

ADDRESS LENGTH BINARY CONTROL CARDS.
0 2412
2412 IDENT ACTIONS
END

BLOCKS	TYPE	ADDRESS	LENGTH
PROGRAM*	LOCAL	0	2307
JUMTAB	LOCAL	2307	55
AUTHS	LOCAL	2364	26

ENTRY POINTS.

ENTRY	-	3	FRETURN	-	44	PASSER	-	70	OP.FRET	-	45
VIEWERR	-	37	GETPAR	-	46	REC.DR	-	75	OP.RPAR	-	47
RETURN	-	42	RETERR	-	53	OP.RTRN	-	43	OP.RERR	-	54

EXTERNAL SYMBOLS.

P.WHICH	EN.BIDX	CA.DRCT	DEHASH	P.KEYNO	P.INCR	SKPENT	DF:CFIL
P.ERRCL	ERRLOC	CA.SBPD	PUTDNT	P.SUCCO	P.TAG	CBYNAME	EC:DSOP
P.ERRNO	R.UACC	CA.ACKY	GETCTRS	P.SUCCO	CF.DIR	EC.OPER	KOVSONL
E.BPAR	T.SCANL	T.DNTN	PUTCTRS	P.NUMB	EF.TYPS	EN.CPTY	EC:MCAP
E.SPAR	RETDATA	EC.DNTN	CLSDYNT	P.OBSPC	L.RW	EN.SPAP	EC:CCAP
E.NOIA	T.SLL	CA.DYNT	C.DIRCT	C.STNT	EN.NTIM	EN.FASO	DISPKEY
E.ISOWN	T.SPL	CANON	P.DIRCT	P.STNT	EC.DRCT	XPACK	CLOSDP
E.BGOPT	T.OPTS	GETFCAP	P.NAME	C.OBJ	EN.RSRV	EN.NTFD	OPENRO
E.IMPOT	C.LOL	OPEN	C.KEY	P.OBJ	O.SYSTM	T	DF:WRIT
E.ISLCK	RETLIST	OPEN1	P.KEY	C.DYNT	O.SWPTM	WNEWAK	DF:READ
E.ISLKI	SOB.IA	CLOSE	C.SCAN	P.DYNT	O.USRTM	LOCKAK	RESTORE
E.NTLCK	WINDOW	CLOSEI	P.SCAN	P.KN1	RETBUFF	EC:CIN	EC:RERR
E.DELZR	DF.DRCT	REA	P.SHP	P.OPT1	EN.LUP1	EC:CDUT	EC:BPAP
E.FDNT	EF.DRCT	UNIQUE	P.SIZE	P.KN2	EN.LUP2	DSPDYNT	EC:FBET
E.FLOL	C.T1	NAMSCAN	P.ACBLK	P.OPT2	SOB.ACC	EC:SEV	EC:RTRN
E.BLOC	C.T2	GETSPAC	C.DOBJ	C.FOBJ	EN.NTDR	EC:GEVH	D.STKBF
E.BGOC	CL.SCAN	ADDWDS	P.DOBJ	P.FOBJ	EN.NTAK	DF:CLO	EC:DSSE
E.DNNTD	EF.CODE	DELWDS	C.DIR2	C.SBPD	EN.NTDO	DF:DSF	D.ENTRY
EC.ABLK	CL.DRCT	NXTOWN	P.DIR2	P.SBPD	SOB.DST	DF:OPRO	BESTERR
EN.NOAR	CL.OPS	FBSPEC	P.NAM2	C.SDIR	E.NTOWN	DSPSUCC	IPLIST
EC.FILE	CC.DIR	NOBSPEC	C.KEY2	P.SDIR	E.OPTS	DISKEY2	EC:SETP
SYSERR	CL.DNT	CLOCKS	P.KEY2	C.DDIR	DSTRY	DISDIR2	RSETESM
E.WAIT	EC.AKN	COPY	P.NWNAM	P.DDIR	M.WIN	DISPOBJ	ERRSAVE
EC.PARM	L.DTYP	GETDNT	P.NWKYN	P.SPACE	MAPIN	DF:ABSV	SAVE
EN.BPAR	CA.DSKF	HASH	P.OPTS	P.FLAG	EN.OPNM	DF:PCLS	DSPCLKS

```

IDENT ACTIONS
* XTEXTS USED: DIOPS - DEFINES PARAMETERS
* MISC MAC - SUBROUTINE LINKAGE AND OTHER MACROS
* SYSMAC - SYSTEM CALLING MACROS
* DIRDEFS - FIELD DEFINITIONS, TYPES, ETC.
    
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```

ENTRY ENTRY TYPES
EXT 1 P.WHICH,P.ERRCL,P.FRRMO
EXT E.BPAR,E.SPAR,E.NOJA
EXT E.ISOWN,E.BGOPT,E.IMPOT,E.ISLCK,E.ISLKT
EXT E.NTLCK,E.DELZR
EXT E.FDNT,E.FLOL,E.BLOC,P.BGOC,E.DNNT0
EXT EC.ABLK,EN.NOAB,EC.FILE
EXT SYSERR,E.WAIT

EXT EC.PARM,EN.BPAR,EN.BIRX

EXT ERRLOC,R.UACC,T.SCANL,RETDATA,T.SLL,T.SPL,T.OPTS
EXT O.LOL,RETLIST

EXT SOB,IA

EXT WINDOW

EXT DF,DRCT,EF,DRCT,C.T1,C.T2,CL,SCAN,EF.CODE
EXT CL,DRCT,CL.OPS,CC,DIR,CL.DNT,EC.AKN

EXT L.DTYP,CA.DSKF,CA.DRCT,CA.SBPD,CA.ACKY
EXT I.DNTN,EC.DNTN,CA.DYNT

EXT CANON,GETFCAP,OPEN,OPENI,CLOSE,CLOSEI,BEA,UNIQUE
EXT NAMSCAN,GETSPAC,ADDWDS,DELWDS,NXTOWN,FOBSPEC
EXT NOBSPEC,CLOCKS,COPY,GETDNT,HASH,DEHASH,PUTRNT
EXT GETCTRS,PUTCTRS,CLSDYNT
    
```

5 L.CH LIM EQU 5 .. LIMIT ON SOFTLINK AND SUCCESSOR CHAINS

2307 0200000076 +
2310

```

USE JIMTAB
JP INIT .. INITIALIZATION ACTION
ACTIONS BSS 0
USE *
    
```

OPGROUP MACRO PREFIX
ENDM

```

MACRO ACTION,NAME,NO:PS .. PUT ENTRY IN JUMP TABLE
USE JIMTAB
* JP NAME
USE *
ENDM
    
```

```

MACRO CAP,NAME,TYPE,OPTIONS .. MAKE EXT DEFINITIONS
EXT C.NAME,P.NAME
ENDM

```

```

MACRO ANYC,NAME,OPTIONS
EXT C.NAME,P.NAME
ENDM

```

```

MACRO DAT,NAME
EXT P.NAME
ENDM

```

```

MACRO BIKD,NAME,LENGTH
EXT P.NAME
ENDM

```

```

MACRO BIKC,NAME,LENGTH
EXT C.NAME,P.NAME
ENDM

```

```

ENDACT MACRO
ENDM

```

```

0 DIROPS XTEXT
0 DIRDEFS XTEXT
0 MISCMAc XTEXT
0 SYSMAC XTEXT

```

```

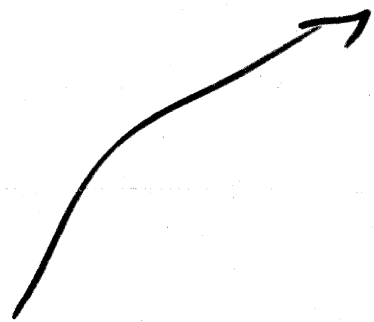
.. ACTION DECLARATIONS
.. FIELD DEFINITIONS, TYPES, ETC.

```

MACRO ACT,NAME,CLASS

**NAME: DBSS
:
:
END
CLASS**

0



* THE FOLLOWING FOUR CELLS ARE THE SUBPROCESS ENTRY POINTS.

0	0100000000 x	+	RJ	SYSERR	.. INITIAL ROOT CALL
1	0100000000 y	+	RJ	SYSERR	.. INTERRUPT
2	0200000007 +	+	JP	ERROR	.. ERROR
3	0130000000 x	ENTRY	SYSCALL	DISCLKS	.. NORMAL
4	0130000000 y		SYSCALL	SAVE	.. SAVE REGISTERS
5	5110000000 x		SA1	P.WHICH	.. ACTION NUMBER
6	0210002310 +		SB1	X1	
7	0130000000 x	ERROR	SYSCALL	ERRSAVE	.. SAVE THE REGISTERS
10	0130000037 +		SYSCALL	VIEWERR	.. SAVE STACK ENTRY FOR DEBUGGING PURPOSES
11	0130000000 x		SYSCALL	RSETESM	.. RESET ERROR SELECTION MASK
12	5110000000 x		SA1	ERRLOC	
			BX6	X6-X6	
			SA6	A1	.. RESET ERRLOC
13	0311000014 +		NZ	X1,ERRSETP	
			SX1	ERROR4	.. ROUTINE TO HANDLE =NO ERROR= CASE
14	7160000000 x	ERRSETP	SETPCNT	(CL,DRCT,CC,DIR)	.. X1,ERROR2
25	0130000000 x		SYSCALL	RESTERR	.. RESTORE THE REGISTERS
26	0130000043 +		SYSCALL	OP.RTRN	.. RETURN TO RECOVERY ROUTINE
27	0100000000 x	ERROR1	SYSERR		.. RETURN DID NOT RETURN
31	0100000000 x	ERROR2	SYSERR		.. UNEXPECTED F-RETURN

* PROCESS UNEXPECTED ERROR.

33	0100000000 x	ERROR4	DEBUG	NOERRADDR	.. WE DONT WANT TO FALL THROUGH
35	0100000000 x	ERROR5	SYSERR		
37	4000000000 x	VIEWERR	IP0	EC:DSSE	
40	0000000000000000000000000000000000 x		D:	=XD,STKBF	
41	00000000000000000000000000000000001		D:	1	

* TO RETURN, AN ACTION SHOULD SET X1 AND X2 TO THE DESIRED RETURN PARAMETER
* DESCRIPTIONS (IF ANY), AND JUMP TO ONE OF THE LABELS: RETURN,
* FRETURN, RETPAR, OR RETERR. EACH OF THESE ROUTINES ACCUMULATES ELAPSED TIMES,
* RESTORES THE ORIGINAL CALLER'S REGISTERS, AND PERFORMS THE
* APPROPRIATE RETURN ACTION.

		ENTRY	RETURN, FRETURN, RETPAR, RETERR, PASSER, REC, DR		
42	5130000043 +	RETURN	SA3	OP.RTRN	.. IP = EC:RTRN
			JP	DO:RTRN	
43	4000000000 x	OP.RTRN	IP0	EC:RTRN	

44	5130000045 + 0200000055 +	* FRETURN	SA3 JP	OP.FRET DORTRN	.. IP _A = ECIFRET
45	4000000000 x	* OP.FRET	IP0	ECIFRET	
46	5130000047 + 0200000055 +	* RETPAR	SA3 JP	OP.RPAR DORTRN	.. IP _A = ECIRPAR
47	4000000000 x	* OP.RPAR	IP0	ECIRPAR	
50	00000000010000000000 x	* RS.T1	D1	T1.1	.. SPECIFICATION TO RETURN T1
51	00000000010000000000 x	* RS.CT1	D1	C.T1.1	..
52	00000000020000000000 x	* RS.CT2	D1	C.T1.2	.. C.T1 AND C.T2
53	5130000054 + 0200000055 +	* RETERR	SA3 JP	OP.RERR DORTRN	.. IP _A = ECIRERR
54	4000000000 x	* OP.RERR	IP0	ECIRERR	
55	10633 10711 5160000000 x	* DORTRN	BX6 BX7 SA6	X3 X1 RETLIST	.. IP _A = A RETURN-TYPE OPERATION .. IPT (OR GARBAGE)
56	5076000001 10622		SA7 BX6	A6+1 X2	.. IP _S (OR GARBAGE)
57	5067000001 6170000061 +		SA6 CALL	A7+1 CLOCKS	
61	0130000000 x		SYSCALL	RSTORE	
62	0130000000 x		SYSCALL	RETLIST	
63	0100000000 x	DORTRNER	SYSERR		.. RETURN DID NOT RETURN
65	6170000066 +	* CFRET	CALL	CLOSE	.. CLOSE DIRECTORY AND FRETURN
66	0200000044 +	* JP	JP	FRETURN	
67	6170000070 +	* CPASSED	CALL	CLOSE	.. CLOSE DIRECTORY AND RELAY ERROR
70	5110000000 x 5120000000 x	* PASSER	SA1 SA2	P.ERRCL P.ERRNO	.. PASS ERROR ON TO CALLER
71	0200000053 +	* JP	JP	RETERR	
72	6170000073 +	* CRETERR	CALL	CLOSE	.. CLOSE DIRECTORY AND GIVE ERROR
73	0200000053 +	* JP	JP	RETERR	
74	6170000075 +	* CREC.DP	CALL	CLOSE	.. CLOSE DIRECTORY AND
75	7110000000 x 0200000053 +	* REC.DR	SX1 JP	EC.DRCT RETERR	.. RETURN A (EC.DRCT, (X2)) ERROR

```

*
*
*          DR:INIT( )
*
EXT          CF.DIR,EF.TYPS,L.RW,EN.NTIM
INIT → ACT  DR
READ        (CL.DRCT,CF.DIR),0,0,1,RW .. INITIALIZE SCRATCH AREA
SYSCALL     RSETESM .. ENABLE ERRORS
READ        (CL.DRCT,EF.TYPS),0,RETBUFF,L,DTYPS
WRITE       (CL.DRCT,CF.DIR),TYPES,***
READ        ***,TYPES,**

*
135 0200000042 +          JP          RETURN          .. DONE
*
136          TYPES      BSSZ          8          .. THIS ARRAY MUST BE AS LONG AS L.DTYP5
*
*
*          DR:DEBUG( )
*
146 0100000000 X          DEBUG:DR → ACT
150 0200000042 +          DEBUG      DRUGCALL .. DIRECTORY SYSTEM DEBUG ACTION
          JP          RETURN          .. ALL DONE
*
*
*          UNWRITTEN ACTIONS
*
151          SCDF        BSS          0          .. CREATE DISK FILE, SCRATCH
151          SCDR        BSS          0          .. CREATE DIRECTORY, SCRATCH
151          CRSN        BSS          0          .. CREATE STATIC NAME TAG
151          OSN1        BSS          0          .. OPEN STNT WITH OBJECT
151          OSN2        BSS          0          .. OPEN STNT WITHOUT OBJECT
151          DSSN        BSS          0          .. DESTROY STATIC NAME TAG
*
151 7120000000 X          SX2         EN.NTIM .. RETURN DIRECTORY CLASS ERROR
          0200000075 +          JP          REC.DR
*
*
*          DR:OPDR( C.DIRCT )
*
EXT          EC.DRCT,EN.RSRV
*
152 6150000153 +          OPDR:DR → ACT
153 7160000070 +          CALLR      GETFCAR,B5 .. CONVERT C.DIRCT INTO DF.DRCT
154 0130000000 X          ON.ERR      PASSER
156 13666          SYSCALL     OPENRO,OPN.ERR2 .. [COULD HAVE BEEN OPENRW]
157 0200000042 +          OFF.ERR    JP          RETURN
*
160 13666          OPN.ERR2  OFF.ERR .. ERROR - DIRECTORY IS EXCLUSIVELY OPEN
161 7120000000 X          SX2         EN.RSRV .. RETURN A DIRECTORY CLASS ERROR
          0200000075 +          JP          REC.DR
*
*
*          DR:CLDR( C.DIRCT )

```

162	6150000163 +	* CLDR:OR → ACT	CALLR	GETFCAP,B5
163	7160000070 +		ON.ERR	PASSER
164	0130000000 X		SYSCALL	CI OSDF
165	13666		OFF.ERR	
166	0200000042 +		JP	RETURN

*
 *
 * DR:CLKS()
 *

* RETURNS:
 * RD(1) = ACCUMULATIVE SYSTEM TIME
 * RD(2) = SWAP TIME
 * RD(3) = USER TIME

EXT 0.SYSTM,0.SWPTM,0.USRTM,RETBUF

167	5110000000 X	CLKS:OR → ACT	SA1	0.SYSTM	.. PICK
	5120000000 X		SA2	0.SWPTM	.. UB
170	5130000000 X		SA3	0.USRTM	.. CLOCKS
	10611		BX6	X1	
	10722		BX7	X2	
171	5160000000 X		SA6	RETBUF	
	5170000001 X		SA7	RETBUF+1	
172	5110000174 +		SA1	RS.CLKS	.. RETURN DATA CONTROL
	13222		BX2	X2-X2	.. (RETURN CAP CONTROL)
	10633		BX6	X3	
173	5160000002 X		SA6	RETBUF+2	
	0200000046 +		JP	RETPAR	.. FINISHED
174	000000003000000000 X	RS.CLKS	SPECIFY	RETBUF,3	

```

*
*
*          DR:UACC( C.DIRCT, BD.NAME, C.KEY )
*
*  REGULAR USER ACCESS.
*
*          EXT          EN.LUP1,EN.LUP2
*          ACT
*          UACC:DR → SX6      FRETURN          .. SET THE
*          SA6           R.UACC          .. FAILURE EXIT
*          SB1           P.NAME
*          CALLR        CANON,B6        .. PUT THE NAME IN CANONICAL FORM
*          SX1           0              .. READ-ONLY FLAG
*          CALLR        OPEN,B6        .. OPEN, LOCK, AND MAP IN DIRECTORY FILE
*          SYSCALL     DISPKEY        .. DISPLAY THE ACCESS KEY IN X6, X7
*          SA7           P.KEY          .. SAVE ACCESS-KEY NUMBER
*          NZ           X7,UACC2       .. NOT IMPLICIT ACCESS
*          UACC1       SA2           SOB,IA .. MASK WITH IMPLICIT ACCESS OPTION
*          SA3           P.DIRCT       .. OPTIONS (SET BY ↑OPEN1↑)
*          BX2          X2*X3
*          ZR           X2,E,NOIA      .. ERROR - NO IMPLICIT ACCESS POWER
*          UACC2       SX6           L,CHLIM
*          SA6           T.SLL         .. INITIALIZE SOFTLINK AND
*          SA6           T.SPL         .. SUCCESSOR LINK CHAIN COUNTS
*          MX4          42            .. A SET OF ALL-ENABLED OPTIONS
*          UA.LOOP     CALLR        BFA,UA.FAULO .. BASIC ENTRY ACCESS [FAILS IF NO
*          *          *              SUCH ENTRY] [MAY CREATE IMPOTENT KEY
*          *          *              ERROR]
*          *          *              RETURNS ENTRY TYPE LEFT-JUSTIFIED
*          *          *              IN X0, OBJECT TYPE INDEX IN B2,
*          *          *              OBJECT-DESCRIPTOR WORD IN X3, AND
*          *          *              OPTIONS -AND-ED WITH X4
*          *          *
*          *          *              X0,UA.SOFT .. ↑BFA↑ HAS SET P.DIRCT, P.KEY, P.NAME
*          *          *              C.TI,(CL.DRCT,B2),(X3) .. CREATE CAPABILITY
*          *          *              LX4 60-18 .. RIGHT-JUSTIFY OPTIONS
*          *          *              COPYCAP C.TI,C.TI,(X4) .. DOWNGRADE OPTIONS TO THOSE DESERVED
*          *          *              CALL CI,OSE .. UNMAP, UNLOCK, AND CLOSE DIRECTORY
*          *          *              RETCTI SX1 0 .. (RETURN DATUM SPECIFICATION)
*          *          *              SA2 RS,CT1 .. RETURN C.TI
*          *          *              JP RETPAR
*          *          *
*          *          *              UA.SOFT SA1 T.SLL
*          *          *              SX6 X1-I
*          *          *              NG X6,UA.ERR1 .. ERROR - TOO MANY SOFT LINKS
*          *          *              SA6 AI
*          *          *              CALL CI,OSE .. THROUGH WITH THE CONTAINING DIRECTORY
*          *          *              UA.SOFT1 SA1 P.DIRCT .. A DIRECTORY-SPECIFIER
*          *          *              CRCAP DF,DRCT,(CL.DRCT,CA.DSKF),(X1) .. MAKE A DISK FILE
*          *          *              *          *              CAPABILITY
*          *          *              *          *              CALLR OPEN1,B6 .. OPEN FILE RATHER THAN DIRECTORY
*          *          *              *          *              SX6 L,CHLIM
*          *          *              *          *              SA6 T.SPL .. RESET SUCCESSOR CHAIN COUNTER
*          *          *              *          *              JP UA.LOOP
  
```


254	5110000000	X	UA.FAI10	SA1	WINDOW	.. HAS-SUCCESSOR FLAG IS BIT 1
		0321000266	+	PL	X1,UA.FAI1	.. GIVE UP
255	5110000000	X		SA1	T.SPL	
		7160000001		SX6	1	
256	37616			IX6	X1-X6	
		0336000272	+	NG	X6,UA.ERR2	.. TOO MANY SUCCESSORS
		54610		SA6	A1	
257	5110000000	X		SA1	P_KEY	
		0311000262	+	NZ	X1,UA.NTIA	
260	5110000001	X		SA1	WINDOW+1	.. OPTIONS OF SUCCESSOR DIRECTORY
		5120000000	X	SA2	SOB.IA	.. WORD WITH JUST SOB.IA SET
261	11221			BX2	X2*X1	
		0302000000	X	ZR	X2,E.NOIA	.. ERROR - NO IMPLICIT ACCESS
262	5110000002	X	UA.NTIA	SA1	WINDOW+2	.. SUCCESSOR DIRECTORY SPECIFIER
		10611		BX6	X1	
263	5160000000	X		SA6	P_DIRECT	.. SAVE FOR LATER
		6170000265	+	CALL	CLOSE	
265	0200000240	+		JP	UA.SOFT1	
266	6170000267	+	UA.FAI11	CALL	CLOSE	
267	5110000000	X		SA1	R_UACC	
		6211000000		SBI	X1+0	.. FAILURE EXIT
270	0210000000			JP	B1	
				*		
				*		
271	7120000000	X	UA.ERR1	SX2	EN.LUP1	.. TOO MANY SOFT LINKS
		0200000074	+	JP	CDEC.DR	.. CLOSE DIRECTORY, RETURN DIRECTORY ERROR
				*		
272	7120000000	X	UA.ERR2	SX2	EN.LUP2	.. TOO MANY CHAINED DIRECTORIES
		0200000074	+	JP	CDEC.DR	
				*		
				*		
				*	DR:ASCL(C.SCAN, RD.NAME)	
				*		
				EXT	SOB.ACC, EN.NTDR, EN.NTAK	
				ASCL:DR	^{SOB-USE} SYSCALL	
273	0130000000	X		SX6	MOVSCAN	.. MOVE C.SCAN TO C.T1
274	7160000000			SA6	0	.. INITIALIZE INDEX OF
		5160000000	X	SA6	T_SCANL	.. NEXT PAIR IN SCANLIST
275	7160000300	+		SX6	AS_LOOP	.. SET FAILURE
		5160000000	X	SA6	R_UACC	.. EXIT FOR ↑UACC↑
276	6110000000	X		SBI	P_NAME	.. PUT -NAME-
		6160000300	+	CALL	CANON,R6	.. INTO PROPER FORMAT
300	5110000000	X	AS_LOOP	SA1	T_SCANL	
		7261000002		SX6	X1+2	.. INDEX OF PAIR FOR NEXT TIME THRU LOOP
301	54610			SA6	A1	
		7160000344	+	ON.ERR	AS.ERR1	.. CODE TO HANDLE END-OF-CLIST CONDITION
		7160000000	X	DISPCAP	(C.T1,X1)	.. GET A DIRECTORY CAPABILITY (HOPEFULLY)
311	10466			BX4	X6	.. TYPE AND OPTIONS
		10577		BX5	X7	.. DESCRIPTOR
		13666		OFF.ERR		
		0304000044	+	ZR	X4,FRETURN	.. QUIT ON EMPTY ENTRY

313	6110000136 +		SB1	TYPES	.. BASE OF DISK TYPES ARRAY
	5121000000 X		SA2	B1+CA.DRCT	.. TYPE NUMBER OF DIRECTORY CAPABILITY
314	5130000000 X		SA3	S0B.ACC	
	12232		BX2	X3+X2	.. REQUIRE THAT ↑USER ACCESS↑ OPTION IS SET
	16242		BX2	-X2+X4	.. X2=0 IFF TYPES MATCH
315	0312000351 +		NZ	X2,AS.ERR2	.. ERROR
	10644		BX6	X4	.. SAVE
316	5160000000 X		SA6	P.DIRCT	.. OPTIONS
	7160000000 X		CRCAP	DF.DRCT,(CL.DRCT,CA.DSKF),(,X5)	.. MAKE A FILE CAP.
327	7160000352 +		ON.ERR	AS.ERR3	.. WE MAY RUN OFF THE END
330	7160000000 X		DISPCAP	(C.T1,X1+1)	.. GET AN ACCESS KEY IN X6,X7
336	5170000000 X		SA7	P.KEY	.. SAVE ACCESS KEY NUMBER
	5121000000 X		SA2	B1+CA.ACKY	
337	16262		BX2	-X2+X6	.. COMPARE TYPE NUMBERS & options
	13666		OFF.ERR		.. DISABLE ERROR PROCESSOR (CLOBBERING X6)
340	0312000352 +		NZ	X5,AS.ERR3	.. ERROR - ODD SCANLIST ENTRY MUST BE KEY
	7110000000		SX1	0	.. OPEN THE DIRECTORY FILE
341	6160000342 +		CALLR	OPEN,B6	.. FOR READING
342	5120000000 X		SA2	P.KEY	
	0312000206 +		NZ	X3,UACC2	.. NOT IMPLICIT ACCESS
343	0200000204 +		JP	UACC1	.. GO CHECK FOR IMPLICIT ACCESS OPTION
		*			
344	5110000000 X	AS.ERR1	SA1	P.ERRCL	.. HOPEFULLY, WE HAVE A -CLIST INDEX TOO
	7120000000 X		SX2	EN.PARM	.. LARGE- ERROR
345	37212		IX2	X1-X2	
	0312000070 +		NZ	X5,PASSER	.. UNKNOWN ERROR - PASS IT ON
346	5120000000 X		SA2	P.ERRNO	
	7140000000 X		SX4	EN.BIDX	
347	73320		SX3	X2	
	37334		IX3	X3-X4	
	0303000044 +		ZR	X3,FRETURN	.. END OF SCANLIST
350	0200000070 +		JP	PASSER	.. OTHER ERROR - PASS IT ON TO THE CALLER
		*			
351	7120000000 X	AS.ERR2	SX2	EN.NTOR	.. EVEN SCANLIST ENTRY
	0200000353 +		JP	AS.ERR23	.. NOT A DIRECTORY
		*			
352	7120000000 X	AS.ERR3	SX2	EN.NTAK	.. ODD ENTRY NOT ACCESS KEY
353	5130000000 X	AS.ERR23	SA3	T.SCANL	.. CONVERT
	7233777775		SX3	X3-2	.. CLIST INDEX
354	21301		AX3	1	.. TO PAIR ORDINAL
	20322		LX3	1A	.. COMBINE MODIFIER
	12232		BX2	X3+X2	.. WITH ERROR NUMBER
355	0200000075 +		JP	REC.DR	.. RETURN DIRECTORY ERROR CLASS

SA3 SOB.USE
 BX2 X3+X2

		DR:CRFI (C.DIRECT, BD.NAME, BD.SHP)			
356	6170000357 +	CRFI:10	CALL	UNIQUE	.. SET UP FOR ENTRY CREATION
357	5110000000 X		SA1	P.NAME	.. HEADER OF NAME BLOCK CONTAINS LENGTH
	7211000002		SX1	X1+2	.. LENGTH OF OWNERSHIP ENTRY
360	6170000361 +		CALL	GETSPAC	
361	5120000000 X		SA2	WINDOW	
	21244		AX2	1R+18	
	43052		MX0	60-18	.. ACCOUNTING POINTER IS 18 BITS
362	15220		BX2	-X0*X2	
	5130000000 X		SA3	P.SHP	.. NUMBER OF SHAPE NUMBERS
363	7160000067 +		ON.ERR	CBASSER	.. CLOSE FILE AND PASS ERRORS TO USER
364	7160000000 X		CFIL	X2, (P.SHP+1, X3), RETDATA, C.T2	.. CREATE LLD-FILE
374	13666		OFF.ERR		
375	5120000000 X		SA2	RETDATA	.. DISK UNIQUE NAME, ADDRESS
	43752		MX7	42	.. ALL-ENABLED IMPLICIT OPTIONS
			SX3	CA.DSKF	.. TYPE INDEX OF DISK FILE
376	5271777776 X		BX7	X7+X3	.. NOTE: CA.DSKF MUST BE ZERO
			SA7	P.NAME-1+X1	.. PLACE (OPTIONS, TYPE) WORD JUST AFTER NAME
	5130000001 X		SA3	P.NAME+1	.. FIRST WORD OF NAME
377	43002		MX0	24 SO ET.OVN	.. Ownership entry type
	20073		LX0	60-18	.. ENTRY TYPE = OWNERSHIP = 3
	12663		BX6	X0+X3	
	54630		SA6	A3	.. FIRST WORD OF NAME WITH ENTRY TYPE
400	10722		BX7	X2	
	5077000001		SA7	A7+1	.. OBJECT-SPECIFIER IS LAST WORD OF ENTRY
401	7160000000 X		CRCAP	C.T1, (CL.DRCT, CA.DSKF), (X2)	.. MAKE DISK FILE CAPABILITY
411	5120000000 X		SA2	WINDOW	.. MAKE new file system on the disk
	36621		IX6	X2+X1	.. UPDATE FREE POINTER, WHICH
	54620		SA6	A2	.. IS DIRDSRE[43:60]
412	6110000001 X		SB1	P.NAME+1	.. SOURCE ADDRESS OF WORDS TO COPY
	6222000000 X		SB2	WINDOW+X2	.. SINK ADDRESS OF WORDS TO MOVE
413	63310		SB3	X1	.. NUMBER OF WORDS TO COPY
	6170000415 +		CALL	COPY	.. MAKE SURE NEW OWNERSHIP ENTRY STRIPS around
415	6170000416 +		CALL	CLOSE	.. MAPOUT, DECLAIM AND CLOSE FILE
416	7110000000		SX1	0	.. (RETURN DATA SPECIFICATION)
	5120000052 +		SA2	RS.CT12	.. RETURN C.T1 AND C.T2
417	0200000046 +		JP	RETPAR	

shaded
closed
close CT1
close DIRCT
will
help

DR:CRDR (C.DIRECT, BD.NAME, P.SIZE, P.ACBLK)

* THIS ACTION CREATES A NEW DIRECTORY OBJECT, OF DESIGNATED SIZE, WITH
 * OR WITHOUT A DIRECTLY ASSOCIATED ACCOUNTING BLOCK (AS P.ACBLK IS
 * != TO ZERO), AND MAKES AN OWNERSHIP ENTRY FOR THE NEW OBJECT IN THE
 * SPONSORING DIRECTORY. A CAPABILITY FOR THE NEW DIRECTORY, WHICH IS
 * INITIALLY OPEN, IS RETURNED AS WELL.
 * PROBLEMS WHICH MAY ARISE ARE: THE SPONSORING DIRECTORY'S ACCOUNTING
 * BLOCK LACKS RESERVED SPACE SUFFICIENT TO HANDLE THE NEW OBJECT; THE
 * SPONSORING DIRECTORY LACKS ROOM FOR THE NEW (OWNERSHIP) ENTRY; THE

* PARAMETER P.SIZE IS TOO LARGE OR SMALL (ALSO OTHER FILE CREATING
 * ERRORS).

* THE FIRST STEPS ARE TO OPEN THE SPONSORING DIRECTORY AND SEARCH IT TO
 * ENSURE THAT P.NAME WILL NOT DUPLICATE AN EXISTING ENTRY NAME. THEN
 * WE CHECK THAT THERE WILL BE ENOUGH ROOM FOR THE NEW ENTRY: A NEW
 * NON-SCRATCH ENTRY REQUIRES (N+2) WORDS, WHERE N IS THE NUMBER OF
 * WORDS FOR ITS NAME PART (AT EIGHT CHARACTERS PER WORD).

420 6170000421 +

CRDR:R CALL

UNIQUE

.. SET UP FOR ENTRY CREATION, CHECKING
 FOR NAME DUPLICATION

421 5110000000 X

SA1

P.NAME

.. HDR OF BLOCK PARAM CONTAINS LENGTH

7211000002

SX1

X1+2

.. ALLOW FOR LENGTH OF OBJECT PART

422 6170000423 +

CALL

GETSPAC

.. THIS ROUTINE DOESN'T RETURN UNLESS
 SUFFICIENT SPACE EXISTS

* NOW IT IS TIME TO CREATE A DISK FILE WHICH WILL HOLD THE NEW
 * DIRECTORY. THIS FILE WILL OF COURSE BE CHARGED TO C.DIRCT, THE
 * SPONSORING DIRECTORY, WHOSE ACCOUNTING BLOCK NUMBER IS IN BITS 7-24
 * OF ITS OWN HEADER (FIRST WORD). IF P.ACBLK IS NONZERO, THE NEW
 * DIRECTORY IS TO HAVE A DIRECTLY ASSOCIATED ACCOUNTING BLOCK.
 * OTHERWISE IT WILL BE (INDIRECTLY) ASSOCIATED WITH THE ACCOUNTING
 * BLOCK OF ITS FATHER.

423 5120000000 X

SA2

WINDOW

.. FETCH ACCOUNTING

43052

MX0

60-18

.. BLOCK NUMBER, STORED

21244

424 15220

AX2

18+18

.. IN BITS 7-24

7160000047 +

BX2

-X0*X2

.. OF WINDOW[01

7160000000 X

ON.ERR

CPASSER

.. PASS ERRORS BACK TO USER

435 13666

CFIL

X2:(P.SIZE,1),RETDATA,C,T2

.. CREATE LLD-FILE

OFF.ERR

.. DISABLE ERROR PROCESSING

* X3 WILL CONTAIN THE DISKADDRESS, UNIQUE NAME OF THE NEW (DIRECTORY) FILE

436 5130000000 X

SA3

RETDATA

.. FETCH UNIQUE NAME, DISK ADDRESS

* CREATE CAPABILITY FOR THE NEW DIRECTORY-TO-BE

7160000000 X

CRCAP

C.T1,(CL.DRCT,CA.DRCT),(,X3)

* X4,X5 WILL CONTAIN RESPECTIVELY P.SIZE,P.ACBLK (FOR A WHILE)

447 5140000000 X

SA4

P.SIZE

5150000000 X

SA5

P.ACBLK

* NOW WE FORM THE NEW OWNERSHIP ENTRY. (X3 CONTAINS THE UNIQUE NAME.)
 * THE ENTRY WILL BE FORMED IN THE PARAMETER AREA, THEN COPIED INTO THE
 * WINDOW.

450 7160000000 X

SX6

CA.DRCT

.. DIRECTORY CAPABILITY TYPE INDEX

43052

MX0

42

.. SET OF ALL-ENABLED OPTIONS

12606

BX6

X0+X6

.. FIRST WORD OF NEW OBJECT-PART

451 5110000000 X

SA1

P.NAME

.. NUMBER OF WORDS IN NAME

452	10633	5261000001 X	SA6	P.NAME+1+X1	.. OBJECT-PART FOLLOWS JUST AFTER NAME
			BX6	X3	.. DISK ADDRESS/UNIQUE NAME IS
453	7100000003	5066000001	SA6	A6+1	.. SECOND WORD OF OBJECT PART
			SX0	ET.OWN	
454	5120000001 X	20071	LX0	60-W.ENTTYP-S.ENTTYP	.. POSITION ENTRY TYPE
		12682	SA2	P.NAME+1	.. FIRST WORD OF NAME
			BX6	X0+X2	.. CONTAINS ENTRY TYPE
455	5120000000 X	54620	SA6	A6	
			SA2	WINDOW	.. FREE POINTER IS WINDOW[43:60]
456	6222000000 X	6110000001 X	SB1	P.NAME+1	.. SOURCE OF WORDS TO COPY
			SB2	WINDOW+X2	.. SINK
457	76630	6231000002	SB3	X1+2	.. NUMBER OF WORDS TO COPY
			SX6	B3	
		36626	IX6	X3+X6	.. UPDATE FREE POINTER
460	6170000461 +	5160000000 X	SA6	WINDOW	
461	7160000000 X		CALL	COPY	.. SAVES X3,X4,X5
466	5110000000 X		PCLOSE	DE.DRCT	.. ENSURE THAT OWNERSHIP ENTRY STAYS AROUND
		20130	SA1	WINDOW	
			LX1	60-18-18	.. GET FATHER'S ACC. BLOCK NUMBER AGAIN
467	15110	43052	MX0	60-18	
			BX1	-X0*X1	
470	7160000000 X	0305000500 +	ZR	X5,CD,HVAR	.. NOT TO BE A FUNDING DIRECTORY
476	5110000000 X		ABSV	ABSV.CRE,*,*,*(RETDATA,1)	.. CREATE DISK AB
477	43652	7100000001	SA1	RETDATA	
		15116	SX0	1	
		20022	MX6	42	.. DO NOT TRUST
			BX1	-X6*X1	.. ANYONE
		12101	LX0	18	.. POSITION THE HAS-OWN-DAB FLAG
			BX1	X0+X1	

* NOW, IT IS TIME TO INITIALIZE THE NEW DIRECTORY, PSEUDO-CLOSE IT, AND
 * THEN ACTIVATE ITS ACCOUNTING BLOCK (IF IT HAS ONE.)

500	20422		CD.HVAR	LX4	18	.. POSITION SIZE
		7160000001	SX6	1		
		12646	BX6	X4+X6		.. COMBINE WITH IN.USE FIELD
501	20144		LX1	18+18		.. POSITION DAB INFO
		12616	BX6	X1+X6		
			SA6	RETDATA		
502	7160000000 X	5160000000 X	WRITE	C.T2,0,RETDATA,1		.. WRITE OUT HEADER
512	7160000000 X		CRCAP	C.T2,(CL.DRCT,CA.DSKF),(X3)		.. NEED DISK FILE CAP TO PCLOSE
522	7160000000 X		PCLOSE	C.T2		.. PSEUDO-CLOSE
527	0305000232 +		ZR	X5,CRECT1		.. NO NEW DAB, ALL DONE
		20130	LX1	60-18-18		.. RIGHT-JUSTIFY NEW DAB NUMBER
530	7160000000 X		ABSV	ABSV.ACT,X1,*,*		.. ACTIVATE
536	0200000232 +		JP	CRECT1		

*
*
*
*

DR:HDLK(C.DIRCT, BD.NAME, C.DORJ)

EXT EN.NTDO

537 6170000540 + HDLK:DK CALL UNIQUE .. SET UP FOR NEW ENTRY CREATION

540	0130000000	x		SYSCALL	DISPOBJ	.. DISPLAY C.DOBJ IN X6, X7
541	43052			MX0	60-18	.. =HOLE 18
	15160			BX1	-X0*X6	.. CAPABILITY TYPE
	7120777776	x		SX2	L.DTYP5-1	.. INDEX OF LAST DISK OBJECT TYPE
542	11406			BX4	X0*X6	.. OPTIONS OF C.DOBJ
	10577			BX5	X7	.. SAVE OBJECT SPECIFIER
543	5232000136	+	HL.CKTYP	SA3	TYPES+X2	.. NEXT CAPABILITY TYPE
	13713			BX7	X1-X3	
544	0307000547	+		ZR	X7,HL.HVTYP	.. X2 NOW CONTAINS THE TYPE INDEX
	7222777776			SX2	X2-1	
545	0322000543	+		PL	X2,HL.CKTYP	
	7120000000	x		SX2	EN.NTDO	
546	0200000074	+		JP	CRFC.DR	.. ERROR - NOT DISK OBJECT
547	12642		HL.HVTYP	BX6	X4+X2	.. COMBINE OPTIONS WITH OBJECT INDEX
	10755			BX7	X5	.. SAVED OBJECT SPECIFIER
	5110000000	x		SA1	P.NAME	.. LENGTH OF NAME BLOCK
550	5261000001	x		SA6	P.NAME+1+X1	.. PLACE (IMPLICIT OPTIONS, TYPE INDEX)
	5076000001		*	SA7	A6+1	.. AND PUT OBJECT SPECIFIER AFTER THAT
551	5120000001	x		SA2	P.NAME+1	
	7160000002			SX6	ET.HARD	
552	20671			LX6	60-W.ENTTYP-S.ENTTYP	.. POSITION ENTRY TYPE
	12626			BX6	X2+X6	
	54620			SA6	A2	.. ADD ENTRY TYPE TO FIRST WORD OF NAME
553	7211000002			SX1	X1+2	.. LENGTH OF NEW HARD-LINK ENTRY
554	6170000555	+	HS.LINK	CALL	GFTSPAC	.. RESERVE (X1) WORDS
555	5120000000	x		SA2	WINDOW	
	36612			IX6	X1+X2	.. UPDATE FREE-POINTER,
	54620			SA6	A2	.. DIRDSORI[43:60]
556	73110			SX1	X1	.. FREE-POINTER, DIRDSORI[43:60], IS
	6110000001	x		SB1	P.NAME+1	.. SOURCE
557	6222000000	x		SB2	WINDOW+X2	.. SINK
	63310			SB3	X1	.. NUMBER
560	6170000561	+		CALL	COPY	.. MOVE NEW ENTRY INTO WINDOW
561	6170000562	+	CRET0	CALL	CLOSE	
562	0200000042	+		JP	RETURN	
			*			
			*			
			*			
			*			
				DRISFLK(C.DIRCT, BD.NAME, C.DIR2, BD.NAM2, C.KEY2)		
563	6110000000	x	SFLK; <i>Act</i>	SB1	P.NAM2	.. PUT -INDIRECT- NAME
	6160000565	+		CALL	CANON, R6	.. IN CANONICAL FORM
565	6170000566	+		CALL	UNIQUE	.. SET UP FOR ENTRY CREATION
566	0130000000	x		SYSCALL	DISDIR2	.. DISPLAY C.DIR2 IN X6, X7
567	5110000000	x		SA1	P.NAME	.. LENGTH OF NEW ENTRY NAME
	5271000001	x		SA7	P.NAME+1+X1	.. DIRECTORY SPECIFIER FOLLOWS NAME
570	10566			BX5	X6	.. SAVE OPTIONS IN CASE KEY2 IS NULL
571	0130000000	x		SYSCALL	DISKEY2	.. DISPLAY C.KEY2
572	0317000574	+		NZ	X7,SL.1	.. NOT THE NULL ACCESS KEY
	5120000000	x		SA2	SOB.IA	
573	11225			BX2	X2+X5	
	0302000000	x		ZR	X2,E.NOIA	.. NEED OPTION TO USE IMPLICIT ACCESS

PCLOSE

DF.DIRT

.. make sure new link is on disk.

ACTIONS : CODE FOR DIRECTORY ACTIONS
 CREATION ACTIONS (FILE, DIRECTORY, LINKS)

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574	512000000 x	SL.1	SA2	P-NAM2	.. LENGTH OF INDIRECT NAME BLOCK
	5077000001		SA7	A7+1	.. KEY NUMBER IS NEXT IN DIRECTORY ENTRY
575	36112		IX1	X1+X2	.. SUM OF LENGTHS OF NAMES
	7211000002		SX1	X1+2	.. LENGTH OF NEW SOFT LINK ENTRY
	10322		BX3	X2	
576	5022000001	SL.MOVE	SA2	A2+1	.. MOVE WORDS OF NAME2
	10722		BX7	X2	.. UP CONTIGUOUS WITH
577	5077000001		SA7	A7+1	.. NAME AND OBJECT PART
	7233777776		SX3	X3-1	
600	0313000576 +		NZ	X3+SL.MOVE	
	0200000554 +		JP	HS.LINK	.. GO RESERVE (X1) WORDS AND MAKE ENTRY

*
*
*
*

DR:RMOE(C.DIRCT, BD.NAME, C.KEY)

* WHEN AN OWNERSHIP ENTRY IS TO BE DELETED FROM A DIRECTORY, THE
 * OWNED OBJECT MUST ALSO BE DESTROYED (IF IT INDEED STILL EXISTS.)
 * THIS IS TO ASSURE THAT EVERY OBJECT IS IN THE DIRECTORY TREE SO IT
 * MAY BE DUMPED AND LOADED. RMOE↑ USES THE SUBROUTINE -DSTRY- TO
 * DESTROY THE OWNED OBJECT, OR FRETURN IF THAT IS NOT POSSIBLE. (E.G.
 * DISK FILE IN MAP, DIRECTORY FUNDING A PROCESS, ETC.)

			EXT	S0B,DST,E.NTOWN,E.OPTS,DSTRY,M.WIN,MAPIN	
601	6110000000 X		RMOE↑ ACT SB1	P.NAME	.. PUT NAME INTO
	6160000603 +		CALL	CANON,,B6	.. INTO CANONICAL FORM
603	7110000001		SX1	1	.. OPEN THE DIRECTORY
	6160000605 +		CALL	OPEN,,B6	.. WITH WRITE ACCESS
605	7160000000 X		DISPCAP	C.KEY	.. DISPLAY C.KEY INTO X6,X7
612	5170000000 X		SA7	P.KEY	.. SAVE ACCESSKEYNUMBER
	0317000615 +		NZ	X7,RMOE1	.. THIS IS NOT IMPLICIT ACCESS
613	5120000000 X		SA2	S0B,IA	
	5130000000 X		SA3	P.DIRCT	
614	11223		BX2	X2*X3	
	0302000000 X		ZR	X2,E.OPTS	.. NO IMPLICIT ACCESS OPTION
615	5140000000 X		RMOE1 SA4	S0B,DST	.. WORD WITH JUST DESTROY OPTION ON
	6170000617 +		CALL	BFA,CFRET	.. LOOKUP P.NAME OR FRETURN
* -BEA- SET X0 TO THE ENTRY TYPE (LEFT-JUSTIFIED, ZERO-FILLED), X4 TO THE					
* DESERVED OPTIONS (-AND-ED WITH THE INPUT OPTIONS), B1 TO THE STARTING					
* FILE ADDRESS, B2 TO THE OBJECT TYPE INDEX, AND X3 TO THE OBJECT					
* DESCRIPTOR WORD.					
620	6130000000 X		GETADDR	B3	.. NOW B3-B1 = LENGTH OF ENTRY
	20001		LX0	1	.. LEFT-JUSTIFY THE OWNERSHIP BIT OF
					THE ENTRY TYPE
621	0320000000 X		PL	X0,E.NTOWN	.. ERROR - WRONG ACTION TO DELETE LINK
	0304000000 X		ZR	X4,E.OPTS	.. ERROR - NO DESTRUCTION OPTION
* NOW WE CALL -DSTRY- TO ACTUALLY DO THE DESTRUCTION, OR FRETURN					
* (WITH X1,X2 SET TO THE ERROR CLASS,NUMBER) IF IMPOSSIBLE. -DSTRY-					
* USES THE WINDOW MAP ENTRY, M.WIN, WITHOUT RESTORING IT. BUT IT DOES					
* NOT DISTURB THE DIRECTORY FILE CAPABILITIES, DF.DRCT AND EF.DRCT.					
622	6170000623 +		CALL	DSTRY,CRETERR	.. SAVES B1,B3 AND SETS B6 NONZERO
624	0460000626 +		ZR	B4,RMOE2	.. IF IT USED THE WINDOW MAP ENTRY
	7110000001		SX1	1	
625	6160000626 +		CALL	MAPIN,,B6	.. PUT EF.DRCT BACK IN MAP
626	76110		RMOE2 SX1	B1	.. START ADDRESS OF ENTRY TO DELETE
	77231		SX2	B3-B1	.. LENGTH OF ENTRY
	6170000630 +		CALL	DELWDS	.. SQUEEZE OUT ENTRY
630	0200000561 +		JP	CRET0	.. CLOSE DIRECTORY AND RETURN

631	6110000000 X	RMLK!OK	SB1	P.NAME	.. PUT NAME IN
	6160000633 +		CALL	CANON,,B6	.. CANONICAL FORM
633	7110000001		SX1	1	.. OPEN DIRECTORY FILE
	6160000635 +		CALL	OPEN,,B6	.. FOR WRITING
635	6110000000 X		SB1	P.NAME	
	6160000637 +		CALL	NAMSCAN,CFRET,B6	.. SETS B1 = STARTING FILE ADDRESS
640	20002		LX0	2	.. RIGHT-JUSTIFY ENTRY TYPE
	7210777774		SX1	X0-ET.OWN	
641	0301000000 X		ZR	X1,E.ISOWN	.. MUST USE CORRECT ACTION TO DELETE AN OWNERSHIP ENTRY
	5011000001	*	GETWD	RMLKERR1	.. PASS BY THE TWO
643	5011000001		GETWD	RMLKERR1	.. WORDS OF THE OBJECT PART
645	5011000001	RL.ALLP	GETWD	Ri.AFTL0	.. FIRST WORD OF AN ACCESS-PAIR, OR ...
	20103		LX1	S.APF	.. LEFT-JUSTIFY THE ACCESS-PAIR FLAG
647	0321000655 +		PL	X1,RL.AFTL1	.. NOT AN ACCESS-PAIR
	5011000001		GETWD	RMLKERR2	.. SKIP THE SECOND WORD OF AN ACCESS-PAIR
651	0200000645 +		JP	Ri.ALLP	
652	0310000663 +	RL.AFTL0	NZ	X0,RL.END	.. NOT SOFT LINK
653	0100000000 X	RMLKERR3	SYSERR		.. END OF DIRECTORY INSIDE OF SOFTLINK
655	0310000663 +	RL.AFTL1	NZ	X0,RL.END	.. HARD LINK - THIS IS THE END
	20171		LX1	60-S.APF	.. REPOSITION LAST WORD PICKED UP
656	0331000661 +	RL.NMLP	NG	X1,RL.END0	.. END OF SOFT LINK NAME
	5011000001		GETWD	RMLKERR3	
660	0200000656 +		JP	RL.NMLP	
661	5011000001	RL.END0	GETWD	Ri.END	.. STEP PAST END OF ENTRY
663	6120000000 X	RL.END	GETADDR	B0	.. LWA+1 OF ENTRY
	76110		SX1	B1	.. START ADDRESS OF ENTRY
664	77221		SX2	B0-B1	.. LENGTH OF ENTRY
	6170000666 +		CALL	DELDWS	.. SQUEEZE OUT ENTRY
666	0200000561 +		JP	CRET0	.. CLOSE DIRECTORY AND RETURN
667	0100000000 X	RMLKERR1	SYSERR		.. END IN OBJECT PART
671	0100000000 X	RMLKERR2	SYSERR		.. END IN ACCESS PAIR

*
*
*
*
*

DR:ADPR(C.DRCT, BD.NAME, C.KEY, P.NWKYN, P.OPTS)

* ADD AN ACCESS PAIR TO AN ACCESS LIST

673	6110000000 x		ADPR:DR	ACT SB1	P.NAME	.. PUT NAME IN
	6160000675 +			CALL R	CANON, B6	.. CANONICAL FORM
675	5140000000 x			SA4	P.NWKYN	
	0304000000 x			ZR	X4, E.ISLK1	.. ALL ENTRIES HAVE THE NULL PAIR
676	5120000000 x			SA2	P.OPTS	
	43022			MX0	1R	
	11602			BX6	X0*X2	
677	0316000000 x			NZ	X2, E.BGOPT	.. TOO MANY OPTIONS
	7110000001			SX1	1	.. OPEN THE DIRECTORY
700	6160000701 +			CALL R	OPEN, B6	.. FILE FOR WRITING
701	6110000000 x			SB1	P.NAME	
	6160000703 +			CALL FR	NAMSCAN, CFRET, B6	
704	43252			MX2	42	
	5011000001			GETWD	ADPRERR1	.. FIRST WORD OF OBJECT PART
	0300000707 +			ZR	X0, AP.1	.. ET.SOFT => IMPLICIT OPTIONS ARE ALL-ENABLED
706	11221			BX2	X2*X1	.. IMPLICIT OPTIONS [ET.OWN, ET.HARD]
707	5011000001	AP.1		GETWD	ADPRERR1	.. SECOND WORD OF OBJECT PART
711	0130000000 x			SYSCALL	DISPKEY	.. DISPLAY C.KEY IN X6, X7
712	0307000722 +			ZR	X7, AP.IMPL	.. KEY NUMBER=0 => IMPLICIT ACCESS
	10377			BX3	X7	
713	5011000001	AP, EXPL		GETWD	E.IMPOT	.. ACCESS-PAIR WORD, OR ...
	20103			LX1	S.APF	
715	0321000000 x			PL	X1, E.IMPOT	.. END OF ACCESS-LIST
	20171			LX1	60-S.APF	
	10011			BX0	X1	.. SAVE THESE OPTIONS
716	5011000001			GETWD	ADPRERR2	.. GET LOCK
	13614			BX6	X1-X4	.. COMPARE WITH P.NWKYN
720	0306000000 x			ZR	X2, E.ISLCK	.. ERROR - DUPLICATE LOCK
	13113			BX1	X1-X3	.. COMPARE WITH P.KEY
721	0311000713 +			NZ	X1, AP.EXPL	.. NOT EQUAL
	0200000725 +			JP	AP.2	
722	10022	AP, IMP1		BX0	X5	.. USE THE IMPLICIT OPTIONS
	20052			LX0	60-18	.. (RIGHT JUSTIFIED)
	5120000000 x			SA2	S0B, IA	
723	5130000000 x			SA3	P.DIRCT	
	11223			BX2	X2*X3	
724	0302000000 x			ZR	X2, E.NOIA	

* NOW X0 CONTAINS THE OPTIONS DESERVED BY P.KEY. THE REMAINDER OF THE
 * ACCESS-LIST MUST BE SCANNED TO ENSURE THAT P.NWKYN WILL BE UNIQUE.

725	5011000001	AP.2		GETWD	AP.3 ** NOTE: WE SHOULD MAKE SURE THIS IS NOT A SOFTLINK **	
	20103			LX1	S.APF	.. LEFT JUSTIFY ACCESS-PAIR FLAG
727	0321000732 +			PL	X1, AP.3	.. END OF LIST REACHED
	5011000001			GETWD	ADPRERR2	.. LOCK

731	0311000725 +	13114	BX1	X1-X4	.. COMPARE WITH P.NWKYN
	0200000000 x		NZ	X1,AP.2	.. NOT EQUAL
			JP	E.ISLCK	.. ERROR
732	5120000000 x	AP.3	SA2	P.OPTS	.. NEW PAIR CAN NOT BE MORE POWERFUL
	116A2	*	BX6	X0*X2	THAN THE OLD
733	20771	43701	MX7	1	
	12676		LX7	60-S,APF	
	54620		BX6	X7+X6	.. ACCESS-PAIR FLAG
734	6110000000 x		SA6	A2	
735	7110000002		GETADDR	B1	.. ADDRESS TO INSERT NEW PAIR
	6170000737 +		SX1	2	.. RESERVE
737	10211		CALL	GETSPAC	.. TWO WORDS
	76110		BX2	X1	
	6170000741 +		SX1	B1	
741	5120000000 x		CALL	ADDWDS	.. MAKE A 2-WORD GAP
	5130000000 x		SA2	P.OPTS	
742	10622		SA3	P.NWKYN	
	10733		BX6	X2	
	5261000000 x		BX7	X3	
743	5076000001		SA6	WINDOW+X1	
	0200000561 +		SA7	A6+1	
			JP	CRET0	.. CLOSE DIRECTORY AND RETURN
744	0100000000 x	ADPRERR1	SYSERR		.. END OF DIRECTORY IN OBJECT PART
746	0100000000 x	ADPRERR2	SYSERR		.. END OF DIRECTORY IN ACCESS PAIR
		*			
		*			
		*		DR:DLPR(C.DIRCT, BD.NAME, P.KEYNO)	
		*			
		*		DELETE AN ACCESS PAIR FROM AN ACCESS LIST	
		*			
750	5110000000 x	DLPR <i>ACT</i>	SA1	P.KEYNO	
	0301000000 x		ZR	X1,E.DELZR	.. IMPLICIT PAIR CAN NOT BE DELETED
751	6110000000 x		SB1	P.NAME	.. PUT P.NAME INTO
	6160000753 +		CALLR	CANON,B6	.. CANONICAL FORM
753	7110000001		SX1	1	.. OPEN THE DIRECTORY
	6160000755 +		CALLR	OPEN,B6	.. FILE FOR WRITING
755	6110000000 x		SB1	P.NAME	
	6160000757 +		CALLFR	NAMSCAN,CFRET,B6	
760	5120000000 x		SA2	P.KEYNO	
	5011000001		GETWD	DI,PRERR1	.. SKIP THE TWO WORDS
762	5011000001		GETWD	DI,PRERR1	.. OF THE OBJECT PART
764	5011000001	DP.ACLP	GETWD	E.NTLCK	.. ACCESS-PAIR WORD OR ...
	20103		LX1	S.APF	.. LEFT-JUSTIFY THE ACCESS-PAIR FLAG
766	0321000000 x		PL	X1,E.NTLCK	.. NO SUCH LOCK AS P.KEYNO
	5011000001		GETWD		
770	13112		BX1	X1-X2	.. COMPARE WITH P.KEYNO
	0311000764 +		NZ	X1,DP.ACLP	.. NOT EQUAL
771	6110000000 x		GETADDR	B1	.. FILE LWA OF PAIR TO B1
772	7111777776		SX1	B1-1	.. ADDRESS OF FIRST WORD
	7120000002		SX2	2	.. NUMBER OF WORDS TO

773 6170000774 + CALL DFLWDS .. DELETE
 774 0200000561 + JP CRETO .. CLOSE DIRECTORY AND RETURN
 775 0100000000 x DLPRERR1 SYSERR .. END OF DIRECTORY IN OBJECT PART

*
 *
 * DR:CHNM(C.DIRECT, BD.NAME, BD.NWNAM)
 *
 * THE ENTRY IN #DIRECT# WITH NAME #NAME# IS CHANGED TO HAVE NAME #NWNAM#.
 * IF NO SUCH ENTRY EXISTS, THE ACTION RETURNS.
 * RETURNS: NOTHING.

Code	Address	Ext	Action	Parameters	Description
777	6110000000 x	CHNM10P	ACT SB1	P.NAME	.. PUT BD.NAME AND
1001	6160001001 +	CALL	SB1	CANON,,B6	.. BD.NWNAM INTO
1003	7110000001	CALL	SX1	CANON,,B6	.. CANONICAL FORM
1005	6160001005 +	CALL	SB1	OPEN,,B6	.. PUT C.DIRECT IN
1010	7120000000 x	CALL	SX2	NAMSCAN,CHNM1,B6	.. MAP, READ/WRITE
	0200000074 +	JP	JP	EN.DPNM	.. NAME NOT UNIQUE
1011	6110000000 x	CHNM1	SB1	P.NAME	
	6160001013 +	CALL	CHNM1A	NAMSCAN,CFRET,B6	.. LOOK FOR BD.NAME OR FAIL (RETURNS PTR TO START OF ENTRY IN B1)
1014	5121000000 x	SA2	MX0	WINDOW+B1	.. FIRST WORD OF ENTRY
	43002	LX0	LX0	W.ENTTYP	.. CONTAINS ENTRY TYPE IN
	20073	LX0	LX0	60-S.ENTTYP	
1015	5130000001 x	SA3	BX6	P.NWNAM+1	
	11602	BX6	BX6	X0*X2	
	12663	BX6	BX6	X6*X3	
1016	5160000001 x	SA6	SA6	P.NWNAM+1	
	5120000000 x	SA2	SA2	P.NAME	.. LENGTH OF BD.NAME
1017	5130000000 x	SA3	SA3	P.NWNAM	.. SIMILIARLY
	37403	IX4	IX4	X2-X3	
1020	0334001024 +	NG	NG	X4,CHNM2	.. ENTRY MUST GROW
	76110	SX1	SX1	B1	.. PTR TO START OF ENTRY
1021	0304001030 +	ZR	ZR	X4,CHNM3	.. LENGTHS ARE EQUAL
	73240	SX2	SX2	X4	.. ENTRY MUST SHRINK
1022	6170001023 +	CALL	CALL	DFLWDS	.. BY C(X4) WORDS (DELWDS SAVES XT)
1023	0200001030 +	JP	JP	CHNM3	.. NOW CHANGE THE NAME
1024	14144	CHNM2	BX1	-X4	.. NUMBER OF WORD TO ADD
	6170001026 +	CALL	CALL	GETSPAC	.. CHECK IF SPACE EXISTS (SAVES B1,X1)
1026	73210	SX2	SX2	X1	.. NUMBER TO ADD,
	76110	SX1	SX1	B1	.. PLACE TO ADD THEM
	6170001030 +	CALL	CALL	ADDWDS	.. DO IT (SAVES X1)
1030	6110000001 x	CHNM3	SB1	P.NWNAM+1	.. SOURCE ADDRESS FOR COPY
	6221000000 x	SB2	SB2	WINDOW+X1	.. DESTINATION
1031	5120000000 x	SA2	SA2	P.NWNAM	.. NUMBER

PMET

EN.ERR1

PMET

*SA1 WINDOW
 PL X1,CHNM1A
 SA1 A1+2*

*** NAMSCAN SHOULD
 ** PROBABLY DO THIS
 ** FOR NEXT*

63320
1032 6170001033 +
1033 0200000561 +

SB3 X5
CALL COPY
JP CRET0

.. OF WORDS
.. TO COPY
.. CLOSE C.DIRECT AND RETURN


```

*
*
*      DR:DSPN( C.DIRECT, BD.NAME )
*
* THIS ACTION RETURNS A BLOCK OF DATA CONTAINING THE NAME, TYPE, AND CONTENTS
* OF THE N-TH ENTRY IN A DIRECTORY. THIS INFORMATION IS FORMATTED AS FOLLOWS:
*
*      WD 1 - TYPE (0 => SOFTLINK, 2 => HARDLINK, 3 => OWNERSHIP)
*      WDS 2,3 - CONTENTS OF ENTRY, SEE BELOW
*      WD 4 - M = NUMBER OF CHARACTERS IN NAME OF ENTRY
*      WDS 5,6,....,(5*CEIL(M/8)-1) - THE NAME OF THE ENTRY
*
* IF THE ENTRY TYPE IS SOFTLINK, THEN THE CONTENTS FIELD IS:
*
*      WD 2 - DISK ADDRESS, UNIQUE NAME OF THE LINKED-TO DIRECTORY
*      WD 3 - ACCESS KEY NUMBER OF THE LINK
*
* IF THE ENTRY TYPE IS HARDLINK OR OWNERSHIP, THE CONTENTS FIELD IS:
*
*      WD 2 - 42 BITS: IMPLICIT OPTIONS, 18 BITS: OBJECT TYPE INDEX (SEE BELOW)
*      WD 3 - 60 BITS: OBJECT DESCRIPTION
*
* OBJECT TYPE INDICES 0,1,2,.... REPRESENT (RESPECTIVELY) DISK FILE, DIRECTORY,
* SUBPROCESS DESCRIPTOR,.... (ONLY THE FIRST TWO TYPES CAN BE OWNED.)
    
```

```

* THE PARAMETER P.NUMB MUST BE STRICTLY POSITIVE. AS WE SCAN THRU THE
* DIRECTORY, IT WILL BE DECREMENTED ONCE FOR EACH ENTRY ENCOUNTERED. THUS,
* IF P.NUMB=0 IN THE TEST AT DSPNLOOP, WE ARE AT THE DESIRED ENTRY.
    
```

			EXT	SKPENT, RETRUFF, CPYNAME	
1056	5110000000 x	DSPN: <i>Act</i>	SA1	P.NUMB	
	0331000000 x		NG	X1,E,SPAR	.. P.NUMB MUST BE
1057	0301000000 x		ZR	X1,E,SPAR	.. STRICTLY POSITIVE
	6160001061 +		CALL <i>de</i>	OPEN,B6	.. OPEN AND MAPIN THE DIRECTORY
1061	5011000001		GETWD	CFRET	.. FIRST WORD OF FIRST ENTRY, OR
					THE DIRECTORY IS EMPTY
1063	5120000000 x	DSPNLOOP	SA2	P.NUMB	
	43373		MX3	50	.. = (-0)-1 = -1
	36623		IX6	X2+X3	.. REDUCE P.NUMB BY 1
1064	0306001070 +		ZR	X6,DSPNFND	.. THIS IS IT
	5062000000		SA6	A2+0	.. UPDATE P.NUMB
1065	6160001066 +		CALL <i>FR</i>	SKPENT,CFRET,B6	.. SKIP TO NEXT DIRECTORY ENTRY
					.. OR FAIL IF NO MORE
1067	0200001063 +		JP	DSPNLOOP	
1070	43002	DSPNFND	MX0	2	.. MASK TO EXTRACT
	20073		LX0	60-1	.. THE ENTRY TYPE,

```

* NOW IT IS TIME TO FORMAT THE DATA TO BE RETURNED, IN THE AREA RETRUFF.
    
```

		11601		BX6	X0*X1	.. WHICH RESIDES IN THE
		20603		LX6	3	.. FIRST WORD OF THE ENTRY NAME
1071	5160000000	y		SA6	RETBUFF	.. STORE TYPE, RIGHT-JUSTIFIED
		6110000003	x	SB1	RETRUFF+3	
1072	6170001073	+		CALL	CPYNAME	.. RETURNS NUMBER MOVED IN B1 (INCL. COUNT WORD)
1073	5011000001			GETWD	DSPNERR2	.. 1 ST WORD OF OBJECT PART
		10611		BX6	X1	
1075	5160000001	x		SA6	RETBUFF+1	.. 2 ND WORD OF OBJECT PART
		5011000001		GETWD	DSPNERR2	
		10611		BX6	X1	
1077	5160000002	x		SA6	RETBUFF+2	.. ADDRESS PART OF RETURN DATA SPECIFICATIONS
		7110000000	x	SX1	RETBUFF	.. TOTAL WORD COUNT
1100	7151000003			SX5	3+B1	.. COUNT PART OF SPEC
		20536		LX5	30	
		12151		BX1	X5+X1	.. NO RETURN CAPABILITIES
1101	7120000000			SX2	0	.. SAVES X1,X2
		6170001103	+	CALL	CLOSE	
1103	0200000046	+		JP	RETPAR	
1104	0100000000	x	DSPNERR1	SYSERR		.. END OF DIRECTORY ENCOUNTERED IN ENTRY NAME
1106	0100000000	x	DSPNERR2	SYSERR		.. EOF ENCOUNTERED IN OBJECT PART

RE: DSTR (C.FOB)

ACTIONS : CODE FOR DIRECTORY ACTIONS
DESTROY A DISK OBJECT (FILE, DIRECTORY, SUBPROCESS DESCR.

COMPASS - VER 2.

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			EXT	EN.OPER,EN.CPTY	
1110	7160000000 x		DSTR, ^{AK} DISPCAP	C.FOBJ	.. DISPLAY THE CAPABILITY IN X6,X7
1115	43052		MX0	60-18	
	15660		BX6	-X0*X6	
	6110000136 +		SB1	TYPES	
		*			
1116	6120000000 x		SB2	CA.DSKF	
	56112		SA1	B1+B2	
	13116		BX1	X1-X6	
1117	0301001123 +		ZR	X1,DSTR3	.. OBJECT IS DISK FILE
		*			
1120	6120000000 x		SB2	CA.DRCT	
	56112		SA1	B1+B2	
	13116		BX1	X1-X6	
	0301001123 +		ZR	X1,DSTR3	.. OBJECT IS DIRECTORY
		*			
1121	6120000000 x		SB2	CA.SBPD	
	56112		SA1	B1+B2	
	13116		BX1	X1-X6	
1122	0311001127 +		NZ	X1,DST.ERR1	.. ERROR - CAN NOT DELETE THIS OBJECT
		*			
1123	10377		DSTR3	BX3	.. UNIQUENAME,DISKADDRESS
	6170001125 +		CALL ^{De}	DSTRY,RETERR	.. RETURN WITH X1,X2 SET IF CAN-T DELETE
1126	0200000042 +		JP	RETURN	
		*			
		*			
1127	7120000000 x		DST.ERR1	SX2	.. CAPABILITY TYPE INCORRECT
	7110000000 x		SX1	EN.CPTY	
1130	0200000053 +		JP	EN.OPER	
				RETERR	

* DA: MVSP(C.SDIR, C.DDIR, P.SPACE)
 *
 * IT IS AN ERROR UNLESS THE SOURCE AND DESTINATION ARE FUNDING DIRECTORIES.
 * IT MUST BE THE CASE THAT ONE OF THESE DIRECTORIES IS
 * THE FUNDING FATHER OF THE OTHER (IN EITHER ORDER), OR AN ERROR RESULTS.
 * OTHERWISE, THE LLD-SYSTEM IS CALLED TO PERFORM THE MOVES.
 *
 * NOTE: IF C.SDIR = C.DDIR, THE ACTION NO-OPS.

ACT	EXT	EC.PARM, EN.SPARG, EC.AB1K, EN.FASO, XPACK
EXT	EC.DRCT, EN.NTFD	
1131 5130000000 X 0333001324 +	MVSP, DA → SA3 NG	P.SPACE X3, MVSP.E1 .. AMOUNT TO MOVE MUST BE NON-NEGATIVE
1132 7160000000 X	DISPCAP	C.SDIR .. DISPLAY SOURCE DIRECTORY CAPABILITY
1137 10477	BX4 X7	
1144 10577	DISPCAP BX5 X7	C.DDIR .. DESTINATION
1155 7160000000 X	CRCAP C.T1, *, (*X5)	DF.DRCT, (CL.DRCT, CA.DSKF), (*X4)
1163 7160000070 +	ON.ERR	PASSER .. PASS ANY ERROR ON TO USER
1164 7160000000 X	OPENRO	DF.DRCT, MVSP.E3, EF.DRCT .. OPEN SOURCE DIRECTORY
1172 7160001331 +	ON.ERR	MVSP.E4
1173 7160000000 X	OPENRO	C.T1, MVSP.E5, C.T2
1201 13666	OFF.ERR	
1202 7160000000 X	READ	EF.DRCT, 0, T1, 1, MVSPERR1 .. READ HEADER WORD
1213 5110000000 X	SA1 T1	
1214 0321001345 + 20105	LX1 PL	5 .. LEFT-JUSTIFY HAS-OWN-DAB FLAG X1, MVSP.E61 .. NOT A FUNDING DIRECTORY
1215 7160000000 X	LX1	1, 18 .. RIGHT-JUSTIFY DAB NUMBER
1226 5120000000 X	READ	C.T2, 0, T1, 1, MVSPERR1
1227 0322001346 + 20205	SA2 LX2 PL	T1 .. LEFT-JUSTIFY FLAG 5 .. NOT A FUNDING DIRECTORY X2, MVSP.E62
1230 0306001310 + 13645	LX2 BX6	1, 18 X4-X5
1235 10577	ZR	X6, MVSP.25 .. SOURCE = DESTINATION, NAUGHT TO DO
1243 5150000006 X 13551	DISPCAP C.T2 X7	
1244 15550	DSPDF	(, X5), (RETRUFF, 1) .. DISPLAY DESTINATION FILE DESCRIPTOR
1245 7160000000 X	SA5	RETRUFF+6 .. WORD WITH FUNDING DAB NUMBER
1252 10577	BX5 MX0 BX5	X5-X1 60-18 -X0*X5
1260 5150000006 X 13552	ZR	X5, MVSP.2 .. SOURCE IS FATHER
1261 0315001363 + 7160001377 +	DISPCAP BX5 X7	EF.DRCT
	DSPDF	(, X5), (RETRUFF, 1) .. DISPLAY SOURCE FILE DESCRIPTOR
	SA5	RETRUFF+6
	BX5	X5-X2
	BX5	-X0*X5
	NZ	X5, MVSP.E7 .. DESTINATION IS NOT FATHER
	ON.ERR	MVSP.E8

	7160000000 x		ABSV	ARSV.MSF,X2,X1,X3,,MVSP3	
1273	13666		OFF.ERR		
1274	0200001310 +		JP	MVSP25	
1275	7160001377 +	MVSP2	ON.ERR	MVSP.E8	
1276	7160000000 x		ABSV	ARSV.MSF,X1,X2,X3,,MVSP3 .. FRETURN IF INSUFFICIENT SPACE	
1307	13666		OFF.ERR		
1310	7160000000 x	MVSP25	CLOSE	EF.DRCT	
1315	7160000000 x		CLOSE	C.T2	
1322	0200000042 +		JP	RETURN	
1323	5160000016 x	MVSP3	SA6	XBACK+16B	.. ACTUAL AMOUNT MOVED -> USER X6
	0200000044 +		JP	FRETURN	.. WHOPEE - FRETURN WITH PARAMETER
		*			
		*			
1324	7110000000 x	MVSP.E1	SX1	EC.PARM	.. AMOUNT TO MOVE WAS < 0
	7120000000 x		SX2	EN.SPARR	
1325	0200000053 +		JP	RETERR	
		*			
1326	7130000001	MVSP.E3	SX3	1	.. MODIFIER OF 1 FOR IPI
1327	7120000000 x	MVSP.Ex	SX2	EN.RSRV	.. SOURCE DIRECTORY IS EXCLUSIVELY OPEN
	20322		LX3	1R	
	12232		BX2	X3+X2	.. COMBINE MODIFIER WITH ERROR NUMBER
1330	0200000075 +		JP	RFC.DR	
		*			
1331	7160000000 x	MVSP.E4	CLOSE	EF.DRCT	.. ERROR OPENING DESTINATION DIRECTORY
1336	0200000070 +		JP	PASSER	.. PASS ERROR ON TO USER
		*			
1337	7160000000 x	MVSP.E5	CLOSE	EF.DRCT	.. DESTINATION DIRECTORY IS EXCLUSIVELY OPEN
1344	7130000002		SX3	2	.. MODIFIER OF 2 FOR IPI
	0200001327 +		JP	MVSP.EX	.. RETURN + DIRECTORY IS RESERVED + ERROR
		*			
1345	7130000001	MVSP.E61	SX3	1	
	0200001347 +		JP	MVSP.E6	
1346	7130000002	MVSP.E62	SX3	2	
1347	7160000000 x	MVSP.E6	CLOSE	EF.DRCT	
1354	7160000000 x		CLOSE	C.T2	
1361	7120000000 x		SX2	EN.NTFD	
	20322		LX3	1R	
	12232		BX2	X3+X2	.. COMBINE MODIFIER WITH ERROR NUMBER
1362	0200000075 +		JP	RFC.DR	
		*			
1363	7160000000 x	MVSP.E7	CLOSE	EF.DRCT	.. MOVE NOT BETWEEN FATHER/SON PAIR
1370	7160000000 x		CLOSE	C.T2	
1375	7110000000 x		SX1	EC.ABLK	
	7120000000 x		SX2	EN.FASO	
1376	0200000053 +		JP	RETERR	
		*			
1377	7160000000 x	MVSP.E8	CLOSE	EF.DRCT	.. ERROR WHILE MOVING THE SPACE
1404	7160000000 x		CLOSE	C.T2	
1411	0200000070 +		JP	PASSER	.. PASS ERROR ON TO USER
		*			
1412	0100000000 x	MVSPERR1	SYSERR		.. UNEXPECTED FRETURN
		*			

*
 * DA:INCM(C.DIRECT, P.INCR)
 *
 * FOR THIS ACTION, THE DIRECTORY MUST HAVE A DIRECTLY ASSOCIATED
 * DISK ACCOUNTING RECORD (DAR), OR AN ERROR RESULTS. THE INCREMENT IS
 * TREATED AS A SIXTY-BIT INTEGER AND ADDED TO THE CURRENT DISK CHARGE
 * METER IN THE DAR.
 *
 * RETURNS: NOTHING.

Code	Accounting Code	Flags	Action Code	Parameters	Description
1414	7160000000	x	INCM:DA	EXT C.DIRECT,P.INCR,T1	
1421	10277		DISPCAP	EXT EC.DIRECT,EN.RSRV	.. DISPLAY DIRECTORY CAP IN X6,X7
1432	7160000000	x	CRCAP	C.T1,(CL.DIRECT,CA.DISK),(X2)	.. CREATE FILE CAP
1433	7160000000	x	ON.ERR	PASSER	.. PASS OPENING ERRORS TO USER
1441	13666		OPENRO	C.T1,INC.ERR2,C.T2	.. ECS INCARN. -> C.T2
1442	7160000000	x	OFF.ERR		
1442	7160000000	x	READ	C.T2,0,T1,I,INCERR	.. READ DIRECTORY HEADER WORD
1453	5120000000	x	SA2	T1	
1454	0322001473	+	LX2	5	.. LEFT-JUSTIFY HAS-OWN-DAB FLAG
1455	5140000000	x	PL	X2,INC.ERR3	.. NOT A FUNDING DIRECTORY
1464	7160000000	x	LX2	1+18	.. RIGHT-JUSTIFY DAB NUMBER
1471	0200000042	+	SA4	P.INCR	
1472	7120000000	x	ABSV	ABSV,ICM,X2,(X4),*	.. INCREMENT CHARGE METER
1473	7160000000	x	CLOSE	C.T2	
1500	7120000000	x	JP	RETURN	
1501	0100000000	x	INC.ERR2	SX2	.. DIRECTORY IS EXCLUSIVELY OPEN
1501	0200000053	+	JP	EN.RSRV	
1501	0200000075	+	INC.ERR3	CLOSE	
1501	0200000075	+	SX2	C.T2	
1501	0200000075	+	JP	EN.NTFD	
1501	0200000075	+	JP	RFC.DR	
1501	0100000000	x	INCERR	SYSERR	.. UNEXPECTED FRETURN

*
 * DA:STAG(C.DIRECT, P.TAG)
 *
 * IF C.DIRECT HAS NO DIRECTLY ASSOCIATED DAR AN ERROR RESULTS. OTHERWISE,
 * THE TAG FIELD OF THE DAR IS SET TO THE VALUE OF P.TAG,
 * WHOSE HIGH-ORDER 48 BITS MUST BE ZERO.
 *
 * RETURNS: NOTHING.

Code	Accounting Code	Flags	Action Code	Parameters	Description
1503	5110000000	x	STAG:DA	EXT T1,EC.PARM,EN.BPAR	
1504	0310001562	+	SA1	P.TAG	
1504	0310001562	+	MX0	60-18	
1504	0310001562	+	BX0	X0*X1	
1504	0310001562	+	NZ	X0,STG.ERR1	.. P.TAG IS TOO LARGE

```

7160000000 X
1511 10277
7160000000 X
1522 7160000070 +
1523 7160000000 X
1531 13666
1532 7160000000 X
1543 5120000000 X
20205
1544 0322001565 +
20223
1545 7160000000 X
1554 7160000000 X
1561 0200000042 +
*
1562 7110000000 X
7120000000 X
1563 0200000053 +
*
1564 7120000000 X
0200000075 +
*
1565 7160000000 X
1572 7120000000 X
0200000075 +
*
1573 0100000000 X
*
*
* DA: DSP( C.DIRECT )
*
* IF C.DIRECT HAS NO DIRECTLY ASSOCIATED DAB, AN ERROR RESULTS.
* OTHERWISE, A BLOCK OF 8 WORDS IS RETURNED: RD(1)-RD(8), IN
* A FORMAT DETERMINED BY THE DISK ACCOUNTING SYSTEM.
*
* RETURNS: RD(1)-RD(8).
1575 7160000000 X
1602 10177
7160000000 X
1613 7160000070 +
1614 7160000000 X
1622 13666
1623 7160000000 X
1634 5110000000 X
20105
1635 0321001656 +
20123
1636 7160000000 X
1645 7160000000 X
1652 5110001654 +
7120000000
1653 0200000046 +
DISPCAP C.DIRECT
BX2 X7
CRCAP C.T1,(CL.DRCT,CA.DSKF),(X5)
ON.ERR PASSER .. PASS OPENING ERRORS ON TO USER
OPENRO C.T1,STG.ERR3,C.T2 .. ECS INCARN. -> C.T2
OFF.ERR
READ C.T2,0,T1,I,STGERR .. READ DIRECTORY HEADER
SA2 T1
LX2 5 .. LEFT-JUSTIFY HAS-OWN-DAB FLAG
PL X2,STG.ERR4 .. NOT A FUNDING DIRECTORY
LX2 1,18 .. RIGHT-JUSTIFY DAB NUMBER
ABSV ARSV,STG,X2,X1,* .. SET TAG
CLOSE C.T2
JP RETURN
*
* STG.ERR1 SX1 EN.PARM
SX2 EN.BPAR
JP RETERR
*
* STG.ERR3 SX2 EN.RSRV
JP RFC.DR
*
* STG.ERR4 CLOSE C.T2
SX2 EN.NTFD
JP RFC.DR
*
* STGERR SYSERR .. UNEXPECTED RETURN
*
*
* DA: DSP( C.DIRECT )
*
* IF C.DIRECT HAS NO DIRECTLY ASSOCIATED DAB, AN ERROR RESULTS.
* OTHERWISE, A BLOCK OF 8 WORDS IS RETURNED: RD(1)-RD(8), IN
* A FORMAT DETERMINED BY THE DISK ACCOUNTING SYSTEM.
*
* RETURNS: RD(1)-RD(8).
DSP:DA ACT
1575 7160000000 X
1602 10177
7160000000 X
1613 7160000070 +
1614 7160000000 X
1622 13666
1623 7160000000 X
1634 5110000000 X
20105
1635 0321001656 +
20123
1636 7160000000 X
1645 7160000000 X
1652 5110001654 +
7120000000
1653 0200000046 +
DISPCAP C.DIRECT
BX1 X7
CRCAP C.T1,(CL.DRCT,CA.DSKF),(X1)
ON.ERR PASSER .. PASS OPENING ERRORS TO USER
OPENRO C.T1,DSP.ERR2,C.T2 .. ECS INCARN. -> C.T2
OFF.ERR
READ C.T2,0,T1,I,DSPERR
SA1 T1
LX1 5 .. LEFT-JUSTIFY HAS-OWN-DAB FLAG
PL X1,DSP.ERR3 .. NOT A FUNDING DIRECTORY
LX1 1,18 .. RIGHT-JUSTIFY DAB NUMBER
ABSV ARSV,DSP,X1,*,*,(RETBUFF*8) .. DISPLAY DAB
CLOSE C.T2
SA1 RS.DAB .. RETURN DATA CONTROL
SX2 0 .. CAPABILITIES CONTROL
JP RETPAR
    
```

1654	00000000100000000000	x	RS.DAB	SPECIFY	RETRUFF,8	
1655	7120000000	x	DSP.ERR2	SX2	EN.RSRV	.. DIRECTORY IS EXCLUSIVELY OPEN
	0200000053	+		JP	RETERR	
1656	7160000000	x	DSP.ERR3	CLOSE	C.T2	
1663	7120000000	x		SX2	EN.NTFD	
	0200000075	+		JP	REC.DR	
1664	0100000000	x	DSPERR	SYSERR		.. UNEXPECTED FRETURN

ORIGINAL [unclear] [unclear]
\$ [unclear]

```

*
*
*      DR:GNOD( C.DIRCT, P.NUMB )
*
* GET N-TH OWNED LLD-OBJECT (FOR DUMP/RECOVER)
*
1666 5110000000 x          GNOD:OR → SA1      P.NUMB      .. INDEX OF OBJECT
      43673                MX6      59          .. TO FETCH MUST BE
      36616                IX6      X1+X6      .. STRICTLY POSITIVE
1667 0336000000 x          NG        X6,E.SPAR
      54610                SA6      A1
      76100                SX1      B0          .. OPEN (DIRECTORY) FILE
1670 6160001671 +          CALL R    OPEN1,B6   .. FOR READING
1671 6170001672 +          GNODLOOP CALL F    NXTOWN,CFRET .. LOOP: FETCH( LLD-OBJECT(I) )
1673 5140000000 x          SA4      P.NUMB      .. IF I=NUMB THEN
      0304001676 +        ZR        X4,GNODFND .. GOTO FOUND
1674 43673                MX6      59
      36646                IX6      X4+X6      .. I+I
      5064000000          SA6      A4+0
1675 0200001671 +          JP        GNODLOOP .. GOTO LOOP
1676 7160000000 x          GNODFND CRCAP    C.T1,(CL,DRCT,CA,DSKF),(X3) .. ↑NXTOWN↑ SETS X3
1706 73620                SX6      X2          .. AND X2
      5160000000 x        SA6      RETBUFF    .. STORE ENTRY TYPE INTO RETURN BUFFER
1707 5111000000 x          SA1      WINDOW+B1 .. SOURCE ADDRESS FOR ↑CPYNAME↑
      61100000001 x      SB1      RETBUFF+1 .. SINK
1710 6170001711 +          CALL    CPYNAME .. COPY NAME (AND COUNT ITS CHARACTERS)
1711 6170001712 +          CALL    C'OSE  .. SAVES B1, WHICH ↑CPYNAME↑ SET
1712 7110000000 x          SX1      RETBUFF    .. BUFFER ADDRESS
      76510                SX5      B1          .. AND
      20536                LX5      30          .. WORD COUNT
1713 12151                BX1      X5+X1      .. CONSTITUTE RETURN AUTHORIZATION
      5120000051 +        SA2      RS,CT1    .. RETURN CAP SPEC
1714 0200000046 +          JP        RETPAR

```

```

*
*
*      DR:GNOD( C.DIRCT, P.NUMB )
*
* GET N-TH OWNED DIRECTORY (FOR DUMP/RECOVER)
*
1715 5110000000 x          GNOD:OR → SA1      P.NUMB      .. INDEX OF OBJECT
      43673                MX6      59          .. TO FETCH
      36616                IX6      X1+X6      .. MUST BE STRICTLY POSITIVE
1716 0336000000 x          NG        X6,E.SPAR
      54610                SA6      A1
      76100                SX1      B0          .. OPEN (DIRECTORY) FILE
1717 6160001720 +          CALL R    OPEN1,B6   .. FOR READING
1720 6170001721 +          GNODLOOP CALL F    NXTOWN,CFRET .. FETCH AN OWNED OBJECT TO X2,X3
1722 63120                SB1      X2          .. OBJECT TYPE INDEX
      6120000000 x        SB2      CA,DRCT   .. DIRECTORY TYPE INDEX
1723 0512001720 +          NE        B1,B2,GNODLOOP .. OBJECT IS NOT A DIRECTORY
      5140000000 x        SA4      P.NUMB
1724 0304001726 +        ZR        X4,GNODFND .. THIS IS THE N-TH DIRECTORY

```

		43673		MX6	59	
			36646	IX6	X4+X6	
1725	54640			SA6	A4	
		0200001720	+	JP	GNODLOOP	.. KEEP FETCHING
1726	716000000	x		GNODFNR	CRCAP	C.T1,(CL.DRCT,CA.DSKF),(,X3) .. CONSTRUCT DISK FILE CAPABILITY
1736	5111000000	y		SA1	WINDOW+B1	.. SOURCE ADDRESS FOR CPYNAME↑
		6110000001	x	SB1	RETBUFF+1	.. SINK
1737	6170001740	+		CALL	CPYNAME	.. MOVE CHARACTER COUNT AND CHAR COUNT
1740	6170001741	+		CALL	CLOSE	.. SAVES B1, WHICH CPYNAME↑ SET
1741	7110000000	y		SX1	RETBUFF	.. CONSTRUCT
		76510		SX5	B1	.. RETURN DATUM
			20536	LX5	30	.. AND
1742	12151			BX1	X5+X1	.. CAPABILITY
		5120000051	+	SA2	RS.CT1	.. CONTROL WORDS
1743	0200000046	+		JP	RETPAR	

*
*
* DR:DABN(C.DIRCT)
*
* DISPLAY DIRECTORY ACCOUNTING BLOCK NUMBER [FOR LOAD].
*

1744	7110000000			DABN:DR	SX1	0	.. OPEN (DIRECTORY) FILE
		6160001746	+		CALL	OPEN,R6	.. FOR READING
1746	5110000000	y		SA1	WINDOW	.. HEADER WORD CONTAINS ACC. BLK. NUMBER	
		21144		AX1	18+18	.. RIGHT-JUSTIFY THE NUMBER	
			43652	MX6	60-18	.. AND DELETE	
1747	15616			BX6	-X6*X1	.. OTHER FIELDS	
		5160000000	x	SA6	T1		
1750	6170001751	+		CRET1	CALL	CLOSE	
1751	5110000050	+		RETT1	SA1	RS.T1	
		7120000000		SX2	0		
1752	0200000046	+		JP	RETPAR		

*
*
* DR:GNOS(C.DIRCT, P.NUMB)
*
* GET THE N-TH LLD OBJECT SPECIFIER.
*

1753	5110000000	x		GNOS:DR	SA1	P.NUMB	
		43673			MX6	59	.. ==1
			36616		IX6	X1+X6	
1754	0336000000	x		NG	X6,E.SPAR	.. NUMB MUST BE STRICTLY POSITIVE	
		54610		SA6	A1		
			76100	SX1	B0	.. OPEN (DIRECTORY) FILE	
1755	6160001756	+		CALL	OPEN,R6	.. FOR READING	
1756	6170001757	+		CALL	FOBSPEC,CFRET	.. SET A1-X1 TO THE FIRST OBJECT SPECIFIER	
1760	5120000000	x		GNOSLOOP	SA2	P.NUMB	
		0302001765	+	ZR	X2,GNOSFND	.. THIS IS THE N-TH	
1761	43673			MX6	59		
		36626		IX6	X2+X6		
		5062000000		SA6	A2+0		
1762	6170001763	+		CALL	NOBSPEC,CFRET	.. SET A1-X1 TO THE NEXT OBJECT SPECIFIER	

1764	0200001760 +		JP	GNOSLOOP	
1765	10611		GNOSFNN	BX6	X1
	5160000000 X			SA6	T1
1766	0200001750 +		JP	CRET1	.. CLOSE (DIRECTORY) FILE AND RETURN T1
			*		
			*		
			*	DR:RNOS(C.DIRECT, P.NUMB, P.OBSPC)	
			*		
			*	REPLACE THE N-TH WILD OBJECT SPECIFIER.	
			*		
1767	5110000000 X		RNOS ^{OK}	SA1	P.NUMB
	43673			MX6	59
	36616			IX6	X1+X6
1770	0336000000 X			NG	X6, E.SPAR
	5061000000			SA6	A1+0
1771	7110000001			SX1	1
	6160001773 +			CALIF	OPEN1, B6
1773	6170001774 +			CALIF	F.OBSPEC, CFRET
1775	5120000000 X		RNOSLOOP	SA2	P.NUMB
	0302002002 +			ZR	X2, RNOSFND
1776	43673			MX6	59
	36626			IX6	X2+X6
	5062000000			SA6	A2+0
1777	6170002000 +			CALIF	NOBSPEC, CFRET
2001	0200001775 +			JP	RNOSLOOP
					.. SET A1 TO ADDRESS OF NEXT SPECIFIER
2002	5120000000 X		RNOSFNN	SA2	P.OBSPC
	10622			BX6	X2
	54610			SA6	A1
2003	0200000561 +			JP	CRET0
					.. REPLACE THE OBJECT SPECIFIER
					.. CLOSE DIRECTORY AND RETURN

CONVERT DIRECTORY TO SUBPROCESS DESCRIPTOR AND VICE VERSA

* DIRECTORY CAP -> SUBPROCESS DESCRIPTOR CAP

2004 7160000000 X

2011 6110000000 X

2012 10166
10277
20152
43022

2013 15110
7160000000 X

2024 7160000000 X

2033 0200000233 +

MAKE;SD ^{Act} DISPCAP C.DIRCT
SB1 CA.SBPD

*
BLDCAP BX1 X6
BX2 X7
LX1 60-18
MX0 18
BX1 -X0*X1

CRCAP C.T1,(CL.DRCT,B1),(,X2)
COPYCAP C.T1,C.T1,(,X1)
JP RETCT1

.. DISPLAY CAP INTO X6,X7
.. 42/OPTIONS, 18/TYPE
.. DISK ADDRESS AND UNIQUE NAME

*
* SD: ~~MAKE~~ (C.SBPD)

* SUBPROCESS DESCRIPTOR CAP -> DIRECTORY CAP

2034 7160000000 X

2041 6110000000 X
02000002012 +

CONV;S ^{Act} DISPCAP C.SBPD
SB1 CA.DRCT
JP BLD CAP

* NOW CONSTRUCT GLOBAL AND LOCAL TABLE ENTRIES

2124	5130000000 x		SA3	P.DYNT	.. FETCH THE UNIQUE NAME
	16635		BX6	-X5+X3	.. ADD OPEN COUNT OF -(-1) =+1
	54610		SA6	A1	.. STORE ENTRY IN DNT
2125	53622		SA6	B2+X2	.. STORE ENTRY IN LOL (IN NEW FREE ENTRY)
	7160000000 x		CAPOUT	(CL,DRCT,CL,DNT)	.. PLACE OBJECT IN DNT CLIST
2136	6160002137 +		CALLR	PUTDNT,B6	.. MAP OUT AND UNLOCK THE DNT
2137	0200000042 +		JP	RETURN	
2140	6160002141 +	ODN.FAIL	CALLR	PUTDNT,B6	.. LET GO OF THE DYNAMIC NAME TABLE
2141	0200000044 +		JP	FRETURN	

*
 *
 * DNI:ODN2(C.DYNT)
 *

* OPEN A DYNAMIC NAME TAG WITHOUT AN ACCOMPANYING OBJECT.

2142	0130000000 x	ODN2:IN	ACT SYSCALL	DSPDYNT	.. DISPLAY C.DYNT IN X6,X7
2143	43052		MX0	42	
	11606		BX6	X0*X6	.. SAVE OPTIONS
	20652		LX6	60-18	.. FROM C.DYNT
2144	5160000000 y		SA6	T.OPTS	
	5170000000 x		SA7	P.DYNT	.. SAVE UNIQUE NAME ALSO
2145	5110000000 y		SA1	O.LOL	.. LOCAL OPEN LIST DESCRIPTOR WORD
	6221000000		SB2	X1+0	.. FREE POINTER (=NUMBER OF WORDS IN USE)
2146	20130		LX1	60-18-18	.. RIGHT JUSTIFY START ADDRESS FIELD
	6110000000		SB1	0	
2147	0412002201 +	ODN2LOOP	EQ	B1,B2,ODN2GLB	.. PERFORM GLOBAL ACTION - TAG NOT IN LOL
	53211		SA2	X1+B1	.. FETCH NEXT ENTRY WORD
	11302		BX3	X0*X2	.. EXTRACT ITS UNIQUE NAME FIELD
2150	6111000001		SB1	B1+1	.. STEP LIST INDEX
	13373		BX3	X7-X3	.. COMPARE UNIQUE NAME WITH P.DYNT
2151	0313002147 +		NZ	X3:ODN2LOOP	.. NOT EQUAL, KEEP CHECKING

* A MATCHING LOCAL ENTRY WAS FOUND. INCREMENT ITS LOCAL OPEN COUNT
 * (LOWER 17 BITS) AND CALL HASH TO FIND THE APPROPRIATE OBJECT.

	43673		MX6	59	
2152	43053	37626	IX6	X2-X6	.. INCREMENT LOCAL OPEN COUNT
	15360		MX0	60-17	
	0200000000 x		BX3	-X0*X6	
2153	54620		ZR	X3,E.BLOC	.. ERROR - LOC OVERFLOWED
	76100		SA6	A2	.. UPDATE LOL ENTRY
	6160002155 +		SX1	B0	.. LOCK AND MAP IN THE DNT
2155	6150002156 +		CALLR	GETDNT,B6	.. WITH READ ONLY ACCESS
2157	0301002214 +		CALLR	HASH,ODN2ERR,B5	.. SYSTEM ERROR IF ENTRY NOT FOUND
			ZR	X1,ODN2ERR	.. (DITTO)
2160	7160000000 x	ODN2ACC	CAPIN	(CL,DRCT,CL,DNT)	.. FETCH CAPABILITY FROM DNT CLIST
2170	5110000000 x		SA1	T.OPTS	.. OPTINS FROM C.DYNT
	7160000000 x		COPYCAP	C.T1,C.T1,(,X1)	.. DOWNGRADE TO DESERVED OPTIONS
2177	6160002200 +		CALLR	PUTDNT,B6	.. MAP OUT AND UNLOCK THE DNT

2200	0200000233 +		JP	RFTCT1	
2201	7110000001		ODN2GLR SX1	1	.. LOCK AND MAP IN
2203	6150002204 +	6160002203 +	CALLR	GETDNT,B6	.. THE DNT, WITH WRITE ACCESS
2205	0301002140 +		CALLFR	HASH,ODN,FAIL,B5	.. FRETURN IF NOT GLOBALLY OPEN
		42573	ZR	X1,ODN,FAIL	.. (DITTO)
		37615	MX5	59	.. ==-1
2206	73160		IX6	X1-X5	.. INCREMENT GLOBAL OPEN COUNT
		0336000000 X	SX1	X6	
2207	5120000000 y		NG	X6,E,BGOC	.. ERROR - GLOBAL OPEN COUNT OVERFLOW
		63220	SA2	0,LOL	.. REFETCH THE LOL DESCRIPTOR
		37725	SB2	X2	.. FREE POINTER
2210	20252		IX7	X2-X5	.. INCREMENT F.P IN DESCRIPTOR
		63320	LX2	60-18	.. RIGHT JUSTIFY AND
		0623000000 X	SB3	X2	.. EXTRACT THE MAX LENGTH FIELD
2211	54610		GE	B2,B3,E,FLOL	.. ERROR - LOL IS FULL
		54720	SA6	A1	.. CAN SAFELY UPDATE DNT ENTRY NOW
		5130000000 X	SA7	A2	.. ALSO THE LOL DESCRIPTOR
2212	16635		SA3	P,DYNT	.. UNIQUE NAME OF TAG WE ARE OPENING
		21222	BX6	-X5+X3	.. FORM LOL ENTRY, WITH OPEN COUNT = 1
		53622	AX2	18	.. RIGHT JUSTIFY LOL-SPACE START ADDRESS
2213	0200002160 +		SA6	X2+B2	.. STORE NEW ENTRY
			JP	ODN2ACC	.. FETCH OBJECT AND RETURN IT
2214	0100000000 X		ODN2ERR RJ	SYSERR	.. LOCALLY OPEN TAG NOT IN DNT
			*		
			*		
			*	DN:CLDN(C.DYNT)	
			*		
			*	CLOSE A GIVEN DYNAMIC NAME TAG.	
			*		
2215	0130000000 X		CLDN,ON	SYSCALL	.. DISPLAY C.DYNT IN X6,X7
2216	5110000000 X		SA1	0,LOL	.. LOCAL OPEN LIST DESCRIPTOR
		63210	SB2	X1	.. NO. IN USE = 0,LOL[43:60]
		21144	AX1	18+18	.. RIGHT JUSTIFY START ADDRESS FIELD
2217	6110000000		SB1	0	.. INITIALIZE INDEX
		43052	MX0	42	.. MASK AS WIDE AS A UNIQUE NAME
2220	0412000000 X		CLDNLOOP EQ	B1,B2,E,DNNT0	.. ERROR - NO SUCH LOCALLY OPEN TAB
		53211	SA2	X1+B1	.. NEXT LOL ENTRY
		13327	BX3	X2-X7	.. COMPARE WITH DATUM(C.DYNT)
2221	11303		BX3	X0*X3	.. REMOVE GARBAGE
		0303002223 +	ZR	X3,CLDNFND	.. FOUND THE TAG TO CLOSE
2222	6111000001		SB1	B1+1	.. STEP LIST INDEX
		0200002220 +	JP	CLDNLOOP	.. KEEP LOOKING
			*		
2223	6120000000		CLDNFND SB2	0	.. INDICATES LOCAL ACTION TO BE PERFORMED
		6170002225 +	CALLFR	C.DYNT,FRETURN	.. CLOSE TAG POINTED TO BY B1
			*		.. FAILURE RETURN IF GLOBAL COUNT -> 0
2226	0200000042 +		JP	RETURN	
			*		
			*		
			*	DN:CLAW()	
			*		

* CLOSE ALL (WEDGED OR NOT) LOCALLY OPEN DYNAMIC NAME TAGS.

2227	5110000000 x	6211777776	CLAW:DN	SA1	0,LOL	•• LOCAL OPEN LIST DESCRIPTOR
2230	0710000042 +	6120000001		SB1	X1-1	•• IN USE-1 = INDEX OF LAST ENTRY
2231	6170002232 +			NG	B1,RETURN	•• ALL DONE - NO (MORE) LOCALLY OPEN
2233	0200002227 +			SB2	1	•• SPECIFY GLOBAL CLOSE TO BE PERFORMED
				CALLF	C,SDYNT,CLAW	•• (RETURNS IF GLOBAL OPEN COUNT GOES TO ZERO)
				JP	CLAW	•• CLOSE THE REST

DN:CLAO()

* CLOSE ALL (UNWEDGED) LOCALLY OPEN DYNAMIC NAME TAGS.

2234	5110000000 x	63110	CLAO:DN	SA1	0,LOL	•• LOCAL OPEN LIST DESCRIPTOR
2235	6111777776	21144		SB1	X1	•• NUMBER IN USE = (INDEX OF LAST) + 1
2236	53211	0710000042 +	CLAOLP	AX1	1R+1B	•• RIGHT ADJUST LOL BASE ADDRESS
	20252			SB1	B1-1	•• NO MORE TO CLOSE
	0332002235 +			NG	B1,RETURN	•• FETCH LOL ENTRY
2237	76610			SA2	X1+B1	•• LEFT ADJUST THE WEDGE BIT
2240	6120000001			LX2	42	•• WEDGED, DO NOT CLOSE IT
2243	5110000000 x	6170002242 +	CLAOCLS	SX6	B1	•• SAVE
2244	63120	5120000000 x		SA6	T1	•• INDEX
	21144			SB2	1	•• SPECIFY GLOBAL CLOSE TO BE PERFORMED
	0200002235 +			CALLF	C,SDYNT,*+1	•• (RETURNS IF GLOBAL COUNT -> 0)
				SA1	0,LOL	•• RESTORE
				SA2	T1	•• INDEX
				SB1	X2	•• RESTORE LOL BASE PTR
				AX1	1R+1B	
				JP	CLAOLP	

DN:CFLG(C.DYNT, P.FLAG)

* C.DYNT MUST BE LOCALLY OPEN. ITS WEDGE BIT IS SET/CLEARED AS P.FLAG
 * IS .NE./EQ. TO ZERO, RESPECTIVELY. THE OLD VALUE OF THE WEDGE BIT,
 * 0 OR 1, IS RETURNED AS RDAT(0).

2245	0130000000 x		CFLG:DN	SYSCALL	D,SPDYNT	•• DISPLAY C.DYNT IN X6,X7
2246	5110000000 x	63110		SA1	0,LOL	•• LOCAL OPEN LIST DESCRIPTOR
2247	21144	66200		SB1	X1	•• NUMBER OF ENTRIES IN USE
	43052			SB2	B0	
2250	0412000000 x	53212		AX1	1R+1B	•• RIGHT ADJUST LOL BASE ADDRESS
2251	13337	11302		MX0	42	
				EQ	B1,B2,CFL.ERR1	•• NO SUCH LOCALLY OPEN DNT
				SA2	X1+B2	•• FETCH NEXT ENTRY
				BX3	X0#X2	•• EXTRACT UNIQUE NAME FIELD
				BX3	X3-X7	•• COMPARE WITH C.DYNT

2252	0313002250 +	6122000001 43573	*	SB2 NZ	B2+1 X2,CFLGLP	.. NOT EQUAL, KEEP LOOKING
2253	15625	20253 5110000000 X		MX5 LX2 BX6 SA1	50 60-17 -X5*X2 P FLAG	.. RIGHT ADJUST THE OLD WEDGE BIT .. EXTRACT IT
2254	0301002255 +	11752 16725		BX7 ZR BX7	X5*X2 X1,CFLGX -X5*X2	.. TENTATIVELY RESET WEDGE BIT
2255	20721	54720	CFLGX	LX7 SA7 SA6	17 A2 T1	.. SET IT .. REPOSITION LOL ENTRY
2256	0200001751 +	5160000000 X		JP	RFTT1	.. RETURN T1
			0 X * CFL.ERR1 EQU		E.DNNT0	

```
*
*
*
2257 0130000000 x      *
2260 43066             *
                7110000001
                36571
2261 15250             *
                0302002302 +
*
2262 7160000000 x      *
2271 7160000000 x      *
2307 0200000233 +      *
*
2302 10655             *
                5160000000 X
2303 6170002304 +      *
*
2304 0130000000 x      *
2305 6170002306 +      *
2306 5150000000 x      *
                0200002262 +
*
*
2412                                     END
```

```
AK:CRAK( )
SYSCALL LOCKAK      .. GET THE ACCESS-KEY-NUMBER EVENT IN X7
MX0      60-6
SX1      1
IX5      X7+X1      .. NEXT ACCESS-KEY NUMBER
BX2      -X0*X5      .. X5 MODULO 64
ZR      X2,CRAKUPD  .. TIME TO UPDATE THE DISK VERSION OF
                                THE NEXT ACCESS-KEY NUMBER
*
CRAK1 SENDV (CL,DRCT,EC,AKN),(,X5) .. PUT COUNTER BACK ON CHANNEL
CRCAP C,T1,(CL,DRCT,CA,ACKY),(,X5) .. CREATE KEY CAPABILITY
JP RFTCT1
*
CRAKUPD BX6 X5      .. SAVE NEW
SA6 RETDATA      .. ACCESS-KEY NUMBER
CALL GFTCTRS      .. OPEN AND RESERVE THE FILE CONTAININ
                                ACCESS-KEY AND DYNAMIC NAME TAG
                                COUNTERS
*
SYSCALL WRNEWAK      .. WRITE OUT THE NEW NUMBER FROM -RETDATA-
CALL P1TCTRS      .. PSEUDO-CLOSE, UNLOCK, CLOSE
SA5 RETDATA      .. PICK UP NUMBER AGAIN ...
JP CRAK1      .. ... AND FINISH UP
```

```
40071 STORAGE USED      6257 STATEMENTS      515 SYMBOLS      000135 INVENTED SYMBOLS
6600 ASSEMBLY      26.379 SECONDS      1533 REFERENCES
```


ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

COMPASS - VER 2.

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ABSV.CRE	0		13/24							
ABSV.DSP	3		29/50							
ABSV.ICM	6		28/27							
ABSV.MFS	4		27/06							
ABSV.MSF	5		27/02							
ABSV.STG	7		29/13							
ACTIONS	2310	PROGRAM*	2/42 L	4/14						
ADDWDS	0	EXTERNAL*	19/18	20/51	22/18					
ADPR	673	PROGRAM*	18/07 L							
ADPRERR1	744	PROGRAM*	18/21	18/25	19/26 L					
ADPRERR2	746	PROGRAM*	18/34	19/01	19/27 L					
AP.EXPL	713	PROGRAM*	18/28 L	18/37						
AP.IMPL	722	PROGRAM*	18/26	18/40 L						
AP.1	707	PROGRAM*	18/21	18/24 L						
AP.2	725	PROGRAM*	18/38	18/50 L	19/02					
AP.3	732	PROGRAM*	18/51	18/52	19/05 L					
ASCL	273	PROGRAM*	9/38 L							
AS.ERR1	344	PROGRAM*	9/48	10/23 L						
AS.ERR2	351	PROGRAM*	10/06	10/34 L						
AS.ERR23	353	PROGRAM*	10/35	10/38 L						
AS.ERR3	352	PROGRAM*	10/10	10/16	10/37 L					
AS.LOOP	300	PROGRAM*	9/41	9/45 L						
BEA	0	EXTERNAL*	8/27	16/27						
BLDCAP	2012	PROGRAM*	34/06 L	34/20						
CANON	0	EXTERNAL*	8/13	14/44	17/03	19/38	20/20			
			9/45	16/16	18/09	20/18				
CA.ACKY	0	EXTERNAL*	10/13	40/13						
CA.DRCT	0	EXTERNAL*	10/02	12/40	12/50	25/13	31/50	34/19		
CA.DSKF	0	EXTERNAL*	8/49	11/31	25/08	28/17	29/41	32/07		
			10/10	13/42	26/20	29/04	31/23			
CA.DYNT	0	EXTERNAL*	35/16							
CA.SBPD	0	EXTERNAL*	25/18	34/04						
CC.DIR	0	EXTERNAL*	4/25							
CD.HVAB	500	PROGRAM*	13/22	13/34 L						
CFLG	2245	PROGRAM*	38/43 L							
CFLGLP	2250	PROGRAM*	38/50 L	39/02						
CFLGX	2255	PROGRAM*	39/09	39/11 L						
CFL.ERR1	0	EXTERNAL*	38/50	39/16 D						
CFRET	65	PROGRAM*	5/36 L	17/07	19/42	22/29	23/47	31/49	33/01	33/26
			16/27	18/19	20/29	23/40	31/15	32/48	33/20	
CF.DIR	0	EXTERNAL*	6/08	6/11						
CHNM	777	PROGRAM*	20/16 L							
CHNM1	1011	PROGRAM*	20/24	20/27 L						
CHNM2	1024	PROGRAM*	20/40	20/46 L						
CHNM3	1030	PROGRAM*	20/42	20/45	20/51 L					
CLAO	2234	PROGRAM*	38/17 L							
CLAOCLS	2237	PROGRAM*	38/26 L							
CLAO LP	2235	PROGRAM*	38/20 L	38/24	38/34					
CLAW	2227	PROGRAM*	38/04 L	38/09	38/10					
CLDN	2215	PROGRAM*	37/32 L							
CLDNFND	2223	PROGRAM*	37/42	37/46 L						
CLDNLOOP	2220	PROGRAM*	37/38 L	37/44						

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

CLDR	162	PROGRAM*	7/02	L						
CLKS	167	PROGRAM*	7/18	L						
CLOCKS	0	EXTERNAL*	5/31							
CLOSDF	0	EXTERNAL*	7/04							
CLOSE	0	EXTERNAL*	5/37		5/45	8/38	9/19	11/39	24/18	32/11
			5/40		5/48	8/47	9/22	14/37	31/29	32/31
CLOSE1	0	EXTERNAL*								
CLSDYNT	0	EXTERNAL*	37/48		38/09	38/30				
CL.DNT	0	EXTERNAL*	36/09		36/51					
CL.DRCT	0	EXTERNAL*	4/25		6/11	10/10	13/42	29/04	32/07	35/14
			6/08		8/35	11/31	26/20	29/41	34/12	35/16
			6/10		8/49	12/40	28/17	31/23	35/08	36/09
CL.Ops	0	EXTERNAL*	4/24		8/36	13/40	26/24	27/25	28/20	29/38
			4/37		8/48	13/41	26/26	27/28	28/26	29/40
			4/53		9/49	13/42	26/31	27/35	28/27	29/42
			5/06		10/09	13/45	26/32	27/36	28/33	29/44
			5/12		10/11	16/18	26/40	27/42	29/01	29/49
			5/22		11/15	25/03	26/46	27/43	29/03	29/50
			6/07		11/30	26/15	26/42	27/48	29/05	30/07
			6/09		12/30	26/17	27/01	27/49	29/07	31/22
			6/10		12/39	26/19	27/05	28/14	29/12	32/06
			6/11		13/17	26/20	27/07	28/16	29/13	34/03
			8/34		13/23	26/22	27/08	28/18	29/23	34/11
CL.SCAN	0	EXTERNAL*								
CN.ERR1	1010	PROGRAM*	20/24	L						
CONV	2034	PROGRAM*	34/18	L						
COPY	0	EXTERNAL*	11/38		13/17	14/36	21/03			
CPASSER	67	PROGRAM*	5/39	L	11/14	12/29				
CPYNAME	0	EXTERNAL*	24/06		31/28	32/10				
CRAK	2257	PROGRAM*	40/04	L						
CRAKUPD	2302	PROGRAM*	40/09		40/15	L				
CRAK1	2262	PROGRAM*	40/11	L	40/23					
CRDN	2042	PROGRAM*	35/07	L						
CRDNERR	2110	PROGRAM*	35/22		35/26	L				
CRDNUPD	2073	PROGRAM*	35/12		35/18	L				
CRDN1	2052	PROGRAM*	35/13	L	35/24					
CRDR	420	PROGRAM*	12/10	L						
CREC.DR	74	PROGRAM*	5/47	L	9/28	9/31	14/13	20/25		
CRETCT1	232	PROGRAM*	8/37	L	13/43	13/46				
CRETERR	72	PROGRAM*	5/44	L	16/45					
CRET11	1750	PROGRAM*	32/30	L	33/05					
CRET0	561	PROGRAM*	14/36	L	17/34	20/02	22/21	33/31		
			16/51		19/24	21/03	22/36			
CRFI	356	PROGRAM*	11/05	L						
CRSN	151	PROGRAM*	6/28	L						
CSUL	1047	PROGRAM*	22/26	L						
C.DDIR	0	EXTERNAL*	26/18							
C.DIRCT	0	EXTERNAL*	28/15		29/02	29/39	34/04			
C.DIR2	0	EXTERNAL*								
C.DOBJ	0	EXTERNAL*								
C.DYNT	0	EXTERNAL*								
C.FOBJ	0	EXTERNAL*	25/04							
C.KEY	0	EXTERNAL*	16/19							

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

C.KEY2	0	EXTERNAL*								
C.OBJ	0	EXTERNAL*	36/09							
C.SBPD	0	EXTERNAL*	34/19							
C.SCAN	0	EXTERNAL*								
C.SDIR	0	EXTERNAL*	26/16							
C.STNT	0	EXTERNAL*								
C.SUCCD	0	EXTERNAL*								
C.T1	0	EXTERNAL*	5/14	8/37	12/40	28/19	29/43	34/13	36/53	
			5/15	9/50	26/21	29/04	31/23	34/13	36/53	
			8/35	10/12	26/25	29/06	32/07	35/16	40/13	
			8/37	11/31	28/17	29/41	34/12	36/51		
C.T2	0	EXTERNAL*	11/16	13/43	27/09	28/19	29/06	29/43	35/22	
			12/31	26/25	27/37	28/21	29/08	29/45		
			13/41	26/32	27/44	28/28	29/14	29/51		
			13/42	26/39	27/50	28/34	29/24	30/08		
DABN	1744	PROGRAM*	32/23	L						
DBUG	146	PROGRAM*	6/20	L						
DEHASH	0	EXTERNAL*								
DELWDS	0	EXTERNAL*	16/51	17/34	20/02	20/45	22/36			
DF.DRCT	0	EXTERNAL*	8/49	10/10	13/18	26/20	26/23			
DF:ABSV	0	EXTERNAL*	13/24	13/46	27/02	27/06	28/27	29/13	29/50	
DF:CFIL	0	EXTERNAL*	11/16	12/31						
DF:CLO	0	EXTERNAL*	27/08	27/26	27/36	27/43	27/49	28/28	29/14	29/51
			27/09	27/29	27/37	27/44	27/50	28/34	29/24	30/08
DF:DSF	0	EXTERNAL*	26/41	26/49						
DF:OPRO	0	EXTERNAL*	26/23	26/25	28/19	29/06	29/43			
DF:PCLS	0	EXTERNAL*	13/18	13/43						
DF:READ	0	EXTERNAL*	6/08	6/10	6/12	26/27	26/32	28/21	29/08	29/45
DF:WRIT	0	EXTERNAL*	6/11	13/41	35/22					
DISDIR2	0	EXTERNAL*	14/45							
DISKEY2	0	EXTERNAL*	14/49							
DISPKEY	0	EXTERNAL*	8/15	18/25						
DISPOBJ	0	EXTERNAL*	14/01							
DLPR	750	PROGRAM*	19/34	L						
DLPRERR1	775	PROGRAM*	19/44	19/45	20/04	L				
DORTRN	55	PROGRAM*	4/50	5/03	5/09	5/19	5/24	L		
DORTRNER	63	PROGRAM*	5/33	L						
DP.ACPLP	764	PROGRAM*	19/45	L	19/50					
DSP	1575	PROGRAM*	29/38	L						
DSPCLKS	0	EXTERNAL*	4/10							
DSPDYNT	0	EXTERNAL*	35/35	36/20	37/32	38/43				
DSPERR	1664	PROGRAM*	29/45	30/11	L					
DSPN	1056	PROGRAM*	23/35	L						
DSPNERR1	1104	PROGRAM*	24/20	L						
DSPNERR2	1106	PROGRAM*	24/07	24/10	24/21	L				
DSPNFND	1070	PROGRAM*	23/44	23/52	L					
DSPNLOOP	1063	PROGRAM*	23/41	L	23/48					
DSPSUCC	0	EXTERNAL*	22/18							
DSP.ERR2	1655	PROGRAM*	29/43	30/04	L					
DSP.ERR3	1656	PROGRAM*	29/47	30/07	L					
DSSN	151	PROGRAM*	6/31	L						
DSTR	1110	PROGRAM*	25/03	L						
DSTRY	0	EXTERNAL*	16/45	25/25						

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

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ERROR4	33	PROGRAM*	4/23	4/33	L				
ERROR5	35	PROGRAM*	4/24	L					
ERRSAVE	0	EXTERNAL*	4/16						
ERRSETP	14	PROGRAM*	4/22	4/24	L				
ET.HARD	2		14/22						
ET.OWN	3		13/04	17/08					
E.BGOC	0	EXTERNAL*	37/10						
E.BGOPT	0	EXTERNAL*	18/14						
E.BLOC	0	EXTERNAL*	36/44						
E.BPAR	0	EXTERNAL*							
E.DELZR	0	EXTERNAL*	19/35						
E.DNNT0	0	EXTERNAL*	37/38	39/16					
E.FDNT	0	EXTERNAL*	35/38						
E.FLOL	0	EXTERNAL*	35/47	37/16					
E.IMPOT	0	EXTERNAL*	18/29	18/30					
E.ISLCK	0	EXTERNAL*	18/35	19/03					
E.ISLKI	0	EXTERNAL*	18/10						
E.ISOWN	0	EXTERNAL*	17/09						
E.NOIA	0	EXTERNAL*	8/21	9/14	14/53	18/45			
E.NTLCK	0	EXTERNAL*	19/46	19/47					
E.NTOWN	0	EXTERNAL*	16/36						
E.OPTS	0	EXTERNAL*	16/24	16/37					
E.SPAR	0	EXTERNAL*	23/36	23/37	31/10	31/44	32/43	33/15	
E.WAIT	0	EXTERNAL*							
F0BSPEC	0	EXTERNAL*	32/48	33/20					
FRETURN	44	PROGRAM*	4/47	E 5/37	9/53	27/12	37/48		
			5/02	L 8/09	10/31	36/13			
GETCTRS	0	EXTERNAL*	35/21	40/18					
GETDNT	0	EXTERNAL*	35/35	36/48	37/05				
GETFCAP	0	EXTERNAL*	6/43	7/03					
GETSPAC	0	EXTERNAL*	11/09	12/15	14/28	19/15	20/48	22/11	
GNOD	1715	PROGRAM*	31/41	L					
GNODFND	1726	PROGRAM*	31/53	32/06	L				
GNODLOOP	1720	PROGRAM*	31/48	L 31/51	32/04				
GN00	1666	PROGRAM*	31/07	L					
GN00FND	1676	PROGRAM*	31/16	31/22	L				
GN00LOOP	1671	PROGRAM*	31/14	L 31/20					
GN0S	1753	PROGRAM*	32/40	L					
GN0SFND	1765	PROGRAM*	32/49	33/03	L				
GN0SLOOP	1760	PROGRAM*	32/48	L 33/01					
HASH	0	EXTERNAL*	35/38	36/49	37/06				
HDLK	537	PROGRAM*	13/53	L					
HL.CKTYP	543	PROGRAM*	14/07	L 14/11					
HL.HVTYP	547	PROGRAM*	14/09	14/15	L				
HS.LINK	554	PROGRAM*	14/27	L 15/11					
INCERR	1501	PROGRAM*	28/21	28/37	L				
INCM	1414	PROGRAM*	28/14	L					
INC.ERR2	1472	PROGRAM*	28/19	28/30	L				
INC.ERR3	1473	PROGRAM*	28/23	28/33	L				
INIT	76	PROGRAM*	2/41	6/07	L				

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

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IPLIST	0	EXTERNAL*	4/25 S	10/10 S	13/42	26/32 S	27/36 S	28/34 S	29/45 S	35/08 S
			4/25 S	10/10 S	13/43 S	26/32 S	27/36	28/34 S	29/45 S	35/08 S
			4/25 S	10/10 S	13/43 S	26/32 S	27/37 S	28/34	29/45 S	35/08
			4/25 S	10/10 S	13/43	26/32 S	27/37 S	29/02 S	29/45 S	35/14 S
			4/25	10/10	13/46 S	26/32	27/37	29/02 S	29/45 S	35/14 S
			6/08 S	10/12 S	13/46 S	26/39 S	27/43 S	29/02	29/45	35/14 S
			6/08 S	10/12 S	13/46 S	26/39 S	27/43 S	29/04 S	29/50 S	35/14
			6/08 S	10/12	13/46	26/39	27/43	29/04 S	29/50 S	35/14 S
			6/08 S	11/16 S	16/19 S	26/41 S	27/44 S	29/04 S	29/50 S	35/14 S
			6/08 S	11/16 S	16/19 S	26/41 S	27/44 S	29/04 S	29/50	35/14 S
			6/08	11/16 S	16/19	26/41	27/44	29/04	29/51 S	35/14 S
			6/10 S	11/16	25/04 S	26/47 S	27/49 S	29/06 S	29/51 S	35/16
			6/10 S	11/31 S	25/04 S	26/47 S	27/49 S	29/06 S	29/51	35/22 S
			6/10 S	11/31 S	25/04	26/47	27/49	29/06	30/08 S	35/22 S
			6/10 S	11/31 S	26/16 S	26/49 S	27/50 S	29/08 S	30/08 S	35/22 S
			6/10 S	11/31 S	26/16 S	26/49 S	27/50 S	29/08 S	30/08	35/22 S
			6/10	11/31	26/16	26/49	27/50	29/08 S	31/23 S	35/22 S
			6/11 S	12/31 S	26/18 S	27/02 S	28/15 S	29/08 S	31/23 S	35/22
			6/11 S	12/31 S	26/18 S	27/02 S	28/15 S	29/08 S	31/23 S	36/09 S
			6/11 S	12/31 S	26/18	27/02 S	28/15	29/08	31/23 S	36/09 S
			6/11	12/31	26/20 S	27/02 S	28/17 S	29/13 S	31/23	36/09 S
			6/12 S	12/40 S	26/20 S	27/02 S	28/17 S	29/13 S	32/07 S	36/09 S
			6/12 S	12/40 S	26/20 S	27/02	28/17 S	29/13 S	32/07 S	36/09
			6/12	12/40 S	26/20 S	27/06 S	28/17 S	29/13 S	32/07 S	36/51 S
			8/35 S	12/40 S	26/20	27/06 S	28/17	29/13	32/07 S	36/51 S
			8/35 S	12/40	26/21 S	27/06 S	28/19 S	29/14 S	32/07	36/51 S
			8/35 S	13/18 S	26/21 S	27/06 S	28/19 S	29/14 S	34/04 S	36/51 S
			8/35 S	13/18 S	26/21 S	27/06 S	28/19	29/14	34/04 S	36/51
			8/35	13/18	26/21	27/06	28/21 S	29/24 S	34/04	36/53 S
			8/37 S	13/24 S	26/23 S	27/08 S	28/21 S	29/24 S	34/12 S	36/53 S
			8/37 S	13/24 S	26/23 S	27/08 S	28/21 S	29/24	34/12 S	36/53 S
			8/37 S	13/24	26/23	27/08	28/21 S	29/39 S	34/12 S	36/53 S
			8/37 S	13/41 S	26/25 S	27/09 S	28/21 S	29/39 S	34/12 S	36/53
			8/37	13/41 S	26/25 S	27/09 S	28/21	29/39	34/12	40/12 S
			8/49 S	13/41 S	26/25	27/09	28/27 S	29/41 S	34/13 S	40/12 S
			8/49 S	13/41 S	26/27 S	27/26 S	28/27 S	29/41 S	34/13 S	40/12 S
			8/49 S	13/41 S	26/27 S	27/26 S	28/27 S	29/41 S	34/13 S	40/12
			8/49 S	13/41	26/27 S	27/26	28/27 S	29/41 S	34/13 S	40/12
			8/49	13/42 S	26/27 S	27/29 S	28/27	29/41	34/13	40/12 S
			9/50 S	13/42 S	26/27 S	27/29 S	28/28 S	29/43 S	34/19 S	40/12 S
			9/50 S	13/42 S	26/27	27/29	28/28 S	29/43 S	34/19 S	40/12 S
			9/50	13/42 S	26/32 S	27/36 S	28/28	29/43	34/19	40/12
I.DNTM	0	EXTERNAL*	35/22							
LOCKAK	0	EXTERNAL*	40/04							
L.CHLM	5		2/38	D	8/22	8/51				
L.DTYP	0	EXTERNAL*	6/10		14/04					
L.RW	0	EXTERNAL*	6/08							
MAKE	2004	PROGRAM*	34/03	L						
MAPIN	0	EXTERNAL*	16/48							
MOVSCNL	0	EXTERNAL*	9/38							
MVSP	1131	PROGRAM*	26/13	L						
MVSPERR1	1412	PROGRAM*	26/27		26/32	27/52	L			
MVSP2	1275	PROGRAM*	26/45		27/04	L				

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

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MVSP25	1310	PROGRAM*	26/37	27/03	27/07 L				
MVSP3	1323	PROGRAM*	27/32	27/06	27/11 L				
MVSP.EX	1327	PROGRAM*	27/20 L	27/30					
MVSP.E1	1324	PROGRAM*	26/14	27/15 L					
MVSP.E3	1326	PROGRAM*	26/23	27/19 L					
MVSP.E4	1331	PROGRAM*	26/23	27/25 L					
MVSP.E5	1337	PROGRAM*	26/25	27/28 L					
MVSP.E6	1347	PROGRAM*	27/33	27/35 L					
MVSP.E61	1345	PROGRAM*	26/29	27/32 L					
MVSP.E62	1346	PROGRAM*	26/34	27/34 L					
MVSP.E7	1363	PROGRAM*	26/52	27/42 L					
MVSP.E8	1377	PROGRAM*	26/53	27/04	27/48 L				
M.WIN	0	EXTERNAL*							
NAMSCAN	0	EXTERNAL*	17/07	18/19	19/42	20/24	20/29		
NOBSPEC	0	EXTERNAL*	33/01	33/26					
NXTOWN	0	EXTERNAL*	31/15	31/49					
ODN1	2112	PROGRAM*	35/33 L						
ODN2	2142	PROGRAM*	36/20 L						
ODN2ACC	2160	PROGRAM*	36/50 L	37/23					
ODN2ERR	2214	PROGRAM*	36/49	36/49	37/25 L				
ODN2GLB	2201	PROGRAM*	36/30	37/03 L					
ODN2LOOP	2147	PROGRAM*	36/30 L	36/35					
ODN.FAIL	2140	PROGRAM*	35/38	36/12 L	37/06	37/06			
OPDR	152	PROGRAM*	6/42 L						
OPEN	0	EXTERNAL*	8/15	16/18	18/17	20/22	22/28		
			10/19	17/05	19/40	22/07	23/39		
OPENRO	0	EXTERNAL*	6/44						
OPEN1	0	EXTERNAL*	8/51	31/14	31/48	32/25	32/47	33/19	
OPN.ERR2	160	PROGRAM*	6/45	6/48 L					
OP.FRFT	45	PROGRAM*	5/02	5/05 L					
OP.REPR	54	PROGRAM*	5/18	5/21 L					
OP.RPAR	47	PROGRAM*	5/08	5/11 L					
OP.RTRN	43	PROGRAM*	4/26	4/49	4/52 L				
OSN1	151	PROGRAM*	6/29 L						
OSN2	151	PROGRAM*	6/30 L						
O.LOL	0	EXTERNAL*	35/42	36/26	37/11	37/33	38/04	38/17	38/30 38/44
O.SWPTM	0	EXTERNAL*	7/19						
O.SYSTM	0	EXTERNAL*	7/18						
O.USRTM	0	EXTERNAL*	7/20						
PASSER	70	PROGRAM*	4/47 E	6/43	10/26	26/21	27/50	29/04	
			5/40 L	7/03	10/32	27/26	28/17	29/41	
PUTCTRS	0	EXTERNAL*	35/23	40/22					
PUTDNT	0	EXTERNAL*	36/10	36/13	37/01				
P.ACBLK	0	EXTERNAL*	12/44						
P.DDIR	0	EXTERNAL*							
P.DIRCT	0	EXTERNAL*	8/19	8/47	9/17 S	10/08 S	16/22	18/43	
P.DIR2	0	EXTERNAL*							
P.DOBJ	0	EXTERNAL*							
P.DYNT	0	EXTERNAL*	35/36 S	36/04	36/25 S	37/19			
P.ERRCL	0	EXTERNAL*	5/40	10/23					
P.ERRNO	0	EXTERNAL*	5/41	10/27					
P.FLAG	0	EXTERNAL*	39/07						
P.FOBJ	0	EXTERNAL*							

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

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P.INCR	0	EXTERNAL*	28/25						
P.KEY	0	EXTERNAL*	8/16 S	9/09	10/12 S	10/19	16/19 S		
P.KEYNO	0	EXTERNAL*	19/34	19/42					
P.KEY2	0	EXTERNAL*							
P.KN1	0	EXTERNAL*							
P.KN2	0	EXTERNAL*							
P.NAME	0	EXTERNAL*	8/11	11/23	13/01 S	14/18 S	14/47 S	18/07	20/16
			9/43	11/34	13/06	14/21	16/14	18/17	20/27
			11/06	12/12	13/10	14/32	17/01	19/36	20/37
			11/21 S	12/53	14/17	14/46	17/05	19/40	
P.NAM2	0	EXTERNAL*	14/42	15/01					
P.NUMB	0	EXTERNAL*	23/35	31/07	31/41	32/40	33/12		
			23/41	31/15	31/52	32/48	33/20		
P.NWKYN	0	EXTERNAL*	18/09	19/19					
P.NWNAM	0	EXTERNAL*	20/18	20/22	20/33	20/36 S	20/38	20/51	20/53
P.OBJ	0	EXTERNAL*							
P.OBSPC	0	EXTERNAL*	33/28						
P.OPTS	0	EXTERNAL*	18/11	19/05	19/18				
P.OPT1	0	EXTERNAL*							
P.OPT2	0	EXTERNAL*							
P.SBPD	0	EXTERNAL*							
P.SCAN	0	EXTERNAL*							
P.SDIR	0	EXTERNAL*							
P.SHP	0	EXTERNAL*	11/13	11/16					
P.SIZE	0	EXTERNAL*	12/31	12/43					
P.SPACE	0	EXTERNAL*	26/13						
P.STNT	0	EXTERNAL*							
P.SUCCD	0	EXTERNAL*							
P.TAG	0	EXTERNAL*	28/50						
P.WHICH	0	EXTERNAL*	4/12						
REC.DR	75	PROGRAM*	4/47 E	6/34	10/43	27/40	29/21	30/09	
			5/48 L	6/50	27/23	28/35	29/25		
RESTERR	0	EXTERNAL*	4/25						
RESTORE	0	EXTERNAL*	5/31						
RETBUFF	0	EXTERNAL*	6/10	7/28 S	24/04	24/12	26/49	30/02	31/29
			7/23 S	7/31	24/08 S	26/41	26/49	31/24 S	32/08
			7/24 S	24/03 S	24/11 S	26/41	29/50	31/26	32/11
REICT1	233	PROGRAM*	8/38 L	34/13	35/16	37/01	40/13		
RETDATA	0	EXTERNAL*	11/16	12/31	13/24	13/39 S	35/19 S	35/23	40/22
			11/17	12/35	13/24	13/41	35/22	40/16 S	
RETERR	53	PROGRAM*	4/47 E	5/42	5/49	25/30	27/46	29/18	
			5/18 L	5/45	25/25	27/17	28/31	30/05	
RETLIST	0	EXTERNAL*	5/26 S	5/32					
RETPAR	46	PROGRAM*	4/47 E	7/29	11/41	29/53	32/16		
			5/08 L	8/40	24/18	31/34	32/33		
RETT1	1751	PROGRAM*	32/31 L	39/14					
RETURN	42	PROGRAM*	4/47 E	6/13	6/46	14/37	27/09	29/14	37/49
			4/49 L	6/21	7/06	25/25	28/28	36/10	38/06
RL.AFTL0	652	PROGRAM*	17/14	17/19 L					
RL.AFTL1	655	PROGRAM*	17/15	17/22 L					
RL.ALLP	645	PROGRAM*	17/13 L	17/17					
RL.END	663	PROGRAM*	17/19	17/22	17/29	17/30 L			
RL.END0	661	PROGRAM*	17/24	17/28 L					

ACTIONS : CODE FOR DIRECTORY ACTIONS
 SYMBOLIC REFERENCE TABLE.

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RL.NMLP	656	PROGRAM*	17/24 L	17/26						
RMLK	631	PROGRAM*	17/21 L							
RMLKERR1	667	PROGRAM*	17/12	17/13	17/36 I					
RMLKERR2	671	PROGRAM*	17/17	17/37 L						
RMLKERR3	653	PROGRAM*	17/20 L	17/26						
RMOE	601	PROGRAM*	16/14 L							
RMOE1	615	PROGRAM*	16/20	16/25 L						
RMOE2	626	PROGRAM*	16/45	16/48 L						
RNOS	1767	PROGRAM*	33/12 L							
RNOSFND	2002	PROGRAM*	33/21	33/28 L						
RNOSLOOP	1775	PROGRAM*	33/20 L	33/26						
RSETESM	0	EXTERNAL*	4/18	6/08						
RS.CLKS	174	PROGRAM*	7/25	7/31 L						
RS.CT1	51	PROGRAM*	5/14 L	8/39	31/33	32/15				
RS.CT12	52	PROGRAM*	5/15 L	11/40						
RS.DAB	1654	PROGRAM*	29/51	30/02 L						
RS.T1	50	PROGRAM*	5/13 L	32/31						
R.UACC	0	EXTERNAL*	8/10 S	9/22	9/42 S					
SAVE	0	EXTERNAL*	4/11							
SCDF	151	PROGRAM*	6/26 L							
SCDR	151	PROGRAM*	6/27 L							
SFLK	563	PROGRAM*	14/42 L							
SKPENT	0	EXTERNAL*	23/47							
SL.MOVE	576	PROGRAM*	15/06 L	15/10						
SL.1	574	PROGRAM*	14/50	15/01 L						
SOB.ACC	0	EXTERNAL*	10/03							
SOB.DST	0	EXTERNAL*	16/25							
SOB.IA	0	EXTERNAL*	8/18	9/12	14/51	16/21	18/42			
SSUL	1034	PROGRAM*	22/05 L							
SSUL.GO	1044	PROGRAM*	22/08	22/18 L						
STAG	1503	PROGRAM*	28/50 L							
STGERR	1573	PROGRAM*	29/08	29/27 L						
STG.ERR1	1562	PROGRAM*	28/53	29/16 L						
STG.ERR3	1564	PROGRAM*	29/06	29/20 L						
STG.ERR4	1565	PROGRAM*	29/10	29/23 L						
SYSERR	0	EXTERNAL*	4/04	4/29	17/20	19/26	24/20	28/37	35/26	
			4/06	4/34	17/36	19/27	24/21	29/27	37/25	
			4/27	5/33	17/37	20/04	27/52	30/11		
S.APF	3		17/14	17/23	18/29	18/31	18/51	19/09	19/46	
S.ENTTYP	1		13/05	14/23	20/32					
TYPES	136	PROGRAM*	6/11	6/12	6/15 L	10/01	14/07	25/06		
T1	0	EXTERNAL*	5/13	26/27	26/32	28/21	29/08	29/45	33/04 S	38/31
			26/27	26/32	28/21	29/08	29/45	32/29 S	38/27 S	39/13 S
T.OPTS	0	EXTERNAL*	36/24 S	36/51						
T.SCANL	0	EXTERNAL*	9/40 S	9/45	10/38					
T.SLL	0	EXTERNAL*	8/23 S	8/42						
T.SPL	0	EXTERNAL*	8/24 S	8/52 S	9/04					
UACC	175	PROGRAM*	8/09 L							
UACC1	204	PROGRAM*	8/18 L	10/21						
UACC2	206	PROGRAM*	8/17	8/22 L	10/20					
UA.ERR1	271	PROGRAM*	8/44	9/27 L						
UA.ERR2	272	PROGRAM*	9/07	9/30 L						
UA.FAIL0	254	PROGRAM*	8/27	9/02 L						

