

PUT AND GET 2/1/72 (PG,11)

/FNN (BPC)

CTEM=202

ATEM=112

PG1=ATEM

PG2=ATEM+1

PG3=ATEM+2

PG4=ATEM+3

PG5=ATEM+4

PG6=ATEM+5

PG7=ATEM+6

PG8=ATEM+7

PG10=ATEM+10

SGI=IOT 5300

NNIF=IOT 6300

/READ ROUTINE FOR PUT AND GET  
 /GETS PIECE OF ITEM OR MAP INTO CORE  
 /IO=ADDR OF DESIRED WORD, REL TO BEG OF INFO  
 /USES F,G,H  
 /RETURNS CORE ADDR OF DESIRED WORD IN IO

RDM,	DAC I (PG7)	
	STF 6	/READ, MAP
	SZF I 3	
	JMP COREM	
	JMP RD	
VRL,	LAW VRR	
RDI,	DAC I (PG7)	
	CLF 6	/READ, ITEM
	SZF I 2	
	JMP COREI	
RD,	DIO I (PG6)	
	LAW 3	
	SZF 6	
	ADD (5)	
	ADD F	
	DAC G	/REL ORG OF CUR PIECE
	LAW I 2	
	SZF 6	
	LAW 2	
	SUB I G	
	ADD I (PG6)	/CAL ADR REL TO BEG OF PIECE
	SPA	
	JMP WR1A	/MINUS= NOT IN CORE
	DAC H	
	IDX G	
	IDX G	
	LAC I 0	/LTH OF PIECE
	SUB P	
	SPC	
	JMP WR1	/BEYOND END
	LAW I 1	/WORD DESIRED ALREADY IN CORE
	ADD 0	
	DAC C	
	LAC I G	/CORE ADD OF PIECE
	ADD H	
	LIA	/PUT CORE ADD OF WORD IN IO
	JMP PDF3	
COREM,	LAC I (PG10)	
	JMP CORE	
COREI,	LAC I (PG9)	
CORE,	AAI	
	LIA	
	JMP PDF3	

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UQRD,   DAC I (PG7)
        STF 6           /UNCUND READ, MAP
        DIO I (PG6)
WR1,    LIO I (PG10)
        SZF 6
        JMP RD1
        LIO I (PG9)     /ITEM ADD
        SZF I 5
        JMP RD1
        CLF 5
WR2,    LAC CIORIN      /SET UP WRITE COMMAND
        DIP I F
        LAW 4
        ADD F
        DAC H
        LAC CIORIN
        DIP I H
        JSP SGCM

RD1,    LAC CIORIN
        DIP I F
RD1A,   LAW 3
        ADD F
        SZF 6
        ADD (5)
        DAC H
        IQA
        DAC 6
        CLA           /SET UP READ COMMAND
        DIP I G
        LAW I 2
        SZF 6
        LAW 2
        ADD I (PG6)
        DAC I H
        JSP SGCM

```

RDF1,	LAW 4	
	ADD F	
	SZF 6	
	ADD (5)	
	DAC 6	
	LIO I G	/RET BEG OF BUF
RDF3,	LAC I (PG7)	
	DAC F	
	JMP HEXIT	
UCRW,	DAC I (PG7)	
	CLF 6	
	SZF I 2	
	JMP COREI	
	DIO I (PG6)	
WR1A,	SZF 6	
	JMP WR1	
	LAW I 1	
	ADD I (PG6)	
	SZM	
	JMP WR1	
	LAC F	
	IDA	
	DAC G	
	LAC I F	
CANDIN,	AND (7777)	
	ADD I G	
	SUB B16	
	ADD I (PG6)	
	LIA	
	JMP RDF3	
UCRI,	DAC I (PG7)	
	CLF 6	
	DIO I (PG6)	
	CLA	
	DIP I F	
	LIO I (PG9)	
	JMP RD1A	

SGCH,      DAP H  
            LAC I (PG8)  
            SAR 1S  
            AND (3)  
            ADD (XCT SGTB)  
            DAC G  
            LAC F  
            SZF 6  
            ADD (7)  
            XCT G  
            JMP FSTER1  
            JMP HEXIT

SGTB,      SGI+1  
            SGI+3  
            SGI+5

FSTER1,    LAC I (ERCODE) /WRITE ERROR  
            SAD (40000)    /ILL SPEC ERROR  
            JMP HEXIT

FSTER3,    DID I (ERCODE+1)  
            LID I (PG8)  
            LAC I (USERPC)  
            DAC I (TRAPPC)  
            IDA  
            RIR 1S  
            SPI I  
            LAW IOPTSU  
            JMP GO

## /BEGIN ITEM

BG1C,      LAW 10  
           DAC I (PG8)  
           LAC I (USERID)  
           DAC I (PG9)  
           LIO I (USERAC)  
           DIO I (PG10)  
           SEF I 1  
           JMP MPF  
           JSP GSET  
           LIO B16  
           JSP UCRW  
           JMP PRT

BG12,      JSP PTFX  
           LAC H  
           DAC A  
           CLI  
           JSP RDI  
           DIO B  
           DIO E  
           IDX B  
           LAW 1760  
           AND I C  
           RAP 4S  
           DAC I E  
           SUB B16  
           DAC I (CTEM)      /REL PTR FROM TREE REG TO TREE  
           LAW 17  
           AND I C  
           ADD I E  
           IDA  
           DAC I A  
           LAC B1  
           DAC I B  
           LAW 1  
           DAC I (PG4)  
           LAW 7  
           DAC I (PG3)

BGA,      LIA  
           JSP RDM  
           DIO B  
           LAC I B  
           AND CJ  
           SEA  
           JMP BGS  
           IDX I E  
           IDX I A  
           STF 5  
           IDX I (PG4)  
           LIA  
           JSP RDI  
           DIO B  
           LIO I (CTEM)  
           DIO I B

LAW 3  
ADD I (PG3)  
DAC I (PG3)  
JMP BGA

RGB,      IDX I (PG4)  
          ADD I (CTEM)  
          DAC A

BGC,      LID I (PG4)  
          STF 5  
          JSP RDI  
          DIO B  
          CLC  
          DAC I R  
          IDX I (PG4)  
          SAS A  
          JMP BGC  
          LIA  
          STF 5  
          JSP RDI  
          DIO B  
          LAC ML4  
          DAC I R  
          STF 5  
          SZF I 1  
          JMP PRT  
          CLI  
          JSP RDM  
          DIO C  
          JMP GTP3

/EOM



## /GET A FIELD

```

GETX,    CLL+UCML
GETC,    LAH GLT1
GSET,    DAP H
          LIF+USCF
          DIO I (PG8)    /SAVE FLAGS FROM IOT
          RIR 6S
          SPI
          STF 1

          LAC I (USERAC) /GET PARAMETERS
          DAC A
          LAC I A
          DAC I (PG1)    /SAVE INFO ADD OR ERRORS AREA
          IDX A
          LAC I A
          DAC D
          IDX A
          LAC I A        /ITEM ADD
          SPA
          CMA+USTF 2      /IF DRUM ADD, COMP AND SET FLAG 2
          DAC I (PG9)
          IDX A
          LAC I A        /MAP ADD
          SPA
          CMA+USTF 3      /IF DRUM ADD, COMP AND SET FLAG 3
          DAC I (PG10)
          IDX A
          LAC I A
          DAC I (PG2)
          IDX A
          LAC I A
          DAC F          /SAVE BUFFER ADDRESS
          SZF 2
          LAC I F
          SPA
          STF 5
          JMP HEXIT
GET1,    RIL 1S          /INFO PRES FLAG
          SPI
          JMP GTP1
          CLI+UCLF 5
          SZF I 3
          LIO I (PG10)    /MAP IN CORE
          SZF 3
          JSP UGRD
MPF,     DIO C
          SZF I 2
          JMP NIT
          LAH 1
          ADD F
          DAC H
          LAH 17
          AND I C
          ADD 816
          DAC I H

```

LIO 810  
JSP UCR1

GTP4,  
 LAC F  
 ADD (5)  
 DAC E  
 LAC I E  
 DAC E  
 LAC I F  
 AND (7777)  
 DAC A  
 LAN 17  
 AND I C  
 ADD B16  
 CHARLC,  
 SUB I A  
 ADD E  
 SMA  
 STF 4

GTP,  
 LAC I (PG8)  
 RAR 4S  
 SPA

GTP3,  
 JMF BG12  
 LAN I 1777  
 AND I C  
 RAL 8S  
 SUB D

/MAX FIELD ADD

SPA  
 JMP GTE1

/FIELD ADDR TOO HIGH

LIO D  
 JSP RDM  
 DIO B  
 LIO I B  
 DIO B  
 SPI

/CORE ADDR= WD 0 OF FIELD MAP

JMP FCD  
 DZM I (PG3)

/SEC INFO

FTB,  
 IDX D  
 DAC C  
 IDX C  
 LIO D  
 JSP RDM  
 DIO D  
 LAN I 7600  
 AND I C  
 DAC D  
 ADD I (PG3)  
 AND (17777)  
 DAC A  
 LIO C  
 JSP RDM  
 DIO C  
 LIO A  
 LAC I C  
 SPA  
 SEF 4  
 JMP VRL  
 JSP UGRW

/JSP RDI

```

VRR,    LAC D
        AND (7600000)
        IAI
        DAC E
        LIO B
        RIL 16
        SPI I
        JMP GTE3
        LIO I 0
        SPI
        JMP FTA      /FIXED LENGTH INFO
        CLI
        JSP RDI
        DIO D
        SZF 1
        JMP FPV
        LAC I 0
        ADD I E
        DAC E
        AND (1777777)
        LIA
        LAW VRT
        SZF 4
        JMP RDI
        JSP UCRW
VRT,    LAC E
        AND ML2
        IAI
        LIO I 0

FTA,    SZF 1
        JMP FPF
        DIO I (USERIO)
        DAC I (USERAC)
PRT,    CLA
        SZF 5
        CMA
        SZF 2
        DIP I F
        LAC I (PG8)
        RAR 13
        SMA
        JMP R1
        JMP R2

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```
GTP1,  CLI
        JSP RDM
        DIO C
        SZF 2
        JMP GTP4

NIT,   LAW 17
        AND I C
        ADD I (PG9)
        DAC I (PG9)
        JMP GTP

GTE1,  DAC I (USERAC)
        LAC I (PG1)
        JMP FTE1

GTE2,  SZF 1
        JMP FPE
        DAC I (USERAC)
        JMP FTE2

GTE3,  SZF 1
        JMP PRT
        DAC I (USERAC)
        LIO I C
        DIO I (USERIO)

FTE3,  IOX I (PG1)
FTE2,  IOX I (PG1)
FTE1,  SZF 1
        C16RET*1
        DAC A
        LAC I A
        JMP GO
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FCD,      LAM CTEM
          DAC A
          LAC D
          DAC I A

CHARLO,   IDX A
FCG,      SAC (CTEM+6)
          C16RET+1      /TOO LOW= PUNT
          CLA
          RCP 8S
          RAL 8S      /POINTER TO NEXT LEVEL
          DAC I A      /PUSH
          LIA
          JSP RDM
          DIO H
          LIO I H
          SPI          /TREE BASE?
          JMP FCG      /NO= GO ON DOWN TREE

FRH,      IDX I A      /TREE POINTER
          LIO I A
          JSP RDM
          DIO H
          LAM 177
          AND I H
          DAC I (PG3)   /REL TREE LOC
          LIA
          JSP RDI
          DIO D
          LAC I D
          ADD I (PG3)
          DAC I (PG4)   /NEXT LEVEL LOC
          LAM I 1
          ADD A

```

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FCC,   DAC C           /POP 1 LEVEL
        LIO I (PG4)
        JSP RDI
        DIO D           /NEXT LEVEL POINTER
        LIO I D
        DIO D
        LIO I (PG3)
        JSP RDI
        DIO B           /THIS LEVEL POINTER
        LIO I C
        JSP RDM
        DIO E           /MAP POINTER
        LAC I (PG2)
        DAC H
        LAC (77400)
        AND I E
        DAC E
        MUL I H         /SUBSCRIPT
        SUL 95
        ADD I B         /ADD POINTER
        ADD I (PG3)
        DAC I (PG3)     /NEXT LEVEL
        SUB D
        SUB I (PG4)
        SMA             /TOO HIGH?
        JMP GTE2        /ERROR 2= PUT MAYBE
        LAC E
        RAR BS
        ADD I (PG3)
        DAC I (PG4)     /NEXT LEVEL FOR CHECKING
        IOX I (PG2)
        LAH I 1
        ADD C
        DAC C
        SAS (CTEM-1)
        JMP FCC

FCF,   LIO I (CTEM)
        DIO D
        JSP RDM
        DIO B
        LIO I B
        DIO B
        JMP FTB

```

FPV,

LAW 1  
ADD D  
DAC B  
LIO (PG1)  
JSP TRACEI  
LAC A  
DAC C  
LAC I B  
DAC I E  
STF 5

FV1,

IDC  
DAC I B  
AND (177777)  
ADD I D  
LIA+UCLF 1  
JSP RDI  
LAC I B  
AND ML2  
IAI  
DAC E  
LCH I C  
DCH E  
SAD (74)  
STF 1  
JSP PTFX  
LAC E  
AND ML2  
SAD B1  
IOX I 4  
LAC I B  
STF 5  
SEF I 1  
JMP FV1  
JMP PRT

PRT1,



```

FPF,      LIA          /FIXED LENGTH FIELD
          SZL I        /SKIP CONVERSION IF LINK SET
          JSP PTCON
          DIO B
          LIO (PG1)
          JSP TRACEI
          RIP 5S       /PROGRAM BUM BECAUSE TRACE MASKS OUT EXTEND BITS
          SZL I        /SKIP CONVERSION IF LINK SET
          JSP PTCON
          DIO A

          LAH 777
          AND I C      /3RD WORD OF MAP
          SZL
          JMP FP2      /SKIP CALC BYTES IF LINK SET
          CLI
          RCR 5S
          RIL 6S
          DIO C
          MUL C18,
          SWP
          ADD C
          CHA+UCHI+USWP
          DIV C6
          6
          DAC C

          LCH I A
          DCH I H
          ISP C
          JMP 3
          JMP PRT1

FP2,      CHA
          JMP FP1

PTCON,    DAP H
          CLA+USWP
          RCL 6S
          DAC G
          CLA
          DIV C6
          18,
          LIO G
          RIP 4S
          RCR 2S
          JMP HEXIT
C18,,

```

/MAKE SPACE IN TREE

```

FPE,      SZA
          C16RET+1      /ERROR IF MORE THAN ONE OFF
          LAR CTEM
          SAS C
          C16RET+1      /ERROR IF NOT AT TOP LEVEL
          LIO I A
          JSP RDM
          DIO H
          LAR 177
          AND I H
          DAC B          /TREE POINTER LOCATION
          DAC D
          LAR E
          RAR 85
          DAC E          /ADJUST GROUP LENGTH
          LAR 2
          JMP PUB

```

```

PUC,      LIO B          /INCREMENT TREE POINTER
          JSP RDI
          DIO H
          LAR I H
          ADD E
          DAC I H
          STF 5
          LAR 3

```

```

CHARLA,PUB, ADD I A      /NEXT MAP FIELD
          DAC I A
          IDX R          /NEXT ITEM WORD
          LIO I A
          JSP RDM
          DIO H
          LAR I H
          AND CJ
          SZA I          /ANOTHER TREE POINTER
          JMP PUC        /YES
          LAR CTEM
          SUB A
          DAC A          /- NO OF LEVELS

```

```

PUD,      LIO D          /GO DOWN WITH SUBSCRIPTS 0
          JSP RDI
          DIO H
          LAR I H
          ADD D
          DAC D
          ISP A
          JMP PUD
          LIO I (CTEM+1)
          JSP RDM
          DIO A
          LAR (77400)
          AND I A
          RAR 85
          DAC A          /LTH OF GROUP ABOVE LEVEL

```

CHLNUM,



```

PUE,    LLD I (PG4)
        JSP RDI
        DIO G
        LAC I G
        ADD E
        DAC I G      /INC POINTER OF ABOVE LEVEL
        STF 5
        LAC I (PG4)
        SAD D        /LOWEST LEVEL
        JMP PUG      /YES, DONE
        ADD A        /NO, GO TO NEXT POINTER
        DAC I (PG4)
        JMP PUE

```

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PUG,    LLD I (CTEM)
        JSP RDM
        DIO C
        LLD I C
        RIL 25
        DIO C
        LAC I (PG4)

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PUH,    SPI I      /LOWEST LEVEL IN TREE
        SAD I (PG3) /OR LAST PTR ON LEVEL
        JMP PUK      /YES

```

```

        ADD E
        DAC I (PG4) /GO TO NEXT POINTER
        LIA
        JSP RDI
        DIO H
        LAC I H
        ADD E
        DAC I H
        STF 5
        LAC I (PG4)
        JMP PUH

```

```

PUK,    JSP PTFX
        LAC I H
        ADD E
        DAC I H      /INC WD CT
        CLI
        JSP RDI
        DIO A
        DIO B
        IDX B
        LAC I A
        ADD E
        DAC I A      /INC BEG OF VAR
        STF 5
        ADD I B
        AND (7777)   /REL INS LOC

```

PUJ,	DAC B	
	SUB E	
	DAC A	
	LIO A	
	JSP RDI	
	DIO D	
	LIO I D	
	DIO D	
	LIO B	
	JSP RDI	
	DIO H	
	LIO D	
	DIO I H	
	STF 5	
	LAC A	
	SAD I (PG3)	/STOP AT INS PT
	JMP PUIC	/DONE
	LAW I 1	
	ADD B	
	JMP PUJ	
PUIC,	LIO C	
	SPI I	/LOWEST LEVEL IN TREE?
	JMP PUID	/NO
PUIB,	CLC	
PUIA,	DAC I H	
	STF 5	
	LAW I 1	
	ADD B	
	DAC B	
	SAD I (PG3)	
	JMP FCF	
	LIA	
	JSP RDI	
	DIO H	
	JMP PUIB	
PUID,	LAC I H	
	SUB E	
	JMP PUIA	
PTFX,	DAP A	
	SZF 2	
	JMP PTFX2	
	CLI	
	JSP RDM	
	DIO H	
	LAW 17	
	AND I H	
	SUB I (PG9)	
	CMA	
PFX,	DAP H	
	JMP AEXIT	
PTFX2,	LAC I F	
	JMP PFX	

START

FORM 8510

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