

TELETYPE SERVICE ROUTINE (TTSERV.43) 2/10/72 BPC

```
TTSERV.  LIF
          DIO TTFLGS
TTLOOP.  ASC 600      /PROCESS ALL WAITING CHARS, THEN DEBREAK
          CKS
          RIR 2S
          SPI I
          JMP TTDBRK   /SCANNER NOT STOPPED
          RRC
          SSB
          LAW TTP+T200000
          SCF+UAAI
          SAL 2S
          DAP TTF
          LAW 40
          NAI
          SZA I        /LINE # >= 40?
          JMP TTF       /NO, PROCESS CHAR
          RCC          /YES, FLUSH CHAR
          JMP TTLOOP
```

+L

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TTF.      LIO .
          LAW 7777
          AND TTF
          LFI+UIDA
          DSC 600      /KEEP WAITING BKS FROM PILING UP
          RCC
          SZS 40
          JMP TTSS4
TTSS4X.   SZF I 6
          JMP TTLO      /LINE OPEN
          SZF I 1
          JMP TTIN      /INPUT
          DAP TTALD      /OUTPUT
          DAP TTASP
          IDA
          DAP TTAUP
          LAW TTTBL      /ODD INTEGRAL MULTIPLE OF 200
          IAI+USZL+UCLL
          JMP TTASP      /DON'T TEST FOR NULL OR CR
          SZF 3
          JMP TTINT      /BEING INTERRUPTED
          SAD (TTTBL
          JMP TT1NUL      /FIRST NULL
          SAD (TTTBL+U215
          JMP TTACR      /CR.  SEND A LF.
TTASP,    LAC .
TTAUP,    SAD .
          JMP TTEMTY      /GO PASSIVE
          IDA+UIDC
          SAD I TTAUP
          CLF 6      /PF 6 TEM STORAGE FOR ALARM CONDITION
TTALD,    LCH I .
          SAD (770000
          JMP TTA77      /TWO-BYTE CHAR
          DCH (JMP .+1
          LIO TTTBL+0      /GET OUTPUT CODE
TTFULX.   TCB
          SZF I 6
          JMP TTALM      /UNHANG IF HUNG
          LIF
          LAI
          DAP I TTF
          JMP TTLOOP

```

↑L

/ROUTINE FOR INPUT

```

TTIN.      DAP TTIDCH
           SZF 2
           JMP TT8BIT
           DAP TTISP
           IDA+USZL+UCLL
           JMP TTIIGN      /IGNORE.  GENERATED BY SERVICE ROUTINE.
           DAP TTIUP
TT8INT.    LAW TTBTL      /ODD INTEGRAL MULTIPLE OF 200
           LAI
           SZF 3
           JMP TTINT      /BEING INTERRUPTED
           SAD (TTBTL
           JMP TT1NUL      /FIRST NULL
           SZF 5
           JMP TTFULL      /NO ROOM IN BUFFER
           DAP . 1
           LIO .          /GET WORD FROM TRANSLATION TABLE
TTISP.     LAC .
           IDC
TTIUP.     SAD .
           JMP TTFUL1
           SPI
           JMP TTI77
           IDA+UIDC
           SAD I TTIUP
           CLF 6          /PF 6 TEM STORAGE FOR ALARM CONDITION
TTFULX.    LAI
           SAD TTBTL+15
           JMP TTINCR      /CR INPUT
TTINCX.    RAL 1S
TTIDCH.    DCH I .        /PUT CHAR IN BUFFER
           SPA+USZF 4
           JMP TTALM      /CONTROL MODE ALARM
           RAL 1S
           SMA+USZF 6 I
           JMP TTALM      /REGULAR ALARM OR BUFFER NEARLY FULL
TTIIGN.    LIF
           LAI
           DAP I TTF
           JMP TTLOOP

```

+L

/BRANCHES AND SPECIAL CASES

/DEBREAK

```

TTDBRK.  LIO TTFLGS
          LFI
          LAC 30
          LIO 32
          JMP I 31

```

/SS4 UP

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TTSS4.  SUB TTSS4C
          SMA /TT # TOO HIGH?
          JMP TTSS4A /YES
          ADD TTSS4C
          JMP TTSS4X

```

TTSS4A.

```

LAW 7TT4
DAP 7TT2 /SET SWITCH IN CH 7 ROUTINE
LAW 251
AND I TTF
SAS (41 /GUY TYPING OUT, ETC?
JMP TTLOOP /NO
LAW 200
IAI
SAS (215 /IS CHAR CR, NEEDING LF ECHO?
JMP TTLOOP /NO

```

/TYPEACTIVE CR ECHO. SEND LF. DON'T STORE FLAGS.

```

TTACR.  LIO (212 /LF
          TCB
          JMP TTLOOP

```

/ROUTINE JSP'ED TO ON CH 7 BREAK

/SEND RUBOUT ON ALL TT'S TYPEACTIVE WITH LINE CLOSED

```

7TT4.  DAP 7TT2
          LAW I TTF
          ADD TTSS4C
          SAR 2S
          DAC 7TTEM /LOWEST TT RESTARTED WHEN SS4 GOES DOWN
          LSM

```

7TT5.

```

LIA
SSB
ADD (TTP+T2000000
SAL 2S
DAP . 2
LAW 41
AND .
CLI+UCMI /RUBOUT IS 377
SAD (41 /TYPEACTIVE AND LINE CLOSED
TCB
IDX 7TTEM
SAS (100
JMP 7TT5
FSM
JMP 7TT2+1

```

TTSS4C.
7TTEM,
+L

TTP+4+T2
0

/TTP + 4 TIMES LOWEST TT LOCKED OUT

/LINE OPEN

```

TTLO.      LAW TTBTL
           SZL+UCLL+UCML+UIAI
           JMP TTLGC      /FINISH CLOSING LINE
           DAP . 2
           LAW I 3777
           AND .          /TRANSLATE CHAR
           SAS (360000)   /EOM?
           JMP TTLOOP     /NO. IGNORE.
           LIF+UIAI       /ADR PART OF CLEAR
           DAP I TTF
TTINT1.    LIO (215)      /START CLOSING LINE OR RUBOUT ECHOED
           TCB
           JMP TTLOOP

```

/FINISH CLOSING LINE

```

TTLGC,     LAW 212        /LF
           CLI+USWP+USTF 6
           TCB
           LIF+USCF+UIAI   /LEAVE RING MODE
TTLGCX.    DAP I TTF
           JMP TTLOOP

```

/BEING INTERRUPTED BY NULL. PF 3 UP.

```

TTINT,     SAD (TTTBL+U377
           JMP TTINT1      /RUBOUT ECHO. SEND CR.
           SAD (TTTBL+U215
           JMP TTBRK       /CR ECHO. SEND LF AND GIVE "BREAK".
           LAC (I
           ADD I TTF
           DIP I TTF       /INCREMENT NULL COUNT
           SAS I TTF       /END-AROUND CARRY?
           JMP TTLGO       /YES. SET LINE TO "OPEN".
           CLI+UCMI
           TCB
           JMP TTLOOP

```

/LINE GOING OPEN

```

TTLGO,     LAW 11
           LIF+USCF+UXAI   /CLF 3 AND CLF 6 AND LRG
           JMP TTLGCX

```

/FIRST NULL

```

TT1NUL.    CLI+UCMI+USTF 3
           TCB            /RUBOUT
           LAC (I        /NULL COUNT SET TO "1"
           LIF+UIAI
TTSUPX.    DAC I TTF     /SIC.
           JMP TTLOOP

```

+L

/GIVE "BREAK" ALARM AND SEND LF

TTBRK, DZM HOTFLG
 ISB 1700 /NEEDED. SEE TTOK FOR CASE UNDER DDT.
 LIO (212) /LF

TCB

LAW 3

ADD TTF

DAP TTBRK1

LAW I 1000

/ALL BUT "77 SAVED" BIT

TTBRK1.

AND .

SZF I 1

/FLUSH BUFFER IF OUTPUT

JMP TTBRKA

/INPUT

DAC I TTBRK1

/OUTPUT

LIO I TTAUP

DIO I TTASP

TTBRKA.

AND (377)

/KEEP STAT POINTER

SZA I

JMP TTSUP

/STARTUP PROCEDURE

SAD BDSTAT

LAW FSTAT

DAP TTBRK2

LAC (300000)

LSM

TTBRK2.

AND .

CLI+USWP

SNI

LAC I TTBRK2

IOR (40000)

/SET MY BIT

DIP I TTBRK2

LAW 777

/MASK QUEUE IN CASE HE WAS CLKHNG

AND I TTBRK2

DAP I TTBRK2

ESM

LAW 210

LIF+UXAI

/SET LINK AND CLF 3

DAP I TTF

/LEAVE NON-ZERO NULL COUNT AS "BREAK"

JMP TTLOOP

+L

/STARTUP PROCEDURE

```
TTSUP.    LAW 7774
          AND TTBRK1
          SAR 2S          /GET TT NUMBER+200
          LIA
          LAW WHERE
          DAP TTSUP2
TTSUP1.   IDX TTSUP2      /SEARCH WHERE TABLE FOR 300
          SAD (SAS WHERE+100)
          JMP TTSUP4      /NO ROOM, CALL LATER
          LAW 300
TTSUP2.   SAS .
          JMP TTSUP1
          DIO I TTSUP2    /PUT TT NUMBER+200 IN "WHERE" TABLE
          LAW I WHERE-STAT
          ADD TTSUP2
          DAP I TTBRK1    /SET UP PGM WORD
          DAP TTSUP3
          SUB (SAS STAT-WHERE)
          SAD WTOP
          IDX WTOP
          LAW 1          /GIVE HI QUEUE
TTSUP3.   DAC .
          LAW 210
          LIF+UXAI       /SET LINK AND CLF 3 AND CLEAR NULL COUNT
          JMP TTSUPX
TTSUP4.   STF 1          /GO TYPE-ACTIVE
          LAW I 12
          LIF+UNAI       /CLF 3 AND CLF 5
          DAC I TTF      /SIC. CLEARS NULL COUNT.
          IDX TTF
          LIO I TTF
          IDX TTF
          DAP TTSUP6
          DIO I TTF
          LAW TTSUPT
          DAC TTSOT
TTSUP5.   LRG
          LCH I TTSOT
          ERG
          SAD (740000)
          JMP TTLOOP
TTSUP6.   DCH I .        /DCH I USER PTR
          JMP TTSUP5

TTSUPT.   TEXT /CALL LATER PLEASE
/
          770474
```

+L

/BUFFER ALARM. UNHANG IF HUNG.

TTALM, CLI+USTF 6 /RESTORE PF 6

LAW 3

ADD TTF

DAP . 2

LAW 377

AND .

SZA I

JMP TTALMX /HAS NO PGM. FLUSH ALARM.

SAD BDSTAT

LAW FSTAT

DAP TTALM1

LAW I 3777

RCL 1S

/I. O. CLEAR

TTALM1. AND .

SZF I 1

JMP TTALM3

SAS (TYOHNG)

JMP TTALM4

RIL 3S

TTALM2. DIO I TTALM1

DZM HOTFLG

TTALMX. LIF+UIAI /ADR PART OF AC CLEAR

DAP I TTF

JMP TTLOOP

TTALM3. SAS (TYIHNG)

TTALM4. SAD (CLKHNG)

JMP TTALM2

JMP TTALMX

/TYPEACTIVE. GOING PASSIVE: BUFFER EMPTY

TTEMTY. LAW 40

LIF+UXAI /CLF 1

DAP I TTF

JMP TTLOOP

/TYPEACTIVE. 12-BIT CHARACTER PROCESSING

TTA77. LCH I TTALD

SAS (150000)

SZA I

CML /IGNORE 7715 AND 7700 ECHOS

DCH (JMP .+1

LIO TTTBL+100 /GET TT CODE

TCB

LAC I TTASP

IDA+ULIF

SZF 6

SAD I TTAUP

JMP TTALM /GIVE ALARM

LAI

DAP I TTF

JMP TTLOOP

+L

/8-BIT MODE INPUT

```

TT8BIT.  DAP TT8SP
          IDA+USZL+UCLL
          JMP TTIIGN      /IGNORE.  GENERATED BY SERVICE ROUTINE.
          DAP TTIUP
          IDA
          DAP TT8PGM
          SZF 3
          JMP TT8INT      /BEING INTERRUPTED
          SNI
          JMP TT1NUL      /FIRST NULL.  ONLY FULL NULLS WORK.
          RIR 8S
TT8PGM.  LAC .            /ALARM CHAR IN TOP 8 BITS OF PGM WORD
          XAI
          AND (740000)
          NOP             /EVERY CHAR AN ALARM IN 8-BIT MODE
          CLF 6           /PF 6 TEM STORAGE FOR ALARM CONDITION
TT8SP.  LAC .
          IDC
          SAS I TTIUP
          SZF 5
          JMP TTFULL      /BUFFER TOO FULL
          JMP TT8X

```

/FULL BUFFER ON INPUT

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TTFULL.  CML             /IGNORE ECHO
          LIO (334       /BACKSLASH
          JMP TTFULX     /SEND CHAR, STORE FLAGS.

```

/ALMOST FULL BUFFER ON INPUT

```

TTFUL1.  SPI            /TWO-BYTE CHAR?
          JMP TTFULL     /YES.  TOO FULL.
          STF 5          /NO.  ROOM FOR THIS AND NO OTHERS.
          JMP TTFU1X

```

/12-BIT CHARACTER PROCESSING ON INPUT

```

TTI77.  SIR 5S
TT8X.   IDC
          SAD I TTIUP
          STF 5          /BUFFER FILLING.  WITH PTRS TO BE EQUAL
          IDA
          SAD I TTIUP
          JMP TTI77A     /BUFFER FILLING.  GIVE ALARM.
          IDC
          SAD I TTIUP
TTI77A. CLF 6           /PF 6 IS TEM STORAGE FOR ALARM
          LAI
          DCH I TTIDCH   /STORE "77"
          JMP TTIDCH

```

/CR ON INPUT. SEND LF. TO BE IGNORED ON ECHO.

```

TTINCR.  CML
          LIO (212
          TCB
          JMP TTINCX

```

+L

TTSOT, 0 /TEM STOR

/CALL SOROBAN OCTAL PRINT IN CORE 15

14SOCT, 0
DAP 14SOCT
LAC 14SOCT
DAC I 15SOCT
JSP I 15SOCT
14SOCT. JMP .

/CALL SOROBAN TOS IN CORE 15

14STXT, 0
DAP 14STXX
LAC 14STXT
DAC I 15STXT
JSP I 15STXT
14STXX. JMP .

TTFLGS, 0

START

↑L