

Software / Documents / Cylindrical File



3020
cylindrical file ^{77 nov} 17 oct 70

(RPH) cylinder

bs=2 /block spacing
ffb=12 /first free tape block
tap=xct tape
dimension pd1(40)
wbuf=7740 /work buffer
tbuf=7000 /tape buffer

mot=ivk 4077
dat=ivk 4021

org=100

```
org/      jmp nts      /non TS entry
          hlt
          law 74      /TS entry
          lia
          law 1600+ffb
          rcr 6s
          dac .+2
          law org
          jmp .
rrr,      iam
          lem
          lio .c34
          tyo
          jmp cr
wdy,      rst
          lio (ffb-2
          law tbuf
          tap
          jdp tpe
          lac tbuf+3
          sas dbt+3
tts,      jmp ery      /wrong tape
          lio (40000+ffb-4
          lac (400000+ntb
inw,      tap
          jdp tpe
.law,     law 0
          dap wtd
          jmp i wdy
ery,      law e20
          jmp ex
tape,     ivk 16      /for TS
```

~~loses: tape error 2
: on losing 5/11 (fixed
after hitting wrong E.Z.
fails to rewind tape
on 9 when not
rewinding directory~~

```

q,      law que
        jdp txp
cr,     cliVcmiVcla 7
        dap cd
        tyo
        xct tsf
        mot 500      /stop tape
        jsp ll
        jmp cp      /,
        jmp cp      /cr
        ZX          /space
clb,    lac van
        dip etb
        dip tbd
        lio (770000
cm,     lac i tbl
        dap .+3
        xor van
        AAIP|
        jmp
        SXX
        jmp cm
cp,     law etb-tbl+1
        A+XX
        jmp clb
que,    text .?:

```



```

tbl,      220000 sav
          240000 uns
          640000 del
          510000 ren
          470000 pri
etb,      q
          470000 pa      /print all
          470000 pt      /print top level
          000000 cr      /null
          620000 ddt     /exit
          300000 you     /tape name
          670000 go     /restart system
tbd,      q
ddt,      jdp rew
          jdp car
          ZXIA
          lpf
tsf,      skp 600        /skip on TS
          hltVclVclVclVcl 17
          dsm
you,      lxr (dbt-1
          jdp prn
          jmp rst

```

LOSE

sfa=770045

```

go,      jdp rew
          xct tsf
          jmp .+2
          jmp erg
          lac (60000
          sfa
          jmp its
          law e24
          jdp txp
          lac (60000
          sfa
          jmp .+2
          jmp .-2
its,     mot 300        /skip eot
          jmp .-1
          eem
          jmp i (70153  /save system

```

/in TS debug mode
/non TS
Reverse
go
~~*mot 700*
mot 400
lac .
SAA P
jmp -1~~


```

11,      dap ell
         law vbf
         dap tlc
         dap lp4
         lxr (-20
         dzm i vbf+20
         SXXP
         jmp .-2
ti,      jdp typin
         XVIP|
         jmp .-2
         lai 1
         sad (40
         jmp cd
         lxr (-3
         sad i tit+2
         jmp lla
         SXXI>
         jmp .-3
         sad (75
         jmp tbs
tlc,     dac
         lac (dac vbf+11
         sas tlc
         idx tlc
         jmp ti
tbs,     law i 1
         add tlc
         sas (dac vbf-1
         dac tlc
         aam
         dzm tlc
         jmp ti

typin,   0
         xct tsf
         jmp tyints
typ,     tyi
         jmp i typin
tyints,  rpf
         clf 1
         skp i 1
         jmp .-1
         lpf
         jmp typ

```

314 /

```

11a,      dzm vbf+11
          dio lp3
          ZX
ccr,      law cct
          dap lp2
          SXX
lp4,      lac
          TAIAP|
          jmp lle
lp2,      xct
          adm i van-1
          law 20
          AMI=
          law 7
          AMI>=
          stf 1
          lac pne
          rir 3s
          rcl 3s
          ior (400000
          dac pne
          idx lp4
          idx lp2
          sad (xct cct+3
          jmp ccr
          jmp lp4
lle,      lxr lp3
          CXX
          aam
e11,      jmp

```

cct,
.c34;

rar 6s
ral 734
nop

/ral 6s

tit,
.a77;

0
77
33

/2
/1
/0

gef, dap gee
 dzm sga
 clf 6
 clf 5
 lac ntb
 dac sfp
gea, jdp ll
 nop
 TXA |
 jmp gen-1
 stf 6
 adm gee
 lxr (ntb
gen, law 777
 and sfp
 skp 5
 jmp guc
 sza i
 jmp gun
 lxr sfp
 jdp ttx
 law ntb
 X+AXI
 lac i 0
 dac sfp
 lac van
 sza i
 jmp gou
 dio sga
 sas i 1
 jmp gen
 lac van+1
 sas i 2
 jmp gen
 lac van+2
 sas i 3
 jmp gen
 skp 6
 jmp got
 lac i 4
 sma
 jmp gea-1
er1, law e1
 jdp txp
 jdp prn
 jmp cd

/,
/cr
/space

```

gun,      TXXA
          dap gua
          jdp gfa
          lac sfp
gua,      dac
          dzm i 0
          lac van
          sza i
          jmp gos
          dac i 1
          lac van+1
          dac i 2
          lac van+2
          dac i 3
          TXXA
          dac sga
          skp i 6
          jmp gub
          lac (400000
          dac i 4
          jmp got
gub,      stf 5
          law 4
          A+XA
          dap guc
          jdp gfa
          jmp gea
guc,      dac
          add (ntb
          TAAX
          jmp gua+1

er3,      jdp car
          lxr (van-1
          jdp prn
          law e3
          jmp ex
gos,      law i 1
          adm pdp
          sad (dac pd1
          jmp erg+1
          lac (400000
          xct guc
          TXXA
          jdp flh
gou,      lxr sga
          TXXP|
          jmp erg
got,      TXXA
gee,      jmp

```



```

gfa,      0
           skp i 2
           jmp er3
           lac ntb+1
           sza i
           jmp er2
           dac sfp
           add (ntb
TAAAX
           lio i 0
           dio ntb+1
pdp,      dac pdl
           idx .-1
           law i 0
           dac i 0
           dzm i 4
           jmp i gfa

er2,      law e2
ex,       jdp txp

cd,       skp i
           jmp rem
cda,      law i 1
           adm pdp
           sad (dac pdl-1
           jmp rst
           dap .+1
           lac
           jdp flh
           jmp cda

car,      0
           cliVcmi
           tyo
           jmp i car

erp,      TXXA
           jdp prz
.lai,     lai
           jdp ocp

rst,      law pdl
           dap pdp
rsp,      lxr (ntb+2
rsa,      lac i 4
           TAAI#
           jmp rsj
           TAAM
           and (200000
           TA=
           jmp rsd

```



```

rsb,    law 5
        A+XAX
        sas (ntb+1000
        jmp rsa
        skp 3
        jmp q
wtd,    skp i
        skp i 20
        jmp cr
        jdp wdy
        jmp cr

rsd,    lac i 4
        jdp uch
        law i 0
        dac i 4
        lac ntb+1
        dac i 0
        law ntb
        XMAA
        dac ntb+1
        jmp rsb

rsj,    TXA
        jdp flh
        jmp rsp

fls,    0
        TXA
        dac snx
flt,    lxr snx
        lac i 4
        spq
        jmp flu
        add (ntb
        jmp flt
flu,    jdp uch
        jmp i fls

uch,    0
        xor (400000
        and (400777
        TAA>
        jmp i uch
        add (dbt
        dap .+2
        dap .+2
        lac
        dzm
        jmp uch+1

```

jdp flh

```

0220
flh,      0
          dac fla
          TAX
          lac i 4
          ral 1s
          spa
          jmp i flh
flz,      lxr fla
fli,      lac i 4
          spq
          jmp flb
          add (ntb+4
          dap .+1
          lac
          and (200000
          sza
          jmp flb
          law ntb
.lioi4,   lio i 4
          A+IX
          lio i 0
          sni i
          jmp .-3
          jmp fli

flb,      lac (200000
          ior i 4
          dac i 4
          lio i 0
          dzm i 0
          dio fle
          TIIW
          jmp i flh
          law ntb
          dac svl
          XMAA
          sad ntb
          jmp fp5
          dac flf
          lxr (-776
          lio .a5
flg,      sad i ntb+1000
          jmp fp0
          sad i ntb+1004
          jmp fp4
          X+IX>=
          jmp flg
          jmp fp1

```

```
fp0,    law ntb+1000
        skip i
fp4,    law ntb+1004
        A+XAX
        dac svl
        lac fle
        dac i 0
fp1,    law ntb
        add flf
        sas fla
        jmp flz
        jmp i flh

fp5,    dio ntb
        jmp i flh
```



```

e1,      text /
no subfile of /
e2,      text /
directory full /
e3,      text / not found /
e4,      text /field /
e8,      text / has subfiles /
e11,     text /tape error /
e12,     text /tape full /
e13,     text /anomalous directory /
e15,     text /no write permit, type a character to try again
/
e20,     text /wrong tape, can't rewrite directory /
e21,     text / locked /
e23,     text /no drum write permit /
e24,     text /turn on TS switch
/

```

```

txp,     0
dap txy
txy,     lio
idx .-1
lac (607600
rcl 6s
sad .lai
jmp i txy
sad .+2
jmp txy
swp
tyo
lia
jmp txy+2

```

```

prn,     0
law 1
dap .+1
lio i
law i 3
dac t

```

```

prr,     ril 6s
law 77
AAIA+
jmp i prn
tyo
isp t
jmp prr
idx prn+3
sas .lio14
jmp prn+3
jmp i prn

```

gtf, 0
jdp gef
idx gtf
law 4
X+AA
dap ucp
dap drd
lac i 4
dac bkp
spa
jmp i gtf
jdp car
jdp prn
law e8
jmp ex

tf, 0
skp i 2
jmp i tf /read operation is always ok
xct tsf
jmp tfa

law 1
jdp rwf
jmp er23 /no drum write permit
tfa, lac aff

jdp rwf
jmp er21 /field locked
jmp i tf

rwf, 0
lio aff
dio rwz
jdp saf
law wbuf
jdp .mta
law 40
lio afz
xct fiv
jmp .-1
law 60
xct fiv
jmp .+2
idx rwf
lac rwz
dac aff
jmp i rwf

1205 → xct fiv 1440

verg, jdp car
stf 3
jmp cd

er23,

law e23
jmp ex

er21,

law e4
jdp txp
lac aff
jdp ocp
law e21
jmp ex

saf,
0
and .a77
dac aff
rar 6s
dac afz
ral 6s
jmp i saf

1240 nts,

~~dac~~ unit 5101 /non TS entry
law 0
dap tsf
lac (jdp .dcc
dac fiv
lac (jdp tapnts
dac tape
law 7400
dat 100 /tape core address 77400
jdp stt /initialize tape handler
jmp rrr

dia=iot 60
dcc=iot 62

.mta,
0
xct tsf
jmp ntsmta
mta
jmp i .mta
ntsmta, dac .w
jmp i .mta

1262 .dcc,

0
dac ac
dio .io
swp
and (7777
swp
and (20
TAP
lac afz
AVII
dia
lio .ac
law 20
AVIA
TAP |
lac afz
AVII
law i 20
AVII
lac .w
dcc
jmp .+2
idx .dcc
lac .ac 5122
lio .io 5104
jmp i .dcc

```
ey,      jdp ocp
          jmp cd

ocp,      0
          lio .law
          rcl 3s
          sni
          jmp .-2
          sza

opa,      sni
          lio .+3
          tyo
          cli
          rcl 620
          sza
          jmp opa
          jmp i ocp
```

```
del,      jsp gef
          skp i
          stf 2
          jdp flh
          skp i 2
          jmp del
          jmp wre

ren,      jsp gef
          skp i
          jmp q
          dac reu
          lac i 1
          dac sve
          lac i 4
          dac rsi
          law 600
          dap cd
          dac i 1
          dzm i 4
          stf 2
          jsp gef
          jmp er4
          jdp fls
          lac rsi
          dac i 4
          lac reu
          jdp flh
          jmp wre

er4,      stf 3
rem,      lxr reu
          lac sve
          dac i 1
          lac rsi
          dac i 4
          jmp cda

rew,      0
          xct wtd
          jdp wdy
          law i 0

.tap,    tap
          nop
          lac tape
          xct tsf
          jmp i rew
          skp i 60
          mta 204
          jmp i rew
```



```

uns,      jdp gtf
          jmp .+2
          jmp erg
          law flds
          dap usa
loc,      stf 2
usa,      lac
          sza i
          jmp una
          jdp saf
          jdp tf
          lxr (-1777
          dzm i 7777
          SXX>
          jmp .-2
          law 6000
          jdp .mta /core address
          lxr (-4
          lio afz
          AVII
une,      law 2020
fiv,      mta 104 /drum ivk
          jmp .-1
          law i 2000
          A+II
          SXX=
          jmp une
          idx usa
          jmp loc
una,      cla 2
          jdp dro
          jmp rst

tpe,      0
          sad (6
          jmp fpt
          dac ter
          law e11
          jdp txp
          lac ter
          jmp ey

flds,     21
          22
          24
          25
          0

```

fpt,

dio ter
law e15
jdp txp
jdp typin
law i 3
adm tpe
lac ter
swp
sad (40
jmp cd
jmp i tpe

```

dro,      0
           lac (10000
           dac ofs
           law flds-1
           dap droa
drob,     idx droa
droa,     lac
           sza i
           jmp i dro
           jdp saf
           jdp tf
           lac (-10000
drb,      adm ofs
           clf 6
           law 777
           and bkp
           sza i
           jmp drob
           dac blk
           lac (17000
           and bkp
           rar 1
           lio ofs
           A+IIA
           and (7777
           A~IP|
drp,      jmp drp
           jmp drob
           dio ofs
           lio blk
           law 7777
           A^II
           law tbuf
           jdp .mta
           tap
           jdp tpe
           lio ofs
           lac afz
           AVII
           law 420
           xct fiv
           jmp .-1
drs,      law 400
           adm ofs
drt,      lxr blk
           lac i dbt
           dac bkp
           jmp drb

```



```
pri,      jsp gef
          skp 1
          stf 2
          lxr 1 4
          jmp prh
pt,       stf 2
pa,      lxr ntb
prh,     TXX>
          jmp erp
          jdp crp
          law c0
          jdp txp
          dzm nip
prm,     TXX#
          jmp prp
          jdp ttx
          law ntb
          X+AX
          lac (dac pd1
          sub pdp
          dac nid
          lio nip
          sni 1
          A~IM|
          skp 1
          jmp prq
          sza 1 2
prq,     jmp prv
          stf 6
          jmp prw
```

prv, jdp crp
dzm nip
lac nid
ZIP
tyo
SAA>
jmp .-2
jdp prn
law i 7777
and i 1
sas (560000
jmp prw
lac nid
cma
dac nip
prw, lac i 4
sma
jmp phi
jdp prz
pru, swp
adm bck
lxr i 0
jmp prm
phi, lac i 0
xct pdp
idx pdp
lxr i 4
jmp prm
prz, 0
cli
and (777
sza i
jmp i prz
add (dbt
dap .+2
SII
lac
jmp prz+2

```

prp,      law i 1
          adm pdp
          dap .+1
          lxr
          sas (dac pdl-1
          jmp prm
          jdp crp
          jdp car
          lxr (-1000+ffb
          law 0
          lio i dbt+1000
          sni
          SAA
          SXX=
          jmp .-4
          jdp ocp
          law c1
          jdp txp
          law i 1
          CAX
          lxr i ntb
          SAA
          TXXP
          jmp .-3
          jdp ocp
          law c2
          jdp txp
          jmp rst

```

```

c0,      text /
file     blocks
c1,      text / free tape blocks
c2,      text / free directory entries

```

```

crp,      0
          lac bck
          TAAW
          jmp crq
          lio (5736
          tyo
          .a55, rir 555      /rir 6s
          skp 6
          tyo
          jdp ocp      lio .a55
          skp 6
          tyo
          crq,   clc 6
          dac bck
          jdp car
          skp 10
          jmp rst
          jmp i crp

```

```

bck,      -0

```



```

dri,      0
          dzm t̄
          law dbt+ffb-bs
          dap tbo
          law flds
          dap dria
          jmp dria
drib,    idx dria
dria,    lac
          sza i
          jmp i dri
          jdp saf
          jdp tf
          lac aff
          SAA
          rar 6s
          dac hig
          sub (10400
          dac ofs
drl,     law 400
          adm ofs
          sub h̄ig
          sma
          jmp drn
drg,     law 200
          and aff
          rar 6s
          ior ofs
          ral 6s
          jdp saf
          law tbuf
          jdp .mta
          lio ofs
          law 400
          xct fiv
          jmp .-1
          CAX
          law 0
          ior i tbuf+400
          SXX=
          jmp .-2
          sza
          jmp drk
          idx t
          jmp drl
drn,     skp 2
          skp 4
          jmp drib
          stf 4
          jmp drg

```

```

drk,      law i bs
          dac bnl
          law bs-1
          adm tbo
tbp,      idx tbo
          sub (lio dbt+1000
          sma
          jmp tpf
tbo,      lio
          sni i
          jmp tbp
          add (401000
          lia
          rar 9s
          ior t
          rar 9s
drd,      dac
          and (777
          add (dbt
          dap drd
          lac (400000
          xct drd
          law 7777
          A^II
          lac (400000+tbuf
          tap
          jdp tpe
          dzm t
          jmp drl
tpf,      law dbt+ffb
          dap tbo
          isp bnl
          jmp tbp
          law e12
          jdp txp
          jmp rst

```

/block ffb can't be free

0120

```
sav,      stf 2
          jdp gtf
          jmp .+2
          jmp erg
          clf 2
          jdp tf
          law i 7777
ucp,      ior
          jdp uch
          jdp dri
wre,      law 600
          dap wtd
          jmp rst

ttx,      0
          law i 2
          A+XA
          mul (1
          div .+1
.a5,      5
          law 1000
          XMA>
          sni i
          jmp erb
          jmp i ttx

erb,      jdp car
          law e13
          jmp ex
```


/controller

```
tapnts, 0          2155
         dac  $\bar{t}$ pac
         dio  $\bar{t}$ pio
         TXI      2160
         dio  $\bar{t}$ pxr
tpnf,   law i 777
         ior  $\bar{t}$ pio
         ral 9s
         sar 8s
         TATA>P
         CAI
         law 400 2170
         add  $\bar{t}$ pac
         dap reab
         dap wric
         lac (600000
         and  $\bar{t}$ pac
         spa
         jmp  $\bar{t}$ pna
         jdp rea 2200
         jmp  $\bar{t}$ pnb
tpna,   sad (600000
         jmp  $\bar{t}$ psc
         jdp wri
tpnb,   law 400
         adm  $\bar{t}$ pac
         law i 7777
         adm  $\bar{t}$ pio 2210
         sar 9s
         sar 3s
         TA=
         jmp  $\bar{t}$ pnf
         jmp  $\bar{t}$ pnd
tpnc,   lio unit
         mot 0
         mot 700 2220
         mot 400
         lac 1 +3
         SAA>
         jmp  $\bar{t}$ pnf
         jmp  $\bar{t}$ pnd
         /select
         /reverse
         /go
tpnd,   idx tapnts
         lac  $\bar{t}$ pac
         jmp  $\bar{t}$ pne
stt,    0          2230
         clf 4
         law mot 600-ivk
         dap drc
         dzm  $\bar{t}$ bk
         jmp i stt
         /forward
```

```

rea,      0
          law dat 500-ivk      /read
          jdp cnt 2240
          lxr {77400
          lio {-400
reaa,    lac i 0
          X->IX
reab,    dac i
          X->IX
          SXX
          SIIP 2250
          jmp reaa
          jmp i rea

wri,      0
          dio wr̄ib
          lxr {77400
          lio {-400
wria,    X->IX
wric,    lac i
          X->IX
          dac i 0
          SXX
          SIIP
          jmp wria
          law dat 600-ivk      /write
          lio wr̄ib
          jdp cnt
          jmp i wri

cnt,      0
          dap inf
          dio b̄kn
cnc,     law 5
          skp i 4
          cma
          add cbk
          skp 4
          cma\c̄mi
          AMI>
          jmp cna
          law 100
          xor drc
cnb,     dap drc
          law i 7777
          dac eoc
cna,     lio unit
          mot 0      /motion select
          dat 0      /data select
          mot 100    /skip if ready
          jmp nr̄dy    /not ready
          mot 600    /direction
          mot 400    /go
          mot 300    /skip eot
          jmp cne
drc,

```

```

eot,      law mot 600-ivk      /forward
          skp i 4
          law mot 700-ivk      /reverse
          dap drc
          isp eoc
          jmp cna
wbx,      clf 4
          lac drc
          sas (mot 600         /forward
          stf 4
          jmp cnc
wbk,      law 777
          dat 200              /read block number
          AAIA
          dac cbk
          lio bkn
          jmp wbx

cne,      lac bkn
inf,      dat                  /read or write
          dat 300              /read status
          spi
          jmp wbk
          ril 1
          spi
          jmp i cnt
          ril 1
          spi
          jmp cna
          ril 1s
          spi
          jmp eot
          law 2
          SAA
          ril 1s
          spi i
          jmp .-3
          jmp taperr

nrdy,     law 0
taperr,   mot 500              /stop
tpne,     lio tpio
          lxr tpxr
          jmp i tapnts

```


constants
repeat if2, [printo [ffb-4]x400+org-.
[ffb-4]x400+org/
ntb, ntb+1000/
dbt, dbt+1000/

printe 77]

variables

vbf, vbf+12/
van, van+4/
pnu, pnu+1/
lp1, lp1+1/

/initialization

6000/

in, iam
law ntb
lio (40000+ffb-4
tap
hlt
jdp itn
lac (400000+org
lio ([ffb-4]xi
tap
hlt
lac (nop
dac tts
law 600
dap wtd
jmp rrr

itn, 0
law ima
jdp txp
lxx (dbt-1
jdp prn
law imb
jdp txp
jsp ll
nop
nop
lac van
sza i
jmp i itn
lxx (-3
cli

ito, lac i van+3
A~II
rir 5s
dac i dbt+3
SXXP
jmp ito
dio dbt+3
jmp i itn

```

ini,      iam
          law inm
          jdp txp
          law 16
          mta 400
          and (7
          jdp ocp
          law inn
          jdp txp
          tyi
          law 30
          A~IP
          dsm
          lxr (-1000+ffb
          dzm i dbt+1000
          SXX=
          jmp .-2
          cliVcmi
          law 2
          dac ntb+1
ink,      TAAX
          sad (1000
          jmp inj
          law 5
          X+AA
          dac i ntb
          dio i ntb+4
          jmp ink
inj,      dzm ntb+773
          dzm ntb
          jdp itn
          lac (400000+org
          lio (ffbxi
          jmp inw

inm,      text .initialize drive :
inn,      text .?
:

ima,      text /
tape name is now !/
imb,      text /'
type in new name if desired

constants
start in

```


starter

NDS/SYS

end of cylindrical file

mot=ivk 4077
dat=ivk 4021
unt=ivk 4020
lcr=770037
ioc=770032

readin

0/

in,

ioc

unt 100

/unit wait

cad,

unt 0

/read unit number

bk,

mot 0

/motion select

dat 0

/data select

mot 100

/skip if ready

jmp in

cli

lcr

eem

iam

go,

lac .+1

mot 600

/forward

mot 400

/go

SAA>

jmp .-1

mot 700

/reverse

mot 300

/skip eot

jmp .-1

lac .+1

mot 400

/go

SAA>

jmp .-2

mot 600

/forward

mot 400

/go

law i 1

dac bk

ent,

law 100

dac cad

law i-777400

dat 100

/core address 77400

god,

law 2

adm bk

unt 0

/read unit number

sad (25

jmp i ent

gob,

dat 500

/read

dat 300

/read status

spi i

jmp goa

dat 200

/wrong block, read block number

lcr (777

XVII

AMII>

jmp go

/lose

goa,

ril 1s

spi i

jmp gob

/error, try again

lcr (77400

goe,

lac i 0


```
aam
dac cad
idx cad
SXXA
sas (100000
jmp goe
jmp god
```

```
constants
repeat if2,printo .-1
start in
```