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RAD      IDENT   H15 10/1/67
        ENTRY   NRCL,RTS,RTC,RTW,ERCL
        ENTRY   IRM,IRER
        ENTRY   ICOUNT
TRRQ    BES 4
        DATA  -1,-1,-1,-1
BRRQ    EQU *
$FRQLST DATA *+1
        RPT NRRQ-1
        DATA *+5
        BSS 4
        ENDR
        DATA -1
        BSS 4
ALRC    ALR
ALRJ    BRU IRM2
RADJMP  BRU IRSAVE
RADRRF  EOD* 2226B
RADWRF  EOD* 2266B
NRCL    DATA -1 COUNT OF RAD COMMANDS IN LIST
ERCL    ZRO
$IRCL   ZRO
$IRCL1  ZRO
ICOUNT  DATA -1 COUNT AFTER COMPLETION OF CURRENT RAD TRANSFER
IRPM1   ZRO 0 STORAGE FOR RAD ADDRESS
IRPM3   ZRO 0 STORAGE FOR WORD COUNT/MEMORY ADDRESS
$RADTRY ZRO 4 TRY-AGAIN COUNTDOWN
IRSA    ZRO 0 SAVE (A)
IRSB    ZRO 0 SAVE (B)
IRSX    ZRO 0 SAVE (X)
IRT     DATA RSYBI,IRS,RD2KI
*ZERO   WORD COUNT AND EARLY WORD COUNT INTERRUPT ROUTINE
IRM     ZRO; RSR; BRU *-1; RSE; BRU IR1X
IRM1    ALR; POT IRPM1
IRM2    CATE; BRU *-1
        CETE; BRU IR1X
IRMX    EOD* 10000B
IRPM2   EOD 0
        POT IRPM3
IRSAVE  BRM RREGSV; LDX IRCL1
IRUNLK  LDA IRCL1; SUB =1; XMA FRQLST; STA* FRQLST
        BRM CPNO; XXA; SKR RMC,2; NOP
        COPY AX,XB; LDA 3,2; ETR =3; COPY BA,AX,XB; BRM* IRT,2
        LDA ICOUNT
        STA NRCL; SKN ICOUNT; BRM RADADV
IDAWAY  LDA IRSA; LDB IRSB; LDX IRSX; EIR; BRI IRM
IR1X    BRM RREGSV; LDX IRCL+1; MIN RADTER; SKN 3,2
        MIN RADRER; SKR RADTRY; BRU IRGOMO; MIN RTUERR
        MIN RDTUER; SKN 3,2; MIN RDRUER
        LDX IRSX; RSR; BRU *-1; ALR; POT IRPM1; BRU IRMX
IRGOMO  BRM RRETRY; BRU IDAWAY
CPNO    ZRO
        LDA 1,2; RSH 9; EOR 2,2; ETR =37B; EOR 2,2; RSH 2
        ETR =37B; BRR CPNO

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RREGSV ZRO; STA IRSA; STB IRSB; STX IRSX; BRR RREGSV
*SETS UP NEXT COMMAND IF THERE IS ONE
RADADV ZRO; LDA =NRTRY-1; STA RADTRY
ADV2 SKR ICOUNT; BRU ADV1
LDA ALRJ; STA IRM1
LDA IRCL; STA IRCL1; LDA RADJMP; STA IRMX; BRR RADADV
ADV1 LDA* IRCL; ADD =40B; BRM FRRC; CAX
LDA 3,2; SKA =1; BRU *+2; BRU ADV3
BRM CPNO; COPY AX,XB; LDA* RMT,2; XXB
SKA =BIT4+BIT5; BRU ADV3
COPY XA,BX; SKR RMC,2; NOP
SUB =1; XMA FRQLST; STA* FRQLST
SKR SWWCTR; NOP; SKR WIPFLG; NOP; BRU ADV2
ADV3 CXA; XMA IRCL; STA IRCL1; BRM RADMVE; BRR RADADV
FRRC ZRO; LRSR 4; ETR =2
FRRC1 SUB =4; CAX
SKN BRRQ,2; BRU FRRC2; BRX *-2
CXA; BRU FRRC1
FRRC2 LDA TRRQ,2; SKE BRRQ,2; BRU *+3
LDB =-1; STB BRRQ,2
LDA* TRRQ,2; XMA TRRQ,2; ADD =1; BRR FRRC
*PUT RAD COMMANDS IN THE INTERRUPT ROUTINE
RADMVE ZRO; LDA 0,2; STA IRPM1
LDA 2,2; STA IRPM2; LDA 1,2; STA IRPM3
LDA ALRC; STA IRM1
LDA RADWRF; SKN 3,2; LDA RADRRF; STA IRMX; BRR RADMVE
SRRETRY ZRO; RSR; BRU *-1; ALR; POT 0,2
LDA 2,2; STA *+2; EOD* 100000B; EXU 2,2
POT 1,2; SKN 3,2; BRU *+3; WRF; BRR RRETRY; RRF; BRR RRETRY
*END OF RECORD INTERRUPT ROUTINE
IRER ZRO; SKN NRCL; CATE; BRU IRER1; RSE; BRU IRERX
CATE; BRU IRERX
IRER1 EIR; BRI IRER
IRERX XMA IRER; STA IRM; LDA IRER; BRU IRIX
*INSERT WRITE COMMAND IN RAD COMMAND LIST
RTW ZRO; MRG DCWBIT; BRM RTC; BRR RTW
*INSERT COMMAND IN RAD COMMAND LIST
RTC ZRO; STA RTCS1
LDA =BIT0; SKA FRQLST; BRU *-1
DIR; LDA* FRQLST; EIR; XMA FRQLST; ADD =1; STA ERCL
CBA; LRSR 6; SKG =37777B; BRU *+2; BRM RCVR; STA* ERCL
LDA RTCS1; ETR ADMSK; RSH 14; CXA; ETR =77777B; LCY 14
LDX ERCL; STA 1,2; LSH 19; LDA RTCS1; ETR =140000B
CBX; RSH 14; CXB; LSH 5; MRG =IOSDEC; LDB X4; SKN RTCS1
BRU RTCFIX
RTCBAK LDX ERCL; STA 2,2; STB 3,2; LDA RTCS1; RSH 11; ETR =37B
COPY XB,AX; MIN RMC,2; BRR RTC
RTCFIX CLB; MRG X4; BRU RTCBAK
RTCS1 0
$IRTC ZRO; LDA 0,2; LRSR 4; ETR =2; SKN 3,2; BRU *+2
MRG =1; EAX -1,2; CXB; SUB =4; COPY AX,BA
SKN BRRQ,2; BRU *+3; STA TRRQ,2; BRU *+2
STA* BRRQ,2; STA BRRQ,2; EIR; BRR IRTC
$IRTCT ZRO; LDA 0,2; LRSR 4; ETR =2; EAX -1,2

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      CXB; SUB =4; COPY AX,BA; SKN BRRQ,2; BRU IRTCT1
      STA TRRQ,2; STA BRRQ,2; BRU IRTCT2
IRTCT1 XMA TRRQ,2; STA* TRRQ,2
IRTCT2 EIR; BRR IRTCT
*FIRE UP THE RAD AND START DATA TRANSFER
RTS   ZRO; DIR; SKN NRCL; BRU RTS1
      EIR
      ALRS; PIN RTS2; LDA RTS2 -
      ETR =37B; SKG =36B; SKG =34B; BRU RTS8
      LDA RTS2; ETR =40B; EOR =40B; STA RTS2
      DIR; BRM RTSS; BRU RTS5
RTS8  LDA RTS2; ADD =1; ETR =40B; MRG =36B; STA RTS2
      LDA RTS3; STA 65B; RSR; BRU *-1
      DIR
      ALR; POT RTS2; EOD* 2226B
      EOD 16200B; POT RTS4
RTS5  MIN NRCL; MIN ICOUNT
      EIR; BRR RTS
RTS1  SKN ICOUNT; BRU RTS5
      LDA* IRCL; ADD =40B; BRM FRRC
      CAX; STA IRCL; BRM RADMVE; BRU RTS5
RTS2  ZRO
RTS3  BRM RTSC
RTS4  ZRO* RTS6
RTS6  ZRO
RTS7  BRM IRER
RTSC  ZRO; BRM RREGSV; LDA RTS7; STA 65B
      BRM RTSS
      LDA IRSA; LDB IRSB; LDX IRSX; EIR; BRI RTSC
RTSS  ZRO
      LDA RTS2; BRM FRRC; STA IRCL
      CAX; BRM RRETRY; BRM RADADV
      BRR RTSS
      END

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