISN 0055          SR(SKAP)=0
ISN 0056          SKAP=SKAP+1
ISN 0057          IF(SKAP.GT.NSBUF) SKAP=1
ISN 0059       60 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
ISN 0060          OP = ABUFF(INS,2)
ISN 0061          REPL=D(OP,33)
            C               FIRST SET BUSY VECTOR
ISN 0062          DO 10 REG=1,NAREGS
            C               IS REG A DEST
ISN 0063          IF(ADEST(INS,REG).NE.1) GO TO 10
            C               IGNORE STORAGE AS DEST
ISN 0065          IF(REG.EQ.89) GO TO 10
            C               DOES AREG HAVE AN ABUREG
ISN 0067          IF(ABUPS(REG).NE.1) GO TO 9
            C               CAN THIS OP DO BACK-UP TO FRONT MOVE.
            C               I.E.,IS THIS A REPLACE OR A TO X MOVE OP.
ISN 0069          IF(REPL.EQ.0) GO TO 9
            C               IS ABUREG FULL
ISN 0071          IF(ABUFUL(REG).NE.1) GO TO 99
ISN 0073          ABUFUL(REG)=0
ISN 0074          XBUSY(REG)=0
ISN 0075          GO TO 10
ISN 0076       99 APASS(REG)=ABUFF(INS,1)
```

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```
ISN 0077          9 ABUSY(REG)=ABUFF(INS,1)
ISN 0078         10 CONTINUE
            C                REMOVE INS FROM BUFF
ISN 0079            AINPT=AINPT-1
ISN 0080            M=NABUF-1
ISN 0081            IF(INS.EQ.NABUF) GO TO 31
ISN 0083            DO 30 I=INS,M
ISN 0084            AGO(I)=AGO(I+1)
ISN 0085            AFULL(I)=AFULL(I+1)
ISN 0086            DO 25 J=1,25
ISN 0087         25 ABUFF(I,J)=ABUFF(I+1,J)
ISN 0088            DO 26 J=1,NAREGS
ISN 0089            ASOR(I,J)=ASOR(I+1,J)
ISN 0090         26 ADEST(I,J)=ADEST(I+1,J)
ISN 0091            DO 27 FAC=1,NAFAC
ISN 0092         27 AFAC(I,FAC)=AFAC(I+1,FAC)
ISN 0093            DO 28 BUS=1,NABUS
ISN 0094         28 AOBUS(I,BUS)=AOBUS(I+1,BUS)
ISN 0095         30 CONTINUE
ISN 0096         31 CONTINUE
ISN 0097            AGO(NABUF)=0
ISN 0098            AFULL(NABUF)=0
ISN 0099            DO 125 J=1,25
ISN 0100        125 ABUFF(NABUF,J)=0
ISN 0101            DO 126 J=1,NAREGS
ISN 0102            ASOR(NABUF,J)=0
ISN 0103        126 ADEST(NABUF,J)=0
ISN 0104            DO 127 FAC=1,NAFAC
ISN 0105        127 AFAC(NABUF,FAC)=0
ISN 0106            DO 128 BUS=1,NABUS
ISN 0107        128 AOBUS(NABUF,BUS)=0
ISN 0108            GO TO 5
ISN 0109        100 CONTINUE
ISN 0110            RETURN
ISN 0111            END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XARET
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,       IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,      ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,      IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),      BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,     AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,        AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,      NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,      NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,      ACON,        XCON,        AEMP,
                 B XEMP,        MXO,        AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,       NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,      ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,        XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
            C               USES OBUS SHIFT CELLS TO BUS TO DESTINATIONS
            C               PERFORMS ANY EXEC ACTIVITY ASSOC WITH RETURN
            C               FIRST RESET THE WAITING VECTOR
ISN 0010          DO 10 BUS=1,NABUS
ISN 0011          DEST=ABUSSC(1,BUS,1)
            C               IF DEST NOT XBU GO HANDLE NORMALLY
ISN 0012          IF(XBUPS(DEST).NE.1) GO TO 9
            C               DEST IS XBU. SEE IF CORRESP XREG IS BUSY
            C               IF SO, RETURN DEST TO IT. ELSE SET XBU BUSY.
ISN 0014          IF(XPASS(DEST).NE.0) GO TO 8
ISN 0016          XBUFUL(DEST)=1
ISN 0017          GO TO 10
ISN 0018        8 XBUSY(DEST)=0
ISN 0019          XPASS(DEST)=0
ISN 0020        9 ABUSY(DEST)=0
ISN 0021       10 CONTINUE
```

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                C          PLACE ANY EXEC ACTIVITY HERE - - - - -
                C          SHIFTS THE SHIFT CELLS
ISN 0022              DO 99 I=1,10
ISN 0023              ABXBSY(I)=0
ISN 0024           99 AIBBSY(I)=0
ISN 0025              SLOTM1=NSLOT-1
ISN 0026              DO 101 J=1,10
ISN 0027              DO 100 SLOT=1,SLOTM1
ISN 0028              ABUSSC(1,J,SLOT)=ABUSSC(1,J,SLOT+1)
ISN 0029              ABUSSC(2,J,SLOT)=ABUSSC(2,J,SLOT+1)
ISN 0030              ABUSSC(3,J,SLOT)=ABUSSC(3,J,SLOT+1)
ISN 0031          100 CONTINUE
ISN 0032              ABUSSC(1,J,NSLOT)=0
ISN 0033              ABUSSC(2,J,NSLOT)=0
ISN 0034              ABUSSC(3,J,NSLOT)=0
ISN 0035          101 CONTINUE
ISN 0036              DO 103 J=1,NAFAC
ISN 0037              DO 102 SLOT=1,SLOTM1
ISN 0038              AFACSC(1,J,SLOT)=AFACSC(1,J,SLOT+1)
ISN 0039              AFACSC(2,J,SLOT)=AFACSC(2,J,SLOT+1)
ISN 0040          102 CONTINUE
ISN 0041              AFACSC(1,J,NSLOT)=0
ISN 0042              AFACSC(2,J,NSLOT)=0
ISN 0043          103 CONTINUE
ISN 0044              RETURN
ISN 0045              END
```


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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE DECBUS
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          COMMON/TAGS/D(256,70)
ISN 0009          REAL MEMDLY,MXTIME
ISN 0010          REAL TIME
            C
            C
            C
ISN 0011          ENTRY BUSTOA
            C               MOVE OP FROM ABUS TO ABUFF(AINPT)
ISN 0012          DO 10 I=1,25
ISN 0013       10 ABUFF(AINPT,I)=ABUS(I)
ISN 0014          AFULL(AINPT)=1
            C               PERFORM COMPLETE OP DECODE HERE
            C               FIRST DECODE SOURCE-DEST INTERLOCK TAGS
ISN 0015          I=AINPT
ISN 0016          OP=ABUFF(I,2)
ISN 0017          II=ABUFF(I,3)
ISN 0018          IJ=ABUFF(I,4)
ISN 0019          IK=ABUFF(I,5)
```


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```
                C               TEST VALID OP TAG TO SEE IF OP VALID
ISN 0020              IF(D(OP,30).EQ.0) GO TO 11
                C               INVALID OP. ISSUE ERROR MESSAGE, INCR AINPT,
                C               AND RETURN THUS MAKING OP INTO NOP.
ISN 0022              WRITE(6,998)
ISN 0023              WRITE(6,999) OP,ABUS(1)
ISN 0024              WRITE(6,998)
ISN 0025              AINPT=AINPT+1
ISN 0026              RETURN
ISN 0027           11 CONTINUE
                C
                C               SET A(I) SOURCE
ISN 0028              IF(D(OP, 4).EQ.1) ASOR(I,II+1)=1
                C
                C               SET A(I) DEST
ISN 0030              IF(D(OP, 5).EQ.1)ADEST(I,II+1)=1
                C
                C               SET A(I+1) SOURCE
ISN 0032              IF(D(OP, 6).EQ.1) ASOR(I,MOD(II+1,32)+1)=1
                C
                C               SET A(I+1) DEST
ISN 0034              IF(D(OP, 7).EQ.1)ADEST(I,MOD(II+1,32)+1)=1
                C
                C               SET A(J) SOURCE
ISN 0036              IF(D(OP, 8).EQ.1) ASOR(I,IJ+1)=1
                C
                C               SET A(J) DEST
ISN 0038              IF(D(OP, 9).EQ.1)ADEST(I,IJ+1)=1
                C
                C               SET A(J+1) SOURCE
ISN 0040              IF(D(OP,10).EQ.1) ASOR(I,MOD(IJ+1,32)+1)=1
                C
                C               SET A(K) SOURCE
ISN 0042              IF(D(OP,11).EQ.1) ASOR(I,IK+1)=1
                C
                C               SET A(K+1) SOURCE
ISN 0044              IF(D(OP,12).EQ.1) ASOR(I,MOD(IK+1,32)+1)=1
                C
                C               SET XB(I) DEST
ISN 0046              IF(D(OP,13).EQ.1) ADEST(I,II+33)=1
                C
                C               SET XB(J) DEST
ISN 0048              IF(D(OP,14).EQ.1) ADEST(I,IJ+33)=1
                C
                C               SET CB(I) DEST
ISN 0050              IF(D(OP,15).EQ.1) ADEST(I,II+65)=1
                C               SET STORAGE DEST
ISN 0052              IF(D(OP,28).EQ.1) ADEST(I,89)=1
                C
                C               REMOVE ANY SOURCE-DEST TAGS ON A(0),XBU(0)
```


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```
ISN 0054          ASOR(I,1)=0
ISN 0055          ADEST(I,1)=0
ISN 0056          ASOR(I,33)=0
ISN 0057          ADEST(I,33)=0
            C               SET FACILITY USE TAGS, BUS DEST TAGS
ISN 0058          DO 20 FAC=1,NAFAC
ISN 0059          AFAC(I,FAC)=D(OP,FAC+55)
ISN 0060          IF(AFAC(I,FAC).EQ.0) GO TO 20
ISN 0062          OBUS=AFOBUS(FAC)
ISN 0063          DO 25 DEST=1,NAREGS
ISN 0064          IF(ADEST(I,DEST).NE.0) GO TO 26
ISN 0066       25 CONTINUE
ISN 0067          GO TO 20
ISN 0068       26 AOBUS(I,OBUS)=DEST
            C               CHECK FOR DOUBLE DEST. IF SO, PLACE ON ADJ. BUS
ISN 0069          DESTP1=DEST+1
ISN 0070          IF(DESTP1.GT.NAREGS) GO TO 20
ISN 0072          DO 27 DEST2=DESTP1,NAREGS
ISN 0073          IF(ADEST(I,DEST2).NE.0) GO TO 28
ISN 0075       27 CONTINUE
ISN 0076          GO TO 20
ISN 0077       28 AOBUS(I,OBUS+1)=DEST2
ISN 0078       20 CONTINUE
            C               INCREMENT AINPT
ISN 0079          AINPT=AINPT+1
ISN 0080          RETURN
            C
            C
            C
ISN 0081          ENTRY BUSTOX
            C               MOVE OP FROM XBUS TO XBUFF(XINPT)
ISN 0082          DO 110 I=1,25
ISN 0083      110 XBUFF(XINPT,I)=XBUS(I)
ISN 0084          XFULL(XINPT)=1
            C               PERFORM COMPLETE OP DECODE HERE
            C               FIRST DECODE SOURCE-DEST INTERLOCK TAGS
ISN 0085          I=XINPT
ISN 0086          OP=XBUFF(I,2)
ISN 0087          II=XBUFF(I,3)
ISN 0088          IJ=XBUFF(I,4)
ISN 0089          IK=XBUFF(I,5)
            C               TEST VALID OP TAG TO SEE IF OP VALID
ISN 0090          IF(D(OP,30).EQ.0) GO TO 111
            C               INVALID OP. ISSUE ERROR MESSAGE, INCR XINPT,
            C               AND RETURN THUS MAKING OP INTO NOP.
ISN 0092          WRITE(6,998)
ISN 0093          WRITE(6,999) OP,XBUS(1)
ISN 0094          WRITE(6,998)
ISN 0095          XINPT=XINPT+1
ISN 0096          RETURN
```


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```
ISN 0097        111 CONTINUE
                C
                C               SET X(I) SOURCE
ISN 0098            IF(D(OP,16).EQ.1) XSOR(I,II+33)=1
                C
                C               SET X(I) DEST
ISN 0100            IF(D(OP,17).EQ.1)XDEST(I,II+33)=1
                C
                C               SET X(I+1) SOURCE
ISN 0102            IF(D(OP,18).EQ.1) XSOR(I,MOD(II+1,32)+33)=1
                C
                C               SET X(I+1) DEST
ISN 0104            IF(D(OP,19).EQ.1)XDEST(I,MOD(II+1,32)+33)=1
                C
                C               SET X(J) SOURCE
ISN 0106            IF(D(OP,20).EQ.1) XSOR(I,IJ+33)=1
                C
                C               SET X(J) DEST
ISN 0108            IF(D(OP,21).EQ.1)XDEST(I,IJ+33)=1
                C
                C               SET X(K) SOURCE
ISN 0110            IF(D(OP,22).EQ.1) XSOR(I,IK+33)=1
                C
                C               SET AB(I) DEST
ISN 0112            IF(D(OP,23).EQ.1)XDEST(I,II+1)=1
                C
                C               SET C(I) SOURCE
ISN 0114            IF(D(OP,24).EQ.1) XSOR(I,II+65)=1
                C
                C               SET C(I) DEST
ISN 0116            IF(D(OP,25).EQ.1)XDEST(I,II+65)=1
                C
                C               SET C(J) SOURCE
ISN 0118            IF(D(OP,26).EQ.1) XSOR(I,IJ+65)=1
                C
                C               SET C(K) SOURCE
ISN 0120            IF(D(OP,34).EQ.1) XSOR(I,IK+65)=1
                C
                C               SET STORAGE SOURCE
ISN 0122            IF(D(OP,27).EQ.1) XSOR(I,89)=1
                C
                C               SET STORAGE DEST
ISN 0124            IF(D(OP,28).EQ.1)XDEST(I,89)=1
                C               REMOVE ANY SOURCE-DEST TAGS ON X(0),ABU(0)
ISN 0126            XSOR(I,1)=0
ISN 0127            XDEST(I,1)=0
ISN 0128            XSOR(I,33)=0
ISN 0129            XDEST(I,33)=0
                C - - - - - - - -SPECIAL DECODE FOR BRANCH OPS - - - - - - - - - - - - - -
                C               PLACE NO FACILITY IF K FIELD = 0 FOR BRANCH OP
```


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```
ISN 0130          IF((XBUFF(I,12).EQ.1).AND.(IK.EQ.0)) GO TO 121
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C                 SET FACILITY USE TAGS, BUS DEST TAGS
ISN 0132          DO 120 FAC=1,NXFAC
ISN 0133          XFAC(I,FAC)=D(OP,FAC+40)
ISN 0134          IF(XFAC(I,FAC).EQ.0) GO TO 120
ISN 0136          OBUS=XFOBUS(FAC)
ISN 0137          DO 125 DEST=1,NXREGS
ISN 0138          IF(XDEST(I,DEST).NE.0) GO TO 126
ISN 0140      125 CONTINUE
ISN 0141          GO TO 120
ISN 0142      126 XOBUS(I,OBUS)=DEST
            C                 CHECK FOR DOUBLE DEST. IF SO, PLACE ON ADJ BUS
ISN 0143          DESTP1=DEST+1
ISN 0144          IF(DESTP1.GT.NXREGS) GO TO 120
ISN 0146          DO 127 DEST2=DESTP1,NXREGS
ISN 0147          IF(XDEST(I,DEST2).NE.0) GO TO 128
ISN 0149      127 CONTINUE
ISN 0150          GO TO 120
ISN 0151      128 XOBUS(I,OBUS+1)=DEST2
ISN 0152      120 CONTINUE
ISN 0153      121 CONTINUE
            C                 INCREMENT XINPT
ISN 0154          XINPT=XINPT+1
ISN 0155          RETURN
ISN 0156      998 FORMAT(1H )
ISN 0157      999 FORMAT(21H ERROR - - - OP TYPE ,I3,14H, INSTRUCTION ,A1,
                 X  53H, IS NOT HANDLED BY THE SIMULATOR - - - - - - - - - -)
ISN 0158          END
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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE JSTART(ENDRUN)
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODUT,       NOPSC,       NOBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,        XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
ISN 0010          DIMENSION AREPT(10),XREPT(10)
ISN 0011          INTEGER*2 ENDRUN
            C                READ PARAM CARD FOR JOB
ISN 0012          READ(5,100,END=10)(JOB(I),I=1,6),
                 W                          NABUF,NATEST,NAGO,NXBUF,NXTEST,NXGO,
                 X NQBUF,NQTEST,NQGO,NBOX,NBBUF,NSBUF,NODUT,NOPSC,NOBUS,NADSP,NXDSP,
                 Y MXTIME,MEMDLY,OUTLVL,FSTADD
ISN 0013          PRINT=OUTLVL
ISN 0014          ENDRUN=0
            C                WRITE NEW JOB HEADER
ISN 0015          WRITE(6,202)
ISN 0016          WRITE(6,200)
ISN 0017          WRITE(6,300)
ISN 0018          WRITE(6,200)
ISN 0019          WRITE(6,200)
ISN 0020          WRITE(6,400) (JOB(I),I=1,6)
```

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```
ISN 0021          WRITE(6,201)
ISN 0022          CALL TMTU(OUT(1))
ISN 0023          WRITE(6,3333) OUT(1),OUT(2)
ISN 0024          WRITE(6,200)
ISN 0025          WRITE(6,200)
ISN 0026          WRITE(6,500)
ISN 0027          WRITE(6,200)
ISN 0028          WRITE(6,600) NABUF,NXBUF,NQBUF
ISN 0029          WRITE(6,201)
ISN 0030          WRITE(6,700) NATEST,NXTEST,NQTEST
ISN 0031          WRITE(6,201)
ISN 0032          WRITE(6,800) NAGO,NXGO,NQGO
ISN 0033          WRITE(6,201)
ISN 0034          WRITE(6,900) MEMDLY
ISN 0035          WRITE(6,201)
ISN 0036          WRITE(6,901) NBOX
ISN 0037          WRITE(6,201)
ISN 0038          WRITE(6,910) NBBUF,NSBUF,NODOT
ISN 0039          WRITE(6,201)
ISN 0040          WRITE(6,920) NOPSC
ISN 0041          WRITE(6,201)
ISN 0042          WRITE(6,930) NOBUS
ISN 0043          WRITE(6,201)
ISN 0044          WRITE(6,940) NADSP,NXDSP
ISN 0045          WRITE(6,200)
ISN 0046          WRITE(6,200)
ISN 0047          WRITE(6,1000)
ISN 0048          WRITE(6,201)
            C               CALC REP TIMES
ISN 0049          DO 20 I=1,NAFAC
ISN 0050          AREPT(I)=0
ISN 0051          DO 20 J=1,NSLOT
ISN 0052       20 AREPT(I)=AREPT(I)+AFSLOT(I,J)
ISN 0053          WRITE(6,1001)(AREPT(I),I=1,NAFAC)
ISN 0054          WRITE(6,1002)(AFDLY(I),I=1,NAFAC)
ISN 0055          WRITE(6,1003)(AFIBUS(I),I=1,NAFAC)
ISN 0056          WRITE(6,1005)(ABOX(I),I=1,NAFAC)
ISN 0057          WRITE(6,1004)(AFOBUS(I),I=1,NAFAC)
ISN 0058          WRITE(6,200)
ISN 0059          WRITE(6,200)
ISN 0060          WRITE(6,2000)
            C               CALC REP TIMES
ISN 0061          DO 30 I=1,NXFAC
ISN 0062          XREPT(I)=0
ISN 0063          DO 30 J=1,NSLOT
ISN 0064       30 XREPT(I)=XREPT(I)+XFSLOT(I,J)
ISN 0065          WRITE(6,1001)(XREPT(I),I=1,NXFAC)
ISN 0066          WRITE(6,1002)(XFDLY(I),I=1,NXFAC)
ISN 0067          WRITE(6,1005)(XBOX(I),I=1,NXFAC)
ISN 0068          WRITE(6,1004)(XFOBUS(I),I=1,NXFAC)
```


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```
ISN 0069          WRITE(6,202)
ISN 0070          CALL UNROLL
ISN 0071          RETURN
ISN 0072       10 CONTINUE
ISN 0073          ENDRUN=1
ISN 0074          RETURN
ISN 0075      100 FORMAT(6A1,2X,17I2,17X,F7.1,1X,F4.1,1XI2,1XI5)
ISN 0076      101 FORMAT(1H1,6A1)
ISN 0077      200 FORMAT(1H0)
ISN 0078      201 FORMAT(1H )
ISN 0079      202 FORMAT(1H1)
ISN 0080      300 FORMAT(120H - - -
```

```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XQCON
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNUP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXG,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
            C               ALGORITHM...LOADS OUT OF ORDER WITH BOM INTLK.
            C               STORES IN ORDER.
ISN 0010          CALL CAUSE(QCON,TIME+1.0,0,0,0)
ISN 0011          CALL CAUSE(QEMP,TIME+0.8,0,0,0)
ISN 0012          NGO=0
ISN 0013          DO 1 I=1,NQBUF
ISN 0014        1 Q(I,16)=0
ISN 0015          DO 100 INS=1,NQTEST
ISN 0016          IF(Q(INS,8).EQ.0) GO TO 100
ISN 0018          IF(INS.EQ.1) GO TO 11
ISN 0020          INSM1=INS-1
ISN 0021          DO 10 I=1,INSM1
            C               IF PREV GO INS TO SAME BOM, NOGO
ISN 0022          IF((Q(I,6).EQ.Q(INS,6)).AND.(Q(I,16).EQ.1)) GO TO 100
            C               IF PREV INS TO SAME WORD, NOGO
ISN 0024          IF(Q(I,7).EQ.Q(INS,7)) GO TO 100
```


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```
                C               IF STORE AND PREV NOGO STORE, NOGO
ISN 0026            IF(Q(INS,3).NE.1) GO TO 10
ISN 0028            IF((Q(I,3).EQ.1).AND.(Q(I,16).EQ.0)) GO TO 100
ISN 0030         10 CONTINUE
                C               IF STORE AND DATA NOT AVAIL, NOGO
ISN 0031         11 IF((Q(INS,3).EQ.1).AND.(Q(INS,9).EQ.0)) GO TO 100
                C               MARK GO
ISN 0033            Q(INS,16)=1
ISN 0034            NGO=NGO+1
ISN 0035            IF(NGO.GT.NQGO) GO TO 101
ISN 0037        100 CONTINUE
ISN 0038        101 CONTINUE
                C               TEST INS FETCH REQ FOR ISSUANCE
ISN 0039            DO 200 II=1,4
ISN 0040            IF(IQ(II,1).EQ.0)GO TO 200
                C               COMPARE BOM REQD AGAINST GO DATA REQSTS
ISN 0042            DO 150 ID=1,NQBUF
ISN 0043            IF((IQ(II,6).EQ. Q(ID,6)).AND.( Q(ID,16).EQ.1)) GO TO 200
ISN 0045        150 CONTINUE
                C               MARK INS FETCH REQ GO
ISN 0046            IQ(II,16)=1
ISN 0047        200 CONTINUE
ISN 0048            RETURN
ISN 0049            END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XQEMP
ISN 0003          IMPLICIT INTEGER (A-Z)
ISN 0004          COMMON/RLS/     IPAR1,          IPAR2,          IPAR3,
                 A AINPT,         NABUF,          ABUS(50),       XINPT,          NXBUF,
                 B XBUS(50),      IFADD,          IFDST,          IFRTN,          BRXP,
                 C BRAP,          ER(8),          BE(8),          ET(8),          NBBUF,
                 D AHOLDT,        XHOLDT,         AFRCT,          XFRCT,          BOSC,
                 E BNOP,          XEP,            AEP,            PHI(100),       PRINT,
                 F FSTADD,        NODOT,          NOPSC,          NDBUS,          NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/     FIRST,          NAREGS,         NXREGS,         NABUS,
                 A NXBUS,         STATS,          ACON,           XCON,           AEMP,
                 B XEMP,          MXO,            AFULL(12),      XFULL(12),      AGO(12),
                 C XGO(12),       NAGO,           NXGO,           NATEST,         NXTEST,
                 D NAFAC,         NXFAC,          ABUSYZ,         ABUSY(200),     XBUSYZ,
                 E XBUSY(200),    ABUFB(12,100),  XBUFB(12,100),  ASOR(12,200),
                 F XSOR(12,200),  ADEST(12,200),  XDEST(12,200),                  AFAC(12,15),
                 G XFAC(12,15),   AFACSC(4,15,20),ARET,           XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),     XFDLY(15),      AFOBUS(15),     XFOBUS(15),     NSLOT,
                 K ABUPSZ,        ABUPS(200),     XBUPS(200),     ABUFUL(200),    XBUFUL(200),
                 L Q(16,16),      SDBA(32,2),     NQBUF,          NQTEST,         NQGO,
                 M QINPT,         QCON,           QEMP,           MBUSY,          MFREE,
                 N LOAD,          MEMDLY,         MEMORY(16),     NBOX,           EAV,
                 O MXTIME,        OUTLVL,         IQ(4,16),       RTN,            LONGBR,
                 P SR(8),         ST(8),          SKXP,           SKAP,           NSBUF,
                 Q APASS(200),    XPASS(200),     OUT(2),         JOB(6),         SSTOP,
                 R MEMCNT(16),    ABOX(15),       ABXBSY(10),     XBOX(15),       XBXBSY(10)
ISN 0006          COMMON/RLS/     LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
ISN 0010          DIMENSION CODE(12)
ISN 0011          DATA CODE/1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,1HA,1HB,1HC/
            C
            C
            C                ISSUE GO DATA REQ
ISN 0012          DO 100 INS=1,NQBUF
ISN 0013        5 IF(Q(INS,16).EQ.0) GO TO 100
ISN 0015          IF(Q(INS,8 ).EQ.0) GO TO 100
            C                ISSUE INS TO MEMORY
ISN 0017          BOM=Q(INS,6)
ISN 0018          DEST=Q(INS,15)
ISN 0019          A=Q(INS,4)
ISN 0020          X=Q(INS,5)
ISN 0021          L=Q(INS,1)
ISN 0022          MEMCNT(BOM)=MEMCNT(BOM)+1
ISN 0023          CALL CAUSE(MBUSY,TIME+MEMDLY-3.0,BOM,L,0)
```


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```
                C                IF LOAD, CAUSE DEST LOAD IN MEMDLY CYCLES
ISN 0025              IF(Q(INS,2).EQ.1)CALL CAUSE(LOAD,TIME+MEMDLY-1.0,DEST,A,X)
                C                REMOVE INS FROM QUEUE
ISN 0027              Q(INS,1)=0
ISN 0028              M=NQBUF-1
ISN 0029              IF(INS.EQ.NQBUF) GO TO 31
ISN 0031              DO 30 I=INS,M
ISN 0032              DO 30 J=1,16
ISN 0033              Q(I,J)=Q(I+1,J)
ISN 0034           30 CONTINUE
ISN 0035           31 CONTINUE
ISN 0036              DO 32 J=1,16
ISN 0037              Q(NQBUF,J)=0
ISN 0038           32 CONTINUE
ISN 0039              GO TO 5
ISN 0040          100 CONTINUE
                C
                C
                C                ISSUE GO INS FETCH REQ TEST
ISN 0041              DO 200 II=1,4
ISN 0042              IF(IQ(II,1).EQ.0) GO TO 200
ISN 0044              IF(IQ(II,16).EQ.0)GO TO 200
                C                ISSUE REQ
ISN 0046              BOM=IQ(II,6)
ISN 0047              DEST=IQ(II,15)
ISN 0048              L=IQ(II,1)
ISN 0049              MEMCNT(BOM)=MEMCNT(BOM)+1
ISN 0050              CALL CAUSE(MBUSY,TIME+MEMDLY-3.0,BOM,L,0)
ISN 0051              CALL CAUSE(MFREE,TIME+MEMDLY-2.1,BOM,0,0)
                C                ZERO POSN IN IQ
ISN 0052              DO 150 I=1,16
ISN 0053          150 IQ(II,I)=0
                C                IF LAST OF 4 INS FETCH REQSTS, CAUSE RTN
ISN 0054              DO 160 I=1,4
ISN 0055              IF(IQ(I,1).NE.0) GO TO 200
ISN 0057          160 CONTINUE
ISN 0058              CALL CAUSE(RTN,TIME+MEMDLY-1.0,DEST,0,0)
ISN 0059          200 CONTINUE
                C
                C
                C                FILL IQ IF EMPTY AND INS REQ PRESENT ON INTERFACE
                C                FIRST TEST IF IQ EMPTY
ISN 0060              DO 250 II=1,4
ISN 0061              IF(IQ(II,1).NE.0) GO TO 400
ISN 0063          250 CONTINUE
                C                TEST IF REQ PRESENT
ISN 0064              IF(IFDST.EQ.0) GO TO 400
                C                FILL IQ
ISN 0066              BOM=MOD(IFADD,NBOX)+1
```


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```
ISN 0067          DO 300 II=I,4
ISN 0068          IQ(II,1)=CODE(IFDST)
ISN 0069          IQ(II,6)=BOM+II-1
ISN 0070          IQ(II,7)=IFADD
ISN 0071          IQ(II,15)=IFDST
ISN 0072      300 CONTINUE
            C                 ZERO INTERFACE
ISN 0073          IFADD=0
ISN 0074          IFDST=0
ISN 0075      400 CONTINUE
ISN 0076          RETURN
ISN 0077          END
```


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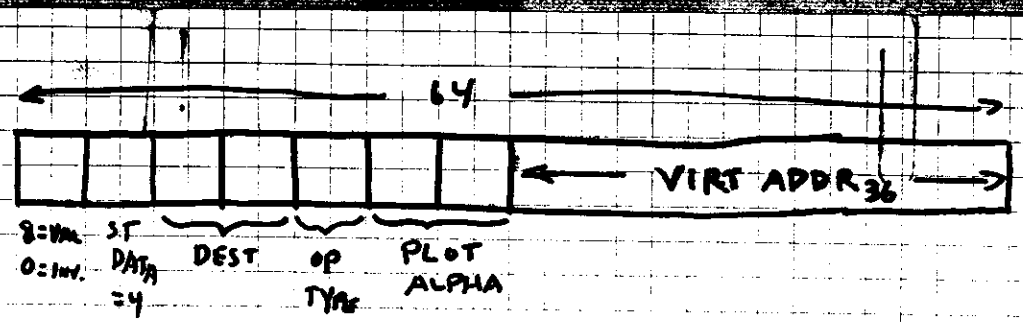

'BLCU' ——— call every cycle

'BLCNTL' ——— to get BLCU control card
placed after MPM control card.

DAI
DAI
INS

3 × 64 bits requests

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Current MPM — MQ interface:

C Variables:

Q (16,16)
SDBA (32,2)
NQBUF
NQTEST
NQGO
QINPT
MEMDLY
MEMORY (16)
NBOX
IQ (4,16)
MEMCNT (16) (STOP CONDN)

EVENTS - CAUSATION

.1	.8	.9
QCON	MFREE	QEMP
		RTN
		MBUSY
		LOAD
		EAV

XBON test for availability of Q space, as one of the interlocks.

XEMP If GO L/S, Place on the interface

ACON STORE A — KEPT IN ORDER, INTLK ON BUS

AEMP PLACE DATA ON INTERFACE

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INS Q:

INTERFACE VARIABLES: IFDST, IFADD, IFRTN

IF (IFDST N.E. 0) FILL IQ (or PLACE REQST)

CODE(IFDST) is destination literal

ZERO ØL interface IFDST, IFADD

RTN: IFRTN = DEST

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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE SRQ
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON          TIME,          IPAR1,         IPAR2,         IPAR3,
                 A AINPT,         NABUF,         ABUS(50),      XINPT,         NXBUF,
                 B XBUS(50),      IFADD,         IFDST,         IFRTN,         BRXP,
                 C BRAP,          ER(8),         BE(8),         ET(8),         NBBUF,
                 D AHOLDT,        XHOLDT,        AFRCT,         XFRCT,         BOSC,
                 E BNOP,          XEP,           AEP,           PH1(100),      PRINT,
                 F FSTADD,        NODOT,         NOPSC,         NDBUS,         NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/     FIRST,         NAREGS,        NXREGS,        NABUS,
                 A NXBUS,         STATS,         ACON,          XCON,          AEMP,
                 B XEMP,          MXO,           AFULL(12),     XFULL(12),     AGO(12),
                 C XGO(12),       NAGO,          NXGO,          NATEST,        NXTEST,
                 D NAFAC,         NXFAC,         ABUSYZ,        ABUSY(200),    XBUSYZ,
                 E XBUSY(200),    ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),                   AFAC(12,15),
                 G XFAC(12,15),   AFACSC(4,15,20),ARET,          XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),     XFDLY(15),     AFOBUS(15),    XFOBUS(15),    NSLOT,
                 K ABUPSZ,        ABUPS(200),    XBUPS(200),    ABUFUL(200),   XBUFUL(200),
                 L Q(16,16),      SDBA(32,2),    NQBUF,         NQTEST,        NQGO,
                 M QINPT,         QCON,          QEMP,          MBUSY,         MFREE,
                 N LOAD,          MEMDLY,        MEMORY(16),    NBOX,          EAV,
                 O MXTIME,        OUTLVL,        IQ(4,16),      RTN,           LONGBR,
                 P SR(8),         ST(8),         SKXP,          SKAP,          NSBUF,
                 Q APASS(200),    XPASS(200),    OUT(2),        JOB(6),        SSTOP,
                 R MEMCNT(16),    ABOX(15),      ABXBSY(10),    XBOX(15),      XBXBSY(10)
ISN 0006          COMMON/RLS/     LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
            C
ISN 0010          ENTRY XMBUSY
ISN 0011          BOM=IPAR1
ISN 0012          L=IPAR2
ISN 0013          MEMORY(BOM)=L
ISN 0014          RETURN
            C
ISN 0015          ENTRY XMFREE
ISN 0016          BOM=IPAR1
ISN 0017          MEMCNT(BOM)=MEMCNT(BOM)-1
ISN 0018          MEMORY(BOM)=0
ISN 0019          RETURN
            C
ISN 0020          ENTRY XLOAD
ISN 0021          DEST=IPAR1
ISN 0022          IF(ABUPS(DEST).NE.1) GO TO 9
```


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```
ISN 0024          IF(APASS(DEST).NE.0) GO TO 8
ISN 0026          ABUFUL(DEST)=1
ISN 0027          RETURN
ISN 0028        8 ABUSY(DEST)=0
ISN 0029          APASS(DEST)=0
ISN 0030        9 XBUSY(DEST)=0
ISN 0031          RETURN
            C
ISN 0032          ENTRY XRTN
ISN 0033          DEST=IPAR1
ISN 0034          IFRTN=DEST
ISN 0035          RETURN
            C
ISN 0036          ENTRY XEAV
ISN 0037          DO 10 I=1,NQBUF
ISN 0038          IF(Q(I,8).EQ.1) GO TO 10
ISN 0040          Q(I,8)=1
ISN 0041          RETURN
ISN 0042       10 CONTINUE
ISN 0043          A=1
ISN 0044          B=20000
ISN 0045          C=101
ISN 0046          CALL TROUBL(A,B,C)
ISN 0047          RETURN
            C
ISN 0048          END
```


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```
          COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID
ISN 0002        SUBROUTINE XSTATS
ISN 0003        IMPLICIT INTEGER*2(A-Z)
ISN 0004        COMMON        TIME,  *      IPAR1,        IPAR2,        IPAR3,
               A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
               B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
               C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
               D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
               E BNOP,        XEP,          AEP,          PH1(100),     PRINT,
               F FSTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
               G NXDSP
ISN 0005        COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
               A NXBUS,       STATS,        ACON,         XCON,         AEMP,
               B XEMP,        MXO,          AFULL(12),    XFULL(12),    AGO(12),
               C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
               D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
               E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
               F XSOR(12,200),ADEST(12,200),XDEST(12,200),             AFAC(12,15),
               G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
               H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
               I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
               J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
               K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
               L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
               M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
               N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
               O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
               P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
               Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
               R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0006        COMMON/RLS/   LAST
ISN 0007        INTEGER OUT
ISN 0008        REAL MEMDLY,MXTIME
ISN 0009        REAL TIME
ISN 0010        INTEGER INDEX
ISN 0011        COMMON/OBUF/SPH1(80,100),SABUFF(12,100),SXBUFF(12,100),
               A SAREG(32,100),SXREG(32,100),SABREG(32,100),SCBIT(24,100),
               B SCBBIT(24,100),SAFAC(15,100),SXFAC(15,100),SQ(16,100),
               C SMEM(16,100),SIQ(4,100),SB(34,100),SS(10,100)
ISN 0012        DIMENSION BB(2)
ISN 0013        EQUIVALENCE(BB(1),SPH1(1,1))
ISN 0014        DIMENSION XMN(10),AMN(10)
ISN 0015        DIMENSION BSYM(68),SSYM(20)
ISN 0016        DATA SSYM/40HSR 1SR 2SR 3SR 4SR 5SR 6SR 7SR 8SKXPSKAP/
ISN 0017        DATA BSYM/136HER 1ER 2ER 3ER 4ER 5ER 6ER 7ER 8BE 1BE 2BE 3BE 4BE 5
               ABE 6BE 7BE 8ET 1ET 2ET 3ET 4ET 5ET 6ET 7ET 8BRXPBRAPXHLTAHLTXFCTAF
               BCTXEP AEP BOSCBNOP/
ISN 0018        DATA XMN/20HEAEAL S M D XAC SP  /
ISN 0019        DATA AMN/20HFAFAFMFDIAIMIDC L S /
ISN 0020        DATA BLNK/2H  /
```

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```
                C               OUTPUT LEVELS AS FOLLOWS
                C               OUTLVL=0   FULL DEBUG INCLUDED
                C               OUTLVL=1   CYC/CYC INCLUDED
                C               OUTLVL=2   FULL 100 CYC INCLUDED
                C               OUTLVL=3   MIN  100 CYC INCLUDED
                C               FIRST TIME THRU, BLANK THE OUTPUT ARRAYS
ISN 0021                ABNORM=0
ISN 0022                IF(TIME.GT.0.0) GO TO 60
ISN 0024                DO   50 INDEX=1,35800
ISN 0025             50 BB(INDEX)=BLNK
ISN 0026             60 CONTINUE
ISN 0027                CALL CAUSE(STATS,TIME+1.0,0,0,0)
                C
                C - - - - - - - - - - -  PLACE PER CYCLE OUTPUT HERE - - - - - - - - - - -
                C
                C               OUTPUT PER CYCLE IF OUTLVL LE 1
ISN 0028                IF(OUTLVL.GT.1) GO TO 100
ISN 0030                WRITE(6,1000)TIME
ISN 0031            100 CONTINUE
ISN 0032                ITIME=TIME
ISN 0033                JT=MOD(ITIME,100)+1
ISN 0034                IF(JT.NE.1) GO TO 2050
ISN 0036                IF(TIME.EQ.0.0) GO TO 2050
                C
                C - - - - - - - - - OUTPUT 100 CYCLE OUTPUT - - - - - - - - - - - - - - - -
                C
ISN 0038           2500 CONTINUE
ISN 0039                ITIME=TIME
ISN 0040                BTIME=ITIME-MOD(ITIME,100)
ISN 0041                IF(MOD(ITIME,100).EQ.0) BTIME=ITIME-100
ISN 0043                FTIME=ITIME-1
ISN 0044                CALL TMTU(OUT(1))
ISN 0045                WRITE(6,2610) BTIME,FTIME,(JOB(I),I=1,6),OUT(1),OUT(2)
ISN 0046                WRITE(6,2611)
ISN 0047                IF(OUTLVL.EQ.3) GO TO 888
                C               OUTPUT DISP REG AND PH1
ISN 0049                WRITE(6,2630)
ISN 0050                WRITE(6,2640)(SPH1(1,T),T=1,100)
ISN 0051                WRITE(6,2641)(SPH1(2,T),T=1,100)
ISN 0052                DO 90 I=1,8
ISN 0053                J=I+2
ISN 0054             90 WRITE(6,2622)I,(SPH1(J,T),T=1,100),I
ISN 0055                WRITE(6,2630)
ISN 0056                WRITE(6,2643)(SPH1(11,T),T=1,100)
ISN 0057                WRITE(6,2641)(SPH1(12,T),T=1,100)
ISN 0058                DO 91 I=1,8
ISN 0059                J=I+12
ISN 0060             91 WRITE(6,2622)I,(SPH1(J,T),T=1,100),I
ISN 0061                WRITE(6,2630)
ISN 0062                WRITE(6,2644)(SPH1(21,T),T=1,100)
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ISN 0063          WRITE(6,2641)(SPH1(22,T),T=1,100)
ISN 0064          DO 92 I=1,8
ISN 0065          J=I+22
ISN 0066       92 WRITE(6,2622)I,(SPH1(J,T),T=1,100),I
ISN 0067          WRITE(6,2630)
ISN 0068          WRITE(6,2645)(SPH1(31,T),T=1,100)
ISN 0069          WRITE(6,2641)(SPH1(32,T),T=1,100)
ISN 0070          DO 93 I=1,8
ISN 0071          J=I+32
ISN 0072       93 WRITE(6,2622)I,(SPH1(J,T),T=1,100),I
ISN 0073          WRITE(6,2630)
ISN 0074          WRITE(6,2646)(SPH1(41,T),T=1,100)
ISN 0075          DO 94 I=42,80
ISN 0076       94 WRITE(6,2642)(SPH1(I,T),T=1,100)
ISN 0077      888 CONTINUE
            C                OUTPUT BRANCH CONTROLS
ISN 0078          WRITE(6,2630)
ISN 0079          I=1
ISN 0080          WRITE(6,2637)BSYM(1),BSYM(2),(SB(1,T),T=1,100)
ISN 0081          DO 104 J=1,17,8
ISN 0082          DO 104 K=1,NBBUF
ISN 0083          I=J+K-1
ISN 0084          IF(I.EQ.1) GO TO 104
ISN 0086          WRITE(6,2638)BSYM(2*I-1),BSYM(2*I),(SB(I,T),T=1,100)
ISN 0087      104 CONTINUE
ISN 0088          DO 103 I=25,34
ISN 0089      103 WRITE(6,2638)BSYM(2*I-1),BSYM(2*I),(SB(I,T),T=1,100)
            C                OUTPUT SKIP CONTROLS
ISN 0090          WRITE(6,2630)
ISN 0091          WRITE(6,2647)SSYM(1),SSYM(2),(SS(1,T),T=1,100)
ISN 0092          DO 102 K=2,NSBUF
ISN 0093      102 WRITE(6,2648)SSYM(2*K-1),SSYM(2*K),(SS(K,T),T=1,100)
ISN 0094          DO 101 K=9,10
ISN 0095      101 WRITE(6,2648)SSYM(2*K-1),SSYM(2*K),(SS(K,T),T=1,100)
            C                OUTPUT ABUFF
ISN 0096          WRITE(6,2630)
ISN 0097          I=1
ISN 0098          WRITE(6,2623)I,(SABUFF(1,T),T=1,100),I
ISN 0099          DO 110 I=2,NABUF
ISN 0100      110 WRITE(6,2622)I,(SABUFF(I,T),T=1,100),I
            C                OUTPUT XBUFF
ISN 0101          WRITE(6,2630)
ISN 0102          I=1
ISN 0103          WRITE(6,2624)I,(SXBUFF(I,T),T=1,100),I
ISN 0104          DO 111 I=2,NXBUF
ISN 0105      111 WRITE(6,2622)I,(SXBUFF(I,T),T=1,100),I
            C                OUTPUT A FACILITIES
ISN 0106          WRITE(6,2630)
ISN 0107          I=1
ISN 0108          WRITE(6,2631)AMN(I),I,(SAFAC(I,T),T=1,100),I
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ISN 0109          DO 108 I=2,NAFAC
ISN 0110      108 WRITE(6,2635)AMN(I),I,(SAFAC(I,T),T=1,100),I
            C                OUTPUT X FACILITIES
ISN 0111          WRITE(6,2630)
ISN 0112          I=1
ISN 0113          WRITE(6,2632)XMN(I),I,(SXFAC(I,T),T=1,100),I
ISN 0114          DO 109 I=2,NXFAC
ISN 0115      109 WRITE(6,2635)XMN(I),I,(SXFAC(I,T),T=1,100),I
            C                OUTPUT Q BUSY
ISN 0116          WRITE(6,2630)
ISN 0117          IF(OUTLVL.EQ.3) GO TO 889
ISN 0119          I=1
ISN 0120          WRITE(6,2633)I,(  SQ(I,T),T=1,100),I
ISN 0121          DO 106 I=2,NQBUF
ISN 0122      106 WRITE(6,2622) I,(SQ(I,T),T=1,100),I
            C                OUTPUT IQ BUSY
ISN 0123          WRITE(6,2630)
ISN 0124          I=1
ISN 0125          WRITE(6,2636)I,(SIQ(I,T),T=1,100),I
ISN 0126          DO 105 I=2,4
ISN 0127      105 WRITE(6,2622)I,(SIQ(I,T),T=1,100),I
            C                OUTPUT MEM BUSY
ISN 0128          WRITE(6,2630)
ISN 0129          I=1
ISN 0130          WRITE(6,2634)I,(SMEM(I,T),T=1,100),I
ISN 0131          DO 107 I=2,NBOX
ISN 0132      107 WRITE(6,2622) I,(SMEM(I,T),T=1,100),I
            C                OUTPUT AREGS    BUSY
ISN 0133          WRITE(6,2630)
ISN 0134          J=0
ISN 0135          I=1
ISN 0136          WRITE(6,2625)J,( SAREG(I,T),T=1,100),J
ISN 0137          DO 112 I=2,32
ISN 0138          J=I-1
ISN 0139      112 WRITE(6,2622)J,( SAREG(I,T),T=1,100),J
            C                OUTPUT ABU REGS BUSY
ISN 0140          WRITE(6,2630)
ISN 0141          J=0
ISN 0142          I=1
ISN 0143          WRITE(6,2626)J,(SABREG(I,T),T=1,100),J
ISN 0144          DO 113 I=2,32
ISN 0145          J=I-1
ISN 0146      113 WRITE(6,2622)J,(SABREG(I,T),T=1,100),J
            C                OUTPUT XREGS    BUSY
ISN 0147          WRITE(6,2630)
ISN 0148          J=0
ISN 0149          I=1
ISN 0150          WRITE(6,2627)J,( SXREG(I,T),T=1,100),J
ISN 0151          DO 114 I=2,32
ISN 0152          J=I-1
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ISN 0153      114 WRITE(6,2622)J,( SXREG(I,T),T=1,100),J
            C               OUTPUT C BITS    BUSY
ISN 0154          WRITE(6,2630)
ISN 0155          J=0
ISN 0156          I=1
ISN 0157          WRITE(6,2628)J,( SCBIT(I,T),T=1,100),J
ISN 0158          DO 115 I=2,24
ISN 0159          J=I-1
ISN 0160      115 WRITE(6,2622)J,( SCBIT(I,T),T=1,100),J
            C               OUTPUT CBU BITS  BUSY
ISN 0161          WRITE(6,2630)
ISN 0162          J=0
ISN 0163          I=1
ISN 0164          WRITE(6,2629)J,(SCBBIT(I,T),T=1,100),J
ISN 0165          DO 116 I=2,24
ISN 0166          J=I-1
ISN 0167      116 WRITE(6,2622)J,(SCBBIT(I,T),T=1,100),J
            C
ISN 0168          WRITE(6,2630)
ISN 0169      889 CONTINUE
ISN 0170          DO 2550 INDEX=1,35800
ISN 0171     2550 BB(INDEX)=BLNK
            C
            C- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C               IF ABNORMAL TERMINATION,I.E. ENTERED AT FINIS,
            C               WRITE OUT OBUF, CALL TROUBL, THEN STOP.
ISN 0172          IF(ABNORM.EQ.0) GO TO 7777
ISN 0174          A=1
ISN 0175          B=20000
ISN 0176          C=7777
ISN 0177          CALL TROUBL(A,B,C)
ISN 0178          STOP
            C
ISN 0179          ENTRY FINIS
ISN 0180          ABNORM=1
ISN 0181          GO TO 2500
ISN 0182     7777 CONTINUE
            C - - - - - - - - FILL CYCLE POSITION IN 100 CYCLE BUFFER - - - - - - - -
            C
ISN 0183          IF(SSTOP.EQ.1) RETURN
ISN 0185     2050 CONTINUE
ISN 0186          CYCLE=JT
ISN 0187          CALL STOBUF(CYCLE)
            C               TEST FOR STOP CONDITION
ISN 0188          IF(PH1(100).EQ.0) RETURN
ISN 0190          DO 200 I=1,NABUF
ISN 0191          IF(ABUFF(I,1).NE.0) RETURN
ISN 0193      200 CONTINUE
ISN 0194          DO 201 I=1,NXBUF
ISN 0195          IF(XBUFF(I,1).NE.0) RETURN
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ISN 0197        201 CONTINUE
ISN 0198            DO 206 I=1,NQBUF
ISN 0199            IF(Q(I,1).NE.0) RETURN
ISN 0201        206 CONTINUE
ISN 0202            DO 207 I=1,NBOX
ISN 0203            IF(MEMCNT(I).NE.0) RETURN
ISN 0205            IF(MEMORY(I).NE.0) RETURN
ISN 0207        207 CONTINUE
ISN 0208            DO 208 I=1,NAREGS
ISN 0209            IF(ABUSY(I).NE.0) RETURN
ISN 0211        208 CONTINUE
ISN 0212            DO 209 N=1,NXREGS
ISN 0213            IF(XBUSY(I).NE.0) RETURN
ISN 0215        209 CONTINUE
ISN 0216            DO 202 I=1,NAFAC
ISN 0217            DO 202 J=1,NSLOT
ISN 0218            IF(AFACSC(2,I,J).NE.0) RETURN
ISN 0220        202 CONTINUE
ISN 0221            DO 203 I=1,NXFAC
ISN 0222            DO 203 J=1,NSLOT
ISN 0223            IF(XFACSC(2,I,J).NE.0) RETURN
ISN 0225        203 CONTINUE
ISN 0226            DO 204 I=1,NABUS
ISN 0227            DO 204 J=1,NSLOT
ISN 0228            IF(ABUSSC(2,I,J).NE.0) RETURN
ISN 0230        204 CONTINUE
ISN 0231            DO 205 I=1,NXBUS
ISN 0232            DO 205 J=1,NSLOT
ISN 0233            IF(XBUSSC(2,I,J).NE.0) RETURN
ISN 0235        205 CONTINUE
              C                STOP CONDITION TRUE. TERMINATE RUN.
ISN 0236            SSTOP=1
ISN 0237            GO TO 2500
ISN 0238       1000 FORMAT(6H TIME=,F6.2)
ISN 0239       2610 FORMAT(1H1,17X,16HSIMULATED TIME =,I5,3H TO,I5,10X,
                  A 16HINPUT PROGRAM = ,6A1,10X,
                  B 16HREAL TIME/DATE =,2(1XZ8))
ISN 0240       2611 FORMAT(1H )
ISN 0241       2622 FORMAT(18H                    ,I2,1X,100A1,I2)
ISN 0242       2623 FORMAT(18H A BUFFER           ,I2,1X,100A1,I2)
ISN 0243       2624 FORMAT(18H X BUFFER           ,I2,1X,100A1,I2)
ISN 0244       2625 FORMAT(18H A REGS BUSY        ,I2,1X,100A1,I2)
ISN 0245       2626 FORMAT(18H ABU REGS BUSY      ,I2,1X,100A1,I2)
ISN 0246       2627 FORMAT(18H X REGS BUSY        ,I2,1X,100A1,I2)
ISN 0247       2628 FORMAT(18H C BITS BUSY        ,I2,1X,100A1,I2)
ISN 0248       2629 FORMAT(18H CBU BITS BUSY      ,I2,1X,100A1,I2)
ISN 0249       2630 FORMAT(21X,101H0----+----1----+----2----+----3----+----4----+----5
                  X----+----6----+----7----+----8----+----9----+----0)
ISN 0250       2631 FORMAT(15H A FACILITIES  ,A2,1XI2,1X,100A1,I2)
ISN 0251       2632 FORMAT(15H X FACILITIES  ,A2,1XI2,1X,100A1,I2)
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ISN 0252    2633 FORMAT(18H MEMORY QUEUE (D) ,I2,1X,100A1,I2)
ISN 0253    2634 FORMAT(18H MEMORY           ,I2,1X,100A1,I2)
ISN 0254    2635 FORMAT(15H                ,A2,1XI2,1X,100A1,I2)
ISN 0255    2636 FORMAT(18H MEMORY QUEUE (I) ,I2,1X,100A1,I2)
ISN 0256    2637 FORMAT(16H BRANCH CONTROL-,2A2,1X,100A1,2H +)
ISN 0257    2638 FORMAT(16H                ,2A2,1X,100A1,2H +)
ISN 0258    2640 FORMAT(20H DSPX1            IB,1X,100A1,2H +)
ISN 0259    2641 FORMAT(20H                  DO,1X,100A1,2H +)
ISN 0260    2642 FORMAT(20H                   +,1X,100A1,2H +)
ISN 0261    2643 FORMAT(20H DSPX2            IB,1X,100A1,2H +)
ISN 0262    2644 FORMAT(20H DSPA1            IB,1X,100A1,2H +)
ISN 0263    2645 FORMAT(20H DSPA2            IB,1X,100A1,2H +)
ISN 0264    2646 FORMAT(20H PH1               +,1X,100A1,2H +)
ISN 0265    2647 FORMAT(16H SKIP CONTROL- -,2A2,1X,100A1,2H +)
ISN 0266    2648 FORMAT(16H                ,2A2,1X,100A1,2H +)
ISN 0267         END
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE STOBUF(CYCLE)
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGC(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I ADBUS(12,10),XDBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
ISN 0010          COMMON/OBUF/SPH1(80,100),SABUFF(12,100),SXBUFF(12,100),
                 A SAREG(32,100),SXREG(32,100),SABREG(32,100),SCBIT(24,100),
                 B SCBBIT(24,100),SAFAC(15,100),SXFAC(15,100),SQ(16,100),
                 C SMEM(16,100),SIQ(4,100),SB(34,100),SS(10,100)
ISN 0011          INTEGER*2 CYCLE
            C               FILLS CYCLE POSITION IN OUTPUT BUFFER
ISN 0012          JT=CYCLE
            C
            C               FILL DISP REG,PH1, OUTPUT BUFFER
ISN 0013          DO 5 I=1,80
ISN 0014        5 SPH1(I,JT)=PH1(I)
            C               FILL BRANCH CONTROL OUTPUT BUFFER
ISN 0015          DO 6 I=1,8
ISN 0016          SB(I,JT)=0
ISN 0017          SB(I+8,JT)=0
ISN 0018          SB(I+16,JT)=0
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ISN 0019          IF(ER(I).NE.0) SB(I,JT)=(ER(I)+240)*256
ISN 0021          IF(BE(I).NE.0) SB(I+8,JT)=(BE(I)+240)*256
ISN 0023          IF(ET(I).NE.0) SB(I+16,JT)=(ET(I)+240)*256
ISN 0025        6 CONTINUE
ISN 0026          DO 3 I=25,34
ISN 0027        3 SB(I,JT)=0
ISN 0028          IF(  BRXP.NE.0) SB(25,JT)=(BRXP+240)*256
ISN 0030          IF(  BRAP.NE.0) SB(26,JT)=(BRAP+240)*256
ISN 0032          IF(XHOLDT.NE.0) SB(27,JT)=(XHOLDT+240)*256
ISN 0034          IF(AHOLDT.NE.0) SB(28,JT)=(AHOLDT+240)*256
ISN 0036          IF(XFRCT .NE.0) SB(29,JT)=(XFRCT+240)*256
ISN 0038          IF(AFRCT .NE.0) SB(30,JT)=(AFRCT+240)*256
ISN 0040          IF(  XEP .NE.0) SB(31,JT)=(XEP+240)*256
ISN 0042          IF(  AEP .NE.0) SB(32,JT)=(AEP+240)*256
ISN 0044          IF(  BOSC.NE.0) SB(33,JT)=(BOSC+240)*256
ISN 0046          IF(  BNOP.NE.0) SB(34,JT)=(BNOP+240)*256
            C                 FILL SKIP CONTROL OUTPUT BUFFER
ISN 0048          DO 4 I=1,8
ISN 0049          SS(I,JT)=0
ISN 0050          IF(SR(I).NE.0) SS(I,JT)=(SR(I)+240)*256
ISN 0052        4 CONTINUE
ISN 0053          SS(9,JT)=0
ISN 0054          SS(10,JT)=0
ISN 0055          IF(SKXP.NE.0) SS(9,JT)=(SKXP+240)*256
ISN 0057          IF(SKAP.NE.0) SS(10,JT)=(SKAP+240)*256
            C                 FILL ABUFF OUTPUT BUFFER
ISN 0059          DO 10 I=1,NABUF
ISN 0060       10 SABUFF(I,JT)=ABUFF(I,1)
            C                 FILL XBUFF OUTPUT BUFFER
ISN 0061          DO 11 I=1,NXBUF
ISN 0062       11 SXBUFF(I,JT)=XBUFF(I,1)
            C                 FILL A AND X FACILITY OUTPUT BUFFER
ISN 0063          DO 9 I=1,NXFAC
ISN 0064        9 SXFAC(I,JT)=XFACSC(2,I,1)
ISN 0065          DO 19 I=1,NAFAC
ISN 0066          SAFAC(I,JT)=AFACSC(2,I,1)
ISN 0067       19 CONTINUE
            C                 FILL Q AND MEM OUTPUT BUFFER
ISN 0068          DO 8 I=1,16
ISN 0069          SQ(I,JT)=Q(I,1)
ISN 0070        8 SMEM(I,JT)=MEMORY(I)
            C                 FILL IQ OUTPUT BUFFER
ISN 0071          DO 7 I=1,4
ISN 0072        7 SIQ(I,JT)=IQ(I,1)
            C                 FILL REG BUSY OUTPUT BUFFERS
ISN 0073          DO 12 I=1,32
ISN 0074           SAREG(I,JT)=ABUSY(I)
ISN 0075          SABREG(I,JT)=XBUSY(I)
ISN 0076           SXREG(I,JT)=XBUSY(I+32)
ISN 0077       12 CONTINUE
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                C              FILL COMPARE BIT BUSY OUTPUT BUFFERS
ISN 0078              DO 13 I=1,24
ISN 0079               SCBIT(I,JT)=XBUSY(I+64)
ISN 0080              SCBBIT(I,JT)=ABUSY(I+64)
ISN 0081           13 CONTINUE
ISN 0082              RETURN
ISN 0083              END
```

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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XXCON
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NOBUS,       NADSP,
                 G NXOSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SOBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          DIMENSION SORBSY(200),DESBSY(200)
ISN 0009          REAL MEMDLY,MXTIME
ISN 0010          REAL TIME
ISN 0011          CALL CAUSE(XCON,TIME+1.0,0,0,0)
ISN 0012          CALL CAUSE(XEMP,TIME+0.3,0,0,0)
ISN 0013          CALL CAUSE(XRET,TIME+0.8,0,0,0)
ISN 0014          NGO=0
ISN 0015          QGO=0
ISN 0016          DO 1 I=1,NXBUF
ISN 0017        1 XGO(I)=0
            C - - - - - - -IF BNOP STATE, NOP ALL BDS OPS- - - - - - - - - - - - - -
ISN 0018          IF(BNOP.NE.1) GO TO 5
ISN 0020          DO 4 I=1,NXBUF
ISN 0021          IF(XBUFF(I,12).NE.1) GO TO 4
ISN 0023          DO 2 K=1,NXREGS
ISN 0024          XSOR(I,K)=0
ISN 0025        2 XDEST(I,K)=0
ISN 0026          DO 3 K=1,NXFAC
```

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```
ISN 0027          XFAC(I,K)=0
ISN 0028        3 XOBUS(I,K)=0
ISN 0029          XBUFF(I,2)=0
ISN 0030          XBUFF(I,12)=0
ISN 0031        4 CONTINUE
ISN 0032        5 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C- - - - - - - - IF SKIP TAKEN,NOP ALL STARRED OPS UP TO 1ST EXEC SKIP - -
ISN 0033          DO 80 I=1,NXBUF
ISN 0034          IF(XBUFF(I,13).EQ.0) GO TO 79
ISN 0036          IF(XBUFF(I, 9).EQ.0) GO TO 84
ISN 0038          IF(XBUFF(I,11).EQ.0) GO TO 84
ISN 0040       79 CONTINUE
ISN 0041          IF(XBUFF(I,11).EQ.0) GO TO 80
ISN 0043          IF(XBUFF(I,9).EQ.0) GO TO 80
ISN 0045          DO 81 K=1,NXREGS
ISN 0046          XSOR(I,K)=0
ISN 0047       81 XDEST(I,K)=0
            C                APPROX WAY TO HANDLE SKIPPED BRANCHES
            C                LET GO AS UNSUCC BRANCH - NO S/O INTLKS
ISN 0048          IF(XBUFF(I,12).NE.1) GO TO 1081
ISN 0050          XBUFF(I,10)=0
ISN 0051          GO TO 80
ISN 0052     1081 CONTINUE
ISN 0053          DO 82 K=1,NXFAC
ISN 0054          XFAC(I,K)=0
ISN 0055       82 XOBUS(I,K)=0
ISN 0056          XBUFF(I,2)=0
ISN 0057          DO 83 K=9,15
ISN 0058       83 XBUFF(I,K)=0
ISN 0059       80 CONTINUE
ISN 0060       84 CONTINUE
            C- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C                THIS EVENT SCANS XBUFF FOR INST WHICH CAN GO
            C                SCAN FOR NXGO OUT OF NXTEST
ISN 0061          DO 10 REG=1,NXREGS
ISN 0062          SORBSY(REG)=0
ISN 0063       10 DESBSY(REG)=XBUSY(REG)
ISN 0064          DO 100 INS=1,NXTEST
ISN 0065          IF(XFULL(INS).EQ.0) GO TO 100
ISN 0067          IF(INS.EQ.1) GO TO 21
ISN 0069          DO 11 REG=1,NXREGS
ISN 0070          SORBSY(REG)=SORBSY(REG)+XSOR(INS-1,REG)
ISN 0071       11 DESBSY(REG)=DESBSY(REG)+XDEST(INS-1,REG)
ISN 0072          INSM1=INS-1
ISN 0073          DO 20 I=1,INSM1
            C                PREV EXIT INTLKS ALL CODE BELOW
ISN 0074          IF(XBUFF(I,14).EQ.1) GO TO 100
            C                PREV SKIP INTLKS ALL STARRED CODE BELOW
            C                AND ALL SKIPS BELOW
```

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```
ISN 0076          IF(XBUFF(I,13).EQ.0) GO TO 20
ISN 0078          IF((XBUFF(INS,13).EQ.1).OR.(XBUFF(INS,9).EQ.1)) GO TO 100
ISN 0080       20 CONTINUE
ISN 0081       21 CONTINUE
            C                IF EXIT, INTLK AGAINST PREV BRANCHES AND ER
ISN 0082          IF(XBUFF(INS,14).NE.1) GO TO 28
ISN 0084          IF(ER(BRXP).NE.1) GO TO 100
ISN 0086          IF(INS.EQ.1) GO TO 129
ISN 0088          DO 128 I=1,INSM1
ISN 0089          IF(XBUFF(I,12).EQ.1) GO TO 100
ISN 0091      128 CONTINUE
            C                EXIT PART OF OP GOES, MARK GO EXIT.
ISN 0092      129 CONTINUE
ISN 0093          XBUFF(INS,15)=1
ISN 0094       28 CONTINUE
ISN 0095          DO 22 REG=1,NXREGS
ISN 0096          IF((XSOR(INS,REG).EQ.1).AND.(DESBSY(REG).NE.0)) GO TO 100
ISN 0098          IF((XDEST(INS,REG).EQ.1).AND.(DESBSY(REG).NE.0)) GO TO 100
ISN 0100          IF((XDEST(INS,REG).EQ.1).AND.(SORBSY(REG).NE.0)) GO TO 100
ISN 0102       22 CONTINUE
            C                FIND FAC USED
ISN 0103          DO 25 FAC=1,NXFAC
ISN 0104          IF(XFAC(INS,FAC).NE.0) GO TO 26
ISN 0106       25 CONTINUE
            C                NO FAC USED. ISSUE OP
ISN 0107          FAC=0
ISN 0108       26 CONTINUE
            C - - - - - - - - TEST FOR SPECIAL OPS HERE - - - - - - - - - - - - - - -
ISN 0109          SPEC=0
            C                IF L/S TEST AVAIL OF QUEUE
ISN 0110          IF((XSOR(INS,89).NE.1).AND.(XDEST(INS,89).NE.1)) GO TO 27
ISN 0112          SPEC=1
ISN 0113          QPT=QINPT+QGO
ISN 0114          IF(QPT.GT.NQBUF) GO TO 100
ISN 0116       27 CONTINUE
            C                IF BRANCH,INTLK AGAINST PREV BRANCHES AND EHT AVAIL
ISN 0117          IF(XBUFF(INS,12).NE.1) GO TO 29
ISN 0119          IF(ER(BRXP).EQ.1) GO TO 100
            C                IF SHORT BRANCH,TEST LONGBR INTLK
ISN 0121          IF((XBUFF(INS,5).EQ.0).AND.(LONGBR.NE.0)) GO TO 100
ISN 0123          IF(INS.EQ.1) GO TO 231
ISN 0125          DO 230 I=1,INSM1
ISN 0126          IF(XBUFF(I,12).EQ.1) GO TO 100
ISN 0128      230 CONTINUE
ISN 0129      231 SPEC=1
ISN 0130       29 CONTINUE
            C                IF SKIP,INTLK AGAINST PREV NOGO STARRED OPS,SHT AVAILABLE
ISN 0131          IF(XBUFF(INS,13).NE.1) GO TO 132
ISN 0133          IF(SR(SKXP).EQ.1) GO TO 100
ISN 0135          IF(INS.EQ.1) GO TO 131
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ISN 0137          DO 130 I=1,INSM1
ISN 0138          IF((XBUFF(I,9).EQ.1).AND.(XGO(I).NE.1)) GO TO 100
ISN 0140      130 CONTINUE
ISN 0141      131 SPEC=1
ISN 0142      132 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C               IF NORMAL OR SPEC OP AND NGO =NXGO, DO NOT ISSUE
            C               IF REPLACE OR NOP, CAN ISSUE ANYWAY.
ISN 0143          IF(((FAC.NE.0).OR.(SPEC.NE.0)).AND.(NGO.EQ.NXGO)) GO TO 100
            C               IF NO FACS USED GO DIRECTLY TO 95
ISN 0145          IF(FAC.EQ.0) GO TO 95
            C               IF MULT IDENT FAC, GO TO SPEC HANDLING
ISN 0147          IF(XFAC(INS,FAC).GT.1) GO TO 49
            C               CHECK INBUS,FAC SLOT,OUTBUS INTLKS
            C               NO INBUS CONFLICTS IN X
ISN 0149          BOX=XBOX(FAC)
ISN 0150          IF(XBXBSY(BOX).EQ.1) GO TO 100
ISN 0152          DO 30 T=1,NSLOT
ISN 0153          IF((XFSLOT(FAC,T).EQ.1).AND.(XFACSC(1,FAC,T).EQ.1)) GO TO 100
ISN 0155       30 CONTINUE
ISN 0156          OBUS=XFOBUS(FAC)
ISN 0157          DELAY=XFDLY(FAC)
ISN 0158          IF((XOBUS(INS,OBUS).NE.0).AND.(XBUSSC(1,OBUS,DELAY).NE.0))
                 X GO TO 100
ISN 0160          IF((XOBUS(INS,OBUS+1).NE.0).AND.(XBUSSC(1,OBUS+1,DELAY).NE.0).AND.
                 X ((OBUS+1).LE.NXBUS)) GO TO 100
            C               SUCCESS.  MARK GO AND SET SHIFT CELLS
ISN 0162       31 CONTINUE
ISN 0163          XIBBSY(INBUS)=1
ISN 0164          XBXBSY(BOX)=1
ISN 0165          XBUFF1=XBUFF(INS,1)
ISN 0166          DO 32 T=1,NSLOT
ISN 0167          IF(XFSLOT(FAC,T).EQ.0) GO TO 32
ISN 0169          XFACSC(1,FAC,T)=1
ISN 0170          XFACSC(2,FAC,T)=XBUFF1
ISN 0171       32 CONTINUE
ISN 0172          XBUSSC(1,OBUS,DELAY)=XOBUS(INS,OBUS)
ISN 0173          XBUSSC(2,OBUS,DELAY)=XBUFF(INS,1)
ISN 0174          XBUSSC(3,OBUS,DELAY)=XBUFF(INS,2)
ISN 0175          IF(XOBUS(INS,OBUS+1).EQ.0) GO TO 95
ISN 0177          IF((OBUS+1).GT.NXBUS) GO TO 95
ISN 0179          XBUSSC(1,OBUS+1,DELAY)=XOBUS(INS,OBUS+1)
ISN 0180          XBUSSC(2,OBUS+1,DELAY)=XBUFF(INS,1)
ISN 0181          XBUSSC(3,OBUS+1,DELAY)=XBUFF(INS,2)
ISN 0182          GO TO 95
            C               SPEC ROUTINE TO HANDLE MULT IDENT FAC INTLK
ISN 0183       49 CONTINUE
            C               NO INBUS CONFLICTS IN X
ISN 0184          BOX=XBOX(FAC)
ISN 0185          IF(XBXBSY(BOX).EQ.1) GO TO 60
```

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ISN 0187          DO 50 T=1,NSLOT
ISN 0188          IF((XFSLOT(FAC,T).EQ.1).AND.(XFACSC(1,FAC,T).EQ.1)) GO TO 60
ISN 0190       50 CONTINUE
ISN 0191          OBUS=XFOBUS(FAC)
ISN 0192          DELAY=XFDLY(FAC)
ISN 0193          IF((XOBUS(INS,OBUS).NE.0).AND.(XBUSSC(1,OBUS,DELAY).NE.0))
                 X GO TO 60
            C                SUCCESS
ISN 0195          DO 51 BUS=1,NXBUS
ISN 0196       51 IF(BUS.NE.OBUS) XOBUS(INS,BUS)=0
ISN 0198          GO TO 31
ISN 0199       60 CONTINUE
ISN 0200          FAC=FAC+1
ISN 0201          IF((FAC.GT.NXFAC).OR.(XFAC(INS,FAC).LE.1)) GO TO 100
ISN 0203          GO TO 49
ISN 0204       95 CONTINUE
ISN 0205          XGO(INS)=1
ISN 0206          IF((XSOR(INS,89).EQ.1).OR.(XDEST(INS,89).EQ.1)) QGO=QGO+1
            C                IF OP USES NO FACILITIES, AND IS NOT SPECIAL OP THEN IT
            C                IS A REPLACE OP, AND GOES WITHOUT INCREMENTING NGO.
ISN 0208          IF((FAC.NE.0).OR.(SPEC.NE.0)) NGO=NGO+1
ISN 0210      100 CONTINUE
            C  - - - - - - - - - - -  EXIT EXECUTION - - - - - - - - - - - - - - - - - -
            C                CHECK FOR NOGO EXITS TO SET XHOLDT
ISN 0211          XHOLDT=0
ISN 0212          DO 200 I=1,NXBUF
ISN 0213          IF((XBUFF(I,14).EQ.1).AND.(XBUFF(I,15).NE.1)) XHOLDT=1
ISN 0215      200 CONTINUE
            C                CHECK FOR GO EXIT,ET
ISN 0216          XFRCT=0
ISN 0217          DO 201 I=1,NXBUF
ISN 0218          IF(XBUFF(I,15).NE.1) GO TO 201
ISN 0220          IF(XBUFF(I,14).NE.1) GO TO 201
ISN 0222          XBUFF(I,14)=0
ISN 0223          XBUFF(I,15)=0
ISN 0224          IF(XBUFF(I,10).EQ.1) GO TO 202
ISN 0226      201 CONTINUE
ISN 0227          GO TO 300
            C                FOUND GO EXIT,ET. NOP AND MARK GO ALL CODE BENEATH IT.
            C                ALSO SET XFRCT.
ISN 0228      202 XFRCT=1
ISN 0229          IF(I.EQ.NXBUF) GO TO 300
ISN 0231          I=I+1
ISN 0232          DO 203 J=I,NXBUF
ISN 0233          XGO(I)=1
ISN 0234          DO 204 K=1,NXREGS
ISN 0235          XSOR(J,K)=0
ISN 0236      204 XDEST(J,K)=0
ISN 0237          DO 205 K=1,10
ISN 0238      205 XOBUS(J,K)=0
```

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ISN 0239          XBUFF(I,2)=0
ISN 0240          DO 206 K=9,15
ISN 0241      206 XBUFF(J,K)=0
ISN 0242          DO 207 K=1,NXFAC
ISN 0243          XFAC(J,K)=0
ISN 0244      207 CONTINUE
ISN 0245      203 CONTINUE
ISN 0246      300 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            C              CALL BOSEX TO SAVE .1 BOS CONTROL TRIGGER VALUES.
ISN 0247          CALL BOSEX
            C- - - - - - - - IF SKIP NOT TAKEN,REMOVE FLAGS FROM ALL OPS THRU 1ST SKIP
ISN 0248          DO 85 I=1,NXBUF
ISN 0249          IF(XBUFF(I,11).EQ.0) XBUFF(I,9)=0
ISN 0251          IF(XBUFF(I,13).EQ.1) GO TO 86
ISN 0253       85 CONTINUE
ISN 0254       86 CONTINUE
            C- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
ISN 0255          RETURN
ISN 0256          END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID
ISN 0002          SUBROUTINE XXEMP
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XEP,          AEP,          PH1(100),     PRINT,
                 F FSTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A NXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXO,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),            AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFOLY(15),   XFOLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MFREE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          COMMON/TAGS/D(256,70)
ISN 0009          REAL MEMDLY,MXTIME
ISN 0010          REAL TIME
ISN 0011          DO 100 INS=1,NXBUF
ISN 0012        5 IF(XGO(INS).EQ.0) GO TO 100
ISN 0014          IF(XFULL(INS).EQ.0) GO TO 100
                C              ISSUE INS
                C - - - - - - - TEST FOR SPECIAL OPS HERE - - - - - - - - - - - - - -
                C              IF L/S SHIP TO QUEUE
ISN 0016          IF((XSOR(INS,89).NE.1).AND.(XDEST(INS,89).NE.1)) GO TO 7
ISN 0018          CALL CAUSE(EAV,TIME+1.0,0,0,0)
ISN 0019          IN=QINPT
ISN 0020          QINPT=QINPT+1
                C              SET Q LETTER
ISN 0021          Q(IN,1)=XBUFF(INS,1)
                C              SET Q A
ISN 0022          Q(IN,4)=XBUFF(INS,7)
                C              SET Q X
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ISN 0023          IF(Q(IN,4).NE.1) Q(IN,5)=1
                C           SET Q EFF ADD
ISN 0025          Q(IN,7)=XBUFF(INS,6)
                C           SET Q BOM
ISN 0026          Q(IN,6)=MOD(Q(IN,7),NBOX)+1
                C           SET Q LOAD
ISN 0027          IF(XSOR(INS,89).EQ.1) Q(IN,2)=1
                C           SET Q STORE
ISN 0029          IF(XDEST(INS,89).EQ.1) Q(IN,3)=1
                C           SET Q DATA VALID FOR X STORE
ISN 0031          IF((Q(IN,5).EQ.1).AND.(Q(IN,3).EQ.1)) Q(IN,9)=1
ISN 0033          IF(Q(IN,2).NE.1) GO TO 88
                C           SET Q DEST FOR LOADS
ISN 0035          DO 8 REG=1,NXREGS
ISN 0036          IF(XDEST(INS,REG).NE.0) Q(IN,15)=REG
ISN 0038        8 CONTINUE
ISN 0039       88 CONTINUE
                C           IF STORE A, GET DATA OR SET WAIT
ISN 0040          IF((Q(IN,3).NE.1).OR.(Q(IN,4).NE.1)) GO TO 7
ISN 0042          IF(SDBA(1,1).NE.1) GO TO 6
                C           DATA AVAIL
ISN 0044          Q(IN,9)=1
ISN 0045          DO 50 I=1,31
ISN 0046          SDBA(I,1)=SDBA(I+1,1)
ISN 0047       50 SDBA(I,2)=SDBA(I+1,2)
ISN 0048          SDBA(32,1)=0
ISN 0049          SDBA(32,2)=0
ISN 0050          GO TO 7
ISN 0051        6 CONTINUE
                C           DATA NOT AVAIL. SET FIRST FREE WAIT BIT
ISN 0052          DO 4 I=1,31
ISN 0053          IF(SDBA(I,2).EQ.1) GO TO 4
ISN 0055          SDBA(I,2)=1
ISN 0056          GO TO 7
ISN 0057        4 CONTINUE
ISN 0058          A=1
ISN 0059          B=20000
ISN 0060          C=102
ISN 0061          CALL TROUBL(A,B,C)
ISN 0062        7 CONTINUE
                C           ISSUE BRANCH OP
ISN 0063          IF(XBUFF(INS,12).NE.1) GO TO 200
                C           IF LONG BRANCH, SET LONGBR=1 TO INTLK SHORT BRANCH NXTCYC
ISN 0065          LONGBR=0
ISN 0066          IF((XBUFF(INS,5).NE.0).AND.(XBUFF(INS,2).NE.138)) LONGBR=1
                C           IF SUCC LONG BRANCH, SET LONGBR=2
ISN 0068          IF((LONGBR.EQ.1).AND.(XBUFF(INS,10).EQ.1))LONGBR=2
ISN 0070      200 CONTINUE
                C           ISSUE SKIP-INCR SKIP POINTER, SET SR
ISN 0071          IF(XBUFF(INS,13).NE.1) GO TO 60
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ISN 0073          SR(SKXP)=1
ISN 0074          SKXP=SKXP+1
ISN 0075          IF(SKXP.GT.NSBUF) SKXP=1
ISN 0077       60 CONTINUE
            C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
ISN 0078          OP = XBUFF(INS,2)
ISN 0079          REPL=D(OP,32)
            C               FIRST SET BUSY VECTOR
ISN 0080          DO 10 REG=1,NXREGS
            C               IS REG A DEST
ISN 0081          IF(XDEST(INS,REG).NE.1) GO TO 10
            C               IGNORE STORAGE AS DEST
ISN 0083          IF(REG.EQ.89) GO TO 10
            C               DOES XREG HAVE AN XBUREG
ISN 0085          IF(XBUPS(REG).NE.1) GO TO 9
            C               CAN THIS OP DO BACK-UP TO FRONT MOVE.
            C               I.E.,IS THIS A TO X MOVE OR A COMPARE OP.
ISN 0087          IF(REPL.EQ.0) GO TO 9
            C               IS XBUREG FULL
ISN 0089          IF(XBUFUL(REG).NE.1) GO TO 99
ISN 0091          XBUFUL(REG)=0
ISN 0092          ABUSY(REG)=0
ISN 0093          GO TO 10
ISN 0094       99 XPASS(REG)=XBUFF(INS,1)
ISN 0095        9 XBUSY(REG)=XBUFF(INS,1)
ISN 0096       10 CONTINUE
            C               REMOVE INS FROM BUFF
ISN 0097          XINPT=XINPT-1
ISN 0098          M=NXBUF-1
ISN 0099          IF(INS.EQ.NXBUF) GO TO 31
ISN 0101          DO 30 I=INS,M
ISN 0102          XGO(I)=XGO(I+1)
ISN 0103          XFULL(I)=XFULL(I+1)
ISN 0104          DO 25 J=1,25
ISN 0105       25 XBUFF(I,J)=XBUFF(I+1,J)
ISN 0106          DO 26 J=1,NXREGS
ISN 0107          XSOR(I,J)=XSOR(I+1,J)
ISN 0108       26 XDEST(I,J)=XDEST(I+1,J)
ISN 0109          DO 27 FAC=1,NXFAC
ISN 0110       27 XFAC(I,FAC)=XFAC(I+1,FAC)
ISN 0111          DO 28 BUS=1,NXBUS
ISN 0112       28 XOBUS(I,BUS)=XOBUS(I+1,BUS)
ISN 0113       30 CONTINUE
ISN 0114       31 CONTINUE
ISN 0115          XGO(NXBUF)=0
ISN 0116          XFULL(NXBUF)=0
ISN 0117          DO 125 J=1,25
ISN 0118      125 XBUFF(NXBUF,J)=0
ISN 0119          DO 126 J=1,NXREGS
ISN 0120          XSOR(NXBUF,J)=0
```

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```
ISN 0121      126 XDEST(NXBUF,J)=0
ISN 0122          DO 127 FAC=1,NXFAC
ISN 0123      127 XFAC(NXBUF,FAC)=0
ISN 0124          DO 128 BUS=1,NXBUS
ISN 0125      128 XOBUS(NXBUF,BUS)=0
ISN 0126          GO TO 5
ISN 0127      100 CONTINUE
ISN 0128          RETURN
ISN 0129          END
```


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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE XXRET
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,         IPAR1,        IPAR2,        IPAR3,
                 A AINPT,       NABUF,        ABUS(50),     XINPT,        NXBUF,
                 B XBUS(50),    IFADD,        IFDST,        IFRTN,        BRXP,
                 C BRAP,        ER(8),        BE(8),        ET(8),        NBBUF,
                 D AHOLDT,      XHOLDT,       AFRCT,        XFRCT,        BOSC,
                 E BNOP,        XEP,          AEP,          PH1(100),     PRINT,
                 F FSTADD,      NODOT,        NOPSC,        NDBUS,        NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,        NAREGS,       NXREGS,       NABUS,
                 A NXBUS,       STATS,        ACON,         XCON,         AEMP,
                 B XEMP,        MXO,          AFULL(12),    XFULL(12),    AGO(12),
                 C XGO(12),     NAGO,         NXGO,         NATEST,       NXTEST,
                 D NAFAC,       NXFAC,        ABUSYZ,       ABUSY(200),   XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),            AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,       XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AESLOT(15,20),XESLOT(15,20),AEIBUS(15),
                 J AFDLY(15),   XFDLY(15),    AFOBUS(15),   XFOBUS(15),   NSLOT,
                 K ABUPSZ,      ABUPS(200),   XBUPS(200),   ABUFUL(200),  XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),   NQBUF,        NQTEST,       NQGO,
                 M QINPT,       QCON,         QEMP,         MBUSY,        MERFE,
                 N LOAD,        MEMDLY,       MEMORY(16),   NBOX,         EAV,
                 O MXTIME,      OUTLVL,       IQ(4,16),     RTN,          LONGBR,
                 P SR(8),       ST(8),        SKXP,         SKAP,         NSBUF,
                 Q APASS(200),  XPASS(200),   OUT(2),       JOB(6),       SSTOP,
                 R MEMCNT(16),  ABOX(15),     ABXBSY(10),   XBOX(15),     XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
C                       USES OBUS SHIFT CELLS TO BUS TO DESTINATIONS
C                       PERFORMS ANY EXEC ACTIVITY ASSOC WITH RETURN
C                       FIRST RESET THE WAITING VECTOR
ISN 0010          DO 10 BUS=1,NXBUS
C                       IGNORE L/S BUSES
ISN 0011          IF((BUS.EQ.5).OR.(BUS.EQ.6)) GO TO 10
ISN 0013          DEST=XBUSSC(1,BUS,1)
C                       IF DEST NOT ABU GO HANDLE NORMALLY
ISN 0014          IF(ABUPS(DEST).NE.1) GO TO 9
C                       DEST IS ABU. SEE IF CORRESP AREG IS BUSY
C                       IF SO, RETURN DEST TO IT. ELSE SET ABU BUSY.
ISN 0015          IF(APASS(DEST).NE.0) GO TO 8
ISN 0018          ABUFUL(DEST)=1
ISN 0019          GO TO 10
ISN 0020        8 ABUSY(DEST)=0
ISN 0021          APASS(DEST)=0
```


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```
ISN 0022          9 XBUSY(DEST)=0
ISN 0023         10 CONTINUE
                C              PLACE ANY EXEC ACTIVITY HERE - - - - -
                C - - - - - - - - BRANCH EXECUTION - - - - - - - - - - - - - - - - - - - - -
                C
                C              CHECK FOR MOVE OF EHT POSITION
ISN 0024              IF((OERX.NE.1).OR.(OXEP.NE.1)) GO TO 200
                C              MOVE BRXP
ISN 0026              BRXP=BRXP+1
ISN 0027              IF(BRXP.GT.NBBUF) BRXP=1
ISN 0029        200 CONTINUE
ISN 0030              IF((OERA.NE.1).OR.(OAEP.NE.1)) GO TO 201
                C              MOVE BRAP
ISN 0032              BE(BRAP)=0
ISN 0033              ER(BRAP)=0
ISN 0034              ET(BRAP)=0
ISN 0035              BRAP=BRAP+1
ISN 0036              IF(BRAP.GT.NBBUF) BRAP=1
ISN 0038        201 CONTINUE
                C
                C              CHECK FOR RESETTING OF BNOP
ISN 0039              IF((OBNOP.EQ.1).AND.(OXEP.EQ.1)) BNOP=0
                C
                C              MAIN BRANCH EXECUTION ROUTINE
ISN 0041              IF(EXBOS.NE.1) GO TO 250
ISN 0043              IF(BOSSUC.EQ.1) GO TO 240
ISN 0045              IF(OXEP.NE.1) GO TO 230
ISN 0047              IF(OBOSC.EQ.1) GO TO 290
ISN 0049              ER(OBRXP)=1
ISN 0050              ET(OBRXP)=0
ISN 0051              GO TO 290
ISN 0052        230 CONTINUE
ISN 0053              BE(OBRXP)=1
ISN 0054              ET(OBRXP)=0
ISN 0055              GO TO 290
ISN 0056        240 CONTINUE
ISN 0057              ER(OBRXP)=1
ISN 0058              ET(OBRXP)=1
ISN 0059              BNOP=1
ISN 0060              GO TO 290
ISN 0061        250 CONTINUE
ISN 0062              IF(OBEX .NE.1)GO TO 290
ISN 0064              IF(OXEP .NE.1)GO TO 290
ISN 0066              IF(OBOSC.EQ.1)GO TO 290
ISN 0068              ER(OBRXP)=1
ISN 0069              BE(OBRXP)=0
ISN 0070        290 CONTINUE
                C - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                C              SHIFTS THE SHIFT CELLS
ISN 0071              DO 99 I=1,10
```

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```
ISN 0072          XBXBSY(I)=0
ISN 0073       99 XIBBSY(I)=0
ISN 0074          SLOTM1=NSLOT-1
ISN 0075          DO 101 J=1,10
ISN 0076          DO 100 SLOT=1,SLOTM1
ISN 0077          XBUSSC(1,J,SLOT)=XBUSSC(1,J,SLOT+1)
ISN 0078          XBUSSC(2,J,SLOT)=XBUSSC(2,J,SLOT+1)
ISN 0079          XBUSSC(3,J,SLOT)=XBUSSC(3,J,SLOT+1)
ISN 0080      100 CONTINUE
ISN 0081          XBUSSC(1,J,NSLOT)=0
ISN 0082          XBUSSC(2,J,NSLOT)=0
ISN 0083          XBUSSC(3,J,NSLOT)=0
ISN 0084      101 CONTINUE
ISN 0085          DO 103 J=1,NXFAC
ISN 0086          DO 102 SLOT=1,SLOTM1
ISN 0087          XFACSC(1,J,SLOT)=XFACSC(1,J,SLOT+1)
ISN 0088          XFACSC(2,J,SLOT)=XFACSC(2,J,SLOT+1)
ISN 0089      102 CONTINUE
ISN 0090          XFACSC(1,J,NSLOT)=0
ISN 0091          XFACSC(2,J,NSLOT)=0
ISN 0092      103 CONTINUE
ISN 0093          RETURN
            C - - - - - - - - - .1 ENTRY TO SET TRIGGERS USED IN BRANCH EXECUTION.- - - -
ISN 0094          ENTRY BOSEX
            C                 PRESERVES .1 VALUES OF VARIOUS BOS CONTROL TRIGGERS
ISN 0095          OERX=ER(BRXP)
ISN 0096          OERA=ER(BRAP)
ISN 0097          OBEX=BE(BRXP)
ISN 0098          OBEA=BE(BRAP)
ISN 0099          OETX=ET(BRXP)
ISN 0100          OETA=ET(BRAP)
ISN 0101          OBRXP=BRXP
ISN 0102          OBRAP=BRAP
ISN 0103          OXEP=XEP
ISN 0104          OAEP=AEP
ISN 0105          OBNOP=BNOP
            C                 ESTABLISH AND SAVE TRUE BOSC CONDITION
ISN 0106          CBOS=0
ISN 0107          CEXIT=0
ISN 0108          CBOSC=0
ISN 0109          DO 300 I=1,NXBUF
ISN 0110          IF((XBUFF(I,12).EQ.1).AND.(XGO(I).EQ.0)) CBOS=1
ISN 0112          IF(XBUFF(I,14).NE.1) GO TO 300
ISN 0114          IF(CBOS.EQ.1) CBOSC=1
ISN 0116          CEXIT=1
ISN 0117          GO TO 301
ISN 0118      300 CONTINUE
ISN 0119      301 CONTINUE
ISN 0120          OBOSC=0
ISN 0121          IF((CEXIT.EQ.0).AND.((BOSC.EQ.1).OR.(CBOS.EQ.1))) OBOSC=1
```

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```
ISN 0002          SUBROUTINE TSTEP(IEVENT)
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          [illegible] IPAR1,  IPAR2,  IPAR3,
ISN 0005          REAL [illegible]
ISN 0006          [illegible] ISL,  [illegible]  LINK(200),
                 A CTIME(200),  NEVENT(200), KOL1(200),   KOL2(200),   KOL3(200)
ISN 0007          REAL CTIME
ISN 0008          INTEGER*2 IEVENT
C                 SUBROUTINE TO STEP EVENTS IN CALENDAR
C                 ITL IS LOCATION OF FIRST EVENT IN CALENDAR
C                 ISL IS LOCATION OF FIRST AVAIL ROW IN CALENDAR
ISN 0009          ID=ITL
ISN 0010          ITL=LINK(ID)
ISN 0011          LINK(ID)=ISL
ISN 0012          ISL=ID
ISN 0013          TIME=CTIME(ID)
ISN 0014          IPAR1=KOL1(ID)
ISN 0015          IPAR2=KOL2(ID)
ISN 0016          IPAR3=KOL3(ID)
ISN 0017          IEVENT=NEVENT(ID)
ISN 0018          RETURN
ISN 0019          END
```

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```
COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=50,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,NOID

ISN 0002          SUBROUTINE TROUBL(START,LSTOP,CODE)
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0005          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),           AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0006          COMMON/RLS/   LAST
ISN 0007          INTEGER OUT
ISN 0008          REAL MEMDLY,MXTIME
ISN 0009          REAL TIME
ISN 0010          INTEGER*2 START,LSTOP,CODE
ISN 0011          INTEGER L
ISN 0012          DIMENSION SAV(2)
ISN 0013          EQUIVALENCE(SAV(1),FIRST)
ISN 0014          LCODE=CODE
ISN 0015          END=LSTOP
ISN 0016          WRITE(6,100)TIME
ISN 0017          WRITE(6,101) LCODE
ISN 0018          CALL TMTU(OUT(1))
ISN 0019          WRITE(6,3333) OUT(1),OUT(2)
ISN 0020          IF(END.EQ.1) RETURN
ISN 0022          END=END-7
ISN 0023          DO 529 K=START,END,8
ISN 0024          K9=K+7
ISN 0025          DO 528 M=K,K9
ISN 0026          IF(SAV(M).NE.0) GO TO 527
```

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```
ISN 0028        528 CONTINUE
ISN 0029            GO TO 529
ISN 0030        527 CONTINUE
ISN 0031            L=K
ISN 0032            WRITE(6,550)L,(SAV(J),J=K,K9)
ISN 0033        529 CONTINUE
ISN 0034            RETURN
ISN 0035        100 FORMAT(7H TIME =,F8.2)
ISN 0036        101 FORMAT(7H CODE =,I8)
ISN 0037        550 FORMAT(1X I6, 8(2X I8, 4X ))
ISN 0038       3333 FORMAT(19H TIME/DATE OF RUN =,2(1XZ8))
ISN 0039            END
```


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```
ISN 0002          SUBROUTINE CAUSE(IEV,T,IP1,IP2,IP3)
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          COMMON/CALNDR/ISL,ITL,LINK(200),
                 A CTIME(200), NEVENT(200), KOL1(200), KOL2(200), KOL3(200)
ISN 0005          REAL CTIME
ISN 0006          INTEGER*2 IEV,IP1,IP2,IP3
            C             CAUSE ENTERS EVENTS ONTO CALENDAR
            C             ITL IS LOCATION OF FIRST EVENT IN CALENDAR
            C             ISL IS LOCATION OF FIRST AVAIL ROW IN CALENDAR
ISN 0007          NEXT=ITL
ISN 0008          GO TO 20
            C             LOOP UNTIL GIVEN TIME IS LESS THAN NEXT ENTRY IN CALENDAR
ISN 0009       10 LAST=NEXT
ISN 0010          NEXT=LINK(NEXT)
ISN 0011       20 IF(T.GT.CTIME(NEXT))GO TO 10
ISN 0013          ID=ISL
ISN 0014          ISL=LINK(ISL)
ISN 0015          LINK(ID)=NEXT
            C             SEE IF THIS EVENT WILL BE THE FIRST IN THE LIST
ISN 0016          IF(NEXT.EQ.ITL) GO TO 40
ISN 0018          LINK(LAST)=ID
ISN 0019       30 CTIME(ID)=T
ISN 0020          NEVENT(ID)=IEV
ISN 0021          KOL1(ID)=IP1
ISN 0022          KOL2(ID)=IP2
ISN 0023          KOL3(ID)=IP3
ISN 0024          RETURN
ISN 0025       40 ITL=ID
ISN 0026          GO TO 30
ISN 0027          END
```

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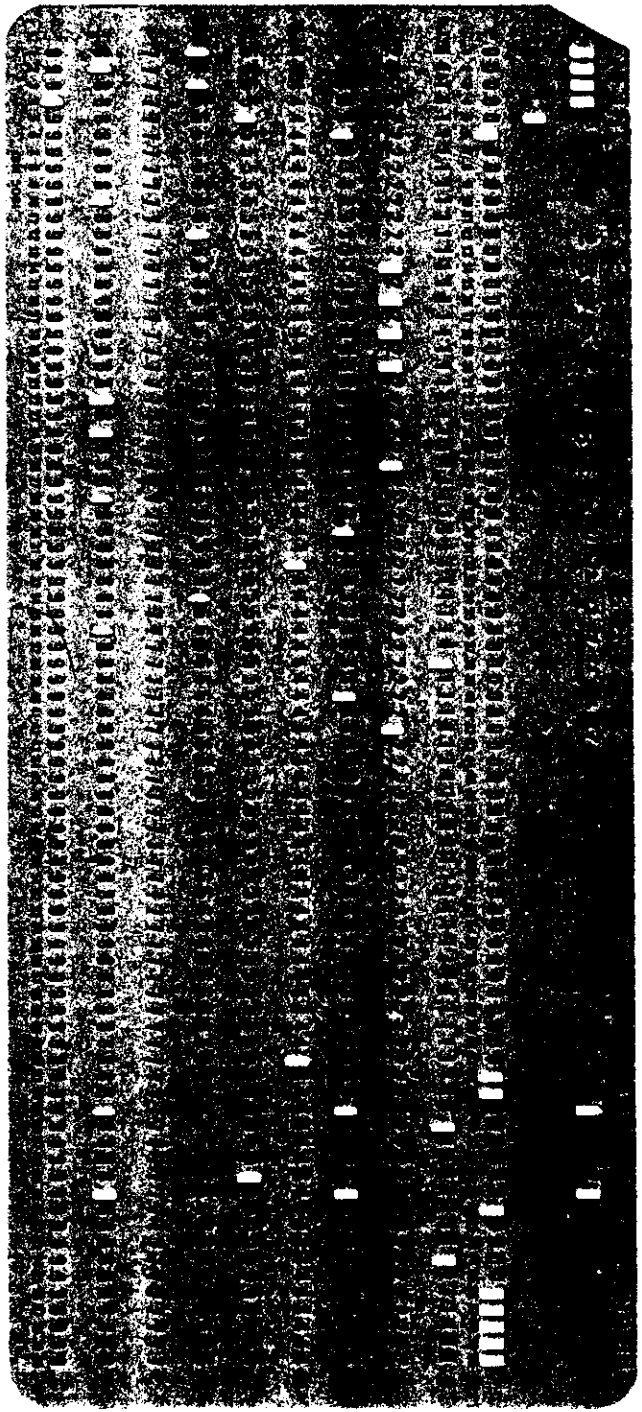

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MM-MS 3/8 F

Correct
DTF FHF (best)
exp Mtx Mpy

- ACS-1 MPM SIMULATION PROGRAM - - -

INPUT PROGRAM FOR THIS RUN = MM-MS

TIME/DATE OF RUN = 5A63CE76 0067271F

MACHINE PARAMETERS FOR THIS RUN - - -

1) NUMBER OF A BUFFERS = 8 4) NUMBER OF X BUFFERS = ~~3~~ 2 7) NUMBER OF Q BUFFERS = 8

2) NUMBER A OPS TESTED = ~~8~~ 6 5) NUMBER X OPS TESTED = ~~3~~ 2 8) NUMBER Q OPS TESTED = 8

3) MAX A OPS ISS/CYCLE = ~~32~~ 6) MAX X OPS ISS/CYCLE = ~~3~~ 2 9) MAX Q OPS ISS/CYCLE = 2

9) MINIMUM Q-MEM DELAY = 5.0

0) NUMBER OF BOMS = 8

1) NUMBER BRANCH REGS = 3 12) NUMBER OF SKIP REGS = 4 13) SIZE OF DO TABLE = 6

4) NUMBER OF PSC REGS = ~~8~~

5) NUMBER DISP BUSES = ~~4~~ 1

6) MAX A OPS DSP/CYCLE = ~~4~~ 3 17) MAX X OPS DSP/CYCLE = ~~4~~ 2

A FACILITIES - -	FA1	FA2	FM	FD	IA	IM	ID	C	L	S	?
REP TIME =	1	1	~~12~~	~~18~~	1	2	10	1	1	1	1
DELAY TIME =	3	4	~~34~~	~~210~~	2	5	15	1	~~1~~ 2	~~1~~ 2	~~1~~ 2
INBUS =	2	1	3	1	1	2	2	1	2	3	1
BOX =	1	1	3	~~1~~ 3	2	~~1~~ 3	~~1~~ 3	~~1~~ 1	~~1~~ 2	~~1~~ 2	~~1~~ 2
OUTBUS =	2	1	4	3	2	4	4	6	1	3	7

X FACILITIES - -	EA1	EA2	L	S	M	D	XA	C	SP
REP TIME =	1	1	1	1	2	8	1	1	1
DELAY TIME =	1	1	1	1	4	8	1	1	1
BOX =	1	2	3	~~1~~ 5	~~1~~ 5	~~1~~ 3	~~1~~ 3	~~1~~ 3	~~1~~ 3
OUTBUS =	5	6	1	3	2	2	7	10	8

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Figure 2-3. The Parameter Card Format

PARAMETER	MIN	TYP	MAX	COLS
0 JØBNAME				1-6
1 NABUF	1	8	12	9-10
2 NATEST	1	8	NABUF	11-12
3 NAGØ	1	3	3	13-14
4 NXBUF	1	3	12	15-16
5 NXTEST	1	3	NXBUF	17-18
6 NXGØ	1	3	3	19-20
7 NQBUF	1	8	16	21-22
8 NQTEST	1	8	16	23-24
9 NQGØ	1	2	NBØX	25-26
10 NBØX	1	8	16	27-28
11 NBBUF	1	3	8	29-30
12 NSBUF	1	4	8	31-32
13 NØDØT	1	6	16	33-34
14 NØPSC	0	8	8	35-36
15 NDBUS	1	2	2	37-38
16 NADSP	1	4	NABUF	39-40
17 NXDSP	1	3	NXBUF	41-42
19 MXTIME		300.0		60-66 (F7.1)
18 MEMDLY	2.0	5.0		68-71 (F4.1)
ØUTLVL	0	1	3	73-74
FSTADD	0	0		76-80

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MM-MS 3/8 F

Correct
DTF FHF (bad)
exp Mtx Mpy

- ACS-1 MPM SIMULATION PROGRAM - - -

INPUT PROGRAM FOR THIS RUN = MM-MS

TIME/DATE OF RUN = 5A6BCE76 0067271F

MACHINE PARAMETERS FOR THIS RUN - - -

NUMBER OF A BUFFERS = ~~8~~ 6 NUMBER OF X BUFFERS = ~~3~~ 2 NUMBER OF Q BUFFERS = 8

NUMBER A OPS TESTED = ~~8~~ 6 NUMBER X OPS TESTED = ~~3~~ 2 NUMBER Q OPS TESTED = 8

MAX A OPS ISS/CYCLE = ~~3~~ 2 MAX X OPS ISS/CYCLE = ~~3~~ 2 MAX Q OPS ISS/CYCLE = 2

MINIMUM Q-MEM DELAY = 5.0

NUMBER OF BOMS = 8

NUMBER BRANCH REGS = 3 NUMBER OF SKIP REGS = 4 SIZE OF DO TABLE = 6

NUMBER OF PSC REGS = 8

NUMBER DISP BUSES = ~~4~~ 1

MAX A OPS DSP/CYCLE = ~~4~~ 3 MAX X OPS DSP/CYCLE = ~~4~~ 2

A FACILITIES - -	FA1	~~FA2~~	FM	FD	IA	IM	ID	C	L	S	?
REP TIME =	1	~~1~~	~~12~~	~~8~~ 6	1	2	10	1	1	1	1
DELAY TIME =	3	~~4~~	~~14~~	~~10~~	2	5	15	1	~~2~~	~~2~~	~~2~~
INBUS =	2	~~1~~	3	1	1	2	2	1	2	3	1
BOX =	1	~~1~~	3	~~3~~	2	~~3~~	~~3~~	~~1~~	~~2~~	~~2~~	~~2~~
OUTBUS =	2	~~1~~	4	3	2	4	4	6	1	3	7

X FACILITIES - -	EA1	EA2	L	S	M	D	XA	C	SP
REP TIME =	1	1	1	1	2	8	1	1	1
DELAY TIME =	1	1	1	1	4	8	1	1	1
BOX =	1	2	3	~~3~~	~~3~~	~~3~~	~~3~~	~~3~~	~~3~~
OUTBUS =	5	6	1	3	2	2	7	10	8

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```
COMPILER OPTIONS - NAME=  MAIN,OPT=00,LINECNT=56,SOURCE,EBCDIC,NOLIST,DECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002          SUBROUTINE INIT
ISN 0003          IMPLICIT INTEGER*2(A-Z)
ISN 0004          DIMENSION COM(300)
ISN 0005          DIMENSION SAV(20000)
ISN 0006          COMMON        TIME,        IPAR1,       IPAR2,       IPAR3,
                 A AINPT,       NABUF,       ABUS(50),    XINPT,       NXBUF,
                 B XBUS(50),    IFADD,       IFDST,       IFRTN,       BRXP,
                 C BRAP,        ER(8),       BE(8),       ET(8),       NBBUF,
                 D AHOLDT,      XHOLDT,      AFRCT,       XFRCT,       BOSC,
                 E BNOP,        XEP,         AEP,         PH1(100),    PRINT,
                 F FSTADD,      NODOT,       NOPSC,       NDBUS,       NADSP,
                 G NXDSP
ISN 0007          COMMON/RLS/   FIRST,       NAREGS,      NXREGS,      NABUS,
                 A NXBUS,       STATS,       ACON,        XCON,        AEMP,
                 B XEMP,        MXO,         AFULL(12),   XFULL(12),   AGO(12),
                 C XGO(12),     NAGO,        NXGO,        NATEST,      NXTEST,
                 D NAFAC,       NXFAC,       ABUSYZ,      ABUSY(200),  XBUSYZ,
                 E XBUSY(200),  ABUFF(12,100),XBUFF(12,100),ASOR(12,200),
                 F XSOR(12,200),ADEST(12,200),XDEST(12,200),          AFAC(12,15),
                 G XFAC(12,15), AFACSC(4,15,20),ARET,      XFACSC(4,15,20),XRET,
                 H ABUSSC(4,10,20),AIBBSY(10),XBUSSC(4,10,20),XIBBSY(10),XFIBUS(15),
                 I AOBUS(12,10),XOBUS(12,10),AFSLOT(15,20),XFSLOT(15,20),AFIBUS(15),
                 J AFDLY(15),   XFDLY(15),   AFOBUS(15),  XFOBUS(15),  NSLOT,
                 K ABUPSZ,      ABUPS(200),  XBUPS(200),  ABUFUL(200), XBUFUL(200),
                 L Q(16,16),    SDBA(32,2),  NQBUF,       NQTEST,      NQGO,
                 M QINPT,       QCON,        QEMP,        MBUSY,       MFREE,
                 N LOAD,        MEMDLY,      MEMORY(16),  NBOX,        EAV,
                 O MXTIME,      OUTLVL,      IQ(4,16),    RTN,         LONGBR,
                 P SR(8),       ST(8),       SKXP,        SKAP,        NSBUF,
                 Q APASS(200),  XPASS(200),  OUT(2),      JOB(6),      SSTOP,
                 R MEMCNT(16),  ABOX(15),    ABXBSY(10),  XBOX(15),    XBXBSY(10)
ISN 0008          COMMON/RLS/   LAST
ISN 0009          INTEGER OUT
ISN 0010          REAL MEMDLY,MXTIME
ISN 0011          REAL TIME
ISN 0012          COMMON /CALNDR/              ISL,         ITL,         LINK(200),
                 A CTIME(200),  NEVENT(200), KOL1(200),   KOL2(200),   KOL3(200)
ISN 0013          REAL CTIME
ISN 0014          REAL X
ISN 0015          INTEGER I
ISN 0016          COMMON/TAGS/D(256,70)
ISN 0017          EQUIVALENCE(COM(1),TIME),(X,CTIME(1))
ISN 0018          EQUIVALENCE(SAV(1),FIRST)
            C
            C
            C                ZERO ALL COMMON
ISN 0019          DO 520 I=1,300
ISN 0020      520 COM(I)=0
ISN 0021          DO 525 I=1,20000
ISN 0022      525 SAV(I)=0
ISN 0023      526 CONTINUE
            C
            C
            C                INITIALIZE THE CALENDAR
```

EXAMPLE OF INIT MODIFICATIONS TO CHANGE FACILITY STRUCTURE:

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```
ISN 0024          DO 92 ITL=2,199
ISN 0025       92 LINK(ITL)=ITL+1
ISN 0026          ISL=2
ISN 0027          ITL=1
ISN 0028          X=1.0E30
ISN 0029          TIME=0.0
            C
            C
            C              INITIALIZE THE EVENT NUMBERS
ISN 0030          STATS=1
ISN 0031          MXO=2
ISN 0032          ACON=3
ISN 0033          XCON=4
ISN 0034          AEMP=5
ISN 0035          XEMP=6
ISN 0036          ARET=7
ISN 0037          XRET=8
ISN 0038          EAV=9
ISN 0039          QCON=10
ISN 0040          QEMP=11
ISN 0041          MBUSY=12
ISN 0042          MFREE=13
ISN 0043          LOAD=14
ISN 0044          RTN=15
            C
            C
            C              SET UP STARTING EVENTS
ISN 0045          CALL CAUSE(STATS,TIME+0.0,0,0,0)
ISN 0046          CALL CAUSE( ACON,TIME+0.1,0,0,0)
ISN 0047          CALL CAUSE( XCON,TIME+0.1,0,0,0)
ISN 0048          CALL CAUSE( QCON,TIME+0.1,0,0,0)
ISN 0049          CALL CAUSE( MXO ,TIME+0.6,0,0,0)
            C
            C
            C              INITIALIZE THE MACHINE PARAMETERS
ISN 0050          BRXP=1
ISN 0051          BRAP=1
ISN 0052          SKXP=1
ISN 0053          SKAP=1
ISN 0054          NAREGS=90
ISN 0055          NXREGS=90
ISN 0056          AINPT=1
ISN 0057          QINPT=1
ISN 0058          XINPT=1
ISN 0059          DO 50 I=1,32
ISN 0060          ABUPS(I)=1
ISN 0061       50 XBUPS(I)=0
ISN 0062          DO 51 I=33,89
ISN 0063          ABUPS(I)=0
ISN 0064       51 XBUPS(I)=1
ISN 0065          NSLOT=15
            C              INITIALIZE AFAC TABLES
ISN 0066          NABUS=6
ISN 0067          NAFAC=10
```


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```
ISN 0068          DO 10 I=1,10
ISN 0069       10 AFSLOT(I,3)=1
ISN 0070          DO 9 J=4,9
ISN 0071        9 AFSLOT(4,J)=1
ISN 0072          AFSLOT(6,4)=1
ISN 0073          DO 8 J=4,12
ISN 0074        8 AFSLOT(7,J)=1
ISN 0075          AFDLY(1)=3
ISN 0076          AFDLY(2)=4
ISN 0077          AFDLY(3)=3
ISN 0078          AFDLY(4)=9
ISN 0079          AFDLY(5)=2
ISN 0080          AFDLY(6)=5
ISN 0081          AFDLY(7)=15
ISN 0082          AFDLY(8)=1
ISN 0083          AFDLY(9)=1
ISN 0084           AFDLY(10)=1
ISN 0085          AFIBUS(1)=2
ISN 0086          AFIBUS(2)=1
ISN 0087          AFIBUS(3)=3
ISN 0088          AFIBUS(4)=1
ISN 0089          AFIBUS(5)=1
ISN 0090          AFIBUS(6)=2
ISN 0091          AFIBUS(7)=2
ISN 0092          AFIBUS(8)=1
ISN 0093          AFIBUS(9)=2
ISN 0094          AFIBUS(10)=3
ISN 0095          AFOBUS(1)=2
ISN 0096          AFOBUS(2)=1
ISN 0097          AFOBUS(3)=4
ISN 0098          AFOBUS(4)=3
ISN 0099          AFOBUS(5)=2
ISN 0100          AFOBUS(6)=4
ISN 0101          AFOBUS(7)=4
ISN 0102          AFOBUS(8)=6
ISN 0103          AFOBUS(9)=1
ISN 0104          AFOBUS(10)=3
ISN 0105          ABOX(1)=1
ISN 0106          ABOX(2)=2
ISN 0107          ABOX(3)=3
ISN 0108          ABOX(4)=4
ISN 0109          ABOX(5)=2
ISN 0110          ABOX(6)=4
ISN 0111          ABOX(7)=4
ISN 0112          ABOX(8)=5
ISN 0113          ABOX(9)=6
ISN 0114          ABOX(10)=7
            C              INITIALIZE XFAC TABLES
ISN 0115          NXBUS=10
ISN 0116          NXFAC=9
ISN 0117          DO 11 I=1,9
ISN 0118       11 XFSLOT(I,2)=1
ISN 0119          XFSLOT(5,3)=1
ISN 0120          DO 12 I=3,9
```


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```
ISN 0121        12 XFSLOT(6,I)=1
ISN 0122           XFDLY(1)=1
ISN 0123           XFDLY(2)=1
ISN 0124           XFDLY(3)=1
ISN 0125           XFDLY(4)=1
ISN 0126           XFDLY(5)=4
ISN 0127           XFDLY(6)=8
ISN 0128           XFDLY(7)=1
ISN 0129           XFDLY(8)=1
ISN 0130           XFDLY(9)=1
ISN 0131           XFOBUS(1)=5
ISN 0132           XFOBUS(2)=6
ISN 0133           XFOBUS(3)=1
ISN 0134           XFOBUS(4)=3
ISN 0135           XFOBUS(5)=2
ISN 0136           XFOBUS(6)=2
ISN 0137           XFOBUS(7)=7
ISN 0138           XFOBUS(8)=10
ISN 0139           XFOBUS(9)=8
ISN 0140           XBOX(1)=1
ISN 0141           XBOX(2)=2
ISN 0142           XBOX(3)=3
ISN 0143           XBOX(4)=4
ISN 0144           XBOX(5)=5
ISN 0145           XBOX(6)=5
ISN 0146           XBOX(7)=6
ISN 0147           XBOX(8)=7
ISN 0148           XBOX(9)=8
ISN 0149           NAFAC=11
ISN 0150           NABUS=7
ISN 0151           AFDLY(11)=1
ISN 0152           AFIBUS(11)=1
ISN 0153           AFOBUS(11)=7
ISN 0154           ABOX(11)=8
ISN 0155           AFSLOT(11,3)=1
ISN 0156           D(39,1)=1
ISN 0157           D(39,2)=1
ISN 0158           D(39,11)=1
ISN 0159           D(39,13)=1
ISN 0160           D(39,17)=1
ISN 0161           D(39,30)=0
ISN 0162           D(39,32)=1
ISN 0163           D(39,66)=1
ISN 0164           AFDLY(1)=4
ISN 0165           AFDLY(3)=4
ISN 0166           AFDLY(4)=15
ISN 0167           AFSLOT(3,4)=1
ISN 0168           DO 7 J=4,15
ISN 0169           AFSLOT(4,J)=1
ISN 0170           AFSLOT(7,J)=1
ISN 0171         7 CONTINUE
ISN 0172           NSLOT=18
ISN 0173           RETURN
ISN 0174           END
```

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AFSLOT(3,4)=1
AFSLOT(4,10)=1
AFDLY(3) =4
AFDLY(4) =10
AFDLY(9) =2
AFDLY(10) =2
AFDLY(11) =2
ABOX(4) = 3
ABOX(6) = 3
ABOX(7) = 3
ABOX(8) = 1
ABOX(9) =2
ABOX(10) =2
ABOX(11) =2
XBOX(4) =3
XBOX(5) =3
XBOX(6) =3
XBOX(7) =3
XBOX(8) =3
XBOX(9) =3

DØ 991 I=56,66
D(I,56)=1
D(I,57)=0
991 CONTINUE

to get rid of FAZ had to change OP DECODE TAGS

A FACILITIES:

REP TIME → AFSLØT(I,J)
DELAY TIME → AFDLY(I)
INBUS → AFIBUS(I)
BOX → ABØX(I)
OUTBUS → AFØBUS(I)

X FACILITIES:

REP TIME → XFSLØT(I,J)
DELAY TIME → XFDLY(I)
BOX → XBØX(I)
OUTBUS → XFØBUS(I)