

ASSIGN M:CI,(FILE,100,:DOUCI)

METASYM CI,CN,LB

•SS R0,R1,R2,R3,R4,R5,R6,R7,R8,R9,R10,R11,R12,R13,R14,R15

•SS SR1,SR2,SR3,SR4,D1,D2,D3,D4,⊕

•END

ACCHECK							
ACS	992/CH	1015/AH	1034-GEN				
AF	1834/CS						
ARS	887/GEN	1058/CBM	1058/CBM	1058/CBM	1058/CBM	2028/GEN	2283/GEN
ASN	1854/STS						
ASSIGNSC	758/AND						
AVRDCT	1393/B	1444-SCS					
AVRTBLNE	61/REF	2074/STW					
BA	62/REF	1573/CI					
BAFCN	853/CI	853/CI	887/GEN	887/GEN	2059/LI	2299/EQU	2299/EQU
BANRA	1383/LI						
BATAPE	812/LI						
BISR2	63/REF	1571/CI	1573/CI				
BISR4	648/BNE	652/BAZ	686-RES				
BITS	419-RES	445/BCS	452/BNE	755/BEZ			
BLK	49-SET						
BTDBIT	64/EQU						
BUFLIMS	65/REF	804/SLS					
C:NBQ	66/REF	610/CLM	612/CLM	1872/CLM	1916/CLM		

C:RTRW	67/REF	390/MTW				
CBFLAGS	68/REF	327/MTW				
CDA	1155/EOR	1157/EOR	1338/OR	1406=DATA	1611/EOR	1613/EOR
CFUBIT	769/INT	874/LW				
CHAIN	69/REF	759/CI	1344/CI	1860/CI		
CHAINCHK	593/BLEZ	595/BG	603=DISABLE	607/B		
CHANBLK	500/BAL	578=EQU				
CHANTEST	1000/BCS	1013=LB	1018=EQU			
CHECKMF	1284/EXU	1389=NOP				
CHFLAGS	329/BCR	337=RES				
CHKDA	1336/OR	1412=DATA	1702/CW	1709/EOR	1778/CW	1782/EOR
CHKDAQ	215/DEF	704=EQU				
CHKDA1	216/DEF	707=EQU				
CHKDA2	706/LI	723=STCF				
CHNEX	711/BEZ	713/BG	715/BEZ	718/BGE	721=LCI	
CHSAVE	597-BAL					
CH21	1337/EXU	1400=STB	1704/ANLZ			
CH22	605/BNEZ	608=LW				
	609/BEZ	612=CLM				

CH50							
	630-AI	637/B					
CH55							
	635/BLEZ	638-AW					
CH60							
	673-EQU	684/BDR					
CIT1							
	70/REF	515/STB	531/STB	971/LB	1927/STB		
CIT2							
	71/REF	513/LB	516/STB	541/STB	1932/STB		
CIT3							
	72/REF	973/LB	1150/LB	1159/STB	1281/LB	1349/STB	1606/LB
	1615/STB	1701/LB	1710/STB	1783/STB			
CIT4							
	73/REF						
CIT5							
	74/REF	1022/LB	1400/STB	1402/STB			
CIT6							
	75/REF	1024/LB	1403/STB				
CJ9B							
	76/REF	322/LB	945/LB	2272/LB			
CKEYN							
	2178/DATA	2179-CI					
CKEYN1							
	2183-LB	2190/B					
CLEANUP							
	956/BANZ	1656-LB	1660-RES				
CLEANUP1							
	1029/B	1662-LH					
CL9CK10							
	954/BANZ	1092-LW					
CL9CK0UT							
	1099/BAZ	1110-LC					
CL9CKXIT							
	1116-LI						
CB0C10							
	77/REF	764/BE					

CPCOR							
CRCOR	896/:COR	916=DATA					
	895/:COR	897/:COR	914=DATA				
CTACT	78/REF	1995/MTW	2000/MTW	2149/STW			
CTFLAGS	79/REF	1213/OR	1214/STW	2132/CW	2134/STS	2141/STS	2144/CW
CTGL	80/SREF	1217/LW					
CTINT	81/SREF	1215/LI	1741/LI	1747/CI			
CTIOP	2005=EGU	2147/B					
CTOC	82/REF	1223/MTW	1989/LCW	1994/AWM			
CTOCINT	1216/BEZ	1221=LI					
CTRIG	217/DEF	1210=DISABLE	1578/B	1992/BAL			
CTRIG1	1189/B	1211=PSW					
CTWD	83/SREF	1218/WD*					
CURBQ	84/REF	383/MTW	1938/MTW				
DCACCESS	85/REF	408/LI	415/AI				
DCCOR	898/:COR	918=DATA					
DCT\$MASK	86/REF	442/LW	710/AND	770/AND			
DCT\$MASK\$2	87/REF	441/AND					
DCT\$IZ	88/REF	389/LI	712/CI	1204/LI	1204/LI	1548/LI	2089/LI
DCT1							

DCT1A	89/REF	1097/LH	1295/LH	1308/STH	1536/CH	1549/CH	1886 ⁵ /LH
DCT1P	90/REF	1397/LH					
DCT10	91/REF	1395/LH	1396/LH				
DCT11	92/REF	1247/LH	1278/CH	1353/MTH	1662/LH	1690/CH	1692/MTH
DCT12	93/REF	1092/LW	1105/STW	1331/STW	1758/STW	2112/LW	2195/STW
DCT13	94/REF	1565/LW	1587/STW	1883/LW	2108/LW		
DCT14	95/REF 1901/LD	1472/STD 2164/LD	1602/STD	1753/LD	1755/STD	1841/LD	1885/LD
DCT15	96/REF 1535/LB	1164/LB 1538/LB	1167/STB 1541/STB	1169/STB 1544/STB	1310/LB 1546/LB	1311/STB	1312/STB
DCT16	97/REF 1539/LB	448/LB 1542/STB	1165/LB 1543/STB	1166/STB 1563/MTB	1170/STB 1665/LB	1302/LB 2099/LB	1313/STB
DCT17	98/REF	1205/CW					
DCT18	99/REF	1289/STH	1720/LH				
DCT19	100/REF	1095/LB	1288/STB	2110/LB			
DCT2	101/REF	1300/STCF	1594/STB				
DCT20	102/REF	502/LB	950/LB	1149/LB	1605/LB	2183/LB	
DCT21	103/REF	1601/STCF					
DCT22	104/REF	1598/STH					
DCT23	105/REF	508/LB	714/LB				

	106/REF						
DCT24	107/REF	444/LC					
DCT25	108/REF	1297/MTW					
DCT3	109/REF	446/LC	491/LB	1113/LB	1115/STB	1473/LB	1485/STB
	1693/LB	1695/STB					
DCT4	110/REF	407/LB	649/LB	843/LB	1317/LB	2166/LB	
DCT5	111/REF	952/LB	985/LB	1106/MTB	1110/LC	1144/LB	1160/STB
	1184/LB	1187/MTB	1290/LB	1350/STB	1373/LC	1552/LC	1589/LB
	1592/STB	1699/LB	1731/STB	1787/STB	1790/LB	2045/LB	2047/STB
	2091/LB	2155/LB	2159/STB				
DCT6	112/REF	1028/LB	1152/LB	1348/STB	1608/LB	1656/LB	1663/LB
	2160/LB	2196/LB					
DCT7	113/REF						
DCT8	114/REF	1251/LW					
DCT9	115/REF	1561/INT	1668/LW				
DEFER	55-SET	979/D8	1179/D8	1655/D8	2040/D8		
DEFER1	1180-LI	1658/BL					
DEFER2	981/BL	1182-LI					
DEFER3	1181/B	1183-LB					
DEVCTCHK	116/REF	2103/STW					
DEVKEYN	2234-DATA	2242/CB					
DID							

DISCBPR0C	117/REF	451/CW	1670/CW				
DISCLIMS	48-SET						
DPACCESS	118/REF	717/CW					
DRIVEI0	119/REF	414/AI					
DRIVEI01	218/DEF	552/BAL	945-LB	1621/BAL			
DSCCVT	946-CI						
DSERV	120/REF	477/BAL					
DSI	951-DISABLE	1116/LI	1375/B				
DUALFLAG	761/LW						
	54-SET	490/D0	688/D0	989/D0	1012/D0	1023/D0	1033/D0
	1151/D0	1254/D0	1283/D0	1292/D0	1307/D0	1388/D0	1401/D0
	1407/D0	1413/D0	1437/D0	1474/D0	1607/D0		
E:IC	121/REF	1969/LI					
E:IP	122/REF	348/LI					
ECBPOST1	123/SREF	1966/BAL					
EKEYN	2178/DATA	2189-LI					
ENBSR4	219/DEF	1219/B	1225-ENABLE	2188/B			
ERRLOG	124/REF	1524/BAL					
FCN	753/LW	1820/AWM					
FORCEI0	220/DEF	393/BAL	948-LI	2051/BAL	2095/BAL	2186/BAL	

FORCESC							
FRONTEND	1392/B	1438-LI					
GENERIC	321-EGU	455/BAL	457/B	780/BAL			
GFTQ	850/LB	879-DATA					
GQ10	378-RES	397/B					
GQ11	380/BEZ	389-LI					
GQ40	391-PUSH	395/BDR					
IA	384-LB						
INCDC	320/IPSD						
INCTP	412/BCR	416-EGU					
INH	411/BCR	415-AI					
INTCNT	320/IPSD						
INTFLG	125/REF	1526/MTW	1531/MTW	1622/MTW			
INTSEXIT	126/REF	1626/XW	1970/STW				
INTSIM	1148/BAZ	1160-STB					
INVAL	221/DEF	1144-LB					
I6ALBAD	1030-DATA						
I6CL6CK	1293/EXU	1395-LH					
I6CTQ	127/REF	1093/CW	1104/AW	1330/AW	1757/AW	2113/CW	2194/AW

I000	128/REF	1211/PSW	2017/PLW				
I001	1732-ENABLE	1788/LI					
I002	1722/BAZ	1726-STB					
I003	222/DEF	1497-EQU					
I004	1715/BANZ	1741-LI	1750-RFS				
I005	129/REF	1508/LD					
I006	225/DEF	251-EQU					
I007	493/AH	689-DATA					
I008	130/REF	517/STB	529/LB	532/STB	533/STB	536/LB	543/STB
I009	546/STB	1923/LB	1930/STB				
I010	131/REF	463/STB	814/STB	1380/LB			
I011	132/REF	464/STB	815/STB	1381/CB	1723/MTB	1806/LB	2174/MTB
I012	133/REF	478/STW	511/LW	520/CS	524/CW		
I013	134/REF	479/STD	1894/LD	1902/LD			
I014	135/REF	381/STB	466/CB	468/STB	504/LB	522/CB	537/CB
I015	980/CB	1657/CB	1746/LB				
I016	136/REF	386/STB	496/LB	1360/LB	1363/STB	1669/LB	1939/LB
I017	137/REF	461/STW	797/STW	1364/XW	1821/LW	1855/LW	1941/LW
I018	138/REF	384/LB	534/STB	539/LB	542/STB	544/STB	1001/LB
I019	1922/LB	1925/STB	1935/STB				
I020							

	139/REF 1352/STB	495/STB 1609/LB	977/CB 1696/LB	990/LB 1717/STB	1013/LB 1866/LC	1153/LB 2161/LB	10 1282/LB 2163/STB
I004	140/REF	473/STB	647/CB				
I005	141/REF	474/STB	1265/LB	1726/STB	2171/LB		
I006	142/REF 1896/LW	480/STW	1340/LW	1359/LW	1362/STW	1378/LW	1791/LW
I007	143/REF 984/LB	382/STB 1183/LB	483/LB 1940/LB	527/CB	598/LB	644/LB	820/LB
I008	144/REF 618/LW 1869/AND	475/STW 619/STW 1906/LW	498/INT 640/SW 1912/LW	579/LW 670/LW	581/STW 1252/INT	588/LW 1258/LW	596/STW 1838/LW
I009	145/REF	476/STH	589/LH	592/AH	642/STH	1260/LH	1837/LH
I0REJECT	1301/BCS	1470=LW					
I0SCCHK	1703/BAZ	1708/BCS	1712=CI				
I0SCEXIT	1731=STB	1759/B					
I0SCHED	969=ENABLE	1094/BGE	1096/BEZ	1107/B	1180/LI	1738/B	2198/LI
I0SCHED1	970=DISABLE	1374/BCR					
I0SCHED2	975=INT	1016/B					
I0SCHED3	977=CB	1002/BNEZ					
I0SCU	223/DEF	1689=DISABLE					
I0SERCK	146/REF	1674/BAL					
I0SST							

	224/DEF	1264-AND		
I0STEX	1340-LW	1377/BCR	1487/B	
I0STEX1	1342-LI	1382/BNE	1385/B	
I0STEX2	1341/BEZ	1345/BE	1348-STB	1379/BEZ
I0STEX3	1352-STB	1442/B	1481/B	
I0STEX35	1355/BCR	1356/BCR	1357/LI	1367-EQU
I0STRT	1262/B	1277-DISABLE		
I0STRT1	1282-STB	1441/BAZ	1453/B	
I0STRT2	1319/BDR	1327-AI		
I0STRT3	1316/BCS	1326/BGE	1330-AW	
I0STRT4	1335/BCR	1332-8R		
I0STRT5	1303/BEZ	1306-EQU		
I0STRT6	1304/LI	1314-LC		
I0UNMAP	320-IPSD	363/LPSD		
I010	1545/B	1551-EQU		
I012	1564/BEZ	1569-CW		
I014	1553/BCS	1586-EQU		
I020	1604/BAZ	1616-EQU		
I022	1577/LI	1618-LI		

I030					
	1622-MTW				
I050					
	1572/BL	1574/BGE	1584-LI		
I062					
	1517-EQU	1585/B			
I07					
	1514/BCR	1531-MTW			
I070					
	1516/B	1527-LI			
I071					
	1549-CH	1579/BDR			
I075					
	1536-CH	1547/BNE			
I076					
	1537/BNE	1546-LB			
I08					
	1550/BNE	1570/BAZ	1579-BDR		
IPREGV					
	344/EXU	353-CW			
J:CTIME					
	147/REF	340/AWM			
J:DCBLINK					
	148/REF	328/LC	331/STB	425/STS	428/STS
J:JIT					
	149/REF	417/MTW	1567/LI		
J:RWECS					
	150/REF	779/LW			
JIT					
	151/REF	323/LW	341/LB		
J0VVP					
	152/REF	583/CI			
J0VVPA					
	153/REF	772/CI			
JX:CMAP					
	154/REF	586/LOAD	632/LOAD	775/LOAD	
JXCMAP					

KEYDV	155/REF						
	2168/BL	2170/BG	2173/BNE	2175-PUSH	2177/B	2178/DATA	2178/DATA
KEYIN	2178/DATA						
KEYINBUF	2077/LD	2087-TEXTC					
KEYTV	156/REF	1202/LD	2059/LI				
L	2176/LB	2178-DATA					
LF	763/CS						
MAP	887-GEN	2028-GEN	2283-GEN				
MAXBQ	585/BAL						
MBGBIT	157/REF						
MBCOR	158/REF	824/SCS					
MENPRBC	903/ICOR	927-DATA					
MP00L	47-SET						
MP00LIM	159/REF	604/LW	614/STW	1871/LW	1874/STW	1915/LW	1918/STW
MSG	160/REF	610/CLM	610/CLM	612/CLM	612/CLM	1872/CLM	1872/CLM
	1916/CLM	1916/CLM					
MSGBASE	2281-CNAME						
MSGOUT	2269/LB	2270/AI	2283/GEN	2285-MSG	2299/EQU		
MSG1	226/DEF	1372/BAL	1735/BAL	2214-EQU			
	1100/LI	1328/LI	2223-TEXTC				

MSG2					
	227/DEF	2224=TEXTC			
MSG3					
	228/DEF	2225=TEXTC			
MSG4					
	229/DEF	2226=TEXTC			
MSG5					
	230/DEF	2227=TEXTC			
MSG6					
	2192/LI	2228=TEXTC			
MSG7					
	231/DEF	2229=TEXTC			
MSG9					
	232/DEF	2230=TEXTC			
MSG9A					
	233/DEF	2231=TEXTC			
MTCOR					
	853/CI	899/ICOR	900/ICOR	901/ICOR	920=DATA
M11					
	590/AND	623/AND	1887/AND		
M15					
	808/AND				
M16					
	620/AND	1264/AND	1844/AND		
M17					
	794/AND				
M19					
	580/AND				
M2					
	161/EGU				
M21					
	671/AND	1259/AND	1840/AND		
M22					
	799/AND	1944/AND	1950/AND		
M24					
	1562/BCS*	1868/LW			
M3					

M4	162/EQU		
M7	163/EQU		
MR	164/EQU		
	165/EQU		
NDEVKEYN	2235-EQU	2240/LI	
NEWQ			
NEWQNW	234/DEF	437-EQU	930/EQU
NEWQNW	235/DEF	426-EQU	
NEWQNW	236/DEF	423-EQU	
NEXTQUE			
NL	978/BANZ	1001-LB	
NL	2125-EQU	2128/TEXTC	2128/TEXTC
NMSG			
NWIB	2267/CI	2299-EQU	
	52-SET		
OC			
	46-EQU		
OCDC			
	166/REF	2069/GEN	2275/AI
OCINT			
	237/DEF	1985-EQU	
OCPSD			
	167/REF	1987/LD	
OCQC			
	2083/BAL	2248-LI	
OCQQUEUE			
	238/DEF	2262-EQU	
OCCT10			
	1989-LCW	1993/B	

0CT20	1990/BNEZ	1994-AWM				
0CT30	1997-LI					
0CT35	1998-WD					
0CT40	1996/BEZ	2000-MTW				
0CT60	2145/BAZ	2148-LI				
0CWRITE	239/DEF	2058/BAL	2121/BAL	2247-RES		
0CWRITE1	2219/BAL	2268/BG	2271-LI			
0C22	2272-LB					
0C23	2276-LB	2277/ANLZ				
0C51	2287/MSG	2301-RES				
0C52	2288/MSG	2303-RES				
0C53	2285/MSG	2286/MSG	2289/MSG	2291/MSG	2292/MSG	2305-RES
0C60	2290/MSG	2308-TEXTC				
0C70	2293/MSG	2311-TEXTC				
0C71	2294/MSG	2312-RES				
0C72	2295/MSG	2314-RES				
0C73	2296/MSG	2316-RES				
0C74	2297/MSG	2318-RES				
0C75						

	2298/MSG	2320=RES	
BLDTNEWFC	822/BEZ	841=RES	
BRIG	252=EQU		
PFSRI0	168/REF	2122/BAL	
PFSRMES	2120/LI	2128=TEXTC	
PL5BSR4	240/DEF	557=PLM	
PTCOR	893/ICOR	894/ICOR	912=DATA
PVCHKDA	241/DEF	709=EQU	
QBUF	798/LW		
QD30	760/BE	769=INT	
QD31	767/BANZ	772=CI	
QD33	773/BL	777=EQU	
QD4	740/B	750=LW	782/B
QD49	845/BLE	851=EQU	
QD50	854/BE	857=CI	
QD51A	803/BEZ	806=LW	
QD52	858/BAZ	862=CI	
QD56	863/BNE	866=LI	
QD60	856/B	861/B	872=AW

QFREE	169/REF	379/LB	385/STB	1934/LB	1936/STB
QUEUE	242/DEF	749-LI			
QUEUE1	243/DEF	739-LW			
Q10	440-EQU				
Q11	447/BCR	449/BNEZ	453-AI		
Q13	472-RES	875/B			
Q15	482-EQU				
Q15A	244/DEF	489-EQU			
Q15AA	497/BEZ	499/BCS	501-EQU		
Q151	484/BNEZ	486-RES			
Q20	509/BEZ	512-DISABLE			
Q26	527-CB	532/BLE			
Q26A	521/BL	526/B	529-LB		
Q27	518/B	534-STB			
Q28	514/BNE	537-CB			
Q28A	530/BNE	536-LB			
Q29	519-B	528/BE			
Q30	519/B	523/BE	525/BE	539-LB	
Q40					

Q50	535/B	548-ENABLE		
Q51	551-STB			
RBLIMS	245/DEF	555-EQU		
RBQCK	170/REF	487/CLM		
RCVPSD	171/SREF	488/BCR		
	172/REF			
RC10	1831/BL	1835/BNE	1856/BEZ	1860-CI
RC14	1863/BANZ	1865/BAZ	1867/BCR	1877-EQU
RC15	1861/BE	1879/BNE	1881/BCR	1893-EQU
RC20	246/DEF	1792/BEZ	1899-STB	
RC21	247/DEF	1897/B	1905-RES	
RC22	1908/BAZ	1911-EQU		
RC23	1913/BGEZ	1921-EQU		
RC24	1924/BEZ	1927-STB		
RC26	1929/BEZ	1932-STB		
RC28	1366/B	1946/BEZ	1954-CI	
RC29	1958/BEZ	1960/BNEZ	1962/BGEZ	1967-RES
RC3	1795/BNE	1799-RES		
RC30	1955/BAZ	1956/BE	1972-PULL	

RC4	1804/BNE	1813-EQU			
RC5	1817/BLE	1819-LCW			
RC6	1822/BEZ	1825/BLE	1827-EQU		
RC7	1846-AD	1848/BDR			
RC8	1832/BG	1836-EQU			
RC9	1839/BGEZ	1850-EQU			
REGIPSD	173/REF	403/XPSD			
RELEASSC	1334/BCS	1377-BCR			
REQCOM	1713/BAZ	1779/BAZ	1781/BNE	1786-LI	
REQCOM1	1789-PUSH	2184/BAL			
REQERR	1724/BNC	1748/BL	1774-LI		
REQNSTRT	999-INT	1027/BANZ	1031/B		
REQSERV	988/EXU	1027-BANZ			
REQSTRT	983-LW	1011/B			
RESCHED	248/DEF	1279/BNE	1287/BANZ	1691/BNE	1736-RES
RESTPRI	1734/BEZ	1737-LB			
RKEYN	2178/DATA	2180/BANZ	2185-ENABLE		
RTCU	174/SREF	1666/BNEZ			
RTINT					

RTI0STRT	175/SREF	1566/BLZ					
RTPRI0	176/SREF	1305/B					
RTREY1	200-EQU	946/CI					
RTRET2	249/DEF	1588-EQU					
RTT0	250/DEF	1525-EQU	1560/LI				
SICUN	177/SREF	2115/BAL					
SACT	178/REF	338/LW	356/LW	450/LW			
SCCHECK	179/SREF	1624/BAL	2136/BAL				
SCHEDHLD	1008/AI	1021-B					
SCHEDXIT	976/BCS	1008-AI					
SC17	972/BEZ	994/BL	1003-ENABLE	1018/EQU	1021/B	1182/LI	1446/BGEZ
SC1900	485-SCREECH						
SELECT	180/REF	611/BCS	613/BCS	1873/BCS	1917/BCS		
SELECTAB	1058-COM						
SETKEYIN	975/INT	1058/COM	1060-SELECT	1445/LH			
SIOFAIL	1742/B	1745/BEZ	1752-AI				
SKIPREG	1479/BCS	1484-AI					
SKREG	345/BL	354/B	356-LW				
	359-RES						

SKREG1				
SKREG2	362-LB			
SL:BXMF	324/BEZ	336/B	363-LPSD	
SL:IOTA	181/REF	353/CW		
SL:OXMF	183/REF	339/LW		
SQHD	182/REF	355/CW		
SSCFORCE	184/REF			
SSEO	1256/LB	1417-DATA		
START10	185/REF	1627/BEZ		
SYMBFLAG	993/BAZ	997/B	1247-LH	
SYSACT	53-SET	2130/D0	2310/D0	
T:GJOB	186/REF	2078/LD		
T:PULLE	187/REF	2080/BAL		
T:REG	188/REF	1530/B	1623/BNEZ	
T:RUE	189/REF	349/BAL		
T:SAVE	190/REF	1971/BAL		
T:ISSE	191/REF	1988/BAL		
TBIFLGS	192/REF	1628/B	1999/B	2151/B
TEMP	193/REF	409/ALC	650/LB	846/LB

TPACCESS	194/REF	1499/STW	1504/XW	1506/STM*	1509/STD*	
TPBASE	195/REF	414/AI	415/AI			
TP10	2023/LB	2024/B	2028/GEN	2032=ITP		
TP20	2032/ITP	2041=LW	2054=RES			
TP25	2033/ITP	2057=LI				
TP26	2057/LI	2068=DATA				
TP30	2062/LW	2069=GEN				
TP30A	1202=LD	2060/LI				
TP31	1209=LW					
TP32	1206/BE	2236=SLS				
TP33	2157/BAZ	2239/BNE	2245=ENABLE			
TP40	2153=DISABLE	2243/BE				
TP5	2034/ITP	2071=EQU				
TP50	2015=DISABLE 2137/B	2052/B	2065/B	2081/BCR	2084/B	2104/B
TP60	2035/ITP	2076=EQU				
TP62	2036/ITP	2089=LI				
TP63	2090=EQU	2102/BDR				
TP64	2093/BAZ	2098=EQU				

TP65	2097/B	2101-EQU	2109/BGEZ	2111/BEZ	2114/BGE	2116/B	
TP70	2100/BNEZ	2107-EQU					
TP90	2037/ITP	2119-EQU					
TP91	2018/BCS	2129-LI					
TSTACK	2133/BAZ	2138-EQU					
TYC	551/STB*	553/LB*	557/PLM	1501/MSP	1503/AW	1986/PSM	
TYC0R	1816/CS	1818/STS					
TYPC0R	891/IC0R	892/IC0R	902/IC0R	904/IC0R	905/IC0R	906/IC0R	910-DATA
TYPEMSG	852/LB	853/CI	873/LB	887/GEN	890-EQU		
TYPERSP	1103/BCR	2193-LI					
UBIMF	1111/BCR	2192-LI					
UB:PRIO	197/REF	342/LB	357/MTB				
UNEXP	196/REF	362/LB					
UNMAP	198/REF	1515/MTW					
WABLK	199/REF	597/BAL	643/BAL				
WK	64-EQU	806/LW					
XE7	320/IPSD						
XF	201/REF	1694/AND					
	163-EQU	859/AND					

XFB	202/REF	2046/AND					
XFF	165-EQU	766/AND	1267/AND	1793/AND			
X10	1114/BR						
X20	825/AND						
X3	161-EQU	492/AND	1014/AND	1154/AND	1318/BR	1610/AND	1698/LS
X40	1146/BR	1591/BR					
X44	203/REF	864/AND					
X7	162-EQU	855/AND	869/AND	991/AND	1291/AND		
X7F	164-EQU	1145/AND	1590/AND				
YE	204/REF	1477/CW					
YFF	205/REF	754/AND	788/AND	2154/BR			
YFFFF	206/REF						
Y00FE	207/REF	1346/LW					
Y01	1819/LCW	1991/LW	2263/LW				
Y02	1575/LW	1909/BR	2266/LW				
Y03	208/REF	1209/LW					
Y04	1796/CW	1864/CW					
Y05	209/REF						
Y06							

Y08	210/REF	2216/LW					
Y1	1862/CW						
Y2	1102/AND						
Y4	1672/CW						
Y8	424/LW	987/CW	1476/ER	1569/CW			
ZER	427/LW	617/ER	1010/ER	1448/AND	1523/AW		
ZERBS	2126-EQU 2127/EQU	2127/EQU	2127/EQU	2127/EQU	2127/EQU	2127/EQU	2127/EQU
1Q1	2127-EQU	2128/TEXTC					
1Q2	398-RES	456/B					
1Q3	320/IPSD	364-PUSH					
1Q4	335/LI	405-MAP	781/B				
ICOR	410/BCR	418-RES					
ITP	885-CNAME						
	2026-CNAME						

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*M*      NAME:      I/O  = I/O QUEUEING MANAGER FOR CP-V SYSTEMS
*P*
*P*      THE FOLLOWING ROUTINES MAY BE FOUND IN THIS MODULE
*P*
*P*      ROUTINE      FUNCTION
*P*      -----
*P*      CHKDA        ENTRY TO CHECK DISC ADDRS AND SAVE 4 THRU 6
*P*      CHKDAG       ENTRY TO CHECK DISC ADDRS - NO REGISTER SAVE
*P*      CTRIG        PUSH ENTRY INTO CONTROL TASK QUEUE STACK
*P*      DRIVEI0      ENTRY TO CHECK DEVICES WAITING CLEANUP/TIMEOUT.ETC.
*P*      ENBSR4       ENTRY TO ENABLE AND B *R11
*P*      FORCEI0      ALTERNATE ENTRY TO DRIVEI0
*P*      INTSIM       ENTRY TO SET CLEANUP PENDING-RESET BUSY...ETC
*P*      IOINT        I/O INTERRUPT RECEIVER
*P*      IOSCU        RETURN FROM HANDLERS POST-PROCESSING
*P*      IOSST        RETURN FROM COMLIST FOR I/O STARTUP
*P*      MSG0UT       SEND MSG TO OPERATOR'S CONSOLE
*P*      MSG2         'ERROR' MESSAGE
*P*      MSG3         'TIMED OUT' MESSAGE
*P*      MSG4         'NOT OPERATIONAL' MESSAGE
*P*      MSG5         'WRITE PROTECTED' MESSAGE
*P*      MSG7         'CODE DISC ERR' MSG
*P*      MSG9         'REQ RETRY' MSG
*P*      MSG9A        'INCONSISTENT STATUS' MSG
*P*      NEWQ         MONITOR TYPE I/O ENTRY
*P*      NEWQNW       ENTRY TO NEWQ FOR NO-WAIT I/O
*P*      NEWQNW       ENTRY TO NEWQ (MAPPED) FOR NO-WAIT I/O
*P*      OCINT        OPERATOR CONSOLE INTERRUPT RECEIVER
*P*      OCQUEUF      QUEUE MSG FOR OPERATOR'S CONSOLE
*P*      PL5BSR4      PLM INTO R5 AND B *R11
*P*      PVCHKDA     CHECK PRIVATE PACK DISC ADDRS
*P*      QUEUE        ENTRY FOR I/O WITH DCB AND NO END ACTION
*P*      QUEUE1       ENTRY FOR I/O WITH DCB AND END ACTION
*P*      Q15A        RETURN FROM RBQCK TO FINISH ENQUEUE OF I/O
*P*      Q51         RETURN FROM RBQCK TO THROW AWAY I/O REQUEST
*P*      RC20        ENTRY INTO REQUEST COMPLETE (REQCOM)
*P*      RC21        ENTRY INTO REQUEST COMPLETE (REQCOM)

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 46 00000002
 47 00000001
 48 00000001
 49 00000001
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 52 00000001
 53 00000001
 54 00000001
 55 00000000
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*P*      RESCHED      RE-SCHEDULE I/O ENTRY
*P*      RTRET1       REAL-TIME USER RETURN POINT
*P*      RTRET2       REAL-TIME USER RETURN POINT
*P*
*
*      SET CONTROL SETTINGS FOR UTS PROCEDURES AND INTERNAL
*      VERSIONS
*
OC      EGU          2
MONPROC SET          1
DISCBROC SET         1
BITS    SET          1
        SYSTEM      UTS
*
NWIO    SET          1      NO WAIT I/O VERSION
SYMBFLAG SET         1      SYMBIONT VERSION
DUALFLAG SET         1      DUAL ACCESS VERSION
DEFER   SET          0      DO NOT DEFER START/CLEANUP
*

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I/O EXTERNAL REFERENCES

61		REF	AVRDC	* AVR'D DEVICE DCTX
62		REF	AVRTBLNE	* LAST DISC PACK AVRX+1
63		REF	BATAPE	* DCTX ==> AVRX
64	00000006	WABLK	EGU	BLK
65		REF	BTDBIT	*
66		REF	BUFLIMS	* LIMITS OF WA FROM MP00L TO TOP
67		REF	CIN0Q	* PERF. MON. CELL FOR LACK OF A QUEUE
68		REF	CIRTRW	*
69		REF	CFUBIT	*
70		REF	CIT1	* HEAD OF CHANNEL QUEUE #
71		REF	CIT2	* TAIL OF CHANNEL QUEUE #
72		REF	CIT3	* CHANNEL FLAGS
73		REF	CIT4	* INDEX OF HOLDING QUEUE #
74		REF	CIT5	*
75		REF	CIT6	*
76		REF	CJOB	* JIT POINTER AT LOC X14F1
77		REF	C0C10	*
78		REF	CTACT	*
79		REF	CTFLAGS	*
80		SREF	CTGL	*
81		SREF	CTINT	*
82		REF	CT0C	*
83		SREF	CTWD	*
84		REF	CURBQ	*
85		REF	DCACCESS	*
86		REF	DCT#MASK	*
87		REF	DCT#MASK#2	*
88		REF	DCTSIZ	* LENGTH OF DCT TABLES
89		REF	DCT1	* DEVICE ADDRS TABLE
90		REF	DCT1A	* ALTERNATE DEVICE ADDRS (DUAL=AC)
91		REF	DCT1P	* PRIMARY DEVICE ADDRS (DUAL=AC)
92		REF	DCT10	* RE-ENTRANCY COUNTER
93		REF	DCT11	* DEVICE I/O OVERDUE TIME BUCKET

94	REF	DCT12	* AIO STATUS BUCKET
95	REF	DCT13	* TDV STATUS BUCKET
96	REF	DCT14	* CHANNEL FLINK QUEUE INDEX
97	REF	DCT15	* CHANNEL BLINK QUEUE INDEX
98	REF	DCT16	* DEVICE NAME IN EBCDIC
99	REF	DCT17	* HANDLER CODES
100	REF	DCT18	* TIME-OUT INCREMENTS (5 SECOND UNITS)
101	REF	DCT19	* SIO/AIO CONDITION CODES
102	REF	DCT2	* CHANNEL INFO TABLE INDEX
103	REF	DCT20	* TDV CONDITION CODES
104	REF	DCT21	* TIO STATUS
105	REF	DCT22	* INDEX INTO SEEK CONVERT TABLES
106	REF	DCT23	* O/OR HGP DISPLACEMENT
107	REF	DCT24	* RMA TABLE (PARTITION...ETC)
108	REF	DCT25	* SIO COUNTER
109	REF	DCT3	* I/O LEGALITY/DUAL ACCESS FLAGS
110	REF	DCT4	* BH:NM INDEX
111	REF	DCT5	* DEVICE FLAGS
112	REF	DCT6	* QUEUE HEAD INDEX
113	REF	DCT7	* DA OF COMMAND TABLE
114	REF	DCT8	* WA OF HANDLER POST PROCESSOR
115	REF	DCT9	* WA OF HANDLER PREP PROCESSOR
116	REF	DEVCTCHK	*
117	REF	DID	* DIAGNOSTIC INTERFACE USER # SLOT
118	REF	DISCLIMS	*
119	REF	DPACCESS	*
120	REF	DSCCVT	*
121	REF	E:IC	* I/O COMPLETE EVENT CODE
122	REF	E:IP	* I/O IN PROGRESS EVENT CODE
123	SREF	ECBPOST1	* POSTS ECB GIVEN 4*WORD BLOCK
124	REF	ERRLOG	* ERROR LOGGING RECORDER
125	REF	INTCNT	*
126	REF	INTFLG	*
127	REF	I0CLOCK	* # OF 5 SECOND INTERVALS ELAPSED
128	REF	I0CTG	*
129	REF	I0PSD	* PSD FROM I/O INTERRUPT
130	REF	I0Q1	* BAK LINK FOR I0Q TABLES

131				REF	I0Q10	* # OF RETRY REQUESTS
132				REF	I0Q11	* # OF RETRIES REMAINING
133				REF	I0Q12	* SEEK ADDRESS
134				REF	I0Q13	* DBL-WORD OF END ACTION ADDR/INFB
135				REF	I0Q14	* REQUEST PRIORITY
136				REF	I0Q15	* REQUESTORS USER # (>>0 ONLY)
137				REF	I0Q16	* ECB WORD ADDRESS
138				REF	I0Q2	* FWD LINK FOR I0Q TABLES
139				REF	I0Q3	* I0Q STATUS DATA (DUAL ACCESS.ETC)
140				REF	I0Q4	* CALLERS FUNCTION CODE
141				REF	I0Q5	* CURRENT FUNCTION CODE
142				REF	I0Q6	* WA OF DCB (NON-ZERO)
143				REF	I0Q7	* DCT INDEX OF DEVICE
144				REF	I0Q8	* BA OF BUF OR DBL-WORD OF CDW
145				REF	I0Q9	* # CDWS OR # OF BYTES
146				REF	I0SERCK	* CHECK STATUS FOR ERROR ROUTINE
147				REF	J:CTIME	*
148				REF	J:DCBLINK	* DCB POINTER IN USER JIT
149				REF	J:JIT	* WA OF JIT
150				REF	J:RWECB	*
151				REF	JIT	* WA OF THE JIT
152				REF	J0VVP	*
153				REF	J0VVP	*
154				REF	JXICMAP	*
155				REF	JXCMP	*
156				REF	KEYINBUF	* OPERATOR KEYIN INTO THISBUFFER
157				REF	MAXBQ	* MAX # OF USER I/O EVENTS
158				REF	MBGBIT	* MBN BUFFER USED BIT
159				REF	MP00L	* MBN P00L CHAIN
160				REF	MP00LIM	*
161	00000002	S	X3	EQU	M2	* DATA OF X'00000003'
162	00000003	S	X7	EQU	M3	* DATA OF X'00000007'
163	00000004	S	XF	EQU	M4	* DATA OF X'0000000F'
164	00000007	S	X7F	EQU	M7	* DATA OF X'0000007F'
165	00000008	S	XFF	EQU	M8	* DATA OF X'000000FF'
166				REF	0CDCT	* DCT INDEX OF 0C DEVICE
167				REF	0CPSD	* PSD FROM 0/C INTERRUPT

168	REF	PFSR10	*
169	REF	QFREE	* BYTE ZERO HAS INDEX OF FIRST FREE Q
170	REF	RBLIMS	* CLM PAIR OF REMOTE BATCH DCT'IS
171	SREF	RBQCK	*
172	REF	RCVPSD	* RECOVERY'IS XPSD BUCKET
173	REF	REGIPSD	*
174	SREF	RTCU	*
175	SREF	RTINT	*
176	SREF	RTI0STRT	*
177	SREF	RTT0	*
178	REF	SICUN	* CURRENT USER # SLOT
179	SREF	SACT	* ACTIVATE SYMBIONT ROUTINES
180	REF	SC1900	*
181	REF	SL:BXMF	* LIMIT I/O MAX FOR BATCH JOBS
182	REF	SL:0XMF	* LIMIT I/O MAX FOR ONLINE JOBS
183	REF	SL:I0TA	*
184	REF	SQHD	*
185	REF	SSEO	*
186	REF	SYSACT	* DBL=WORD TEXT0F ISYS
187	REF	T:GJOB	* PASS PRIORITY/ACCNT # ROUTINE
188	REF	TIPULLE	*
189	REF	T:REG	* REPORT EVENT AND GIVEUP CONTROL
190	REF	T:RUE	* REPORT UNUSUAL EVENT IN SCHED
191	REF	T:SAVE	* SAVE STANDARD ENVIRONMENT
192	REF	TISSE	*
193	REF	TB:FLGS	*
194	REF	TEMP	* USED FOR INT PROCESSING
195	REF	TPACCESS	*
196	REF	UB:PR10	* USER'S CURRENT PR10 TABLE
197	REF	UBIMF	* USER COUNT OF OUTSTANDING I/O'IS
198	REF	UNEXP	* COUNT OF UNEXPECTED INTERRUPTS
199	REF	UNMAP	* GOES UNMAPPED ROUTINE IN ERHNDLR
200	000000CU	RTPR10	* I/O PRIORITY FOR REAL-TIME USERS
201	REF	XE7	* DATA 0F X'1000000E7'
202	REF	XFB	* DATA 0F X'1000000FB'
203	REF	X44	* DATA 0F X'100000044'
204	REF	YE	* DATA 0F X'1E0000000'

HC1 20:42 SEP 08, 1975

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REF YFF
REF YFFFF
REF Y00FE
REF Y03
REF Y05
REF Y06

* DATA BF X'FF000000!
* DATA BF X'FFFF0000!
* DATA BF X'00FE0000!
* DATA BF X'03000000!
* DATA BF X'05000000!
* DATA BF X'06000000!

211		PAGE	
212	*		
213	*	I00 INTERNAL DEFINITIONS	
214	*		
215		DEF	CHKDA *
216		DEF	CHKDAQ *
217		DEF	CTRIG *
218		DEF	DRIVEI0 *
219		DEF	ENBSR4 * ENABLE/B *R11
220		DEF	F0RCEI0 *
221		DEF	INTSIM *
222		DEF	I0INT * I/O INTERRUPT RECEIVER
223		DEF	I0SCU * CLEANUP RETURN ADDRESS
224		DEF	I0SST * I/O START ROUTINE
225		DEF	I00 * MODULE BASE ADDRESS
226		DEF	MSG0UT * WRITES MSG AS PASSED
227		DEF	MSG2 *
228		DEF	MSG3 *
229		DEF	MSG4 *
230		DEF	MSG5 *
231		DEF	MSG7 *
232		DEF	MSG9 *
233		DEF	MSG9A *
234		DEF	NEWQ * MONITOR TYPE I/O
235		DEF	NEWQNW * NEWQ ENTRY NO-WAIT
236		DEF	NEWQNW * NEWQ ENTRY MAPPED=NO WAIT
237		DEF	0CINT * 0/C INTERRUPT RECEIVER
238		DEF	0CQUEUE *
239		DEF	0CWRITE *
240		DEF	PL5BSR4 * PLM 5 AND BRANCH *R11
241		DEF	PVCHKDA *
242		DEF	QUEUE * I/O THRU DCB WITH END ACTION
243		DEF	QUEUE1 * I/O THRU DCB W/O END ACTION
244		DEF	Q15A *
245		DEF	Q51 *
246		DEF	RC20 *
247		DEF	RC21 *

H01 20142 SEP 08, 175

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01 00000

01 00000

IBQ
BRIG

DEF

DEF

DEF

EGU

EGU

RESCHED

RTRET1

RTRET2

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* RE-SCHEDULE I/O RETURN

*

* RETURN FROM RTR00T

PAGE

REGISTER DEFINITIONS

253		*		
254		*		
255		*		
256		*		
257	00000000	R0	REGU	0
258	00000001	R1	REGU	1
259	00000002	R2	REGU	2
260	00000003	R3	REGU	3
261	00000004	R4	REGU	4
262	00000005	R5	REGU	5
263	00000006	R6	REGU	6
264	00000007	R7	REGU	7
265	00000008	R8	REGU	8
266	00000009	R9	REGU	9
267	0000000A	R10	REGU	10
268	0000000B	R11	REGU	11
269	0000000C	R12	REGU	12
270	0000000D	R13	REGU	13
271	0000000E	R14	REGU	14
272	0000000F	R15	REGU	15

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PAGE

BASIC I/O ROUTINES

NEWQ CALLING SEQUENCE;

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R12      FC/PRI/NRT/DCTX      (8,8,8,8)
R13      DATA CHAIN,CMND CHAIN,BA OF BUFFER (1,1,6,24)
R14      BUFFER SIZE IN BYTES (0,16)
R15      GENERALIZED DISC ADDRESS (32)
R0       END ACTION WORD ADDRESS (32)
R1       END ACTION INFO TO RETURN (32)

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QUEUF/QUEUE1 CALLING SEQUENCE;

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R8       FC/DCB ADDRESS      (8,0,17)
R9       END ACTION ADDRESS  (32)
R10      END ACTION INFO     (32)

```

BOTH ROUTINES ENTERED ON BAL,11

331	01	00009	75300000	X	STB,R3	J:DCBLINK	CLEAR THEM
332	01	0000A	6840000C		BCR,4	S+2	NEWQNW
333	01	0000B	223000FF	A	LI,3	XIFF'	SET MAGIC USER NO FOR NEWQNW
334	01	0000C	09B00000	N	PUSH	R11	SAVE REAL RETURN IN MAPPED STACK
335	01	0000D	22B00044		LI,R11	1Q3	SET RETURN TO BACKEND OF FRONTEND
336	01	0000E	68000026		B	SKREG2	AND GO GET A QUEUE ENTRY
337	01	0000F			CHECKMF RES	0	
338	01	0000F	32300000	X	LW,3	S:CUN	
339	01	00010	32400000	X	LW,4	SL:IBTA	GET DING
340	01	00011	66400000	X	AWM,4	J:CTIME	ADD IT IN
341	01	00012	72400000	X	LB,4	JIT	FETCH USER TYPE BITS
342	01	00013	72360000	X	LB,3	UB:MF,3	GET MASTER FUNCTION COUNT
343	01	00014	2540007A	A	SLS,4	*6	ISOLATE USER TYPE TO USE AS INDEX
344	01	00015	6708001E		EXU	IPREGV,4	EXECUTE PROPER INSTRUCTION
345	01	00016	69100021		BL	SKIPREG	LESS THAN LIMIT, SKIP REG
346	01	00017	09600000	N	PUSH	6	
347	01	00018	09B00000	N	PUSH	11	
348	01	00019	22600000	N	LI,6	E:IP	REPORT
349	01	0001A	6AB00000	X	BAL,11	T:REG	I/O PERMISSION REQUEST
350	01	0001B	08B00000	N	PULL	11	
351	01	0001C	08600000	N	PULL	6	
352	01	0001D	68040001	A	B	1,R2	RETURN IN 10MF BLOCK
353	01	0001E	31300000	X	IPREGV CW,3	SL:BXMF	BATCH * USER TYPE = 0
354	01	0001F	68000021		B	SKIPREG	GHOST * USER TYPE = 1
355	01	00020	31300000	X	CW,3	SL:BXMF	ONLINE USER TYPE = 2
356	01	00021	32300000	X	SKIPREG LW,3	S:CUN	GET USER NO
357	01	00022	73160000	X	MTB,1	UB:MF,3	INCREMENT MASTER FUNCTION COUNT
358					*		
359	01	00023			SKREG RES	0	
360	01	00023	09B00000	N	PUSH	R11	SAVE REAL RETURN
361	01	00024	32B00002	A	LW,R11	R2	SET RETURN TO BACKEND POINTER
362	01	00025	72460000	X	SKREG1 LB,4	UB:PRI0,3	GET USER PRIORITY
363	01	00026	0E000000		SKREG2 LPSD,0	10UNMAP	UNMAP AND DISABLE
364	01	00027	02200070	A	1Q2 PUSH	7,R5	SAVE NON VOLATILES
	01	00028	0B500000	N			
365	01	00029	32600003	A	LW,R6	R3	MOVE USER NUMBER FOR GETQ
366					*		

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 378 01 0002A
 379 01 0002A 72300000 X
 380 01 0002B 68300034
 381 01 0002C 75460000 X
 382 01 0002D 75C60000 X
 383 01 0002E 33100000 X
 384 01 0002F 72560000 X
 385 01 00030 75500000 X
 386 01 00031 75660000 X
 387 01 00032 6U000027 A
 388 01 00033 68040002 A
 389 01 00034 22300000 N
 390 01 00035 33100000 X
 391 01 00036 02200000 A
 01 00037 09000000 N
 392 01 00038 6A100003 A
 393 01 00039 6A2001AC
 394 01 0003A 02200000 A
 01 0003B 0A000000 N
 395 01 0003C 64300036
 396 01 0003D 6U000037 A
 397 01 0003E 6800002A
 398 01 0003F
 399
 400 01 0003F 6A100000 X
 401 01 00040 09600000 N

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*
* GET A QUEUE ENTRY FOR THIS REQUEST
*
* DRIVES ALL I/O IF NONE ARE AVAILABLE
*
* R4 = PRIORITY (IN)
* R6 = USER NUMBER (IN)
* R12 = DCT INDEX (IN)
*
* R3 = I/O INDEX (OUT)
*
*
GETQ RES 0
LB,R3 QFREE GET FREE ENTRY HEAD
BEZ GQ10 EMPTY, DRIVE ALL I/O
STB,R4 IOQ14,R3 SAVE PRIORITY
STB,R12 IOQ7,R3 AND DCT INDEX
MTW,1 CURBQ INCREMENT CURRENT BACKGROUND ENTRIES
GQ40 LB,R5 IOQ2,R3 FLINK
STB,R5 QFREE SET HEAD TO NEXT FREE ENTRY
STB,R6 IOQ15,R3 PUT AWAY USER NUMBER
ENABLE ** ENABLE **
B 2,R2 RETURN SKIPPING *2
GQ10 LI,R3 DCTSIZ DRIVE I/O FOR ALL DEVICES
MTW,1 C;N0Q COUNT NUMBER OF TIMES THERE ARE NONE
GQ11 PUSH 16,R0 SAVE ALL REGS

INT,R1 R3 GET DCT INDEX INTO REG FOR DRIVE I/O
BAL,R2 FORCEIO FORCE
PULL 16,R0 RESTORE REGS

BDR,R3 GQ11 CONTINUE
DISABLF **DISABLE**
B GETQ TRY AGAIN

1Q1 RES 0
*
MAP
PUSH 6 GO MAPPED FOR REG

```

H01 20142 SEP 08, 175

41

402 01 00041 22600000 A
 403 01 00042 0F000000 X
 404 01 00043 08600000 N
 405 01 00044 6A100000 X
 406 01 00045 08B00000 N
 407 01 00046 72240000 X
 408 01 00047 22100000 N
 409 01 00048 70240000 X
 410 01 00049 6880004F
 411 01 0004A 6840004D
 412 01 0004B 6830004E
 413
 414 01 0004C 20100000 N
 415 01 0004D 20100000 N
 416 01 0004E
 417 01 0004E 33120000 X
 418 01 0004F
 419 01 0004F
 420 01 0004F E800000B A
 421

103

*

INCTP
INCDC

104
BISR4

*

LI,6 0
 XPSD,0 REGIPSD
 PULL 6
 MAP
 PULL 11
 LB,R2 DCT4,R2
 LI,R1 DCACCESS
 LC TBIFLGS,R2
 BCR,8 104
 BCR,4 INCTP
 BCR,3 INCDC
 *
 AI,R1 DPACCESS=TPACCESS **
 AI,R1 TPACCESS=DCACCESS **
 EQU * **
 MTW,+1 J;JIT,R1 * ACCOUNT FOR IT
 RES 0
 RES 0
 B *11

DCB ADDRESS OF ZERO FOR NEWQ
 REPORT TO SCHEDULER
 RESTORE REG
 * GB MAPPED FOR HIS JIT
 * RESTORE REAL RETURN
 * GET DEVICE TYPE INDEX
 * ASSUME PUB RAD
 * GET DEVICE ATTRIBUTE FLAGS
 * NOT TAPE OR DISC,NO ACCOUNTING
 * TAPE ACCESS
 * RAD ACCESS
 * PACK ACCESS
 **
 **
 * ACCOUNT FOR IT

422					PAGE		
423		01	00050	NEWQNW	EQU	\$	NO WAIT MAPPED ENTRY
424	01	00050	3230001F	N	LW,3	Y4	
425	01	00051	47300000	X	STS,3	J;DCBLINK	
426		01	00052	NEWQNW	EQU	\$	
427	01	00052	32300020	N	LW,R3	Y8	
428	01	00053	47300000	X	STS,R3	J;DCBLINK	
429					*F*		
430					*F*	NAME:	NEWQ
431					*F*		
432					*F*	PURPOSE:	TO ENQUEUE A REQUEST FOR I/O
433					*F*		
434					*F*	DESCRIPTION:	CALL HERE WITH REGISTER SETUP AS DEFINED
435					*F*		IN THE COO DATA BASE TECH MANUAL.
436					*F*		
437		01	00054	NEWQ	EQU	\$	NORMAL ENTRY (LATER WILL BE QUEUE)
438					*		
439					*		
440		01	00054	Q10	EQU	\$	
441	01	00054	45C00000	X	AND,R12	DCT\$MASK\$2	CLEAN UP DCT FOR 7275
442	01	00055	32300000	X	LW,3	DCT\$MASK	
443	01	00056	4530000C	A	AND,R3	R12	
444	01	00057	70260000	X	LC	DCT2,R3	IS CAL1,1 DIAG USE BIT SET
445	01	00058	6940004F		BCS,4	BISR4	YES, ERROR EXIT
446	01	00059	70260000	X	LC	DCT3,R3	LOOK AT DEVICE DOWN BIT
447	01	0005A	68200060		BCR,2	Q11	DEVICE NOT PARTITIONED
448	01	0005B	72260000	X	LB,R2	DCT15,R3	IS THIS A REAL-TIME IOEX CALL
449	01	0005C	69300060		BNEZ	Q11	YES
450	01	0005D	32300000	X	LW,R3	S:CUN	DEV.DOWN, GET SYS ID
451	01	0005E	31300000	X	CW,R3	DID	IS THIS A DIAG USER
452	01	0005F	6930004F		BNE	BISR4	NO, ERROR EXIT IF DOWN
453	01	00060	20800001	A	Q11	AI,R11	1
454					*		
455	01	00061	6A200002		BAL,2	FRONTEND	UTS INTERFACE
456	01	00062	6800003F		B	1Q1	POINTER TO NEWQ BACKEND OF FRONTEND
457	01	00063	68000002		B	FRONTEND	REPEAT FRONTEND IF IOMF UNBLOCK
458					*		

```

489
460 01 00064 22200000 A
461 01 00065 35260000 X
462 01 00066 25C00078 A
463 01 00067 75C60000 X
464 01 00068 75C60000 X
465 01 00069 25C00078 A
466 01 0006A 71C60000 X
467 01 0006B 6920006D
468 01 0006C 75C60000 X
469 01 0006D 25C00078 A
470 01 0006E 3280000F A
471 01 0006F 22F00000 A
472 01 00070
473 01 00070 75C60000 X
474 01 00071 75C60000 X
475 01 00072 35D60000 X
476 01 00073 55E60000 X
477 01 00074 6AB00000 X
478 01 00075 35860000 X
479 01 00076 15060000 X
480 01 00077 35260000 X
481
482 01 00078
483 01 00078 72160000 X
484 01 00079 6930007C
485 01 0007A 0F000000 X
01 0007B 00170000 A
486 01 0007C
487 01 0007C 19100000 X
488 01 0007D 68900000 X
489 01 0007E
00000001
491 01 0007E 72720000 X
492 01 0007F 48700002 N
493 01 00080 50FE0110
494
    
```

*

Q13

Q15

SC17

Q151

Q15A

```

LI,R2 0
STW,R2 I0Q16,R3
SLS,R12 =8
STB,R12 I0Q10,R3
STB,R12 I0Q11,R3
SLS,R12 =8
CB,R12 I0Q14,R3
BG $+2
STB,R12 I0Q14,R3
SLS,R12 =8
LW,R8 R15
LI,R15 0
RES 0
STB,R12 I0Q4,R3
STB,R12 I0Q5,R3
STW,R13 I0Q8,R3
STH,R14 I0Q9,R3
BAL,11 DSCCVT
STW,8 I0Q12,R3
STD,R0 I0Q13,R3
STW,R2 I0Q6,R3

EGU $
LB,R1 I0Q7,3
BNEZ Q151
SCREECH X:17'

RES 0
CLM,R1 RBLIMS
BCR,9 RBQCK
EGU $
DB DUALFLAG
LB,R7 DCT3,R1
AND,R7 X3
AH,R15 I0QINIT,R7
FIN
    
```

BUILD Q ENTRY

NO ECB FOR NEWQ I/O.

MAX TRIES
TRY COUNT

CHECK AGAINST ASSUMED
LOWER
PRIORITY

GET DISK ADDRESS INTO REG FOR DSCCVT
NO MBG BIT
MERGE POINT FOR QUEUE AND NEWQ
FUNCTION CODE
CURRENT FUNCTION STEP
BUF ADDR
BYTE COUNT
CONVERT TO SEEK
STORE SEEK
END-ACTION DATA
DCB AND FUNCTION

GET DCT INDEX
OK, NON-ZERO
BAD DCT

EXTRACT DCT ACCESS KEY
..
SET I0Q ACCESS KEY

H01 20:42 SEP 08, 175

44

495	01	00081	75F60000	X		STB,R15	I0Q3,R3	SAVE REQUEST SWITCHES
496	01	00082	72960000	X		LB,R9	I0Q15,R3	GET USER NUMBER
497	01	00083	68300087			BEZ	Q15AA	ZERO, UNMAPPED I/O
498	01	00084	60760000	X		INT,R7	I0Q8,R3	IS THIS A USER COMMAND LIST
499	01	00085	69C00087			BCS,4+8	Q15AA	YES, SKIP CHAINCHK
500	01	00086	6A9000B8			BAL,R9	CHAINCHK	NO, USER, CONVERT BUF ADR
501		01 00087			Q15AA	EGU	*	
502	01	00087	72420000	X		LB,R4	DCT2,R1	GET CHANNEL INDEX
503					*			LINK ENTRY INTO Q
504	01	00088	72860000	X		LB,R8	I0Q14,R3	GET PRIORITY OF ENTRY
505					*			
506	01	00089	22BF0000	A		LI,R11	X'F0000'	MASK FOR COMPARE SELECTIVE(YFFFF)
507					*			
508	01	0008A	72220000	X		LB,R2	DCT22,R1	GET SUBTYPE
509	01	0008B	6830008E			BEZ	Q20	NOT A DISC
510	01	0008C	22200001	A		LI,R2	1	SET INDEX
511	01	0008D	32A60000	X		LW,R10	I0Q12,R3	GET SEEK ADDRESS
512	01	0008E	60000037	A	Q20	DISABLE		*** DISABLE ***
513	01	0008F	72780000	X		LB,R7	CIT2,R4	GET TAIL OF QUEUE
514	01	00090	693000A7			BNE	Q28	NOT EMPTY
515	01	00091	75380000	X		STB,R3	CIT1,R4	Q WAS EMPTY
516	01	00092	75380000	X		STB,R3	CIT2,R4	
517	01	00093	75760000	X		STB,R7	I0Q1,R3	
518	01	00094	680000A4			B	Q27	
519	01	00095	680000A9		Q29	B	Q30	DEVICE, AT THE RIGHT SPOT
520	01	00096	45AE0000	X		CS,R10	I0Q12,R7	CHECK CYLINDER
521	01	00097	6910009F			BL	Q26A	LOWEST NUMBERED FIRST
522	01	00098	718E0000	X		CB,R8	I0Q14,R7	CHECK PRI0 AGAIN
523	01	00099	683000A9			BE	Q30	SAME
524	01	0009A	31AE0000	X		CW,R10	I0Q12,R7	CHECK DISK ADDR
525	01	0009B	683000A9			BE	Q30	SAME, CANT INVERT, PUT KINK IN Q
526	01	0009C	6800009F			B	Q26A	KEEP GOING
527	01	0009D	711E0000	X	Q26	CB,R1	I0Q7,R7	SAME DEVICE
528	01	0009E	68340095			BE	Q29,R2	YES, SWITCH ON DEVICE/DISK
529	01	0009F	726E0000	X	Q26A	LB,R6	I0Q1,R7	BLINK
530	01	000A0	693000A6			BNE	Q28A	GET ANOTHER
531	01	000A1	75380000	X		STB,R3	CIT1,R4	SET NEW HEAD

532	01	000A2	75660000	X		STB,R6	I0Q1,R3	SET NEW BLINK
533	01	000A3	753E0000	X		STB,R3	I0Q1,R7	MAKE PREVIOUS BLINK TO CURRENT
534	01	000A4	75760000	X	Q27	STB,R7	I0Q2,R3	SET CURRENT FLINK
535	01	000A5	680000B1			B	Q40	DONE
536	01	000A6	727E0000	X	Q28A	LB,R7	I0Q1,R7	GET NEXT
537	01	000A7	718E0000	X	Q28	CB,R8	I0Q14,R7	CHECK PRI0
538	01	000A8	6820009D			BLE	Q26	TRY TO INVERT
539	01	000A9	726E0000	X	Q30	LB,R6	I0Q2,R7	INSERT
540	01	000AA	693000AC			BNEZ	\$+2	CHECK FOR TAIL
541	01	000AB	75380000	X		STB,R3	CIT2,R4	SET NEW TAIL
542	01	000AC	75660000	X		STB,R6	I0Q2,R3	SET CURRENT FLINK
543	01	000AD	75760000	X		STB,R7	I0Q1,R3	SET CURRENT BLINK
544	01	000AE	753E0000	X		STB,R3	I0Q2,R7	SET PREV BLINK TO CURRENT
545	01	000AF	683000B1			BEZ	\$+2	CHECK FOR TAIL
546	01	000B0	753C0000	X		STB,R3	I0Q1,R6	NO, SET NEXT BLINK TO CURRENT
547					*			
548	01	000B1	64000027	A	Q40	ENABLE		**ENABLE**
549					*			
550					*			
551	01	000B2	F5100000	X	Q50	STB,R1	*TSTACK	CALL SERVICE DEVICE
552	01	000B3	6A2001A9			BAL,R2	DRIVEI0	SAVE DCT INDEX IN RETURN
553	01	000B4	F2200000	X		LB,R2	*TSTACK	CALL I/O SCHEDULER WITH CJOB PRI
554					*			RESTORE DCT INDEX
555		01 000B5			Q51	EGU	\$	RETURN TO CALLER
556	01	000B5	02200070	A		LCI	7	RESTORE NON-VOLATILE REGS
557	01	000B6	0A500000	X	PL5BSR4	PLM,5	TSTACK	
558	01	000B7	E800000B	A		B	*11	

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 579 01 000B8 32660000 X
 580 01 000B9 45600013 N
 581 01 000BA 35660000 X
 582 01 000BB 25600175 A
 583 01 000BC 21600000 N
 584 01 000BD E9100009 A
 585 01 000BE 6A100000 X
 586 01 000BF 726C0000 N
 587 01 000C0 2560010B A
 588 01 000C1 32D60000 X
 589 01 000C2 52E60000 X
 590 01 000C3 45D0000B N
 591
 592 01 000C4 50D60000 X
 593 01 000C5 682000CC
 594 01 000C6 20DFF800 A
 595 01 000C7 692000CC

PAGE

```

*
* THIS ROUTINE CHECKS THE REQUEST FOR OVERLAPPING A PAGE
* BOUNDARY (IF A USER REQUEST). IF IT OVERLAPS, A MONITOR
* BUFFER IS ACQUIRED AND THE OPERATION IS DIVIDED INTO
* PAGE SIZE OR SMALLER CHUNKS AND THE REQUEST IS FLAGGED
* AS A DATA CHAIN. IT ALSO CONVERTS THE BUFFER ADDRESS FROM
* VIRTUAL TO PHYSICAL. IF THE OPERATION IS TO RAD, DISC OR
*
*
* R2      COUNT OF COMMAND PAIRS IN CHAIN
* R3      Q ENTRY
* R4      WA OF MONITOR BUFFER CONTINUING DATA CHAIN
* R9      LINK
* R13     BYTE COUNT
* R14     WA OF VIRTUAL PAGE
* R15     BA OF PHYSICAL PAGE
*
* CHAINCHK  EQU      $
579      LW,6      I0Q8,3      GET BUFFER ADDRESS
580      AND,6     M19        SCRUB TO VIRTUAL BYTE ADDRESS
581      STW,6    I0Q8,3
582      SLD,6    =11        GET PAGE NUMBER
583      CI,6     J0VVP      IS THE BUFFER IN THE MONITOR
584      BL      *9         YES GET OUT
585      BAL,1    MAP       GO MAPPED TO SEE USER JIT
586      LOAD,6  JX:CMAP,6  VIRTUAL TO PHYSICAL
587      SLD,6    11        MAKE BYTE ADDRESS AGAIN
588      LW,13   I0Q8,3     GET BUFFER ADDRESS
589      LH,14   I0Q9,3     AND BYTE COUNT
590      AND,13  M11        SCRUB PAGE DISP INTO BUFFER
591
592      AH,13   I0Q9,3     R13 CONTAINS I0Q8 UPON ENTRY
593      BLEZ    CHAIN      ADD BYTE COUNT
594      AI,13   =2048     32K BYTES OR GREATER
595      BG      CHAIN      CHECK FOR CROSSING PAGE
                          YES
    
```

H01 20:42 SEP 08, '75

596	01	000C8	35660000	X		STW,6	I0Q8,3	STORE PHYSICAL BUFFER ADR
597	01	000C9	6A100000	X	CHNEX	BAL,1	UNMAP	GO UNMAPPED AGAIN
598	01	000CA	72160000	X		LB,1	I0Q7,3	RESTORE DCT INDEX TO R1
599	01	000CB	E8000009	A		B	*9	RETURN
600								
601								
602								
603	01	000CC	60000037	A	CHAIN	DISABLE		*** DISABLE ***
604	01	000CD	32400000	X		LW,4	MP00L	GET A MONITOR BUFFER(34 WDS)
605	01	000CE	69300001			BNEZ	CH21	GET ONE
606	01	000CF	60000027	A		ENABLE		*** ENABLE ***
607	01	000D0	680000CC			B	CHAIN	GO TRY AGAIN
608	01	000D1	32580000	A	CH21	LW,5	0,4	GET POINTER TO NEXT MBUF
609	01	000D2	68300005			BEZ	CH22	
610	01	000D3	19500000	F		CLM,5	BUFLIMS+MP00LIM+MP00LIM	CHECK MP00L WITHIN LIMITS
611	01	000D4	69900000	X		BCS,9	SC1900	SOFTWARE CHECK 19=00
612	01	000D5	19400000	F	CH22	CLM,4	BUFLIMS+MP00LIM+MP00LIM	
613	01	000D6	69900000	X		BCS,9	SC1900	SOFTWARE CHECK 19=00
614	01	000D7	35500000	X		STW,5	MP00L	MAKE IT THE NEW HEAD
615	01	000D8	60000027	A		ENABLE		*** ENABLE ***
616	01	000D9	2540007F	A		SLS,4	=1	MAKE DOUBLEWORD ADR
617	01	000DA	49400020	N		BR,4	Y8	SET DATA CHAIN BIT
618	01	000DB	32560000	X		LW,5	I0Q8,3	GET BUFFER VIRTUAL ADDRESS
619	01	000DC	35460000	X		STW,4	I0Q8,3	SAVE POINTER TO DATA CHAIN
620	01	000DD	4BE00010	N		AND,14	M16	SCRUB BYTE COUNT
621								R14 CONTAINS BYTE COUNT UPON ENTRY
622	01	000DE	3A700006	A		LCW,7	6	FIND REMAINING BYTES IN PAGE
623	01	000DF	4B70000B	N		AND,7	M11	SCRUB
624	01	000E0	693000E2			BNE	\$+2	NOT ON PAGE BOUNDARY
625	01	000E1	22700800	A		LI,7	2048	WHOLE PAGE
626	01	000E2	38E00007	A		SW,14	7	ACCOUNT FOR FIRST PAGE
627	01	000E3	15680000	A		STD,6	0,4	STORE FIRST COMMAND PAIR
628	01	000E4	25500075	A		SLS,5	=11	VIRTUAL PAGE OF BUFFER START
629	01	000E5	22700800	A		LI,7	X'800'	ALL BUT FIRST AND LAST GET COUNT OF
630	01	000E6	20500001	A	CH50	AI,5	1	BUMP TO NEXT PAGE
631	01	000E7	20400001	A		AI,4	1	AND NEXT COMMAND POSITION
632	01	000E8	726A0000	N		LOAD,6	JXICMAP,5	VIRTUAL TO PHYSICAL

633	01	000E9	2560000B	A	SLS,6	11	BYTE ADDRESS	
634	01	000EA	20EFF800	A	AI,14	=2048	COUNT FOR THIS COMMAND	
635	01	000EB	682000EE		BLEZ	CH55	LAST COMMAND	
636	01	000EC	15680000	A	STD,6	0,4	STORE COMMAND	
637	01	000ED	680000E6		B	CH50	CONTINUE	
638	01	000EE	3070000E	A	CH55	AW,7	14	CORRECT BYTE COUNT
639	01	000EF	15680000	A	STD,6	0,4	AND STORE LAST COMMAND	
640	01	000F0	38460000	X	SW,4	I8Q8,3	CALCULATE NO OF COMMANDS	
641	01	000F1	20400001	A	AI,4	1	IN DATA CHAIN	
642	01	000F2	55460000	X	STH,4	I8Q9,3	AND SAVE IN I8Q9	
643	01	000F3	6A100000	X	BAL,1	UNMAP	UNMAPPED AGAIN	
644	01	000F4	72160000	X	LB,1	I8Q7,3	RESTORE DCT INDEX	
645								
646	01	000F5	22000002	A	LI,0	2		
647	01	000F6	71060000	X	CB,0	I8Q4,3		
648	01	000F7	6930010F		BNE	BISR2		
649	01	000F8	72620000	X	LB,6	DCT4,1	GET DEVICE TYPE	
650	01	000F9	720C0000	X	LB,0	TB:FLGS,6	CHECK REVERSE BIT(=> 9 TRACK)	
651	01	000FA	21000004	A	CI,0	4		
652	01	000FB	6840010F		BAZ	BISR2		
653								
654								
655								
656								
657								
658								
659								
660								
661								
662								
663								
664	01	000FC	32200004	A	LW,2	4	COMPUTE NO OF PASSES NEEDED	
665								
666	01	000FD	20400001	A	AI,4	1	TO INVERT	
667	01	000FE	2540007F	A	SLS,4	=1	THE COMMAND LIST	
668	01	000FF	202FFFFFF	A	AI,2	=1		
669	01	00100	25200001	A	SLS,2	1		

CH55

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WE HAVE A READ BACKWARD DATA CHAINED ON A 9T DRIVE
THE COMMAND LIST AND EACH PAIR IN IT MUST BE
INVERTED BECAUSE 9T HARDWARE ACTUALLY READS BACKWARD.
7T READ BACKWARD IS SOFTWARE SIMULATED

R2 HIGH INDEX
R4 COUNT
R5 LOW INDEX
R7 DA OF COMMAND LIST
R12=R15 TEMP

COMPUTE NO OF PASSES NEEDED
TO INVERT
THE COMMAND LIST

H01 20:42 SEP 08, '75

670 01 00101 32760000 X
 671 01 00102 40700015 N
 672 01 00103 22500000 A
 673 01 00104 CH60
 674 01 00104 92CE0005 A
 675 01 00105 92EE0002 A
 676 01 00106 20CFFFFFF A
 677 01 00107 20EFFFFFF A
 678 01 00108 30C0000D A
 679 01 00109 30E0000F A
 680 01 0010A 95EE0005 A
 681 01 0010B 95CE0002 A
 682 01 0010C 202FFFFFFE A
 683 01 0010D 20500002 A
 684 01 0010E 64400104
 685
 686 01 0010F
 687 01 0010F E8000009 A
 688 00000001
 689 01 00110 0000 A
 01 00110 2 0001 A
 01 00111 0002 A
 01 00111 2 0004 A
 690

CH60

*
BISR2

I0QINIT

LW,7 I0Q8,3
 AND,7 M21
 LI,5 0
 EGU *
 LD,12 *5,7
 LD,14 *2,7
 AI,12 =1
 AI,14 =1
 AW,12 13
 AW,14 15
 STD,14 *5,7
 STD,12 *2,7
 AI,2 =2
 AI,5 2
 BDR,4 CH60
 RES 0
 B *9
 D0 DUALFLAG
 DATA,2 0,1,2,4
 FIN

GET DA OF COMMAND LIST

LOW INDEX

INVERT EACH COMMAND PAIR

AND INVERT THEIR POSITIONS

INITIAL I0Q KEYS FOR DUAL-ACCESS

691
 692
 693
 694
 695
 696
 697
 698
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 700
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 703
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 720
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 F

PAGE

NAME: CHKDA

PURPOSE: TO CHECK DISC ADDRESS IN R8 FOR VALIDITY

DESCRIPTION: CALL W/ADDRS INR8 AND CHKDA WILL INSURE THAT IT IS LEGAL.

RETURNS W/CC = 0 IF D/A OK

RETURNS W/CC = 15 IF D/A NOT OK

CHKDA

FGU \$
 PUSH 3,4

SAVE 4,5,6

CHKDAQ

LI,6 CHKDA1

SET INTERNAL RETURN

PVCHKDA

FGU \$
 LH,R4 R8
 FGU \$

GET DCT INDEX + POSSIBLE SECTOR ADR

AND,R4 DCT#MASK
 BEZ CHKDA2
 CI,4 DCTSIZ
 BG CHKDA2
 LB,R4 DCT22,R4
 BEZ CHKDA2
 LSECTA,R5 R8

SCRUB BF EXTRA BITS
 ERROR
 CHECK FOR LEGAL
 NO
 GET SUBTYPE
 NOT A DISC
 REL SECTOR IN 5

CW,5 DISCLIMS,4
 BGE CHKDA2
 LCI 15
 B 0,6
 LCI 0

COMPARE
 BAD
 SET CC
 RETURN
 ERROR

CHKDA2

H01 20:42 SEP 08, 175

722 01 00127 680C0000 A
 723 01 00128 7400000B A
 724 01 00129 02200030 A
 01 0012A 0A400000 N
 725 01 0012B 7030000B A
 726 01 0012C E800000B A
 727
 728

CHKDA1

B 0,6
 STCF 11
 PULL 3,4

 LCF 11
 B *11

RETURN
 SAVE CC
 RESTORE REGS

 RESTORE CC
 RETURN

*
*

729
730
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01 0012D 32000009 A
01 0012E 68000130

01 0012F 22000000 A
01 00130 3210000A A
01 00131 2221FFFF A
01 00132 48200008 A
01 00133 32340007 A
01 00134 48300000 X
01 00135 6830004F

01 00136 22F00003 A
01 00137 48F40000 A
01 00138 21F00000 N
01 00139 68300143
01 0013A 32C40001 A
01 0013B 22D0BF00 A
01 0013C 45C0054E
01 0013D 68300000 X
01 0013E 21C08000 A

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*

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F

QUEUE1
LW,R0 R9
B QD4

QUEUE
QD4
LI,R0 0
LW,R1 R10
LI,R2 X'1FFFF'
AND,R2 R8
LW,R3 FCN,R2
AND,R3 YFF
BEZ BISR4

*
LI,R15 3
AND,R15 ASN,R2
CI,R15 CFUBIT
BE QD30
LW,R12 DSI,R2
LI,R13 X'1BF00'
CS,R12 L(X'9000')
BE C8C18
CI,R12 X'18000'

PAGE

NAME: QUEUE
PURPOSE: ENTRY FOR I/O WITH A DCB AND END ACTION
DESCRIPTION: CALL HERE WITH REGISTERS AS DESCRIBED IN THE COO DATA BASE TECH MANUAL.
MOVE END ACTION ADDRESS

NAME: QUEUE1
PURPOSE: ENTRY FOR I/O WITH A DCB AND NO END ACTION
DESCRIPTION: CALL HERE WITH REGISTERS AS DESCRIBED IN THE COO DATA BASE TECH MANUAL.
MOVE END ACTION INFO
MASK FOR DCB ADDRESS
EXTRACT FROM ARGUMENT
CHECK FOR FUNCTION COUNT
NON-ZERO
NO, GET OUT

EXTRACT ASN
FROM DCB,
CHECK FOR FILE ASSIGNMENT.
---> YES,
NOT FILE,
CHECK DEVICE TYPE.
IS IT C8C...
---> YES,
NOT FILE! NOT C8C. TEST 8PLABEL BIT.

```

766 01 0013F 4BC00008 N
767 01 00140 69400145
768 01 00141 0F000000 X
      01 00142 00320100 A
769 01 00143 6BC40008 A
770 01 00144 4BC00000 X
771
772 01 00145 21200000 N
773 01 00146 6910014A
774 01 00147 25200177 A
775 01 00148 72240000 N
776 01 00149 25200109 A
777      01 0014A
778 01 0014A 32D00002 A
779 01 0014B 32E00000 X
780 01 0014C 6A200002
781 01 0014D 68000044
782 01 0014E 68000130
783
784
785
786
787 01 0014F 3220000D A
788 01 00150 4B800000 X
789 01 00151 49200008 A
790
791
792
793
794 01 00152 4BE00011 N
795 01 00153 68300155
796 01 00154 F310000E A
797 01 00155 35E60000 X
798 01 00156 32D40007 A
799 01 00157 4BD00016 N
800 01 00158 25D00002 A
801 01 00159 227000C0 A
    
```

QD30

QD31

QD33

*
*
*
*
*
*
*
*
*
*

```

AND,R12 XFF
BANZ QD31
SUA X'32'

INT,R12 CDA,R2
AND,R12 DCT#MASK

CI,R2 J0VVPA
BL QD33
SLD,R2 =9
LOAD,R2 JXICMAP,R2
SLD,R2 +9
EQU *
LW,R13 R2
LW,R14 JIRWECB
BAL,R2 FRONTEND
B 1Q3
B QD4

UNMAP

LW,R2 R13
AND,R8 YFF
BR,R2 R8

AND,R14 M17
BEZ *+2
MTB,+1 *R14
STW,R14 I0Q16,R3
LW,R13 QBUF,R2
AND,R13 M22
SLS,R13 2
LI,R7 X'CO'
    
```

```

(EXTRACT DCT INDEX)
---> NOT @PLABEL.
-----> @PLABEL IMPOSSIBLE W/ OPEN DCB.

FILE DCB.
R12= DCT INDEX.

IS DCB IN THE MONITOR...
---> YES. ALREADY REAL ADDRESS.
TRANSLATE
VIRTUAL TO PHYSICAL
DCB ADDRESS.

SAVE TRANSLATED DCB ADDRESS
GET ECB ADDRESS (IF ANY) INTO R14.
SCHEDULER INTERFACE AND GETQ
POINTER TO QUEUE BACKEND OF FRONTEND
RECYCLE IF IOMF UNBLOCK
RETURNS UNMAPPED WITH R4=PRI0
AND R6=USER

RESTORE PHYSICAL DCB ADDRESS
EXTRACT OLD FUNCTION CODE
MERGE WITH PHYS DCB ADDRESS

BUILD Q ENTRY

GET ECB ADDRESS ONLY.
---> NO ECB.
ECB. BUMP I/O COUNT IN 4-WD BLK.
PUT ECB ADDRESS INTO Q ENTRY.
GET WORD ADDRESS OF BUFFER
SCRUB OFF FCN
CONVERT TO BYTE ADDRESS
MASK FOR HBTD
    
```

HC1 20:42 SEP 08, 175

802 01 0015A 4B740000 A
803 01 0015B 6830015E
804 01 0015C 25700061 N
805 01 0015D 49D00007 A
806 01 0015E 32E40006 A
807 01 0015F 25E0020F A
808 01 00160 4BE0000F N
809 01 00161 69300163
810 01 00162 22E08000 A
811
812 01 00163 22700008 A
813 01 00164 F2AE0002 A
814 01 00165 75A60000 X
815 01 00166 75A60000 X
816
817
818
819 01 00167 72500002 A
820 01 00168 72760000 X
821 01 00169 20FFFFFF A
822 01 0016A 6830016E
823 01 0016B 32F40000 A
824 01 0016C 25F00206 N
825 01 0016D 4BF00006 N
826
827
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836
837
838

QDS1A

AND,R7 0,R2 EXTRACT FROM DCB
BEZ QD51A NONE, SHORT CUT
SLS,R7 BTDBIT=31 ALIGN
BR,R13 R7 MERGE
LW,R14 WABLK,R2 GET RECBRD SIZE
SCS,R14 15 RIGHT ALIGN
AND,R14 M15 SCRUB
BNE \$+2
LI,R14 X'8000' 0 => 32K BYTES
*
LI,R7 BANRA INDEX TO NRA (NRT)
LB,R10 *R2,R7 GET NRT FROM DCB
STB,R10 I0Q10,R3 NUMBER OF TRIES
STB,R10 I0Q11,R3 TRY COUNT
*
*
*
LB,R5 R2 CONVERT FUNCTION CODE
GET FUNCTION CODE
LB,R7 I0Q7,R3 GET DCT
AI,R15 =1 CHECK FOR FILE ASSIGNMENT
BEZ 0LDTNEWFC YES, NO MBG BIT
LW,R15 0,R2 EXTRACT MBG BIT
SCS,R15 MBGBIT+6 FROM DCB
AND,R15 X20 SCRUB AND PASS TO Q13
*
* AT THIS POINT, MOST DCB INFORMATION HAS BEEN MOVED
* INTO REGISTERS IN ESSENTIALLY THE SAME FORMAT AS A
* NEWQ CALL.
*
* R0 = END ACTION ADDRESS
* R1 = END ACTION INFORMATION
* R13 = BUFFER (BYTE ADDRESS)
* R14 = BYTE COUNT
* R8 = DISC ADDRESS
* R15 = MBG BIT (IF APPROPRIATE)
* R12 = FUNCTION CODE FOR HANDLER
* R2 = OLD FUNCTION CODE, DCB PHYSICAL ADDRESS (8,24)

839			*			
840			*			
841	01	0016E		BLDTNEWFC RES	0	5=BLD,7=DCT,6NG
842			*			9=RA,5=NEW FC
843	01	0016E		LB,R7	DCT4,R7	GET TYPE
844	01	0016F		CI,R7	X'10'	TEST FOR RESOURCE TYPE
845	01	00170		BLE	QD49	NO
846	01	00171		LB,R6	TB:FLGS,R7	GET TYPE FLAGS FOR ADDED DEVICE
847	01	00172		SLD,R6	=6	6= BITS 0,1 OF TB:FLGS
848	01	00173		SLS,R7	3	LEFT ALIGN REV BIT
849	01	00174		SLD,R6	1	MERGE TO FORM INDEX ON GENERIC TYPES
850	01	00175		LB,R7	GENERIC,R6	TRANSLATE
851		01 00176	QD49	EGU	\$	
852	01	00176		LB,R6	TYPCBR,R7	TABLE OFFSET
853	01	00177		CI,R6	BA(MTCBR)-BA(TYPCBR)	CHECK FOR TAPE
854	01	00178		BE	QD50	YES
855	01	00179		AND,R5	X7	USE 3 BITS FOR OTHERS
856	01	0017A		B	QD60	
857	01	0017B	QD50	CI,R5	8	IS IT POSITION OF
858	01	0017C		BAZ	QD52	NO
859	01	0017D		AND,R5	XF	YES, MASK
860	01	0017E		AI,R6	22	INDEX TO POS OPS
861	01	0017F		B	QD60	
862	01	00180	QD52	CI,R7	8	IS IT 9T
863	01	00181		BNE	QD56	NO
864	01	00182		AND,R5	X44	YES, MASK DIRECTION, R/W BITS
865	01	00183		AI,R5	X'22'	ADD PACKED, BINARY BITS
866	01	00184	QD56	LI,R7	X'60'	
867	01	00185		AND,R7	R5	MASK DIREC, PACK BITS
868	01	00186		SLS,R7	=2	
869	01	00187		AND,R5	X7	READ/WRITE BITS
870	01	00188		BR,R5	R7	COMBINE
871			*			
872	01	00189	QD60	AW,R6	R5	SET INDEX IN CBR TABLE
873	01	0018A		LB,R12	TYPCBR,R6	CONVERT TO HANDLER FUNCTION CODE
874	01	0018B		LW,R8	CDA,R2	GET SEEK ADDRESS
875	01	0018C		B	Q13	MERGE WITH NEWQ PATH

876
 877
 878
 879 01 0018D 01 A
 01 0018D 1 01 A
 01 0018D 2 06 A
 01 0018D 3 06 A
 01 0018E 09 A
 01 0018E 1 08 A
 01 0018E 2 09 A
 01 0018E 3 09 A

*
 * TABLE TO CONVERT TB:FLGS CONTENT TO GENERIC TYPE INDEX
 *
 * GENERIC DATA,1 1,1,6,6,9,8,11,11

880
 881
 882
 883
 884

*
 *
 * FUNCTION CODE CONVERSION TABLES
 *

885 00000000
 886
 887
 888
 889

:CØR CNAME
 PRØC
 LF GEN,8 BA(AF(1))-BA(TYPECØR)
 PEND

890 01 0018F
 891 01 0018F 10 A
 892 01 0018F 1 10 A
 893 01 0018F 2 18 A
 894 01 0018F 3 18 A
 895 01 00190 20 A
 896 01 00190 1 28 A
 897 01 00190 2 20 A
 898 01 00190 3 30 A
 899 01 00191 38 A
 900 01 00191 1 38 A
 901 01 00191 2 38 A
 902 01 00191 3 10 A
 903 01 00192 60 A
 904 01 00192 1 10 A
 905 01 00192 2 10 A

*
 * TYPECØR EGU \$
 :CØR TYCØR NULL
 :CØR TYCØR TY
 :CØR PTCØR PR
 :CØR PTCØR PP
 :CØR CRCØR CR
 :CØR CPCØR CP
 :CØR CRCØR LP
 :CØR DCCØR DC
 :CØR MTCØR 9T
 :CØR MTCØR 7T
 :CØR MTCØR MT
 :CØR TYCØR DP
 :CØR MØCØR MØC TYPE DEVICES
 :CØR TYCØR
 :CØR TYCØR

H01 20:42 SEP 08, '75

906	01	00192	3	10	A		ICOR	TYCOR	
907						*			
908							BBUND	4	
909						*			
910	01	00193		00	A	TYCOR	DATA,1	0,0,0,0,1,1,1,1	TY
	01	00193	1	00	A				
	01	00193	2	00	A				
	01	00193	3	00	A				
	01	00194		01	A				
	01	00194	1	01	A				
	01	00194	2	01	A				
	01	00194	3	01	A				
911						*			
912	01	00195		08	A	PTCOR	DATA,1	8,4,0,4,1,5,3,5	PR,PP
	01	00195	1	04	A				
	01	00195	2	00	A				
	01	00195	3	04	A				
	01	00196		01	A				
	01	00196	1	05	A				
	01	00196	2	03	A				
	01	00196	3	05	A				
913						*			
914	01	00197		02	A	CRCOR	DATA,1	2,2,0,0,1,1,3,3	CR,LP
	01	00197	1	02	A				
	01	00197	2	00	A				
	01	00197	3	00	A				
	01	00198		01	A				
	01	00198	1	01	A				
	01	00198	2	03	A				
	01	00198	3	03	A				
915						*			
916	01	00199		00	A	CPCOR	DATA,1	0,0,1,1,0,0,1,1	CP
	01	00199	1	00	A				
	01	00199	2	01	A				
	01	00199	3	01	A				
	01	0019A		00	A				
	01	0019A	1	00	A				

H01 20:42 SEP 08, 1975

58

	01	0019A	2	01	A				
	01	0019A	3	01	A				
917						*			
918	01	0019B		00	A	DCCBR	DATA,1	0,0,0,0,4,4,4,4	DC
	01	0019B	1	00	A				
	01	0019B	2	00	A				
	01	0019B	3	00	A				
	01	0019C		04	A				
	01	0019C	1	04	A				
	01	0019C	2	04	A				
	01	0019C	3	04	A				
919						*			
920	01	0019D		00	A	MTCBR	DATA,1	13,13,10,10,14,14,11,11	7 TRACK
	01	0019D	1	00	A				
	01	0019D	2	0A	A				
	01	0019D	3	0A	A				
	01	0019E		0E	A				
	01	0019E	1	0E	A				
	01	0019E	2	0B	A				
	01	0019E	3	0B	A				
921	01	0019F		00	A		DATA,1	13,13,00,00,14,14,01,01	
	01	0019F	1	00	A				
	01	0019F	2	00	A				
	01	0019F	3	00	A				
	01	001A0		0E	A				
	01	001A0	1	0E	A				
	01	001A0	2	01	A				
	01	001A0	3	01	A				
922	01	001A1		0F	A		DATA,1	15,15,12,12,14,14,11,11	
	01	001A1	1	0F	A				
	01	001A1	2	0C	A				
	01	001A1	3	0C	A				
	01	001A2		0E	A				
	01	001A2	1	0E	A				
	01	001A2	2	0B	A				
	01	001A2	3	0B	A				
923	01	001A3		0F	A		DATA,1	15,15,02,02,14,14,01,01	

H01 20142 SEP 08, '75

01	001A3	1	0F	A
01	001A3	2	02	A
01	001A3	3	02	A
01	001A4		0E	A
01	001A4	1	0E	A
01	001A4	2	01	A
01	001A4	3	01	A

924
925

01	001A5		05	A
01	001A5	1	04	A
01	001A5	2	07	A
01	001A5	3	06	A
01	001A6		08	A
01	001A6	1	03	A
01	001A6	2	0U	A
01	001A6	3	0U	A

*

DATA,1 5,4,7,6,8,3,0,0 MT POSITION

926
927

01	001A7		0U	A
01	001A7	1	8U	A
01	001A7	2	0U	A
01	001A7	3	8U	A
01	001A8		0U	A
01	001A8	1	8U	A
01	001A8	2	0U	A
01	001A8	3	8U	A

*

MBCBR DATA,1 0,X'80',0,X'80',0,X'80',0,X'80' M0

928
929
930

01 00054

*

QUEUE LOCAL QUEUE
EGU NEWQ

931
932

PAGE
SPACE

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9/1/71 J PODOLSKY .. DUAL-ACCESS INPUT/OUTPUT SCHEDULER.
DRIVEI0 .. TO DRIVE I/O WITH CURRENT JOB PRIORITY.
DRIVEI01 .. TO DRIVE I/O WITH PRIORITY IN R0.
FORCEI0 .. TO DRIVE I/O WITH PRIORITY X'FF' (LOWEST PRI).
CALLING SEQUENCE ..

... .. PRIORITY IN R0 (FOR DRIVEI01)
... .. DCT INDEX IN R1
BAL,R2 <NAME> CALL DRIVEI0 OR FORCEI0

SPACE

945	01	001A9	72000000 X	DRIVEI0	LB,R0	CJOB	NORMAL ENTRY - SET CURRENT JOB PRI
946	01	001AA	210000C0 A	DRIVEI01	CI,R0	RTPRI0	CHECK FOR BACKGROUND CALL
947	01	001AB	691001AD		BL	\$+2	IF S0, TREAT THIS CALL AS I/O FORCE
948	01	001AC	220000FF A	FORCEI0	LI,R0	X'FF'	SINCE BKGD PRI IS BELOW CONTROL TASK
949	01	001AD	09200000 N		PUSH	2	
950	01	001AE	72220000 X		LB,2	DCT2,1	
951	01	001AF	60000037 A	DSERV	DISABLF		DEVICE SERVICE CHECK, INHIBIT
952	01	001B0	72820000 X		LB,R8	DCT5,R1	GET DEVICE STATUS SWITCHES(2)
953	01	001B1	21800088 A		CI,R8	X'88'	IS DEVICE BUSY OR KEY-IN PENDING.
954	01	001B2	694001F4		BANZ	CLOCKI0	YES, SERVICE CLOCK & CHECK TIMEOUT
955	01	001B3	21800040 A		CI,R8	X'40'	NO, IS CLEANUP OPERATION PENDING.
956	01	001B4	6940034A		BANZ	CLEANUP	YES, DO IT, PRIORITY PERMITTING

957				PAGE		
958			*F*			
959			*F*	NAME:	IOSCHED	
960			*F*			
961			*F*	PURPOSE:	TO SELECT CHANNEL/DEVICE FOR I/O ACTIVITY	
962			*F*			
963			*F*	DESCRIPTION:	CALL HERE WITH:	
964			*F*			
965			*F*	R1	DCT INDEX	
966			*F*	R2	CHANNEL INDEX	
967			*F*			
968			*F*			
969	01	001B5	60000027 A	IOSCHED	ENABLE	MAIN I/O SCHEDULING ALGORITHM
970	01	001B6	60000037 A	IOSCHED1	DISABLE	RELEASE ANY PENDING INTERRUPTS
971	01	001B7	72340000 X		LB,R3	GET HEAD OF CHANNEL QUEUE
972	01	001B8	683001CE		BEZ	ARE THERE ANY PENDING REQUESTS.
973	01	001B9	72540000 X		LB,R5	YES, GET SUBCHANNEL STATUS BYTE
974	01	001BA	2550007C A		SLS,R5	FORM INDEX FROM BUSY/HOLD FLAGS
975	01	001BB	688A01E4	IOSCHED2	INT,R8	GET SCHEDULING KEY & COMPARE MASK
976	01	001BC	698001D1		BCS,R8	CHECK CHANNEL HOLD IF SPECIFIED
977	01	001BD	71860000 X	IOSCHED3	CB,R8	ELSE SCAN QUEUE FOR FREE REQUEST
978	01	001BE	694001CC		BANZ	THAT IS STARTABLE ON AVAILABLE S.C.
979			0000000U		D0	
980					DEFER	
981				*S*	CB,R0	COMPARE REQUEST/SCHEDULER PRIORITIES
982				*S*	BL	SCHEDULER HIGHER, MUST DEFER SERVICE
983	01	001BF	32A00003 A	REQSTRT	FIN	
984	01	001C0	72160000 X		LW,R10	PRIORITY OK, SAVE CURRENT I/O INDEX
985	01	001C1	72420000 X		LB,R1	GET INDEX OF DEVICE FOR THIS REQUEST
986	01	001C2	2540027B A		LB,R4	CHECK DEVICE STATE FOR AVAILABILITY
987	01	001C3	3140001F N		DCT5,R1	CHECK DEVICE STATE FOR AVAILABILITY
988	01	001C4	670801DC		SCS,R4	ISOLATE BUSY/CLEANUP/INTEROP FLAGS
989			00000001		=5	AND CHECK FOR DEVICE KEY IN PENDING
990	01	001C5	72460000 X		CW,R4	GO IF CLEANUP, NO GO IF BUSY/KEY IN
991	01	001C6	48400003 N		Y4	
992	01	001C7	515801E1		EXU	REQSERV,R4
993	01	001C8	6840023A		D0	DUALFLAG
					LB,R4	I/O3,R3
					AND,R4	X7
					CH,R5	ACCHECK,R4
					BAZ	STARTIO

H01 20:42 SEP 08, '75

994 01 001C9 691001CE
 995
 996 *S*
 997 *S*
 998
 999 01 001CA 6530000A A
 1000 01 001CB 698001D5
 1001 01 001CC 72360000 X
 1002 01 001CD 693001BD
 1003 01 001CE 60000027 A
 1004 01 001CF 08200000 N
 1005 01 001D0 68040000 A

BL SCHEDXIT
 ELSE
 LI,R4 0
 B STARTI0
 FIN
 REGNSTRY INT,R3 R10
 BCS,8 CHANBLK
 NEXTQUE LB,R3 I002,R3
 BNEZ I0SCHD3
 SCHEDXIT ENABLE
 PULL 2
 B 0,2

NO, ARE BOTH SUBCHANNELS REQUIRED.
 SINGLE-ACCESS ONLY, FORCE KEY TO 0
 GO DIRECTLY TO STARTI0
 NO, RESTORE CURRENT I00 INDEX
 IF SUBCHANNEL HELD, BLOCK IT OUT.
 OTHERWISE, CONTINUE QUEUE SCAN
 ARE THERE ANY MORE REQUESTS.
 NO, REMOVE INTERRUPT INHIBITS

LINE	UNIT	ADDRESS	DATA	STATUS	OPERATION	PARAMS	FUNCTION	DESCRIPTION
1006					PAGE			
1007					SPACE			
1008	01	001D1	208001D9	.	SCHEDHLD	AI,R8	SCCHECK	SUBCHANNEL HELD OR BOTH BUSY, CHECK
1009	01	001D2	E7000008	A		EXU	*R8	IF BOTH BUSY (FCN=0), EXIT SCHEDULER
1010	01	001D3	49300020	N		BR,R3	Y8	HELD = REQUEST INDEX IN R3 = FLAG
1011	01	001D4	680001BF			B	REQSTRT	ATTEMPT SERVICE OF HOLDING REQUEST
1012			00000001			D0	DUALFLAG	
1013	01	001D5	72460000	X	CHANBLK	LB,R4	I0G3,R3	HELD SUBCHANNEL BLOCKED, EXTRACT KEY
1014	01	001D6	40400002	N		AND,R4	X3	..
1015	01	001D7	505801E1			AM,R5	ACCHECK,R4	SET REQUIRED SUBCHANNELS UNAVAILABLE
1016	01	001D8	680001BB			B	I0SCHED2	RE-SCHEDULE WITH NEW CHANNEL STATUS
1017						ELSE		
1018					*S* CHANBLK	EGU	SCHEDXIT	SINGLE-ACCESS CHANNEL BLOCKED
1019						FIN		
1020						SPACE		
1021	01	001D9	680001CE		SCCHECK	B	SCHEDXIT	FUNCTION 0 .. BOTH SUBCHANNELS BUSY
1022	01	001DA	72340000	X		LB,R3	CIT5,R2	FUNCTION 1 .. SUBCHANNEL 1 HELD
1023			00000001			D0	DUALFLAG	
1024	01	001DB	72340000	X		LB,R3	CIT6,R2	FUNCTION 2 .. SUBCHANNEL 2 HELD
1025						FIN		
1026						SPACE		
1027	01	001DC	694001CA		REQSERV	BANZ	REQNSTRT	0 .. NO START IF KEY-IN PENDING
1028	01	001DD	72320000	X		LB,R3	DCT6,R1	1 .. INTER-OP, GET WAITING REQUEST
1029	01	001DE	6800034A			B	CLEANUP1	2 .. CLEANUP PENDING, PROCESS
1030	01	001DF	00000000	A	INVAL	DATA	0	3 .. NO SUCH ANIMAL .. S.C. 40
1031	01	001E0	680001CA			B	REQNSTRT	4 .. DEVICE BUSY, NO GO
1032						SPACE		
1033			00000001			D0	DUALFLAG	
1034	01	001E1	000C	A	ACCHECK	GEN,16	X'0'	000 .. BOTH SUBCHANNELS REQUIRED
1035	01	001E1	0008	A		GEN,16	X'8'	001 .. SUBCHANNEL 1 REQUIRED
1036	01	001E2	0004	A		GEN,16	X'4'	010 .. SUBCHANNEL 2 REQUIRED
1037	01	001E2	0000	A		GEN,16	X'0'	011 .. UNDEFINED ACCESS KEY
1038	01	001E3	0000	A		GEN,16	X'0'	100 .. UNASSIGNED DUAL-ACCESS DEVICE

H01 20:42 SEP 08, 1975
1039
1040

FIN
BOUND 4

PAGE
SPACE

SELECTAB .. CENTRAL SCHEDULING DECISION TABLE. AN ENTRY IN THIS TABLE IS SELECTED ACCORDING TO THE VALUE OF CIT3 BITS 0 THRU 3 (SUBCHANNEL 'BUSY' & 'HOLD' FLAGS). TABLE FORMAT:

BIT 0 AT LEAST ONE SUBCHANNEL IDLE=HELD OR BOTH SUBCHANNELS BUSY
 BITS 4=15 IF BIT 0 IS 1, THIS IS A SPECIAL FUNCTION CODE, WITH 0 = BOTH SC'S BUSY, 1 = SC1 HELD, & 2 = SC2 HELD. IF BIT 0 IS 0, THIS IS A COMPARE MASK FOR THE I0Q ACCESS KEY. BIT 8 WILL ALWAYS BE 1, WITH BIT 14 1 IF SC2 BUSY & BIT 15 1 IF SC1 BUSY.
 BITS 16=19 USED BY 'ASSIGNSC' TO SELECT SUBCHANNEL
 BITS 24=31 CIT CHECK MASK (INVERSE OF CIT3(0=3))

SPACE

SELECT COM,1,3,12,3,1,12 AF(1),0,AF(2),AF(3),AF(4),(\$=SELECTAB|15)**4
 SPACE

1060	01	001E4	0080B0F0	A	SELECTAB	SELECT	0,X'801',=3,1	0	..	I=F/I=F	..	UNRESTRICTED CHANNEL
1061	01	001E5	8002A0E0	A		SELECT	1,2',=3,0	1	..	I=F/I=H	..	SCHEDULE HELD SC2
1062	01	001E6	8001C0D0	A		SELECT	1,1',=2,0	2	..	I=H/I=F	..	SCHEDULE HELD SC1
1063	01	001E7	800100C0	A		SELECT	1,1,0,0	3	..	I=H/I=H	..	BOTH HELD, SC1 FIRST
1064	01	001E8	0082A0B0	A		SELECT	0,X'821',=3,0	4	..	I=F/B=F	..	SCHEDULE SC1 ONLY
1065	01	001E9	0082A0A0	A		SELECT	0,X'821',=3,0	5	..	I=F/B=H	..	LIKewise = SC1 ONLY
1066	01	001EA	80010090	A		SELECT	1,1,0,0	6	..	I=H/B=F	..	SCHEDULE HELD SC1
1067	01	001EB	80010080	A		SELECT	1,1,0,0	7	..	I=H/B=H	..	SAME AS ABOVE = SC1
1068	01	001EC	0081C070	A		SELECT	0,X'811',=2,0	8	..	B=F/I=F	..	SCHEDULE IF DUAL=ACC
1069	01	001ED	80020060	A		SELECT	1,2,0,0	9	..	B=F/I=H	..	SCHEDULE HELD SC2
1070	01	001EE	0081C050	A		SELECT	0,X'811',=2,0	A	..	B=H/I=F	..	SC2 AVAIL IF DUAL=AC
1071	01	001EF	80020040	A		SELECT	1,2,0,0	B	..	B=H/I=H	..	SUBCHANNEL 2 HELD
1072	01	001F0	80000030	A		SELECT	1,0,0,0	C	..	B=F/B=F	..	BOTH BUSY, NOTHING
1073	01	001F1	80000020	A		SELECT	1,0,0,0	D	..	B=F/B=H	..	CAN BE SCHEDULED.
1074	01	001F2	80000010	A		SELECT	1,0,0,0	E	..	B=H/B=F	..	NOTE: I=IDLE, B=BUSY

HC1 20:42 SEP 08, 175
1075 01 001F3 80000000 A

SELECT 1,0,0,0

F .. B=H/B=H .. AND F=FREE, H=HELD ⁶⁶

PAGE
SPACE

1076
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CLOCKI0 .. PERFORM I/O TIMEOUT CHECK FOR SCHEDULER. IF TIME EXCEEDED AND TIME-OUT INCREMENT IS NON-ZERO, FOLLOWING WILL HAPPEN, DEPENDING ON DCT STATUS INFORMATION:

1. DEVICE BUSY-MANUAL. IF STILL IN MANUAL STATE, OPERATOR WILL BE NOTIFIED. IF NOW IN AUTOMATIC STATE, TIMEOUT WILL BE SET FOR I/O NOW IN PROGRESS.
2. DEVICE BUSY, NOT MANUAL. I/O WILL BE HALTED AND CLEANUP REQUEST SET.
3. DEVICE KEY-IN PENDING. OPERATOR WILL BE NOTIFIED WITH 'PLEASE RESPOND' MESSAGE.

R1 HAS DCT INDEX UPON ENTRY TO CLOCKI0.
SPACE

1092 01 001F4 32A20000 X
1093 01 001F5 31A00000 X
1094 01 001F6 681001B5
1095 01 001F7 72920000 X
1096 01 001F8 683001B5
1097 01 001F9 52A20000 X
1098 01 001FA 21800002 A
1099 01 001FB 68400204
1100 01 001FC 22D004E0
1101 01 001FD C0B0000A A
1102 01 001FE 48B0001D N
1103 01 001FF 68B004D1
1104 01 00200 30900000 X
1105 01 00201 35920000 X
1106 01 00202 73E20000 X
1107 01 00203 680001B5

CLOCKI0

LW,R10 DCT11,R1
CW,R10 I0CLOCK
BGE I0SCHED
LB,R9 DCT18,R1
BEZ I0SCHED
LH,R10 DCT1,R1
CI,R8 2
BAZ CLOCKOUT
LI,R13 MSG1
TI0,R11 *R10
AND,R11 Y1
BCR,11 TYPMSG
AW,R9 I0CLOCK
STW,R9 DCT11,R1
MTB,-2 DCT5,R1
B I0SCHED

GET EXPECTED COMPLETION TIME
HAVE WE EXCEEDED TIME LIMIT.
NO, RETURN TO SERVICE CHANNEL
YES, IS TIME-OUT INCREMENT ZERO.
YES, NO LIMIT, IGNORE TIMEOUT
NO, PROBABLY WILL NEED I/O ADDRESS
WAS DEVICE MANUAL LAST TIME.
NO, TIMED OUT I/O OR EXPECTED KEY-IN
YES, SET UP 'MANUAL' MESSAGE
STATUS OF I/O
EXTRACT MANUAL/AUTOMATIC FLAG
TYPE MSG IF STATUS AVAIL & MANUAL
DEVICE NOW AUTO OR INDETERMINATE
SET TIMEOUT FOR I/O NOW IN PROGRESS
RESET DEVICE-MANUAL INDICATOR
RETURN TO SERVICE CHANNEL QUEUE

PAGE
SPACE

INTSIM .. ROUTINE TO SET DEVICE IN CLEANUP-PENDING STATE
FOLLOWING AN I/O HALT. CALLING SEQUENCE ..

BAL,R5 INTSIM DCT INDEX PASSED IN R1
... .. USES REGISTERS 6 THRU 9

THE FOLLOWING ACTIONS WILL BE TAKEN:

- 1. DEVICE STATE SWITCHED FROM 'BUSY' TO 'CLEANUP-PENDING'
- 2. IF DATA TRANSFER WAS SET, 'SUBCHANNEL-BUSY' IS RESET.

NOTE: NO INDICATORS FOR RECOVERY .. SUCH AS 'TIMED-OUT' .. ARE
SET BY INTSIM. THERE MAY BE FUTURE ENHANCEMENTS TO ALLOW
FOR SOME KIND OF RECOVERY ATTEMPT AFTER I/O HALT, BUT CUR-
RENTLY THE ONLY MODULES USING INTSIM, OUTSIDE OF 'SERDEV',
ARE THE PFSR AND RTR00T ROUTINES.
SPACE

1144	01	0020B	72820000	X	INTSIM	LB,R8	DCT5,R1	GET DCT SWITCHES(2)
1145	01	0020C	48800007	N		AND,R8	X7F	RESET DEVICE BUSY FLAG
1146	01	0020D	49800007	N		BR,R8	X40	SET CLEANUP PENDING FLAG
1147	01	0020E	21800010	A		CI,R8	X'10'	WAS THERE DATA TRANSFER.
1148	01	0020F	68400217			BAZ	INTSEXIT	NO, SKIP CHANNEL STATUS RESET
1149	01	00210	72620000	X		LB,R6	DCT2,R1	YES, GET CIT INDEX (DON'T USE R2)
1150	01	00211	729C0000	X		LB,R9	CIT3,R6	GET CHANNEL STATUS FLAGS
1151			00000001			D0	DUALFLAG	
1152	01	00212	72720000	X		LB,R7	DCT6,R1	GET INDEX OF REQUEST USING DEVICE
1153	01	00213	727E0000	X		LB,R7	I003,R7	EXTRACT 3-BIT IOW ACCESS KEY
1154	01	00214	48700002	N		AND,R7	X3	..
1155	01	00215	489E02B7			EOR,R9	CBFLAGS,R7	RESET SUBCHANNEL BUSY INDICATOR
1156						ELSE		
1157					*S*	EOR,R9	CBFLAGS	SINGLE-ACCESS IMPLEMENTATION
1158						FIN		
1159	01	00216	759C0000	X		STB,R9	CIT3,R6	RESTORE CHANNEL STATUS

H01 20142 SEP 08, '75

1160 01 00217 75820000 X
 1161 01 00218 32500005 A
 1162 01 00219 691A0000 A
 1163 01 0021A 6U000037 A
 1164 01 0021B 72620000 X
 1165 01 0021C 72720000 X
 1166 01 0021D 757C0000 X
 1167 01 0021E 756E0000 X
 1168 01 0021F 22700000 A
 1169 01 00220 75720000 X
 1170 01 00221 75720000 X
 1171 01 00222 680A0000 A

INTSEXIT STB,R8 DCT5,R1
 LW,R5 R5
 BLZ 0,R5
 DISABLEF
 LB,6 DCT14,1
 LB,7 DCT15,1
 STB,7 DCT15,6
 STB,6 DCT14,7
 LI,7 0
 STB,7 DCT14,1
 STB,7 DCT15,1
 B 0,R5

RESTORE DEVICE SWITCHES(2)
 IS THIS A REAL-TIME IBEX CALL
 YES, RETURN

 GET FORWARD LINK
 GET BACK LINK
 AND CROSS LINK THEM

 ZAP
 ANY
 GARBAGE
 RETURN TO CALLING PROGRAM

PAGE
SPACE

1174 * I/O SCHEDULER CONTROL TASK DEFER ROUTINES.
 1175 *
 1176 * DEFER1 .. DEFER TO CONTROL TASK, RETURN TO IOSCHED.
 1177 * DEFER2 .. DEFER TO CONTROL TASK, RETURN TO SCHEDXIT.
 1178 *
 SPACE

1179 00000000

1180	*S*	DEFER1	D0	DEFER	
1181	*S*		LI,R11	IOSCHED	ENTRY FROM CLEANUP, SET RETURN
1182	*S*	DEFER2	B	DEFER3	GO SET CONTROL TASK FUNCTION
1183	*S*	DEFER3	LI,R11	SCHEDXIT	ENTRY FROM I/O SCHEDULER, SET RETURN
1184	*S*		LB,R7	IOQ7,R3	GET DEVICE ASSOCIATED WITH REQUEST
1185	*S*		LB,R8	DCT5,R7	GET DEVICE SWITCH BYTE 2
1186	*S*		CI,R8	4	IS CONTROL TASK ALREADY SET.
1187	*S*		BANZ	*R11	YES, TAKE DEFER EXIT NOW
1188	*S*		MTB,4	DCT5,R7	NO, SIGNAL CONTROL TASK FUNCTION
1189	*S*		LW,R8	R7	SET CONTROL WORD EQUAL TO DCT INDEX
1190	*S*		B	CTRIG1	GO SET CONTROL TASK FUNCTION
			FIN		

H01 20:42 SEP 08, 1975

73

1225	01	00238	60000027 A	ENBSR4	ENABLE	REMOVE INTERRUPT INHIBITS	**ENABLE**
1226	01	00239	E800000B A		B	RETURN TO CALLING PROGRAM	
1227					SPACE		

PAGE
SPACE

1228
1229

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* STARTIO .. INITIATE I/O ACTIVITY FOR A REQUEST.
* AT THIS POINT, THERE IS A STARTABLE REQUEST IN R3. THE DEVICE
* ACTIVITY COUNTER IS SET IN R14 AND INTERRUPTS ARE ENABLED.
* THE I/O HANDLER PRE-PROCESSOR IS CALLED UNLESS USER COMMAND
* LIST IS SPECIFIED. HANDLER RETURN IS TO 'IOSST'.
* REGISTER SETUP FOR I/O HANDLER:
*
* R0 .. DOUBLEWORD ADDRESS OF COMMAND LIST
* R1 .. PRIORITY, CIT CHECK MASK, DCT INDEX (8,4,20)
* R2 .. FLAGS, SERDEV EXIT, CIT INDEX (3,10,19)
* R3 .. REQUEST I/O INDEX
* R4 .. HANDLER FLAGS, SUBCHANNEL ALLOCATION CODE (8,24)
* R10 .. DEVICE OPERATION TABLE ('DOT') FOR 'IOSST'
* R14 .. DEVICE ACTIVITY COUNT FOR RE-ENTRANCY CHECK
* R15 .. NOT USED - SAVED FOR FUTURE EXPANSION
*

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SPACE

1247	01	0023A	52E20000	X	STARTIO	LH,R14	DCT10,R1	START, SET DEVICE ACTIVITY COUNTER
1248	01	0023B	60000027	A		ENABLE		RUN HANDLER & INITIAL START ENABLED
1249	01	0023C	75900002	A		STB,9	2	
1250	01	0023D	79000001	A		STB,R0	R1	SAVE PRIORITY & MASK IN R1(0=11)
1251	01	0023E	32620000	X		LW,R6	DCT8,R1	GET HANDLER PRE-PROCESSOR ADDRESS
1252	01	0023F	69760000	X		INT,R7	I0Q8,R3	IS USER COMMAND LIST SPECIFIED.
1253	01	00240	684C0000	A		BCR,4	0,R6	NO, CALL I/O HANDLER, RETURN 'IOSST'
1254			0000C001			D0	DUALFLAG	
1255	01	00241	68200243			BCR,2	*+2	YES, IS OPERATION RESTRICTED TO SC1.
1256	01	00242	7248028D			LB,R4	SSCFORCE,R4	YES, FORCE TO SC1 IF UNALLOCATED.
1257						FIN		
1258	01	00243	32060000	X		LW,0	I0Q8,3	
1259	01	00244	40000015	N		AND,0	M21	
1260	01	00245	52860000	X		LH,R8	I0Q9,R3	GET I/O TIMEOUT INCREMENT
1261	01	00246	22900000	A		LI,R9	0	SET NULL RE-TRY & FOLLOW-ON CODES
1262	01	00247	6800024C			B	I0STRT	GO TO ENTRY DISABLE POINT

1263

SPACE

1264 01 00248 4#000010 N
 1265 01 00249 72760000 X
 1266 01 0024A EP8E000A A
 1267 01 0024B 4#800008 N

10SST

AND,R0 M16
 LB,R7 I005,R3
 INT,R8 *R10,R7
 AND,R8 XFF

HANDLER RETURN, MASK COMMAND LIST
 GET CURRENT FUNCTION STEP INDEX
 GET 'DBT' INFORMATION FROM HANDLER
 MASK TIMEOUT INCREMENT IN BYTE 2

1268
1269

PAGE
SPACE

1270
1271
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1273
1274
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1276

* IOSTRT .. INITIATE I/O ACTIVITY ON COMPLETED COMMAND LIST.
* REGISTER SETUP IS AS IN STARTIO, WITH R8 CONTAINING THE
* TIMEOUT INCREMENT (IN 5-SECOND INTERVALS) FOR THE OPERATION
* AND R9 CONTAINING THE RE-TRY & FOLLOW-ON OPERATIONS. THE
* OBJECTIVE IS TO GET THE I/O GOING AS SOON AS POSSIBLE; THUS,
* THE FRANTIC CODE AT THE BEGINNING.
SPACE

1277	01	0024C	60000037	A	IOSTRT	DISABLEF		DISABLE POINT, START CRITICAL CODE
1278	01	0024D	51E20000	X		CH,R14	DCT10,R1	HAS START/CLEANUP BEEN SCHEDULED.
1279	01	0024E	69300385			BNE	RESCHED	YES, RE-ENTERED, ABORT I/O START
1280	01	0024F	22E00000	A		LI,R14	0	SET FOR NO MESSAGE
1281	01	00250	72540000	X		LB,R5	CIT3,R2	NO PRE-EMPT, GET CHANNEL STATUS
1282	01	00251	72A60000	X		LB,R10	I0Q3,R3	AND GET REQUEST SWITCH BYTE
1283			00000001			D0	DUALFLAG	
1284	01	00252	670802AC			EXU	CHANTEST,R4	SELECT RELEVANT STATUS IF ASSIGNED
1285						FIN		
1286	01	00253	71500002	A		CB,5	2	
1287	01	00254	69400385			BANZ	RESCHED	YES, ABORT START, BACK TO IOSCHED
1288	01	00255	75820000	X	IOSTRT1	STB,R8	DCT18,R1	NO, SAVE I/O TIMEOUT INTERVAL COUNT
1289	01	00256	55920000	X		STH,R9	DCT17,R1	SAVE RE-TRY & FOLLOW-ON CODES
1290	01	00257	72920000	X		LB,R9	DCT5,R1	GET DEVICE SWITCH BYTE 2
1291	01	00258	45900003	N		AND,R9	X7	RESET STATE FLAGS & DATA XFER BIT
1292			00000001			D0	DUALFLAG	
1293	01	00259	670802B1			EXU	I0AL0AD,R4	GET DEVICE I/O ADDRESS IN R6
1294						ELSE		
1295					*S*	LH,R6	DCT1,R1	SINGLE-ACCESS ONLY, GET I/O ADDRESS
1296						FIN		
1297	01	0025A	33120000	X		MTW,1	DCT25,R1	BUMP THE NUMBER OF SIO'S ATTEMPTED
1298	01	0025B	02200000	A		LCI	0	
1299	01	0025C	40CC0000	A		SIO,R12	0,R6	ATTEMPT I/O START ON THIS ADR.
1300	01	0025D	74020000	X		STCF	DCT19,R1	SAVE SIO CONDITION CODES
1301	01	0025E	69C002CE			BCS,12	I0REJECT	IF IT FAILED, EXIT TO ANALYZE FAULT
1302	01	0025F	72720000	X		LB,R7	DCT15,R1	IS THIS A REAL-TIME IOEX REQUEST

HC1 20142 SEP 08, 175

1303	01	00260	68300263	
1304	01	00261	22700268	
1305	01	00262	68000000	X
1306		01 00263		
1307		00000001		
1308	01	00263	55620000	X
1309				
1310	01	00264	72700000	X
1311	01	00265	75100000	X
1312	01	00266	75720000	X
1313	01	00267	751E0000	X
1314				
1315	01	00268	70200000	A
1316	01	00269	69100275	
1317	01	0026A	72720000	X
1318	01	0026B	48700002	N
1319	01	0026C	64700272	
1320	01	0026D	02200000	A
1321	01	0026E	4EDC0000	A

	BEZ	I0STRT5
	LI,R7	I0STRT6
	B	RTI0STRT
I0STRT5	EGU	*
	D0	DUALFLAG
	STH,R6	DCT1,R1
	FIN	
	LB,7	DCT14
	STB,1	DCT14
	STB,7	DCT14,1
	STB,1	DCT15,7
I0STRT6	,	
	LC	R13
	BCS,1	I0STRT3
	LB,R7	DCT4,R1
	E0R,R7	X3
	BDR,R7	I0STRT2
	LCI	0
	TDV,R13	0,R6

NO, CONTINUE
 YES, SET RETURN FROM RTR00T
 SPECIAL PROCESSING IN RTR00T

ACCEPTED, SET IACTIVE I/O ADDRESS

GET HEAD
 MAKE CURRENT REQUEST NEW HEAD
 LINK TO REST OF CHAIN
 AND BACK LINK

CHECK FOR DEVICE 'MANUAL' OR 'AUTO'
 AUTOMATIC, CONTINUE PROCESSING
 MANUAL, SPECIAL TEST FOR PAPER TAPE
 IS DEVICE PAPER READER/PUNCH (2/3).
 NO, DEVICE IS DEFINITELY MANUAL.

GET TDV STATUS

				PAGE	SPACE		
1322							
1323							
1324	01	0026F	25DE0003 A	SLS,R13	3,R7	CHECK BIT 2 = PUNCH, BIT 3 = READER	
1325	01	00270	21D00000 A	CI,R13	0	IS SPECIFIED SUB=UNIT MANUAL.	
1326	01	00271	68100275	BGE	I0STRT3	NO, OTHER ONE MUST BE = IGNORE IT	
1327	01	00272	20900002 A	I0STRT2	AI,R9	2	MANUAL, SET FLAG IN DCT SWITCHES
1328	01	00273	22E004E0	LI,R14	MSG1	SET UP TO OUTPUT 'MANUAL' MESSAGE	
1329	01	00274	22800003 A	LI,R8	3	AND SET 15-SECOND TIME-OUT INCREMENT	
1330	01	00275	30800000 X	I0STRT3	AW,R8	I0CLOCK	ADD CURRENT I/O CLOCK TO TIMEOUT
1331	01	00276	35820000 X	STW,R8	DCT11,R1	SAVE I/O DEADLINE VALUE IN DCT	
1332	01	00277	20900080 A	AI,R9	XI80'	SET DEVICE TO 'BUSY' MODE	
1333	01	00278	70200004 A	LC	R4	GET I/O HANDLER PRE-PROCESSOR FLAGS	
1334	01	00279	698002A3	BCS,8	RELEASSC	IS SUBCHANNEL RELEASE SPECIFIED.	
1335	01	0027A	6820027D	BCR,2	I0STRT4	NO, IS SUBCHANNEL TO BE HELD.	
1336	01	0027B	495802BA	BR,R5	CHFLAGS,R4	YES, SET APPROPRIATE HOLD FLAGS.	
1337	01	0027C	670802B4	EXU	CHSAVE,R4	SAVE REQUEST INDEX IN CIT5 OR CIT6	
1338	01	0027D	495802B7	I0STRT4	BR,R5	CBFLAGS,R4	SET APPROPRIATE SUBCHANNEL(S) BUSY
1339	01	0027E	20900010 A	AI,R9	XI10'	AND SET DEVICE 'DATA=TRANSFER' BIT	
1340	01	0027F	32660000 X	I0STEX	LW,R6	I0Q6,R3	IS THIS A DCB I/O REQUEST.
1341	01	00280	68300287	BEZ	I0STEX2	NO, SKIP DCB INITIALIZATION	
1342	01	00281	22C00003 A	I0STEX1	LI,R12	3	YES, GET 2-BIT ASSIGNMENT MASK
1343	01	00282	4PCC0000 A	AND,R12	0,R6	EXTRACT ASN FROM DCB WORD ZERO	
1344	01	00283	21C00000 N	CI,R12	CFUBIT	IS I/O BEING DONE FOR FILE.	
1345	01	00284	68300287	BE	I0STEX2	YES, DO NOT RESET 'ITYC' FIELD	
1346	01	00285	32D00000 X	LW,R13	Y00FE	NO, SET 7-BIT 'ITYC' FIELD TO ZERO	
1347	01	00286	47CC0002 A	STS,R12	2,R6	**	
1348	01	00287	75320000 X	I0STEX2	STB,R3	DCT6,R1	LINK THIS REQUEST TO DEVICE
1349	01	00288	75540000 X	STB,R5	CIT3,R2	SAVE CHANNEL STATUS FLAGS	
1350	01	00289	75920000 X	STB,R9	DCT5,R1	AND DEVICE STATUS BYTE 2	
1351	01	0028A	20A00080 A	AI,R10	XI80'	SET REQUEST BUSY IN I0Q3 SWITCHES	
1352	01	0028B	75A60000 X	I0STEX3	STB,R10	I0Q3,R3	RESTORE UPDATE I0Q3 SWITCH BYTE
1353	01	0028C	53120000 X	MTH,1	DCT10,R1	UPDATE DEVICE ACTIVITY COUNTER	
1354	01	0028D	70200004 A	LC	4	GET FLAGS	
1355	01	0028E	6880029B	BCR,8	I0STEX35	IS SUBCHANNEL RELEASE SPECIFIED	
1356	01	0028F	6840029B	BCR,4	I0STEX35	WAS FCN DECREMENTED	
1357	01	00290	2250029B	LI,5	I0STEX35	SET RETURN ADDRESS	

H01 20:42 SEP 08, '75

79

1358	01	00291	02200090	A	PUSH	9,R13	SAVE REGS LIKE REQC0M
	01	00292	0B000000	N			
1359	01	00293	32460000	X	LW,4	I006,3	GET DCB ADDRESS
1360	01	00294	72560000	X	LB,5	I0015,3	AND USER NUMBER
1361	01	00295	22000000	A	LI,0	0	ZAP USER NUMBER
1362	01	00296	35060000	X	STW,0	I006,3	
1363	01	00297	75060000	X	STB,0	I0015,3	SO WE REPORT ONLY ONCE
1364	01	00298	46060000	X	XW,0	I0016,3	GET & ZERO USER ECB/EA POINTER.
1365	01	00299	32300000	A	LW,3	0	GET TO RIGHT REG FOR RC28.
1366	01	0029A	6800042F		B	RC28	WADE INTO END OF REQC0M
1367	01	0029B			EGU	\$	
1368	01	0029B	60000027	A	10STEX35	ENABLE	REMOVE INTERRUPT INHIBITS
1369	01	0029C	72000001	A	LB,R0	R1	RESTORE PRIORITY CODE INTO R0
1370	01	0029D	3200000E	A	LW,R13	R14	IS THERE ANY MESSAGE TO BE OUTPUT.
1371	01	0029E	683002A0		BEZ	\$+2	NO, DON'T ASK FOR ANY TYPEOUT
1372	01	0029F	6A5004D7		BAL,R5	MSGOUT	YES, PASS MESSAGE INDEX IN R13
1373	01	002A0	70220000	X	LC	DCT5,R1	WAS CLEANUP SET BY I/O START.
1374	01	002A1	684001B6		BCR,4	I0SCHED1	NO, RE-ENTER SCHEDULER FOR MORE I/O
1375	01	002A2	680001AF		B	DSERV	YES, CHECK DEVICE PRIOR TO SCHEDULER
1376					SPACE		
1377	01	002A3	6840027F		RELEASSC	BCR,4	SUBCHANNEL RELEASE, DECR FCN COUNT.
1378	01	002A4	32660000	X	LW,R6	I006,R3	YES, REQUEST COMPLETE (E.G., REWIND)
1379	01	002A5	68300287		BEZ	I0STEX2	IS THERE A DCB FOR THIS REQUEST.
1380	01	002A6	72760000	X	LB,R7	I0010,R3	YES, GET MAX RECOVERY TRIES
1381	01	002A7	71760000	X	CB,R7	I0011,R3	HAVE WE ALREADY DONE A RE-TRY.
1382	01	002A8	69300281		BNE	I0STEX1	YES, DON'T DECREMENT FCN COUNT
1383	01	002A9	2270001C	A	LI,R7	BAFCN	NO, SET POINTER TO FUNCTION COUNT
1384	01	002AA	F3FE0006	A	MTB,-1	*R6,R7	DECREMENT ACTIVE FUNCTION COUNT
1385	01	002AB	68000281		B	I0STEX1	RETURN TO FINISH UP I/O START

LINE	MODE	ADDRESS	DATA	OPERATION	DESCRIPTION	PARAMETERS	NOTES
1386				PAGE			
1387				SPACE			
1388		00000001		D0	DUALFLAG		
1389	01	002AC	02000000	A	CHANTEST	N0P	SUBCHANNEL ASSIGNMENT CHECK LIST
1390	01	002AD	4020054F			AND,2	'X1A0FFFFFF'
1391	01	002AE	40200550			AND,2	'X150FFFFFF'
1392	01	002AF	680002BF			B	FORCE SC
1393	01	002B0	680002C4			B	ASSIGN SC
1394				SPACE			
1395	01	002B1	52620000	X	I0AL0AD	LH,R6	DCT1P,R1
1396	01	002B2	52620000	X		LH,R6	DCT1P,R1
1397	01	002B3	52620000	X		LH,R6	DCT1A,R1
1398				FIN			
1399				SPACE			
1400	01	002B4	75340000	X	CHSAVE	STB,R3	CIT5,R2
1401		00000001				D0	DUALFLAG
1402	01	002B5	75340000	X		STB,R3	CIT5,R2
1403	01	002B6	75340000	X		STB,R3	CIT6,R2
1404				FIN			
1405				SPACE			
1406	01	002B7	000000C0	A	CBFLAGS	DATA	X'00'
1407		00000001				D0	DUALFLAG
1408	01	002B8	00000080	A		DATA	X'80'
1409	01	002B9	00000040	A		DATA	X'40'
1410				FIN			
1411				SPACE			
1412	01	002BA	00000030	A	CHFLAGS	DATA	X'30'
1413		00000001				D0	DUALFLAG
1414	01	002BB	00000020	A		DATA	X'20'
1415	01	002BC	00000010	A		DATA	X'10'
1416				SPACE			

011 .. DUAL-ACCESS RESTRICTED TO SC1
 100 .. UNASSIGNED DUAL-ACCESS

LOAD I/O ADDRESS: 00 = BOTH SC'S
 01 .. 0N SC1 .. PRIMARY I/O ADDRESS
 10 .. 0N SC2 .. SECONDARY ADDRESS

SAVE HOLDING REQUEST = BOTH SC'S
 01 .. HOLD 0N SUBCHANNEL 1
 10 .. HOLD 0N SUBCHANNEL 2

SUBCHANNEL BUSY FLAGS: 00 = BOTH
 01 .. SUBCHANNEL 1 ONLY
 10 .. SUBCHANNEL 2 ONLY

SUBCHANNEL HOLD FLAGS: 00 = BOTH
 01 .. SUBCHANNEL 1 HELD
 10 .. SUBCHANNEL 2 HELD

H01 20142 SEP 08, 1975

1417 01 002BD 00010200 A
1418 01 002BE 03000000 A
1419

SSCFORCE DATA
DATA
FIN

X'00010200'
X'03000000'

81
ALLOCATION CODE TRANSLATION TABLE
TO FORCE DUAL-ACCESS TO S.C. 1 ONLY

PAGE
SPACE

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FORCESC .. FORCE DUAL-ACCESS TO SUBCHANNEL 1 OPERATION.
ASSIGNSC .. ROUTINE TO DETERMINE SUBCHANNEL ASSIGNMENT FOR
A NEW OPERATION ON A DUAL-ACCESS DEVICE. ASSIGNMENT HAS
BEEN DELAYED TO 'IOSTRT' TIME IN ORDER TO AVOID RE-SCHEDULING
DUE TO PRE-EMPTION OF THE SUBCHANNEL BY A HIGHER-PRIORITY
TASK. ALGORITHM WORKS AS FOLLOWS:

1. IF NEITHER SUBCHANNEL IS AVAILABLE (NOT BUSY, NOT HELD),
THE I/O SCHEDULER IS RE-ENTERED.
2. IF ONE AND ONLY ONE SUBCHANNEL IS AVAILABLE, THAT SUB-
CHANNEL IS TAKEN BY DEFAULT.
3. IF BOTH SUBCHANNELS ARE AVAILABLE, THE 'PREFERRED' BIT
IS EXTRACTED FROM THE CIT STATUS AND IS USED TO SELECT
THE SUBCHANNEL TO BE USED. THE BIT IS THEN INVERTED.

SPACE

1437
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1443

00000001

01 002BF 22400001 A
01 002C0 20AFFFFD A
01 002C1 215000A0 A
01 002C2 68400255
01 002C3 6800028B

FORCESC

D0 DUALFLAG
LI,R4 1
AI,R10 =3
CI,R5 X'AO'
BAZ IOSTRT1
B IOSTEX3
SPACE

DUAL-ACCESS DEVICE FORCED TO SC1
FORCE IOQ ACCESS KEY TO 001
IS SUBCHANNEL 1 IDLE AND FREE.
YES, RETURN TO START I/O ON SC1
NO, RE-SCHEDULE WITH NEW ACCESS KEY

1444
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1453

01 002C4 2550027D A
01 002C5 526A01E4
01 002C6 681001CE
01 002C7 25600573 A
01 002C8 48700020 N
01 002C9 10400006 A
01 002CA 25500203 A
01 002CB 22800007 A
01 002CC 4AA00004 A
01 002CD 68000255

ASSIGNSC

SCS,R5 =3
LH,R6 SELECTAB,R5
BGEZ SCHEDXIT
SAD,R6 =13
AND,R7 Y8
AD,R4 R6
SCS,R5 3
LI,R11 7
LS,R10 R4
B IOSTRT1

R4 KEY = 100; UNASSIGNED DUAL-ACCESS
GET RIGHT HALFWORD OF SELECTAB ENTRY
IS ANY SUBCHANNEL IDLE & FREE.
YES, SET UP SUBCHANNEL SELECT DATA:
SC1=3/0, SC2=2/0, EITHER=3/1*31
SELECT, INVERT 'PREFERRED' IF EITHER
RESTORE (POSSIBLY NEW) CIT STATUS
MOVE SUBCHANNEL INDEX TO IOQ3
TO FORM NEW IOQ ACCESS KEY
AND RETURN TO CONTINUE I/O START

H01 20142 SEP 08, '75
1454

FIN

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PAGE
SPACE

```

* IOREJECT .. PROCESS REJECTED 'SIO' INSTRUCTION. ACTION TO
* BE TAKEN IS A FUNCTION OF CONDITION CODE STATUS AS FOLLOWS:
*
* 01 .. SIMPLE SIO REJECTION. REVERSE IOQ ACCESS KEY IF DEVICE
* IS DUAL-ACCESS AND DEVICE IS 'RESERVED' .. A CONDITION
* NORMALLY UNEXPECTED BUT MAY OCCUR AFTER SPECIAL I/O,
* SUCH AS SYSTEM START-UP OR RECOVERY.
*
* 10 .. SELECTOR IOP BUSY WITH ANOTHER CONTROLLER OR CON-
* TROLLER BUSY WITH ANOTHER DEVICE. SET 'SIO-FAIL'
* BIT IN DCT3 AND CLEANUP PENDING.
*
* 11 .. DEVICE ADDRESS NOT RECOGNIZED. SET 'SIO-FAIL' AND
* CLEANUP PENDING.
*
SPACE
    
```

1470 01 002CE 32C00000 A
1471 01 002CF 7400000C A
1472 01 002D0 15C20000 X
1473 01 002D1 72620000 X
1474 00000001
1475 01 002D2 22700003 A
1476 01 002D3 48D0001F N
1477 01 002D4 31D00000 X
1478 01 002D5 45600007 A
1479 01 002D6 69F002D9
1480 01 002D7 48A00007 A
1481 01 002D8 6800028B
1482
1483

```

IOREJECT LW,12 0
STCF 12
STD,R12 DCT13,R1
LB,R6 DCT3,R1
DB DUALFLAG
LI,R7 3
EOR,R13 Y4
CW,R13 YE
CS,R6 R7
BCS,15 SIOFAIL
EOR,R10 R7
B IOSTEX3
FIN
SPACE
    
```

```

NON-OP DEVICE LEAVES GARBAGE
SIO REJECTED SAVE CC
SAVE SIO STATUS IN DCT
GET DEVICE STATUS BYTE 1

SET ACCESS KEY COMPARE MASK
AND CHECK FOR DEVICE STATUS '10'
IS DEVICE STATUS 'RESERVED' (10)
AND IS DEVICE DUAL-ACCESS (KEY=11).
AND IS SIO CC1 ZERO (STATUS AVAIL).
YES, RE-SCHEDULE ON OTHER CONTROLLER
BY INVERTING IOQ ACCESS KEY.
    
```

1484 01 002D9 20600008 A
1485 01 002DA 75620000 X
1486 01 002DB 20900050 A
1487 01 002DC 6800027F

```

SIOFAIL AI,R6 8
STB,R6 DCT3,R1
AI,R9 X'50'
B IOSTEX
    
```

```

DEVICE NOT STARTABLE, SET FAIL BIT
..
SET CLEANUP PENDING, DATA TRANSFER
FINISH UP I/O START & EXIT
    
```

PAGE

NAME: I0INT

PURPOSE: I/O INTERRUPT RECEIVER

DESCRIPTION: WHENEVER THERE IS AN I/O INTERRUPT
THE XPSD AT LOCATION X'5C' WILL BRING US HERE.

EGU \$

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F
F
I0INT
*

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1497 01 002DU
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1499 01 002DD 35100000 X
1500 01 002DE 22100013 A
1501 01 002DF 13100000 X
1502 01 002E0 221FFFF1 A
1503 01 002E1 30100000 X
1504 01 002E2 46100000 X
1505 01 002E3 02200000 A
1506 01 002E4 A8000000 X
1507 01 002E5 223FFFFFF A
1508 01 002E6 12000000 X
1509 01 002E7 95060000 X
1510 01 002E8 60000027 A
1511 01 002E9 02200000 A
1512 01 002EA 6E100000 A
1513 01 002EB 74000003 A
1514 01 002EC 688002FB
1515 01 002ED 33100000 X
1516 01 002EE 680002F7
1517 01 002EF
1518 01 002EF 32F00001 A
1519 01 002F0 5570000F A
1520 01 002F1 32200003 A
1521 01 002F2 25200078 A
1522 01 002F3 2260000F A
1523 01 002F4 30600020 N
1524 01 002F5 6A500000 X

1062

STW,1 TEMP SAVE FOR LATER PUSH
LI,1 19 OPEN
MSP,1 TSTACK STACK
LI,1 =15 REG 0
AW,1 TSTACK STACK LOC
XW,1 TEMP RESTORE REGS
LCI 0 STACK
STM,0 *TEMP IEM
LI,3 =1
LD,0 I0PSD STACK
STD,0 *TEMP,3 CONTROL INFO
ENABLE LET IEM COME
LCI 0
AIO,1 0 ACKNOWLEDGE
STCF R3 SAVE AIO CC STATUS
BCR,8 I07 BRANCH IF 0K
MTW,1 UNEXP ELSE, COUNT UNEXP INTS
B I070 DON'T LOG UNRECOGNIZED
EGU \$
LW,R15 R1 MOVE AIO WORD TO MSG BRD ZERO
STH,R7 R15 STORE CODE/COUNT FIELDS
LW,R2 R3 RECORD
SLS,R2 =8
LI,R6 R15 ADDRESS OF ERROR RECORD
AW,R6 Y8 TELL ERROR LOGGER WE'RE ON AN INT.
BAL,5 ERRLOG LOG THE GLITCH

HC1 20142 SEP 08, 175

1525		01 002F6		RTRET2	EQU	*	EXTERNAL RETURN FROM RTR00T(I0EX)
1526	01	002F6	33F00000 X		MTW,-1	INTCNT	COUNT 'EM DOWN
1527	01	002F7	22200020 A	I070	LI,2	X'20'	CLEAR I0 LEVEL
1528	01	002F8	60000037 A		DISABLF		
1529	01	002F9	60201200 A		WD,2	X:12001	CLEAR I/O LEVEL
1530	01	002FA	68000000 X		B	T:PULLE	AND PULLEXIT
1531	01	002FB	33100000 X	I07	MTW,1	INTCNT	COUNT 'EM UP
1532	01	002FC	2220FFFF A		LI,2	X'FFFF'	
1533	01	002FD	40200001 A		AND,2	1	DEVICE ADDR
1534	01	002FE	60000037 A		DISABLF		DISABLE WHILE HANDLING CHAIN
1535	01	002FF	72700000 X		LB,7	DCT14	GET HEAD
1536	01	00300	512E0000 X	I075	CH,2	DCT1,7	CHECK DEVICE ADDRESS
1537	01	00301	6930030A		BNE	I076	NO
1538	01	00302	726E0000 X		LB,6	DCT14,7	YES, DEQUEUE IT
1539	01	00303	725E0000 X		LB,5	DCT15,7	BACK LINK
1540	01	00304	22800000 A		LI,8	0	
1541	01	00305	758E0000 X		STB,8	DCT14,7	ZAP ANY GARBAGE
1542	01	00306	758E0000 X		STB,8	DCT15,7	IN FLINK AN BLINK
1543	01	00307	755C0000 X		STB,5	DCT15,6	CROSS LINK
1544	01	00308	756A0000 X		STB,6	DCT14,5	REMAINING ENTRIES
1545	01	00309	6800030F		B	I010	
1546	01	0030A	727E0000 X	I076	LB,7	DCT14,7	FLINK TO NEXT DEVICE
1547	01	0030B	69300300		BNE	I075	WITH I/O IN PROGRESS
1548	01	0030C	22700000 N		LI,7	DCTSIZ	TOLOOK IT UP
1549	01	0030D	512E0000 X	I071	CH,2	DCT1,7	
1550	01	0030E	69300324		BNE	I08	NOT YET FOUND
1551		01 0030F		I010	EQU	*	
1552	01	0030F	702E0000 X		LC	DCT5,R7	TEST DEVICE BUSY BIT
1553	01	00310	69800327		BCS,8	I014	DEVICE WAS BUSY
1554				*			
1555				*	NOTE:		IF DEVICE WAS NOT BUSY GO DIRECTLY TO THE
1556				*			HANDLER'S BREAK ADDRESS WHICH IS POST-PROCESSING
1557				*			ADDRESS=1. YOU MUST HAVE A BIT IN DCT9 TO INDICATE
1558				*			THAT AN UN-BUSY INT IS OKAY.
1559				*			
1560	01	00311	22B002F6		LI,R11	RTRET2	LOAD RETURN ADDRESS FOR HANDLER
1561	01	00312	605E0000 X		INT,R5	DCT9,R7	TEST IF DEVICE CAN HAVE THIS

1562	01	00313	E94A0018	N		BCS,4	*M24,R5		GO TO HANDLER'S BREAK ADDRESS
1563	01	00314	730E0000	X		MTB,0	DCT15,R7		CHECK FOR PRE-EMPTED
1564	01	00315	6830031A			BEZ	I012		NO, MIGHT BE AVR
1565	01	00316	326E0000	X		LW,R6	DCT12,R7		GET ENTRY ADDRESS
1566	01	00317	69100000	X		BLZ	RTINT		IF A REAL-TIME IOEX INTERRUPT
1567	01	00318	22500000	N		LI,R5	JIJIT		
1568	01	00319	680C0000	A		B	0,R6		GO TO DEVICE INTERRUPT HANDLER
1569	01	0031A	3110001F	N	I012	CW,1	Y4		CHK DEVICE END
1570	01	0031B	68400324			BAZ	I08		NO
1571	01	0031C	21700000	N		CI,7	BATAPE		IF TAPE OR PACK, MUST BE AVR
1572	01	0031D	69100325			BL	I050		
1573	01	0031E	21700000	N		CI,7	BATAPE+AVRTBLNE		
1574	01	0031F	68100325			BGE	I050		
1575	01	00320	3280001A	N		LW,8	Y02		ASSUME AVR
1576	01	00321	49800007	A		OR,8	7		COMBINE DCT
1577	01	00322	22B0033F			LI,11	I022		SET RETURN
1578	01	00323	6800022B			B	CTRIG		TRIGGER CONTROL TASK
1579	01	00324	6470030D		I08	BDR,7	I071		TRY NEXT ENTRY
1580					*				
1581					*				CAN'T FIND THE DEVICE OR IT WASNT BUSY, LOG
1582					*				AN ERROR RECORD.
1583					*				
1584	01	00325	22701304	A	I050	LI,7	X113041		CODE/COUNT
1585	01	00326	680002EF			B	I062		LOG ERROR
1586		01 00327			I014	EGU	\$		
1587	01	00327	351E0000	X		STW,1	DCT12,7		SAVE AIO INFO
1588		01 00328			RTRET1	EGU	\$		EXTERNAL RETURN FROM RTR00T(IOEX)
1589	01	00328	726E0000	X		LB,R6	DCT5,R7		GET DEVICE FLAGS
1590	01	00329	48600007	N		AND,R6	X7F		STRIP DEVICE BUSY
1591	01	0032A	49600007	N		OR,R6	X40		SET CLEANUP PENDING
1592	01	0032B	756E0000	X		STB,R6	DCT5,R7		REPLACE IT
1593	01	0032C	72300003	A		LB,R3	R3		POSITION AIO CONDITION CODES
1594	01	0032D	753E0000	X		STB,3	DCT19,7		SAVE
1595	01	0032E	02200000	A		LCI	0		
1596	01	0032F	4D340000	A		TIO,3	0,2		STATUS OF I/O
1597	01	00330	52300003	A		LH,3	3		
1598	01	00331	553E0000	X		STH,3	DCT21,7		SAVE IN DCT

H01 20142 SEP 08, 175

1599	01	00332	02200000	A	LCI	0	
1600	01	00333	4E240000	A	TDV,2	0,2	GET TDV STATUS
1601	01	00334	740E0000	X	STCF	DCT20,7	SAVE STATUS & CC
1602	01	00335	152E0000	X	STD,2	DCT13,7	SAVE THE INFO IN DCT
1603	01	00336	21600010	A	CI,6	X:101	DATA XFER
1604	01	00337	6840033F		BAZ	I020	NOPE
1605	01	00338	725E0000	X	LB,5	DCT2,7	CIT INDEX
1606	01	00339	724A0000	X	LB,4	CIT3,5	CIT SWITCHES
1607			00000001		D0	DUALFLAG	
1608	01	0033A	723E0000	X	LB,R3	DCT6,R7	GET I00 INDEX
1609	01	0033B	72360000	X	LB,R3	I003,R3	GET I00 SWITCHES
1610	01	0033C	4B300002	N	AND,R3	X3	EXTRACT ACCESS KEY
1611	01	0033D	4B4602B7		EOR,R4	CBFLAGS,R3	SET SUBCHANNEL(S) NOT BUSY
1612					ELSE		
1613				*S*	EOR,R4	CBFLAGS	SET SINGLE ACCESS NOT BUSY
1614					FIN		
1615	01	0033E	754A0000	X	STB,4	CIT3,5	
1616		01 0033F			1020 EQU	*	READY TO EXIT INTERRUPT HANDLER
1617					* EXECUTE SPECIAL END ACTION FROM R1 HERE		
1618	01	0033F	22600020	A	1022 LI,6	X:201	CLEAR
1619	01	00340	60601200	A	WD,6	X:12001	I0 LEVEL
1620	01	00341	32100007	A	LW,R1	R7	GET DCT FOR SCHEDULER
1621	01	00342	6A2001A9		BAL,R2	DRIVEI0	CALL I/O SCHEDULER
1622	01	00343	33F00000	X	1030 MTW,-1	INTCNT	COUNT IEM DOWN
1623	01	00344	69300000	X	BNEZ	TIPULLE	
1624	01	00345	6AB00000	X	BAL,11	SACT	
1625	01	00346	22B00000	A	LI,11	0	
1626	01	00347	46B00000	X	XW,11	INTFLG	SEE RC28 IN REQCOM
1627	01	00348	68300000	X	BEZ	SSEO	
1628	01	00349	68000000	X	B	TISSE	

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CLEANUP • D0 POST-PROCESSING, PRIORITY PERMITTING.
CLEANUP1 • D0 POST-PROCESSING, REGARDLESS OF PRIORITY.

IF PRIORITY PERMITS, THE DEVICE ACTIVITY COUNT IS SET IN R14,
INTERRUPTS ARE ENABLED, AND THE REQUEST CURRENTLY BEING SER-
VICED BY THE DEVICE IS PROCESSED BY THE I/O HANDLER, WITH
THE DEVICE RETURNED TO THE 'FREE', 'INTER-OP', OR 'KEY-IN-
PENDING' STATE, AS APPLICABLE. REGISTER SETUP:

R1 .. PRIORITY, DCT INDEX (8,24)
R2 .. FLAGS, SERDEV EXIT, CIT INDEX (3,10,19)
R3 .. SCRATCH, IOQ INDEX (8,24)
R12 .. FLAGS RETURNED FROM HANDLER:
BIT 16 .. RE-TRY SEQUENCE
BIT 17 .. FOLLOW-ON SEQUENCE
BIT 18 .. INTER-OPERATIVE REQUEST
BIT 19 .. KEY-IN PENDING (NORMAL)
BIT 20 .. KEY-IN PENDING (SPECIAL)
BIT 21 .. CONTINUE CHANNEL HOLD
BYTE 3 .. TYPE OF COMPLETION

R13 .. MESSAGE TO BE TYPED (0 IF NONE)
R14 .. DEVICE ACTIVITY COUNT
R15 .. NOT USED • RESERVED FOR FUTURE SYSTEMS

SPACE

1655 00000000

1656			*S*	CLEANUP	D0	DEFER	
1657			*S*		LB,R3	DCT6,R1	SERVICE CLEANUP-PENDING, GET REQUEST
1658			*S*		CB,R0	IOQ14,R3	IS REQUEST PRIORITY BELOW SCHEDULER.
1659					BL	DEFER1	YES, DEFER CLEANUP, RETURN IOSCHED
1660	01 0034A			CLEANUP	ELSE		
1661					RES	0	
1662	01 0034A	52E20000 X		CLEANUP1	FIN		
1663	01 0034B	72320000 X			LH,R14	DCT10,R1	NO, SET DEVICE ACTIVITY COUNTER
					LB,R3	DCT6,R1	PRE-EMPT REQUEST INDEX

H01 20142 SEP 08, 175

1664 01 0034C 79000001 A
1665 01 0034D 72520000 X
1666 01 0034E 69300000 X
1667 01 0034F 60000027 A
1668 01 00350 32520000 X
1669 01 00351 72F60000 X
1670 01 00352 31F00000 X
1671 01 00353 693A0000 A
1672 01 00354 3150001E N
1673 01 00355 684A0000 A
1674 01 00356 6A900000 X
1675 01 00357 02000000 A

STB,R0 R1
LB,R5 DCT15,R1
BNEZ RTCU
ENABLE
LW,R5 DCT9,R1
LB,15 I0Q15,3
CW,15 DID
BNE 0,5
CW,5 Y2
BAZ 0,5
BAL,9 I0SERCK
NBP

90
SAVE PRIORITY OF SCHEDULER CALL
IS THIS A REAL-TIME I0EX CLEANUP
YES, BY-PASS HANDLER POST-PROCESSOR
RUN I/O HANDLER IN ENABLED STATE
GET I/O HANDLER CLEANUP ENTRY

IS IT DIAG USR
NO
IS IT DIAG REQ
NO

PAGE

NAME: I0SCU

PURPOSE: RETURN POINT FROM HANDLERS POST-PROCESSING ROUTINES.

DESCRIPTION: HANDLERS RETURN HERE WITH THE STANDARD I/O REGISTER SETUP PLUS THEIR FLAGS IN R12/R13.

I0SCU WILL DECODE THE FLAGS AND TAKE APPROPRIATE ACTION.

1676
1677
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1686
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1688
1689 01 00358 60000037 A
1690 01 00359 51E20000 X
1691 01 0035A 69300385
1692 01 0035B 53120000 X
1693 01 0035C 72420000 X
1694 01 0035D 40400000 X
1695 01 0035E 75420000 X
1696 01 0035F 72560000 X
1697 01 00360 22400000 A
1698 01 00361 4A400002 N
1699 01 00362 72820000 X
1700 01 00363 40800551
1701 01 00364 72940000 X
1702 01 00365 319802BA
1703 01 00366 6840036F
1704 01 00367 446802B4
1705 01 00368 727C0000 A
1706 01 00369 21C00400 A
1707 01 0036A 48700003 A
1708 01 0036B 6970036F
1709 01 0036C 489802BA
1710 01 0036D 75940000 X
1711 01 0036E 757C0000 A
1712 01 0036F 21C0D800 A

F
F
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F

I0SCU

DISABLEF

CH,R14 DCT10,R1
BNE RESCHED
MTH,R1 DCT10,R1
LB,R4 DCT3,R1
AND,R4 XE7
STB,R4 DCT3,R1
LB,R5 I0Q3,R3
LI,R4 0
LS,R4 X3
LB,R8 DCT5,R1
AND,R8 =X'15'
LB,R9 CIT3,R2
CW,R9 CHFLAGS,R4
BAZ I0SCCHK
ANLZ,R6 CHSAVE,R4
LB,R7 0,R6
CI,R12 X'400'
E0R,R7 R3
BCS,R7 I0SCCHK
E0R,R9 CHFLAGS,R4
STB,R9 CIT3,R2
STB,R7 0,R6
CI,R12 X'D800'

I0SCCHK

RETURN FROM HANDLER POST-PROCESSOR
WAS START/CLEANUP RE-ENTERED.
YES, CLEANUP HAS ALREADY BEEN DONE
NO, INCREMENT ACTIVITY COUNT
RESET TIMEOUT/SIO-FAIL IN DCT3
..
..
GET REQUEST SWITCH BYTE
EXTRACT ASSIGNMENT CODE FROM I0Q3
..
SET UP SWITCHES(2) IN R8
SAVE DATA-XFER, CONTROL-TASK, MODE
GET CHANNEL STATUS FLAGS
IS SUBCHANNEL CURRENTLY BEING HELD.
NO, CONTINUE CLEANUP CHECKS
YES, GET CIT HOLD TABLE ADDRESS
GET INDEX OF HOLDING REQUEST
IS SUBCHANNEL TO REMAIN HELD.
OR IS IT HELD FOR DIFFERENT REQUEST.
YES, CANNOT RELEASE HOLD NOW.
NO, RESET SUBCHANNEL HOLD FLAG(S).
..
CLEAR SUBCHANNEL HOLD REQUEST INDEX
IS THERE ANY ADDITIONAL ACTIVITY?

H01 20:42 SEP 08, 175

1713 01 00370 68400398
1714 01 00371 21C01800 A
1715 01 00372 69400387
1716 01 00373 205FFF80 A
1717 01 00374 75560000 X

BAZ REGCOM
CI,R12 X'1800'
BANZ I0KEYIN
AI,R5 =X'180'
STB,R5 I0Q3,R3

92
NO, REQUEST COMPLETE, END-ACTION
YES, IS KEY-IN REQUIRED.
YES, GO TO KEY-IN PROCESSOR.
NO, RESET REQUEST 'BUSY' FLAG
SO THAT REQUEST MAY BE STARTED

				PAGE		
				SPACE		
1718						
1719						
1720	01	00375	52A20000 X	LH,R10	DCT17,R1	GET RETRY/FOLLOW-ON CODES
1721	01	00376	21C08000 A	CI,R12	X'8000'	IS RE-TRY FLAG SET BY HANDLER.
1722	01	00377	6840037B	BAZ	I0FOLLOW	NO, FOLLOW-ON, PRESUMABLY NO ERROR
1723	01	00378	73F60000 X	MTB,-1	I0Q11,R3	YES, RE-TRY, DECREMENT RE-TRY COUNT
1724	01	00379	6880038F	BNC	REQERR	NO MORE ATTEMPTS - ERROR COMPLETION
1725	01	0037A	25A00078 A	SLS,R10	=8	RE-TRY OK, GET HANDLER FUNCTION CODE
1726	01	0037B	75A60000 X	I0FOLLOW STB,R10	I0Q5,R3	SAVE CODE AS NEXT FUNCTION STEP
1727	01	0037C	21C02000 A	CI,R12	X'2000'	IS INTER-OPERATION REQUESTED.
1728	01	0037D	6840037F	BAZ	*+2	NO, SEQUENCE IS 'INTERRUPTABLE'
1729	01	0037E	20800020 A	AI,R8	X'20'	YES, SET DEVICE INTER-OPERATION MODE
1730	01	0037F	22D00000 A	LI,R13	0	NO MSG FOR RE-TRY/FOLLOW-ON
1731	01	00380	75820000 X	I0SCEXIT STB,R8	DCT5,R1	SAVE UPDATED DCT SWITCHES(2)
1732	01	00381	60000027 A	I0CUEXIT	ENABLE	NOW PERMIT INTERRUPTS TO FIRE
1733	01	00382	21D00000 A	CI,R13	0	IS MESSAGE TO BE OUTPUT.
1734	01	00383	68300385	BEZ	RESTPRI	NO, SKIP CALL TO MESSAGE QUEUE
1735	01	00384	6A5004D7	BAL,R5	MSGOUT	YES, CALL TO OUTPUT MSG IN R13
1736	01	00385		RESCHED	RES	
1737	01	00385	72000001 A	RESTPRI LB,R0	R1	RESTORE SCHEDULEK PRIORITY
1738	01	00386	680001B5	B	I0SCHED	RE-ENTER SCHED
1739				SPACE		
1740		00000000		D0	0	
1741			*S* I0KEYIN	LI,R9	CTINT	KEY-IN, DOES CONTROL TASK EXIST.
1742			*S*	B	SETKEYIN	NOT FOR U.T.S. ** BRANCH
1743			*S* *			THIS BRANCH WILL BE REMOVED WHEN CTINT IS DEF'ED AS 0 OR
1744			*S* *			AS THE CONTROL TASK INTERRUPT
1745			*S*	BEZ	SETKEYIN	NO, FOREGROUND NO PROBLEM
1746			*S*	LB,R9	I0Q14,R3	YES, GET REQUEST PRIORITY
1747			*S*	CI,R9	CTINT-X'50'	IS IT ABOVE CONTROL TASK PRIORITY.
1748			*S*	BL	REQERR	YES, COMPLETE REQUEST IN ERROR
1749				ELSE		
1750	01	00387		I0KEYIN	RES	
1751				FIN		
1752	01	00387	20800008 A	SETKEYIN AI,R8	8	NO, OK, SET DEVICE KEY-IN PENDING

HC1 20:42 SEP 08, '75

1753	01	00388	12A20000	X
1754	01	00389	55C0000B	A
1755	01	0038A	15A20000	X
1756	01	0038B	22A00006	A
1757	01	0038C	30A00000	X
1758	01	0038D	35A20000	X
1759	01	0038E	68000380	

LD,R10	DCT13,R1
STH,R12	R11
STD,R10	DCT13,R1
LI,R10	6
AW,R10	I0CLOCK
STW,R10	DCT11,R1
B	I0SCEXIT

94

```
GET TDV STATUS INFORMATION
SAVE FLAGS, TYC WITH TDV INFO
..
SET 30 SECOND TIME-OUT INTERVAL
..
GO RESTORE DCT SWITCHES & EXIT
```

1760				PAGE	
1761			*	REQCOM = REQUEST COMPLETE	
1762			*		
1763			*		
1764			*	R1,R3,R4 SFT AS FOR CLEANUP	
1765			*		
1766			*	R10 HAS CCA	
1767			*	R11 HAS RBC	
1768			*	R12 HAS TYC	
1769			*		
1770			*	BAL,R5 REQCOM	
1771			*		
1772			*	R13 TO R4 WILL BE SAVED	*
1773			*		
1774	01	0038F	22C00008	A	REQERR LI,R12 8 ERROR,FORCE ENTRY FROM '10SCU'
1775					
1776					DONIT HOLD CHANNEL IF RETRIES ARE ZERO
1777					
1778	01	00390	319802BA		CW,R9 CHFLAGS,R4 GET SUBCHANNEL HOLD FLAGS
1779	01	00391	68400399		BAZ REQCOM+1 NONE SET
1780	01	00392	20700000	A	AI,R7 0 IS SUBCHANNEL HELD FOR THIS REQUEST
1781	01	00393	69300399		BNE REQCOM+1 NO, DONIT RELEASE HOLD
1782	01	00394	489802BA		EOR,R9 CHFLAGS,R4 YES, RESET HOLD FLAGS
1783	01	00395	75940000	X	STB,R9 CIT3,R2
1784	01	00396	757C0000	A	STB,R7 0,R6 CLEAR SUBCHANNEL HOLD REQUEST INDEX
1785	01	00397	68000399		B \$+2 **
1786	01	00398	22D00000	A	REQCOM LI,R13 0 REQUEST COMPLETE, NO MSG
1787	01	00399	75820000	X	STB,R8 DCT5,R1 SAVE DCT SWITCHES
1788	01	0039A	22500381		LI,R5 10CUEXIT SET RETURN ADDRESS IN R5
1789	01	0039B	02200090	A	REQCOM1 PUSH 9,R13 SAVE REGS
	01	0039C	08D00000	N	
1790	01	0039D	72020000	X	LB,R0 DCT5,R1 GET DCT SWITCHES (2)
1791	01	0039E	32460000	X	LW,R4 10Q6,R3 DCB
1792	01	0039F	683003FF		BEZ RC20 NO DCB
1793	01	003A0	48C00008	N	AND,R12 XFF MASK TYC
1794	01	003A1	21C00008	A	CI,R12 8 IS IT ERROR
1795	01	003A2	693003A6		BNE RC3 NO

HC1 2042 SEP 08, '75

Address	Mode	Op Code	Op Name	Op Type	Op Detail	Op Comment
1796	01	003A3	31400018	N	CW,R4 Y04	READ OR WRITE
1797	01	003A4	684003A6		BAZ \$+2	READ
1798	01	003A5	22C00009	A	LI,R12 9	WRITE
1799	01	003A6			RES 0	
1800	01	003A6	22600000	A	LI,R6 0	CLEAR REG FOR RESETTING EGV
1801	01	003A7	22F0000F	A	LI,R15 X'1'	EXTRACT ASN
1802	01	003A8	4BF80000	A	AND,R15 0,R4	FROM DCB
1803	01	003A9	21F00003	A	CI,R15 3	CHECK FOR DEVICE
1804	01	003AA	693003B3		BNE RC4	NO DONT CLOBBER
1805	01	003AB	22500004	A	LI,R5 4	DISP TO NRT
1806	01	003AC	72760000	X	LB,R7 I0Q11,R3	GET REAL NUMBER REMAINING
1807	01	003AD	F57A0004	A	STB,R7 *R4,R5	TRANSFER TO DCB
1808	01	003AE	22720000	A	LI,R7 X'20000'	SET BIN BIT IN DCB ACCORDING TO
1809	01	003AF	21000001	A	CI,R0 1	TO THE BIN BIT IN DCTS
1810	01	003B0	684003B2		BAZ \$+2	
1811	01	003B1	22620000	A	LI,R6 X'20000'	
1812	01	003B2	47680000	A	STS,R6 0,R4	
1813	01	003B3			EGU *	
1814	01	003B3	22D0003F	A	LI,R13 X'3F'	MASK FOR TYC
1815	01	003B4	25C00111	A	SLD,R12 17	ALIGN MASK AND TYC
1816	01	003B5	45C80002	A	CS,R12 TYC,R4	TEST FOR NEW PEAK VALUE
1817	01	003B6	682003B8		BLE RC5	DONT CHANGE, PREVIOUS PEAK
1818	01	003B7	47C80002	A	STS,R12 TYC,R4	SAVE NEW VALUE
1819	01	003B8	3AD00019	N	LCW,R13 Y01	DECREMENT FUNCTION COUNT
1820	01	003B9	66D80007	A	AWM,R13 FCN,R4	IN DCB.
1821	01	003BA	32760000	X	LW,R7 I0Q16,R3	IF AN ECB IS ASSOCIATED
1822	01	003BB	683003C0		BEZ RC6	WITH THIS REQUEST,
1823	01	003BC	25C00007	A	SLS,R12 +7	UPDATE THE TYC IN
1824	01	003BD	45CE0002	A	CS,R12 2,R7	THE 4-WORD BLOCK
1825	01	003BE	682003C0		BLE RC6	IF NEW TYC IS BIGGER.
1826	01	003BF	47CE0002	A	STS,R12 2,R7	
1827	01	003CU			EGU *	
1828	01	003C0	22701000	A	LI,R7 X'1000'	
1829	01	003C1	47680000	A	STS,R6 0,R4	CLEAR EGV
1830	01	003C2	21F00002	A	CI,R15 2	
1831	01	003C3	691003DD		BL RC10	DO NOT STORE ARS FOR DISC, BLOCKED L
1832	01	003C4	692003C8		BG RC8	

H01 20:42 SEP 08, '75

1833	01	003C5	22500003	A		LI,R5	3	
1834	01	003C6	45580005	A		CS,R5	ACS,R4	
1835	01	003C7	693003DD			BNE	RC10	
1836		01 003C8			RC8	EGU	*	
1837	01	003C8	52860000	X		LH,R8	I8Q9,R3	BYTE COUNT.
1838	01	003C9	32560000	X		LW,R5	I8Q8,R3	
1839	01	003CA	681003D5			BGEZ	RC9	BRANCH IF NO DATA CHAINING
1840	01	003CB	45500015	N		AND,R5	M21	
1841	01	003CC	12A20000	X		LD,R10	DCT13,R1	GET STATUS
1842	01	003CD	38A00005	A		SW,R10	R5	TAKE NUMBER OF COMMANDS USED
1843	01	003CE	20A00001	A		AI,R10	1	TO COMPUTE ARS
1844	01	003CF	45A00010	N		AND,R10	M16	SCRUB COMMAND COUNT
1845	01	003D0	22900000	A		LI,R9	0	CLEAR ACCUMULATOR FOR COUNT
1846	01	003D1	108A0000	A	RC7	AD,R8	0,5	ADD COUNT FROM ONE COMMAND
1847	01	003D2	20500001	A		AI,R5	1	GET NEXT COMMAND
1848	01	003D3	64A003D1			BDR,R10	RC7	DO ALL ACTIVE COMMANDS
1849	01	003D4	32800009	A		LW,R8	R9	TOTAL COUNT OF BYTES IN R8 NOW.
1850		01 003D5			RC9	EGU	*	
1851	01	003D5	3880000B	A		SW,R8	R11	COMPUTE ARS = BC * RBC.
1852	01	003D6	22907FFF	A		LI,R9	X17FFF1	15 BIT MASK.
1853	01	003D7	25800111	A		SLD,R8	17	POSITION ARS AND MASK.
1854	01	003D8	47880004	A		STS,R8	ARS,R4	STORE ARS IN DCB.
1855	01	003D9	32660000	X		LW,R6	I8Q16,R3	IF AN ECB IS ASSOCIATED
1856	01	003DA	683003DD			BEZ	RC10	WITH THIS REQUEST,
1857	01	003DB	2580016F	A		SLD,R8	=17	UPDATE THE RECORD SIZE IN
1858	01	003DC	478C0002	A		STS,R8	2,R6	THE 4-WORD BLOCK.
1859					*			TEST TO RELEASE BUFFER
1860	01	003DD	21F00000	N	RC10	CI,R15	CFUBIT	DOES ASN = FILE
1861	01	003DE	683003FB			BE	RC15	YES
1862	01	003DF	3140001C	N		CW,R4	Y08	IS IT POSITION OPERATION
1863	01	003E0	694003ED			BANZ	RC14	YES, DO NOT RELEASE
1864	01	003E1	3140001B	N		CW,R4	Y04	IS IT READ OP
1865	01	003E2	684003ED			BAZ	RC14	YES, DO NOT RELEASE
1866	01	003E3	70260000	X		LC	I8Q3,R3	IS MON BUF USED
1867	01	003E4	682003ED			BCR,2	RC14	NO
1868	01	003E5	32E00018	N		LW,R14	M24	GET BUFFER ADDR MASK
1869	01	003E6	45E60000	X		AND,R14	I8Q8,R3	GET BUFF ADDR

MO1 20:42 SEP 08, 1975

1870	01	003E7	25E0007E	A	SLS,R14	=2	MAKE WORD ADDR
1871	01	003E8	32800000	X	LW,R8	MP00L	NEXT AVAIL BUF
1872	01	003E9	19E00000	F	CLM,14	BUFLIMS+MP00LIM+MP00LIM	CHECK MP00L WITHIN LIMITS
1873	01	003EA	69900000	X	BCS,9	SC1900	SOFTWARE CHECK 19-00
1874	01	003EB	35E00000	X	STW,R14	MP00L	RELEASED BUF TO HEAD
1875	01	003EC	B580000E	A	STW,R8	*R14	NEXT AVAIL TO RELEASED BUF
1876							
1877		01	003ED		* RC14	EGU	\$
1878	01	003ED	21F00003	A	CI,R15	3	IS IT DEVICE
1879	01	003EE	693003FB		BNE	RC15	NO - STILL NOT DIAG CAL
1880	01	003EF	60B80005	A	INT,R11	5,R4	TEST FOR DIAG BIT
1881	01	003FO	682003FB		BCR,2	RC15	NO
1882					* DIAG RETURN -		
1883	01	003F1	32720000	X	LW,R7	DCT12,R1	AIB STATUS
1884	01	003F2	25700070	A	SLS,7	=16	SAVE ONLY STATUS
1885	01	003F3	12820000	X	LD,R8	DCT13,R1	TDV STATUS
1886	01	003F4	52A20000	X	LW,R10	DCT1,R1	DEVICE ADDRESS
1887	01	003F5	40A0000B	N	AND,10	M11	
1888	01	003F6	02200000	A	LCI	0	
1889	01	003F7	C0B0000A	A	T10,11	*10	STATUS OF I/O
1890	01	003F8	32A00C0B	A	LW,10	11	
1891	01	003F9	02200040	A	LCI	4	
1892	01	003FA	2078000F	A	STM,7	15,4	SAVE IN DCB
1893		01	003FB		* RC15	EGU	\$
1894	01	003FB	12A60000	X	LD,R10	I0Q13,R3	
1895	01	003FC	46A0000B	A	XW,R10	R11	EAI IN R10, E-A ADDR IN R11
1896	01	003FD	32860000	X	LW,R8	I0Q6,R3	DCB ADDR
1897	01	003FE	68000405		B	RC21	
1898					* RC20	STB,R12	R11
1899	01	003FF	75C0000B	A	RC20	STB,R12	R11
1900	01	00400	32C0000B	A	LW,R12	R11	COMPLETION INFO IF NO DCB
1901	01	00401	12D20000	X	LD,R13	DCT13,R1	TYC
1902	01	00402	12A60000	X	LD,R10	I0Q13,R3	TYC, RBC
1903	01	00403	32E0000B	A	LW,R14	R11	CCA
1904	01	00404	46B0000A	A	XW,R11	R10	END-ACTION INFO
1905	01	00405			* RC21	RES	0
1906	01	00405	32F60000	X	RC21	LW,R15	I0Q8,R3
							BUF ADDR
							MIGHT AS WELL GETEA REGS COMP.

HC1 20142 SEP 08, 175

1907	01	00406	21000001	A		CI,R0	1	CHECK FOR BIN BIT IN DCT5
1908	01	00407	68400409			BAZ	RC22	
1909	01	00408	49F0001A	N		BR,R15	Y02	SET BIN FOR NEWQ
1910					*			RELEASE Q ENTRY
1911		01	00409		RC22	EQU	*	
1912	01	00409	32660000	X		LW,R6	I0Q8,R3	DATA CHAIN
1913	01	0040A	68100411			BGEZ	RC23	NO
1914	01	0040B	25600001	A		SLS,R6	1	TO BUILD DATA CHAIN
1915	01	0040C	32700000	X		LW,R7	MP00L	RELEASE BUFFER
1916	01	0040D	19600000	F		CLM,6	BUFLIMS+MP00LIM+MP00LIM	CHECK MP00L WITHIN LIMITS
1917	01	0040E	69900000	X		BCS,9	SC1900	SOFTWARE CHECK 19=00
1918	01	0040F	35600000	X		STW,R6	MP00L	
1919	01	00410	357C0000	A		STW,R7	0,R6	
1920					*			
1921		01	00411		RC23	EQU	*	
1922	01	00411	72660000	X		LB,6	I0Q2,3	FLINK
1923	01	00412	72760000	X		LB,R7	I0Q1,R3	BLINK
1924	01	00413	68300416			BEZ	RC24	FIRST ENTRY
1925	01	00414	756E0000	X		STB,R6	I0Q2,R7	CUR FLINK TO PREV FLINK
1926	01	00415	68000417			B	*+2	
1927	01	00416	75640000	X	RC24	STB,R6	CIT1,R2	CUR FLINK TO HEAD
1928	01	00417	20600000	A		AI,R6	0	TEST FLINK
1929	01	00418	68300418			BEZ	RC26	LAST ENTRY
1930	01	00419	757C0000	X		STB,R7	I0Q1,R6	CUR BLINK TO NEXT BLINK
1931	01	0041A	6800041C			B	*+2	
1932	01	0041B	75740000	X	RC26	STB,R7	CIT2,R2	CUR BLINK TO TAIL
1933					*			
1934	01	0041C	72700000	X		LB,R7	QFREE	HEAD OF FREE ENTRIES
1935	01	0041D	75760000	X		STB,R7	I0Q2,R3	TO FLINK
1936	01	0041E	75300000	X		STB,R3	QFREE	CUR IS NEW HEAD
1937					*			
1938	01	0041F	33F00000	X		MTW,-1	CURBQ	YES, DEC NO, BIGNRD ENTRIES
1939	01	00420	72560000	X		LB,5	I0Q15,3	
1940	01	00421	72760000	X		LB,R7	I0Q7,R3	GET DCT INDEX FOR POSSIBLE E A
1941	01	00422	32360000	X		LW,R3	I0Q16,R3	GET USER ECB/EA POINTER.
1942	01	00423	60000027	A		ENABLE		
1943					*			

Year	Month	Day	Time	Address	Mode	Instruction	Register	Comment
1944	01	00424	45B00016	N	AND,R11	M22		IS THERE END ACTION
1945								
1946	01	00425	6830042F		BEZ	RC28		
1947	01	00426	02200030	A	PUSH	3,R3		SAVE ECB,DCB,USER#.
	01	00427	05300000	N				
1948	01	00428	3260000F	A	LW,R6	R15		BUF ADDR
1949	01	00429	68200428		BLEZ	*+2		
1950	01	0042A	45600016	N	AND,R6	M22		
1951	01	0042B	2560007E	A	SLS,R6	=2		MAKE WORD ADDR
1952	01	0042C	EAB0000B	A	BAL,R11	*R11		GO TO END-ACTION RECEIVER
1953	01	0042D	02200030	A	PULL	3,R3		RESTORE ECB,DCB,USER#.
	01	0042E	0A300000	N				
1954	01	0042F	215000FF	A	RC28	CI,5	XIFF'	
1955	01	00430	68400440		BAZ	RC30		
1956	01	00431	68300440		BE	RC30		NEWQNW
1957	01	00432	32700003	A	LW,R7	R3		DID USER SPECIFY ECB OR EA
1958	01	00433	6830043C		BEZ	RC29		==> NO.
1959	01	00434	F3F00007	A	MTB,-1	*R7		ARE ALL PHYSICAL I/O'S DONE
1960	01	00435	6930043C		BNEZ	RC29		==> NO.
1961	01	00436	328E0003	A	LW,R8	3,R7		IS CAL COMPLETED YET
1962	01	00437	6810043C		BGEZ	RC29		==> NO.
1963	01	00438	32800005	A	LW,R8	R5		R8= USER#.
1964	01	00439	329E0002	A	LW,R9	2,R7		R9= TYC/RBC FOR ECB INFO WORD.
1965	01	0043A	32AE0001	A	LW,R10	1,R7		R10=ECB ADDRESS.
1966	01	0043B	6AB00000	X	BAL,R11	ECBPOST1		POST THE ECB. (USING BLK IN R7)
1967	01	0043C			RC29	RES	0	
1968	01	0043C	32100004	A	LW,R1	R4		GET DCB ADDRESS
1969	01	0043D	22600000	N	LI,6	E:IC		REPORT I/O COMPLETE
1970	01	0043E	35600000	X	STW,6	INTFLG		
1971	01	0043F	6AB00000	X	BAL,11	T:RUE		
1972	01	00440	02200090	A	RC30	PULL	9,R13	RESTORE REGS
	01	00441	0AD00000	N				
1973	01	00442	680A0000	A	B	0,R5		


```

2003                                     PAGE
2004
2005          01 00454          * CTI0P      EQU      $          CONTROL TASK I/O PROCESSOR
2006          *
2007          *          CALLED BY CONTROL TASK OR CONTROL TASK SIMULATOR
2008          *          EXECUTES FUNCTIONS FOUND IN CONTROL TASK I/O STACK
2009          *
2010          *          BAL,R11 CTI0P
2011          *
2012          *          USES ALL RFGS
2013          *
2014          *
2015          01 00454          60000037 A TP5      DISABLE          **DISABLE**
2016          *
2017          01 00455          08800000 X          PLW,R8      I0CTQ          GET NEXT FUNCTION
2018          01 00456          69200497          BCS,2       TP90          STACK EMPTY
2019          *
2020          01 00457          60000027 A          ENABLE          **ENABLE**
2021          *
2022          01 00458          72700008 A          LB,R7       R8          GET CODE
2023          01 00459          727E045B          LB,R7       TPBASE,R7        GET DISP TO ENTRY POINT
2024          01 0045A          680E045B          B           TPBASE,R7        SWITCH TO IT
2025          *
2026          00000000          :TP        CNAME      0
2027          *          PR0C
2028          LF          GEN,8      AF(1)=TPBASE
2029          *
2030          *
2031          *
2032          01 0045B          02          A          TPBASE      :TP        TP10          0 => DEVICE FUNCTION
2033          01 0045B 1 02          A          :TP        TP20          1 => CONSOLE INTERRUPT
2034          01 0045B 2 00          A          :TP        TP40          2 => AVR
2035          01 0045B 3 10          A          :TP        TP50          3 => KEYIN MSG IN BUF
2036          01 0045C          10          A          :TP        TP60          4 => CHECK ALL DEVICES
2037          01 0045C 1 31          A          :TP        TP70          5 => PFSR I/O RESTART
2038          *          BOUND      4
2039          *

```

2040		00000000		D0	DEFER	CONTROL TASK DEFERRED CLEANUP
2041			*S* TP10	LW,R1	R8	SET DCT INDEX
2042			*S* *			
2043			*S*	DISABLE		**DISABLE**
2044			*S* *			
2045			*S*	LB,R9	DCT5,R1	GET DCT SWITCHES
2046			*S*	AND,R9	XFB	RESET CONTROL TASK BIT
2047			*S*	STB,R9	DCT5,R1	RESTORE SWITCHES
2048			*S* *			
2049			*S*	ENABLE		**ENABLE**
2050			*S* *			
2051			*S*	BAL,R2	FORCEI0	SERVICE DEVICE WITH PRI X'IFF'
2052			*S*	B	TP5	
2053				ELSE		
2054	01	0045D	TP10	RES	0	
2055				FIN		
2056			*			
2057	01	0045D	TP20	LI,R1	TP25	MESSAGE ADDRESS
2058	01	0045E		BAL,R11	BCWRITE	OUTPUT NL=BANG
2059	01	0045F	N	LI,R13	BA(KEYINBUF)	BUFFER ADDRESS
2060	01	00460		LI,R0	TP30	END ACTION ROUTINE
2061	01	00461	A	LI,R14	72	SIZE
2062	01	00462		LW,R12	TP26	SET FUN AND PRI0
2063	01	00463		BAL,R11	QUEUE	
2064	01	00464	A	N0P		
2065	01	00465		B	TP5	
2066			*			
2067			*			
2068	01	00466	A	TP25	DATA	X'02155A00' TEXTC NL=BANG
2069	01	00467	N	TP26	GEN,8,8,8,8 0,X'F0',15,BCDCT	
2070			*			
2071		01 00468	TP40	EGU	\$	
2072	01	00468	A	LI,R15	X'IFF'	
2073	01	00469	A	AND,R15	R8	DCTX
2074	01	0046A	X	STW,15	AVRDCT	SET DCTX FOR KEYIN
2075			*			
2076		01 0046B	TP50	EGU	\$	

2077	01	0046B	12000474		LD,0	KEYIN		
2078	01	0046C	12800000	X	LD,8	SYSACT	SET UP KEYIN'S ACCOUNT	
2079	01	0046D	22F000F0	A	LI,15	X:FOI	SET UP KEYIN'S PRIORITY	
2080	01	0046E	6AA00000	X	BAL,10	T:IGJ0B	SEE IF WE CAN START UP KEYIN	
2081	01	0046F	68800454		BCR,8	TP5		
2082	01	00470	22100003	A	LI,R1	3	LATER MESSAGE	
2083	01	00471	6AB00510		BAL,11	8CQC		
2084	01	00472	68000454		B	TP5		
2085					*			
2086					B0UND	8		
2087	01	00474	05D2C5E8	A	KEYIN	TEXTC	(KEYIN)	
	01	00475	C9D54040	A				
2088					*		TIME-OUT TEST, ALL BUSY DEVICES	
2089	01	00476	22100000	N	TP60	LI,R1	DCTSIZ	
2090		01	00477		TP62	EGU	\$	
2091	01	00477	72820000	X		LB,R8	DCT5,R1	DCT SWITCHES
2092	01	00478	21800088	A		CI,R8	X:881	DEV BUSY OR KEYIN PENDING
2093	01	00479	6840047E			BAZ	TP63	
2094	01	0047A	09100000	N		PUSH	R1	
2095	01	0047B	6A2001AC			BAL,R2	FORCEIO	YES, FORCE I/O WITH PRIORITY XIFFI
2096	01	0047C	08100000	N		PULL	R1	
2097	01	0047D	68000480			B	TP64	
2098		01	0047E		TP63	EGU	\$	
2099	01	0047E	72820000	X		LB,R8	DCT15,R1	PRE-EMPTED DEVICE
2100	01	0047F	69300483			BNEZ	TP65	YES, GO CHECK IT
2101		01	00480		TP64	EGU	\$	
2102	01	00480	64100477			BDR,R1	TP62	DB NEXT
2103	01	00481	35100000	X		STW,R1	DEVCTCHK	CLEAR FLAG
2104	01	00482	68000454			B	TP5	
2105					*			
2106					*			
2107		01	00483		TP65	EGU	\$	CHECK FOR POSSIBLE IOEX TIMEOUT
2108	01	00483	32620000	X		LW,R6	DCT12,R1	INTERRUPT EXPECTED
2109	01	00484	68100480			BGEZ	TP64	NO
2110	01	00485	72820000	X		LB,R8	DCT18,R1	TIME-OUT REQUESTED
2111	01	00486	68300480			BEZ	TP64	NO
2112	01	00487	32820000	X		LW,R8	DCT11,R1	OVERDUE TIME VALUE

H01 20:42 SEP 08, 1975

105

2113 01 00488 31800000 X
2114 01 00489 68100480
2115 01 0048A 6AB00C00 X
2116 01 0048B 68000480

CW,R8 I0CLOCK
BGE TP64
BAL,R11 RTT0
B TP64

ARE WE OVERDUE
NO
REAL-TIME (IOEX) TIME-OUT PROCESSING

2117
2118

*
*

2119 01 0048C 22100490
2120 01 0048C 22100490
2121 01 0048D 6AB00510
2122 01 0048E 6AB00C00 X
2123 01 0048F 68000454

TP70 EQU \$
LI,R1 PFSRMES
BAL,R11 0CWRITE
BAL,R11 PFSRI0
B TP5

WRITE IPOWER FAIL=SAFE; ON 0C
RESTART I/O AFTER PFSR

2124
2125 TEXT
2126 TEXT
2127 LIST

*
NL FGU INI NEW LINE X'15'
ZER EQU ' '
ZER0S FGU ZER,ZER,ZER,ZER,ZER,ZER,ZER
PFSRMES TEXTC ZER0S,NL,IPOWER FAIL=SAFE;NL

2128 01 00490 18000000 A
01 00491 00000000 A
01 00492 15D7D6E6 A
01 00493 C5D940C6 A
01 00494 C1C9D360 A
01 00495 E2C1C6C5 A
01 00496 15404040 A

2129 01 00497 22200000 A
2130 00000001
2131 01 00498 22300100 A
2132 01 00499 31300000 X
2133 01 0049A 6840049F
2134 01 0049B 47200000 X
2135 01 0049C 60000027 A
2136 01 0049D 6AB00000 X
2137 01 0049E 68000454

TP90 LI,R2 0
D0 SYMBFLAG
LI,3 X'100'
CW,3 CTFLAGS
BAZ TP91
STS,2 CTFLAGS
ENABLE
BAL,11 SACT
B TP5

IS SYMFLAG SET
NO
YES-SET FLAG OFF
AND START SYMBIONTS

2138 01 0049F
2139
2140 01 0049F 22300001 A
2141 01 004A0 47200000 X

TP91 EQU \$
FIN
LI,R3 1
STS,R2 CTFLAGS

RESET FLAG

2142
2143 01 004A1 22101001 A

*
LI,R1 X'1001'

H01 20:42 SEP 08, '75

2144	01	004A2	31100000	X
2145	01	004A3	684004A6	
2146	01	004A4	6U000027	A
2147	01	004A5	68000454	
2148	01	004A6	22100000	A
2149	01	004A7	35100000	X
2150	01	004A8	6U000027	A
2151	01	004A9	68000000	X

0CT60

CW,R1	CTFLAGS
BAZ	0CT60
ENABLE	
B	CTI0P
LI,R1	0
STW,R1	CTACT
ENABLE	
B	TISSE

2152					PAGE		
2153	01	004AA	60000037	A	TP33	DISABLE	***** DISABLE *****
2154	01	004AB	49100000	X		OR,R1	YFF
2155	01	004AC	72820000	X		LB,R8	DCT5,R1
2156	01	004AD	21800008	A		CI,R8	8
2157	01	004AE	6840050E			BAZ	TP32
2158	01	004AF	208FFFF8	A		AI,R8	=8
2159	01	004B0	75820000	X		STB,R8	DCT5,R1
2160	01	004B1	72320000	X		LB,R3	DCT6,R1
2161	01	004B2	72860000	X		LB,R8	I0Q3,R3
2162	01	004B3	208FFF80	A		AI,R8	=X'80'
2163	01	004B4	75860000	X		STB,R8	I0Q3,R3
2164	01	004B5	12820000	X		LD,R8	DCT13,R1
2165	01	004B6	52C00009	A		LH,R12	R9
2166	01	004B7	72820000	X		LB,R8	DCT4,R1
2167	01	004B8	21800008	A		CI,R8	8
2168	01	004B9	691004C0			BL	KEYDV
2169	01	004BA	2180000A	A		CI,R8	10
2170	01	004BB	692004C0			BG	KEYDV
2171	01	004BC	72860000	X		LB,R8	I0Q5,R3
2172	01	004BD	21800008	A		CI,R8	8
2173	01	004BE	693004C0			BNE	KEYDV
2174	01	004BF	73F60000	X		MTB,-1	I0Q11,R3
2175	01	004C0	09B00000	N	KEYDV	PUSH	11
2176	01	004C1	722404C3			LB,2	KEYTV,R2
2177	01	004C2	680404C0			B	KEYDV,R2
2178	01	004C3	00	A	KEYTV	DATA,1	0,CKEYN=KEYDV,RKEYN=KEYDV,EKEYN=KEYDV
		01	004C3	1		04	A
		01	004C3	2		0A	A
		01	004C3	3		0E	A
2179	01	004C4	21C00800	A	CKEYN	CI,R12	X'800'
2180	01	004C5	694004CA			BANZ	RKEYN
2181	01	004C6	22B00000	A		LI,R11	0
2182	01	004C7	22C00001	A		LI,R12	1
2183	01	004C8	72220000	X	CKEYN1	LB,R2	DCT2,R1
2184	01	004C9	6A50039B			BAL,R5	REQCOM1
2185	01	004CA	60000027	A	RKEYN	ENABLE	***** ENABLE *****

H01 20:42 SEP 08, 175

2186 01 004CB 6A2001AC
2187 01 004CC 08B00000 N
2188 01 004CD 68000238
2189 01 004CE 22C00008 A
2190 01 004CF 680004C8

EKEYN

BAL,R2 FORCEI0
PULL 11
B ENBSR4
LI,R12 8
B CKEYN1

RESTORE EA RETURN
RETURN
ERROR

2191
 2192 01 004D0 22D004F2
 2193 01 004D1 22A0000A A
 2194 01 004D2 30A00000 X
 2195 01 004D3 35A20000 X
 2196 01 004D4 72320000 X
 2197 01 004D5 6U000027 A
 2198 01 004D6 225001B5
 2199
 2200
 2201
 2202
 2203
 2204
 2205
 2206
 2207
 2208
 2209
 2210
 2211
 2212
 2213
 2214 01 004D7
 2215 01 004D7 022000A0 A
 01 004D8 04B00000 N
 2216 01 004D9 32C00000 X
 2217 01 004DA 32F00001 A
 2218 01 004DB 3210000D A
 2219 01 004DC 6AB00519
 2220 01 004DD 022000A0 A
 01 004DE 0AB00000 N
 2221 01 004DF E8000005 A
 2222
 2223 01 004E0 0840D4C1 A
 01 004E1 D5E4C1D3 A
 01 004E2 15404C40 A

PAGE
 TYPERSP LI,R13
 TYPEMSG LI,R10

MSG6
 10
 I8CL8CK
 DCT11,R1
 DCT6,R1
 ENABLE
 LI,R5 I8SCHD

WAITING KEYIN
 TIME IN
 CURRENT TIME
 TIME OUT
 Q PNTR
 FORCE RETURN

F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F
 F

NAME: MSGOUT
 PURPOSE: TO WRITE EITHER A CANNED MSG/MSG INTERNALLY
 TO THE OPERATOR.
 DESCRIPTION: CALL HERE WITH:
 R1 DCT INDEX
 R3 I8Q INDEX
 R5 RETURN LINK
 R13 MESSAGE WORD ADDRESS
 NOTE THAT ALL REGISTERS ARE SAVED

MSGOUT

EQU *
 PUSH 10,R11
 LW,R12 Y06
 LW,R15 R1
 LW,R1 R13
 BAL,R11 8CWRITE1
 PULL 10,R11
 B *R5

SAVE R11-R4
 FUNCTION
 DCT INDEX
 MESSAGE ADDRESS
 WRITE IT
 RESTORE REGS
 RETURN

*
 MSG1

TEXTC I MANUALN

H01 20142 SEP 08, 175

2224	01	004E3	0740C5D9 A	MSG2	TEXTC	ERRORN
	01	004E4	D9D6D915 A			
2225	01	004E5	0B40F3C9 A	MSG3	TEXTC	TIMED OUTN
	01	004E6	D4C5C440 A			
	01	004E7	D6E4E315 A			
2226	01	004E8	1140D5D6 A	MSG4	TEXTC	NOT OPERATIONALN
	01	004E9	E340D6D7 A			
	01	004EA	C5D9C1E3 A			
	01	004EB	C9D6D5C1 A			
	01	004EC	D3154040 A			
2227	01	004ED	1140F6D9 A	MSG5	TEXTC	WRITE PROTECTEDN
	01	004EE	C9E3C540 A			
	01	004EF	D7D9D6E3 A			
	01	004F0	C5C3F3C5 A			
	01	004F1	C4154040 A			
2228	01	004F2	1040D7D3 A	MSG6	TEXTC	PLEASE RESPONDN
	01	004F3	C5C1F2C5 A			
	01	004F4	40D9C5E2 A			
	01	004F5	D7D6D5C4 A			
	01	004F6	15404040 A			
2229	01	004F7	0F40C3D6 A	MSG7	TEXTC	CODE DISC ERRN
	01	004F8	C4C540C4 A			
	01	004F9	C9E2C340 A			
	01	004FA	C5D9D915 A			
2230	01	004FB	0B40D9C5 A	MSG9	TEXTC	REQ RETRYN
	01	004FC	D840D9C5 A			
	01	004FD	E3D9E815 A			
2231	01	004FE	1540C9D5 A	MSG9A	TEXTC	INCONSISTENT STATUSN
	01	004FF	C3D6D5E2 A			
	01	00500	C9E2F3C5 A			
	01	00501	D5E340E2 A			
	01	00502	E3C1E3E4 A			
	01	00503	E2154040 A			

				PAGE		
2232						
2233				*		
2234	01	00504	00	A	DEVKEYN DATA,1	0,'C','R','E'
	01	00504	1	A		
	01	00504	2	A		
	01	00504	3	A		
2235		00000003			NDEVKEYN EQU	3
2236	01	00505	2510007F	A	TP31	SLS,R1 =1
2237	01	00506	72700008	A		LB,R7 R8
2238	01	00507	2170006B	A		CI,R7 1,1
2239	01	00508	6930050E			BNE TP32
2240	01	00509	22200003	A		LI,R2 NDEVKEYN
2241	01	0050A	52800008	A		LH,R8 R8
2242	01	0050B	71840504			CB,R8 DEVKEYN,R2
2243	01	0050C	683004AA			BE TP33
2244	01	0050D	6420050B			BDR,R2 \$=2
2245	01	0050E	64000027	A	TP32	ENABLE ***** ENABLE *****
2246	01	0050F	22100004	A		LI,R1 4
2247	01	00510			BCWRITE	RES 0
2248	01	00510	22700000	A	BCQC	LI,R7 0
2249					*F*	
2250					*F*	NAME: BCQUEUE
2251					*F*	
2252					*F*	PURPOSE: TO ENQUEUE A I/O REQUEST TO THE BC.
2253					*F*	
2254					*F*	DESCRIPTION: CALL HERE WITH:
2255					*F*	
2256					*F*	R1 MESSAGE CODE
2257					*F*	R7 DCT INDEX (0 MEANS CANNED MSG)
2258					*F*	R11 RETURN LINK
2259					*F*	
2260					*F*	SAVES R5 THRU R11 (SEE MSGOUT)
2261					*F*	
2262		01	00511		BCQUEUE EQU	\$
2263	01	00511	32C00019	N		LW,R12 Y01
2264	01	00512	32F00007	A		LW,R15 R7
2265	01	00513	68300515			BEZ \$=2

2266	01	00514	32C0001A	N	LW,R12	Y02	SET TO WRITE WITH DEVICE NAME
2267	01	00515	2110000E	A	CI,R1	NMSG	CHECK FOR RECOGNIZED MESSAGE
2268	01	00516	69200519		BG	0CWRITE1	NO
2269	01	00517	72120523		LB,R1	MSGBASE,R1	TRANSLATE CODE TO ADDRESS
2270	01	00518	20100523		AI,R1	MSGBASE	ADD BASE ADDRESS FOR MESSAGES
2271	01	00519	22000000	A	0CWRITE1	LI,R0	SET NO END ACTION
2272	01	0051A	72200000	X	0C22	LB,R2	PRIORITY
2273	01	0051B	25200010	A		SLS,R2	
2274	01	0051C	49C00002	A		BR,R12	16
2275	01	0051D	20C00000	N		AI,R12	R2
2276	01	0051E	F2E00001	A	0C23	LB,R14	0CDOCT
2277	01	0051F	44D0051E			ANLZ,R13	*R1
2278	01	00520	20BFFFFFF	A			0C23
2279	01	00521	20D00001	A		AI,R11	=1
2280	01	00522	68000054			AI,R13	1
2281			00000000		MSG	B	QUEUE
2282						CNAME	0
2283					LF	PR0C	
2284						GEN,8	AF(1)=MSGBASE
2285	01	00523	0A	A	MSGBASE	PEND	
2286	01	00523	1 0A	A		MSG	0C53
2287	01	00523	2 04	A		MSG	0C53
2288	01	00523	3 07	A		MSG	0C51
2289	01	00524	0A	A		MSG	0C52
2290	01	00524	1 00	A		MSG	0C53
2291	01	00524	2 0A	A		MSG	0C60
2292	01	00524	3 0A	A		MSG	0C53
2293	01	00525	0F	A		MSG	0C53
2294	01	00525	1 14	A		MSG	0C70
2295	01	00525	2 18	A		MSG	0C71
2296	01	00525	3 1C	A		MSG	0C72
2297	01	00526	21	A		MSG	0C73
2298	01	00526	1 26	A		MSG	0C74
2299			0000000E		NMSG	MSG	0C75
2300						EQU	BA(*)=BA(MSGBASE)
2301	01	00527			0C51	BOUND	4
2302	01	00527	0A155A5A	A		RES	0
						TEXTC	IN AVRERRN1

DCTX 0F 0C DEVICE
 BYTE COUNT FOR MESSAGE
 GET BYTE ADDRESS TO R13
 FIX RETURN
 SKIP COUNT
 OUTPUT MSG

0 => EH MESSAGE
 1 => EH MESSAGE
 2 => AVRERR MESSAGE
 3 => LATER MESSAGE
 4 => EH MESSAGE
 5 => AVAIL
 6 =>
 7 =>
 8 => SYMB NOT ACTIVE
 9 => SYMB ACTIVE
 10=> SYMB NOT SUSP
 11=> NOT AVAIL
 12=> SYMB NOT SUSPENDED
 13=> SYMB TERMINATED

	01	00528	C1E5D9C5	A			
	01	00529	D9D91540	A			
2303	01	0052A			0C52	RES	0
2304	01	0052A	08	A		DATA,1	8,X'15'5,L,I,A,I,T,I,E,I,R,X'15'0,0,0
	01	0052A	1 15	A			
	01	0052A	2 05	A			
	01	0052A	3 D3	A			
	01	0052B	C1	A			
	01	0052B	1 E3	A			
	01	0052B	2 C5	A			
	01	0052B	3 D9	A			
	01	0052C	15	A			
	01	0052C	1 0U	A			
	01	0052C	2 0U	A			
	01	0052C	3 0U	A			
2305	01	0052D			0C53	RES	0
2306	01	0052D	08154040	A		TEXTC	'N EH N'
	01	0052E	C5C86F40	A			
	01	0052F	15404040	A			
2307					*		
2308	01	00530	0740C1E5	A	0C60	TEXTC	' AVAILN' DEVICE
	01	00531	C1C9D315	A			
2309					*		
2310			00000001			D0	SYMBFLAG
2311	01	00532	1140F2E8	A	0C70	TEXTC	' SYMB NOT ACTIVEN' SYMBI0NT
	01	00533	D4C240D5	A			
	01	00534	D6E340C1	A			
	01	00535	C3E3C9E5	A			
	01	00536	C5154040	A			
2312	01	00537			0C71	RES	0
2313	01	00537	0U40F2E8	A		TEXTC	' SYMB ACTIVEN'
	01	00538	D4C240C1	A			
	01	00539	C3E3C9E5	A			
	01	0053A	C5154040	A			
2314	01	0053B			0C72	RES	0
2315	01	0053B	0F40F2E8	A		TEXTC	' SYMB NOT SUSPN'
	01	0053C	D4C240D5	A			

H01 20:42 SEP 08, 1975

114

01 0053D D6E340E2 A
 01 0053E E4E2D715 A
 2316 01 0053F
 2317 01 0053F 1040F2E8 A
 01 00540 D4C240D5 A
 01 00541 D6E340C1 A
 01 00542 E5C1C9D3 A
 01 00543 15404040 A
 2318 01 00544
 2319 01 00544 1040F2E8 A
 01 00545 D4C240E2 A
 01 00546 E4E2D7C5 A
 01 00547 D5C4C5C4 A
 01 00548 15404040 A
 2320 01 00549
 2321 01 00549 1040C4C9 A
 2322 01 0054A E2C340C2 A
 01 0054B D3D6C3D2 A
 01 0054C 40C2C1C4 A
 2323 01 0054D 15000000 A
 2324
 2325
 2326
 2327
 2328
 01 0054E 00009000 A
 01 0054F AFFFFFFF A
 01 00550 5FFFFFFF A
 01 00551 00000015 A

0C73 RES 0
 TEXTC ! SYMB NOT AVAILN!

0C74 RES 0
 TEXTC ! SYMB SUSPENDEDN!

0C75 RES 0
 DATA X:1040C4C9! CNT,! DI!
 TEXT !SC BLOCK BAD!

DATA X:15000000!
 FIN

* LOCAL

* END

CONTROL SECTION SUMMARY: 01 00552 PT 0

ABA/00000004
ACNMAX/0000000C
ARS/00000004
ATCYLBIT/00008000
BACIS/0000002C
BACV8/00000024
BAFCN/0000001C
BAIMT/00000038
BANRA/00000008
BARNDIV/00000016
BASVA/0000004D
BBUD/00000010
BISR4/01 0004F
BTD/00000000
BUFSIZ/00000800
BUF2/FUNC
CCBD/00000004
CFUPRIVBIT/00010000
CHANTEST/01 002AC
CHKDA2/01 00126
CH22/01 00005
CIS/00000000
CLEANUP1/01 0034A
CLBCKXIT/01 0020A
CRC8R/01 00197
CTRIG1/01 0022C
CYL/00000000
DCBPRIVBIT/00000800
DCT*FLD/LIST
DEVKEYN/01 00504
DPDFDA/00010004
DSI/00000001
E8P/00000000
FCN/00000007
FIL1/00000005
FNEMAX/00000020

ACCHECK/01 001E1
ACS/00000005
ASN/00000000
ATPRIVBIT/00004000
BAC8S/0000002C
BADEVTP/00000006
BAFILDISP/0000002C
BAKEYM/00000030
BA8RG/00000017
BASCR/00000044
BAVDCTX/00000028
BCDA/0000000F
BITS/00000001
BUF/00000002
BUFX/00000009
BUF2MSK/000003E0
CDA/00000008
CHAIN/01 000CC
CHECKMF/01 0000F
CHNEX/01 000C9
CH50/01 000E6
CKEYN/01 004C4
CLK/0000000C
CMD/00000014
CSC/0000000E
CVA/00000014
DCBCDAM/00000015
DCBPR8C/00000000
DCT*SHIFT*AMT/00000010
DIR/00000000
DRIVEI81/01 001AA
DUALFLAG/00000001
ERA/00000003
FC8N/00000000
FLD/00000015
F8RCESC/01 002BF

ACD/00000015
AGV/00000000
ASSIGNSC/01 002C4
BAATNGC/00000007
BACSC/00000038
BADSC/0000004C
BAFUNM/00000002
BALVA/00000029
BA8VC/0000002D
BASLIDES/00000003
BAVNB/0000002C
BFL/00000010
BLINK/00000000
BUFF1/00009400
BUF1/FUNC
CBD/00000012
CDAM/00000002
CHAINCHK/01 000B8
CHFLAGS/01 002BA
CHSAVE/01 002B4
CH55/01 000EE
CKEYN1/01 004C8
CL8CKI8/01 001F4
C8S/0000000B
CTI8P/01 00454
CVI/00000009
DCBCYLBIT/00020000
DCBSWXVBIT/00008000
DISCBPR8C/00000001
DSC/00000013
EGV/00000000
EXT/00000000
FDA/00000001
FLINK/00000001
FPARAM/0000000B

ACNDISP/00000009
ANSPR8C/00000000
ATINVAT/00000005
BAAVRNBU/00000005
BACVI/00000024
BADSI/00000007
BAHSC/00000050
BANLR/00000015
BARAX/00000015
BASPARE/0000004F
BAVSNB/00000024
BISR2/01 0010F
BLK/00000006
BUFF2/00009600
BUF1MSK/0000001F
CBFLAGS/01 002B7
CFU/00000001
CHANBLK/01 001D5
CHKDA1/01 00128
CH21/01 000D1
CH60/01 00104
CLEANUP/01 0034A
CL8CK8UT/01 00204
CPC8R/01 00199
CT8CINT/01 00235
CV8/00000009
DCBN8SEPBIT/00000200
DCC8R/01 0019B
DEFER/00000000
DPADFDA/00010002
USERV/01 001AF
EKEYN/01 004CE
FCD/00000000
FILDISP/0000000B
FLP/00000006
FRM/00000000

20142 SEP 08, '75

FRONTEND/01 000U2
 GAVAL/00000003
 GQ11/01 00036
 HACMD/00000028
 HLC/00000013
 INCDC/01 0004E
 I0ALBAD/01 002B1
 I0GINIT/01 0011U
 I0SCHED/01 001B5
 I0STEX/01 0027F
 I0STEX35/01 0029B
 I0STRT3/01 00275
 I0UNMAP/01 0000U
 I020/01 0033F
 I062/01 002EF
 I075/01 00300
 KAD/00000012
 KEYM/0000000C
 LSLIDES/0000004U
 MIDIS/0000000C
 M0NPR0C/00000001
 MSG6/01 004F2
 M11/0000000B S
 M15/0000000F S
 M19/00000013 S
 M22/00000016 S
 M26/0000001A S
 M3/00000003 S
 M4/00000004 S
 M8/00000008 S
 NDEVKEYN/00000003
 NMSG/0000000E
 NVA/00000008
 NXTF/00000005
 0CT20/01 0044B
 0CT60/01 004A6
 0C51/01 00527

FSP/00000007
 GENERIC/01 0018D
 GQ40/01 0002F
 HAFLD/0000002B
 HSC/00000014
 INCTP/01 0004D
 I0CUEXIT/01 00381
 I0REJECT/01 002CE
 I0SCHED1/01 001B6
 I0STEX1/01 00281
 I0STRT/01 0024C
 I0STRT4/01 0027D
 I010/01 0030F
 I022/01 0033F
 I07/01 002FB
 I076/01 0030A
 KBUF/0000000A
 KEYTV/01 004C3
 LVA/0000000A
 MIUD/00000010
 MPBITS/00000000
 MTC0R/01 0019D
 M12/0000000C S
 M16/00000010 S
 M2/00000002 S
 M23/00000017 S
 M27/0000001B S
 M30/0000001E S
 M5/00000005 S
 M9/00000009 S
 NEXTQUE/01 001CC
 N0SEP/00000000
 NWISE/00000001
 0C/00000002
 0CT30/01 0044E
 0CWRITE1/01 00519
 0C52/01 0052A

FUN/00000001
 GETQ/01 0002A
 HAACD/0000002A
 HAPBD/00000029
 HWDSI/00000003
 INTSEXIT/01 00217
 I0F0LL0W/01 0037B
 I0SCCHK/01 0036F
 I0SCHED2/01 001BB
 I0STEX2/01 00287
 I0STRT1/01 00255
 I0STRT5/01 00263
 I012/01 0031A
 I030/01 00343
 I070/01 002F7
 I08/01 00324
 KEYDV/01 004C0
 LDA/00000007
 MAXACN/00000010
 M0C0R/01 001A7
 MSGBASE/01 00523
 M1/00000001 S
 M13/0000000D S
 M17/00000011 S
 M20/00000014 S
 M24/00000018 S
 M28/0000001C S
 M31/0000001F S
 M6/00000006 S
 NAV/00000004
 NL/TEXT
 N0U/00000000
 NWK/00000005
 0C0C/01 00510
 0CT35/01 0044F
 0C22/01 0051A
 0C53/01 0052D

FVA/00000014
 GG10/01 00034
 HACCD/00000008
 HASND/00000019
 IMT/0000000E
 INVAL/01 001DF
 I0KEYIN/01 00387
 I0SCEXIT/01 00380
 I0SCHED3/01 001BD
 I0STEX3/01 0028B
 I0STRT2/01 00272
 I0STRT6/01 00268
 I014/01 00327
 I050/01 00325
 I071/01 0030D
 IPREGV/01 0001E
 KEYIN/01 00474
 LRDL0/0000004E
 MBG/00000000
 M0D/00000000
 MSG1/01 004E0
 M10/0000000A S
 M14/0000000E S
 M18/00000012 S
 M21/00000015 S
 M25/00000019 S
 M29/0000001D S
 M32/00000020 S
 M7/00000007 S
 NAVX/00000002
 NLR/00000005
 NRA/00000002
 NXTA/00000010
 0CT10/01 00446
 0CT40/01 00451
 0C23/01 0051E
 0C60/01 00530

8C70/01 00532
 8C74/01 00544
 8RG/00000005
 PBD/00000014
 PTCOR/01 00195
 QD33/01 0014A
 QD51A/01 0015E
 Q10/01 00054
 Q15AA/01 00087
 Q26A/01 0009F
 Q29/01 00095
 R*LDCTX/00000000
 RAX/00000005
 RC22/01 00409
 RC28/01 0042F
 RC4/01 003B3
 RC8/01 003C8
 REGCBM/01 00398
 REGSERV/01 001DL
 RLIM/00000015
 RSZ/00000003
 R1/00000001
 R13/00000000
 R3/00000003
 R7/00000007
 SCFU/00000004
 SC17/01 0007A
 SETKEYIN/01 00387
 SKREG/01 00023
 SQS/00000014
 SVA/00000013
 TAB1/0000000F
 T8F/00000000
 TP20/01 0045D
 TP30A/01 0022A
 TP40/01 00468
 TP62/01 00477

8C71/01 00537
 8C75/01 00549
 8RIG/01 00000
 PCK/00000000
 QBUF/00000007
 QD4/01 00130
 QD52/01 00180
 Q11/01 00060
 Q151/01 0007C
 Q27/01 000A4
 Q30/01 000A9
 R*LSECTA/00000000
 RC10/01 003DD
 RC23/01 00411
 RC29/01 0043C
 RC5/01 003B8
 RC9/01 003D5
 REGCBM1/01 00398
 REGSTRT/01 001BF
 RNDEV/00000005
 RTPRI8/000000C0
 R10/0000000A
 R14/0000000E
 R4/00000004
 R8/00000008
 SCHEDHLD/01 001D1
 SECT*FLD/LIST
 SID/00000015
 SKREG1/01 00025
 SREC/00000006
 SWXV/00000000
 TCFU/0000000F
 T8PMSK/00007C00
 TP25/01 00466
 TP31/01 00505
 TP5/01 00454
 TP63/01 0047E

8C72/01 0053B
 8LDTNEWFC/01 0016E
 8VC/0000000B
 PFSRMES/01 00490
 QD30/01 00143
 QD49/01 00176
 QD56/01 00184
 Q13/01 00070
 Q20/01 0008E
 Q28/01 000A7
 Q40/01 000B1
 R*STDCTX/00000000
 RC14/01 003ED
 RC24/01 00416
 RC3/01 003A6
 RC6/01 003C0
 RDLO/0000004C
 REQERR/01 0038F
 RESTPRI/01 00385
 RNR/00000010
 RWS/0000000D
 R11/0000000B
 R15/0000000F
 R5/00000005
 R9/00000009
 SCHEDXIT/01 001CE
 SELECTAB/01 001E4
 SI8FAIL/01 002D9
 SKREG2/01 00026
 SSCFBORCE/01 002BD
 SYMBFLAG/00000001
 TDA/00000005
 TPBASE/01 0045B
 TP26/01 00467
 TP32/01 0050E
 TP50/01 0046B
 TP64/01 00480

8C73/01 0053F
 8NWK/00000005
 PAT/00000011
 PRIV/00000000
 QD31/01 00145
 QD50/01 0017B
 QD60/01 00189
 Q15/01 00078
 Q26/01 0009D
 Q28A/01 000A6
 Q50/01 000B2
 R*STSECTA/00000000
 RC15/01 003FB
 RC26/01 0041B
 RC30/01 00440
 RC7/01 003D1
 RELEASSC/01 002A3
 REGNSTRT/01 001CA
 RKEYN/01 004CA
 RST8KE/00000014
 R0/00000000
 R12/0000000C
 R2/00000002
 R6/00000006
 SCHECK/01 001D9
 SCR/00000011
 SEQ/00000005
 SKIPREG/01 00021
 SND/0000000C
 STARTI8/01 0023A
 S69PR8C/00000001
 TLB/0000000E
 TP10/01 0045D
 TP30/01 00223
 TP33/01 004AA
 TP60/01 00476
 TP65/01 00483

HC1 20:42 SEP 08, 1975

TP70/01 0048C
 TTL/00000000
 TYPMSG/01 004D1
 USR/00000000
 VNB/0000000B
 VTBC:MAPWL/00000004
 WAT/00000000
 XBUFSIZ/00000400
 X10/00000005 S
 X20/00000006 S
 X4/00000003 S
 X7/00000003 S
 X800/0000000C S
 Y0004/00000013 S
 Y004/00000017 S
 Y04/0000001B S
 Y4/0000001F S
 1Q1/01 0003F

TP90/01 00497
 TYC/00000002
 TYPERSP/01 004D0
 UTSPRC/00000001
 VSND/00000009
 VTBC:INVAT/00000005
 WFNEMAX/00000008
 XF/00000004 S
 X100/00000009 S
 X200/0000000A S
 X40/00000007 S
 X7F/00000007 S
 X8000/00000010 S
 Y0008/00000014 S
 Y008/00000018 S
 Y08/0000001C S
 Y8/00000020 S
 1Q2/01 00027

TP91/01 0049F
 TYC0R/01 00193
 UFLAGS/00000000
 VDCTX/0000000A
 VTBC:BITMAP/00000007
 VTBC:SNVD/00000003
 WRDLO/00000013
 XFF/00000008 S
 X1000/0000000D S
 X2000/0000000E S
 X400/0000000B S
 X8/00000004 S
 Y0001/00000011 S
 Y001/00000015 S
 Y01/00000019 S
 Y1/0000001D S
 ZER/TEXT
 1Q3/01 00044

TRN/00000005
 TYPCHR/01 0018F
 ULB/0000000C
 VFC/00000000
 WABLK/00000006
 WXBUFSIZ/00000100
 X1/00000001 S
 X2/00000002 S
 X3/00000002 S
 X4000/0000000F S
 X80/00000008 S
 Y0002/00000012 S
 Y002/00000016 S
 Y02/0000001A S
 Y2/0000001E S
 ZER0S/LIST
 1Q4/01 0004F

* EXTERNAL DEFINITIONS

CHKDA/01 00112
 ENBSR4/01 00238
 IBG/01 00000
 MSG2/01 004E3
 MSG7/01 004F7
 NEWQNW/01 00052
 BCWRITE/01 00510
 QUEUE1/01 0012D
 RC21/01 00405

CHKDAQ/01 00115
 FORCEIB/01 001AC
 IBSCU/01 00358
 MSG3/01 004E5
 MSG9/01 004FB
 NEWQNW/01 00050
 PL5BSR4/01 000B6
 Q15A/01 0007E
 RESCHED/01 00385

CTRIG/01 0022B
 INTSIM/01 0020B
 IBSST/01 00248
 MSG4/01 004E8
 MSG9A/01 004FE
 BCINT/01 00443
 PVCHKDA/01 00116
 Q51/01 000B5
 RTRET1/01 00328

DRIVEIB/01 001A9
 IBINT/01 002DD
 MSGOUT/01 004D7
 MSG5/01 004ED
 NEWQ/01 00054
 BCQUEUE/01 00511
 QUEUE/01 0012F
 RC20/01 003FF
 RTRET2/01 002F6

* PRIMARY REFERENCES

AVRDCT
 CIRTRW
 CIT6
 DCACCESS
 DCT10
 DCT17
 DCT23
 DCT7
 AVRTBLNE
 CFUBIT
 CJOB
 UCT\$MASK
 UCT11
 UCT18
 UCT24
 UCT8

BATAPE
 CIT1
 CBCIB
 DCT\$MASK\$2
 DCT12
 DCT19
 DCT25
 DCT9

BTDBIT
 CIT2
 CTACT
 DCTSIZ
 DCT13
 DCT2
 DCT3
 DEVCTCHK
 BT31T0
 CIT3
 CTFLAGS
 DCT1
 DCT14
 DCT20
 DCT4
 DID

BUFLIMS
 CIT4
 CT0C
 DCT1A
 DCT15
 DCT21
 DCT5
 DISCLIMS
 C;NBQ
 CIT5
 CURBQ
 DCT1P
 DCT16
 DCT22
 DCT6
 DPACCESS

H01 20142 SEP 08, 175

DSCCVT
I8CTQ
I8Q14
I8Q6
J:JIT
KEYINBUF
8CDCY
SICUN
SSE0
T:ISSE
UNEXP
YFFFF
:B9

E:IC
I8PSD
I8Q15
I8Q7
J:RWECB
MAP
8CPSD
SC1900
SYSACT
I8:FLGS
UNMAP
Y00FE

E:IP
I8Q1
I8Q16
I8Q8
JIT
MASKS
PFSR18
SECTOR#MASK
TIGJOB
TEMP
XE7
Y03

ERRLOG
I8Q10
I8Q2
I8Q9
J8VVP
MAX8Q
QFREE
SL:BXMF
T:PULLE
TPACCESS
XFB
Y05

INTCNT
I8Q11
I8Q3
I8SERCK
J8VVPA
MBGBIT
RBLIMS
SL:I8TA
T:REG
TSTACK
X44
Y06

INTFLG
I8Q12
I8Q4
J:CTIME
JX:CMAP
MP00L
RCVPSD
SL:I8XMF
T:RUE
UB:MF
YE
:B1G

119
I8CLOCK
I8Q13
I8Q5
J:DCBLINK
JXCMAP
MP00LIM
REGIPSD
SQHD
T:SAVE
UB:PRI8
YFF
:B560

* SECONDARY REFERENCES

CTGL
RTI8STRT
CTINT
RTT8

CTWD
SACT

ECBP8ST1

RBQCK

RTCU

RTINT

- * NO UNDEFINED SYMBOLS
- * ERROR SEVERITY LEVEL: 0
- * NO ERROR LINES