



L T4RUPT PROGRAM

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0001				12,2000					BANK 12
0002	REP	1		08,2000					SETLOC T4RUP
0003				08,2000					BANK
0004	REP	1							COUNT 08/T4RPT
0005	REP	1		08,2000	54 016 1	T4RUPT			TS BANKRUPT
0006				08,2001	0 0008 1				EXTEND
0007	REP	1		08,2002	22 012 1				QXCH QRUPT
0008	REP	2	LAST	08,2003	11=302 0				CCS DSRUPTSW
0009	REP	1		08,2004	1 2010 0				TCP NORMT4 +1
0010	REP	2	LAST	08,2005	1 2007 0				TCP NORMT4
0011	REP	1		08,2006	1 2136 0				TCP QUIKOSP
0012	REP	1		08,2007	3 4716 0	NORMT4			CAP SEVEN
0013	REP	1		08,2010	54 070 1				TS RUPTREG1
0014	REP	3	LAST	08,2011	55=302 0				TS DSRUPTSW
0015	REP	1							COUNT 02/T4RPT

GOES 7(-)0 AROUND AND AROUND

0016 REP 1 7711 74K = HIGH4  
 R0017 RELTAB IS A PACKED TABLE. RELAYWORD CODE IN UPPER 4 BITS, RELAY CODE  
 R0018 IN LOWER 5 BITS.

0019				4072					BLOCK 02
0020	REP	1		4000					SETLOC FFTAG12
0021				4072					BANK
0022				4072	04025 1	RELTAB			OCT 04025
0023				4073	10003 0				OCT 10003
0024				4074	14031 0				OCT 14031
0025				4075	20033 0				OCT 20033
0026				4076	24017 1				OCT 24017
0027				4077	30036 1				OCT 30036
0028				4100	34034 1				OCT 34034
0029				4101	40023 1				OCT 40023
0030				4102	44035 1				OCT 44035
0031				4103	50037 0				OCT 50037
0032				4104	54000 0				OCT 54000
0033				4105	60000 1	RELTAB11			OCT 60000



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P0034 SWITCHED-BANK PORTION.

0035				12,2000			BANK	12
0036	REF	2	LAST	129	08,2000		SETLOC	TARUP
0037					08,2012		BANK	
0038	REF	2	LAST	129 TO 129'	10	10*	COUNT	08/TARPT
0039	REF	1			08,2012	11*036 1	CDRVE	CCS DSPTAB +11D
0040	REF	1			08,2013	0 2063 0		TC DSPQUT
0041	REF	2	LAST	130	08,2014	0 2063 0		TC DSPQUT
0042	REF	2	LAST	130	08,2015	57*036 0		XCH DSPTAB +11D
0043	REF	1			08,2016	7 4372 1		MASK LOW11
0044	REF	3	LAST	130	08,2017	55*036 1		TS DSPTAB +11D
0045	REF	1			08,2020	6 4105 1		AD RELTAB11
0046					08,2021	0 0006 1		EXTEND
0047	REF	1			08,2022	01 010 1		WRITE QUTO
0048	REF	1			08,2023	0 2071 0		TC HANG20



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P0049 DSPOUT PROGRAM. PUTS OUT DISPLAYS.

0050	REF	1		06,2024	55=016 0	DSPOUTSB	TS	NOUT	
0051	REF	1		06,2025	4 4714 0		CS	ZERO	
0052	REF	1		06,2026	54 073 1		TS	DSRUPTM	SET TO -0 FOR 1ST PASS THRU DSPTAB
0053	REF	1		06,2027	56 776 1		XCH	DSPCNT	
0054	REF	1		06,2030	8 4713 0		AD	NEGO	TO PREVENT +0
0055	REF	2	LAST	131	06,2031	54 776 0		TS	DSPCNT
0056	REF	3	LAST	131	06,2032	50 776 1	DSPCAN	INDEX	DSPCNT
0057	REF	4	LAST	130	06,2033	11=023 0		CCS	DSPTAB
0058	REF	4	LAST	131	06,2034	10 776 0		CCS	DSPCNT
0059	REF	1		06,2035	1 2030 1		TCF	DSPCAN -2	IF DSPTAB ENTRY +, SKIP
0060	REF	1		06,2036	1 2047 1		TCF	DSPLAY	IF DSPCNT +, AGAIN
0061				06,2037	00012 1	TABLNT	OCT	12	IF DSPTAB ENTRY -, DISPLAY
0062	REF	2	LAST	131	06,2040	10 073 1		CCS	DSRUPTM
0063				06,2041	37764 0	120MRUPT	DEC	16372	DEC 10 LENGTH OF DSPTAB
0064	REF	2	LAST	131	06,2042	55=016 0		TS	IF DSRUPTM=+0, 2ND PASS THRU DSPTAB
0065	REF	2	LAST	39	06,2043	0 0002 0		TC	(DSPCNT = 0). +0 INTO NOUT.
0066	REF	3	LAST	131	06,2044	54 073 1		TS	
0067	REF	1		06,2045	3 2037 1		CAP	TABLNT	IF DSRUPTM=-0, 1ST PASS THRU DSPTAB
0068	REF	2	LAST	131	06,2046	1 2031 0		TCF	(DSPCNT=0). +0 INTO DSRUPTM. PASS AGAIN
0069	REF	1		06,2047	8 4712 1	DSPLAY	AD	ONE	
0070	REF	5	LAST	131	06,2050	50 776 1		INDEX	DSPCNT
0071	REF	5	LAST	131	06,2051	55=023 0		TS	DSPTAB
0072	REF	2	LAST	130	06,2052	7 4372 1		TS	DSPTAB
0073	REF	4	LAST	131	06,2053	54 073 1		TS	DSRUPTM
0074	REF	1		06,2054	3 4364 1		CAP	HI5	REPLACE POSITIVELY
0075	REF	6	LAST	131	06,2055	50 776 1		INDEX	DSPCNT
0076	REF	1		06,2056	7 4072 1		INDEX	RELTAB	REMOVE BITS 12 TO 15
0077	REF	5	LAST	131	06,2057	8 0073 0		AD	DSRUPTM
0078				06,2060	0 0006 1		EXTEND		
0079	REF	2	LAST	130	06,2061	01 010 1		WRITE	QUT0
0080	REF	1		06,2062	1 6706 1		TCF	Q+1	WRITE CHANNEL 10
0081	REF	1		06,2063	10 101 0	DSPOUT	CCS	FLAGWRD5	***NORMAL RETURN SKIPS ONE
0082	REF	2	LAST	131	06,2064	3 4714 1		CAP	ZERO
0083	REF	1		06,2065	1 2132 1		TCF	NODSPOUT	DONT DISPLAY UNLESS DSKY FLAG ON.
0084	REF	3	LAST	131	06,2066	11=016 0		CCS	NOUT
0085	REF	1		06,2067	0 2024 0		TC	DSPOUTSB	
0086	REF	2	LAST	131	06,2070	1 2132 1		TCF	NODSPOUT
0087	REF	1		06,2071	4 2173 1	HANG20	CS	11,14,9	NO DISPLAY REQUESTS
0088	REF	4	LAST	129	06,2072	27=302 0		ADS	DSRUPTSW
0089	REF	1		06,2073	3 7700 1		CAP	20MRUPT	
0090	REF	1		06,2074	54 027 0	SETTIME4	TS	TIME4	



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P0091 THE STATUS OF THE PROCEED PUSHBUTTON IS MONITORED EVERY 120 MILLISECONDS VIA THE CHANNEL 32 BIT 14 INBIT.  
 R0093 THE STATE OF THIS INBIT IS COMPARED WITH ITS STATE DURING THE PREVIOUS T4RUPT AND IS PROCESSED AS FOLLOWS.

R0095 IF PREV ON AND NOW ON - BYPASS  
 R0096 IF PREV ON AND NOW OFF - UPDATE IMODES33  
 R0097 IF PREV OFF AND NOW ON - UPDATE IMODES33 AND PROCESS VIA PINBALL  
 R0098 IF PREV OFF AND NOW OFF - BYPASS

R0099 THE LOGIC EMPLOYED REQUIRES ONLY 9 MCT (APPROX. 108 MICROSECONDS) OF COMPUTER TIME WHEN NO CHANGES OCCUR.

Address	Operation	Condition	Value	Code	Comment
0101	RESP	1	06,2075 3 1321 0	PROCEED CA IMODES33	MONITOR FOR PROCEED BUTTON
0102			06,2076 0 0008 1	EXTEND	
0103	RESP	1	06,2077 06 032 0	RXOR CHAN32	CHECK IF BIT 14 DIFFERENT
0104	RESP	10 LAST 63	06,2100 7 4675 0	MASK BIT14	
0105			06,2101 0 0008 1	EXTEND	
0106	RESP	1	06,2102 1 2116 1	BZF T4JUMP	NO CHANGE
0107	RESP	2 LAST 132	06,2103 23=321 0	LXCH IMODES33	
0108			06,2104 0 0008 1	EXTEND	
0109	RESP	1	06,2105 06 001 0	RXOR LCHAN	
0110	RESP	3 LAST 132	06,2106 55=321 1	TS IMODES33	UPDATE IMODES33
0111	RESP	11 LAST 132	06,2107 7 4675 0	MASK BIT14	
0112	RESP	2 LAST 80	06,2110 10 000 0	CCS A	
0113	RESP	2 LAST 132	06,2111 1 2116 1	TCF T4JUMP	WAS ON - NOW OFF
0114	RESP	1	06,2112 3 4371 0	CAP CHRPRIO	WAS OFF - NOW ON
0115	RESP	1	06,2113 0 5027 1	TC NOVAC	
0116	RESP	1	0777	ERANK= DSPCOUNT	
0117	RESP	1	06,2114 03353 1	ZCADR PROCKEY	
0117	RESP	1	06,2115 60101 1		

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P0116 JUMP TO APPROPRIATE ONCE-PER SECOND (.96 SEC ACTUALLY) ACTIVITY

0119	REF	2	LAST	129	06,2116	50 070 0	T4JUMP	INDEX	RUPTREG1		
0120					06,2117	1 2120 1		TCF	+1		
0121	REF	1			06,2120	1 2130 0		TCF	OPTTEST		
0122	REF	1			06,2121	1 2785 0		TCF	OPTMON		
0123	REF	1			06,2122	1 2174 0		TCF	IMMON		
0124	REF	3	LAST	128	06,2123	1 5222 1		TCF	RESUME		
0125	REF	2	LAST	133	06,2124	1 2130 0		TCF	OPTTEST		
0126	REF	2	LAST	133	06,2125	1 2785 0		TCF	OPTMON		
0127	REF	2	LAST	133	06,2126	1 2174 0		TCF	IMMON		
0128	REF	4	LAST	133	06,2127	1 5222 1		TCF	RESUME		
0129	REF	1			06,2130	0 4633 0	OPTTEST	TC	IBNCALL		
0130	REF	1			06,2131	20000 0		CADR	OPTDRIVE		
0131	REF	1			7700		20MRUPT	=	OCT3776	(DEC 16382)	
0132					06,2132	0 0006 1	NODSPOUT	EXTEND		TURN OFF RELAYS	
0133	REF	3	LAST	131	06,2133	01 010 1		WRITE	OUT0		
0134	REF	1			06,2134	3 2041 0		CAP	120MRUPT	SET FOR NEXT DRIVE	
0135	REF	1			06,2135	1 2074 1		TCF	SETTIME4		
0136	REF	12	LAST	132	06,2136	3 4675 1	QUIKDSP	CAP	BIT14		
0137	REF	5	LAST	131	06,2137	7 1302 0		MASK	DSRUPTSW		
0138					06,2140	0 0006 1		EXTEND			
0139	REF	1			06,2141	1 2167 1		BZF	QUIKOFF	WROTE LAST TIME, NOW TURN OFF RELAYS.	
01395	REF	4	LAST	131	06,2142	11*016 0		CCS	NOUT		
0140	REF	2	LAST	131	06,2143	0 2024 0		TC	DSPOUTSB		
0141	REF	1			06,2144	1 2154 1		TCF	NODSPY	NOUT=0 OR BAD RETURN FROM DSPOUTSB	
0142	REF	13	LAST	133	06,2145	4 4675 0		CS	BIT14	GOOD RETURN (WE DISPLAYED SOMETHING)	
0143	REF	6	LAST	133	06,2146	27*302 0	QUIKRUPT	ADS	DSRUPTSW		
0144	REF	2	LAST	131	06,2147	3 7700 1		CAP	20MRUPT		
0145	REF	2	LAST	131	06,2150	54 027 0		TS	TIME4		
0146	REF	11	LAST	62	06,2151	3 4702 0		CAP	BIT9		
0147	REF	7	LAST	133	06,2152	27*302 0		ADS	DSRUPTSW		
0148	REF	5	LAST	133	06,2153	0 5222 0		TC	RESUME		
0149					06,2154	0 0006 1	NODSPY	EXTEND			
0150	REF	4	LAST	133	06,2155	01 010 1		WRITE	OUT0		
0151	REF	3	LAST	133	06,2156	3 7700 1	SYNCT4	CAP	20MRUPT		
0152	REF	3	LAST	133	06,2157	26 027 0		ADS	TIME4		
0153	REF	12	LAST	133	06,2160	3 4702 0		CAP	BIT9		



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0154	REF	8	LAST	133	06,2161	27*302 0	ADS	DSRUPTSW
0155	REF	9	LAST	134	06,2162	11*302 0	CCS	DSRUPTSW
0156	REF	6	LAST	133	06,2163	0 5222 0	TC	RESUME
0157					06,2164	37737 0	OCT37737	OCT 37737
0158	REF	1			06,2165	0 2158 1	TC	SYNCT4
0159	REF	7	LAST	134	06,2166	0 5222 0	TC	RESUME
0160					06,2167	0 0008 1	QUIKOFF	EXTEND
0161	REF	5	LAST	133	06,2170	01 010 1	WRITE	OUT0
0162	REF	14	LAST	133	06,2171	3 4875 1	CAP	BIT14
0163	REF	1			06,2172	1 2146 1	TCP	QUIKRUPT
0164					06,2173	22400 0	11,14,9	OCT 22400

RESET DSRUPTSW TO SEND DISPLAY NEXT PASS



L TARPUP PROGRAM

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R0165 PROGRAM NAME' IMUMON

R0166 FUNCTIONAL DESCRIPTION' THIS PROGRAM IS ENTERED EVERY 480 MS. IT DETECTS CHANGES OF THE IMU STATUS BITS IN  
R0168 CHANNEL 30 AND CALLS THE APPROPRIATE SUBROUTINES. THE BITS PROCESSED AND THEIR RELEVANT SUBROUTINES ARE'

R0170	FUNCTION	BIT	SUBROUTINE CALLED
R0171	-----	---	-----
R0172	TEMP IN LIMITS	15	TLIM
R0173	ISS TURN-ON REQUEST	14	ITURNON
R0174	IMU FAIL	13	IMUFAIL (SETISSW)
R0175	IMU CDU FAIL	12	ICDUFAIL (SETISSW)
R0176	IMU CAGE	11	IMUCAGE
R0177	IMU OPERATE	9	IMUOP

R0178 THE LAST SAMPLED STATE OF THESE BITS IS LEFT IN IMODES30. ALSO, EACH SUBROUTINE CALLED FINDS THE NEW  
R0180 VALUE OF THE BIT IN A, WITH Q SET TO THE PROPER RETURN LOCATION, NXTIFAIL.

R0182 CALLING SEQUENCE' TARPUP EVERY 480 MILLISECONDS.

R0183 JOBS OR TASKS INITIATED' NONE.

R0184 SUBROUTINES CALLED' TLIM, ITURNON, SETISSW, IMUCAGE, IMUOP.

R0185 ERASABLE INITIALIZATION'

R0186 FRESH START OR RESTART WITH NO GROUPS ACTIVE' C(IMODES30) = OCT 37411.

R0188 RESTART WITH ACTIVE GROUPS' C(IMODES30) = (B(IMODES30)AND(OCT 00035)) PLUS OCT 37400.  
R0190 THIS LEAVES IMU FAIL BITS INTACT.

R0191 ALARMS' NONE.

R0192 EXIT' TNONTEST.

R0193 OUTPUT' UPDATED IMODES30 WITH CHANGES PROCESSED BY APPROPRIATE SUBROUTINE.

0195	REP	1		06,2174	3 1320 1	IMUMON	CA	IMODES30	SEE IF THERE HAS BEEN A CHANGE IN THE
0196				06,2175	0 0006 1		EXTEND		RELEVANT BITS OF CHAN 30.
0197	REP	1		06,2176	06 030 1		RXOR	CHAN30	CHECK IF BITS 9,11-15 CHANGED
0198	REP	1		06,2177	7 2743 1		MASK	30RDMASK	
0199				06,2200	0 0006 1		EXTEND		
0200	REP	1		06,2201	1 2231 1		BZF	TNONTEST	NO CHANGE IN STATUS.
0201	REP	3	LAST	133	06,2202	54 070 1	TS	RUPTRG1	SAVE BITS WHICH HAVE CHANGED.
0202	REP	2	LAST	135	06,2203	23*320 1	LXCH	IMODES30	UPDATE IMODES30.
0203					06,2204	0 0006 1	EXTEND		
0204	REP	2	LAST	132	06,2205	06 001 0	RXOR	LCHAN	
0205	REP	3	LAST	135	06,2206	55*320 0	TS	IMODES30	
0206	REP	2	LAST	131	06,2207	4 4712 0	CS	ONE	
0207	REP	4	LAST	135	06,2210	56 070 0	XCH	RUPTRG1	
0208					06,2211	0 0006 1	EXTEND		

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0209	REF	1		06,2212	6 2507 1		BZAP	TLIM	
0210	REF	1		06,2213	1 2215 1		TCP	NXTIFBIT	
0211	REF	3	LAST	135	06,2214	6 4712 1	-1	AD	ONE
0212	REF	5	LAST	135	06,2215	24 070 0	NXTIFBIT	INCR	RUPTREG1
0213					06,2216	6 0000 1	+1	DOUBLE	
0214	REF	3	LAST	132	06,2217	54 000 0		TS	A
0215	REF	2	LAST	136	06,2220	1 2215 1		TCP	NXTIFBIT
0216	REF	1			06,2221	56 071 1		XCH	RUPTREG2
0217	REF	6	LAST	136	06,2222	50 070 0		INDEX	RUPTREG1
0218	REF	15	LAST	134	06,2223	3 4675 1		CAP	BIT14
0219	REF	4	LAST	135	06,2224	7 1320 0		MASK	IMODES30
0220	REF	7	LAST	136	06,2225	50 070 0		INDEX	RUPTREG1
0221	REF	1			06,2226	0 2737 0		TC	IFAILJMP
0222	REF	2	LAST	136	06,2227	10 071 0	NXTIFAIL	CCS	RUPTREG2
0223	REF	3	LAST	136	06,2230	1 2214 0		TCP	NXTIFBIT -1

CHANGE IN IMU TEMP.  
BEGIN BIT SCAN.

(RE-ENTERS HERE FROM NXTIFAIL.)  
ADVANCE BIT POSITION NUMBER.

SKIP IF OVERFLOW.  
LOOK FOR BIT.

SAVE OVERFLOW-CORRECTED DATA.  
SELECT NEW VALUE OF THIS BIT.

PROCESS ANY ADDITIONAL CHANGES.





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R0224 PROGRAM NAME' TNONTEST.

R0225 FUNCTIONAL DESCRIPTION' THIS PROGRAM HONORS REQUESTS FOR ISS INITIALIZATION. ISS TURN-ON (CHANNEL 30 BIT 14)  
 R0227 AND ISS OPERATE (CHANNEL 30 BIT 9) REQUESTS ARE TREATED AS A PAIR AND PROCESSING TAKES PLACE .480 SECONDS  
 R0229 AFTER EITHER ONE APPEARS. THIS INITIALIZATION TAKES ON ONE OF THE FOLLOWING THREE FORMS'

R0231 1) ISS TURN-ON' IN THIS SITUATION THE COMPUTER IS OPERATING WHEN THE ISS IS TURNED ON. NOMINALLY,  
 R0233 BOTH ISS TURN-ON AND ISS OPERATE APPEAR. THE PLATFORM IS CAGED FOR 90 SECONDS AND THE ICDU'S ZEROED  
 R0235 SO THAT AT THE END OF THE PROCESS THE GIMBAL LOCK MONITOR WILL FUNCTION PROPERLY.

R0237 2) ICDU INITIALIZATION' IN THIS CASE THE COMPUTER WAS PROBABLY TURNED ON WITH THE ISS IN OPERATE OR  
 R0239 A FRESH START WAS DONE WITH THE ISS IN OPERATE. IN THIS CASE ONLY ISS OPERATE IS ON. THE ICDU'S ARE  
 R0241 ZEROED SO THE GIMBAL LOCK MONITOR WILL FUNCTION. AN EXCEPTION IS IF THE ISS IS IN GIMBAL LOCK AFTER  
 R0243 A RESTART, THE ICDU'S WILL NOT BE ZEROED.

R0244 3) RESTART WITH RESTARTABLE PROGRAM USING THE IMU' IN THIS CASE, NO INITIALIZATION TAKES PLACE SINCE  
 R0246 IT IS ASSUMED THAT THE USING PROGRAM DID THE INITIALIZATION AND THEREFORE T4RUPT SHOULD NOT INTERFERE.

R0248 IMODES30 BIT 7 IS SET = 1 BY THE FIRST BIT (CHANNEL 30 BIT 14 OR 9) WHICH ARRIVES. FOLLOWING THIS, TNONTEST IS  
 R0250 ENTERED, FINDS BIT 7 = 1 BUT BIT 8 = 0, SO IT SETS BIT 8 = 1 AND EXITS. THE NEXT TIME IT FINDS BIT 8 = 1 AND  
 R0252 PROCEEDS, SETTING BITS 8 AND 7 = 0. AT PROCTNQN, IF ISS TURN-ON REQUEST IS PRESENT, THE ISS IS CAGED (ZERO +  
 R0254 COARSE). IF ISS OPERATE IS NOT PRESENT PROGRAM ALARM 00213 IS ISSUED. AT THE END OF A 90 SECOND CAGE, BIT 2  
 R0256 OF IMODES30 IS TESTED. IF IT IS = 1, ISS TURN-ON WAS NOT PRESENT FOR THE ENTIRE 90 SECONDS. IN THAT CASE, IF  
 R0258 THE ISS TURN-ON REQUEST IS PRESENT THE 90 SECOND WAIT IS REPEATED, OTHERWISE NO ACTION OCCURS UNLESS A PROGRAM  
 R0260 WAS WAITING FOR THE INITIALIZATION IN WHICH CASE THE PROGRAM IS GIVEN AN IMUSTALL ERROR RETURN. IF THE DELAY  
 R0262 WENT PROPERLY, THE ISS DELAY OUTBIT IS SENT AND THE ICDU'S ZEROED. A TASK IS INITIATED TO REMOVE THE PIPA FAIL  
 R0264 INHIBIT BIT IN 10.24 SECONDS. IF A MISSION PROGRAM WAS WAITING IT IS INFORMED VIA ENDIMU.

R0266 AT PROCTNQN, IF ONLY ISS OPERATE IS PRESENT (OPONLY), THE CDU'S ARE ZEROED UNLESS THE PLATFORM IS IN COARSE  
 R0268 ALIGN (= GIMBAL LOCK HERE) OR A MISSION PROGRAM IS USING THE IMU (IMUSEFLG = 1).

R0270 CALLING SEQUENCE' T4RUPT EVERY 480 MILLISECOND AFTER IMUQN.

R0271 JOBS OR TASKS INITIATED' 1) ENDINQN, 90 SECONDS AFTER CAGING STARTED. 2) ISSUP, 4 SECONDS AFTER CAGING DONE.  
 R0273 3) PFAILQK, 10.24 SECONDS AFTER INITIALIZATION COMPLETED. 4) UNZ2, 320 MILLISECOND AFTER ZEROING  
 R0275 STARTED.

R0276 SUBROUTINES CALLED' CAGESUB, CAGESUB2, ZEROICDU, ENDIMU, IMUBAD, NOATTOFF, SETISSW, VARDELAY.

R0278 ERASABLE INITIALIZATION' SEE IMUQN.

R0279 ALARMS' PROGRAM ALARM 00213 IF ISS TURN-ON REQUESTED WITHOUT ISS OPERATE.

R0281 EXIT' ENDINQN EXITS TO C33TEST. TASKS HAVING TO DO WITH INITIALIZATION EXIT AS FOLLOWS' MISSION PROGRAM  
 R0283 WAITING AND INITIALIZATION COMPLETE, EXIT TO ENDIMU, MISSION PROGRAM WAITING AND INITIALIZATION FAILED, EXIT TO  
 R0285 IMUBAD, IMU NOT IN USE, EXIT TO TASKOVER.

R0286 OUTPUT' ISS INITIALIZED.

0287 REP 5 LAST 136 06,2231 4 1320 0 TNONTEST CS IMODES30 AFTER PROCESSING ALL CHANGES, SEE IF IT

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0288	REP	13	LAST	64	06,2232	7 4704 1	MASK	BIT7	IS TIME TO ACT ON A TURN-ON SEQUENCE.
0289	REP	4	LAST	136	06,2233	10 000 0	CCS	A	
0290	REP	1			06,2234	1 2367 0	TCF	C33TEST	NO - EXAMINE CHANNEL 33.
0291	REP	12	LAST	62	06,2235	3 4703 1	CAP	BIT8	SEE IF FIRST SAMPLE OR SECOND.
0292	REP	6	LAST	137	06,2236	7 1320 0	MASK	IMODES30	
0293	REP	5	LAST	138	06,2237	10 000 0	CCS	A	
0294	REP	1			06,2240	1 2244 0	TCF	PROCTN0N	REACT AFTER SECOND SAMPLE.
0295	REP	13	LAST	138	06,2241	3 4703 1	CAP	BIT8	IF FIRST SAMPLE, SET BIT TO REACT NEXT
0296	REP	7	LAST	138	06,2242	27=320 0	ADS	IMODES30	TIME.
0297	REP	2	LAST	138	06,2243	1 2367 0	TCF	C33TEST	
R0298									PROCESS IMU TURN-ON REQUESTS AFTER WAITING 1 SAMPLE FOR ALL SIGNALS TO ARRIVE.
0300	REP	1			06,2244	4 2757 1	PROCTN0N	CS	BIT8d8
0301	REP	8	LAST	138	06,2245	7 1320 0	MASK	IMODES30	
0302	REP	9	LAST	138	06,2246	55=320 0	TS	IMODES30	
0303	REP	16	LAST	136	06,2247	7 4675 0	MASK	BIT14	SEE IF TURN-ON REQUEST.
0304	REP	6	LAST	138	06,2250	10 000 0	CCS	A	
0305	REP	1			06,2251	1 2342 1	TCF	OPONLY	OPERATE ON ONLY.
0306	REP	10	LAST	138	06,2252	4 1320 0	CS	IMODES30	IF TURN-ON REQUEST, WE SHOULD HAVE IMU
0307	REP	13	LAST	133	06,2253	7 4702 1	MASK	BIT9	OPERATE.
0308	REP	7	LAST	138	06,2254	10 000 0	CCS	A	
0309					06,2255	1 2260 0	TCF	+3	
0310	REP	1			06,2256	0 5537 0	TC	ALARM	ALARM IF NOT.
0311					06,2257	00213 1	OCT	213	
0312	REP	1			06,2260	0 2717 1	+3	TC	CAGESUB
0313	REP	1			06,2261	3 2764 0	CAP	90SECS	
0314	REP	1			06,2262	0 5140 1	TC	WAITLIST	
0315	REP	1			E3,1474		EBANK=	CDUIND	
0316	REP	1			06,2263	02270 0	2CADR	ENDTNCN	
0316	REP	1			06,2264	14063 1			
0317	REP	3	LAST	138	06,2265	1 2367 0	TCF	C33TEST	
0318	REP	2	LAST	138	06,2266	3 2764 0	RETN0N	CAP	90SECS
0319	REP	1			06,2267	0 5161 1	TC	VARDELAY	
0320	REP	8	LAST	63	06,2270	4 4711 0	ENDTNCN	CS	BIT2
0321	REP	11	LAST	138	06,2271	7 1320 0	MASK	IMODES30	RESET TURN-ON REQUEST FAIL BIT.
0322	REP	12	LAST	138	06,2272	57=320 1	XCH	IMODES30	
0323	REP	9	LAST	138	06,2273	7 4711 0	MASK	BIT2	IF IT WAS OFF, SEND ISS DELAY COMPLETE.
0324					06,2274	0 0006 1	EXTEND		
0325	REP	1			06,2275	1 2310 0	BZF	ENDTNCN2	

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0326	REF	17	LAST	138	06,2276	3 4875 1	CAP	BIT14	IF IT WAS ON AND TURN-ON REQUEST NOW	
0327	REF	13	LAST	138	06,2277	7 1320 0	MASK	IMODES30	PRESENT, RE-ENTER 90 SEC DELAY IN WL.	
0328					06,2300	0 0008 1	EXTEND			
0329	REF	1			06,2301	1 2288 0	BZF	REINON		
0330	REF	14	LAST	64	06,2302	4 0074 0	CS	STATE	IF IT IS NOT ON NOW, SEE IF A PROG WAS	
0331	REF	1			06,2303	7 4703 0	MASK	IMUSEPLG	WAITING.	
0332	REF	8	LAST	138	06,2304	10 000 0	CCS	A		
0333	REF	1			06,2305	1 5213 0	TCF	TASKOVER		
0334	REF	1			06,2306	0 4574 0	TC	POSTJUMP		
0335	REF	1			06,2307	17441 0	CADR	IMUBAD	UNSUCCESSFUL TURN-ON.	
0336	REF	10	LAST	61	06,2310	3 4874 0	ENDINON2	CAP	BIT15	SEND ISS DELAY COMPLETE.
0337					06,2311	0 0008 1	EXTEND			
0338	REF	1			06,2312	05 012 1	WOR	CHAN12	TURN OFF ISS DELAY COUNTER	
0339	REF	2	LAST	133	06,2313	0 4833 0	TC	IBNKCALL	TURN OFF NO ATT LAMP.	
0340	REF	1			06,2314	17070 0	CADR	NOATTOPF		
0341	REF	1			06,2315	0 5410 1	UNZ2	TC	ZEROICDU	
0342	REF	1			06,2316	4 4722 0	CS	BITS4d5	REMOVE ZERO AND COARSE.	
0343					06,2317	0 0008 1	EXTEND			
0344	REF	2	LAST	139	06,2320	03 012 1	WAND	CHAN12		
0345	REF	11	LAST	61	06,2321	3 4700 1	CAP	BIT11	WAIT 10 SECS FOR CTRS TO FIND GIMRALS	
0346	REF	2	LAST	138	06,2322	0 5181 1	TC	VARDELAY		
0347	REF	1			06,2323	4 2754 1	ISSUP	CS	OCT54	REMOVE CAGING, IMU FAIL INHIBIT, AND
0348	REF	14	LAST	139	06,2324	7 1320 0	MASK	IMODES30	ICDUFIL INHIBIT FLAGS.	
0349	REF	15	LAST	139	06,2325	55*320 0	TS	IMODES30		
0350	REF	11	LAST	62	06,2328	4 4705 0	CS	BIT8	ENABLE DAP	
0351	REF	4	LAST	132	06,2327	7 1321 1	MASK	IMODES33		
0352	REF	5	LAST	139	06,2330	55*321 1	TS	IMODES33		
0353	REF	1			06,2331	0 2865 0	TC	SETISSW	ISS WARNING MIGHT HAVE BEEN INHIBITED.	
0354	REF	11	LAST	139	06,2332	4 4874 1	CS	BIT15	REMOVE IMU DELAY COMPLETE DISCRETE.	
0355					06,2333	0 0008 1	EXTEND			
0356	REF	3	LAST	139	06,2334	03 012 1	WAND	CHAN12		
0357	REF	1			06,2335	3 4740 0	CAP	4SECS	DONT ENABLE PROG ALARM ON PIP FAIL FOR	
0358	REF	2	LAST	138	06,2336	0 5140 1	TC	WAITLIST	ANOTHER 4 SECS.	
0359	REF	2	LAST	138	E3,1474		EBANK-	CDUIND		
0360	REF	1			06,2337	03058 1	ZCADR	PPAILQK		
0360	REF	1			06,2340	18063 0				
0364	REF	2	LAST	139	06,2341	1 5213 0	TCF	TASKOVER		
0367	REF	11	LAST	62	06,2342	3 4707 0	OPONLY	CAP	BIT4	



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0368				06,2343	0 0008	1		EXTEND
0369	REP	4	LAST	139	06,2344	02 012	0	RAND CHAN12
0370	REP	9	LAST	139	06,2345	10 000	0	CCS A
0371	REP	4	LAST	138	06,2346	1 2367	0	TCF C33TEST
0372	REP	2	LAST	139	06,2347	3 4703	1	CAP IMUSEFLO
0373	REP	15	LAST	139	06,2350	7 0074	0	MASK STATE
0374	REP	10	LAST	140	06,2351	10 000	0	CCS A
0375	REP	5	LAST	140	06,2352	1 2367	0	TCF C33TEST
0376	REP	1			06,2353	0 2730	1	TC CAGESUB2
0377	REP	3	LAST	139	06,2354	0 4633	0	ISSZERO TC IBKCALL
0378	REP	2	LAST	139	06,2355	17070	0	CADR NOATTOPF
0379	REP	10	LAST	62	06,2356	3 4706	1	CAP BITS
0380					06,2357	0 0008	1	EXTEND
0381	REP	5	LAST	140	06,2360	05 012	1	WOR CHAN12
03811	REP	2	LAST	139	06,2361	0 5410	1	TC ZEROICDU
0382	REP	12	LAST	139	06,2362	3 4705	1	CAP BITS
0383	REP	3	LAST	139	06,2363	0 5140	1	TC WAITLIST
0384	REP	1			1331			EBANK= OPTMODES
0385	REP	1			06,2364	02315	1	ZCADR UNZ2
0385	REP	1			06,2365	14062	0	
0386	REP	6	LAST	140	06,2366	1 2367	0	TCF C33TEST

IF OPERATE ON ONLY AND WE ARE IN COARSE ALIGN, DONT ZERO THE CDUS BECAUSE WE MIGHT BE IN GIMBAL LOCK. USE V41N20 TO RECOVER.

OTHERWISE, ZERO THE COUNTERS UNLESS SOMEONE IS USING THE IMU.

SET TURNON FLAGS:

TURN OFF NO ATT LAMP  
IMU CAGE OFF ENTRY

ISS CDU ZERO

WAIT 300 MS FOR AGS TO RECEIVE SIGNAL.



L INTERRUPT PROGRAM

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R0387 PROGRAM NAME' C33TEST

R0388 FUNCTIONAL DESCRIPTION' THIS PROGRAM MONITORS THREE FLIP-FLOP INBITS OF CHANNEL 33 AND CALLS THE APPROPRIATE  
 R0390 SUBROUTINE TO PROCESS A CHANGE. IT IS ANALOGOUS TO INMON, WHICH MONITORS CHANNEL 30, EXCEPT THAT IT READS  
 R0392 CHANNEL 33 WITH A WAND INSTRUCTION BECAUSE A "WRITE" PULSE IS REQUIRED TO RESET THE FLIP-FLOPS. THE BITS  
 R0394 PROCESSED AND THE SUBROUTINES CALLED ARE'

R0395	BIT	FUNCTION	SUBROUTINE
R0396	---	-----	-----
R0397	13	PIPA FAIL	PIPPAIL
R0398	12	DOWNLINK TOO FAST	DNTMFAST
R0399	11	UPLINK TOO FAST	UPTMFAST

R0400 UPON ENTRY TO THE SUBROUTINE, THE NEW BIT STATE IS IN A.

R0401 CALLING SEQUENCE' EVERY 480 MILLISECONDS AFTER TMCNTST.

R0402 JOBS OR TASKS INITIATED' NONE.

R0403 SUBROUTINES CALLED' PIPPAIL, DNTMFAST AND UPTMFAST ON BIT CHANGES.

R0404 ERASABLE INITIALIZATION' C(IMODES33) = OCT 16000 ON A FRESH START OR RESTART, THEREFORE, THESE ALARMS WILL  
 R0406 REAPPEAR IF THE CONDITIONS PERSIST.

R0407 ALARMS' NONE.

R0408 EXIT' GLOCKMON.

R0409 OUTPUT' UPDATED BITS 13, 12 AND 11 OF IMODES33 WITH CHANGES PROCESSED.

0410	REP	6	LAST	139	06,2367	3 1321 0	C33TEST	CA	IMODES33	SEE IF RELEVANT CHAN 33 BITS HAVE
0411	REP	1			06,2370	7 4763 0		MASK	33RDMSK	CHANGED.
0412	REP	2	LAST	39	06,2371	54 001 1		TS	L	
0413	REP	2	LAST	141	06,2372	3 4763 1		CAP	33RDMSK	
0414					06,2373	0 0006 1		EXTEND		
0415	REP	1			06,2374	03 033 1		WAND	CHAN33	RESETS FLIP-FLOP INPUTS.
0416					06,2375	0 0006 1		EXTEND		
0417	REP	3	LAST	135	06,2376	06 001 0		RXOR	LOHAN	
0418					06,2377	0 0006 1		EXTEND		
0419	REP	1			06,2400	1 2427 0		BZF	GLOCKMON	ON NO CHANGE.
0420	REP	8	LAST	136	06,2401	54 070 1		TS	RUPTRG1	SAVE BITS WHICH HAVE CHANGED.
0421	REP	7	LAST	141	06,2402	23*321 0		EXCH	IMODES33	
0422					06,2403	0 0006 1		EXTEND		
0423	REP	4	LAST	141	06,2404	06 001 0		RXOR	LOHAN	
0424	REP	8	LAST	141	06,2405	55*321 1		TS	IMODES33	UPDATED IMODES33.
0425	REP	3	LAST	131	06,2406	3 4714 1		CAP	ZERO	
0426	REP	9	LAST	141	06,2407	56 070 0		XCH	RUPTRG1	
0427					06,2410	6 0000 1		DOUBLE		



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0428	REF	1		06,2411	1 2414 0		TCF	NXTIBT +1
0429	REF	4	LAST	136	06,2412	6 4712 1	-1	AD ONE
0430	REF	10	LAST	141	06,2413	24 070 0	NXTIBT	INCR RUPTREG1
0431					06,2414	6 0000 1	+1	DOUBLE
0432	REF	11	LAST	140	06,2415	54 000 0		TS A
0433	REF	2	LAST	142	06,2416	1 2413 1		TCF NXTIBT
0434	REF	3	LAST	136	06,2417	58 071 1		XCH RUPTREG2
0435	REF	11	LAST	142	06,2420	50 070 0		INDEX RUPTREG1
0436	REF	11	LAST	61	06,2421	3 4876 1		CAF BIT13
0437	REF	9	LAST	141	06,2422	7 1321 1		MASK IMODES33
0438	REF	12	LAST	142	06,2423	50 070 0		INDEX RUPTREG1
0439	REF	1			06,2424	0 2745 0		TC C33JMP
0440	REF	4	LAST	142	06,2425	10 071 0	NXTIPL33	CCS RUPTREG2
0441	REF	3	LAST	142	06,2426	1 2412 0		TCF NXTIBT -1

SCAN FOR BIT CHANGES.

(CODING IDENTICAL TO CHAN 30).

GET NEW VALUE OF BIT WHICH CHANGED.

PROCESS POSSIBLE ADDITIONAL CHANGES.



L INTERRUPT PROGRAM

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P0442 PROGRAM NAME' GLOCKMON

R0443 FUNCTIONAL DESCRIPTION' THIS PROGRAM MONITORS THE CDUZ COUNTER TO DETERMINE WHETHER THE ISS IS IN GIMBAL LOCK  
R0445 AND TAKES ACTION IF IT IS. THREE REGIONS OF MIDDLE GIMBAL ANGLE (MGA) ARE USED'

- R0447 1) ABS(MGA) LESS THAN OR EQUAL TO 70 DEGREES - NORMAL MODE.
- R0448 2) ABS(MGA) GREATER THAN 70 DEGREES AND LESS THAN OR EQUAL TO 85 DEGREES - GIMBAL LOCK LAMP TURNED ON.
- R0450 3) ABS(MGA) GREATER THAN 85 DEGREES - ISS PUT IN COARSE ALIGN AND NO ATT LAMP TURNED ON.

R0452 CALLING SEQUENCE' EVERY 480 MILLISECONDS AFTER C33TEST.

R0453 JOBS OR TASKS INITIATED' NONE.

R0454 SUBROUTINES CALLED' 1) SETCOARS WHEN ABS(MGA) GREATER THAN 85 DEGREES AND ISS NOT IN COARSE ALIGN.  
R0456 2) LAMPTST BEFORE TURNING OFF GIMBAL LOCK LAMP.

R0457 ERASABLE INITIALIZATION'

- R0458 1) FRESH START OR RESTART WITH NO GROUPS ACTIVE' C(CDUZ) = 0, IMODES30 BIT 6 = 0, IMODES33 BIT 1 = 0.
- R0460 2) RESTART WITH GROUPS ACTIVE' SAME AS FRESH START EXCEPT C(CDUZ) NOT CHANGED SO GIMBAL MONITOR  
R0462 PROCEEDS AS BEFORE.

R0463 ALARMS' 1) MGA REGION (2) CAUSES GIMBAL LOCK LAMP TO BE LIT.  
R0464 2) MGA REGION (3) CAUSES THE ISS TO BE PUT IN COARSE ALIGN AND THE NO ATT LAMP TO BE LIT IF EITHER NOT  
R0466 SO ALREADY.

0467	REP	1		06,2427	10 034 1	GLOCKMON	CCS	CDUZ	
0468	REP	1		06,2430	1 2434 1		TCF	GLOCKCHK	SEE IF MAGNITUDE OF MGA IS GREATER THAN
0469	REP	1		06,2431	1 2460 0		TCF	SETGLOCK	70 DEGREES.
0470	REP	2	LAST 143	06,2432	1 2434 1		TCF	GLOCKCHK	
0471	REP	2	LAST 143	06,2433	1 2460 0		TCF	SETGLOCK	
0472	REP	1		06,2434	6 2505 0	GLOCKCHK	AD	-70DEGS	
0473				06,2435	0 0006 1		EXTEND		
0474	REP	3	LAST 143	06,2436	6 2457 0		BZMF	SETGLOCK -1	NO LOCK.
0475	REP	1		06,2437	6 2506 0		AD	-15DEGS	SEE IF ABS(MGA) GREATER THAN 85 DEGS.
0476				06,2440	0 0006 1		EXTEND		
0477	REP	1		06,2441	6 2455 1		BZMF	NOGIMRUN	
0478	REP	12	LAST 139	06,2442	3 4707 0		CAF	BIT4	IF SO, SYSTEM SHOULD BE IN COARSE ALIGN
0479				06,2443	0 0006 1		EXTEND		TO PREVENT GIMBAL RUN-AWAY.
0480	REP	6	LAST 140	06,2444	02 012 0		RAND	CHAN12	
0481	REP	12	LAST 142	06,2445	10 000 0		CCS	A	
0482	REP	2	LAST 143	06,2446	1 2455 0		TCF	NOGIMRUN	
0483	REP	4	LAST 140	06,2447	0 4633 0		TC	IBNKCALL	GO INTO COARSE ALIGN.
0484	REP	1		06,2450	16746 0		CADR	SETCOARS	
0485	REP	1		06,2451	3 6211 0		CAF	SIX	ENABLE ISS ERROR COUNTERS IN 60 MS
0486	REP	4	LAST 140	06,2452	0 5140 1		TC	WAITLIST	







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P0515 PROGRAM NAME' TLIM.

R0516 FUNCTIONAL DESCRIPTION' THIS PROGRAM MAINTAINS THE TEMP LAMP (BIT 4 OF CHANNEL 11) ON THE DSKY TO AGREE WITH  
 R0518 THE TEMP SIGNAL FROM THE ISS (BIT 15 OF CHANNEL 30). HOWEVER, THE LIGHT WILL NOT BE TURNED OFF IF A LAMP TEST  
 R0520 IS IN PROCESS.

R0521 CALLING SEQUENCE' CALLED BY IMMON ON A CHANGE OF BIT 15 OF CHANNEL 30.

R0522 JOBS OR TASKS INITIATED' NONE.

R0523 SUBROUTINES CALLED' LAMPTEST.

R0524 ERASABLE INITIALIZATION' FRESH START AND RESTART TURN THE TEMP LAMP OFF.

R0526 ALARMS' TEMP LAMP TURNED ON WHEN IMU TEMP GOES OUT OF LIMITS.

R0527 EXIT' NXTIFAIL.

R0528 OUTPUT' SERVICE OF TEMP LAMP.

IN A, EXCEPT FOR TLIM.

0530	REF	1		06,2507	7 4872 1	TLIM	MASK	POSMAX	REMOVE BIT FROM WORD OF CHANGES AND SET
0531	REF	5	LAST 142	06,2510	54 071 0		TS	RUPTREG2	DSKY TEMP LAMP ACCORDINGLY.
0532	REF	17	LAST 144	06,2511	11*320 0		CCS	IMODES30	
0533	REF	1		06,2512	1 2520 0		TCF	TEMPCK	
0534	REF	2	LAST 145	06,2513	1 2520 0		TCF	TEMPCK	
0535	REF	13	LAST 143	06,2514	3 4707 0		CAF	BIT4	TURN ON LAMP.
0536	REF	1		06,2515	0 0006 1		EXTEND		
0537	REF	1		06,2516	05 011 1		WOR	DSALMOUT	
0538	REF	1		06,2517	1 2227 0		TCF	NXTIFAIL	
0539	REF	2	LAST 144	06,2520	0 2750 1	TEMPCK	TC	LAMPTEST	IF TEMP NOV OK, DONT TURN OFF LAMP IF
0540	REF	2	LAST 145	06,2521	1 2227 0		TCF	NXTIFAIL	LAMP TEST IN PROGRESS.
0541	REF	14	LAST 145	06,2522	4 4707 1		CS	BIT4	
0542	REF	1		06,2523	0 0006 1		EXTEND		
0543	REF	2	LAST 145	06,2524	03 011 1		WAND	DSALMOUT	TURN OFF TEMP CAUTION
0544	REF	3	LAST 145	06,2525	1 2227 0		TCF	NXTIFAIL	



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P0545 PROGRAM NAME' ITURNON.

R0546 FUNCTIONAL DESCRIPTION' THIS PROGRAM IS CALLED BY IMMON WHEN A CHANGE OF BIT 14 OF CHANNEL 30 (ISS TURN-ON  
R0548 REQUEST) IS DETECTED. UPON ENTRY, ITURNON CHECKS IF A TURN-ON DELAY SEQUENCE HAS FAILED, AND IF SO, IT EXITS.  
R0550 IF NOT, IT CHECKS WHETHER THE TURN-ON REQUEST CHANGE IS TO ON OR OFF. IF ON, IT SETS BIT 7 OF IMODES30 TO 1 SO  
R0552 THAT TMONTEST WILL INITIATE THE ISS INITIALIZATION SEQUENCE. IF OFF, THE TURN-ON DELAY SIGNAL, CHANNEL 12 BIT  
R0554 15, IS CHECKED AND IF IT IS ON, ITURNON EXITS. IF THE DELAY SIGNAL IS OFF, PROGRAM ALARM 00207 IS ISSUED, BIT 2  
R0556 OF IMODES30 IS SET TO 1 AND THE PROGRAM EXITS.  
R0557 THE SETTING OF BIT 2 OF IMODES30 (ISS DELAY SEQUENCE FAIL) INHIBITS THIS ROUTINE AND IMUOP FROM  
R0559 PROCESSING ANY CHANGES. THIS BIT WILL BE RESET BY THE ENDINON ROUTINE WHEN THE CURRENT 90 SECOND DELAY PERIOD  
R0561 ENDS.

R0562 CALLING SEQUENCE' FROM IMMON WHEN ISS TURN-ON REQUEST CHANGES STATE.

R0563 JOBS OR TASKS INITIATED' NONE.

R0564 SUBROUTINES CALLED' ALARM, IF THE ISS TURN-ON REQUEST IS NOT PRESENT FOR 90 SECONDS.

R0566 ERASABLE INITIALIZATION' FRESH START AND RESTART SET BIT 15 OF CHANNEL 12 AND BITS 2 AND 7 OF IMODES30 TO 0,  
R0568 AND BIT 14 OF IMODES30 TO 1.

R0569 ALARMS' PROGRAM ALARM 00207 IS ISSUED IF THE ISS TURN-ON REQUEST SIGNAL IS NOT PRESENT FOR 90 SECONDS.

R0571 EXIT' NXTIFAIL.

R0572 OUTPUT' BIT 7 OF IMODES30 TO START ISS INITIALIZATION, OR BIT 2 OF IMODES30 AND PROGRAM ALARM 00207 TO INDICATE  
R0574 A FAILED TURN-ON SEQUENCE.

0575	REP	10	LAST	138	06,2528	3 4711 1	ITURNON	CAP	BIT2	IF DELAY REQUEST HAS GONE OFF
0576	REP	18	LAST	145	06,2527	7 1320 0		MASK	IMODES30	PREMATURELY, DO NOT PROCESS ANY CHANGES
0577	REP	15	LAST	144	06,2530	10 000 0		CCS	A	UNTIL THE CURRENT 90 SEC WAIT EXPIRES.
0578	REP	4	LAST	145	06,2531	1 2227 0		TCF	NXTIFAIL	
0579	REP	18	LAST	139	06,2532	3 4675 1		CAP	BIT14	SEE IF JUST ON OR OFF.
0580	REP	19	LAST	146	06,2533	7 1320 0		MASK	IMODES30	
0581					06,2534	0 0006 1		EXTEND		
0582	REP	1			06,2535	1 2551 0		BZF	ITURNON2	IF JUST ON.
0583	REP	13	LAST	144	06,2536	3 4674 0		CAP	BIT15	
0584					06,2537	0 0006 1		EXTEND		
0585	REP	7	LAST	143	06,2540	02 012 0		RAND	CHAN12	SEE IF DELAY PRESENT DISCRETE HAS BEEN
0586					06,2541	0 0006 1		EXTEND		SENT. IF SO, ACTION COMPLETE.
0587					06,2542	1 2544 1		BZF	+2	
0588	REP	5	LAST	146	06,2543	1 2227 0		TCF	NXTIFAIL	
0589	REP	11	LAST	146	06,2544	3 4711 1		CAP	BIT2	IF NOT, SET BIT TO INDICATE REQUEST NOT
0590	REP	20	LAST	146	06,2545	27*320 0		ADS	IMODES30	PRESENT FOR FULL DURATION.
0591	REP	2	LAST	138	06,2546	0 5537 0		TC	ALARM	
0592					06,2547	00207 1		OCT	207	
0593	REP	6	LAST	146	06,2550	1 2227 0		TCF	NXTIFAIL	



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0594	REP	21	LAST	146	06,2551	4	1320	0	ITURNON2	CS	IMODES30
0595	REP	14	LAST	138	06,2552	7	4704	1		MASK	BIT7
0596	REP	22	LAST	147	06,2553	27	320	0		ADS	IMODES30
0597	REP	7	LAST	146	06,2554	1	2227	0		TOP	NXTIFAIL

SET BIT7 TO INDICATE WAIT OF 1 SAMPLE

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P0598 PROGRAM NAME' IMUCAGE.

R0599 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES OF THE IMUCAGE INBIT, CHANNEL 30 BIT 11. IF THE BIT  
R0601 CHANGES TO 0 (CAGE BUTTON PRESSED), THE ISS IS CAGED (ICDU ZERO + COARSE ALIGN + NO ATT LAMP) UNTIL THE  
R0603 ASTRONAUT SELECTS ANOTHER PROGRAM TO ALIGN THE ISS. ANY PULSE TRAINS TO THE ICDU'S AND GYRO'S ARE TERMINATED,  
R0605 THE ASSOCIATED OUTCOUNTERS ARE ZEROED AND THE GYRO'S ARE DE-SELECTED. NO ACTION OCCURS WHEN THE BUTTON IS  
R0607 RELEASED (INBIT CHANGES TO 1).

R0608 CALLING SEQUENCE' BY IMMON WHEN IMU CAGE BIT CHANGES.

R0609 JOBS OR TASKS INITIATED' NONE.

R0610 SUBROUTINES CALLED' CAGESUB.

R0611 ERASABLE INITIALIZATION' FRESH START AND RESTART SET BIT 11 OF IMODES30 TO 1.

R0613 ALARMS' NONE.

R0614 EXIT' NXTIFAIL.

R0615 OUTPUT' ISS CAGED, COUNTERS ZEROED, PULSE TRAINS TERMINATED AND NO ATT LAMP LIT.

0617	REP	16	LAST	148	06,2555	10 000 0	IMUCAGE	CCS	A	NO ACTION IF GOING OFF.
0618	REP	1			06,2556	1 2354 0		TCF	ISSZERO	
0619	REP	1			06,2557	4 2762 1		CS	OCT77000	TERMINATE ICDU, OPTICS, GYRO PULSE TRAINS
0620					06,2560	0 0006 1		EXTEND		
0621	REP	1			06,2561	03 014 1		WAND	CHAN14	
0622	REP	1			06,2562	4 2756 0		CS	OCT272	
0623					06,2563	0 0006 1		EXTEND		
0624	REP	8	LAST	148	06,2564	03 012 1		WAND	CHAN12	KNOCK DOWN TVC ENABLE, IMU ERROR COUNTER ENABLE, ZERO ICDU, COARSE ALIGN ENABLE, OPTICS ERR CNTR ENABLE
0625	REP	12	LAST	142	06,2565	4 4676 0		CS	BIT13	
0626					06,2566	0 0006 1		EXTEND		TURN OFF ENGINE
0627	REP	3	LAST	145	06,2567	03 011 1		WAND	DSALMOUT	
0628	REP	1			06,2570	0 2725 0		TC	CAGESUB1	
0629	REP	5	LAST	143	06,2571	0 4633 0		TC	IBNKCALL	
0630	REP	1			06,2572	16777 1		CADR	RNDREFDR	KNOCK DOWN TRACK, REFSMMAT, DRIFT FLAGS
0631	REP	5	LAST	144	06,2573	4 4714 0		CS	ZERO	ZERO COMMAND OUT-COUNTERS
0632	REP	1			06,2574	54 050 0		TS	CDUXCMD	
0633	REP	1			06,2575	54 051 1		TS	CDUYCMD	
0634	REP	1			06,2576	54 052 1		TS	CDUZZCMD	
0635	REP	1			06,2577	54 047 0		TS	GYROCMD	
0636	REP	1			06,2600	4 2761 1		CS	OCT740	
0637					06,2601	0 0006 1		EXTEND		
0638	REP	2	LAST	148	06,2602	03 014 1		WAND	CHAN14	HAVING WAITED AT LEAST 27 MCT FROM GYRO PULSE TRAIN TERMINATION, WE CAN DE-SELECT THE GYROS.



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0639 REP 8 LAST 147 06,2603 1 2227 0

TCF NKTIFAIL



L INTERRUPT PROGRAM

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P0640 PROGRAM NAME' IMUOP.

R0641 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES IN THE ISS OPERATE DISCRETE, BIT 9 OF CHANNEL 30.  
 R0643 IF THE INBIT CHANGES TO 0, INDICATING ISS ON, IMUOP GENERALLY SETS BIT 7 OF IMODES30 TO 1 TO REQUEST ISS  
 R0645 INITIALIZATION VIA INQTEST. AN EXCEPTION IS DURING A FAILED ISS DELAY DURING WHICH BIT 2 OF IMODES30 IS SET  
 R0647 TO 1 AND NO FURTHER INITIALIZATION IS REQUIRED. WHEN THE INBIT CHANGES TO 1, INDICATING ISS OFF, IMUSEFLO IS  
 R0649 TESTED TO SEE IF ANY PROGRAM WAS USING THE ISS. IF SO, PROGRAM ALARM 00214 IS ISSUED.

R0651 CALLING SEQUENCE' BY IMUMON WHEN BIT 9 OF CHANNEL 30 CHANGES.

R0652 JOBS OR TASKS INITIATED' NONE.

R0653 SUBROUTINES CALLED' ALARM, IF ISS IS TURNED OFF WHILE IN USE.

R0654 ERASABLE INITIALIZATION' ON FRESH START AND RESTART, BIT 9 OF IMODES30 IS SET TO 1 EXCEPT WHEN THE GIMBAL LOCK  
 R0656 LAMP IS ON, IN WHICH CASE IT IS SET TO 0. THIS PREVENTS ICDU ZERO BY INQTEST WITH THE ISS IN GIMBAL LOCK.

R0658 ALARMS' PROGRAM ALARM 00214 IF THE ISS IS TURNED OFF WHILE IN USE.

R0659 EXIT' NXTIFAIL.

R0660 OUTPUT' ISS INITIALIZATION REQUEST (IMODES30 BIT 7) OR PROGRAM ALARM 00214.

0662				06,2604	0	0006	1	IMUOP	EXTEND		
0663	REF	1		06,2605	1	2625	0		BZF	IMUOP2	IF OPERATE JUST ON, WAIT 1 SAMPLE.
0664	REF	10	LAST	142	06,2606	4	1321	1	CS	IMODES33	DISABLE DAP
0665	REF	17	LAST	144	06,2607	7	4705	0	MASK	BIT6	
0666	REF	11	LAST	150	06,2610	27	321	1	ADS	IMODES33	
0667	REF	6	LAST	148	06,2611	0	4633	0	TC	IBNKCALL	KNOCK DOWN TRACK, REFSMAT, DRIFT FLAGS
0668	REF	2	LAST	148	06,2612		16777	1	CADR	RNDREFDR	
0669	REF	2	LAST	138	06,2613	4	2757	1	CS	BIT5d8	KNOCK DOWN RENDEVOUS, IMUSE FLAGS
0670	REF	16	LAST	140	06,2614	7	0074	0	MASK	STATE	
0671	REF	17	LAST	150	06,2615	56	074	1	XCH	STATE	IF GOING OFF, ALARM IF PROG USING IMU
0672					06,2616	4	0000	0	COM		
0673	REF	3	LAST	140	06,2617	7	4703	0	MASK	IMUSEFLO	
0674	REF	17	LAST	148	06,2620	10	000	0	CCS	A	
0675	REF	9	LAST	149	06,2621	1	2227	0	TCF	NXTIFAIL	
0676	REF	3	LAST	146	06,2622	0	5537	0	TC	ALARM	
0677					06,2623		00214	0	OCT	214	
0678	REF	10	LAST	150	06,2624	1	2227	0	TCF	NXTIFAIL	
0679	REF	12	LAST	146	06,2625	3	4711	1	IMUOP2	CAP	BIT2
0680	REF	23	LAST	147	06,2626	7	1320	0	MASK	IMODES30	SEE IF FAILED ISS TURN-ON SEQ IN PROG.
0681	REF	18	LAST	150	06,2627	10	000	0	CCS	A	
0682	REF	11	LAST	150	06,2630	1	2227	0	TCF	NXTIFAIL	IF SO, DONT PROCESS UNTIL PRESENT 90
0683	REF	2	LAST	146	06,2631	1	2551	0	TCF	ITURNON2	SECONDS EXPIRES.



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P0684 PROGRAM NAME' PIPFAIL

R0685 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES OF BIT 13 OF CHANNEL 33, PIPA FAIL. IT SETS BIT 10 OF  
 R0687 IMODES30 TO AGREE. IT CALLS SETISSW IN CASE A PIPA FAIL NECESSITATES AN ISS WARNING. IF NOT, I.E., IMODES30  
 R0689 BIT 1 = 1, AND A PIPA FAIL IS PRESENT AND THE ISS IS NOT BEING INITIALIZED, PROGRAM ALARM 00212 IS ISSUED.

R0691 CALLING SEQUENCE' BY C33TEST ON CHANGES OF CHANNEL 33 BIT 13.

R0692 JOBS OR TASKS INITIATED' NONE.

R0693 SUBROUTINES CALLED' 1) SETISSW, AND 2) ALARM (SEE FUNCTIONAL DESCRIPTION).

R0695 ERASABLE INITIALIZATION' SEE IMON FOR INITIALIZATION OF IMODES30. THE RELAVANT BITS ARE 5, 7, 8, 9, AND 10.

R0697 ALARMS' PROGRAM ALARM 00212 IF PIPA FAIL IS PRESENT BUT NEITHER ISS WARNING IS TO BE ISSUED NOR THE ISS IS  
 R0699 BEING INITIALIZED.

R0700 EXIT' NXIFL33.

R0701 OUTPUT' PROGRAM ALARM 00212 AND ISS WARNING MAINTENANCE.

0702	REF	19	LAST	150	06,2632	10 000 0	PIPFAIL	CCS	A	SET BIT10 IN IMODES30 SO ALL ISS WARNING INFO IS IN ONE REGISTER.
0703	REF	12	LAST	62	06,2633	3 4701 0		CAP	BIT10	
0704	REF	24	LAST	150	06,2634	57*320 1		XCH	IMODES30	
0705	REF	1			06,2635	7 2763 0		MASK	-BIT10	
0706	REF	25	LAST	151	06,2636	27*320 0		ADS	IMODES30	
0707	REF	2	LAST	139	06,2637	0 2665 0		TC	SETISSW	
0708	REF	26	LAST	151	06,2640	4 1320 0		CS	IMODES30	IF PIP FAIL DOESNT LIGHT ISS WARNING, DO A PROGRAM ALARM IF IMU OPERATING BUT NOT CAGED OR BEING TURNED ON.
0709	REF	11	LAST	63	06,2641	7 4712 0		MASK	BIT1	
0710	REF	20	LAST	151	06,2642	10 000 0		CCS	A	
0711	REF	1			06,2643	1 2425 1		TCF	NXIFL33	
0712	REF	27	LAST	151	06,2644	3 1320 1		CA	IMODES30	
0713	REF	1			06,2645	7 2760 0		MASK	OCT1720	
0714	REF	21	LAST	151	06,2646	10 000 0		CCS	A	
0715	REF	2	LAST	151	06,2647	1 2425 1		TCF	NXIFL33	ABOVE CONDITION NOT MET.
0716	REF	4	LAST	150	06,2650	0 5537 0		TC	ALARM	
0717					06,2651	00212 0		OCT	212	
0718	REF	3	LAST	151	06,2652	1 2425 1		TCF	NXIFL33	

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R0719 PROGRAM NAMES' DNIMFAST, UPTIMFAST

R0720 FUNCTIONAL DESCRIPTION' THESE PROGRAMS PROCESS CHANGES OF BITS 12 AND 11 OF CHANNEL 33. IF A BIT CHANGES TO A  
R0722 0, A PROGRAM ALARM IS ISSUED. THE ALARMS ARE'

R0723	BIT	ALARM	CAUSE
R0724			
R0725	12	01105	DOWNLINK TOO FAST
R0726	11	01106	UPLINK TOO FAST

R0727 CALLING SEQUENCE' BY C33TEST ON A BIT CHANGE.

R0728 SUBROUTINES CALLED' ALARM, IF A BIT CHANGES TO A 0.

R0729 ERASABLE INITIALIZATION' FRESH START OR RESTART, BITS 12 AND 11 OF IMODES33 ARE SET TO 1.

R0731 ALARMS' SEE FUNCTIONAL DESCRIPTION.

R0732 EXIT' NXIFL33.

R0733 OUTPUT' PROGRAM ALARM ON A BIT CHANGE TO 0.

0734	REP	22	LAST	151	06,2853	10 000 0	DNIMFAST	CCS	A	DO PROG ALARM IF TM TOO FAST.
0735	REP	4	LAST	151	06,2854	1 2425 1		TCP	NXIFL33	
0736	REP	5	LAST	151	06,2855	0 5537 0		TC	ALARM	SAME AS DNLINK TOO FAST WITH DIFFERENT ALARM CODE.
0737					06,2856	01105 1		OCT	1105	
0738	REP	5	LAST	152	06,2857	1 2425 1		TCP	NXIFL33	
0739	REP	23	LAST	152	06,2860	10 000 0	UPTIMFAST	CCS	A	SAME AS DNLINK TOO FAST WITH DIFFERENT ALARM CODE.
0740	REP	6	LAST	152	06,2861	1 2425 1		TCP	NXIFL33	
0741	REP	6	LAST	152	06,2862	0 5537 0		TC	ALARM	SAME AS DNLINK TOO FAST WITH DIFFERENT ALARM CODE.
0742					06,2863	01106 1		OCT	1106	
0743	REP	7	LAST	152	06,2864	1 2425 1		TCP	NXIFL33	



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P0744 PROGRAM NAME' SETISSW

R0745 FUNCTIONAL DESCRIPTION' THIS PROGRAM TURNS THE ISS WARNING LAMP ON AND OFF (CHANNEL 11 BIT 1 = 1 FOR ON,  
 R0747 0 FOR OFF) DEPENDING ON THE STATUS OF IMODES30 BITS 13 (IMJ FAIL) AND 4 (INHIBIT IMJ FAIL), 12 (ICDU FAIL) AND  
 R0749 3 (INHIBIT ICDU FAIL), AND 10 (PIPA FAIL) AND 1 (INHIBIT PIPA FAIL). THE LAMP IS LEFT ON IF A LAMP TEST IS IN  
 R0751 PROGRESS.

R0752 CALLING SEQUENCE' CALLED BY IMUMON ON CHANGES TO IMJ FAIL AND ICDU FAIL. CALLED BY IFAILOK AND PFAILOK UPON  
 R0754 REMOVAL OF THE FAIL. INHIBITS. CALLED BY PIPFAIL WHEN THE PIPA FAIL DISCRETE CHANGES. IT IS CALLED BY PIPUSE  
 R0756 SINCE THE PIPA FAIL PROGRAM ALARM MAY NECESSITATE AN ISS WAERNING, AND LIKEWISE BY PIPFREE WHEN THE ALARM DEPARTS  
 R0758 AND IT IS CALLED BY IMUZERO3 AND ISSUP AFTER THE FAIL INHIBITS HAVE BEEN REMOVED.

R0760 JOBS OR TASKS INITIATED' NONE.

R0761 SUBROUTINES CALLED' NONE.

R0762 ERASABLE INITIALIZATION'

R0763 1) IMODES30 - SEE IMUMON.  
 R0764 2) IMODES33 BIT 1 = 0 (LAMP TEST NOT IN PROGRESS).

R0765 ALARMS' ISS WARNING.

R0766 EXIT' VIA O.

R0767 OUTPUT' ISS WARNING LAMP SET PROPERLY.

0768	REF	1		06,2665	3 4720 0	SETISSW	CAP	OCT15		
0769	REF	28	LAST 151	06,2666	7 1320 0		MASK	IMODES30		SET ISS WARNING USING THE FAIL BITS IN
0770				06,2667	0 0006 1		EXTEND			BITS 13, 12, AND 10 OF IMODES30 AND THE
0771	REF	13	LAST 151	06,2670	7 4701 1		MP	BIT10		FAILURE INHIBIT BITS IN POSITIONS
0772	REF	29	LAST 153	06,2671	3 1320 1		CA	IMODES30		4, 3, AND 1.
0773				06,2672	0 0006 1		EXTEND			
0774	REF	5	LAST 141	06,2673	04 001 1		ROR	LCHAN		0 INDICATES FAILURE.
0775				06,2674	4 0000 0		COM			
0776	REF	1		06,2675	7 4762 1		MASK	OCT15000		
0777	REF	24	LAST 152	06,2676	10 000 0		CCS	A		
0778	REF	1		06,2677	1 2710 1		TCF	ISSWON		FAILURE.
0779	REF	12	LAST 151	06,2700	3 4712 1	ISSWOFF	CAP	BIT1		DONT TURN OFF ISS WARNING IF LAMP TEST
0780	REF	12	LAST 150	06,2701	7 1321 1		MASK	IMODES33		IN PROGRESS.
0781	REF	25	LAST 153	06,2702	10 000 0		CCS	A		
0782	REF	3	LAST 131	06,2703	0 0002 0		TC	O		
0783	REF	13	LAST 153	06,2704	4 4712 0		CS	BIT1		
0784				06,2705	0 0006 1		EXTEND			
0785	REF	4	LAST 148	06,2706	03 011 1		WAND	DSALMOUT		TURN OFF ISS WARNING
0786	REF	4	LAST 153	06,2707	0 0002 0		TC	O		
0787				06,2710	0 0006 1	ISSWON	EXTEND			

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07871	REP	1		06,2711	22 066 1	QXCH	ITEMP8		
07872	REP	1		06,2712	0 5651 0	TC	VARALARM		
07873	REP	14	LAST	153	06,2713	3 4712 1	CAF	BIT1	TELL EVERYONE WHAT CAUSED THE ISSWARNING
0788					06,2714	0 0006 1	EXTEND		
0789	REP	5	LAST	153	06,2715	05 011 1	WOR	DSALMOUT	TURN ON ISS WARNING
0790	REP	2	LAST	154	06,2716	0 0086 1	TC	ITEMP8	
0791	REP	1			06,2717	4 7703 0	CAGESUB	CS	BIT15+6
0792					06,2720	0 0006 1	EXTEND		
0793	REP	9	LAST	148	06,2721	03 012 1	WAND	CHAN12	SET OUTBITS + INTERNAL FLAGS FOR
0794	REP	2	LAST	139	06,2722	3 4722 1	CAF	BITS4d5	SYSTEM TURN-ON OR CAGE. DISABLE THE
0795					06,2723	0 0006 1	EXTEND		ERROR COUNTER AND REMOVE IMU DELAY COMP.
0796	REP	10	LAST	154	06,2724	05 012 1	WOR	CHAN12	SEND ZERO AND COARSE.
0797	REP	11	LAST	144	06,2725	4 1036 1	CAGESUB1	CS	DSPTAB +11D
0798	REP	1			06,2726	7 2753 0	MASK	CC40010	TURN ON NO ATT LAMP
0799	REP	12	LAST	154	06,2727	27*036 1	ADS	DSPTAB +11D	
0800	REP	30	LAST	153	06,2730	4 1320 0	CAGESUB2	CS	IMODES30
0801	REP	1			06,2731	7 2755 0	MASK	OCT75	SET FLAGS TO INDICATE CAGING OR TURN-ON
0802	REP	31	LAST	154	06,2732	27*320 0	ADS	IMODES30	AND INHIBIT ALL ISS WARNING INFO
0803	REP	13	LAST	153	06,2733	4 1321 1	CS	IMODES33	
0804	REP	18	LAST	150	06,2734	7 4705 0	MASK	BIT6	DISABLE DAP AUTO AND HOLD MODES
0805	REP	14	LAST	154	06,2735	27*321 1	ADS	IMODES33	
0806	REP	5	LAST	153	06,2736	0 0002 0	TC	Q	
0807	REP	3	LAST	151	06,2665		IMUFAIL	EQUALS SETISSW	
0808	REP	4	LAST	154	06,2665		ICDUFAIL	EQUALS SETISSW	



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P0809 JUMP TABLES AND CONSTANTS.

0810	REF	1		06,2737	1	2528	0	IFAILJMP	TCF	ITURNON
0811	REF	1		06,2740	1	2665	1		TCF	IMUFAIL
0812	REF	1		06,2741	1	2665	1		TCF	ICDUFAIL
0813	REF	1		06,2742	1	2555	1		TCF	IMUCAGE
0814				06,2743		76400	1	30RDMSK	OCT	76400
0815	REF	1		06,2744	1	2604	0		TCF	IMUOP
0816	REF	1		06,2745	1	2632	0	C33JMP	TCF	PIPPAIL
0817	REF	1		06,2746	1	2653	1		TCF	DNTMFAST
0818	REF	1		06,2747	1	2660	1		TCF	UPTMFAST

CHANNEL 30 DISPATCH.

(BIT 10 NOT SAMPLED HERE).

CHANNEL 33 DISPATCH.

R0819 SUBROUTINE TO SKIP IF LAMP TEST NOT IN PROGRESS.

0820	REF	15	LAST 154	06,2750	4	1321	1	LAMPTEST	CS	IMODES33
0821	REF	15	LAST 154	06,2751	7	4712	0		MASK	BIT1
0822	REF	1		06,2752	1	3065	0		TCF	ZOPFIN3
0823	REF	1		4763				33RDMSK	EQUALS	PRI016
0824				06,2753	40010	1		CC40010	OCT	40010
0826				06,2754	00054	0		OCT54	OCT	54
0827				06,2755	00075	0		OCT75	OCT	75
0828				06,2756	00272	0		OCT272	OCT	00272
0829				06,2757	00300	1		BITS7d8	OCT	300
0830				06,2760	01720	0		OCT1720	OCT	1720
0831				06,2761	00740	1		OCT740	OCT	00740
0832	REF	1		4762				OCT15000	EQUALS	PRI015
0833				06,2762	77000	1		OCT77000	OCT	77000
0834				06,2763	76777	1		-BIT10	OCT	-1000
0835				06,2764	21450	0		90SECS	DEC	9000
0836	REF	1		5656				120MS	=	OCT14
0837	REF	8	LAST 134	5222				GLOCKOK	EQUALS	RESUME

BIT 1 OF IMODES33 = 1 IF LAMP TEST IN PROGRESS.

(DEC 12)



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Address	Label	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7	Field 8	Field 9	Field 10	Field 11	Field 12
P0838		OPTICS MONITORING AND ZERO ROUTINES											
0839	REF	2	LAST	140	06,2765	3	1331	1	OPTMON	CA	OPTMODES	MONITOR OPTICS INBITS IN CHAN 30 AND 33	
0840					06,2766	0	0008	1		EXTEND			
0841	REF	2	LAST	135	06,2767	06	030	1		RXOR	CHAN30	LOOK FOR OCCU FAIL BIT CHANGE	
0842	REF	15	LAST	147	06,2770	7	4704	1		MASK	BIT7		
0843	REF	13	LAST	142	06,2771	54	070	1		TS	RUPTREG1	STORE CHANGE BIT	
0844	REF	26	LAST	153	06,2772	10	000	0		CCS	A		
0845	REF	1			06,2773	0	3224	0		TC	OCCUPTST	PROCESS OCCUPAIL BIT CHANGE	
0846	REF	1			06,2774	11*303	1		33OPTMON	CCS	OPTIND	BYPASS IF TVC TAKEOVER	
0847					06,2775	1	3001	1		TCF	+4		
0848					06,2776	1	3001	1		TCF	+3		
0849					06,2777	1	3001	1		TCF	+2		
0850	REF	9	LAST	155	06,3000	1	5222	1		TCF	RESUME		
0851	REF	3	LAST	156	06,3001	3	1331	1		CA	OPTMODES	LOOK FOR OPTICS MODE SWITCH CHANGE	
0852					06,3002	0	0006	1		EXTEND			
0853	REF	2	LAST	141	06,3003	06	033	1		RXOR	CHAN33		
0854	REF	1			06,3004	7	4722	0		MASK	OCTHIRTY		
0855	REF	14	LAST	156	06,3005	26	070	1		ADS	RUPTREG1	STORE INBIT CHANGES	
0856	REF	4	LAST	156	06,3006	23*331	1			LXCH	OPTMODES		
0857					06,3007	0	0006	1		EXTEND			
0858	REF	6	LAST	153	06,3010	06	001	0		RXOR	LCHAN		
0859	REF	5	LAST	156	06,3011	55*331	0			TS	OPTMODES	UPDATE OPTMODES TO SHOW BIT CHANGES	
0860					06,3012	4	0000	0		COM		SAMPLE CURRENT SWITCH SETTING	
0861	REF	2	LAST	156	06,3013	7	4722	0		MASK	OCTHIRTY		
0862					06,3014	0	0006	1		EXTEND			
0863	REF	1			06,3015	1	3022	0		BZF	SETSAMP	MANUAL-SET ZERO IN SWSAMPLE	
0864	REF	11	LAST	140	06,3016	7	4706	0		MASK	BITS	SEE IF CSC	
0865	REF	27	LAST	156	06,3017	10	000	0		CCS	A		
0866					06,3020	0	3022	1		TC	+2	CSC-SET SWSAMPLE POS	
0867	REF	1			06,3021	3	7718	0		CAP	NEGONE	ZOPTICS-SET SWSAMPLE (-1)	
0868	REF	1			06,3022	55*314	1		SETSAMP	TS	SWSAMPLE	CURRENT OPTICS SWITCH SETTING	
0869	REF	1			06,3023	11*315	0		PROCESSW	CCS	DESOPMOD	BRANCH ON PREVIOUS SETTING	
0870	REF	1			06,3024	0	3125	1		TC	CSCDES	CSC	
0871	REF	1			06,3025	0	3077	1		TC	MANUDRS	MANUAL	
0872	REF	1			06,3026	0	3027	1		TC	ZOPTDES	ZERO OPTICS	



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0873	REP	2	LAST	156	06,3027	11=314	1	ZOPTDES	CCS	SYSAMPLE	IS SWITCH STILL AT ZOPTICS
0874	REP	1			06,3030	0 3047	1		TC	ZTOCSC	NOW AT CSC
0875	REP	1			06,3031	0 3037	0		TC	ZTOMAN	MANUAL
0876	REP	1			06,3032	0 3057	0		TC	ZOPFINI	ZOPTICS-SEE IF ZOPT PROCESSING
0877	REP	1			06,3033	0 3154	1		TC	SETDESMD	ZOPT NOT PROCESSING-NO ACTION
0878	REP	1			06,3034	11=317	1		CCS	ZOPTCNT	ZOPT PROCESSING-CHECK COUNTER
0879	REP	1			06,3035	0 3153	0		TC	SETCNT	32 SAMPLE NOT FINISHED-SET COUNTER
0880	REP	1			06,3036	0 3157	1		TC	SETZOEND	32 SAMPLE WAIT COMPLETED-SET UP ZOP END
0881	REP	2	LAST	157	06,3037	0 3057	0	ZTOMAN	TC	ZOPFINI	ZOP TO MANUAL-IS ZOPT DONE
0882	REP	2	LAST	157	06,3040	0 3154	1		TC	SETDESMD	YES-NORMAL EXIT
0883	REP	7	LAST	152	06,3041	0 5537	0	ZOPALARM	TC	ALARM	ALARM-SWITCHED ALTERED WHILE ZOPTICS
0884					06,3042	00116	1		OCT	00116	
0885	REP	1			06,3043	3 4717	1		CAF	OCT13	PROCESSING-SET RETURN OPTION
0886	REP	1			06,3044	55=316	0		TS	WTOPTION	
0887	REP	1			06,3045	0 3070	0		TC	CANZOPT	CANCEL ZOPT
0888	REP	3	LAST	157	06,3046	0 3154	1		TC	SETDESMD	
0889	REP	3	LAST	157	06,3047	0 3057	0	ZTOCSC	TC	ZOPFINI	SEE IF ZOPT PROCESSING
0890	REP	1			06,3050	0 3115	1		TC	MANTOCSC +3	NO-CHECK RETURN TO COARS OPT
0891	REP	8	LAST	157	06,3051	0 5537	0		TC	ALARM	ZOPT PROCESSING-ALARM
0892					06,3052	00116	1		OCT	00116	
0893	REP	2	LAST	157	06,3053	0 3070	0		TC	CANZOPT	CANCEL ZOPT
0894	REP	2	LAST	157	06,3054	0 3112	0		TC	MANTOCSC	ZERO CNT-LOCK FOR COARS OPT RETURN
0895	REP	14	LAST	138	06,3055	3 4702	0	COARSLQ	CAF	BIT9	IF COARS OPT SINCE FSTART GO TO L+2
0896	REP	1			06,3056	1 3084	1		TCF	ZOPFIN2	IF NOT GO TO L+1
0897	REP	16	LAST	155	06,3057	3 4712	1	ZOPFINI	CAF	BIT1	SEE IF END ZOPT TASK WORKING
0898	REP	6	LAST	156	06,3060	7 1331	0		MASK	OPTMODES	
0899	REP	28	LAST	156	06,3061	10 000	0		CCS	A	
0900	REP	10	LAST	156	06,3062	0 5222	0		TC	RESUME	ZOPT TASK WORKING-WAIT ONE SAMPLE PERIOD
0901	REP	11	LAST	62	06,3063	3 4710	0		CAF	BIT3	TEST IF ZOPTICS PROCESSING
0902	REP	7	LAST	157	06,3064	7 1331	0	ZOPFIN2	MASK	OPTMODES	RETURNS TO L+1 PROCESSING AND
0903	REP	29	LAST	157	06,3065	10 000	0	ZOPFIN3	CCS	A	
0904	REP	6	LAST	154	06,3066	24 002	0		INCR	Q	L+2 IF NOT
0905	REP	7	LAST	157	06,3067	0 0002	0		TC	Q	
0906	REP	2	LAST	143	06,3070	4 6211	1	CANZOPT	CS	SIX	CANCEL ZERO OPTICS
0907	REP	8	LAST	157	06,3071	7 1331	0		MASK	OPTMODES	ZERO ZOPT PROCESSING BIT-ENABLE OCTDUFAIL
0908	REP	9	LAST	157	06,3072	55=331	0		TS	OPTMODES	
0909	REP	17	LAST	157	06,3073	4 4712	0		CS	BIT1	MAKE SURE ZERO OCTDU IS OFF
0910					06,3074	0 0008	1		EXTEND		
0911	REP	11	LAST	154	06,3075	03 012	1		WAND	CHAN12	
0912	REP	8	LAST	157	06,3076	0 0002	0		TC	Q	

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0913	REP	3	LAST	157	06,3077	11*314	1	MANUDES	CCS	SWSAMPLE	
0914	REP	3	LAST	157	06,3100	0	3112	0	TC	MANTOCSC	SEE IF SWITCH STILL IN MANUAL MODE
0915	REP	1			06,3101	0	3107	1	TC	MANTOMAN	NOW AT CSC
0916	REP	2	LAST	157	06,3102	11*316	0		CCS	WTOPTION	STILL MANUAL
0917					06,3103	0	3105	0	TC	+2	ZOPTICS-LOCK AT ZOPTICS RETURN OPTION
0918	REP	1			06,3104	0	3151	1	TC	OPTZERO	5 SEC RETURN GOOD-CONTINUE ZOPTICS
											ZOPTICS MUST START ANEW
0919	REP	1			06,3105	0	3216	1	TC	INITZOPT	SHOW ZERO OPTICS PROCESSING
0920	REP	4	LAST	157	06,3108	0	3154	1	TC	SETDESMD	NORMAL EXIT
0922	REP	3	LAST	158	06,3107	11*316	0		CCS	WTOPTION	DECREMENT RETURN OPTION TIME
0923	REP	4	LAST	158	06,3110	55*318	0		TS	WTOPTION	
0924	REP	5	LAST	158	06,3111	0	3154	1	TC	SETDESMD	
0925	REP	6	LAST	148	06,3112	3	4714	1	MANTOCSC	CAP	ZERO
0926	REP	5	LAST	158	06,3113	55*318	0		TS	WTOPTION	CANCEL ZOPT RETURN OPTION IF SET
0927	REP	2	LAST	157	06,3114	55*317	1		TS	ZOPTCNT	
0928	REP	1			06,3115	0	3055	1	TC	COARSLCK	CHECK FOR COARS OPT RETURN
0929	REP	6	LAST	158	06,3116	0	3154	1	TC	SETDESMD	NO COARS TASK-NO ACTION
0930	REP	5	LAST	142	06,3117	3	4712	1	CAP	ONE	SET COARS OPT WORKING
0931	REP	2	LAST	156	06,3120	55*303	1		TS	OPTIND	
0932	REP	13	LAST	150	06,3121	3	4711	1	CAP	BIT2	ENABLE OPTICS CDU ERROR CNTS
0933					06,3122	0	0006	1	EXTEND		
0934	REP	12	LAST	157	06,3123	05	012	1	WOR	CHAN12	
0935	REP	7	LAST	158	06,3124	0	3154	1	TC	SETDESMD	
0936	REP	4	LAST	158	06,3125	11*314	1		CSCDES	CCS	SWSAMPLE
0937	REP	8	LAST	158	06,3126	0	3154	1	TC	SETDESMD	SEE IF SWITCH STILL AT CSC
0938	REP	1			06,3127	0	3133	0	TC	CSCOTMAN	STILL AT CSC
0939	REP	1			06,3130	3	4705	1	CSCTOZOP	CAP	MANUAL
0940	REP	3	LAST	158	06,3131	55*317	1		TS	OCT40	ZOPTICS-INITIALIZE FOR ZOPT
0941	REP	2	LAST	158	06,3132	0	3216	1	TC	ZOPTCNT	
									TC	INITZOPT	
0942	REP	3	LAST	158	06,3133	11*303	1		CSCOTMAN	CCS	OPTIND
0943	REP	1			06,3134	0	3140	1	TC	CANCOARS	SEE IF COARS WORKING
0944	REP	2	LAST	158	06,3135	0	3140	1	TC	CANCOARS	COARS WORKING-SWITCH NOT CSC-KILL COARS
0945					06,3136	0	3137	1	TC	+1	
0946	REP	9	LAST	158	06,3137	0	3154	1	TC	SETDESMD	NO COARS-NORMAL EXIT



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0947	REF	2	LAST	158	06,3140	3 7718 0	CANCOARS	CA	NEGONE	
0948	REF	4	LAST	158	06,3141	55*303 1		TS	OPTIND	SET OPTIND (-1) TO SHOW NOT WORKING
0949	REF	14	LAST	158	06,3142	4 4711 0		CS	BIT2	DISABLE OCDU ERR CNTS
0950					06,3143	0 0008 1		EXTEND		
0951	REF	13	LAST	158	06,3144	03 012 1		WAND	CHAN12	
0952	REF	10	LAST	157	06,3145	4 1331 0		CS	OPTMODES	SET RETURN-TO-COARS BIT
0953	REF	15	LAST	157	06,3146	7 4702 1		MASK	BIT9	
0954	REF	11	LAST	159	06,3147	27*331 0		ADS	OPTMODES	
0955	REF	10	LAST	158	06,3150	0 3154 1		TC	SETDESMD	
0956	REF	3	LAST	158	06,3151	0 3216 1	OPTZERO	TC	INITZOPT	INITIALIZE ZERO OPTICS
0957	REF	2	LAST	158	06,3152	3 4705 1		CA	OCT40	SET UP 32 SAMPLE WAIT
0958	REF	4	LAST	158	06,3153	55*317 1	SETCNT	TS	ZOPTCNT	
0959	REF	5	LAST	158	06,3154	3 1314 0	SETDESMD	CA	SSAMPLE	SET CURRENT SWITCH INDICATION-RESUME
0960	REF	2	LAST	158	06,3155	55*315 0		TS	DESOPMOD	
0961	REF	11	LAST	157	06,3156	0 5222 0		TC	RESUME	
0962	REF	18	LAST	157	06,3157	3 4712 1	SETZOECD	CAP	BIT1	SEND ZERO OPTICS CDU
0963					06,3160	0 0008 1		EXTEND		
0964	REF	14	LAST	159	06,3161	05 012 1		WOR	CHAN12	
0965	REF	1			06,3162	3 4112 1		CA	200MS	HOLD ZERO CDU FOR 200 MS
0966	REF	5	LAST	143	06,3163	0 5140 1		TC	WAITLIST	
0967	REF	12	LAST	159	1331			ERANK=	OPTMODES	
0968	REF	1			06,3164	03172 0		ZCADR	ENDZOPT	
0968	REF	1			06,3165	14082 0				
0969	REF	13	LAST	159	06,3166	4 1331 0		CS	OPTMODES	SHOW ZOPTICS TASK WORKING
0970	REF	19	LAST	159	06,3167	7 4712 0		MASK	BIT1	
0971	REF	14	LAST	159	06,3170	27*331 0		ADS	OPTMODES	
0972	REF	11	LAST	159	06,3171	0 3154 1		TC	SETDESMD	
0973	REF	1			06,3172	0 3210 1	ENDZOPT	TC	ZEROPCDU	ZERO OCDU COUNTERS
0974	REF	20	LAST	159	06,3173	4 4712 0		CS	BIT1	TURN OFF ZERO OCDU
0975					06,3174	0 0008 1		EXTEND		
0976	REF	15	LAST	159	06,3175	03 012 1		WAND	CHAN12	
0977	REF	2	LAST	159	06,3176	3 4112 1		CAP	200MS	DELAY 200MS FOR CDUS TO RESYNCHRONIZE
0978	REF	3	LAST	139	06,3177	0 5161 1		TC	VARDELAY	
0979	REF	15	LAST	159	06,3200	4 1331 0		CS	OPTMODES	SHOW ZOPTICS SINCE LAST FRESH START
0980	REF	14	LAST	153	06,3201	7 4701 1		MASK	BIT10	OR RESTART
0981	REF	16	LAST	159	06,3202	27*331 0		ADS	OPTMODES	
0982	REF	2	LAST	129	06,3203	4 4716 1		CS	SEVEN	ENABLE OCDUFAIL-SHOW OPTICS COMPLETE
0983	REF	17	LAST	159	06,3204	7 1331 0		MASK	OPTMODES	
0984	REF	18	LAST	159	06,3205	55*331 0		TS	OPTMODES	
0985	REF	2	LAST	156	06,3206	0 3224 0		TC	OCDUFTST	CHECK OCDU FAIL BIT AFTER ENABLE



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0986	REF	3	LAST	139	06,3207	0 5213 1	TC	TASKOVER	
0987	REF	7	LAST	158	06,3210	3 4714 1	ZEROPCDU	CAP	ZERO
0988	REF	2	LAST	37	06,3211	54 036 0	TS	CDUS	ZERO IN CDUS, -20 IN CDUT
09881	REF	1			06,3212	55*307 0	TS	ZONE	INITIALIZE SHAFT MONITOR ZONE
0989	REF	1			06,3213	4 3261 0	CS	20DEGS	
0990	REF	2	LAST	37	06,3214	54 035 0	TS	CDUT	
0991	REF	9	LAST	157	06,3215	0 0002 0	TC	0	
0992	REF	8	LAST	160	06,3216	3 4714 1	INITZOPT	CAP	ZERO
0993	REF	6	LAST	158	06,3217	55*316 0	TS	WTOPTION	INITIALIZE ZOPTICS-INHIBIT OCDUFAIL
0994	REF	19	LAST	159	06,3220	4 1331 0	CS	OPTMODES	AND SHOW OPTICS PROCESSING
0995	REF	3	LAST	157	06,3221	7 6211 1	MASK	SIX	SET ZERO OPTICS PROCESSING
0996	REF	20	LAST	160	06,3222	27*331 0	ADS	OPTMODES	OPTICS CDU FAIL INHIBITED
0997	REF	10	LAST	160	06,3223	0 0002 0	TC	0	



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0998	REF	16	LAST	156	06,3224	3 4704 0	OCDFUPTST	CAP	BIT7	SEE IF OCDFUPTST ON OR OFF
0999					06,3225	0 0006 1		EXTEND		
1000	REF	3	LAST	156	06,3226	02 030 0		RAND	CHAN30	
1001	REF	30	LAST	157	06,3227	10 000 0		CCS	A	
1002	REF	1			06,3230	1 3252 0		TCF	OPFALOP	OCDFUPTST LIGHT OFF
1003	REF	15	LAST	159	06,3231	3 4711 1		CAP	BIT2	OCDFUPTST LIGHT ON UNLESS INHIBITED
1004	REF	21	LAST	160	06,3232	7 1331 0		MASK	OPTMODES	
1005	REF	31	LAST	161	06,3233	10 000 0		CCS	A	
1006	REF	11	LAST	160	06,3234	0 0002 0		TC	Q	OCDFUPTST INHIBITED
1007	REF	14	LAST	138	06,3235	3 4703 1	OPFALON	CAP	BIT8	ON BIT
1008	REF	13	LAST	154	06,3236	6 1036 0		AD	DSPTAB +11D	
1009	REF	15	LAST	161	06,3237	7 4703 0		MASK	BIT8	
1010					06,3240	0 0006 1	SETOFF	EXTEND		
1011	REF	1			06,3241	1 6711 1		BZF	TCQ	NO CHANGE
1012	REF	3	LAST	141	06,3242	54 001 1		TS	L	
1013	REF	14	LAST	161	06,3243	3 1036 0		CA	DSPTAB +11D	
1014					06,3244	0 0006 1		EXTEND		
1015	REF	7	LAST	156	06,3245	06 001 0		ROR	LCHAN	
1016	REF	2	LAST	145	06,3246	7 4672 1		MASK	POSMAX	
1017	REF	14	LAST	146	06,3247	6 4674 0		AD	BIT15	SHOW ACTION WANTED
1018	REF	15	LAST	161	06,3250	55*036 1		TS	DSPTAB +11D	
1019	REF	12	LAST	161	06,3251	0 0002 0		TC	Q	
1020	REF	21	LAST	159	06,3252	3 4712 1	OPFALOP	CAP	BIT1	DONT TURN OFF IF LAMP TEST
1021	REF	16	LAST	155	06,3253	7 1321 1		MASK	IMODES33	
1022	REF	32	LAST	161	06,3254	10 000 0		CCS	A	
1023	REF	13	LAST	161	06,3255	0 0002 0		TC	Q	LAMP TEST IN PROGRESS
1024	REF	16	LAST	161	06,3256	3 4703 1		CAP	BIT8	TURN OFF OCDFUPTST LIGHT
1025	REF	16	LAST	161	06,3257	7 1036 1		MASK	DSPTAB +11D	
1026	REF	1			06,3260	1 3240 0		TCF	SETOFF	
1027	REF	1			4717		OCT13	=	ELEVEN	
1028	REF	3	LAST	154	4722		OCTHIRTY	EQUALS	BITS4d5	
1029					06,3261	16037 1	20DEGS	DEC	7199	
1030	REF	19	LAST	154	4705		OCT40	EQUALS	BIT6	
1031	REF	1			4112		200MS	EQUALS	OCT24	

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P1032 OPTICS CDU DRIVING PROGRAM

1033			10,2000			BANK 10
1034	REP	1	10,2000			SETLOC OPTDRV
1035			10,2000			BANK
1036	REP	1				COUNT* \$\$/SXT

R1037 SHAFT STOP MONITOR-ZONE UPDATE

1038	REP	3	LAST	160	10,2000	3 0036 1	OPTDRIVE CA	CDUS	GRAB OPTIC SHAFT CDU
1039	REP	4	LAST	161	10,2001	54 001 1	TS	L	
1040	REP	33	LAST	161	10,2002	10 000 0	CCS	A	GET ABS(CDUS)
1041	REP	1			10,2003	6 7707 0	AD	13,14,15	
1042					10,2004	1 2008 1	TCP	+2	ABS(CDUS) - 45 DEG
1043					10,2005	1 2003 1	TCP	-2	
1044					10,2006	0 0006 1	EXTEND		
1045	REP	1			10,2007	6 2016 1	BZMP	OZONE	LESS THAN 45 DEG-SET ZONE 0
1046	REP	2	LAST	160	10,2010	3 1307 1	CA	ZONE	IF ZONE ZERO, CHANGE TO + OR - OTHERWISE
1047					10,2011	0 0006 1	EXTEND		DONT MESS WITH ZONE
1048					10,2012	1 2014 1	BZP	+2	
1049	REP	1			10,2013	1 2020 0	TCP	CONDRVE	JUST CONTINUE
1050	REP	5	LAST	162	10,2014	56 001 0	XCH	L	GREATER THAN 45 DEG-SET ZONE TO SIGN CDU
1051	REP	2	LAST	162	10,2015	1 2017 1	TCP	OZONE +1	
1052	REP	9	LAST	160	10,2016	3 4714 1	OZONE	CAP ZERO	ABS(CDUS) LESS THEN 90 DEG-ZONE ZERO
1053	REP	3	LAST	162	10,2017	55=307 0	TS	ZONE	
1054	REP	1					COUNT*	\$\$/TARPT	
1055	REP	5	LAST	159	10,2020	11=303 1	CONDRVE	CCS OPTIND	
1056					10,2021	0 2025 1	TC	+4	WORK COARS OPTICS
1057					10,2022	0 2025 1	TC	+3	WORK COARS OPTICS
1058	REP	12	LAST	159	10,2023	0 5222 0	TC	RESUME	NO OPT
1059	REP	13	LAST	162	10,2024	0 5222 0	TC	RESUME	NO OPT
1060	REP	6	LAST	159	10,2025	3 1314 0	CA	SWSAMPLE	SEE IF SWITCH AT CMC
1061					10,2026	0 0006 1	EXTEND		
1062	REP	14	LAST	162	10,2027	6 5222 0	BZMP	RESUME	ZERO (-1) MANUAL (+0)
1063	REP	15	LAST	159	10,2030	3 4701 0	CAP	BIT10	SEE IF OCDUS ZEROED SINCE LAST PSTART
1064	REP	22	LAST	161	10,2031	7 1331 0	MASK	OPTMODES	
1065	REP	34	LAST	162	10,2032	10 000 0	CCS	A	
1066					10,2033	0 2036 0	TC	+3	
1067	REP	9	LAST	157	10,2034	0 5537 0	TC	ALARM	OPTICS NOT ZEROED
1068					10,2035	00120 1	OCT	00120	
1069	REP	16	LAST	161	10,2036	3 4711 1	CA	BIT2	SEE IF ERR CNTS ENABLED
1070					10,2037	0 0006 1	EXTEND		
1071	REP	16	LAST	159	10,2040	02 012 0	RAND	CHAN12	
1072					10,2041	0 0006 1	EXTEND		
1073	REP	1			10,2042	1 2175 1	BZP	SETBIT	CNTS NOT ENABLED-DO IT AND RESUME
1074	REP	6	LAST	158	10,2043	3 4712 1	CAP	ONE	INITIALIZE OPTIND

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1075	REP	6	LAST	162	10,2044	55*303	1	OPT2	TS	OPTIND	
1076					10,2045	0	0006	1	EXTEND		
1077	REP	1			10,2046	1	2132	1	BZF	TRUNCMD	CHECK TRUNCION COMMAND
1078	REP	7	LAST	163	10,2047	51*303	0	GETOPCMD	INDEX	OPTIND	
1079	REP	2	LAST	96	10,2050	3	1160	1	CA	DESOPPT	PICK UP DESIRED OPT ANGLE
1080					10,2051	0	0008	1	EXTEND		
1081	REP	8	LAST	163	10,2052	5	1303	0	INDEX	OPTIND	
1082	REP	3	LAST	160	10,2053	20	035	0	MSJ	CDUT	GET DIFFERENCE
1083					10,2054	0	0008	1	EXTEND		
1084	REP	13	LAST	148	10,2055	7	4676	0	MP	BIT13	
1085	REP	6	LAST	162	10,2056	58	001	0	XCH	L	
1086					10,2057	8	0000	1	DOUBLE		
1087	REP	3	LAST	66	10,2060	54	061	1	TS	ITEMP1	
1088					10,2061	1	2063	1	TCF	+2	NO OVFL
1089	REP	7	LAST	163	10,2062	28	001	1	ADS	L	WITH OVFL
1090	REP	9	LAST	163	10,2063	51*303	0	STORCMD	INDEX	OPTIND	
1091	REP	1			10,2064	23*305	0		LXCH	COMMANDO	STORE COMMAND
1092	REP	10	LAST	163	10,2065	11*303	1		CCS	OPTIND	
1093	REP	1			10,2066	1	2044	1	TCF	OPT2	GET NEXT COMMAND
1094	REP	4	LAST	163	10,2067	54	061	1	TS	ITEMP1	
1095	REP	2	LAST	162 TO 162'	16	16	16*		COUNT*	\$\$/SXT	INITIALIZE SEND INDICATOR TO ZERO
R1096	SHAFT STOP AVOIDANCE										
10961	REP	4	LAST	162	10,2070	10	036	0	CCS	CDUS	IF CDUS GREATER THAN +OR- 90 DEG CHECK FOR POSSIBLE STOP PROBLEM
10962	REP	1			10,2071	6	4673	1	AD	NEG1/2	
10963					10,2072	1	2074	1	TCF	+2	
10964					10,2073	1	2071	1	TCF	-2	
10965					10,2074	0	0006	1	EXTEND		
10966	REP	1			10,2075	6	2122	1	BZMF	CMDSETUP	CDUS LESS THAN 90 DEG, NO PROBLEMS
1097	REP	4	LAST	162	10,2076	3	1307	1	CA	ZONE	
1098					10,2077	0	0006	1	EXTEND		
1099	REP	2	LAST	163	10,2100	1	2122	0	BZF	CMDSETUP	ZONE=3,NORMAL COMMAND
1100	REP	15	LAST	161	10,2101	7	4674	1	MASK	BIT15	GRAB SIGN OF ZONE
1101	REP	8	LAST	163	10,2102	54	001	1	TS	L	
1102	REP	2	LAST	163	10,2103	3	1306	0	CA	COMMANDO +1	
1103	REP	16	LAST	163	10,2104	7	4674	1	MASK	BIT15	GRAB SIGN OF SHAFT COMMAND
1104					10,2105	0	0006	1	EXTEND		
1105	REP	8	LAST	161	10,2106	06	001	0	RXOR	LOHAN	
1106	REP	35	LAST	162	10,2107	10	000	0	CCS	A	
1107	REP	3	LAST	163	10,2110	1	2122	0	TCF	CMDSETUP	SIGN ZONE NOT EQUAL, TO SIGN COMMAND
1108	REP	2	LAST	96	10,2111	11*161	1		CCS	DESOPPTS	SEE IF DESOPPTS BETWEEN -90 AND +90
1109	REP	2	LAST	163	10,2112	6	4673	1	AD	NEG1/2	
1110					10,2113	1	2115	1	TCF	+2	ARS(DESOPPTS) - 90 DEG
1111					10,2114	1	2112	0	TCF	-2	
1112					10,2115	0	0006	1	EXTEND		



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1113				10,2116	6 2120 0	BZMF	+2		DESOPTS IN FIRST OR FOURTH QUAD
1114	REP	4	LAST	183	10,2117	1 2122 0	TCF	CMDSETUP	
1115	REP	3	LAST	183	10,2120	4 1308 1	CS	COMMANDO +1	REVERSE REGULAR COMMAND
1116	REP	4	LAST	184	10,2121	55*306 1	TS	COMMANDO +1	
1117	REP	2	LAST	162 TO 163'	40	40*		COUNT* SS/T4RPT	
1118	REP	7	LAST	182	10,2122	3 4712 1	CMDSETUP	CAP ONE	SET OPTIND
1119	REP	11	LAST	183	10,2123	55*303 1	TS	OPTIND	
1120	REP	36	LAST	183	10,2124	50 000 1	INDEX	A	
1121	REP	5	LAST	184	10,2125	11*305 1	CCS	COMMANDO	GET SIGN OF COMMAND
1122	REP	1			10,2126	0 2144 1	TC	POSOPCMD	
1123	REP	1			10,2127	0 2151 0	TC	NEXTOPT +1	ZERO COMMAND-SKIP SEND INDICATOR
1124	REP	1			10,2130	0 2161 0	TC	NEGOPCMD	
1125	REP	2	LAST	164	10,2131	0 2151 0	TC	NEXTOPT +1	ZERO COMMAND
1126	REP	4	LAST	183	10,2132	4 0035 0	TRUNCMD	CS	CDUT
1127	REP	3	LAST	183	10,2133	6 1180 1	AD	DESOPTT	IF COMMAND GREATER THAN 45 DEG-COMMAND
1128	REP	14	LAST	181	10,2134	54 002 1	TS	0	45 DEG
1129	REP	1			10,2135	0 2047 0	TC	GETOPCMD	LESS THAN 45 DEG-NORMAL OPERATION
1130	REP	37	LAST	184	10,2136	10 000 0	CCS	A	
1131	REP	3	LAST	181	10,2137	3 4872 0	CA	POSMAX	GREATER THAN 45 DEG-USE OPSMAX WITH
1132					10,2140	0 2142 1	TC	+2	CORRECT SIGN
1133	REP	4	LAST	184	10,2141	4 4872 1	CS	POSMAX	
1134	REP	9	LAST	183	10,2142	54 001 1	TS	L	
1135	REP	1			10,2143	0 2063 0	TC	STORCMD	
1136	REP	1			10,2144	6 2202 0	POSOPCMD	AD	MAXPLS1
1137					10,2145	0 0006 1	EXTEND		
1138	REP	1			10,2146	6 2166 1	BZMF	DELOPCMD	COMMAND LESS THAN MAX PULSE
1139	REP	1			10,2147	4 2201 1	CS	MAXPLS	GREATER THAN MAX PULSE-USE MAX PULSE
1140	REP	5	LAST	183	10,2150	24 061 0	NEXTOPT	INCR	ITEMP1
1141	REP	2	LAST	131	10,2151	6 4713 0	AD	NEGO	SET SEND INDICATOR
1142	REP	12	LAST	164	10,2152	51*303 0	INDEX	OPTIND	MAKE SURE ZERO COMMAND IS -ZERO
1143	REP	3	LAST	38	10,2153	54 053 0	TS	CDUTCMD	STORE PULSE IN SEND REG
1144	REP	13	LAST	184	10,2154	11*303 1	CCS	OPTIND	
1145	REP	5	LAST	184	10,2155	0 2123 0	TC	CMDSETUP +1	GET NEXT OPT
1146	REP	6	LAST	184	10,2156	10 061 1	CCS	ITEMP1	ARE ANY PULSES TO GO
1147	REP	1			10,2157	1 2171 0	TCF	SENDOCMD	YES-SEND RM
1148	REP	15	LAST	182	10,2160	0 5222 0	TC	RESUME	NO
1149	REP	2	LAST	184	10,2161	6 2202 0	NEGOPCMD	AD	MAXPLS1
1150					10,2162	0 0006 1	EXTEND		
1151	REP	2	LAST	184	10,2163	6 2166 1	BZMF	DELOPCMD	LESS THAN MAX PULSE
1152	REP	2	LAST	184	10,2164	3 2201 0	CA	MAXPLS	MAX PULSES
1153	REP	3	LAST	184	10,2165	1 2150 0	TCF	NEXTOPT	



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1154	REP	14	LAST	164	10,2166	51=303	0	DELOPCMD	INDEX	OPTIND	
1155	REP	6	LAST	164	10,2167	57=305	0		XCH	COMMANDO	SET UP SMALL COMMAND
1156	REP	4	LAST	164	10,2170	1 2150	0		TOP	NEXTOPT	
1157	REP	1			10,2171	3 4755	1	SENDCMD	CAP	11,12	SEND OCDU DRIVE COMMANDS
1158					10,2172	0 0006	1		EXTEND		
1159	REP	3	LAST	148	10,2173	05 014	1		WOR	CHAN14	
1160	REP	16	LAST	164	10,2174	0 5222	0		TC	RESUME	
1161	REP	17	LAST	162	10,2175	3 4711	1	SETBIT	CAP	BIT2	ENABLE OCDU ERR CNTS
1162					10,2176	0 0006	1		EXTEND		
1163	REP	17	LAST	162	10,2177	05 012	1		WOR	CHAN12	
1164	REP	17	LAST	165	10,2200	0 5222	0		TC	RESUME	START COARS NEXT TIME AROUND
1165					10,2201	77532	0	MAXPLS	DEC	-165	WAS -80
1166					10,2202	77533	1	MAXPLS1	DEC	-164	WAS -79
1167	REP	1			4755				11,12	EQUALS PRIOR	

L DOWNLINK LISTS

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0001  
 0002 REF 1 22,2000 BANK 22  
 0003 05,2000 SETLOC DOWNTELM  
 05,2000 BANK  
 0004 REF 2 LAST 128 0340 EBANK= DNIMBUFF

R0005 SPECIAL DOWNLINK OP CODES

OP CODE	ADDRESS(EXAMPLE)	SENDS..	BIT 15	BITS 14-12	BITS 11
1DNADR	TIME2	(2 AGC WDS)	0	0	ECADR
2DNADR	TEPHEM	(4 AGC WDS)	0	1	ECADR
3DNADR	VGBODY	(6 AGC WDS)	0	2	ECADR
4DNADR	STATE	(8 AGC WDS)	0	3	ECADR
5DNADR	UPRUFF	(10AGC WDS)	0	4	ECADR
6DNADR	DSPTAB	(12AGC WDS)	0	5	ECADR
DNCHAN	30	CHANNELS	0	7	CHANNEL ADDRESS
DNPTR	NEXTLIST	POINTS TO NEXT LIST.	0	6	ADRES

R0020 DOWNLIST FORMAT DEFINITIONS AND RULES-

1. END OF A LIST = -XDNADR (X = 1 TO 6), -DNPTR, OR -DNCHAN.
2. SNAPSHOT SUBLIST = LIST WHICH STARTS WITH A -1DNADR.
3. SNAPSHOT SUBLIST CAN ONLY CONTAIN 1DNADRS.
4. TIME2 1DNADR MUST BE LOCATED IN THE CONTROL LIST OF A DOWNLIST.
5. ERASABLE DOWN TELEMETRY WORDS SHOULD BE GROUPED IN SEQUENTIAL LOCATIONS AS MUCH AS POSSIBLE TO SAVE STORAGE USED BY DOWNLINK LISTS.
6. THE DOWNLINK LISTS(INCLUDING SUBLISTS) ARE ORGANIZED SUCH THAT THE ITEMS LISTED FIRST(IN FRONT OF FRANK) ARE SENT FIRST. EXCEPTION--- SNAPSHOT SUBLISTS. IN THE SNAPSHOT SUBLISTS THE DATA REPRESENTED BY THE FIRST 11 1DNADRS IS PRESERVED (IN ORDER) IN DNIMBUFF AND SENT BY THE NEXT 11 DOWNRUPTS. THE DATA REPRESENTED BY THE LIST IS SENT IMMEDIATELY.

0027 REF 1 COUNT 05/DLIST  
 0028 0007 ERASZERO EQUALS 7  
 0029 REF 1 0007 SPARE EQUALS ERASZERO  
 0030 05,2000 77340 0 LOWIDCOD OCT 77340  
 0031 REF 1 05,2113 NOMDNLIST EQUALS CMCSTADL  
 0032 REF 1 05,2214 UPDNLIST EQUALS CMENTRDL

USE SPARE TO INDICATE AVAILABLE SPACE  
 LOW ID CODE  
 FRESH START AND POST P27 DOWNLIST  
 UPDATE PROGRAM (P27) DOWNLIST

L DOWNLINK LISTS

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P0033 CSM POWERED FLIGHT DOWNLIST

R0034 -----CONTROL LIST-----

0035				05,2001	CMPOWERL EQUALS	
0036	REF	1		05,2001	32047 0	DNPTR CMPOWE01 COLLECT SNAPSHOT
0037	REF	3	LAST 166	05,2002	24340 0	6DNADR DNIMBUFF SEND SNAPSHOT
0038	REF	1		05,2003	32056 0	DNPTR CMPOWE02 COLLECT SECOND SNAPSHOT
0039	REF	4	LAST 167	05,2004	14340 0	4DNADR DNIMBUFF SEND SNAPSHOT
0040	REF	1		05,2005	32063 0	DNPTR CMPOWE03 COMMON DATA
0041	REF	3	LAST 126	05,2006	03412 0	1DNADR TIG TIG,+1
0042	REF	2	LAST 115	05,2007	03422 0	1DNADR DELTA4 DELTA4,+1
0043	REF	2	LAST 115	05,2010	13414 1	3DNADR RTARG RTARG,+1,+2,...+5
0044	REF	2	LAST 115	05,2011	03427 0	1DNADR TGO TGO,+1
0045	REF	2	LAST 77	05,2012	01245 0	1DNADR PIPTIME1 PIPTIME1,+1
0046	REF	4	LAST 77	05,2013	11162 1	3DNADR DELV DELV,+1,...+4,+5
0047	REF	1		05,2014	03025 0	1DNADR PACTOFF PACTOFF YACTOFF
0048	REF	2	LAST 102	05,2015	03231 1	1DNADR PCMD PCMD,YCMD
0049	REF	2	LAST 122	05,2016	03702 1	1DNADR CSTEER CSTEER,+1
0050	REF	1		05,2017	00007 0	1DNADR SPARE
0051	REF	2	LAST 167	05,2020	00007 0	1DNADR SPARE
0052	REF	3	LAST 167	05,2021	00007 0	1DNADR SPARE
0053	REF	1		05,2022	25735 1	6DNADR REFSMAT REFSMAT,+1,...+10,+11
0054	REF	1		05,2023	32065 0	DNPTR CMPOWE04 COMMON DATA
0055	REF	1		05,2024	00024 1	1DNADR TIME2 TIME2,TIME1
0056	REF	1		05,2025	32067 1	DNPTR CMPOWE05 COLLECT SNAPSHOT
0057	REF	5	LAST 167	05,2026	24340 0	6DNADR DNIMBUFF SEND SNAPSHOT
0058	REF	2	LAST 167	05,2027	32056 0	DNPTR CMPOWE02 COLLECT SNAPSHOT
0059	REF	6	LAST 167	05,2030	14340 0	4DNADR DNIMBUFF SEND SNAPSHOT
0060	REF	2	LAST 167	05,2031	32063 0	DNPTR CMPOWE03
0061	REF	1		05,2032	32078 1	DNPTR CMPOWE06 COMMON DATA
0062	REF	2	LAST 124	05,2033	03743 1	1DNADR ELEV ELEV,+1
006205	REF	1		05,2034	03753 0	1DNADR CENTANG CENTANG,+1
00621	REF	2	LAST 91	05,2035	02610 1	1DNADR DELTAR DELTAR,+1
0063	REF	18	LAST 150	05,2036	00106 0	1DNADR STATE +10D PALGRDS 10 AND 11
0064	REF	2	LAST 79	05,2037	01336 0	1DNADR TEVENT TEVENT,+1
0065	REF	3	LAST 167	05,2040	03231 1	1DNADR PCMD PCMD,YCMD
0066	REF	23	LAST 162	05,2041	01331 1	1DNADR OPTMODES OPTMODES,HOLDFLAG
0067	REF	1		05,2042	32101 0	DNPTR CMPOWE07 COMMON DATA
0068	REF	3	LAST 122	05,2043	13720 0	3DNADR VGTIG VGTIG,+1,...+4,+5
0069	REF	4	LAST 167	05,2044	00007 0	1DNADR SPARE
0070	REF	5	LAST 167	05,2045	00007 0	1DNADR SPARE
0071	REF	6	LAST 167	05,2046	77770 1	-1DNADR SPARE

R0072 -----SUB LISTS-----

0073	REF	1		05,2047	76605 0	CMPOWE01-1DNADR RN +2	RN+2,+3	SNAPSHOT DATA
0074	REF	2	LAST 167	05,2050	01174 1	1DNADR RN +4	RN+4,+5	
0075	REF	1		05,2051	01176 0	1DNADR VN	VN,+1	
0076	REF	2	LAST 167	05,2052	01200 1	1DNADR VN +2	VN+2,+3	

L DOWNLINK LISTS

0077	REP	3	LAST	187	05,2053	01202 0	1DNADR VN +4	VN+4,+5	
0078	REP	2	LAST	77	05,2054	01204 0	1DNADR PIPTIME	PIPTIME,+1	
0079	REP	3	LAST	187	05,2055	76807 1	-1DNADR RN	RN,+1	
0080	REP	2	LAST	143	05,2056	77743 1	CMPOWE02-1DNADR CDUZ	CDUZ,CDUT	SNAPSHOT DATA
0081	REP	3	LAST	114	05,2057	03133 0	1DNADR ADOT	ADOT,+1/OGARATE,+1	
0082	REP	4	LAST	188	05,2060	03135 0	1DNADR ADOT +2	ADOT+2,+3/OMEGAB+2,+3	
0083	REP	5	LAST	188	05,2061	03137 1	1DNADR ADOT +4	ADOT+4,+5/OMEGAB+4,+5	
0084	REP	1			05,2062	77745 1	-1DNADR CDUX	CDUX,CDUY	
0085	REP	2	LAST	111	05,2063	07076 1	CMPOWE03 2DNADR AK	AK,AK1,AK2,RCSFLAGS	COMMON DATA
0086	REP	3	LAST	111	05,2064	70605 0	-2DNADR THETADX	THETADX,THETADY,THETADZ,GARBAGE	
0087	REP	19	LAST	187	05,2065	20074 0	CMPOWE04 5DNADR STATE	FLAGWRD0 THRU FLAGWRD9	COMMON DATA
0088	REP	17	LAST	161	05,2066	52754 0	-8DNADR DSPTAB	DISPLAY TABLES	
0089	REP	1			05,2067	76054 1	CMPOWE05-1DNADR R-OTHER +2	R-OTHER+2,+3	SNAPSHOT DATA
0090	REP	2	LAST	188	05,2070	01725 0	1DNADR R-OTHER +4	R-OTHER+4,+5	
0091	REP	1			05,2071	01727 1	1DNADR V-OTHER	V-OTHER,+1	
0092	REP	2	LAST	188	05,2072	01731 0	1DNADR V-OTHER +2	V-OTHER+2,+3	
0093	REP	3	LAST	188	05,2073	01733 1	1DNADR V-OTHER +4	V-OTHER+4,+5	
0094	REP	1			05,2074	01642 0	1DNADR T-OTHER	T-OTHER,+1	
0095	REP	3	LAST	188	05,2075	76056 0	-1DNADR R-OTHER	R-OTHER,+1	
0096	REP	1			05,2076	01432 0	CMPOWE06 1DNADR RSRBQ	RSRBQ,+1	COMMON DATA
0097	REP	1			05,2077	10372 0	3DNADR CADRFLSH	CADRFLSH,+1,+2,FAILREG,+1,+2	
0098	REP	5	LAST	163	05,2100	73741 1	-2DNADR CDUS	CDUS,PIPAX,PIPAY,PIPAZ	
0099	REP	2	LAST	100	05,2101	03073 0	CMPOWE07 1DNADR LEMASS	LEMASS,CSMASS	COMMON DATA
0100	REP	1			05,2102	03086 1	1DNADR DAPDATR1	DAPDATR1,DAPDATR2	
0101	REP	3	LAST	111	05,2103	07167 0	2DNADR ERRORX	ERRORX,ERRORY,ERRORZ,GARBAGE	
0102	REP	4	LAST	114	05,2104	13125 0	3DNADR WBODY	WBODY,...+5/OMEGAC,...+5	
0103	REP	1			05,2105	05154 1	2DNADR REDOCTR	REDOCTR,THETAD,+1,+2	
0104	REP	32	LAST	154	05,2106	01320 1	1DNADR IMODES30	IMODES30,IMODES33	
0105					05,2107	34011 0	DNCHAN 11	CHANNELS 11,12	
0106					05,2110	34013 1	DNCHAN 13	CHANNELS 13,14	
0107					05,2111	34030 0	DNCHAN 30	CHANNELS 30,31	
0108					05,2112	43745 0	-DNCHAN 32	CHANNELS 32,33	

R0109





L DOWNLINK LISTS

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P0110 CSM COAST AND ALIGNMENT DOWNLIST

R0111 -----CONTROL LIST-----

0112				05,2113		CMCSTADL EQUALS	SEND ID BY SPECIAL CODING
0113	REP	1		05,2113	32047 0	DNPTR CMCSTA01	COLLECT SNAPSHOT
0114	REP	7	LAST 167	05,2114	24340 0	6DNADR DNTMBUFF	SEND SNAPSHOT
0115	REP	1		05,2115	32058 0	DNPTR CMCSTA02	COLLECT SECOND SNAPSHOT
0116	REP	8	LAST 169	05,2116	14340 0	4DNADR DNTMBUFF	SEND SNAPSHOT
0117	REP	1		05,2117	32063 0	DNPTR CMCSTA03	COMMON DATA
0118	REP	4	LAST 167	05,2120	03412 0	1DNADR TIG	TIG,+1
0119	REP	2	LAST 70	05,2121	00302 0	1DNADR BESTI	BESTI,BESTJ
0120	REP	4	LAST 123	05,2122	17874 1	4DNADR MARKDOWN	MARKDOWN,+1...+5,+6,GARBAGE
0121	REP	1		05,2123	17502 0	4DNADR MARK2DWN	MARK2DWN,+1...+5,+6
0123	REP	2	LAST 90	05,2124	06363 1	2DNADR HAPO	HAPO,+1,HPER,+1
0124	REP	1		05,2125	02355 0	1DNADR RSP-RREC	RSP-RREC,+1
0125	REP	4	LAST 167	05,2126	13720 0	3DNADR VGTIG	VGTIG,...+5
0126	REP	2	LAST 167	05,2127	25735 1	6DNADR REFSMAT	REFSMAT,+1,...+10,+11
0127	REP	1		05,2130	32065 0	DNPTR CMCSTA04	COMMON DATA
0128	REP	2	LAST 167	05,2131	00024 1	1DNADR TIME2	TIME2,TIME1
0129	REP	1		05,2132	32067 1	DNPTR CMCSTA05	COLLECT SNAPSHOT
0130	REP	9	LAST 169	05,2133	24340 0	6DNADR DNTMBUFF	SEND SNAPSHOT
0131	REP	2	LAST 169	05,2134	32058 0	DNPTR CMCSTA02	COLLECT SNAPSHOT
0132	REP	10	LAST 169	05,2135	14340 0	4DNADR DNTMBUFF	SEND SNAPSHOT
0133	REP	2	LAST 169	05,2136	32063 0	DNPTR CMCSTA03	COMMON DATA
0134	REP	1		05,2137	32076 1	DNPTR CMCSTA06	COMMON DATA
0135	REP	2	LAST 93	05,2140	12757 1	3DNADR GGC	GGC,+1,IGC,+1,MCC,+1
0136	REP	20	LAST 168	05,2141	00106 0	1DNADR STATE +10D	FALGWRDS 10 AND 11
0137	REP	3	LAST 167	05,2142	01336 0	1DNADR TEVENT	TEVENT,+1
0138	REP	1		05,2143	02633 0	1DNADR LAUNCHAZ	LAUNCHAZ,+1
0139	REP	24	LAST 167	05,2144	01331 1	1DNADR OPTMODES	OPTMODES,HOLDFLAG
0140	REP	1		05,2145	32101 0	DNPTR CMCSTA07	COMMON DATA
0141	REP	18	LAST 168	05,2146	52754 0	-6DNADR DSPTAB	DISPLAY TABLES

R0142 -----SUB LISTS-----

0143	REP	2	LAST 167	05,2047		CMCSTA01 EQUALS CMPQWE01	COMMON DOWNLIST DATA
0144	REP	3	LAST 167	05,2056		CMCSTA02 EQUALS CMPQWE02	COMMON DOWNLIST DATA
0145	REP	3	LAST 167	05,2063		CMCSTA03 EQUALS CMPQWE03	COMMON DOWNLIST DATA
0146	REP	2	LAST 167	05,2065		CMCSTA04 EQUALS CMPQWE04	COMMON DOWNLIST DATA
0147	REP	2	LAST 167	05,2067		CMCSTA05 EQUALS CMPQWE05	COMMON DOWNLIST DATA
0148	REP	2	LAST 167	05,2076		CMCSTA06 EQUALS CMPQWE06	COMMON DOWNLIST DATA
0149	REP	2	LAST 167	05,2101		CMCSTA07 EQUALS CMPQWE07	COMMON DOWNLIST DATA



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L DOWNLINK LISTS

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P0151 CSM RENDEZVOUS AND PRETHRUST LIST

P0152 -----CONTROL LIST-----

REF	TYPE	TIME	ORIGIN	DESCRIPTION	DATA
0153			05,2147	CMREND01 EQUALS	SEND ID BY SPECIAL CODING
0154	REF 1		05,2147	DNPTR CMREND01	COLLECT SNAPSHOT
0155	REF 11 LAST 169		05,2150	6DNADR DNINBUFF	SEND SNAPSHOT
0156	REF 1		05,2151	DNPTR CMREND02	COLLECT SECOND SNAPSHOT
0157	REF 12 LAST 171		05,2152	4DNADR DNINBUFF	SEND SNAPSHOT
0158	REF 1		05,2153	DNPTR CMREND03	COMMON DATA
0159	REF 5 LAST 169		05,2154	1DNADR TIG	TIG,+1
0160	REF 3 LAST 167		05,2155	1DNADR DELLT4	DELLT4,+1
0161	REF 3 LAST 167		05,2156	3DNADR RTARG	RTARG,+1...+4,+5
0162	REF 1		05,2157	1DNADR VHF TIME	VHF TIME,+1
0163	REF 5 LAST 169		05,2160	4DNADR MARKDOWN	MARK TIME(DP), YCDU, SCDU, ZCDU, TCDU, XCDU, RM
0164	REF 1		05,2161	1DNADR VHF CNT	VHF CNT,+1
0165	REF 2 LAST 122		05,2162	1DNADR TPI	TPI,+1
0166	REF 1		05,2163	1DNADR ECSTEER	ECSTEER,+1
0167	REF 2 LAST 91		05,2164	1DNADR DELVTFF	DELVTFF,+1
0168	REF 7 LAST 167		05,2165	1DNADR SPARE	
0169	REF 8 LAST 171		05,2166	1DNADR SPARE	
0170	REF 3 LAST 121		05,2167	1DNADR TPASS4	TPASS4,+1
0171	REF 3 LAST 115		05,2170	3DNADR DELVSLV	DELVSLV,+1...+4,+5
0172	REF 5 LAST 89		05,2171	2DNADR RANGE	RANGE,+1,RRATE,+1
0173	REF 1		05,2172	DNPTR CMREND04	COMMON DATA
0174	REF 3 LAST 169		05,2173	1DNADR TIME2	TIME2, TIME1
0175	REF 1		05,2174	DNPTR CMREND05	COLLECT SNAPSHOT
0176	REF 13 LAST 171		05,2175	6DNADR DNINBUFF	SEND SNAPSHOT
0177	REF 2 LAST 171		05,2176	DNPTR CMREND02	COLLECT SNAPSHOT
0178	REF 14 LAST 171		05,2177	4DNADR DNINBUFF	SEND SNAPSHOT
0179	REF 2 LAST 171		05,2200	DNPTR CMREND03	COMMON DATA
0180	REF 1		05,2201	DNPTR CMREND06	COMMON DATA
0181	REF 3 LAST 167		05,2202	1DNADR ELEV	ELEV,+1
018103	REF 2 LAST 167		05,2203	1DNADR CENTANG	CENTANG,+1
018106	REF 3 LAST 167		05,2204	1DNADR DELTAR	DELTAR,+1
0182	REF 3 LAST 125		05,2205	3DNADR DELVEET3	DELVEET3,+1,...+4,+5
0183	REF 25 LAST 169		05,2206	1DNADR OPTMODES	OPTMODES,HOLD FLAG
0184	REF 1		05,2207	DNPTR CMREND07	COMMON DATA
0185	REF 2 LAST 88		05,2210	1DNADR RTHETA	RTHETA,+1
0186	REF 2 LAST 115		05,2211	2DNADR LAT(SPL)	LAT(SPL), LNG(SPL),+1
0187	REF 3 LAST 118		05,2212	2DNADR VPRED	VPRED,+1,GAMMAE I,+1
0188	REF 21 LAST 169		05,2213	-1DNADR STATE +10D	FALGWRDS 10 AND 11

P0189 -----SUB LISTS-----

0190	REF 3 LAST 169	05,2047	CMREND01 EQUALS CMPOWER01	COMMON DOWNLIST DATA
0191	REF 4 LAST 169	05,2056	CMREND02 EQUALS CMPOWER02	COMMON DOWNLIST DATA
0192	REF 4 LAST 169	05,2063	CMREND03 EQUALS CMPOWER03	COMMON DOWNLIST DATA



L DOWNLINK LISTS

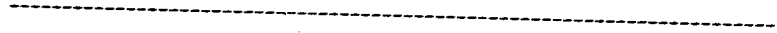
0193 REF 3 LAST 169 05,2085  
 0194 REF 3 LAST 169 05,2087  
 0195 REF 3 LAST 169 05,2076  
 0196 REF 3 LAST 169 05,2101

CMREND04 EQUALS CMPOSE04  
 CMREND05 EQUALS CMPOSE05  
 CMREND06 EQUALS CMPOSE06  
 CMREND07 EQUALS CMPOSE07

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COMMON DOWNLIST DATA  
 COMMON DOWNLIST DATA  
 COMMON DOWNLIST DATA  
 COMMON DOWNLIST DATA

R0197





## L DOWNLINK LISTS

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## P0198 CSM ENTRY AND UPDATE DOWNLIST

## R0199 ----- CONTROL LIST -----

REP	REF	LAST	05,2214	CMENTR01 EQUALS	SEND ID BY SPECIAL CODING
	0200			CMENTR01 EQUALS	SEND ID BY SPECIAL CODING
	0201	REP 1	05,2214 32047 0	DNPTR CMENTR01	COLLECT SNAPSHOT
	0202	REP 15 LAST 171	05,2215 24340 0	6DNADR DNTMBUFF	SEND SNAPSHOT
	0203	REP 1	05,2216 32058 0	DNPTR CMENTR02	COLLECT SECOND SNAPSHOT
	0204	REP 16 LAST 173	05,2217 14340 0	4DNADR DNTMBUFF	SEND SNAPSHOT
	0205	REP 1	05,2220 32063 0	DNPTR CMENTR03	COMMON DATA
	0206	REP 2 LAST 109	05,2221 07300 0	2DNADR OMDAPMOD	OMDAPMOD,PREL,QREL,RREL
	0208	REP 2 LAST 116	05,2222 03635 1	1DNADR L/D1	L/D1,+1
	0209	REP 3 LAST 71	05,2223 24304 0	6DNADR UPBUFF	UPBUFF,+1...+10,+11
	0210	REP 4 LAST 173	05,2224 14320 0	4DNADR UPBUFF +12D	UPBUFF+12,13...+18,19D
	0211	REP 3 LAST 70	05,2225 04300 0	2DNADR COMPNMB	COMPNMB,UPOLMOD,UPVERB,UPCOUNT
	0212	REP 2 LAST 109	05,2226 03313 0	1DNADR PAXERR1	PAXERR1,ROLLTM
	0213	REP 3 LAST 117	05,2227 13675 1	3DNADR LATANG	LATANG,+1,RDOT,+1,THETAH,+1
	0216	REP 3 LAST 171	05,2230 07400 1	2DNADR LAT(SPL)	LAT(SPL),+1,LNG(SPL),+1
	0217	REP 2 LAST 109	05,2231 03265 0	1DNADR ALFA/180	ALFA/180,BETA/180
	0218	REP 1	05,2232 32065 0	DNPTR CMENTR04	COMMON DATA
	0219	REP 4 LAST 171	05,2233 00024 1	1DNADR TIME2	TIME2,TIME1
	0220	REP 1	05,2234 32284 0	DNPTR CMENTR05	COLLECT SNAPSHOT
	0221	REP 17 LAST 173	05,2235 24340 0	6DNADR DNTMBUFF	SEND SNAPSHOT
	0222	REP 2 LAST 173	05,2236 32058 0	DNPTR CMENTR02	COLLECT SNAPSHOT
	0223	REP 18 LAST 173	05,2237 14340 0	4DNADR DNTMBUFF	SEND SNAPSHOT
	0224	REP 3 LAST 168	05,2240 07076 1	2DNADR AK	AK,AK1,AK2,RCSPLAGS
	0225	REP 4 LAST 168	05,2241 13167 0	3DNADR ERRORX	ERRORX/Y/Z,THETADX/Y/Z
	0226	REP 3 LAST 173	05,2242 07300 0	2DNADR OMDAPMOD	OMDAPMOD,PREL,QREL,RREL
	0227	REP 5 LAST 173	05,2243 24304 0	6DNADR UPBUFF	UPBUFF+0,+1...+10,+11D
	0228	REP 6 LAST 173	05,2244 14320 0	4DNADR UPBUFF +12D	UPBUFF+12,+13...+18,+19D
	0229	REP 3 LAST 168	05,2245 03073 0	1DNADR LEMASS	LEMASS,CSMASS
	0230	REP 2 LAST 168	05,2246 03066 1	1DNADR DAPDATR1	DAPDATR1,DAPDATR2
	0231	REP 2 LAST 109	05,2247 03314 1	1DNADR ROLLTM	ROLLTM,ROLLC
	0232	REP 26 LAST 171	05,2250 01331 1	1DNADR OPTIMODES	OPTIMODES,HOLDFLAG
	0233	REP 5 LAST 168	05,2251 13125 0	3DNADR WBODY	WBODY,...+5/OMEGAC,...+5
	0234	REP 2 LAST 168	05,2252 05154 1	2DNADR REDOCTR	REDOCTR,THETAD+0,+1,+2
	0235	REP 33 LAST 168	05,2253 01320 1	1DNADR IMODES30	IMODES30,IMODES33
	0236		05,2254 34011 0	DNCHAN 11	CHANNELS 11,12
	0237		05,2255 34013 1	DNCHAN 13	CHANNELS 13,14
	0238		05,2256 34030 0	DNCHAN 30	CHANNELS 30,31
	0239		05,2257 34032 1	DNCHAN 32	CHANNELS 32,33
	0240	REP 2 LAST 168	05,2260 01432 0	1DNADR RSBRO	RSBRO,+1
	0241	REP 2 LAST 168	05,2261 10372 0	3DNADR CADRFLSH	CADRFLSH,+1,+2,FAILREG,+1,+2
	0242	REP 22 LAST 171	05,2262 00106 0	1DNADR STATE +10D	FALGWRDS 10 AND 11
	0243	REP 3 LAST 117	05,2263 74007 0	-1DNADR GAMMAEI	GAMMAEI,+1

## R0244 ----- SUB LISTS -----

REP	REF	LAST	05,2047	CMENTR01 EQUALS CMPOWE01	COMMON DOWNLIST DATA
	0245	REP 4 LAST 171	05,2047	CMENTR01 EQUALS CMPOWE01	COMMON DOWNLIST DATA

L DOWNLINK LISTS

0246	REP	5	LAST	171	05,2056		CMENTR02 EQUALS CMPOWE02	COMMON DOWNLIST DATA
0247	REP	5	LAST	171	05,2063		CMENTR03 EQUALS CMPOWE03	COMMON DOWNLIST DATA
0248	REP	4	LAST	172	05,2065		CMENTR04 EQUALS CMPOWE04	COMMON DOWNLIST DATA
0249	REP	5	LAST	167	05,2264	76615 1	CMENTR05-1DNADR DELV	DELV,+1 SNAPSHOT DATA
0250	REP	6	LAST	174	05,2265	01164 0	1DNADR DELV +2	DELV+2,+3
0251	REP	7	LAST	174	05,2266	01166 1	1DNADR DELV +4	DELV+4,+5
0252	REP	3	LAST	117	05,2287	03726 1	1DNADR TIE	TIE,+1
0253	REP	3	LAST	117	05,2270	03724 0	1DNADR VIO	VIO,+1
0254	REP	4	LAST	171	05,2271	03766 0	1DNADR VPRED	VPRED,+1
0255	REP	3	LAST	167	05,2272	76532 1	-1DNADR PIPTIME1	PIPTIME1,+1
0256	REP	4	LAST	172	05,2101		CMENTR07 EQUALS CMPOWE07	COMMON DOWNLIST DATA

R0257

L DOWNLINK LISTS

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P0258 P22 DOWNLISTS

R0259 -----CONTROL LIST-----

REF	REP	LAST	05,2273	05,2273	32047 0	CMPG22DL EQUALS	SEND ID BY SPECIAL CODING
0260							
0261	REF 1		05,2273	32047 0		DNPTR CMPG2201	COLLECT SNAPSHOT
0262	REF 19	LAST 173	05,2274	24340 0		6DNADR DNTM\$UFF	SEND SNAPSHOT
0263	REF 1		05,2275	32056 0		DNPTR CMPG2202	COLLECT SNAPSHOT
0264	REF 20	LAST 175	05,2276	14340 0		4DNADR DNTM\$UFF	SEND SNAPSHOT
0265	REF 1		05,2277	32063 0		DNPTR CMPG2203	COMMON DATA
0266	REF 2	LAST 119	05,2300	27537 0		6DNADR SVMR\$DAT	LANDING SITE MARK DATA
0267	REF 3	LAST 175	05,2301	27553 1		6DNADR SVMR\$DAT +12D	SVMR\$DAT+0...+34
0268	REF 4	LAST 175	05,2302	27567 0		6DNADR SVMR\$DAT +24D	LANDING SITE MARK DATA
0269	REF 2	LAST 95	05,2303	02751 0		1DNADR LANDMARK	LANDMARK,GARBAGE
0270	REF 9	LAST 171	05,2304	00007 0		1DNADR SPARE	
0271	REF 10	LAST 175	05,2305	00007 0		1DNADR SPARE	
0272	REF 11	LAST 175	05,2306	00007 0		1DNADR SPARE	
0273	REF 1		05,2307	32065 0		DNPTR CMPG2204	COMMON DATA
0274	REF 5	LAST 173	05,2310	00024 1		1DNADR TIME2	TIME2,TIME1
0275	REF 1		05,2311	32337 1		DNPTR CMPG2205	COLLECT SNAPSHOT
0276	REF 21	LAST 175	05,2312	04340 1		2DNADR DNTM\$UFF	SEND SNAPSHOT
0277	REF 12	LAST 175	05,2313	00007 0		1DNADR SPARE	
0278	REF 13	LAST 175	05,2314	00007 0		1DNADR SPARE	
0279	REF 14	LAST 175	05,2315	00007 0		1DNADR SPARE	
0280	REF 15	LAST 175	05,2316	00007 0		1DNADR SPARE	
0281	REF 2	LAST 175	05,2317	32056 0		DNPTR CMPG2202	COLLECT SNAPSHOT
0282	REF 22	LAST 175	05,2320	14340 0		4DNADR DNTM\$UFF	SEND SNAPSHOT
0283	REF 2	LAST 175	05,2321	32063 0		DNPTR CMPG2203	COMMON DATA
0284	REF 1		05,2322	32076 1		DNPTR CMPG2206	COMMON DATA
0285	REF 2	LAST 95	05,2323	02747 1		1DNADR 8NN	8NN,GARBAGE
0286	REF 23	LAST 173	05,2324	00106 0		1DNADR STATE +10D	FALOWRDS 10 AND 11
0287	REF 1		05,2325	12025 0		3DNADR RLS	RLS,+1,...+4,+5
0288	REF 16	LAST 175	05,2326	00007 0		1DNADR SPARE	
0289	REF 27	LAST 173	05,2327	01331 1		1DNADR OPTMODES	OPTMODES,HOLDFLAG
0290	REF 1		05,2330	32101 0		DNPTR CMPG2207	COMMON DATA
0291	REF 17	LAST 175	05,2331	00007 0		1DNADR SPARE	
0292	REF 18	LAST 175	05,2332	00007 0		1DNADR SPARE	
0293	REF 19	LAST 175	05,2333	00007 0		1DNADR SPARE	
0294	REF 20	LAST 175	05,2334	00007 0		1DNADR SPARE	
0295	REF 21	LAST 175	05,2335	00007 0		1DNADR SPARE	
0296	REF 22	LAST 175	05,2336	77770 1		-1DNADR SPARE	

R0297 -----SUB LISTS-----

0298	REF 5	LAST 173	05,2047			CMPG2201 EQUALS CMP0WE01	COMMON DOWNLIST DATA
0299	REF 6	LAST 174	05,2056			CMPG2202 EQUALS CMP0WE02	COMMON DOWNLIST DATA
0300	REF 6	LAST 174	05,2063			CMPG2203 EQUALS CMP0WE03	COMMON DOWNLIST DATA



L DOWNLINK LISTS

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0301	REP	5	LAST	174	05,2085		CMPG2204	EQUALS	CMP0504
0302	REP	2	LAST	76	05,2337	76672 0	CMPG2205	-1DNADR	LONG
0303	REP	2	LAST	76	05,2340	01107 0		1DNADR	ALT
0304	REP	3	LAST	76	05,2341	76674 0		-1DNADR	LAT
0305	REP	4	LAST	172	05,2076		CMPG2206	EQUALS	CMP0506
0306	REP	5	LAST	174	05,2101		CMPG2207	EQUALS	CMP0507

COMMON DOWNLIST DATA  
LONG,+1           SNAPSHOT DATA  
ALT,+1  
LAT,+1  
COMMON DOWNLIST DATA  
COMMON DOWNLIST DATA

R0307

0308	REP	2	LAST	166	05,2342	02113 0	DNTABLE	GENADR	CNCSTADL
0309	REP	2	LAST	166	05,2343	02214 1		GENADR	CNENTRDL
0310	REP	1			05,2344	02147 1		GENADR	CNRENDL
0311	REP	1			05,2345	02001 1		GENADR	CNPOVEDL
0312	REP	1			05,2346	02273 0		GENADR	CMPG22DL

R0313





L FRESH START AND RESTART

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R0001 PROGRAM DESCRIPTION

8 APRIL, 1967

R0001

SUNDISK REV 120

R0002 FUNCTIONAL DESCRIPTION

R0003 SLAP1 MAN INITIATED FRESH START

- R0004 1. EXECUTE STARTSUB
- R0005 2. TURN OFF DSKY DISCRETE-LAMPS
- R0006 3. CLEAR FAIL REGISTERS, SELF CHECK ERROR COUNTER AND RESTART COUNTER
- R0007 4. EXECUTE DOPSTART

R0009 DOPSTART MACHINE INITIATED FRESH START

- R0010 1. CLEAR SELF-CHECK REGISTERS, MODE REGISTER AND CDUZ REGISTER
- R0011 2. CLEAR PHASE TABLE
- R0012 3. INITIALIZE IMU FLAGS
- R0013 4. INITIALIZE FLAGWORDS
- R0014 5. TRANSFER CONTROL TO IDLE LOOP IN DUMMYJOB

R0015 GOPROG HARDWARE RESTART

- R0016 0. EXECUTE STARTSUB
- R0017 1. TRANSFER CONTROL TO DOPSTART IF ANY OF THE FOLLOWING CONDITIONS EXIST.
  - R0018 A. RESTART OCCURED DURING EXECUTION OF ERASCHK
  - R0019 B. BOTH OSCILLATOR FAIL AND AGC WARNING ARE ON
  - R0020 C. MARK REJECT AND EITHER NAV OR MAIN DSKY ERROR LIGHT RESET ARE ON.
- R0021 2. SCHEDULE A T5RUPT PROGRAM FOR THE DAP
- R0022 3. SET FLAGWRD5 BITS FOR INTWAKE ROUTINE
- R0023 4. EXTINGUISH ALL DSKY LAMPS, EXCEPT PROGRAM ALARM, GIMBAL LOCK AND NO ATT
- R0024 5. INITIALIZE IMU FLAGS
- R0025 6. IF ENGINE COMMAND IS ON (FLAGWRD5, BIT 7), SET ENGINE ON (CHANNEL 11, BIT 13)
- R0026 7. TRANSFER CONTROL TO GOPROG3

R0031 ENFMA SOFTWARE RESTART INITIATED BY MAJOR MODE CHANGE

- R0032 1. EXECUTE STARTSB2
- R0033 2. KILL PROGRAMS THAT WERE INTEGRATING OR WAITING FOR INTEGRATION ROUTINE
- R0034 3. TRANSFER CONTROL TO GOPROG3

R0036 GOPROG3 SUBROUTINE COMMON TO GOPROG AND ENFMA

- R0037 1. TEST PHASE TABLES - IF INCORRECT, DISPLAY ALARM 1107 AND TRANSFER CONTROL TO DOPSTART
- R0038 2. DISPLAY MAJOR MODE
- R0039 3. IF ANY GROUPS WERE ACTIVE UPON RESTART, TRANSFER CONTROL TO THE
- R0040

L FRESH START AND RESTART

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R0041 RESTARTS SUBROUTINE TO RESCHEDULE PENDING TASKS, LONGCALLS, AND  
 R0042 JOBS (P20 IS RESTARTED VIA FINDVAC)  
 R0043 4. IF NO GROUPS WERE ACTIVE UPON RESTART, DISPLAY ALARM CODE  
 R0044 1110 (RESTART WITH NO ACTIVE GROUPS).  
 R0045 5. TRANSFER CONTROL TO IDLE LOOP IN DUMMYJOB

R0046 STARTSUB SUBROUTINE COMMON TO SLAP1 AND GOPROG

R0047 1. CLEAR OUTBIT CHANNELS 5 AND 6  
 R0048 2. INITIALIZE TIME5, TIME4, TIME3  
 R0049 3. TRANSFER CONTROL TO STARTSB2

R0050 STARTSB2 SUBROUTINE COMMON TO STARTSUB AND ENEMA

R0051 1. INITIALIZE OUTBIT CHANNELS 11,12,13 AND 14  
 R0052 2. REPLACE ALL TASKS ON WAITLIST WITH ENDTASK  
 R0053 3. MAKE ALL EXECUTIVE REGISTERS AVAILABLE  
 R0054 4. MAKE ALL VAC AREAS AVAILABLE  
 R0055 5. CLEAR DSKY REGISTERS  
 R0056 6. ZERO NUMEROUS SWITCHES  
 R0057 7. INITIALIZE OPTICS FLAGS  
 R0058 8. INITIALIZE PIPA AND TELEMETRY FAIL FLAGS  
 R0059 9. INITIALIZE DOWN TELEMETRY  
 R0060 INPUT/OUTPUT INITIALIZATION

R0061 A. CALLING SEQUENCE

R0062 SLAP1 - TC POSTJUMP OR VERB 36,ENTER  
 R0063 CADR SLAP1

R0064 ENEMA - TC POSTJUMP \*\*\* DO NOT CALL ENEMA WITHOUT \*\*\*  
 R0065 CADR ENEMA \*\*\* CONSULTING POOH PEOPLE \*\*\*

R0066 B. OUTPUT

R0067 ERASABLE MEMORY INITIALIZATION

R0068 PROGRAM ANALYSIS

R0069 A. SUBROUTINES CALLED

R0070 MR.KLEAN, WAITLIST, DSPMM, ALARM, RESTARTS, FINDVAC

R0071 B. ALARMS

R0072 1107 PHASE TABLE ERROR  
 R0073 1110 RESTART WITH NO ACTIVE GROUPS



L FRESH START AND RESTART

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0074				10,2203				BANK 10	
0075	REF	1		05,2000				SETLOC PRANDRES	
0076				05,2347				BANK	
0077	REF	3	LAST	128	E3,1400			EBANK= LST1	
0078	REF	1						COUNT 05/START	
0079				05,2347	0 0004	0	SLAP1	INHINT	
0080	REF	1		05,2350	0 2787	0		TC STARTSUB	
0081	REF	1		05,2351	1 2358	1	STARTSV	TCP SKIPSIM	
0082	REF	19	LAST	146	05,2352	3 4875	1	STARTSIM	CAP BIT14
0083	REF	1		05,2353	0 5042	1		TC PINDVAC	
0084				05,2354	77777	0	SIM2CADR	OCT 77777	
0085				05,2355	77777	0		OCT 77777	
0086	REF	19	LAST	169	05,2356	3 1038	0	SKIPSIM	CA DSPDAB +11D
00861	REF	1		05,2357	7 4726	1		MASK BITS4d8	
00862	REF	17	LAST	163	05,2360	6 4674	0	AD BIT15	
0087	REF	20	LAST	179	05,2361	55*038	1	TS DSPDAB +11D	
0088	REF	10	LAST	162	05,2362	3 4714	1	CAP ZERO	
0089	REF	2	LAST	80	05,2363	55*365	1	TS ERCCOUNT	
0092	REF	1		05,2364	54 375	1		TS FAILREG	
0093	REF	2	LAST	179	05,2365	54 376	1	TS FAILREG +1	
0094	REF	3	LAST	179	05,2366	54 377	0	TS FAILREG +2	
0096	REF	3	LAST	173	05,2367	55*154	1	TS REDOCTR	
0100	REF	1		05,2370	4 4603	1		CS PRIO12	
0101	REF	10	LAST	134	05,2371	55*302	0	TS DSRUPTSW	
0102	REF	11	LAST	179	05,2372	3 4714	1	DOFSTART	CAP ZERO
0103	REF	2	LAST	80	05,2373	55*360	1	TS ERSTORE	
0104	REF	2	LAST	80	05,2374	55*382	0	TS SMODE	
01045	REF	2	LAST	83	05,2375	55*501	0	TS UPSVFLAG	
01046				05,2376	0 0006	1		EXTEND	
01047	REF	1		05,2377	01 005	0		WRITE CHAN5	
01048				05,2400	0 0006	1		EXTEND	
01049	REF	1		05,2401	01 006	0		WRITE CHAN6	
0105				05,2402	0 0008	1		EXTEND	
0106	REF	6	LAST	154	05,2403	01 011	0	WRITE DSALMOUT	
0107				05,2404	0 0006	1		EXTEND	
0108	REF	18	LAST	165	05,2405	01 012	0	WRITE CHAN12	
0109				05,2406	0 0008	1		EXTEND	
0110	REF	1		05,2407	01 013	1		WRITE CHAN13	
0111				05,2410	0 0008	1		EXTEND	
0112	REF	4	LAST	165	05,2411	01 014	0	WRITE CHAN14	
0114	REF	7	LAST	160	05,2412	55*316	0	TS WTOPTION	
0116	REF	2	LAST	71	05,2413	54 332	1	TS DNLSICOD	

FRESH START. COMES HERE FROM PINBALL. SUBROUTINE DOES MOST OF THE WORK.

PATCH...TCP STARTSIM...FOR SIMULATION

PATCH 2CADR (AND EBANK DESIGNATION) OF SIMULATION START ADDRESS.

REQUESTED FRESH START.

SAME STORY ON ZEROING FAILREG.

DO A FRESH START.  
 \*\*\*\*\* MUST NOT BE REMOVED FROM DOFSTART  
 \*\*\*\*\* MUST NOT BE REMOVED FROM DOFSTART  
 UPDATE STATE VECTOR REQUEST FLAGWORD

TURN OFF RCS JETS

TURN OFF RCS JETS

ZERO CHANNEL 11

ZERO CHANNEL 12

ZERO CHANNEL 13

ZERO CHANNEL 14



L FRESH START AND RESTART

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0117	REP	1		05,2414	54 371 0	TS	NVSAVE
0118	REP	1		05,2415	55=071 1	TS	EBANKIEM
0120	REP	1		05,2418	55=130 0	TS	RATEINDX
01201	REP	2	LAST 76	05,2417	55=126 1	TS	TRONCNT
01202	REP	2	LAST 171	05,2420	55=125 1	TS	VHFUNT
01203	REP	1		05,2421	55=044 1	TS	EXTVBACT
01204	REP	21	LAST 179	05,2422	4 1036 1	CS	DSPTAB +11D
012045	REP	2	LAST 179	05,2423	7 4726 1	MASK	BITS4d6
01205	REP	38	LAST 164	05,2424	10 000 0	CCS	A
01206				05,2425	0 2431 0	TC	+4
01207	REP	3	LAST 180	05,2426	3 4726 0	CA	BITS4d6
01208				05,2427	0 0006 1	EXTEND	
01209	REP	19	LAST 179	05,2430	05 012 1	WOR	CHAN12
0121	REP	1		05,2431	0 2474 1	TC	MR.KLEAN
01215	REP	12	LAST 179	05,2432	4 4714 0	CS	ZERO
01216	REP	1		05,2433	55=011 1	TS	MODREG
01217	REP	1		05,2434	3 4371 0	CAP	PRIO30
01218	REP	1		05,2435	54 366 0	TS	RESTREG
0122	REP	1		05,2436	3 3167 1	CAP	IM30INIF
0123	REP	34	LAST 173	05,2437	55=320 0	TS	IMODES30
0126	REP	3	LAST 159	05,2440	3 7716 0	CAP	NEGONE
0127	REP	15	LAST 165	05,2441	55=303 1	TS	OPTIND
0128	REP	1		05,2442	3 3172 0	CAP	OPTINITP
0129	REP	28	LAST 175	05,2443	55=331 0	TS	OPTMODES
0130	REP	1		05,2444	3 4763 1	CAP	IM33INIT
0131	REP	17	LAST 161	05,2445	55=321 1	TS	IMODES33
0132				05,2446	0 0006 1	EXTEND	
0133	REP	1		05,2447	3 3146 1	DCA	TS IDLER
0134	REP	2	LAST 128	05,2450	53=313 0	DXCH	TSLOC
0135				05,2451	0 0006 1	EXTEND	
0136	REP	1		05,2452	3 3175 1	DCA	SWINIT
0137	REP	24	LAST 175	05,2453	52 075 1	DXCH	STATE
0139				05,2454	0 0006 1	EXTEND	
0140	REP	2	LAST 180	05,2455	3 3177 0	DCA	SWINIT +2
01405	REP	25	LAST 180	05,2456	52 077 0	DXCH	STATE +2
0141				05,2457	0 0006 1	EXTEND	
0142	REP	3	LAST 180	05,2460	3 3201 1	DCA	SWINIT +4
0143	REP	26	LAST 180	05,2461	52 101 0	DXCH	STATE +4
0144				05,2462	0 0006 1	EXTEND	
0145	REP	4	LAST 180	05,2463	3 3203 0	DCA	SWINIT +6
0146	REP	27	LAST 180	05,2464	52 103 1	DXCH	STATE +6

THE IMU WAS IN COARSE ALIGN IN GIMBAL LOCK, SO PUT IT BACK INTO COARSE ALIGN.

FRESH START IMU INITIALIZATION.

KILL COARSE OPTICS

LET TS IDLE.

INITIALIZE SWITCHES ONLY ON FRESH START.



L FRESH START AND RESTART

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01462				05,2465	0 0008	1	EXTEND	
01464	REF	5	LAST	180	05,2466	3 3205	DCA	SWINIT +8D
01466	REF	28	LAST	180	05,2467	52 105	DXCH	STATE +8D
0147	REF	6	LAST	181	05,2470	3 3208	CA	SWINIT +10D
0148	REF	29	LAST	181	05,2471	54 108	TS	STATE +10D
0155	REF	2	LAST	139	05,2472	0 4574	ENDRSTRT	TC POSTJUMP
0156	REF	1			05,2473	03225	CADR	DUMMYJOB + 2 DOES A RELINT. (IN A SWITCHED BANK.)
0157					05,2474	0 0004	MR.KLEAN	INHINT
01571					05,2475	0 0006		EXTEND
0158	REF	3	LAST	184	05,2476	3 4714	DCA	NEG0
0159	REF	1			05,2477	52 755	DXCH	-PHASE2
0160					05,2500	0 0006	POCKLEAN	EXTEND
0161	REF	4	LAST	181	05,2501	3 4714	DCA	NEG0
0162	REF	1			05,2502	52 781	DXCH	-PHASE4
0163					05,2503	0 0006		EXTEND
0164	REF	5	LAST	181	05,2504	3 4714	DCA	NEG0
0165	REF	1			05,2505	52 753	DXCH	-PHASE1
0166					05,2506	0 0008	V37KLEAN	EXTEND
0167	REF	6	LAST	181	05,2507	3 4714	DCA	NEG0
0168	REF	1			05,2510	52 757	DXCH	-PHASE3
0169					05,2511	0 0006		EXTEND
0170	REF	7	LAST	181	05,2512	3 4714	DCA	NEG0
0171	REF	1			05,2513	52 783	DXCH	-PHASE5
0172					05,2514	0 0006		EXTEND
0173	REF	8	LAST	181	05,2515	3 4714	DCA	NEG0
0174	REF	1			05,2516	52 765	DXCH	-PHASE6
0175	REF	15	LAST	184	05,2517	0 0002	TC	0

L FRESH START AND RESTART

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F0177 COMES HERE FROM LOCATION 4000, GOJAM. RESTART ANY PROGRAMS WHICH MAY HAVE BEEN RUNNING AT THE TIME.

0179	REF	4	LAST	179	05,2520	25=154	0	GOPROG	INCR	REDOCTR	ADVANCE RESTART COUNTER.
0180	REF	16	LAST	181	05,2521	22	002	0	LXCH	0	
01805					05,2522	0	0006	1	EXTEND		
01806	REF	1			05,2523	04	007	1	ROR	SUPERBANK	
0181	REF	3	LAST	173	05,2524	53=433	0		DXCH	RSEBQ	
0182	REF	2	LAST	179	05,2525	0	2767	0	TC	STARTSUB	

R0183  
R0185  
R0187  
R0189  
R0191

ERASCHK TEMPORARILY STORES THE CONTENTS OF TWO ERASABLE LOCATIONS, X AND X+1 INTO SKEEP5 AND SKEEP6. IT ALSO STORES X INTO SKEEP7 AND ERSTORE. IF ERASCHK IS INTERRUPTED BY A RESTART, C(ERSTORE) SHOULD EQUAL C(SKEEP7), AND BE A + NUMBER LESS THAN 2000 OCT. OTHERWISE C(ERSTORE) SHOULD EQUAL +0..

0192	REF	2	LAST	131	05,2526	3	4364	1	CAP	HIS	
0193	REF	3	LAST	179	05,2527	7	1380	1	MASK	ERSTORE	
0194					05,2530	0	0006	1	EXTEND		
0195					05,2531	1	2533	1	BZF	+2	IF ERSTORE NOT = +0 OR +N LESS THAN 2K, DOUBT E MEMORY AND DO A FRESH START.
0196	REF	1			05,2532	1	2372	1	TCP	DOFSTART	
0197	REF	4	LAST	182	05,2533	4	1380	1	CS	ERSTORE	
0198					05,2534	0	0006	1	EXTEND		
0199	REF	1			05,2535	1	2552	0	BZF	DORSTART	= +0 CONTINUE WITH RESTART.
0200	REF	1			05,2536	6	1377	0	AD	SKEEP7	
0201					05,2537	0	0006	1	EXTEND		
0202					05,2540	1	2542	1	BZF	+2	= SKEEP7, RESTORE E MEMORY.
0203	REF	2	LAST	182	05,2541	1	2372	1	TCP	DOFSTART	NOT= SKEEP7, DOUBT E MEM, DO FRESH START.
0204	REF	2	LAST	80	05,2542	3	1374	0	CA	SKEEP4	
0205	REF	1			05,2543	54	003	0	TS	ERANK	ERANK OF E MEMORY THAT WAS UNDER TEST. (NOT DXCH SINCE THIS MIGHT HAPPEN AGAIN)
0206					05,2544	0	0006	1	EXTEND		
0207	REF	2	LAST	80	05,2545	3	1376	1	DCA	SKEEP5	
0208	REF	2	LAST	182	05,2546	51=377	0		INDEX	SKEEP7	
0209					05,2547	52	001	1	DXCH	0000	E MEMORY RESTORED.
0210	REF	13	LAST	180	05,2550	3	4714	1	CA	ZERO	
0211	REF	5	LAST	182	05,2551	55=360	1		TS	ERSTORE	
0212	REF	18	LAST	179	05,2552	3	4674	0	DORSTART	CA	BIT15
0213					05,2553	0	0006	1	EXTEND		TEST OSC FAIL BIT TO SEE IF WE HAVE HAD A POWER TRANSIENT. IF SO, ATTEMPT A RESTART. IF NOT, CHECK THE PRESENT STATE OF AGC WARNING.
0214	REF	3	LAST	156	05,2554	03	033	1	WAND	CHAN33	
0215					05,2555	0	0006	1	EXTEND		
0216	REF	1			05,2556	1	2564	0	BZF	BUTTONS	
0217	REF	20	LAST	179	05,2557	3	4675	1	CA	BIT14	IF AGC WARNING ON (BIT = 0), DO A FRESH START ON THE ASSUMPTION THAT WE'RE IN A RESTART LOOP.
0218					05,2560	0	0006	1	EXTEND		
0219	REF	4	LAST	182	05,2561	02	033	0	RAND	CHAN33	
0220					05,2562	0	0006	1	EXTEND		
0221	REF	3	LAST	182	05,2563	1	2372	1	BZF	DOFSTART	
0222	REF	1			05,2564	0	2744	1	BUTTONS	TC	LIGHTSET
A0223											EXIT MARK REJECT DEPRESSED SIMULTANEOUSLY



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0238	REF	1		05,2565	3 0102 1	ELRSKIP	CA	FLAGWRD6	RESTART AUTOPILOTS
0239				05,2566	0 0008 1		EXTEND		
0240	REF	12	LAST	157	05,2567	7 4710 1	MP	BIT3	BITS 15,14 00 TS IDLOC
0241	REF	4	LAST	160	05,2570	7 8211 1	MASK	SIX	01 REDORCS
0242				05,2571	0 0008 1		EXTEND		10 REDOINC
0243	REF	39	LAST	180	05,2572	5 0000 1	INDEX	A	11 REDOSAT
0244	REF	2	LAST	180	05,2573	3 3148 1	DCA	TS IDLER	
0245	REF	3	LAST	180	05,2574	53*313 0	DXCH	TSLOC	
0246	REF	1		05,2575	4 4875 0		CS	INTFLBIT	
0247	REF	1		05,2576	7 0108 1		MASK	RASFLAG	
0248	REF	2	LAST	183	05,2577	54 108 1	TS	RASFLAG	
0256	REF	29	LAST	180	05,2800	3 1331 1	CA	OPTMODES	
0257	REF	1		05,2801	7 3173 0		MASK	OPTINIR	
0258	REF	17	LAST	181	05,2802	6 4704 0	AD	BIT7	
0259	REF	30	LAST	183	05,2803	55*331 0	TS	OPTMODES	
0260	REF	20	LAST	181	05,2804	3 4705 1	CAP	BIT8	
0261	REF	18	LAST	180	05,2805	7 1321 1	MASK	IMODES33	
0262	REF	2	LAST	180	05,2806	6 4783 1	AD	IM33INIT	
0263	REF	19	LAST	183	05,2807	55*321 1	TS	IMODES33	
0264	REF	1		05,2810	3 3171 0		CA	9,8,4	LEAVE PROG ALARM, GIMBAL LOCK, NO ATT
0265	REF	22	LAST	180	05,2811	7 1036 1	MASK	DSPTAB +11D	LAMPS INTACT ON HARDWARE RESTART
0266	REF	19	LAST	182	05,2812	6 4874 0	AD	BIT15	
0267	REF	23	LAST	183	05,2813	57*036 0	XCH	DSPTAB +11D	
0268	REF	15	LAST	145	05,2814	7 4707 1	MASK	BIT4	IF NO ATT LAMP WAS ON, LEAVE ISS IN
0269				05,2815	0 0008 1		EXTEND		COURSE ALIGN
0270	REF	1		05,2816	1 2825 0		BZF	NOCOARSE	
0271	REF	7	LAST	150	05,2817	0 4833 0	TC	IPNKCALL	IF NO ATT LAMP ON, RETURN ISS TO
0272	REF	2	LAST	143	05,2820	18748 0	CADR	SETCOARS	COARSE ALIGN
02721	REF	5	LAST	183	05,2821	3 8211 0	CAP	SIX	
02722	REF	6	LAST	159	05,2822	0 5140 1	TC	WAITLIST	
02723	REF	4	LAST	144	E3,1474		EBANK=	CDUIND	
02724	REF	2	LAST	144	05,2823	02742 1	ZCADR	CA+ECE	
02724				05,2824	18083 0				
0273	REF	1		05,2825	3 3155 0		NOCOARSE	CAP	IFAILINH
0274	REF	35	LAST	180	05,2826	7 1320 0	MASK	IMODES30	LEAVE FAILURE INHIBITS INTACT ON
0275	REF	1		05,2827	6 3170 1		AD	IM30 INIR	HARDWARE RESTART. RESET ALL
0276	REF	36	LAST	183	05,2830	55*320 0	TS	IMODES30	FAILURE CODES.
0277	REF	2	LAST	131	05,2831	4 0101 0	CS	FLAGWRD5	
0278	REF	18	LAST	183	05,2832	7 4704 1	MASK	BIT7	
0279	REF	40	LAST	183	05,2833	10 000 0	CCS	A	
0280	REF	1		05,2834	1 2857 0		TCF	GOPROG3	
0281	REF	14	LAST	183	05,2835	3 4678 1	CAP	BIT13	
0282				05,2836	0 0008 1		EXTEND		
0283	REF	7	LAST	179	05,2837	05 011 1	WOR	DSALMOUT	TURN ENGINE ON



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0284	REP	2	LAST	183	05,2640	1 2657 0		TCP	GOPROG3	
0285					05,2641	0 0004 0	ENEMA	INHINT		
028505	REP	2	LAST	182	05,2642	0 2744 1		TC	LIGHTSET	
02851	REP	1			05,2643	0 2777 1		TC	STARTSB2	EXIT TO DCFSTART IF ERROR RESET AND MARK REJECT DEPRESSED SIMULTANEOUSLY RESET INTEGRATION BITS
0289	REP	1			05,2644	4 3162 0		CS	INTMASK	
02891	REP	3	LAST	183	05,2645	7 0106 1		MASK	RASPLAG	
0290	REP	4	LAST	184	05,2646	54 106 1		TS	RASPLAG	
02901	REP	2	LAST	183	05,2647	4 0102 0		CS	FLAGWRD6	IS TVC ON
02902	REP	1			05,2650	7 4105 0		MASK	OCT60000	
02903					05,2651	0 0008 1		EXTEND		
02904	REP	3	LAST	184	05,2652	6 2657 1		BZMF	GOPROG3	NO
02905	REP	2	LAST	127	05,2653	3 4731 0		CAP	.5SEC	YES, CALL TVCEXEC TASK WHICH WAS KILLED IN STARTSB2.
02906	REP	7	LAST	183	05,2654	0 5140 1		TC	WAITLIST	
02907	REP	1			05,1742			ERANK=	BZERO	
02908	REP	1			05,2655	02660 0		ZCADR	TVCEXEC	
02908	REP	1			05,2656	34066 0				
0291	REP	1			05,2657	3 4715 0	GOPROG3	CAP	NUMGRPS	VERIFY PHASE TABLE AGREEMENTS
0292	REP	1			05,2660	54 161 0	PCLOOP	TS	MPAC +5	
0293					05,2661	6 0000 1		DOUBLE		
0294					05,2662	0 0006 1		EXTEND		
0295	REP	41	LAST	183	05,2663	5 0000 1		INDEX	A	
0296	REP	2	LAST	181	05,2664	3 0753 0		DCA	-PHASE1	COMPLEMENT INTO A, DIRECT INTO L.
0297					05,2665	0 0006 1		EXTEND		
0298	REP	9	LAST	163	05,2666	08 001 0		RXOR	LOHAN	RESULT MUST BE -0 FOR AGREEMENT.
0299	REP	42	LAST	184	05,2667	10 000 0		CCS	A	
0300	REP	1			05,2670	1 2737 1		TCP	PTBAD	RESTART FAILURE.
0301	REP	2	LAST	184	05,2671	1 2737 1		TCP	PTBAD	
0302	REP	3	LAST	184	05,2672	1 2737 1		TCP	PTBAD	
0303	REP	2	LAST	184	05,2673	10 161 0		CCS	MPAC +5	PROCESS ALL RESTART GROUPS.
0304	REP	1			05,2674	1 2660 1		TCP	PCLOOP	
0305	REP	3	LAST	184	05,2675	54 162 0		TS	MPAC +6	SET TO +0.
0306	REP	1			05,2676	0 5247 0		TC	MMSPLAY	DISPLAY MAJOR MODE
0307					05,2677	0 0004 0		INHINT		RELINT DONE IN MMSPLAY
03071	REP	3	LAST	184	05,2700	30 102 1		CAE	FLAGWRD6	IS RCS DAP RUNNING (BITS 15 14 OF FLAGWRD6 = 01)
030715	REP	2	LAST	184	05,2701	7 4105 0		MASK	OCT60000	YES, DO STOPRATE
03072					05,2702	0 0006 1		EXTEND		NO, SKIP TO NXTRST -1
030725	REP	1			05,2703	6 2712 1		BZMF	NXTRST -1	STOPRATE IS DONE IN ERANK 6
03073	REP	1			05,2704	3 4752 0		CAP	ERANK6	
03074	REP	2	LAST	182	05,2705	54 003 0		TS	ERANK	
03075	REP	8	LAST	183	05,2706	0 4633 0		TC	IRNKCALL	ZERO DELCDUS, WRDYS, AND BIASES THUS STOPPING AUTOMATIC MANEUVERING
03076	REP	1			05,2707	45245 0		CADR	STOPRATE	
03077	REP	1			05,2710	3 4744 1		CAP	ERANK3	
03078	REP	3	LAST	184	05,2711	54 003 0		TS	ERANK	
0308	REP	2	LAST	184	05,2712	3 4715 0		CAP	NUMGRPS	SEE IF ANY GROUPS RUNNING.





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0309	REP	4	LAST	184	05,2713	54 161 0	NXRST	TS	MPAC +5	
0310					05,2714	6 0000 1		DOUBLE		
0311	REP	43	LAST	184	05,2715	50 000 1		INDEX	A	
0312	REP	1			05,2716	10 753 1		CCS	PHASE1	
0313	REP	1			05,2717	1 2721 0		TCF	PACTIVE	PNZ - GROUP ACTIVE.
0314	REP	1			05,2720	1 2728 1		TCF	PINACT	+0 - GROUP NOT RUNNING.
0315	REP	5	LAST	185	05,2721	54 154 0	PACTIVE	TS	MPAC	
0316	REP	6	LAST	185	05,2722	24 154 1		INCR	MPAC	ABS OF PHASE.
0317	REP	7	LAST	185	05,2723	24 182 1		INCR	MPAC +6	INDICATE GROUP DEMANDS PRESENT.
0318	REP	1			05,2724	3 2743 0		CA	RACTCADR	
0319	REP	1			05,2725	0 4561 1		TC	SWCALL	MUST RETURN TO SWRETURN.
0320	REP	8	LAST	185	05,2726	10 161 0	PINACT	CCS	MPAC +5	PROCESS ALL RESTART GROUPS.
0321	REP	2	LAST	184	05,2727	1 2713 1		TCF	NXRST	
0326	REP	9	LAST	185	05,2730	10 162 0		CCS	MPAC +6	NO, CHECK PHASE ACTIVITY FLAG
0327	REP	1			05,2731	1 2472 0		TCF	ENDRSTRT	PHASE ACTIVE
0328	REP	20	LAST	183	05,2732	3 4674 0		CAF	BIT15	IS MODE -0
0329	REP	2	LAST	180	05,2733	7 1011 1		MASK	MODREG	
03291					05,2734	0 0006 1		EXTEND		
03292	REP	1			05,2735	1 4106 0		BZF	GOTOPOOH	NO
03293	REP	2	LAST	185	05,2736	1 2472 0		TCF	ENDRSTRT	YES
0336	REP	10	LAST	182	05,2737	0 5537 0	PIBAD	TC	ALARM	SET ALARM TO SHOW PHASE TABLE FAILURE.
0337					05,2740	01107 0		OCT	1107	
0338	REP	4	LAST	182	05,2741	1 2372 1		TCF	DOFSTART	IN R2).
R0339	***** ***** *****									
R0340										
R0341	DO NOT USE GOPROG2 OR ENEMA WITHOUT CONSULTING POOH PEOPLE									
R0342										
0343	REP	1			05,2641		GOPROG2	EQUALS	ENEMA	
0344	REP	15	LAST	183	4676		OCT10000	=	BIT13	
0345	REP	2	LAST	180	4371		OCT30000	=	PRI030	
0346					05,2742	07777 1	OCT7777	OCT	7777	
0347	REP	1			05,2743	03520 0	RACTCADR	CADR	RESTARTS	
0348	REP	19	LAST	183	05,2744	3 4704 0	LIGHTSET	CAF	BIT7	DOFSTART IF MARK REJECT AND EITHER ERROR LIGHT RESET BUTTONS ARE DEPRESSED
0349					05,2745	0 0006 1		EXTEND		
0350	REP	1			05,2746	02 016 1		RAND	NAVKEYIN	
0351					05,2747	0 0006 1		EXTEND		
0352	REP	1			05,2750	1 2764 1		BZF	NONAVKEY	NO MARK REJECT
0353	REP	1			05,2751	3 4362 1		CAF	OCT37	
0354					05,2752	0 0006 1		EXTEND		
0355	REP	2	LAST	185	05,2753	02 016 1		RAND	NAVKEYIN	NAV DSKY KEYCODES, MARK, MARK REJECT
0356	REP	1			05,2754	6 3166 0		AD	-ELR	
0357					05,2755	0 0006 1		EXTEND		
0358	REP	2	LAST	185	05,2756	1 2765 0		BZF	NONAVKEY +1	
0359					05,2757	0 0006 1		EXTEND		
0360	REP	1			05,2760	00 015 0		READ	MNKEYIN	MAIN DSKY KEYCODES



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0361	REF	2	LAST	185	05,2761	6	3186	0	AD	-ELR
0362					05,2762	0	0008	1	EXTEND	
0363					05,2763	1	2765	0	BZF	+2
0364	REF	17	LAST	182	05,2764	0	0002	0	NONAVKEY	TC 0
0365	REF	3	LAST	182	05,2765	0	2767	0	TC	STARTSUB
0366	REF	5	LAST	185	05,2766	1	2372	1	TCP	DOFSTART
0367	REF	1			05,2767	3	3156	0	STARTSUB	CAP LDNPHAS1
0368	REF	1			05,2770	54	335	0	TS	DNTMGOTO
A0369										
A0370										
0371	REF	5	LAST	184	05,2771	3	4672	0	CA	POSMAX
0372	REF	1			05,2772	54	028	1	TS	TIME3
0373	REF	1			05,2773	6	7715	0	AD	MINUS2
0374	REF	4	LAST	133	05,2774	54	027	0	TS	TIME4
0375	REF	4	LAST	180	05,2775	6	7716	0	AD	NEGONE
0376	REF	2	LAST	127	05,2776	54	030	0	TS	TIME5
0377	REF	1			05,2777	3	3163	0	STARTSB2	CAP OCT77603
0378					05,3000	0	0006	1	EXTEND	
0379	REF	8	LAST	183	05,3001	03	011	1	WAND	DSALMOUT
0383	REF	1			05,3002	3	3164	1	CAP	OCT74777
0384					05,3003	0	0006	1	EXTEND	
0385	REF	2	LAST	179	05,3004	03	013	0	WAND	CHAN13
03881	REF	21	LAST	182	05,3005	4	4675	0	CS	BIT14
03882	REF	1			05,3006	7	0076	1	MASK	FLAGWRD2
03883	REF	2	LAST	186	05,3007	54	076	1	TS	FLAGWRD2
0389	REF	4	LAST	179	E3,1400				EBANK=	LST1
0390	REF	1			05,3010	3	3165	0	CAP	STARTEB
0391	REF	4	LAST	184	05,3011	54	003	0	TS	EBANK
0392	REF	3	LAST	183	05,3012	3	4673	1	CAP	NEG1/2
0393	REF	5	LAST	186	05,3013	55	407	1	TS	LST1 +7
0394	REF	6	LAST	186	05,3014	55	406	0	TS	LST1 +6
0395	REF	7	LAST	186	05,3015	55	405	0	TS	LST1 +5
0396	REF	8	LAST	186	05,3016	55	404	1	TS	LST1 +4
0397	REF	9	LAST	186	05,3017	55	403	0	TS	LST1 +3
0398	REF	10	LAST	186	05,3020	55	402	1	TS	LST1 +2
0399	REF	11	LAST	186	05,3021	55	401	1	TS	LST1 +1
0400	REF	12	LAST	186	05,3022	55	400	0	TS	LST1
0401	REF	1			05,3023	4	5173	0	CS	ENDTASK
0402	REF	1			05,3024	55	410	1	TS	LST2
0403	REF	2	LAST	186	05,3025	55	412	0	TS	LST2 +2
0404	REF	3	LAST	186	05,3026	55	414	0	TS	LST2 +4
0405	REF	4	LAST	186	05,3027	55	416	1	TS	LST2 +6
0406	REF	5	LAST	186	05,3030	55	420	1	TS	LST2 +8D

SET POINTER SO NEXT 20MS DOWNRUPT WILL CAUSE THE CURRENT DOWNLIST TO BE INTERRUPTED AND START SENDING FROM THE BEGINNING OF THE CURRENT DOWNLIST.

37777 TO TIME3.

37775 TO TIME4.

37774 TO TIME5.

TURN OFF UPLINK ACTY, TEMP CAUTION, KR, FLASH, OP. ERROR. LEAVE OTHERS UNCHANGED

TURN OFF TEST ALARMS, STANDBY ENABLE.

CLEAR R21MARK  
R21 SETS R21MARK AND RESETS IT IF R21 IS TERMINATED NORMALLY

SET FOR E3

INITIALIZE WAITLIST DELTA-TS.

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0407	REP	6	LAST	186	05,3031	55=422 0	TS	LST2 +10D	
0408	REP	7	LAST	187	05,3032	55=424 0	TS	LST2 +12D	
0409	REP	8	LAST	187	05,3033	55=428 1	TS	LST2 +14D	
0410	REP	9	LAST	187	05,3034	55=430 0	TS	LST2 +16D	
0411	REP	2	LAST	186	05,3035	4 5174 1	CS	ENDTASK +1	
0412	REP	10	LAST	187	05,3036	55=411 0	TS	LST2 +1	
0413	REP	11	LAST	187	05,3037	55=413 1	TS	LST2 +3	
0414	REP	12	LAST	187	05,3040	55=415 1	TS	LST2 +5	
0415	REP	13	LAST	187	05,3041	55=417 0	TS	LST2 +7	
0416	REP	14	LAST	187	05,3042	55=421 0	TS	LST2 +9D	
0417	REP	15	LAST	187	05,3043	55=423 1	TS	LST2 +11D	
0418	REP	16	LAST	187	05,3044	55=425 1	TS	LST2 +13D	
0419	REP	17	LAST	187	05,3045	55=427 0	TS	LST2 +15D	
0420	REP	18	LAST	187	05,3046	55=431 1	TS	LST2 +17D	
0421	REP	14	LAST	182	05,3047	4 4714 0	CS	ZERO	MAKE ALL EXECUTIVE REGISTER SETS AVAILABLE.
0422	REP	1			05,3050	54 167 0	TS	PRIORITY	
0423	REP	2	LAST	187	05,3051	54 203 1	TS	PRIORITY +12D	
0424	REP	3	LAST	187	05,3052	54 217 1	TS	PRIORITY +24D	
0425	REP	4	LAST	187	05,3053	54 233 1	TS	PRIORITY +36D	
0426	REP	5	LAST	187	05,3054	54 247 1	TS	PRIORITY +48D	
0427	REP	6	LAST	187	05,3055	54 283 1	TS	PRIORITY +60D	
0428	REP	7	LAST	187	05,3056	54 277 1	TS	PRIORITY +72D	
0429	REP	11	LAST	179	05,3057	55=302 0	TS	DSRUPTSW	
0430	REP	1			05,3060	54 067 1	TS	NEWJOB	SHOWS NO ACTIVE JOBS.
0431	REP	1			05,3061	3 3160 0	CAF	VAC1ADRC	MAKE ALL VAC AREAS AVAILABLE.
0432	REP	1			05,3062	54 400 1	TS	VAC1USE	
0433	REP	1			05,3063	6 3161 1	AD	LTHVACA	
0434	REP	1			05,3064	54 454 0	TS	VAC2USE	
0435	REP	2	LAST	187	05,3065	6 3161 1	AD	LTHVACA	
0436	REP	1			05,3066	54 530 0	TS	VAC3USE	
0437	REP	3	LAST	187	05,3067	6 3161 1	AD	LTHVACA	
0438	REP	1			05,3070	54 604 1	TS	VAC4USE	
0439	REP	4	LAST	187	05,3071	6 3161 1	AD	LTHVACA	
0440	REP	1			05,3072	54 660 0	TS	VAC5USE	
0441	REP	1			05,3073	3 4377 0	CAF	TEN	BLANK DSKY REGISTERS (PROGRAM, VERB, NOUN, R1, R2, R3)
A0442									
0443	REP	10	LAST	185	05,3074	54 154 0	DSPOFF	MPAC	
0444	REP	9	LAST	81	05,3075	4 4677 1	CS	BIT12	
0445	REP	11	LAST	187	05,3076	50 154 1	INDEX	MPAC	
0446	REP	24	LAST	183	05,3077	55=023 0	TS	DSPTAB	
0447	REP	12	LAST	187	05,3100	10 154 0	CCS	MPAC	
0448	REP	1			05,3101	1 3074 0	TCP	DSPOFF	
0449	REP	1			05,3102	55=141 0	TS	DELAYLOC	
0450	REP	2	LAST	187	05,3103	55=142 0	TS	DELAYLOC +1	
0451	REP	3	LAST	187	05,3104	55=143 1	TS	DELAYLOC +2	

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04515	REP	4	LAST	187	05,3105	55=144	0	TS	DELAYLOC	+3
0452	REP	1			05,3106	55=073	0	TS	R1SAVE	
0453	REP	1			05,3107	54 045	1	TS	INLINK	
0454	REP	7	LAST	131	05,3110	54 778	0	TS	DSPONT	
0455	REP	1			05,3111	55=042	1	TS	CADRSTOR	
0456	REP	1			05,3112	55=013	0	TS	REQRET	
0457	REP	1			05,3113	55=015	0	TS	CLPASS	
0458	REP	1			05,3114	55=012	1	TS	DSPLOCK	
0459	REP	1			05,3115	55=020	0	TS	MONSAVE	
0460	REP	1			05,3118	55=021	1	TS	MONSAVE1	KILL MONITOR
0461	REP	1			05,3117	55=001	0	TS	VERBREG	
0462	REP	1			05,3120	55=002	0	TS	NOUNREG	
0463	REP	1			05,3121	55=043	0	TS	DSPLIST	
0464	REP	1			05,3122	55=330	1	TS	MARKSTAT	
0465	REP	1			05,3123	55=322	1	TS	IMUCADR	
0466	REP	1			05,3124	55=323	0	TS	OPTCADR	
0467	REP	1			05,3125	55=324	1	TS	RADCADR	
0468	REP	2	LAST	79	05,3128	55=325	0	TS	ATTCADR	
0469	REP	1			05,3127	55=304	0	TS	LGYRO	
0470	REP	1			05,3130	54 100	1	TS	FLAGWRD4	KILL INTERFACE DISPLAYS
0471	REP	1			05,3131	3 4717	1	CAP	NOUTCN	
0472	REP	5	LAST	133	05,3132	55=016	0	TS	NOUTC	
0473	REP	22	LAST	186	05,3133	3 4675	1	CAP	BIT14	
0474	REP	2	LAST	180	05,3134	7 1044	1	MASK	EXTVRACT	
0475	REP	3	LAST	188	05,3135	55=044	1	TS	EXTVACT	
0476	REP	1			05,3138	3 3157	1	CAP	LESCRK	SELF CHECK GO-TO REGISTER.
0477	REP	2	LAST	80	05,3137	55=361	0	TS	SELFRET	
0478	REP	1			05,3140	4 4374	1	CS	VD1	
0479	REP	2	LAST	132	05,3141	54 777	1	TS	DSPCOUNT	
0480	REP	18	LAST	186	05,3142	0 0002	0	TC	Q	
0481	REP	10	LAST	164	05,3143	3 0001	0	TS IDLOC	CA	L
0482	REP	1			05,3144	1 5225	0	TCF	NOGRSM	+1
0483	REP	2	LAST	103	E6,1672			EBANK=	OGANOW	
0484	REP	1			05,3145	03143	1	TS IDLER	2CADR	TS IDLOC
0484	REP	1			05,3146	12066	1			
0485	REP	3	LAST	188	E6,1672			EBANK=	OGANOW	
0486	REP	1			05,3147	02071	0	2CADR	REDORCS	
0486	REP	1			05,3150	42066	1			
0487	REP	4	LAST	188	E6,1672			EBANK=	OGANOW	
0488	REP	1			05,3151	03165	0	2CADR	REDOTVC	
0488	REP	1			05,3152	34066	0			
0489	REP	5	LAST	188	E6,1672			EBANK=	OGANOW	
0490	REP	1			05,3153	02765	1	2CADR	REDOSAT	
0490	REP	1			05,3154	46066	0			
0491	REP	1			05,3155	00435	0	IPAILINH	OCT	435
0492	REP	1			05,3156	03351	0	LDNPHAS1	GENADR	DNPHASE1

TSRUPT COMES HERE EVERY 163.84 SECS WHEN NOBODY IS USING IT.



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0493	REP 1	05,3157	03334 0	LESCHK	GENADR	SELFCHK	
0494	REP 2 LAST 187	05,3160	00400 0	VAC1ADRC	ADRES	VAC1USE	
0495		05,3161	00054 0	LITHVACA	DEC	44	
04955		05,3162	20100 1	INTMASK	OCT	20100	
0496		05,3163	77603 1	OCT77603	OCT	77603	
0497		05,3164	74777 0	OCT74777	OCT	74777	
0498	REP 13 LAST 186	05,3165	01400 1	STARTEB	ECADR	LST1	
0499	REP 1	4715		NUMGRPS	EQUALS	FIVE	
0500		05,3166	77755 0	-ELR	OCT	-22	
0501		05,3167	37411 1	IM30INIF	OCT	37411	
0502		05,3170	37000 0	IM30INIR	OCT	37000	
0503	REP 2 LAST 155	4763		IM33INIT =		PRI016	
0504		05,3171	00450 0	9,8,4	OCT	450	
0505		05,3172	00130 0	OPTINIF	OCT	130	
0506		05,3173	00430 0	OPTINIR	OCT	430	
0507		05,3174	00000 1	SWINIT	OCT	0	
0508		05,3175	00000 1		OCT	0	
0509		05,3176	00000 1		OCT	0	
0510		05,3177	00000 1		OCT	0	
0511		05,3200	00000 1		OCT	0	
0512		05,3201	00200 0		OCT	00200	
0513		05,3202	00000 1		OCT	0	
0514		05,3203	00100 0		OCT	00100	
0515		05,3204	00000 1		OCT	0	
0516		05,3205	00000 1		OCT	0	
05162		05,3206	00000 1		OCT	0	

-ERROR LIGHT RESET KEY CODE.  
INHIBITS IMJ FAIL FOR 5 SEC AND PIP ISSW  
NO PIP OR TM FAIL SIGNALS.



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P0517 PROGRAM NAME GOTOPOOH ASSEMBLY SUNDISK  
 R0518 LOG SECTION FRESH START AND RESTART

R0519 FUNCTIONAL DESCRIPTION

R0520 1. DISPLAY MAJOR MODE NUMBER 00 IN DSKY REGISTER R1 AND R3. FLASH V50 N07 ON DSKY. (M M CHANGE REQUEST)  
 R0522 2. PERMIT A CURRENT PENDING REQUEST (FLASH ON DSKY) TO BE REPLACED (WITHOUT AN ABORT) BY THE MAJOR MODE  
 R0524 CHANGE REQUEST

R0525 INPUT/OUTPUT INFORMATION

R0526 A. CALLING SEQUENCE TC GOTOPOOH  
 R0527 B. ERASABLE INITIALIZATION NONE  
 R0528 C. OUTPUT FLASH VERB 50 NOUN 07 ON DSKY  
 R0529 D. DEBRIS L

R0530 PROGRAM ANALYSIS

R0531 A. SUBROUTINES CALLED GOPERF3, LINUS  
 R0532 B. NORMAL EXIT TCF ENDOFJOB  
 R0533 C. ALARM AND ABORT EXITS NONE

0534			4108				BLOCK 02	
0535	REP	1	4000				SETLOC PPTAG10	
0536			4108				BANK	
0537	REP	1					COUNT 02/P00	
0538	REP	1	4108	0 5301	0	GOTOPOOH TC	PHASCHNG	RESTART GOTOPOOH
0539			4107	00014	1	OCT	14	
0540	REP	3	4110	0 4574	0	TC	POSTJUMP	
0541	REP	1	4111	10000	0	CADR	GOPOOFIX	
0542			10,2203			BANK	10	
0543	REP	1	04,2000			SETLOC	VERB37	
0544			04,2000			BANK		
0545	REP	1				COUNT	04/P00	
0546	REP	1	04,2000	0 2315	1	GOPOOFIX TC	INITSUB	
05465	REP	1	04,2001	3 2007	1	CAP	V37N99	
0547	REP	1	04,2002	0 4555	0	TC	BANKCALL	
0548	REP	1	04,2003	20624	0	CADR	GOFLASH	
0549			04,2004	1 2001	0	TCF	-3	
0550			04,2005	1 2001	0	TCF	-4	



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0551	04,2006	1	2001	0	TCP	-5
0552	04,2007	11343	0	V37N99	VN	3799

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R0553 PROGRAM NAME V37 ASSEMBLY SUNDISK  
 R0554 LOG SECTION FRESH START AND RESTART

R0555 FUNCTIONAL DESCRIPTION

- R0556 1. CHECK IF NEW PROGRAM ALLOWED. IF BIT 1 OF FLAG:RD2(NODOFLAG) ISSET, AN ALARM 1520 IS CALLED.
- R0558 2. CHECK FOR VALIDITY OF PROGRAM SELECTED. IF AN INVALID PROGRAM IS SELECTED, THE OPERATOR ERROR LIGHT IS SET AND CURRENT ACTIVITY, IF ANY, CONTINUES.
- R0560 3. SERVICER IS TERMINATED IF IT HAS BEEN RUNNING.
- R0561 4. INSTALL IS EXECUTED TO AVOID INTERRUPTING INTEGRATION.
- R0562 5. THE ENGINE IS TURNED OFF AND THE DAP IS INITIALIZED FOR COAST.
- R0563 6. TRACK, UPDATE AND TARG1 FLAGS ARE SET TO ZERO.
- R0564 7. DISPLAY SYSTEM IS RELEASED.
- R0565 8. THE FOLLOWING ARE PERFORMED FOR EACH OF THE THREE CASES.
- R0566 A. PROGRAM SELECTED IS P00.
  - R0567 1. RENDEZVOUS FLAG IS RESET (KILL P20).
  - R0568 2. STATINT1 IS SCHEDULED BY SETTING RESTART GROUP 2.
  - R0569 3. MAJOR MODE 00 IS STORED IN THE MODE REGISTER(MODREG).
  - R0570 4. SUPERBANK 3 IS SELECTED.
  - R0571 5. NODOFLAG IS RESET.
  - R0572 6. ALL RESTART GROUPS EXCEPT GROUP 2 ARE CLEARED. CONTROL IS TRANSFERRED TO RESTART PROGRAM (GOPROG2) WHICH CAUSES ALL CURRENT ACTIVITY TO BE DISCONTINUED AND A 9 MINUTE INTEGRATION CYCLE TO BE INITIATED.
- R0573 B. PROGRAM SELECTED IS P20
  - R0574 1. IF THE CURRENT MAJOR MODE IS THE SAME AS THE SELECTED NEWPROGRAM, THE PROGRAM IS RE-INITIALIZED VIA V37XEQ, ALL RESTART GROUPS, EXCEPT GROUP 4 ARE CLEARED.
  - R0575 2. IF THE CURRENT MAJOR MODE IS NOT EQUAL TO THE NEW REQUEST, A CHECK IS MADE TO SEE IF THE REQUESTED MAJOR MODE HAS BEEN RUNNING IN THE BACKGROUND, AND IF IT HAS, NO NEW PROGRAM IS SCHEDULED, THE EXISTING P20 IS RESTARTED TO CONTINUE, AND ITS MAJOR MODE IS SET.
  - R0576 3. CONTROL IS TRANSFERRED TO GOPROG2.
- R0577 C. PROGRAM SELECTED IS NEITHER P00 NOR P20
  - R0578 1. V37XEQ IS SCHEDULED (AS A JOB) BY SETTING RESTART GROUP 4
  - R0579 2. ALL CURRENT ACTIVITY EXCEPT RENDEZVOUS AND TRACKING IS DISCONTINUED BY CLEARING ALL RESTART GROUPS. GROUP 2 IS CLEARED. IF THE RENDEZVOUS FLAG IS ON P20 IS RESTARTED IN GOPROG2 VIA REDOP20. TO CONTINUE.

R0596 INPUT/OUTPUT INFORMATION

R0597 A. CALLING SEQUENCE

R0598 CONTROL IS DIRECTED TO V37 BY THE VERBFAN ROUTINE.  
 R0599 VERBFAN GOES TO C(VERBTAB+C(VERBREG)). VERB 37 = MMCHANG.  
 R0600 MMCHANG EXECUTES A TC POSTJUMP, CADR V37.

R0601 B. ERASABLE INITIALIZATION NONE

R0602 C. OUTPUT  
 R0603 MAJOR MODE CHANGE



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R0604 D. DEBRIS  
 R0605 MNUMBER, MPAC +1, MINDEX, BASETEMP +C(MINDEX), FLAGWRD0, FLAGWRD1, FLAGWRD2, MODREG, GOLOC -1,  
 R0607 GOLOC, GOLOC +1, GOLOC +2, BASETEMP, -PHASE2, PHASE2, -PHASE4

R0608 PROGRAM ANALYSIS

R0609 A. SUBROUTINES CALLED  
 R0610 ALARM, RELDSP, PINBRNCH, INTSTALL, ENGINEF2, ALLCOAST, V37KLEAN, GOPROG2, FALTON, FINDVAC, SUPERSW,  
 R0612 DSPMM

R0613 B. NORMAL EXIT TC ENDOFJOB

R0614 C. ALARMS 1520 (MAJOR MODE CHANGE NOT PERMITTED)

0615				4112				BLOCK 02				
0616	REF	2	LAST	190	4000			SETLOC FFTAG10				
0617					4112			BANK				
0618	REF	1						COUNT 02/V37				
0619					4112	00024	1	OCT24	MM	20		
0620					4113	00031	0	OCT31	MM	25		
0621					27,2000				BANK	27		
0622	REF	2	LAST	190	04,2000				SETLOC VERR37			
0623					04,2010				BANK			
0624	REF	1							COUNT 04/V37			
0625	REF	1			04,2010	54	775	0	V37	TS	MNUMBER	SAVE MAJOR MODE
0626	REF	3	LAST	185	04,2011	3	4371	0		CAP	PRI030	RESTART AT PINBALL PRIORITY
0627	REF	2	LAST	180	04,2012	54	366	0		TS	RESTRGG	
0628	REF	37	LAST	183	04,2013	3	1320	1		CA	IMODES30	IS IMU BEING INITIALIZED
0629	REF	21	LAST	183	04,2014	7	4705	0		MASK	BIT6	
0630	REF	44	LAST	185	04,2015	10	000	0		CCS	A	
0631	REF	1			04,2016	1	2070	0		TCF	CANTROO	
0632	REF	16	LAST	185	04,2017	3	4676	1		CAP	BIT13	IS ENGINE ON
0633					04,2020	0	0006	1		EXTEND		
0634	REF	9	LAST	186	04,2021	02	011	0		RAND	DSALMOUT	
0635	REF	45	LAST	193	04,2022	10	000	0		CCS	A	
0636	REF	1			04,2023	1	2030	1		TCF	ROOTOPOO	YES, SET UP FOR POO
0637	REF	4	LAST	184	04,2024	4	0102	0		CS	FLAGWRD6	NO, IS TVC DAP ON
0638	REF	3	LAST	184	04,2025	7	4105	0		MASK	OCT60000	
0639					04,2026	0	0006	1		EXTEND		
0640	REF	1			04,2027	6	2061	1		BZMF	ISITPOO	NO, CONTINUE WITH ROO
0641					04,2030	0	0004	0		ROOTOPOO	INHINT	
06412	REF	2	LAST	184	04,2031	3	4752	0		CAP	EBANK6	

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0642	REP	5	LAST	186	04,2032	54 003 0		TS	EBANK		
0643	REP	3	LAST	173	E6,1468			EBANK=	DAPDATR1		
0644	REP	1			04,2033	31=474 1		CAB	CSQMASS		
0645	REP	2	LAST	103	04,2034	55=862 0		TS	MASSTP		
0647	REP	9	LAST	184	04,2035	0 4633 0		TC	IBNKCALL		
0648	REP	1			04,2036	50737 1		CADR	SPSOFP		
0649	REP	10	LAST	194	04,2037	0 4633 0		TC	IBNKCALL		
0650	REP	1			04,2040	13207 0		CADR	MASSTP		
0651	REP	1			04,2041	3 2402 0		CAP	3.1SEC		
0652	REP	11	LAST	194	04,2042	0 4633 0		TC	IBNKCALL		
0653	REP	1			04,2043	42011 1		CADR	RCSAPON +1		
0654	REP	12	LAST	194	04,2044	0 4633 0		TC	IBNKCALL		
0655	REP	1			04,2045	51003 0		CADR	TVCZAP	DISABLE TVC	
0656	REP	15	LAST	187	04,2046	3 4714 1		CAP	ZERO		
0657	REP	2	LAST	193	04,2047	54 775 0		TS	MNUMBER		
0658					04,2050	0 0003 1		RELINT			
0659	REP	2	LAST	189	04,2051	3 4715 0		CAP	FIVE		
0660	REP	2	LAST	190	04,2052	0 4555 0		TC	BANKCALL		
06602	REP	1			04,2053	01732 0		CADR	DELAYJOB		
06604	REP	16	LAST	194	04,2054	3 4714 1		CAP	ZERO		
06606					04,2055	0 0006 1		EXTEND			
06608					04,2056	01 005 0		WRITE	5		
0661					04,2057	0 0006 1		EXTEND			
06615					04,2060	01 006 0		WRITE	6		
0662	REP	3	LAST	194	04,2061	3 0775 1	ISITPOO	CA	MNUMBER		
0663					04,2062	0 0006 1		EXTEND			
0664	REP	1			04,2063	1 2112 0		BZF	ISSERVON	YES, CHECK SERVICER STATUS	
0665	REP	3	LAST	186	04,2064	4 0076 1		JS	FLAGWRD2	NO, IS NODO V37 FLAG SET	
0666	REP	22	LAST	161	04,2065	7 4712 0		MASK	HIT1		
0667	REP	46	LAST	193	04,2066	10 000 0		CCS	A		
0668	REP	1			04,2067	1 2075 0		TCF	CHECKTAB	NO	
0669	REP	11	LAST	185	04,2070	0 5537 0	CANTROO	TC	ALARM		
0670					04,2071	01520 1		OCT	1520		
0671	REP	1			04,2072	0 4473 0	V37BAD	TC	RELDSP	RELEASES DISPLAY FROM ASTRONAUT	
0672	REP	4	LAST	190	04,2073	0 4574 0		TC	POSTJUMP	BRING BACK LAST NORMAL DISPLAY IF THERE	
0673	REP	1			04,2074	21176 1		CADR	PINBRNH	WAS ONE. OY	
0674	REP	1			04,2075	3 2475 0	CHECKTAB	CA	NOV37MM	THE NO. OF MM	
0675	REP	13	LAST	187	04,2076	54 155 1	AGAINMM	TS	MPAC +1		
0676	REP	14	LAST	194	04,2077	50 155 0		NDX	MPAC +1		
0677	REP	1			04,2100	3 2440 0		CA	PREMM1	OBTAIN WHICH MM THIS IS FOR	
0678	REP	1			04,2101	7 6043 1		MASK	LOW7		
0679					04,2102	4 0000 0		COM			
0680	REP	4	LAST	194	04,2103	6 0775 1		AD	MNUMBER		
0681	REP	47	LAST	194	04,2104	10 000 0		CCS	A		
0682	REP	15	LAST	194	04,2105	10 155 1		CCS	MPAC +1	IF GR, SEE IF ANYMORE IN LIST	



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0683	REF	1		04,2106	1 2076	0	TCF	AGAINMM	YES, GET NEXT ONE		
0684	REF	1		04,2107	1 2257	1	TCF	V37N0NO	LAST TIME OR PASSED MM		
0685	REF	16	LAST	194	04,2110	3 0155	0	CA	MPAC +1		
0686	REF	1			04,2111	54 774	1	TS	MINDEX	SAVE INDEX FOR LATER	
0687	REF	1			04,2112	4 0103	1	ISSERVON	CS FLAGWRD7	V37 FLAG SET - I.E. IS SERVICER GOING	
0688	REF	22	LAST	193	04,2113	7 4705	0	MASK	BITS		
0689	REF	48	LAST	194	04,2114	10 000	0	CCS	A		
0690	REF	1			04,2115	1 2123	1	TCF	CANV37	NO	
0691					04,2116	0 0004	0	INHINT			
0692	REF	23	LAST	194	04,2117	4 4712	0	CS	BIT1	YES, TURN OFF AVERAGE G FLAG AND WAIT	
0693	REF	1			04,2120	7 0075	1	MASK	FLAGWRD1	FOR SERVICER TO RETURN TO CANV37	
0694	REF	2	LAST	195	04,2121	54 075	1	TS	FLAGWRD1		
0695	REF	1			04,2122	1 5112	1	TCF	ENDOFJOB		
0714	REF	1			04,2123	3 2377	0	CANV37	CAP	ROAD	
0715	REF	1			04,2124	54 374	0	TS	TEMPFLASH		
0716	REF	2	LAST	190	04,2125	0 5301	0	TC	PHASCHNG		
0717					04,2126	00014	1	OCT	14		
0718	REF	1			04,2127	0 8006	1	ROO	TC	INTPRET	
0719					04,2130	77624	1	CALL		WAIT FOR INTEGRATION TO FINISH	
0720	REF	1			04,2131	27371	1		INTSTALL		
0721					04,2132	77776	1	DUMMYAD	EXIT		
07211	REF	2	LAST	190	04,2133	0 2315	1	TC	INITSUB		
07212	REF	1			04,2134	0 5447	0	TC	DOWNFLAG		
07213	REF	1			04,2135	00020	0	ADRES	STIKFLAG		
072133	REF	3	LAST	194	04,2136	0 4555	0	TC	BANKCALL		
072134	REF	1			04,2137	57750	1	CADR	UPACTOFF	TURN OFF UPLINK ACTIV LIGHT	
072135	REF	2	LAST	195	04,2140	0 5447	0	TC	DOWNFLAG		
072136	REF	1			04,2141	00215	1	ADRES	VHFRFLAG		
07214	REF	3	LAST	195	04,2142	0 5447	0	TC	DOWNFLAG		
07215	REF	1			04,2143	00037	0	ADRES	R21MARK		
0722	REF	5	LAST	194	04,2144	10 775	0	CCS	MNUMBER	IS THIS A POOH REQUEST	
0723	REF	1			04,2145	1 2245	1	TCF	NOUVEAU	NO, PICK UP NEW PROGRAM	
0724	REF	2	LAST	190 TO 193	8	8*		COUNT	04/P00		
0725	REF	2	LAST	194	04,2146	0 4473	0	POOH	TC	RELDSP	RELEASE DISPLAY SYSTEM

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07255	REP	1		04,2147	3 4754	0			CAP	PRIOS
07256	REP	1		04,2150	55=058	1			TS	PHSPRT2
0726				04,2151	0 0004	0			INHINT	
0727	REP	24	LAST	195	04,2152	4 4712	0		CS	BIT1
0728	REP	4	LAST	194	04,2153	7 0078	1		MASK	FLAGWRD2
0729	REP	5	LAST	196	04,2154	54 076	1		TS	FLAGWRD2
0730	REP	3	LAST	194	04,2155	3 4715	0		CA	FIVE
0731	REP	11	LAST	188	04,2156	54 001	1		TS	L
0732					04,2157	4 0000	0		COM	
0733	REP	2	LAST	181	04,2160	52 755	1		DXCH	-PHASE2
0734	REP	1			04,2161	4 2374	1		CS	BIT7-8
0735	REP	1			04,2162	7 0074	0		MASK	FLAGWRD0
0736	REP	2	LAST	196	04,2163	54 074	0		TS	FLAGWRD0
0737	REP	1			04,2164	3 4714	1		CAP	DNLADP00
0738	REP	2	LAST	193 TO	195'	94	94*		COUNT	04/V37
0739	REP	3	LAST	179	04,2165	54 332	1	SEUDOP00	TS	DNLSTCOD
A0740										
0741	REP	1			04,2166	4 2375	0		CS	OCT01120
0742	REP	2	LAST	180	04,2167	55=071	1		TS	EBANKTEM
0743	REP	3	LAST	195	04,2170	7 0075	1		MASK	FLAGWRD1
0744	REP	4	LAST	196	04,2171	54 075	1		TS	FLAGWRD1
0751	REP	13	LAST	194	04,2172	0 4633	0	GROUPKIL	TC	IBNKCALL
0752	REP	1			04,2173	12506	1		CADR	V37KLEAN
0753	REP	6	LAST	195	04,2174	10 775	0		CCS	MNUMBER
0754	REP	1			04,2175	1 2204	1		TCP	RENDVOO
0755	REP	14	LAST	196	04,2176	0 4633	0		TC	IBNKCALL
0756	REP	1			04,2177	12500	1		CADR	POOKLEAN
0757	REP	7	LAST	196	04,2200	3 0775	1	GQMCD	CA	MNUMBER
0758	REP	3	LAST	185	04,2201	55=011	1		TS	MODREG
0759	REP	5	LAST	194	04,2202	0 4574	0	GOGOPROG	TC	POSTJUMP
0760	REP	1			04,2203	12641	1		CADR	GOPROG2
0761	REP	8	LAST	196	04,2204	4 0775	0	RENDVOO	CS	MNUMBER
0762	REP	2	LAST	161	04,2205	6 4112	1		AD	OCT24
0763					04,2206	0 0006	1		EXTEND	
0764	REP	1			04,2207	1 2211	0		BZP	RENDNOO
0765	REP	1			04,2210	1 2221	0		TCP	POOFIZZ

SET VARIABLE RESTART REGISTER FOR P00.

TURN OFF NODOFLAG

SET 2.5 RESTART FOR STATEINT1

RESET IMUSE + KILL P20 BY TURNING OFF  
RENDPLG

SET UP APPROPRIATE DOWNLIST.

(OLD ONE WILL BE FINISHED FIRST)  
TURN OFF TRACK, TARG1, UPDATE FLAGS

KILL GROUPS 3(5,6)

IS IT POCH  
NO

REDUNDANT EXCEPT FOR GROUP 4.

IS NEW PROG = 20  
20

YES



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0766	REP	9	LAST	196	04,2211	4	0775	0	RENDNOO	CS	MMNUMBER
0767	REP	4	LAST	196	04,2212	6	1011	0		AD	MODREG
0768					04,2213	0	0006	1		EXTEND	
0769	REP	1			04,2214	1	2225	1		BZF	KILL20
0770	REP	3	LAST	196	04,2215	3	0074	1		CA	FLAGWRD0
0771	REP	20	LAST	185	04,2216	7	4704	1		MASK	BIT7
0772	REP	49	LAST	195	04,2217	10	000	0		CCS	A
0773	REP	1			04,2220	1	2236	0		TCF	STATQUO
0774	REP	21	LAST	197	04,2221	3	4704	0	POOFIZZ	CAF	BIT7
0775	REP	4	LAST	197	04,2222	7	0074	0		MASK	FLAGWRD0
0776	REP	50	LAST	197	04,2223	10	000	0		CCS	A
0777	REP	1			04,2224	1	2233	0		TCF	REV37
0778					04,2225	0	0006	1	KILL20	EXTEND	
0779	REP	9	LAST	181	04,2226	3	4714	1		DCA	NEG0
0780	REP	3	LAST	184	04,2227	52	753	1		DXCH	-PHASE1
0781					04,2230	0	0006	1		EXTEND	
0782	REP	10	LAST	197	04,2231	3	4714	1		DCA	NEG0
0783	REP	3	LAST	196	04,2232	52	755	1		DXCH	-PHASE2
0784	REP	1			04,2233	3	2376	1	REV37	CAF	V37QCAD
0785	REP	2	LAST	195	04,2234	54	374	0		TS	TEMPFLSH
0786	REP	1			04,2235	1	2202	1		TCF	GOGOPROG
0787	REP	5	LAST	196	04,2236	4	0075	1	STATQUO	CS	FLAGWRD1
0788	REP	1			04,2237	7	4732	1		MASK	OCT120
0789	REP	6	LAST	197	04,2240	26	075	1		ADS	FLAGWRD1
0790					04,2241	0	0006	1		EXTEND	
0791	REP	11	LAST	197	04,2242	3	4714	1		DCA	NEG0
0792	REP	2	LAST	181	04,2243	52	761	0		DXCH	-PHASE4
0793	REP	1			04,2244	1	2200	0		TCF	GOMOD
0794	REP	22	LAST	197	04,2245	3	4704	0	NOUVEAU	CAF	BIT7
0795	REP	5	LAST	197	04,2246	7	0074	0		MASK	FLAGWRD0
0796	REP	51	LAST	197	04,2247	10	000	0		CCS	A
0797					04,2250	1	2253	0		TCF	+3
0798	REP	4	LAST	195	04,2251	0	5447	0		TC	DOWNFLAG
0799	REP	1			04,2252	0	0007	0		ADRES	IMUSE
0800	REP	2	LAST	195	04,2253	50	774	0	+3	INDEX	MINDEX
0801	REP	1			04,2254	3	2476	0		CAF	DNLADM1
0802					04,2255	0	0004	0		INHINT	
0803	REP	1			04,2256	1	2165	0		TCF	SEUDOPOO
0804	REP	1			04,2257	0	4400	1	V37NCNO	TC	FALTON

IS RENDEZVOO FLAG SET

NO, KILL GROUPS 1 + 2

SET RESTART POINT

SET TRACK FLAG AND UPDATE FLAG

KILL GROUP 4

NO, RESET IMUSE FLAG.  
BIT 8 FLAG 0

OBTAIN NEW DOWNLIST ADDRESS

COME HERE IF MM REQUESTED DOESNT EXIST



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0805	REF	1		04,2260	1 2072 1		TCF	V37BAD	
0809	REF	16	LAST	183	4707		OCT00010	EQUALS BIT4	
0810							V37XEQ	INHINT	
0811	REF	3	LAST	197	04,2261	0 0004 0		INDEX	MINDEX
0812	REF	2	LAST	194	04,2262	50 774 0		CAP	PREMM1
0813	REF	1			04,2263	3 2440 0		TS	MMTEMP
0814	REF	1			04,2264	55*060 1		TS	CYR
0815	REF	2	LAST	198	04,2265	54 020 1			
0816	REF	1			04,2266	3 0020 0		CA	CYR
0817	REF	1			04,2267	7 7874 1		MASK	PRIO37
0818	REF	1			04,2270	55*062 0		TS	PHSPRDT4
					04,2271	54 063 0		TS	NEWPRIO
0819	REF	2	LAST	198	04,2272	3 1060 0		CA	MMTEMP
0820					04,2273	0 0008 1		EXTEND	
0821	REF	17	LAST	161	04,2274	7 4703 0		MP	BIT8
0822	REF	1			04,2275	7 4716 1		MASK	LOW3
0823	REF	12	LAST	196	04,2276	54 001 1		TS	L
0824	REF	4	LAST	198	04,2277	50 774 0		INDEX	MINDEX
0825	REF	1			04,2300	3 2403 1		CAP	FCADRMM1
0826	REF	1			04,2301	55*061 0		TS	BASETEMP
0827	REF	3	LAST	182	04,2302	7 4364 0		MASK	H15
0828	REF	13	LAST	198	04,2303	26 001 1		ADS	L
0829	REF	2	LAST	198	04,2304	3 1061 1		CA	BASETEMP
0830	REF	2	LAST	32	04,2305	7 4747 0		MASK	LOW10
0831	REF	12	LAST	139	04,2306	6 4700 1		AD	BIT11
0832	REF	1			04,2307	0 5053 1		TC	SPVAC
0833	REF	3	LAST	198	04,2310	3 1060 0		CA	MMTEMP
0834	REF	2	LAST	194	04,2311	7 6043 1	V37XEQ	MASK	LOW7
0835	REF	1			04,2312	0 5246 1		TC	NEWMODEA
R0836	FOR SUNDISK ONLY								
0837	REF	3	LAST	195	04,2313	0 4473 0		TC	RELDSP
0838	REF	2	LAST	195	04,2314	0 5112 0		TC	ENDOFJOB
0839					04,2315	0 0006 1	INITSUB	EXTEND	
0840	REF	17	LAST	195	04,2316	22 155 0		QXCH	MPAC +1
0841	REF	3	LAST	193	04,2317	3 4752 0		CAP	EBANK6
0842	REF	6	LAST	194	04,2320	54 003 0		TS	EBANK
0843					04,2321	0 0004 0		INHINT	
08435	REF	4	LAST	195	04,2322	0 4555 0		TC	BANKCALL
08436	REF	2	LAST	184	04,2323	45245 0		CADR	STOPRATE
0844	REF	1			04,2324	3 0105 0		CA	FLAGWRD9
0845	REF	10	LAST	187	04,2325	7 4677 1		MASK	BIT12

OBTAIN PRIORITY BITS 15 - 11  
SHIFT RIGHT TO BITS 14 - 10

PRESET GROUP4 RESTART PRIORITY  
STORE PRIO FOR SPVAC

OBTAIN EBANK - BITS 8, 9, 10 OF MMTEMP.

OBTAIN GENADR PORTION OF 2CADR.

UPON RETURN FROM FINDVAC PLACE THE  
NEW MM IN MODREG (THE LOW 7 BITS OF  
PHSBROT1)

RELEASE DISPLAY  
AND EXIT

SET E6 FOR DEADBRAND CODING  
WILL BE RESET IN STARTS2.

RESTORE DEADBRAND



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0846	REP	52	LAST	197	04,2326	10 000 0		CCS	A	
0847	REP	1			04,2327	1 2333 1		TCF	SETMAXER	MAX DB SELECTED
0848	REP	5	LAST	198	04,2330	0 4555 0		TC	BANKCALL	MIN DB SELECTED
0849	REP	1			04,2331	50213 1		CADR	SETMINDB	
0850	REP	1			04,2332	1 2335 1		TCF	RAKE	
0851	REP	6	LAST	199	04,2333	0 4555 0	SETMAXER	TC	BANKCALL	
0852	REP	1			04,2334	50227 0		CADR	SETMAXDB	
0853	REP	2	LAST	181	04,2335	3 4717 1	RAKE	CAP	ELEVEN	THIS PART CLEARS FLAGWORD BITS.
0854	REP	18	LAST	198	04,2336	54 154 0	+1	TS	MPAC	LOOP COMES HERE.
0855	REP	19	LAST	199	04,2337	50 154 1		INDEX	MPAC	
0856	REP	1			04,2340	4 2356 1		CS	FLAGTABL	
0857	REP	20	LAST	199	04,2341	50 154 1		INDEX	MPAC	
0858	REP	6	LAST	197	04,2342	7 0074 0		MASK	FLAGWRD0	PUT REVISED FLAGWORD BACK.
0859	REP	21	LAST	199	04,2343	50 154 1		INDEX	MPAC	
0860	REP	7	LAST	199	04,2344	54 074 0		TS	FLAGWRD0	
0861	REP	22	LAST	199	04,2345	10 154 0		CCS	MPAC	
0862	REP	2	LAST	199	04,2346	1 2336 1		TCF	RAKE +1	GET THE NEXT FLAGWORD.
0863					04,2347	0 0003 1		RELINT		
0864	REP	1			04,2350	0 5435 0		TC	UPFLAG	NOW SET IMPULSW
0865	REP	1			04,2351	00044 1		ADRES	IMPULSW	
0868	REP	1			04,2352	0 5425 1		TC	CLEARMRK	
08684	REP	5	LAST	186	04,2353	3 7716 0		CA	NEGONE	
08686	REP	16	LAST	180	04,2354	55*303 1		TS	OPTIND	
0869	REP	23	LAST	199	04,2355	0 0155 0		TC	MPAC +1	RETURN FROM INITSUB
0870					04,2356	00000 1	FLAGTABL	OCT	0	
0871					04,2357	00040 0		OCT	00040	IDLEFAIL
0872					04,2360	02000 0		OCT	02000	STEERSW
0873					04,2361	00000 1		OCT	0	
0874					04,2362	00000 1		OCT	0	
0875					04,2363	04140 0		OCT	04140	V59FLAG, ENGNFLG, 3AXISFLG
0876					04,2364	10000 0		OCT	10000	STRULLSW
0877					04,2365	16020 1		OCT	16020	IGNFLAG, ASINFLAG, TIMRFLAG, NOUPFLAG
0878					04,2366	00000 1		OCT	0	
0879					04,2367	42000 1		OCT	42000	SWTOVER, V94FLAG
0880					04,2370	00000 1		OCT	0	
0881					04,2371	00000 1		OCT	0	
0882	REP	1			5630		NEG7	EQUALS	OCT77770	
0883	REP	2	LAST	187	E6,1425			EBANK=	PACTOFF	
0884	REP	2	LAST	188	04,2372	03143 1	POODAPAD	2CADR	T5 IDLOC	
0884					04,2373	12066 1				
0885	REP	1			1060		MMTEMP	EQUALS	PHSPRDT3	
0886	REP	1			1061		BASETEMP	EQUALS	TRASE4	
0887					04,2374	00300 1	BIT7-8	OCT	300	

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0888 04,2375 01120 0 OCT01120 OCT 01120  
 0889 REF 1 04,2376 10264 0 V37QCAD CADR V37XEQ +3  
 0890 REF 1 04,2377 10132 0 ROOAD CADR DUMMYAD  
 0891 REF 4 LAST 194 E6,1466 EBANK= DAPDATR1  
 0892 REF 1 04,2400 02106 1 RCSADDR4 2CADR RCSATT  
 0892 REF 1 04,2401 42066 1  
 0893 04,2402 37312 0 3.1SEC OCT 37312 2.5 + 0.6 SEC  
 R0894 FOR VERB 37 TWO TABLES ARE MAINTAINED. EACH TABLE HAS AN ENTRY FOR EACH  
 R0895 MAJOR MODE THAT CAN BE STARTED FROM THE KEYBOARD. THE ENTRIES ARE PUT  
 R0896 INTO THE TABLE WITH THE ENTRY FOR THE HIGHEST MAJOR MODE COMING FIRST,

R0897 TO THE LOWEST MAJOR MODE WHICH IS THE LAST ENTRY IN EACH TABLE.

R0898 THE FCADRM1 TABLE CONTAINS THE FCADR OF THE STARTING JOB OF  
 R0899 THE MAJOR MODE. FOR EXAMPLE,

A0900		FCADRM1	FCADR	P79	START OF P 79
A0901			FCADR	PROG18	START OF P 18
A0902			FCADR	P01	START OF P 01

0903		04,2403	FCADRM1	EQUALS	
0904	REF 1	04,2403	11334	0	FCADR P79
0905	REF 1	04,2404	11106	0	FCADR P78
0906	REF 1	04,2405	73433	1	FCADR P77
09065	REF 1	04,2406	26036	0	FCADR P76
0907	REF 1	04,2407	72157	1	FCADR P75
0908	REF 1	04,2410	72002	0	FCADR P74
0909	REF 1	04,2411	54320	1	FCADR P62
0910	REF 1	04,2412	54217	1	FCADR P61
0911	REF 1	04,2413	32000	0	FCADR P54
0912	REF 1	04,2414	31054	1	FCADR P53
0913	REF 1	04,2415	32000	0	FCADR PROG52
0914	REF 1	04,2416	31054	1	FCADR P51
0915	REF 1	04,2417	50410	1	FCADR P47CSM
0916	REF 1	04,2420	50235	0	FCADR P41CSM
0917	REF 1	04,2421	50002	0	FCADR P40CSM
0918	REF 1	04,2422	11327	1	FCADR P39
0919	REF 1	04,2423	11103	0	FCADR P38
0920	REF 1	04,2424	74502	0	FCADR P37
0921	REF 1	04,2425	72153	0	FCADR P35
0922	REF 1	04,2426	72000	1	FCADR P34
0923	REF 1	04,2427	73620	1	FCADR P31
0924	REF 1	04,2430	73604	1	FCADR P30
0925	REF 1	04,2431	82021	0	FCADR P23
0926	REF 1	04,2432	80000	1	FCADR PROG22
0927	REF 1	04,2433	76001	1	FCADR PROG21
0928	REF 1	04,2434	76207	0	FCADR PROG20
0929	REF 1	04,2435	73431	0	FCADR P17
0930	REF 1	04,2436	55655	1	FCADR P06



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0931 REP 1 04,2437 86001 0 FCADR GTSCPS1  
 R0932 THE PREMM TABLE CONTAINS THE E-BANK, MAJOR MODE, AND PRIORITY  
 R0933 INFORMATION, IT IS IN THE FOLLOWING FORM,

GYROCOMPASS STANDARD LEAD IN.

R0934 PPP PPE EEM MMM MMM

R0935 WHERE THE 7 M BITS CONTAIN THE MAJOR MODE NUMBER  
 R0936 3 E BITS CONTAIN THE E-BANK NUMBER  
 R0937 5 P BITS CONTAIN THE PRIORITY AT WHICH THE JOB IS  
 R0938 TO BE STARTED

R0939 FOR EXAMPLE,

A0940	PREMM1	OCT	67213	PRIORITY	33
A0941				E-BANK	5
A0942				MAJOR MODE	11
A0943		OCT	25437	PRIORITY	12
A0944				E-BANK	6
A0945				MAJOR MODE	31

	04,2440	PREMM1	EQUALS				
0946				OCT	27117	MM 79	EBANK 4 PRIO 13
0947	04,2440	27117 0		OCT	27118	MM 78	EBANK 4 PR23 13
0948	04,2441	27116 1		OCT	27115	MM 77	EBANK 4 PRIO 13
0949	04,2442	27115 1		OCT	27714	MM 76	EBANK 7 PRIO 13
09495	04,2443	27714 0		OCT	27113	MM 75	EBANK 4 PRIO 13
0950	04,2444	27113 1		OCT	27112	MM 74	EBANK 4 PRIO13
0951	04,2445	27112 0		OCT	27476	MM 62	EBANK 6 PRIO 13
0952	04,2446	27476 1		OCT	27475	MM 61	EBANK 6 PRIO 13
0953	04,2447	27475 1		OCT	27286	MM 54	EBANK 5 PRIO 13
0954	04,2450	27286 0		OCT	27265	MM 53	EBANK 5 PRIO 13
0955	04,2451	27265 0		OCT	27264	MM 52	EBANK 5 PRIO 13
0956	04,2452	27264 1		OCT	27263	MM 51	EBANK 5 PRIO 13
0957	04,2453	27263 0		OCT	27857	MM 47	EBANK 7 PRIO 13
0958	04,2454	27857 0		OCT	27451	MM 41	EBANK 6 PRIO 13
0959	04,2455	27451 1		OCT	27450	MM 40	EBANK 6 PRIO 13
0960	04,2456	27450 0		OCT	27047	MM 39	EBANK 4 PRIO13
0961	04,2457	27047 1		OCT	27046	MM 38	EBANK 4 PRIO 13
0962	04,2460	27046 0		OCT	27845	MM 37	EBANK 7 PRIO13
0963	04,2461	27845 0		OCT	27043	MM 35	EBANK 4 PRIO 13
0964	04,2462	27043 0		OCT	27042	MM 34	EBANK 4 PRIO13
0965	04,2463	27042 1		OCT	27637	MM 31	EBANK 7 PRIO 13
0966	04,2464	27637 0		OCT	27636	MM 30	EBANK 7 PRIO 13
0967	04,2465	27636 1		OCT	27227	MM 23	EBANK 5 PRIO 13
0968	04,2466	27227 0		OCT	27226	MM 22	EBANK 5 PRIO 13
0969	04,2467	27226 1		OCT	27025	MM 21	EBANK 4 PRIO 13
0970	04,2470	27025 0		OCT	27424	MM 20	EBANK 6 PRIO 13
0971	04,2471	27424 0		OCT	27021	MM 17	EBANK 4 PRIO 13
0972	04,2472	27021 1		OCT			



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0973 04,2473 27008 1 OCT 27008 MM 06 EBANK 4 PRIO 13  
 0974 04,2474 41201 1 OCT 41201 MM 01 EBANK 5 PRIO 20  
 R0975  
 R0976

THE FOLLOWING LIST IS FOR THE PURPOSE OF VERIFYING THAT THE EBA

0977	REF	6	LAST	171	E7,1412	EBANK= TIG	EBANK SETTING REQUIRED BY MM 76
0978	REF	4	LAST	90	E4,1763	EBANK= KT	EBANK SETTING REQUIRED BY MM 75
0979	REF	2	LAST	90	E4,1770	EBANK= SUBEXIT	EBANK SETTING REQUIRED BY MM 74
0980	REF	2	LAST	109	E6,1661	EBANK= ACG	EBANK SETTING REQUIRED BY MM 62
0981	REF	3	LAST	202	E6,1661	EBANK= ACG	EBANK SETTING REQUIRED BY MM 61
0982	REF	3	LAST	169	0302	EBANK= BESTI	EBANK SETTING REQUIRED BY MM 54
0983	REF	1			0304	EBANK= STARIND	EBANK SETTING REQUIRED BY MM 53
0984	REF	4	LAST	202	0302	EBANK= BESTI	EBANK SETTING REQUIRED BY MM 52
0985	REF	2	LAST	202	0304	EBANK= STARIND	EBANK SETTING REQUIRED BY MM 51
0986	REF	4	LAST	122	E7,1672	EBANK= P40TMP	EBANK SETTING REQUIRED BY MM 47
0987	REF	2	LAST	121	E7,1477	EBANK= AXISCODE	EBANK SETTING REQUIRED BY MM 41
0988	REF	2	LAST	106	E6,1510	EBANK= KMPAC	EBANK SETTING REQUIRED BY MM 40
0989	REF	5	LAST	202	E4,1763	EBANK= KT	EBANK SETTING REQUIRED BY MM 35
0990	REF	3	LAST	202	E4,1770	EBANK= SUBEXIT	EBANK SETTING REQUIRED BY MM 34
0991	REF	2	LAST	120	E7,1625	EBANK= +MGA	EBANK SETTING REQUIRED BY MM 30
0992	REF	3	LAST	175	E5,1751	EBANK= LANDMARK	EBANK SETTING REQUIRED BY MM 23
0993	REF	2	LAST	70	0301	EBANK= MARKINDX	EBANK SETTING REQUIRED BY MM 22
0994	REF	2	LAST	126	E7,1777	EBANK= WHOCARES	EBANK SETTING REQUIRED BY MM 21
0995	REF	1			E6,1412	EBANK= ESTROKER	EBANK SETTING REQUIRED BY MM 20
0996	REF	2	LAST	77	1150	EBANK= TIME2SAV	EBANK SETTING REQUIRED BY MM 08
0997	REF	1			E5,1425	EBANK= OPLACE	EBANK SETTING REQUIRED BY MM 01

R0998 NOTE, THE FOLLOWING CONSTANT IS THE NUMBER OF ENTRIES IN EACH OF  
 R0999 ---- THE ABOVE LISTS-1 (IE, THE NUMBER OF MAJOR MODES(EXCEPT P00)  
 R1000 THAT CAN BE CALLED FROM THE KEYBOARD MINUS ONE)

1001					04,2475	EPREMM1	EQUALS
1002	REF	3	LAST	198	04,2440	SETLOC	PREMM1
1003	REF	1			0035	NO.MMS	=MINUS EPREMM1
1004	REF	3	LAST	193	04,2000		SETLOC VERB37
1005					04,2475		BANK
1006	REF	1			04,2475	00034 0	NOV37MM ADRES NO.MMS -1
1007					04,2476		DNLADM1 EQUALS
1008	REF	1			04,2476	00002 0	ADRES RENDEZVU
1009	REF	2	LAST	202	04,2477	00002 0	ADRES RENDEZVU
1010	REF	3	LAST	202	04,2500	00002 0	ADRES RENDEZVU
10105	REF	4	LAST	202	04,2501	00002 0	ADRES RENDEZVU
1011	REF	5	LAST	202	04,2502	00002 0	ADRES RENDEZVU
1012	REF	6	LAST	202	04,2503	00002 0	ADRES RENDEZVU

END OF PREMM1 TABLE  
 THIS CODING WILL AUTOMATICALLY CHANGE  
 THE «NOV37MM» CONSTANT AS ENTRIES ARE  
 INSERTED(IN) OR DELETED(FROM) THE  
 «PREMM1» TABLE.  
 ITEMS IN «PREMM1»TABLE - 1. \*DON'T MOVE\*  
 P79  
 P78  
 P77  
 P76  
 P75  
 P74

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1013	REP	1		04,2504	00001 0	ADRES	ENTRYUPD	P62
1014	REP	1		04,2505	00003 1	ADRES	POWERED	P61
1015	REP	1		04,2506	00000 1	ADRES	COSTALIN	
1016	REP	2	LAST	203	04,2507	00000 1	ADRES	COSTALIN
1017	REP	3	LAST	203	04,2510	00000 1	ADRES	COSTALIN
1018	REP	4	LAST	203	04,2511	00000 1	ADRES	COSTALIN
1019	REP	2	LAST	203	04,2512	00003 1	ADRES	POWERED
1020	REP	3	LAST	203	04,2513	00003 1	ADRES	POWERED
1021	REP	4	LAST	203	04,2514	00003 1	ADRES	POWERED
1022	REP	7	LAST	202	04,2515	00002 0	ADRES	RENDEZVU
1023	REP	8	LAST	203	04,2516	00002 0	ADRES	RENDEZVU
1024	REP	9	LAST	203	04,2517	00002 0	ADRES	RENDEZVU
1025	REP	10	LAST	203	04,2520	00002 0	ADRES	RENDEZVU
1026	REP	11	LAST	203	04,2521	00002 0	ADRES	RENDEZVU
1027	REP	12	LAST	203	04,2522	00002 0	ADRES	RENDEZVU
1028	REP	13	LAST	203	04,2523	00002 0	ADRES	RENDEZVU
1029	REP	14	LAST	203	04,2524	00002 0	ADRES	RENDEZVU
1030	REP	1		04,2525	00004 0	ADRES	P22DNLST	P22
1031	REP	15	LAST	203	04,2526	00002 0	ADRES	RENDEZVU
1032	REP	16	LAST	203	04,2527	00002 0	ADRES	RENDEZVU
1033	REP	17	LAST	203	04,2530	00002 0	ADRES	RENDEZVU
1034	REP	5	LAST	203	04,2531	00000 1	ADRES	COSTALIN
1035	REP	6	LAST	203	04,2532	00000 1	ADRES	COSTALIN
1036	REP	17	LAST	194	4714	DNLADP00 =	ZERO	
1037				0000		COSTALIN =	0	
1038				0001		ENTRYUPD =	1	
1039				0002		RENDEZVU =	2	
1040				0003		POWERED =	3	

1041 0004 P22DNLST = 4  
R1042 ORBITAL INTEGRATION CONSTANTS

R1043 THESE CONSTANTS ARE USED IN COMPUTING THE SETTING OF MIDFLAG.

1044				04,2533	00465 0	R/M	2DEC	2538.09 E3 B-27	800 KM ABOVE LUNAR SURFACE
1044				04,2534	32324 0				
1045				04,2535	00333 1	R/M	2DEC	7178165 B-29	800 KM ABOVE EQ. RADIUS
1045				04,2536	01733 1				
1046				13,2000			BANK	13	
1047	REP	1		13,2000			SETLOC	INTINIT	
1048				13,2000			BANK		
1049	REP	1					COUNT*	SS/INTIN	
1050	REP	2	LAST	84	E3,1554		EBANK=	RRECTCSM	
1051				13,2000	43014 0	STATEUP	SET	BOF	EXTRAPOLATE CM STATE VECTOR
1052	REP	1		13,2001	01474 1			VINTFLAG	
1053	REP	1		13,2002	01751 0			ORPWFLAG	ALSO 6X6 W-MATRIX IF VALID
1054				13,2003	26006 0			+3	FOR ORBITAL NAVIGATION
1055				13,2004	77614 1		SET		



L FRESH START AND RESTART

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1056	REF	1		13,2005	01476	0				
1057				13,2006	45014	0				
1058	REF	1		13,2007	01667	1	CLEAR	CALL	DIM0FLAG	
1059	REF	1		13,2010	27113	1			PRECIFLG	
1060				13,2011	71214	0			INTEGRV	
1061	REF	1		13,2012	04307	1	BOF	DLOAD		
1062	REF	1		13,2013	26031	1			SURPFLAG	
1063	REF	2	LAST	13,2014	01571	0			STATEND	
1064	REF	1		13,2015	34041	0			TETCSM	
1065	REF	2	LAST	13,2016	27371	1	STCALL	TDEC1		
1066				13,2017	45014	0			INTSTALL	
1067	REF	2	LAST	13,2020	01674	0	CLEAR	CALL		
1068	REF	1		13,2021	26621	0			VINTFLAG	
1069				13,2022	43014	0			SETIFLGS	
1070	REF	1		13,2023	02756	1	BOF	SET		
1071				13,2024	26026	1			RENDWFLG	
1072	REF	2	LAST	13,2025	01476	0			+2	
1073				13,2026	45014	0			DIM0FLAG	
1074	REF	2	LAST	13,2027	01467	0	SET	CALL		
1075	REF	2	LAST	13,2030	27113	1			PRECIFLG	
1076				13,2031	77614	1			INTEGRV	
1077	REF	1		13,2032	01236	1	STATEND	CLRGO		
1078	REF	1		13,2033	26607	1			NODOFLAG	
R1079	THISVINT IS CALLED BY MIDTOAV1 AND2									
1080				13,2034	43414	1			ENDINT	
1081	REF	3	LAST	13,2035	01474	1				

EXTRAPOLATE LM STATE VECTOR  
AND 6X6 W-MATRIX IF VALID  
FOR RENDEZVOUS NAVIGATION

L RESTART TABLES

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P0001 RESTART TABLES

R0002 -----

R0003 THERE ARE TWO FORMS OF RESTART TABLES FOR EACH GROUP. THEY ARE KNOWN AS THE EVEN RESTART TABLES AND THE ODD  
R0005 RESTART TABLES. THE ODD TABLES HAVE ONLY ONE ENTRY OF THREE LOCATIONS WHILE THE EVEN TABLES HAVE TWO ENTRIES  
R0007 EACH USING THREE LOCATIONS. THE INFORMATION AS TO WHETHER IT IS A JOB, WAITLIST, OR A LONGCALL IS GIVEN BY THE  
R0009 WAY THINGS ARE PUT INTO THE TABLES.

R0010 A JOB HAS ITS PRIORITY STORED IN PRDTTAB OF THE CORRECT PHASE SPOT - A POSITIVE PRIORITY INDICATES A  
R0012 FINDVAC JOB, A NEGATIVE PRIORITY A NOVAC. THE 2CADR OF THE JOB IS STORED IN THE CADRTAB.  
R0014 FOR EXAMPLE,

A0015 5.7SPOT OCT 23000  
A0016 2CADR SOMEJOB

R0017 A RESTART OF GROUP 5 WITH PHASE SEVEN WOULD THEN CAUSE SOMEJOB TO BE RESTARTED AS A FINDVAC WITH PRIORITY 23.

R0019 5.5SPOT OCT -23000  
A0020 2CADR ANYJOB

R0021 HERE A RESTART OF GROUP 5 WITH PHASE 7 WOULD CAUSE ANYJOB TO BE RESTARTED AS A NOVAC WITH PRIORITY 23.  
R0023 A LONGCALL HAS ITS GENADR OF ITS 2CADR STORED NEGATIVELY AND ITS BBCN STORED POSITIVELY. IN ITS PRDTTAB IS  
R0025 PLACED THE LOCATION OF A DP REGISTER THAT CONTAINS THE DELTA TIME THAT LONGCALL HAD BEEN ORIGINALLY STARTED  
R0027 WITH. EXAMPLE,

A0028 3.6SPOT GENADR DELTAT  
A0029 -GENADR LONGTASK  
A0030 BBCN LONGTASK

A0031 OCT 31000  
A0032 2CADR JOBAGAIN

R0033 THIS WOULD START UP LONGTASK AT THE APPROPRIATE TIME, OR IMMEDIATELY IF THE TIME HAD ALREADY PASSED. IT SHOULD  
R0035 BE NOTED THAT IF DELTAT IS IN A SWITCHED E BANK, THIS INFORMATION SHOULD BE IN THE BBCN OF THE 2CADR OF THE  
R0037 TASK. FROM ABOVE, WE SEE THAT THE SECOND PART OF THIS PHASE WOULD BE STARTED AS A JOB WITH A PRIORITY OF 31.

R0039 WAITLIST CALLS ARE IDENTIFIED BY THE FACT THAT THEIR 2CADR IS STORED NEGATIVELY. IF PRDTTAB OF THE PHASE SPOT  
R0041 IS POSITIVE, THEN IT CONTAINS THE DELTA TIME, IF PRDTTAB IS NEGATIVE THEN IT IS THE -GENADR OF AN ERASABLE  
R0043 LOCATION CONTAINING THE DELTA TIME, THAT IS, THE TIME IS STORED INDIRECTLY. IT SHOULD BE NOTED AS ABOVE, THAT  
R0045 IF THE TIME IS STORED INDIRECTLY, THE BBCN MUST CONTAIN THE NECESSARY E BANK INFORMATION IF APPLICABLE. WITH  
R0047 WAITLIST WE HAVE ONE FURTHER OPTION, IF -0 IS STORED IN PRDTTAB, IT WILL CAUSE AN IMMEDIATE RESTART OF THE  
R0049 TASK. EXAMPLES,

A0050 OCT 77777 THIS WILL CAUSE AN IMMEDIATE RESTART  
A0051 -2CADR ATASK OF THE TASK 'ATASK'

A0052 DEC 200 IF THE TIME OF THE 2 SECONDS SINCE DUMMY  
A0053 -2CADR DUMMY WAS PUT ON WAITLIST IS UP, IT WILL BEGIN  
A0054 IN 10 MS, OTHERWISE IT WILL BEGIN WHEN  
A0055 IT NORMALLY WOULD HAVE BEGUN.



L RESTART TABLES

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A0056 -GENADR DTIME  
A0057 -ZCADR TASKTASK

WHERE DTIME CONTAINS THE DELTA TIME  
OTHERWISE THIS IS AS ABOVE

R0058 \*\*\*\*\* NOW THE TABLES THEMSELVES \*\*\*\*\*

0059 01,2000 BANK 01  
0060 REF 1 01,2000 SETLOC RESTART  
0061 01,2000 BANK  
0062 REF 1 COUNT 01/RSTAB

0063 01,2000 PROTAB EQUALS 12000  
0064 01,2001 CADRTAB EQUALS 12001  
A0065

USED TO FIND THE PRIORITY OR DELTATIME  
THIS AND THE NEXT RELATIVE LOC CONTAIN  
RESTART ZCADR

0066 REF 1 01,2000 0 0063 1 SIZETAB TC 1.2SPOT -12006  
0067 REF 1 01,2001 0 0010 0 TC 1.3SPOT -12004  
0068 REF 1 01,2002 0 0063 1 TC 2.2SPOT -12008  
0069 REF 1 01,2003 0 0024 1 TC 2.3SPOT -12004  
0070 REF 1 01,2004 0 0063 1 TC 3.2SPOT -12006  
0071 REF 1 01,2005 0 0043 0 TC 3.3SPOT -12004  
0072 REF 1 01,2006 0 0063 1 TC 4.2SPOT -12008  
0073 REF 1 01,2007 0 0107 1 TC 4.3SPOT -12004  
0074 REF 1 01,2010 0 0242 0 TC 5.2SPOT -12006  
0075 REF 1 01,2011 0 0260 0 TC 5.3SPOT -12004  
0076 REF 1 01,2012 0 0336 1 TC 6.2SPOT -12006  
0077 REF 1 01,2013 0 0346 0 TC 6.3SPOT -12004  
0078 REF 2 LAST 206 01,2071 1.2SPOT EQUALS 3.2SPOT

R0079 ANY MORE GROUP 1.EVEN RESTART VALUES SHOULD GO HERE

0080 01,2014 00170 1 1.3SPOT DEC 120  
0081 REF 4 LAST 202 E6,1661 EBANK= AGC  
0082 REF 1 01,2015 74550 1 -ZCADR SETJTAG  
0083 REF 1 01,2016 45711 1  
0084 REF 5 LAST 200 01,2017 10000 0 1.5SPOT OCT 10000  
0085 REF 1 E6,1466 EBANK= DAPDATR1  
0085 REF 1 01,2020 02362 1 ZCADR REDO40.9  
0085 REF 1 01,2021 34066 0  
0086 01,2022 10000 0 1.7SPOT OCT 10000  
0087 REF 2 LAST 202 E6,1412 EBANK= ESTROKER  
0088 REF 1 01,2023 02074 0 ZCADR RELINUS  
0088 REF 1 01,2024 56066 1  
0089 01,2025 10000 0 1.11SPOT OCT 10000  
0090 REF 3 LAST 206 E6,1412 EBANK= ESTROKER  
0091 REF 1 01,2026 02273 0 ZCADR PIKUP20  
0091 REF 1 01,2027 76066 0

THIS NUMBER MUST EQUAL C(JTAGTIME)

R0092 ANY MORE GROUP 1.ODD RESTART VALUES SHOULD GO HERE

0093 REF 2 LAST 206 01,2071 2.2SPOT EQUALS 1.2SPOT  
R0094 ANY MORE GROUP 2.EVEN RESTART VALUES SHOULD GO HERE



L RESTART TABLES

0095	REP	1		01,2030	02805 0	2.3SPOT	GENADR 600SECS
0096	REP	1		01,2031	75216 0		-GENADR STATEINT
0097	REP	3	LAST 203	E3,1554			EBANK= RRCTCSM
0098	REP	2	LAST 207	01,2032	28063 0		BBCON STATEINT
0099				01,2033	05000 1	2.5SPOT	OCT 05000
0100	REP	4	LAST 207	E3,1554			EBANK= RRCTCSM
0101	REP	1		01,2034	02570 1		2CADR STATINT1
0101	REP	1		01,2035	28063 0		
0102				01,2036	10000 0	2.7SPOT	OCT 10000
0103	REP	3	LAST 124	E7,1734			EBANK= MRKBUP2
0104	REP	1		01,2037	02512 0		2CADR R22
0104	REP	1		01,2040	70067 1		
0105				01,2041	14000 1	2.11SPOT	OCT 14000
0106	REP	4	LAST 202	E5,1751			EBANK= LANDMARK
0107	REP	1		01,2042	02173 0		2CADR V94ENTER
0107	REP	1		01,2043	62085 0		
0108				01,2044	10000 0	2.13SPOT	OCT 10000
0109	REP	4	LAST 207	E7,1734			EBANK= MRKBUP2
0110	REP	1		01,2045	02377 0		2CADR REDOR22
0110	REP	1		01,2046	58067 0		
0111	ANY MORE GROUP 2. ODD RESTART VALUES SHOULD GO HERE						
0112	REP	2	LAST 208	01,2071		3.2SPOT	EQUALS 4.2SPOT
0113	ANY MORE GROUP 3. EVEN RESTART VALUES SHOULD GO HERE						
0114				01,2047	20000 0	3.3SPOT	OCT 20000
0115	REP	3	LAST 167	E7,1427			EBANK= TGO
0116	REP	1		01,2050	02404 0		2CADR S40.13
0116	REP	1		01,2051	34067 1		
0117				01,2052	00000 1	3.5SPOT	DEC 0
0118				01,2053	00000 1		DEC 0
0119				01,2054	00000 1		DEC 0
0120				01,2055	22000 1	3.7SPOT	OCT 22000
0121	REP	2	LAST 85	E3,1706			EBANK= TEPHEM
0122	REP	1		01,2056	02127 1		2CADR MATRXJOB
0122	REP	1		01,2057	70063 0		
0123				01,2060	22000 1	3.11SPOT	OCT 22000
0124	REP	3	LAST 207	E3,1706			EBANK= TEPHEM
0125	REP	1		01,2061	02247 1		2CADR REP11
0125	REP	1		01,2062	70063 0		
0126				01,2063	22000 1	3.13SPOT	OCT 22000
0127	REP	4	LAST 207	E3,1706			EBANK= TEPHEM
0128	REP	1		01,2064	02026 1		2CADR REP11A
0128	REP	1		01,2065	70063 0		
0129	REP	4	LAST 207	01,2066	76347 0	3.15SPOT	-GENADR TGO +1
0130	REP	5	LAST 207	E7,1427			EBANK= TGO
0131	REP	1		01,2067	75071 0		-2CADR ENGINOFF
0131	REP	1		01,2070	27710 1		

L RESTART TABLES

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R0132 ANY MORE GROUP 3.ODD RESTART VALUES SHOULD GO HERE

0133				01,2071	77777 0	4.2SPOT	OCT	77777
0134	REP	7	LAST	202	E7,1412			EBANK= TIG
0135	REP	1			01,2072	75282 0		-2CADR PRECHECK
0135	REP	1			01,2073	27710 1		
0136					01,2074	30000 1		OCT 30000
0137	REP	2	LAST	122	E7,1874			EBANK= DELVIMU
0138	REP	1			01,2075	02461 0		2CADR P47BODY
0138	REP	1			01,2076	50087 0		
0139					01,2077	77777 0	4.4SPOT	OCT 77777
0140	REP	8	LAST	208	E7,1412			EBANK= TIG
0141	REP	2	LAST	208	01,2100	75282 0		-2CADR PRECHECK
0141					01,2101	27710 1		
0142					01,2102	05864 0		DEC 2998
0143	REP	6	LAST	206	E8,1486			EBANK= DAPDATR1
0144	REP	1			01,2103	75517 0		-2CADR TIG/0
0144	REP	1			01,2104	27711 0		
0145					01,2105	77777 0	4.6SPOT	OCT 77777
0146	REP	9	LAST	208	E7,1412			EBANK= TIG
0147	REP	3	LAST	208	01,2108	75282 0		-2CADR PRECHECK
0147					01,2107	27710 1		
0148					01,2110	04700 1		DEC 2496
0149	REP	10	LAST	208	E7,1412			EBANK= TIG
0150	REP	1			01,2111	75256 1		-2CADR TIG-5
0150	REP	1			01,2112	27710 1		

R0163 ANY MORE GROUP 4.EVEN RESTART VALUES SHOULD GO HERE

0164					01,2113	00050 1	4.3SPOT	DEC 40
0165	REP	3	LAST	199	E8,1425			EBANK= PACTOFF
0166	REP	1			01,2114	75170 0		-2CADR DOTVCON
0166	REP	1			01,2115	27711 0		
0167					01,2116	00240 1	4.5SPOT	DEC 160
0168	REP	4	LAST	208	E8,1425			EBANK= PACTOFF
0169	REP	1			01,2117	75142 1		-2CADR DOSTRULL
0169	REP	1			01,2120	27711 0		
0170					01,2121	00784 1	4.7SPOT	DEC 500
0171	REP	5	LAST	208	E8,1425			EBANK= PACTOFF
0172	REP	1			01,2122	75240 0		-2CADR TIG-0
0172	REP	1			01,2123	27711 0		
0173					01,2124	00372 1	4.11SPOT	DEC 250
0174	REP	7	LAST	208	E8,1486			EBANK= DAPDATR1
0175	REP	1			01,2125	74317 1		-2CADR V97E40.6
0175	REP	1			01,2126	27711 0		
0176					01,2127	00310 0	4.13SPOT	DEC 200
0177	REP	3	LAST	202	E7,1777			EBANK= WHOCARES
0178	REP	1			01,2130	74352 0		-2CADR R40ENABL
0178	REP	1			01,2131	27710 1		
0179					01,2132	18000 0	4.15SPOT	OCT 18000
0180	REP	3	LAST	169	E5,1757			EBANK= OGC

PRELAUNCH OPTICAL VERIFICATION





L RESTART TABLES

0181	REP	1		01,2133	02000 0	2CADR	CONPVER
0181	REP	1		01,2134	66065 1		
0182				01,2135	16000 0	4.17SPOT	OCT 16000
0183	REP	3	LAST	93	E5,1671		EBANK= XSM
0184	REP	1		01,2136	03736 0	2CADR	AZMTRCG1
0184	REP	1		01,2137	66065 1		
0185	REP	5	LAST	202	01,2140	4.21SPOT	GENADR P40TMP
0186	REP	1		01,2141	75413 0		-GENADR TIGBLNK
0187	REP	8	LAST	209	E7,1672		EBANK= P40TMP
0188	REP	2	LAST	209	01,2142		BBCON TIGBLNK
0189				01,2143	12000 1	4.23SPOT	OCT 12000
0190	REP	11	LAST	208	E7,1412		EBANK= TIG
0191	REP	1		01,2144	02113 0	2CADR	P40S/SV
0191	REP	1		01,2145	50067 0		
0192				01,2146	24000 1	4.25SPOT	OCT 24000
0193	REP	5	LAST	202	0302		EBANK= BESTI
0194	REP	2	LAST	200	01,2147	02000 0	2CADR
0194				01,2150	32060 0		PROGS2
0195				01,2151	00372 1	4.27SPOT	DEC 250
0196	REP	6	LAST	208	E6,1425		EBANK= PACTOFF
0197	REP	1		01,2152	75055 0		-2CADR DOTVCRCS
0197	REP	1		01,2153	27711 0		
0198				01,2154	13000 0	4.31SPOT	OCT 13000
0199	REP	2	LAST	93	E5,1765		EBANK= STAR
0200	REP	1		01,2155	02524 0		2CADR
0200	REP	1		01,2156	30065 1		RS1 +1
0201				01,2157	04064 1	4.33SPOT	DEC 2100
0202	REP	5	LAST	206	E6,1661		EBANK= AOG
0203	REP	1		01,2160	75403 1		-2CADR WAKEP62
0203	REP	1		01,2161	23711 1		
0204				01,2162	12000 1	4.35SPOT	OCT 12000
0205	REP	8	LAST	208	E6,1466		EBANK= DAPDATR1
0206	REP	1		01,2163	02155 1		2CADR
0206	REP	1		01,2164	50066 1		POSTBURN
0207				01,2165	00764 1	4.37SPOT	DEC 500
0208	REP	12	LAST	209	E7,1412		EBANK= TIG
0209	REP	1		01,2166	75275 0		-2CADR TIGAVEG
0209	REP	1		01,2167	27710 1		
0210				01,2170	17000 1	4.41SPOT	OCT 17000
0211	REP	6	LAST	209	E6,1661		EBANK= AOG
0212	REP	1		01,2171	02511 0		2CADR
0212	REP	1		01,2172	54066 0		P67.1
0213	REP	1		01,2173	76003 0	4.43SPOT	-GENADR S61DT
0214	REP	2	LAST	209	E6,1774		EBANK= S61DT
0215	REP	1		01,2174	75213 0		-2CADR
0215	REP	1		01,2175	23711 1		S61.1C
0216				01,2176	13000 0	4.45SPOT	OCT 13000
0217	REP	7	LAST	209	E6,1661		EBANK= AOG

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CALLS FOR OPTICS DATA AGAIN (STD LEADIN)

PRELAUNCH AZIMUTH CHANGE

DELTA TIME USED IN SETTING UP  
LONG CALL OF TIGBLNK BY P40,P41

PROTECT P40S/SV BY P40 P41

PROTECT CONTINUING JOB TO START P63

PROTECT DISPLAY JOB IN P67

PROTECT TASK TO START PREREAD, ENTRY  
S61.1C WILL CHANGE EBANK=RB7 FOR PREREAD

PROTECT CONTINUING JOB S61.1  
(ENTRY IMJ ALIGNMENT)



L RESTART TABLES

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0218	REF	1		01,2177	02802	1			2CADR	S61.1A	-1
0218	REF	1		01,2200	54066	0					
0219				01,2201	17000	1		4.47SPOT	OCT	17000	
0220	REF	8	LAST	209	E6,1661						
0221	REF	1		01,2202	03006	1				EBANK=	ACG
0221	REF	1		01,2203	52068	0				2CADR	PRE-HUNT
0222				01,2204	77777	0		4.51SPOT	OCT	77777	
0223	REF	2	LAST	113	E6,1704					EBANK=	BODY3
0224	REF	1		01,2205	75463	1				-2CADR	ATERTASK
0224	REF	1		01,2206	07711	1					
0225				01,2207	77777	0		4.53SPOT	DEC	-0	
0226	REF	1		E7,1777						EBANK=	END-E7
0227	REF	1		01,2210	74336	1				-2CADR	V97BTASK
0227	REF	1		01,2211	27710	1					
0228				01,2212	13000	0		4.55SPOT	OCT	13000	
0229	REF	2	LAST	118	E7,1451					EBANK=	RTINIT
0230	REF	1		01,2213	02456	1				2CADR	P65.1
0230	REF	1		01,2214	54067	1					
0231	REF	7	LAST	209	01,2215			4.57SPOT	GENADR	P40IMP	
0232	REF	8	LAST	210	E7,1672					EBANK=	P40IMP
0233	REF	1		01,2216	75352	1				-2CADR	TIGON
0233	REF	1		01,2217	27710	1					
0234				01,2220	77777	0		4.61SPOT	OCT	77777	
0235	REF	7	LAST	209	E6,1425					EBANK=	PACTOFF
0236	REF	1		01,2221	75225	0				-2CADR	IGNITION
0236	REF	1		01,2222	27711	0					
0237				01,2223	77777	0		4.63SPOT	OCT	77777	
0238	REF	8	LAST	210	E6,1425					EBANK=	PACTOFF
0239	REF	1		01,2224	75063	0				-2CADR	DOSPSOFF
0239	REF	1		01,2225	27711	0					
0240				01,2226	00012	1		4.65SPOT	DEC	10	
0241	REF	13	LAST	209	E7,1412					EBANK=	TIG
0242	REF	2	LAST	208	01,2227					-2CADR	TIG-5
0242				01,2230	27710	1					
02421				01,2231	77777	0		4.67SPOT	DEC	-0	
024211	REF	2	LAST	194	E6,1474					EBANK=	CSMASS
024212	REF	1		01,2232	74420	1				-2CADR	V97TTASK
024212	REF	1		01,2233	27711	0					
02422				01,2234	00372	1		4.71SPOT	DEC	250	
024221	REF	9	LAST	209	E6,1466					EBANK=	DAPDATR1
024222	REF	1		01,2235	74403	0				-2CADR	V97TRCS
024222	REF	1		01,2236	27711	0					
02423				01,2237	77777	0		4.73SPOT	DEC	-0	
024231	REF	1		E6,1444						EBANK=	V97VCNTR
024232	REF	1		01,2240	74366	1				-2CADR	V97PTASK
024232	REF	1		01,2241	27711	0					
024233				01,2242	77777	0		4.75SPOT	DEC	-0	
024234	REF	10	LAST	210	E6,1466					EBANK=	DAPDATR1
024235	REF	1		01,2243	74324	1				-2CADR	SPSOFF97
024235	REF	1		01,2244	27711	0					

PROTECT HUNTEST ITERATION.

PROTECT FDAI ATTITUDE  
ERROR DISPLAY IN P11

EBANK7 FOR TIG

PROTECT P65 RESPONSIVE DISPLAY.

(FOR RCDAPON)



L RESTART TABLES

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024236				01,2245	77777 0	4.77SPOT	DEC	-0
024237	REP	9	LAST	210	E8,1425			EBANK= PACTOFF
024238	REP	2	LAST	208	01,2246	75240 0		-2CADR TIG-0
024238					01,2247	27711 0		
R0243	ANY MORE GROUP 4. ODD RESTART VALUES SHOULD GO HERE							
0244					01,2250	32000 0	5.2SPOT	OCT 32000
0245	REP	6	LAST	115	E7,1431			EBANK= DVCNTR
0246	REP	1			01,2251	03141 0		2CADR NORMALIZE
0246	REP	1			01,2252	76087 1		
0247					01,2253	00310 0		DEC 200
0248	REP	9	LAST	210	E8,1661			EBANK= AOG
0249	REP	1			01,2254	74567 0		-2CADR REREADAC
0249	REP	1			01,2255	01711 1		
0250					01,2256	20000 0	5.4SPOT	OCT 20000
0251	REP	7	LAST	211	E7,1431			EBANK= DVCNTR
0252	REP	1			01,2257	03007 0		2CADR SERVICER
0252	REP	1			01,2260	76087 1		
0253					01,2261	00310 0		DEC 200
0254	REP	10	LAST	211	E8,1661			EBANK= AOG
0255	REP	2	LAST	211	01,2262	74567 0		-2CADR REREADAC
0255					01,2263	01711 1		
R0256	ANY MORE GROUP 5. EVEN RESTART VALUES SHOULD GO HERE							
0257					01,2264	00310 0	5.3SPOT	DEC 200
0258	REP	11	LAST	211	E8,1661			EBANK= AOG
0259	REP	3	LAST	211	01,2265	74567 0		-2CADR REREADAC
0259					01,2266	01711 1		
0260					01,2267	77777 0	5.5SPOT	OCT 77777
0261	REP	12	LAST	211	E8,1661			EBANK= AOG
0262	REP	1			01,2270	75123 0		-2CADR REDO5.5
0262	REP	1			01,2271	01711 1		
0263					01,2272	20000 0	5.7SPOT	OCT 20000
0264	REP	4	LAST	209	E5,1671			EBANK= XSM
0265	REP	1			01,2273	02456 1		2CADR RSTGTS1
0265	REP	1			01,2274	66085 1		
0266					01,2275	77777 0	5.11SPOT	OCT 77777
0267	REP	5	LAST	211	E5,1671			EBANK= XSM
0268	REP	1			01,2276	75174 1		-2CADR ALLOOP1
0268	REP	1			01,2277	11712 0		
0269					01,2300	20000 0	5.13SPOT	OCT 20000
0270	REP	6	LAST	211	E5,1671			EBANK= XSM
0271	REP	1			01,2301	02527 0		2CADR WTLISINT
0271	REP	1			01,2302	66085 1		
0272					01,2303	20000 0	5.15SPOT	OCT 20000
0273	REP	7	LAST	211	E5,1671			EBANK= XSM
0274	REP	1			01,2304	03317 1		2CADR RESIEST1
0274	REP	1			01,2305	66085 1		
0275					01,2306	20000 0	5.17SPOT	OCT 20000
0276	REP	8	LAST	211	E5,1671			EBANK= XSM

USED BY PRELAUNCH

L RESTART TABLES

0277	REF	1		01,2307	05112 0		2CADR	GEOSTR4	
0277	REF	1		01,2310	04085 0				
0278				01,2311	20000 0	5.21SPOT	OCT	20000	
0279	REF	9	LAST	211	E5,1671			EBANK= XSM	
0280	REF	1			01,2312	02637 1	2CADR	ALFLT1	
0280	REF	1			01,2313	66065 1			
0281					01,2314	77777 0	5.23SPOT	OCT 77777	
0282	REF	10	LAST	212	E5,1671			EBANK= XSM	
0283	REF	1			01,2315	75151 0	-2CADR	SPECSTS	
0283	REF	1			01,2316	11712 0			
0284					01,2317	20000 0	5.25SPOT	OCT 20000	
0285	REF	11	LAST	212	E5,1671			EBANK= XSM	
0286	REF	1			01,2320	03330 1	2CADR	RESSTEST3	
0286	REF	1			01,2321	66065 1			
0287					01,2322	20000 0	5.27SPOT	OCT 20000	
0288	REF	12	LAST	212	E5,1671			EBANK= XSM	
0289	REF	1			01,2323	03276 1	2CADR	RESTATER	
0289	REF	1			01,2324	66065 1			
0290					01,2325	77777 0	5.31SPOT	OCT 77777	
0291	REF	8	LAST	211	E7,1431			EBANK= DVCNTR	
0292	REF	1			01,2326	75167 0	-2CADR	REDO5.31	
0292	REF	1			01,2327	01710 0			
0293					01,2330	20000 0	5.33SPOT	OCT 20000	
0294	REF	13	LAST	212	E5,1671			EBANK= XSM	
0295	REF	1			01,2331	03353 1	2CADR	RESCHNG	
0295	REF	1			01,2332	66065 1			
0296					01,2333	00000 1	5.35SPOT	DEC 0	
0297					01,2334	00000 1	2DEC	0	
0297					01,2335	00000 1			
0298					01,2336	77777 0	5.37SPOT	OCT 77777	
0299	REF	13	LAST	211	E6,1661			EBANK= AOC	
0300	REF	1			01,2337	75041 0	-2CADR	CHEKAVEG	
0300	REF	1			01,2340	01711 1			
0301					01,2341	77777 0	5.41SPOT	OCT 77777	
0302	REF	9	LAST	212	E7,1431			EBANK= DVCNTR	
0303	REF	1			01,2342	75173 0	-2CADR	PREREAD	
0303	REF	1			01,2343	01710 0			
R0304	ANY MORE GROUP 5.ODD RESTART VALUES SHOULD GO HERE								
0305					01,2344	77777 0	6.2SPOT	OCT 77777	
0306	REF	4	LAST	173	E6,1476			EBANK= AK	
0307	REF	1			01,2345	75737 0	-2CADR	PRE40.6	
0307	REF	1			01,2346	37711 1			
0308					01,2347	00144 0	DEC	100	
0309	REF	2	LAST	121	E7,1660			EBANK= TIOGO	
0310	REF	1			01,2350	74605 1	-2CADR	CLQKTRK	
0310	REF	1			01,2351	27710 1			

TO PROTECT PREREAD AT TIG-30A  
TIG-15 T+60

USED BY P40 AFTER GIMB DR TST TO REPOS=N  
ENGINE UNTIL TVCDAPON

R0311 ANY MORE 6.ODD RESTART VALUES SHOULD GO HERE



L RESTART TABLES

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0312				01,2352	00144 0	6.3SPOT	DEC	100
0313	REP	14	LAST	210	E7,1412		EBANK=	TIG
0314	REP	2	LAST	212	01,2353	74605 1	-2CADR	CLOCKTASK
0314					01,2354	27710 1		
0315					01,2355	30000 1	6.5SPOT	OCT 30000
0316	REP	5	LAST	207	E3,1708		EBANK=	TEPHEN
0317	REP	1			01,2356	03564 0	2CADR	TIMEDIDR
0317	REP	1			01,2357	58083 1		
0318					01,2360	00000 1	6.7SPOT	OCT 0
0319					01,2361	00000 1		OCT 0
0320					01,2362	00000 1		OCT 0
0321	REP	2	LAST	110	01,2363	76052 1	6.11SPOT-GENADR	CM/GYMDT
0322	REP	3	LAST	213	E6,1725		EBANK=	CM/GYMDT
0323	REP	1			01,2364	75323 1	-2CADR	READGYMB
0323	REP	1			01,2365	45711 1		
0324					01,2366	00000 1	6.13SPOT	DEC 0
0325					01,2367	00000 1		DEC 0
0326					01,2370	00000 1		DEC 0

PROTECT INCREMENTING OF TIME2, TIME1 BY  
(P27UPDATE PROGRAM)

PROTECT TASK TO READ CDUS.  
FOR ENTRY DAP

L RESTART TABLES

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R0330 PROGRAM DESCRIPTION' NEWPHASE  
 R0332 MOD' 1  
 R0334 MOD BY' COPPS  
 R0336 FUNCTIONAL DESCRIPTION'  
 R0337 NEWPHASE IS THE QUICK WAY TO MAKE A NON VARIABLE PHASE CHANGE. IT INCLUDES THE OPTION OF SETTING  
 R0339 TRASE OF THE GROUP. IF TRASE IS TO BE SET, -C(TIME1) IS STORED IN THE TRASE TABLE AS FOLLOWS'

DATE' 11 NOV 1968  
 ASSEMBLY' SUNBURST REV  
 LOG SECTION' PHASE TABLE MAINTENANCE

R0341 (L-1) TRASE0  
 R0342 (L) TRASE1 (IF GROUP=1)  
 R0343 (L+1)  
 R0344 (L+2) TRASE2 (IF GROUP=2)  
 R0345 -----  
 R0346 (L+8) TRASE4 (IF GROUP=4)  
 R0347 (L+7)  
 R0348 (L+8) TRASE5 (IF GROUP=5)

R0349 IN ANY CASE, THE NEGATIVE OF THE PHASE, FOLLOWED (IN THE NEXT REGISTER) BY THE PHASE, IS STORED IN THE  
 R0351 PHASE TABLE AS FOLLOWS'

R0352 (L) -PHASE1 (IF GROUP=1)  
 R0353 (L+1) PHASE1  
 R0354 (L+2) -PHASE2 (IF GROUP=2)  
 R0355 (L+3) PHASE2  
 R0356 -----  
 R0357 (L+7) PHASE4  
 R0358 (L+8) -PHASE5 (IF GROUP=5)  
 R0359 (L+9) PHASE5

R0360 CALLING SEQUENCE'

R0361 EXAMPLE IS FOR PLACING A PHASE OF FIVE INTO GROUP THREE'

R0362 1) IF TRASE IS NOT TO BE SET'

A0363 L-1 CA FIVE  
 A0364 L TC NEWPHASE  
 A0365 L+1 OCT 00003

R0366 2) IF TRASE IS TO BE SET'

A0367 L-1 CS FIVE  
 A0368 L TC NEWPHASE  
 A0369 L+1 OCT 00003

R0370 SUBROUTINES CALLED' NONE

R0371 NORMAL EXIT MODE' AT L+2 OF CALLING SEQUENCE

R0372 ALARM OR ABORT EXITS' NONE

R0373 OUTPUT' PHASE TABLE AND TRASE TABLE UPDATED

R0374 ERASABLE INITIALIZATION RPO,D' NONE



L RESTART TABLES

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0375 DEBRIS' A,L,TEMPG

0376 \*\*\*WARNING\*\*\* THIS PROGRAM IS TO BE PLACED IN FIXED-FIXED AND UNSWITCHED ERASABLE.

0378				4114			BLOCK 02		
0379	REP	1		4000			SETLOC PPTAG1		
0380				4114			BANK		
0381	REP	1					COUNT* \$\$/PHASE		
0382				4114	0 0004 0		NEWPHASE INHINT		
0383	REP	14	LAST	198	4115	54 001 1	TS L		SAVE FOR FURTHER USE
0384	REP	19	LAST	188	4116	50 002 0	NDX O		OBTAIN THE GROUP NUMBER
0385					4117	3 0000 1	CA 0		
0386	REP	20	LAST	215	4120	24 002 0	INCR O		OBTAIN THE RETURN ADDRESS
0387					4121	6 0000 1	DOUBLE		SAVE THE GROUP IN A FORM USED FOR
0388	REP	1			4122	54 061 1	TS TEMPG		INDEXING
0389	REP	15	LAST	215	4123	10 001 1	CCS L		SEE IF WE ARE TO SET TRASE
0390					4124	1 4133 0	TCF +7		NO, THE DELTA T WAS POSITIVE
0391					4125	1 4133 0	TCF +6		
0392	REP	53	LAST	199	4126	24 000 1	NUFAZ+10 INCR A		SET TRASE AND STORE PHASE CORRECTLY
0393	REP	16	LAST	215	4127	54 001 1	TS L		
0394	REP	3	LAST	128	4130	4 0025 1	CS TIME1		SET TRASE
0395	REP	2	LAST	215	4131	50 061 0	NDX TEMPG		
0396	REP	1			4132	55*051 0	TS TRASE1 -2		
0397	REP	17	LAST	215	4133	4 0001 1	CS L		NOW PUT THE PHASE IN THE RIGHT TABLE LOC
0398	REP	3	LAST	215	4134	50 061 0	NDX TEMPG		
0399	REP	4	LAST	197	4135	52 751 0	DXCH -PHASE1 -2		
0400					4136	0 0003 1	RELINT		
0401	REP	21	LAST	215	4137	0 0002 0	TC O		NOW RETURN TO CALLER



L SXTMARK USERS PAGE NO. 1 E0 S3

R0001 PROGRAM NAME - SXTMARK DATE- 5 APRIL 1967  
 R0002 PROGRAM MODIFIED BY 258/278 PROGRAMMERS LOG SECTION SXTMARK  
 R0003 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 116

R0004 FUNCTIONAL DESCRIPTION-  
 R0005 SXTMARK IS CALLED FROM INTERNAL ROUTINES WHICH MAY REQUIRE STAR OR LANDMARK MARKINGS BY THE ASTRONAUT. IF  
 R0007 THE MARK SYSTEM IS NOT IN USE, SXTMARK RESERVES A VAC AREA FOR MARKING AND REQUESTS EXECUTION OF THE MKVB51  
 R0009 ROUTINE VIA THE EXECUTIVE JOB PRIORITY LIST. R21 USES THIS ROUTINE TO DETERMINE IF THE MARK SYSTEM CAN BE  
 R0011 USED. IF YES, SXTMARK RETURNS TO R21 TO PERFORM ITS OWN MARK REQUESTS VIA THE V51 FLASH.

R0013 CALLING SEQUENCE-  
 R0014  
 R0015 CAP (NO. MARK REQUESTS IN BITS 1-3 OF A)  
 R0016 TC BANKCALL  
 R0017 CADR SXTMARK

R0018 NORMAL EXIT MODE-  
 R0019 SWRETURN

R0020 ALARM OR ABORT EXIT MODE-  
 R0021 ABORT

R0022 OUTPUT-  
 R0023 1) MARKSTAT CONTAINS MARK VALUE (BITS 14-12) AND VAC AREA ADDRESS  
 R0024 2) QPRET = VAC AREA POINTER VALUE  
 R0025 3) 1ST WORD OF RESERVED VAC AREA SET TO +0  
 R0026 4) PRIO32 PLACED IN A REGISTER

R0027 ERASABLE INITIALIZATION-  
 R0028 1) BITS 1-3 OF A = NO. MARKS REQUESTED  
 R0029 2) BITS 2,3 OF EXTVBACT =0  
 R0030 3) A VAC AREA MUST BE AVAILABLE (WORD 1 = ADDRESS OF VAC AREA)

R0031 DEBRIS-  
 R0032 A,Q,L,RUPTREG1,MARKSTAT,QPRET,BIT2 OF EXTVBACT

0033				13,2038		BANK	13	
0034	REF	1		07,2000		SETLOC	SXTMARK	
0035				07,2002		BANK		
0036	REF	5	LAST	128	E7,1725	EBANK=	MRKBUF1	
0037	REF	1				COUNT	07/SXTMK	
0038				07,2002	0 0004 0	SXTMARK	INHINT	
0039	REF	15	LAST	156	07,2003 54 070 1	TS	RUPTREG1	NUMBER OF MARKS WANTED
0040	REF	6	LAST	183	07,2004 3 6211 0	CAP	SIX	
0041	REF	4	LAST	188	07,2005 7 1044 1	MASK	EXTVBACT	BIT2 = MARKING SYSTEM IN USE
0042	REF	54	LAST	215	07,2006 10 000 0	CCS	A	BIT3 = EXTENDED VERR IN PROGRESS
0043	REF	1			07,2007 0 2013 1	TC	MKABORT	SET THEREFORE ABORT





L SXTMARK

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0044 REP 18 LAST 185 07,2010 3 4711 1  
 0045 REP 5 LAST 216 07,2011 27=044 1  
 0046 REP 1 07,2012 0 2015 1

CAP BIT2  
 ADS EXTVBACT  
 TC MARKOK

NOT SET  
 SET IT, RESET IN ENDMARK  
 YES, FIND VAC AREA

0047 REP 1 07,2013 0 5604 0  
 0048 07,2014 01211 1  
 0049 REP 3 LAST 189 07,2015 10 400 1  
 0050 REP 1 07,2016 0 2031 1  
 0051 REP 2 LAST 187 07,2017 10 454 0  
 0052 REP 2 LAST 217 07,2020 0 2031 1  
 0053 REP 2 LAST 187 07,2021 10 530 0  
 0054 REP 3 LAST 217 07,2022 0 2031 1  
 0055 REP 2 LAST 187 07,2023 10 604 1  
 0056 REP 4 LAST 217 07,2024 0 2031 1  
 0057 REP 2 LAST 187 07,2025 10 660 0  
 0058 REP 5 LAST 217 07,2026 0 2031 1  
 0059 REP 2 LAST 217 07,2027 0 5604 0  
 0060 07,2030 01207 0

MKABORT TC  
 MARKOK CCS

BAILOUT  
 OCT 01211  
 VAC1USE  
 MKVACFND  
 VAC2USE  
 MKVACFND  
 VAC3USE  
 MKVACFND  
 VAC4USE  
 MKVACFND  
 VAC5USE  
 MKVACFND  
 BAILOUT  
 OCT 01207

FIND VAC AREA

0061 REP 1 07,2031 6 4711 1  
 0062 REP 2 LAST 188 07,2032 55=330 1  
 0063 REP 55 LAST 216 07,2033 50 000 1  
 0064 REP 1 07,2034 54 052 1

MKVACFND AD  
 TS  
 INDEX  
 TS

TWO  
 MARKSTAT  
 A  
 QPRET

ADDRESS OF VAC AREA  
 STORE NEXT AVAILABLE MARK SLOT

0065 REP 18 LAST 203 07,2035 3 4714 1  
 0066 REP 3 LAST 217 07,2036 51=330 0  
 0067 07,2037 53=777 0

CAP ZERO  
 INDEX MARKSTAT  
 TS 0 -1

SHOW VAC AREA OCCUPIED

0068 REP 1 07,2040 0 5253 0  
 0069 07,2041 00065 1  
 0070 07,2042 1 2044 1  
 0071 REP 1 07,2043 1 4570 0  
 0072 REP 2 LAST 217 07,2044 0 5253 0  
 0073 07,2045 00066 1  
 0074 07,2046 1 2050 1  
 0075 REP 2 LAST 217 07,2047 1 4570 0  
 0076 REP 11 LAST 198 07,2050 3 4877 0  
 0077 07,2051 0 0006 1  
 0078 REP 16 LAST 216 07,2052 7 0070 1  
 0079 REP 18 LAST 215 07,2053 56 001 0  
 0080 REP 4 LAST 217 07,2054 27=330 1

TC CHECKMM  
 MM 53  
 TCP +2  
 TCP SWRETURN  
 TC CHECKMM  
 MM 54  
 TCP +2  
 TCP SWRETURN  
 CAP BIT12  
 EXTEND  
 MP RUPTREG1  
 XCH L  
 ADS MARKSTAT

BACKUP MARK ROUTINE USES SXTMARK

DESIRED NUMBER OF MARKS IN 12-14

0081 REP 1 07,2055 3 7667 1  
 0082 REP 2 LAST 132 07,2056 0 5027 1  
 0083 REP 5 LAST 217 1330  
 0084 REP 1 07,2057 02346 1  
 0084 REP 1 07,2060 16062 1  
 0085 07,2061 0 0003 1  
 0086 REP 3 LAST 217 07,2062 1 4570 0

CAP PRIO32  
 TC NOVAC  
 EBANK= MARKSTAT  
 ZCADR MKVB51  
 RELINT  
 TCP SWRETURN

ENTER MARK JOB

SAME AS MODREXIT



L SXTMARK USER'S PAGE NO. 3 E7 53

R0087 PROGRAM NAME - MKRELEAS DATE- 5 APRIL 1967  
 R0088 PROGRAM MODIFIED BY 258/278 PROGRAMMERS LOG SECTION SXTMARK  
 R0089 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 116

R0090 FUNCTIONAL DESCRIPTION-  
 R0091 MKRELEAS IS EXECUTED BY INTERNAL ROUTINES TO RELEASE THE MARK SYSTEM TO MAKE IT AVAILABLE TO OTHER INTERNAL  
 R0093 SYSTEM ROUTINES. IT ALSO CLEARS THE COARSE OPTICS FLAG BIT AND DISABLES THE OPTICS ERROR COUNTER.

R0095 CALLING SEQUENCE-

R0096 TC BANKCALL  
 R0097 CADR MKRELEAS

R0098 NORMAL EXIT MODE-  
 R0099 SWRETURN

R0100 ALARM OR ABORT EXIT MODE- NONE

R0101 OUTPUT-

- R0102 1) BIT9 OPTMODES SET TO 0
- R0103 2) OPTIND SET TO -1
- R0104 3) 1ST WORD OF VAC AREA SET TO VAC ADDRESS TO SIGNIFY AVAILABILITY.
- R0105 4) MARKSTAT CLEARED
- R0106 5) BIT2 CHANNEL 12 SET TO 0

R0107 ERASABLE INITIALIZATION- NONE

R0108 DEBRIS-

R0109 A,MARKSTAT,BIT9 OPTMODES,OPTIND,BIT2 CHANNEL 12

0110	REF	19	LAST	217	07,2063	3 4714 1	MKRELEAS CAP	ZERO	SHOW MARK SYSTEM NOW AVAILABLE
0111	REF	6	LAST	217	07,2064	57*330 0	XCH	MARKSTAT	
0112	REF	56	LAST	217	07,2065	10 000 0	CCS	A	
0113	REF	57	LAST	218	07,2066	50 000 1	INDEX	A	
0114					07,2067	54 000 0	TS	0	
0115					07,2070	0 0004 0	MKRELEAS	INHINT	
0116	REF	16	LAST	159	07,2071	4 4702 1	CS	BIT9	COARSE OPTICS RETURN FLAG.
0117	REF	31	LAST	183	07,2072	7 1331 0	MASK	OPTMODES	
0118	REF	32	LAST	218	07,2073	55*331 0	TS	OPTMODES	
0119	REF	6	LAST	199	07,2074	3 7716 0	CA	NEGONE	
0120	REF	17	LAST	199	07,2075	55*303 1	TS	OPTIND	KILL COARS OPTICS
0121	REF	19	LAST	217	07,2076	4 4711 0	CS	BIT2	DISABLE OPTICS ERROR COUNTER
0122					07,2077	0 0006 1	EXTEND		
0123	REF	20	LAST	180	07,2100	03 012 1	WAND	CHAN12	
0124					07,2101	0 0003 1	RELINT		
0125	REF	4	LAST	217	07,2102	0 4570 1	TC	SWRETURN	



L SXTMARK

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R0126 PROGRAM NAME - MARKRUPT DATE- 5 APRIL 1967  
 R0127 PROGRAM MODIFIED BY 258/278 PROGRAMMERS LOG SECTION SXTMARK  
 R0128 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 118

R0129 FUNCTIONAL DESCRIPTION-  
 R0130 MARKRUPT STORES CDUS,OPTICS AND TIME AND TRANSFERS CONTROL TO THE MARKIT,MARK REJECT OR KEYCOM ROUTINES IF  
 R0132 BITS IN CHANNEL 18 ARE SET AS REQUIRED.

R0133 CALLING SEQUENCE-  
 R0134 ROUTINE ENTERED VIA KEYRUPT2 WHEN MARK,MARK REJECT OR DSKY KEYS DEPRESSED BY THE OPERATOR.

R0136 NORMAL EXIT MODE-  
 R0137 MARKIT, MKREJECT OR POSTJUMP ROUTINES (MARK,MARK REJECT OR DSKY CODE)

R0138 ALARM OR ABORT EXIT MODE-  
 R0139 ALARM AND RESUME

R0140 OUTPUT-  
 R0141 RUPTSTOR+5 = CDUT, RUPTSTOR+3 = CDUS, RUPTSTOR+2 = CDUY,  
 R0142 RUPTREG3 = CDUZ, RUPTSTOR+8 = CDUX, RUPTSTOR+1 AND SAMPTIME+1 =TIME1,  
 R0143 RUPTSTOR AND SAMPTIME = TIME2

R0144 ERASABLE INITIALIZATION-  
 R0145 CDUT,CDUS,CDUY,CDUZ,CDUX,TIME2,TIME1,CHANNEL 18 BITS 6,7 OR 1-5

R0146 DEBRIS-  
 R0147 A,ORUPT, RUPTREG3, SAMPTIME, SAMPTIME+1, RUPTSTOR TO RUPTSTOR+8 EXCEPT RUPTSTOR+4 (LOCATION 67)

0149	RESP	2	LAST	129	07,2103	54	016	1	MARKRUPT	TS	BANKRUPT	STORE	CDUS AND OPTICS NOW
0150	RESP	5	LAST	164	07,2104	3	0035	1	CA		CDUT		
0151	RESP	1			07,2105	54	382	1	TS		MKCDUT		
0152	RESP	6	LAST	168	07,2106	3	0036	1	CA		CDUS		
0153	RESP	1			07,2107	54	360	0	TS		MKCDUS		
0154	RESP	1			07,2110	3	0033	1	CA		CDUY		
0155	RESP	1			07,2111	54	357	1	TS		MKCDUY		
0156	RESP	3	LAST	168	07,2112	3	0034	0	CA		CDUZ		
0157	RESP	1			07,2113	54	361	1	TS		MKCDUZ		
0158	RESP	2	LAST	168	07,2114	3	0032	0	CA		CDUX		
0159	RESP	1			07,2115	54	363	0	TS		MKCDUX		
0160					07,2116	0	0006	1			EXTEND		
0161	RESP	6	LAST	175	07,2117	3	0025	0	DCA		TIME2	GET	TIME
0162	RESP	1			07,2120	52	356	0	DXCH		MKT2T1		
0163					07,2121	0	0006	1			EXTEND		
0164	RESP	2	LAST	219	07,2122	3	0356	1	DCA		MKT2T1		
0165	RESP	1			07,2123	52	014	0	DXCH		SAMPTIME	RUPT	TIME FOR NOUN 65.
0166	RESP	22	LAST	215	07,2124	56	002	0	XCH		0		
0167	RESP	2	LAST	129	07,2125	54	012	0	TS		ORUPT		
0168	RESP	23	LAST	195	07,2126	3	4705	1	CAP		BITS	SEE	IF MARK OR MKREJECT



L

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0169				07,2127	0 0008	1		EXTEND
0170	REF	3	LAST	185	07,2130	02 018	1	RAND NAVKEYIN
0171	REF	58	LAST	218	07,2131	10 000	0	CCS A
0172	REF	1			07,2132	0 2427	1	TC MARKIT
0173	REF	23	LAST	197	07,2133	3 4704	0	CAP BIT7
0174					07,2134	0 0008	1	EXTEND
0175	REF	4	LAST	220	07,2135	02 018	1	RAND NAVKEYIN
0176	REF	59	LAST	220	07,2138	10 000	0	CCS A
0177	REF	1			07,2137	0 2300	0	TC MKREJECT
0178	REF	2	LAST	185	07,2140	3 4382	1	KEYCALL CAP OCT37
0179					07,2141	0 0008	1	EXTEND
0180	REF	5	LAST	220	07,2142	02 018	1	RAND NAVKEYIN
0181					07,2143	0 0008	1	EXTEND
0182					07,2144	1 2147	0	BZF +3
0183	REF	6	LAST	196	07,2145	0 4574	0	TC POSTJUMP
0184	REF	1			07,2148	17822	1	CADR KEYCOM
0185	REF	12	LAST	194	07,2147	0 5537	0	+3 TC ALARM
0186					07,2150	00113	1	OCT 113
0187	REF	18	LAST	165	07,2151	0 5222	0	TC RESUME

ITS A MARK

NOT A MARK, SEE IF MKREJECT

ITS A MARK REJECT

NOT MARK OR MKREJECT, SEE IF KEYCODE

IF NO INBITS

IT,S A KEY CODE, NOT A MARK.

ALARM IF NO INBITS

L SXIMARK

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R0188 PROGRAM NAME - MARKCONT DATE- 19 SEPT 1967

R0189 PROGRAM MODIFIED BY 258/278 PROGRAMMERS LOG SECTION SXIMARK  
 R0190 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 116

R0191 FUNCTIONAL DESCRIPTION-  
 R0192 MARKCONT IS USED TO PERFORM A SPECIAL MARK FUNCTION FOR R21, TO EXECUTE A SPECIAL DISPLAY OF OPTICS AND TIME OR  
 R0194 TO PERFORM A MARK OF A STAR OR LAND SIGHTING BASED UPON FLASHING V-N.

R0195 CALLING SEQUENCE-  
 R0196 FROM MARKDIP

R0197 NORMAL EXIT MODE-  
 R0198 TASKOVER

R0199 ALARM OR ABORT EXIT MODE-  
 R0200 ALARM AND TASKOVER

R0201 OUTPUT-

- R0202 1) FOR R21-
- R0203 EBANK=EBANK7
- R0204 MRKBUF1 TO MRKBUF1+6 = TIME2, TIME1, CDUY, OPTICX, CDUZ, OPTICSY, CDUX OF CURRENT R21 MARK FUNCTION.
- R0206 MRKBUF2 TO MRKBUF2+6 CONTAINS PREVIOUS R21 MARK VALUES.
- R0207 2) FOR SPECIAL DISPLAY JOB-
- R0208 RUPTREG1 AND MRKBUF1 = CDUS, RUPTREG2 AND MRKBUF1 +1 = CDUT,
- R0209 RUPTREG3 AND MRKBUF1 +2 = TIME2, RUPTREG4 AND MRKBUF1 +3 = TIME1
- R0210 3) FOR NORMAL MARKING-
- R0211 DECREMENT BITS14-12 OF MARKSTAT BY 1,
- R0212 BIT10 MARKSTAT SET TO 1, INCREMENT OPRET BY 7,
- R0213 STORE TIME2, TIME1, CDUY, CDUS, CDUZ, CDUT AND CDUX IN VAC+1 TO VAC+7

R0214 ERASABLE INITIALIZATION-

- R0215 1) FOR R21-
- R0216 BIT14 OF STATE+2 =1, MRKBUF1 TO MRKBUF1+6, ITEMP1, RUPTREG3,
- R0217 RUPTSTOR TO RUPTSTOR+6 EXCEPT RUPTSTOR+4
- R0218 2) FOR SPECIAL DISPLAY JOB-
- R0219 BIT14 OF STATE+2 =0, MARKSTAT =+0, RUPTREG1, RUPTREG2, RUPTREG3
- R0220 RUPTREG4, RUPTSTOR, RUPTSTOR+1, RUPTSTOR+3, RUPTSTOR+5,
- R0221 BIT12 OF STATE+5 (V59 FLAG), MRKBUF1 THRU MRKBUF1+3
- R0222 3) FOR NORMAL MARKING-
- R0223 BIT14 OF STATE+2 =0, MARKSTAT =VAC ADDRESS, A REG, ITEMP1, RUPTREG3,
- R0224 RUPTSTOR TO RUPTSTOR+6 EXCEPT RUPTSTOR+4

R0225 DEBRIS-

- R0226 1) FOR R21-
- R0227 A, ITEMP1, MRKBUF1, MRKBUF2
- R0228 2) FOR SPECIAL DISPLAY JOB-
- R0229 A, RUPTREG1, RUPTREG2, RUPTREG3, RUPTREG4, MPAC TO MPAC+3
- R0230 3) FOR NORMAL MARKING-
- R0231 A, MARKSTAT, ITEMP1, OPRET, VAC+1 TO VAC+7 OF VAC AREA IN USE



L	SCIMARK									
0232	REF	23	LAST	188	07,2152	3 4875 1	MARKCONT	CAP	BIT14	
0233	REF	30	LAST	181	07,2153	7 0078 1		MASK	STATE +2	
0234					07,2154	0 0008 1		EXTEND		R21 MARK (SPECIAL MARKING FOR R21)
0235	REF	1			07,2155	1 2187 1		BZF	MARKET	NOT SET THEREFORE REGULAR MARKING
0236	REF	7	LAST	216	07,2156	3 6211 0	MARKIT1	CAP	SIX	SPECIAL FOR R21
0237	REF	1			07,2157	0 5475 1		TC	GENTRAN	TRANSFER MRKBUP1 TO MRKBUP2
0238	REF	6	LAST	218	07,2160	01725 0		ADRES	MRKBUP1	
0239	REF	5	LAST	207	07,2161	01734 0		ADRES	MRKBUP2	
0240	REF	8	LAST	222	07,2162	3 6211 0		CAP	SIX	
0241	REF	2	LAST	222	07,2163	0 5475 1		TC	GENTRAN	TRANSFER CURRENT MARK DATA TO MARKBUP1
0242	REF	3	LAST	219	07,2164	00355 1		ADRES	MKT2T1	
0243	REF	7	LAST	222	07,2165	01725 0		ADRES	MRKBUP1	
0244	REF	4	LAST	160	07,2166	1 5213 0		TCF	TASKOVER	
0245	REF	7	LAST	218	07,2167	11*330 1	MARKET	CCS	MARKSTAT	SEE IF MARKS CALLED FOR
0246	REF	1			07,2170	0 2224 1		TC	MARK2	COLLECT MARKS
0255	REF	2	LAST	217	07,2171	3 4711 1		CAP	TWO	IS MARKING SYSTEM IN USE (BIT2)
0256	REF	6	LAST	217	07,2172	7 1044 1		MASK	EXTVBACK	
0257					07,2173	0 0008 1		EXTEND		MARKING NOT CALLED FOR
0258	REF	1			07,2174	1 2216 1		BZF	MARKET3	
0259	REF	12	LAST	217	07,2175	3 4877 0		CAP	BIT12	
0260	REF	31	LAST	222	07,2176	7 0101 0		MASK	STATE +5	V59FLAG
0261					07,2177	0 0008 1		EXTEND		
0262	REF	2	LAST	222	07,2200	1 2216 1		BZF	MARKET3	IF V59FLAG NOT SET-MARK UNCALLED FOR
0263	REF	2	LAST	196	07,2201	3 4754 0		CAP	PRIO5	CALIBRATION MARK (SET) FOR P23
0264	REF	3	LAST	217	07,2202	0 5027 1		TC	NOVAC	SPECIAL DISPLAY JOB
0265	REF	8	LAST	222	07,1725			EBANK=	MRKBUP1	
0266	REF	1			07,2203	02405 1		2CADR	MARKDISP	
0266	REF	1			07,2204	76067 1				
02661	REF	9	LAST	222	07,2205	3 6211 0		CAP	SIX	
02662	REF	3	LAST	222	07,2206	0 5475 1		TC	GENTRAN	TRANSFER MARK DATA TO MARKDOWN
02663	REF	4	LAST	222	07,2207	00355 1		ADRES	MKT2T1	
02664	REF	6	LAST	171	07,2210	01674 0		ADRES	MARKDOWN	
02665	REF	10	LAST	222	07,2211	3 6211 0		CAP	SIX	
02666	REF	4	LAST	222	07,2212	0 5475 1		TC	GENTRAN	TRANSFER MARK DATA TO MRKBUP1 FOR
02667	REF	5	LAST	222	07,2213	00355 1		ADRES	MKT2T1	SPECIAL DISPLAY OF SHAFT AND TRUNNION
02668	REF	9	LAST	222	07,2214	01725 0		ADRES	MRKBUP1	IF V59 ACTING
0267	REF	5	LAST	222	07,2215	1 5213 0		TCF	TASKOVER	
0268	REF	13	LAST	220	07,2216	0 5537 0	MARKET3	TC	ALARM	
0269					07,2217	00122 0		OCT	122	MARKING NOT CALLED FOR
0270	REF	6	LAST	222	07,2220	1 5213 0		TCF	TASKOVER	
0271	REF	14	LAST	222	07,2221	0 5537 0	114ALM	TC	ALARM	MARK NOT WANTED
0272					07,2222	00114 0		OCT	114	
0273	REF	7	LAST	222	07,2223	1 5213 0		TCF	TASKOVER	



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P0274 STORE MARK DATA IN MKVAC AND INCREMENT POINTER

0275	REP	1		07,2224	6 7711 1	MARK2	AD	74K
0276				07,2225	0 0006 1		EXTEND	
0277	REP	1		07,2226	6 2221 1		BZMF	114ALM
0278	REP	8	LAST	222	07,2227	55=330 1	TS	MARKSTAT
0279				07,2230	4 0000 0		COM	
0280	REP	16	LAST	162	07,2231	7 4701 1	MASK	BIT10
0281	REP	9	LAST	223	07,2232	27=330 1	ADS	MARKSTAT
0282	REP	1		07,2233	7 4741 0		MASK	LOW9
0283	REP	7	LAST	164	07,2234	54 061 1	TS	ITEMP1
0284	REP	60	LAST	220	07,2235	50 000 1	INDEX	A
0285	REP	2	LAST	217	07,2236	56 052 0	XCH	QPRET
0286	REP	3	LAST	66	07,2237	54 062 1	TS	ITEMP2
0287	REP	3	LAST	159	07,2240	6 4716 0	AD	SEVEN
0288	REP	8	LAST	223	07,2241	50 061 0	INDEX	ITEMP1
0289	REP	3	LAST	223	07,2242	54 052 1	TS	QPRET
0290				07,2243	0 0006 1	VACSTOR	EXTEND	
0291	REP	6	LAST	222	07,2244	3 0356 1	DCA	MKT2T1
0292	REP	4	LAST	223	07,2245	50 062 0	INDEX	ITEMP2
0293				07,2246	52 001 1		DXCH	0
0294	REP	2	LAST	219	07,2247	3 0357 0	CA	MKCDUY
0295	REP	5	LAST	223	07,2250	50 062 0	INDEX	ITEMP2
0296				07,2251	54 002 1		TS	2
0297	REP	2	LAST	219	07,2252	3 0360 1	CA	MKCDUS
0298	REP	6	LAST	223	07,2253	50 062 0	INDEX	ITEMP2
0299				07,2254	54 003 0		TS	3
0300	REP	2	LAST	219	07,2255	3 0361 0	CA	MKCDUZ
0301	REP	7	LAST	223	07,2256	50 062 0	INDEX	ITEMP2
0302				07,2257	54 004 1		TS	4
0303	REP	2	LAST	219	07,2260	3 0362 0	CA	MKCDUT
0304	REP	8	LAST	223	07,2261	50 062 0	INDEX	ITEMP2
0305				07,2262	54 005 0		TS	5
0306	REP	2	LAST	219	07,2263	3 0363 1	CA	MKCDUX
0307	REP	9	LAST	223	07,2264	50 062 0	INDEX	ITEMP2
0308				07,2265	54 006 0		TS	6
0309	REP	1		07,2266	3 7671 0		CAF	PRI034
0310	REP	10	LAST	223	07,2267	7 1330 1	MASK	MARKSTAT
0311				07,2270	0 0006 1		EXTEND	
0312				07,2271	1 2273 1		BZF	+2
0313	REP	8	LAST	222	07,2272	1 5213 0	TCF	TASKOVER
0314	REP	2	LAST	217	07,2273	3 7667 1	CAF	PRI032
0315	REP	4	LAST	222	07,2274	0 5027 1	TC	NOVAC
0316	REP	11	LAST	223	1330		ERANK=	MARKSTAT
0317	REP	1		07,2275	02421 1		2CADR	MKV50
0317	REP	1		07,2276	16062 1			
0318	REP	9	LAST	223	07,2277	1 5213 0	TCF	TASKOVER

SEE IF MARKS WANTED-REDUCE MARKS WANTED

MARK NOT WANTED-ALARM

SET BIT10 TO ENABLE REJECT

PICK UP MARK SLOT-POINTER  
SAVE CURRENT POINTER  
INCREMENT POINTER

STORE ADVANCED POINTER

IF ALL MARKS MADE FLASH VB50



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R0319 PROGRAM NAME - MKREJECT DATE- 5 APRIL 1967  
 R0320 PROGRAM MODIFIED BY 258/278 PROGRAMMERS LOG SECTION SKIMARK  
 R0321 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 118

R0322 FUNCTIONAL DESCRIPTION-  
 R0323 ROUTINE ALLOWS OPERATOR TO REJECT MARK MADE PRIOR TO ACCEPTANCE AND ALLOWS A NEW MARK TO BE MADE BY ASTRONAUT

R0325 CALLING SEQUENCE-  
 R0326 FROM MARKRUPT IP BIT7 OF CHANNEL 16 IS 1.

R0327 NORMAL EXIT MODE-  
 R0328 RESUME

R0329 ALARM OR ABORT EXIT MODE-  
 R0330 ALARM AND RESUME

R0331 OUTPUT-  
 R0332 1) FOR R21-  
 R0333 MRKBUF1 SET TO -1  
 R0334 2) FOR NORMAL MARKING-  
 R0335 BIT10 MARKSTAT =0, INCREMENT NO. MARKS BY 1, DECREMENT OPRET BY 7

R0338 ERASABLE INITIALIZATION-  
 R0337 1) FOR R21-  
 R0338 BIT14 OF STATE+2 SET TO 1  
 R0339 2) FOR NORMAL MARKING-  
 R0340 BIT14 OF STATE+2 SET TO 0, MARKSTAT, OPRET

R0341 DEBRIS-  
 R0342 1) FOR R21-  
 R0343 A, MARKSTAT, EBANK  
 R0344 2) FOR NORMAL MARKING-  
 R0345 A, MARKSTAT, ITEMP1, OPRET

0346	REP	24	LAST	222	07,2300	3 4675 1	MKREJECT	CAF	BIT14	
0347	REP	32	LAST	222	07,2301	7 0076 1		MASK	STATE +2	R21 MARK (SPECIAL MARKING FOR R21)
0348					07,2302	0 0006 1		EXTEND		
0349	REP	1			07,2303	1 2307 0		BZF	MKREJECT	NOT SET THEREFORE REGULAR REJECT
0350	REP	7	LAST	218	07,2304	3 7716 0		CA	NEGONE	-1 (FOR R22)
0351	REP	10	LAST	222	07,2305	55*725 1		TS	MRKBUF1	-0 IN TIME IS FLAG TO R22 SIGNIFYING A
0352	REP	19	LAST	220	07,2306	0 5222 0		TC	RESUME	REJECTED MARK
0353	REP	12	LAST	223	07,2307	11*330 1	MKREJECT	CCS	MARKSTAT	SEE IF MARKS BEING ACCEPTED
0354	REP	1			07,2310	0 2314 0		TC	REJECT2	
0355	REP	15	LAST	222	07,2311	0 5537 0		TC	ALARM	MARKS NOT BEING ACCEPTED
0356					07,2312	00112 0		OCT	112	
0357	REP	20	LAST	224	07,2313	0 5222 0		TC	RESUME	
0358	REP	17	LAST	223	07,2314	4 4701 1	REJECT2	CS	BIT10	SEE IF MARK HAD BEEN MADE SINCE LAST
0359	REP	13	LAST	224	07,2315	7 1330 1		MASK	MARKSTAT	REJECT, AND SET BIT10 TO ZERO TO
0360	REP	14	LAST	224	07,2316	57*330 0		XCH	MARKSTAT	SHOW MARK REJECT



L	EXTMARK									
0361	REF 18	LAST	224	07,2317	7 4701	1			MASK	BIT10
0362	REF 61	LAST	223	07,2320	10 000	0			CCS	A
0363	REF 1			07,2321	0 2325	1			TC	REJECT3
0364	REF 16	LAST	224	07,2322	0 5537	0			TC	ALARM
0365				07,2323	00110	1			OCT	110
0366	REF 21	LAST	224	07,2324	0 5222	0			TC	RESUME
0367	REF 2	LAST	223	07,2325	3 4741	1	REJECT3	CAP	LOW9	
0368	REF 15	LAST	224	07,2326	7 1330	1		MASK	MARKSTAT	
0369	REF 9	LAST	223	07,2327	54 061	1		TS	ITEMP1	
0370	REF 4	LAST	223	07,2330	4 4716	1		CS	SEVEN	
0371	REF 10	LAST	225	07,2331	50 061	0		INDEX	ITEMP1	
0372	REF 4	LAST	223	07,2332	26 052	1		ADS	QPRET	
0373	REF 13	LAST	222	07,2333	3 4677	0		CAP	BIT12	
0374	REF 16	LAST	225	07,2334	6 1330	0		AD	MARKSTAT	
0375	REF 17	LAST	225	07,2335	57=330	0		XCH	MARKSTAT	
0376	REF 2	LAST	223	07,2336	7 7671	1		MASK	PRIO34	
0377	REF 62	LAST	225	07,2337	10 000	0		CCS	A	
0378	REF 22	LAST	225	07,2340	0 5222	0		TC	RESUME	
0379	REF 3	LAST	223	07,2341	3 7667	1		CAP	PRIO32	
0380	REF 5	LAST	223	07,2342	0 5027	1		TC	NOVAC	
0381	REF 18	LAST	225	1330				EBANK=	MARKSTAT	
0382	REF 2	LAST	217	07,2343	02346	1		ZCADR	MKV851	
0382				07,2344	16062	1				
0383	REF 23	LAST	225	07,2345	0 5222	0		TC	RESUME	

DONT ACCEPT TWO REJECTS TOGETHER

DECREMENT POINTER TO REJECT MARK

NEW POINTER

INCREMENT MARKS WANTED AND IF FIELD IS NOW NON-ZERO, CHANGE TO VB51 TO INDICATE MORE MARKS WANTED



L SKTMARK

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- R0384 PROGRAM DESCRIPTION MKVB51 AND MKVB50.
- R0385 AUTHOR-BARNERT DATE-2-15-67 MOD-0
- R0386 PURPOSE FLASH V51N70,V51N43, OR V51 TO REQUEST MARKING,
- R0387 AND V50N25 R1=16 TO REQUEST TERMINATE MARKING
- R0388 CALLING SEQUENCE AS JOB WITHIN SKTMARK
- R0389 EXIT TO ENDMARK UPON RECEIPT OF V33, V34 CAUSES GOTOPOCH, ENTER
- R0390 RECYCLES THE DISPLAY
- R0391 NOTE- SKTMARK AUTOMATICALLY CHANGES FROM CALLING MKVB51 TO MKVB50 WHEN
- R0392 SUFFICIENT MARKS HAVE BEEN MADE, AND THE REVERSE WHEN A MARK
- R0393 REJECT REDUCES THE NUMBER MADE BELOW THAT REQUIRED
- R0394 SUBROUTINES CALLED- BANKCALL, GOMARK2,GOODEND,ENDMARK,WAITLIST
- R0395 ALARM OR ABORT MODES - NONE
- R0396 ERASABLE USED-VERBREG,MARKSTAT,OPRET,DSPTM1
- R0397 OUTPUT MARKSTAT=VAC ADDRESS

R0398	REF	NO.	LAST	OPRET-	NO.MARKS					
0401	REF	7	LAST	199	07,2346	0 4555 0	MKVB51	TC	BANKCALL	CLEAR DISPLAY FOR MARK VERB
0402	REF	1			07,2347	20464 0		CADR	KLEENEX	
0403	REF	1			07,2350	3 2426 0		CAP	VB51	DISPLAY MARK VB51
0404	REF	8	LAST	226	07,2351	0 4555 0		TC	BANKCALL	
0405	REF	1			07,2352	20476 0		CADR	GOMARK4	
0406	REF	1			07,2353	1 2356 1		TCF	TERMSKT	VB34-TERMINATE
0407	REF	1			07,2354	1 2367 0		TCF	ENTANSWR	V33-PROCEED-MARKING DONE
0408	REF	1			07,2355	1 2415 1		TCF	MKVB5X	ENTER-RECYCLE TO INITIAL MARK DISPLAY
0409	REF	2	LAST	199	07,2356	0 5425 1	TERMSKT	TC	CLEARMRK	CLEAR MARK ACTIVITY.
04095	REF	3	LAST	217	07,2357	0 5253 0		TC	CHECKMM	
0410					07,2360	00003 1		MM	03	
0411					07,2361	1 2363 1		TCF	+2	
0412	REF	1			07,2362	0 2365 0		TC	TERMP03	
0414	REF	7	LAST	220	07,2363	0 4574 0		TC	POSTJUMP	
04145	REF	1			07,2364	30176 1		CADR	TERM52	
04146	REF	2	LAST	199	07,2365	0 5435 0	TERMP03	TC	UPFLAG	
04147	REF	1			07,2366	00032 0		ADRES	TRM03PLG	
0415	REF	3	LAST	225	07,2367	3 4741 1	ENTANSWR	CAP	LOW9	PUT VAC ADR IN MARKSTAT AND NO. OF
0416	REF	19	LAST	225	07,2370	7 1330 1		MASK	MARKSTAT	MARKS MADE IN OPRET BEFORE LEAVING
0417	REF	20	LAST	226	07,2371	55=330 1		TS	MARKSTAT	SKTMARK
0418					07,2372	4 0000 0		COM		
0419	REF	21	LAST	226	07,2373	51=330 0		INDEX	MARKSTAT	
0420	REF	5	LAST	225	07,2374	6 0052 0		AD	OPRET	



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0421				07,2375	0 0006	1			EXTEND		
0422	REP	1		07,2376	6 2402	0			BZMP	JAMIT	
0423				07,2377	0 0006	1			EXTEND		
0424	REP	14	LAST	225	07,2400	7 4677	1		MP	BIT12	
0425	REP	8	LAST	184	07,2401	6 4712	1		AD	ONE	
0426	REP	22	LAST	228	07,2402	51=330	0	JAMIT	INDEX	MARKSTAT	
0427	REP	6	LAST	228	07,2403	54 052	1		TS	OPRET	
0434				07,2404	0 0004	0			INHINT		
0435	REP	4	LAST	196	07,2405	3 4715	0		CAP	FIVE	
0436	REP	8	LAST	184	07,2406	0 5140	1		TC	WAITLIST	
0437	REP	23	LAST	227		1330			EBANK=	MARKSTAT	
0438	REP	1			07,2407	02412	1		ZCADR	ENDMARKS	
0438	REP	1			07,2410	16062	1				
0439	REP	1			07,2411	0 5423	1		TC	ENDMARK	
0440	REP	9	LAST	227	07,2412	3 4712	1	ENDMARKS	CAP	ONE	
0441	REP	15	LAST	196	07,2413	0 4633	0		TC	IBNKCALL	
0442	REP	1			07,2414	17467	1		CADR	GOODEND	
0443	REP	3	LAST	225	07,2415	3 7671	0	MKVB5X	CAP	PRI034	
0444	REP	24	LAST	227	07,2416	7 1330	1		MARK	MARKSTAT	
0445	REP	63	LAST	225	07,2417	10 000	0		CCS	A	
0446	REP	3	LAST	225	07,2420	1 2346	0		TCF	MKVB51	
0447	REP	1			07,2421	3 4333	0	MKVB50	CAP	R1D1	
0448	REP	2	LAST	74	07,2422	55=045	0		TS	DSPTM1	
0449	REP	1			07,2423	3 2425	0		CAP	V50N25	
0450	REP	4	LAST	227	07,2424	1 2351	0		TCF	MKVB51 +3	
0451					07,2425	14431	1	V50N25	VN	5025	
0452					07,2426	14600	1	VB51	VN	5100	
0454	REP	1			4382			OCT37	=	LOW5	

NO MARKS MADE, SHOW IT IN OPRET, R53  
WILL PICK IT UP AND RECYCLE  
THIS PUTS NUMBER MARKS-1 IN A

STORE NO OF MARKS MADE

SERVICE OPTSTALL INTERFACE WITH

KNOCKS DOWN MARKING FLAG + DOES ENDOPJOB

RE-DISPLAY VB51 IF MORE MARKS WANTED  
AND VB50 IF ALL IN

OCT 16

R0455 PROGRAM NAME - MARKIT

DATE- 19 SEPT 1967

R0456 CALLING SEQUENCE

R0457 FROM MARKRUPT IF CHAN 16 BIT 6 = 1

R0458 EXIT

R0459 RESUME

R0460 INPUT

R0461 CDUCHKWD. ALSO ALL INITIALIZATION FOR MARKCONT

R0462 OUTPUT

R0463 MKT2T1, MKCDUX, MKCDUY, MKCDUZ, MKCDUS, MKCDUT

R0464 ALARM EXIT

R0465 NONE

0466	REP	1		07,2427	11=341	1	MARKIT	CCS	CDUCHKWD	
0467				07,2430	1 2433	0		TCF	+3	

DELAY OF CDUCHKWD CS IF PNZ



L SKTMARK

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0468  
 0469 REP 20 LAST 218 07,2431 1 2433 0  
 0470 REP 10 LAST 227 07,2432 3 4714 1  
 0471 REP 9 LAST 227 07,2433 6 4712 1  
 0472 REP 11 LAST 224 07,2434 0 5140 1  
 0473 REP 1 07,2435 02203 1  
 0474 REP 1 07,2436 20067 1  
 0474 REP 24 LAST 225 07,2437 1 5222 1

TOP +2  
 CAP ZERO  
 AD ONE  
 TC WAITLIST  
 EBANK= MRKBUF1  
 ZCADR MARKDIP  
 TOP RESUME

10 MS IF NO CHECK

0475 REP 1 10,2000  
 0476 10,2203

SETLOC SKTMARK1  
 BANK

0477 REP 1

COUNT 10/SKTMK

R0478 PROGRAM NAME - MARKDIP

DATE- 19 SEPT 1967

R0479 CALLING SEQUENCE

R0480 WAITLIST FROM MARKIT

R0481 EXIT

R0482 TASKOVER OF IBKCALL TO MARKCONT

R0483 INPUT

R0484 OUTPUT FROM MARKIT, INPUT TO MARKCONT, CDUCHKWD

R0485 OUTPUT

R0486 RUPTSTOR - RUPTSTOR+3, RUPTREG3, RUPTSTOR+5 - RUPTSTOR +8

R0487 ALARM EXIT

R0488 ALARM AND TASKOVER

0489 REP 2 LAST 227 10,2203 3 1341 0 MARKDIP CA CDUCHKWD  
 0490 10,2204 0 0006 1 EXTEND  
 0491 REP 1 10,2205 6 2216 0 BZMP MKACPT  
 0492 REP 25 LAST 196 10,2206 4 4712 0 CS BIT1  
 0493 REP 1 10,2207 54 354 1 TS MKNDX  
 0494 REP 3 LAST 223 10,2210 3 0363 1 CA MKCDUX  
 0495 REP 1 10,2211 0 2220 0 TC DIFCHK  
 0496 REP 3 LAST 223 10,2212 3 0357 0 CA MKCDUY  
 0497 REP 2 LAST 228 10,2213 0 2220 0 TC DIFCHK  
 0498 REP 3 LAST 223 10,2214 3 0361 0 CA MKCDUZ  
 0499 REP 3 LAST 228 10,2215 0 2220 0 TC DIFCHK

IF DELAY CHECK IS ZERO OR NEG, ACP MARK

SET INDEX -1

SEE IF VEHICLE RATE TOO MUCH AT MARK

0500 REP 16 LAST 227 10,2216 0 4633 0 MKACPT TC IBKCALL  
 0501 REP 1 10,2217 16152 0 CADR MARKCONT

MARK DATA OK, WHAT DO WE DO WITH IT

0503 REP 2 LAST 228 10,2220 24 354 0 DIFCHK INCR MKNDX

INCREMENT INDEX

0504 10,2221 0 0006 1 EXTEND

0505 REP 3 LAST 228 10,2222 5 0354 0 INDEX MKNDX



L	MARK	REP	LAST	219	10,2223	20 032 1
0506	REP	3	LAST	219	10,2223	20 032 1
0507	REP	64	LAST	227	10,2224	10 000 0
0508					10,2225	1 2231 1
0509	REP	23	LAST	219	10,2226	0 0002 0
0510					10,2227	1 2231 1
0511	REP	24	LAST	229	10,2230	0 0002 0
0512	REP	1			10,2231	6 7715 0
0513					10,2232	0 0008 1
0514					10,2233	6 2230 1
0518	REP	17	LAST	225	10,2234	0 5537 0
0519					10,2235	00121 0
0520	REP	10	LAST	223	10,2236	1 5213 0

MSU CDUX  
 CCS A  
 TCF +4  
 TC 0  
 TCF +2  
 TC 0  
 AD NEG2  
 EXTEND  
 BZMF -3  
 TC ALARM  
 OCT 00121  
 TCF TASKOVER

GET MARK(ICDU) - CURRENT(ICDU)

SEE IF DIFFERENCE GREATER THAN 3 BITS

NOT GREATER

COUPLED WITH PROGRAM ALARM

DO NOT ACCEPT

L EXTENDED VERBS

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Address	Operation	Count	Label	Address	Count	Index	MPAC	Verb
0001				07,2440				
0002	REP 1			43,2000			BANK 7	
0003				43,2000			SETLOC EXTVERBS	
				43,2000			BANK	
0004	REP 4 LAST 208			E5,1757			EBANK= OOC	
0005	REP 1						COUNT* \$\$/EXTVB	
0006	PAN-OUT							
0007	REP 24 LAST 199			43,2000	50 154 1	GOEXTVB	INDEX	MPAC
0008	REP 1			43,2001	0 2002 1	TC	MPAC	VERB-40 IS IN MPAC
							LST2PAN	PAN AS BEFORE.
0009	REP 1			43,2002	0 2124 1	LST2PAN	TC	VB40 ZERO (USED WITH NOUN 20 ONLY).
0010	REP 1			43,2003	0 2150 1	TC	VB41	COARSE ALIGN (USED WITH NOUN 20 OR 91 ONLY)
A0011							VB42	PINE ALIGN IMU
0012	REP 1			43,2004	0 2240 0	TC	IMUATICK	VB43 LOAD IMU ATTITUDE ERROR METERS.
0013	REP 1			43,2005	0 2412 1	TC	SETSRF	VB44 SET SURFACE FLAG
0014	REP 1			43,2006	0 3203 0	TC	RETSRPF	VB45 RESET SURFACE FLAG
0015	REP 1			43,2007	0 3206 0	TC	STABLISH	VB46 ESTABLISH G+C CONTROL.
0016	REP 1			43,2010	0 2516 1	TC	LMTOCMSV	VB47 MOVE LM STATE VECTOR INTO CM
0017	REP 1			43,2011	0 3100 0	TC	DAPDISP	VB48 LOAD A/P DATA
0018	REP 1			43,2012	0 2536 0	TC	CREWMANU	VB 49 START AUTOMATIC ATTITUDE MANEUVER
0019	REP 1			43,2013	1 2527 1	TC	GLOADLV	VB50 PLEASE PERFORM
0020	REP 1			43,2014	0 2275 0	TC	V52	VB51 PLEASE MARK
0021	REP 2 LAST 230			43,2015	0 2275 0	TC	GLOADLV	VB52 SET OFFSET NO. FOR P22
0022	REP 1			43,2016	0 3153 0	TC	GOTOR23	VB 53 PLEASE PERFORM COAS MARK
0023	REP 3 LAST 230			43,2017	0 2275 0	TC	ALINTIME	V54 START R23 (R21-BACKUP)
0024	REP 1			43,2020	0 2576 1	TC	TRACKTRM	VB55 ALIGN TIME
0025	REP 1			43,2021	0 2326 1	TC	GOTOR21	VB56 TERMINATE TRACKING (P20 +P25)
0026	REP 1			43,2022	0 2637 1	TC	ENATMA	V57 START R21 REND TRACK SIGHT MARK ROUT
0027	REP 1			43,2023	0 2573 1	TC	GLOADLV	VB58 ENABLE AUTOMATIC ATTITUDE MANEUVER
0028	REP 1			43,2024	0 2502 1	TC	V60	VB59 PLEASE CALIBRATE
0029	REP 4 LAST 230			43,2025	0 2275 0	TC	V61	VB60 SET CPHX (N17) EQUAL TO CDU
0030	REP 1			43,2026	0 2303 0	TC	V62	VB61 SELECT MODE I
0031	REP 1			43,2027	0 2311 0	TC	V63	VB62 SELECT MODE II, ERROR WRT N22
0032	REP 1			43,2030	0 2314 0	TC	VB84	VB63 SELECT MODE III, ERROR WRT N17
0033	REP 1			43,2031	0 2321 0	TC	CKOPTVB	VB64 CALCULATE, DISPLAY S-BAND ANT ANGLES
0034	REP 1			43,2032	0 2472 1	TC	ATTACHED	V 65 E OPTICAL VERIFICATION FOR PRELAUNCH
0035	REP 1			43,2033	0 2367 1	TC	V67	VB 66 ATTACHED. MOVE THIS TO OTHER STATE
0036	REP 1			43,2034	0 3032 0	TC	STRCKON	VB67 MATRIX MONITOR
0037	REP 1			43,2035	0 3175 1	TC	VERB69	VB68 CS4 STROKE TEST ON.
0038	REP 1			43,2036	0 2505 0	TC	V70UPDAT	VB 69 CAUSE RESTART
0039	REP 1			43,2037	0 2037 1	TC	V71UPDAT	VB70 UPDATE LIFTOFF TIME.
0040	REP 1			43,2040	0 3722 0	TC	V72UPDAT	VB71 UNIVERSAL UPDATE - BLOCK ADDRESS.
0041	REP 1			43,2041	0 3724 0	TC	V73UPDAT	VB72 UNIVERSAL UPDATE - SINGLE ADDRESS.
0042	REP 1			43,2042	0 3726 1	TC	DNEDUMP	VB73 UPDATE AGC TIME (OCTAL).
0043	REP 1			43,2043	0 3730 0	TC	LFTFLGN	VB74 INITIALIZE DOWN-TELEMETRY PROGRAM FOR ERASABLE DUMP.
0044	REP 1			43,2044	0 2706 1	TC		VB75 SET LIFTOFF FLAG.
A0045								
0046	REP 1			43,2045	0 2712 1	TC		

L EXTENDED VERBS

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0047 REF 1 43,2046 0 3013 0  
 0048 REF 1 43,2047 0 3016 0  
 0049 REF 1 43,2050 0 2400 1  
 0050 REF 1 43,2051 0 3004 0  
 0051 REF 1 43,2052 0 2700 1  
 0052 REF 1 43,2053 0 2703 1  
 0053 REF 1 43,2054 0 2546 1  
 0054 REF 1 43,2055 0 2553 0  
 0055 REF 1 43,2056 0 2120 0  
 0056 REF 1 43,2057 0 2565 0  
 0057 REF 1 43,2060 0 2632 1  
 0058 REF 1 43,2061 0 3021 1  
 0059 REF 1 43,2062 0 3025 0  
 0060 REF 1 43,2063 0 2732 0  
 0061 REF 1 43,2064 0 3140 1  
 0062 REF 1 43,2065 0 2751 0  
 0063 REF 1 43,2066 0 2380 0  
 0064 REF 1 43,2067 0 2742 1  
 0065 REF 1 43,2070 0 3124 0  
 0066 REF 2 LAST 231 43,2071 0 2120 0  
 0067 REF 1 43,2072 1 3146 0  
 0068 REF 5 LAST 230 43,2073 0 2275 0  
 0069 REF 3 LAST 231 43,2074 0 2120 0  
 0070 REF 2 LAST 231 43,2075 0 2275 0

TC SETPRFLG  
 TC RESSTPRP  
 TC CHAZFOGC  
 TC CALLR35  
 TC LEAVEC  
 TC CSWVEC  
 TC V82PERF  
 TC V83PERF  
 TC ALM/END  
 TC V85PERF  
 TC V86PERF  
 TC SETVHFLG  
 TC RESSTVHP  
 TC V89PERF  
 TC V90PERF  
 TC GOSHOSUM  
 TC SYSTEST  
 TC MATRONG  
 TC VERB94  
 TC ALM/END  
 TC VERB96  
 TC GOLOADV  
 TC ALM/END  
 TC GOLOADV

VB76 SET PREFERRED ATTITUDE FLAG  
 VB77 RESET PREFERRED ATT. FLAG  
 CHANGE GYROCOMPASS LAUNCH AZIMUTH V78  
 VB79 REQU LUNAR LNDMCK SELECTION (R35)  
 VB80 UPDATE LEM STATE VECTOR  
 VB81 UPDATE CSM STATE VECTOR  
 VB82 REQUEST ORBIT PARAM DISPLAY (R30)0  
 VB83 RANGE, RANGE RATE, +X AXIS (R31)  
 VB84 SPARE  
 VB85 RANGE, RANGE RATE, SLOS (R30)0  
 VB86 BACKUP MARK REJECT  
 VB87 SET VHF RANGE FLAG  
 VB88 RESET VHF RANGE FLAG  
 VB89 ALIGN X OR PRF CSM AXIS TO LOS (R69)  
 VB90 OUT OF PLANE PARAMETERS ER36  
 VB91 TEMP FOR HYBRID AND STG.  
 VB92 OPERATE IMU PERFORMANCE TEST  
 VB93 CLEAR RENDWFLG  
 VB94 DO R64  
 VB95 SPARE  
 VB96 SET QUITFLAG TO STOP INTEGRATION  
 VB97 PLEASE PERFORM ENGINE FAIL (R41)  
 VB98 SPARE  
 VB99 PLEASE ENABLE ENGINE

R0071 END OF EXTENDED VERB PAN

0072 REF 7 LAST 222 43,2076 11=044 1  
 0073 REF 4 LAST 231 43,2077 0 2120 0  
 00731 REF 2 LAST 188 43,2100 3 0100 0  
 00732 REF 1 43,2101 7 2123 1  
 00733 REF 65 LAST 229 43,2102 10 000 0  
 00734 REF 5 LAST 231 43,2103 0 2120 0

TESTXACT CCS EXTVRACT  
 TC ALM/END  
 CA FLAGWRD4  
 MASK CC24100  
 CCS A  
 TC ALM/END

YES. TURN ON OPERATOR ERROR LIGHT  
 ARE PRIOS USING DSKY

0074 REF 3 LAST 196 43,2104 3 4112 1  
 0075 REF 8 LAST 231 43,2105 55=044 1  
 A0076

CAP OCT24  
 SETXACT TS EXTVRACT

SET BITS 3 AND 5  
 NO. SET FLAG TO SHOW EXT VERB DISPLAY  
 SYSTEM BUSY

0077 REF 25 LAST 229 43,2106 3 0002 0  
 0078 REF 25 LAST 230 43,2107 54 155 1

CA 0  
 TS MPAC +1

0083 REF 3 LAST 222 43,2110 4 4711 0  
 0084 REF 1 43,2111 0 4170 0  
 0085 43,2112 0 2113 0  
 0086 REF 26 LAST 231 43,2113 0 0155 0

CS TWO  
 TC NVSUB  
 TC +1  
 TC MPAC +1

BLANK EVERYTHING EXCEPT MM AND VERB

0087 REF 2 LAST 197 43,2114 0 4400 1  
 0088 REF 1 43,2115 0 5423 1

XACTALM TC FALTON  
 TC ENDEXT

TURN ON OPERATOR ERROR LIGHT.  
 RELEASE MARK AND EXT. VERB DISPLAY SYS.



L EXTENDED VERBS

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0089	REP	2	LAST	231	5423		TERMEXTV	EQUALS	ENDEXT
0090	REP	3	LAST	232	5423		ENDEXTVB	EQUALS	ENDEXT
0091	REP	21	LAST	228	43,2116	3.4714 1	XACTO	CAF	ZERO
0092	REP	1			43,2117	0 2105 1		TC	SETXTACT
0093	REP	3	LAST	231	43,2120	0 4400 1	ALM/END	TC	FALTON
0094	REP	8	LAST	226	43,2121	0 4574 0	GOPIN	TC	POSTJUMP
0095	REP	2	LAST	194	43,2122	21176 1		CADR	PINBRNCH
00955					43,2123	24100 0	OC24100	OCT	24100

RELEASE MARK AND EXT. VERB DISPLAY SYS.

TURN ON OPERATOR ERROR LIGHT





L EXTENDED VERBS

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PO096				VBZERO	VERB 40		DESCRIPTION			
PO097				ZERO						
PO098							1. REQUIRE NOUN 20 (ICDU ANGLES)			
PO099							2. REQUIRE AVAILABILITY OF EXT VERB DISPLAY SYSTEM			
PO100							3. IF EITHER OF ABOVE CONDITIONS NOT PRESENT, TURN ON OPERATOR ERROR LIGHT AND GO TO PINBRCH.			
PO102							4. SET EXT VERB DISPLAY ACTIVE FLAG.			
PO103							5. EXECUTE IMUZERO (ZERO IMU CDU ANGLES).			
PO104							6. EXECUTE IMUSTALL (ALLOW TIME FOR DATA TRANSFER).			
PO105							7. RELEASE EXT. VERB DISPLAY SYSTEM.			
0106	REP	1			43,2124	0 2136 1	VBZERO	TC	OP/INERT	
0107	REP	1			43,2125	0 2127 1		TC	IMUZEROK	RETURN HERE IF NOUN = ICPU(20)
0108	REP	6	LAST	231	43,2126	0 2120 0		TC	ALM/END	RETURN HERE IF NOUN = OCPU(91)
AO109										(NOT IN USE YET)
0110	REP	1			43,2127	0 2271 1	IMUZEROK	TC	CKMDCAD	KEYBOARD REQUEST FOR ISS CDU ZERO
01101	REP	9	LAST	228	43,2130	0 4555 0		TC	BANKCALL	
0111	REP	1			43,2131	16516 1		CADR	IMUZERO	
0112	REP	10	LAST	233	43,2132	0 4555 0		TC	BANKCALL	STALL
0113	REP	1			43,2133	17516 0		CADR	IMUSTALL	
0114					43,2134	0 2135 1		TC	+1	
0115	REP	1			43,2135	0 2121 1		TC	GOPIN	
0116	REP	4	LAST	231	43,2136	4 4112 0	OP/INERT	CS	OCT24	
0117	REP	2	LAST	188	43,2137	6 1002 1		AD	NOUNREG	
0118					43,2140	0 0006 1		EXTEND		
0119	REP	1			43,2141	1 2470 1		BZF	XACT00	IF = 20.
0120	REP	26	LAST	231	43,2142	24 002 0		INCR	Q	
0121	REP	1			43,2143	6 2147 1		AD	OPIMDIFF	-71
0122					43,2144	0 0006 1		EXTEND		
0123	REP	2	LAST	233	43,2145	1 2470 1		BZF	XACT00	
0124	REP	7	LAST	233	43,2146	0 2120 0		TC	ALM/END	ILLEGAL.
0125					43,2147	77670 0	OPIMDIFF	DEC	-71	

L EXTENDED VERBS

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P0126 VBCOARK VERB 41 DESCRIPTION  
R0127 COURSE ALIGN IMU OR OPTICS  
R0128 1. REQUIRE NOUN 20 OR NOUN 91 OR TURN ON OPERATOR ERROR  
R0129 2. REQUIRE EXT VERB DISPLAY SYS AVAILABLE OR TURN ON OPERATOR ERROR LIGHT AND GO TO PINBRCH.  
R0131 CASE 1 NOUN 20 (ICDU ANGLES)  
R0132 3. SET EXT VERB DISPLAY ACTIVE FLAG.  
R0133 4. DISPLAY FLASHING V25,N22 (LOAD NEW ICDU ANGLES).  
R0134 RESPONSES  
R0135 A. TERMINATE  
R0136 1. RELEASE EXT VERB DISPLAY SYSTEM  
R0137 B. PROCEED  
R0138 1. DISPLAY FLASHING V25,N23 (LOAD DELTA ICDU ANGLES).  
R0140 RESPONSES  
R0141 A. TERMINATE  
R0142 1. RELEASE EXT VERB DISPLAY SYSTEM.  
R0143 B. PROCEED  
R0144 1. EXECUTE ICORK2.  
R0145 C. ENTER  
R0146 1. INCREMENT CDU ANGLES  
R0147 2. EXECUTE ICORK2.  
R0148 C. ENTER  
R0149 1. EXECUTE ICORK2.  
R0150 ICORK2  
R0151 1. RE-DISPLAY VERB 41.  
R0152 2. EXECUTE IMUCOARS (IMU COARSE ALIGN).  
R0153 3. EXECUTE IMUSTALL (ALLOW TIME FOR DATA TRANSFER).  
R0154 4. RELEASE EXT VERB DISPLAY SYSTEM.  
R0155 CASE 2 NOUN 91 (OCDU ANGLES)  
R0156 5. (REQUIRE OPTICS SWITCH TO BE AT COMPUTER OR TURN ON OPERATOR ERROR AND ALARM 115) AND (REQUIRE  
R0158 OPTICS AVAILABLE AND DISPLAY FLASHING V24,N92....LOAD NEW OPTICS ANGLES....OR TURN ON ALARM 117  
R0160 AND RELEASE EXT VERB DISPLAY SYSTEM).  
R0161 6. RESPONSES TO V29,N92.  
R0162 A. TERMINATE  
R0163 RELEASE EXT VERB DISPLAY SYSTEM  
R0164 B. PROCEED OR ENTER  
R0165 RE-DISPLAY V41, SET SWITCH TO INDICATE COURSE ALIGN OPTICS WORKING.  
R0167 RELEASE EXT VERB DISPLAY SYSTEM.

0168	REF	2	LAST	233	43,2150	0	2136	1	VBCOARK	TC	OP/INERT		
0169	REF	1			43,2151	0	2153	1		TC	IMUCOARK	RETURN HERE IF NOUN = ICDU(20)	
0170	REF	1			43,2152	0	2175	0		TC	OPTCOARK	RETURN HERE IF NOUN = OCDU(91)	
R0171					RETURN TO L+1 IF NOUN 20 - TO L+2 IF NOUN 91.								
0172	REF	2	LAST	233	43,2153	0	2271	1	IMUCOARK	TC	QCMDCAD	COARSE ALIGN FROM KEYBOARD	
01721	REF	1			43,2154	0	2076	1		TC	TESTXACT		
0173	REF	1			43,2155	3	2173	0		CAP	VNLOCCDU	CALL FOR THETA LOAD	
0174	REF	11	LAST	233	43,2156	0	4555	0		TC	BANKCALL		
0175	REF	1			43,2157	20465	1			CADR	GOXDSPP		
0176	REF	1			43,2160	0	5423	1		TC	TERWEXIV		
0177					43,2161	1	2162	1		TCF	+1		



L EXTENDED VERBS

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0178	REP	1		43,2162	3	2174	1	ICORK2	CAP	IMUCOARV	
0179	REP	12	LAST	234	43,2163	0	4555	0	TC	BANKCALL	
0180	REP	1		43,2164	20746	0			CADR	EXDSPRET	
0181	REP	13	LAST	235	43,2165	0	4555	0	TC	BANKCALL	
0182	REP	1		43,2166	16602	1			CADR	IMUCOARS	
0183	REP	14	LAST	235	43,2167	0	4555	0	TC	BANKCALL	
0184	REP	2	LAST	233	43,2170	17516	0		CADR	IMUSTALL	
0185	REP	1		43,2171	0	5423	1		TC	ENDEXTVB	
0186	REP	2	LAST	235	43,2172	0	5423	1	TC	ENDEXTVB	
0187				43,2173	08226	1			VNLOCCDU	VN	2522
0188				43,2174	12200	0			IMUCOARV	VN	4100

RE-DISPLAY COARSE ALIGN VERB.

CALL MODE SWITCHING PROG

STALL



L EXTENDED VERBS

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P0189 TEMPORARY ROUTINE TO RUN THE OPTICS CDUS FROM THE KEYBOARD

0190	REP	2	LAST	188	43,2175	3 1323 1	OPTCOARK	CA	OPTCADR	
019001	REP	3	LAST	234	43,2176	0 2272 1		TC	CKMODCAD	+1
019002	REP	2	LAST	234	43,2177	0 2076 1		TC	TESTXACT	
01901	REP	1			43,2200	3 4751 0		CAP	EBANK5	
01902	REP	7	LAST	198	43,2201	54 003 0		TS	EBANK	
0191	REP	7	LAST	162	43,2202	11=314 1		CCS	SWSAMPLE	
0192					43,2203	0 2210 0		TC	+5	SEE IF SWITCH AT COMPUTER
0193					43,2204	0 2205 1		TC	+1	SWITCH AT COMPUTER
0194	REP	4	LAST	232	43,2205	0 4400 1		TC	FALTON	NOT ON COMPUTER
0195	REP	18	LAST	229	43,2206	0 5537 0		TC	ALARM	TURN ON OPERATOR ERR
0196					43,2207	00115 1		OCT	00115	AND ALARM
0197	REP	18	LAST	218	43,2210	11=303 1		CCS	OPTIND	SEE IF OPTICS AVAILABLE
0198	REP	1			43,2211	0 2217 1		TC	OPTC1	IN USE
0199	REP	2	LAST	236	43,2212	0 2217 1		TC	OPTC1	IN USE
0200	REP	3	LAST	236	43,2213	0 2217 1		TC	OPTC1	IN USE
0201	REP	19	LAST	236	43,2214	0 5537 0		TC	ALARM	OPTICS RESERVED (OPTIND=-0)
0202					43,2215	00117 0		OCT	00117	
0203	REP	4	LAST	232	43,2216	0 5423 1		TC	ENDEXT	
0204	REP	1			43,2217	3 2237 0	OPTC1	CAP	VNLD0CDU	VERB-NOUN TO LOAD OPTICS CDUS
0205	REP	15	LAST	235	43,2220	0 4555 0		TC	BANKCALL	
0206	REP	2	LAST	234	43,2221	20465 1		CADR	GOXDSPF	
0207	REP	2	LAST	234	43,2222	0 5423 1		TC	TERMEXTV	
0208					43,2223	0 2224 1		TC	+1	PROCEED
02082	REP	2	LAST	93	43,2224	3 1773 0		CA	SAC	
02084	REP	3	LAST	163	43,2225	55=161 1		TS	DESOPTS	
02086	REP	2	LAST	93	43,2226	3 1775 0		CA	PAC	
02088	REP	4	LAST	164	43,2227	55=160 0		TS	DESOPPT	
0209	REP	1			43,2230	3 2174 1		CAP	OPTCOARV	RE-DISPLAY OUR OWN VERB
0210	REP	16	LAST	236	43,2231	0 4555 0		TC	BANKCALL	
0211	REP	2	LAST	235	43,2232	20746 0		CADR	EXDSPRET	
0212	REP	11	LAST	228	43,2233	3 4712 1		CAP	ONE	
0213	REP	19	LAST	236	43,2234	55=303 1		TS	OPTIND	SET COARS WORKING
0214	REP	3	LAST	235	43,2235	0 5423 1		TC	ENDEXTVB	
0215	REP	4	LAST	236	43,2236	0 5423 1		TC	ENDEXTVB	
0216					43,2237	06134 1	VNLD0CDU	VN	2492	
0217	REP	2	LAST	235	43,2174		OPTCOARV	EQUALS	IMUCOARV	DIFFERENT NOUNS.



L EXTENDED VERBS

PO218	IMUPINEK	VERB 42	DESCRIPTION
R0219	FINE ALIGN IMU		
R0220	1. REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG OR TURN ON OPER ERROR AND GO TO PINBRCH.		
R0222	2. DISPLAY FLASHING V25,N93....LOAD DELTA GYRO ANGLES....		
R0223	RESPONSES		
R0224	A. TERMINATE		
R0225	1. RELEASE EXT VERB DISPLAY SYSTEM.		
R0226	B. PROCEED OR ENTER		
R0227	1. RE-DISPLAY VERB 42		
R0228	2. EXECUTE IMUPINE (IMU FIVE ALIGN MODE SWITCHING).		
R0229	3. EXECUTE IMUSTALL (ALLOW FOR DATA TRANSFER)		
R0230	A. FAILED		
R0231	1. RELEASE EXT VERB DISPLAY SYSTEM.		
R0232	B. GOOD		
R0233	1. EXECUTE IMPULSE (TORQUE IRIGS).		
R0234	2. EXECUTE IMUSTALL AND RELEASE EXT VERB DISPLAY SYSTEM.		
0236	REF	4 LAST 236	43,2240 0 2271 1 IMUPINEK TC QKMODCAD FINE ALIGN WITH GYRO TORQUING
02361	REF	3 LAST 236	43,2241 0 2076 1 TC TESTXACT
0237	REF	1	43,2242 3 2267 0 CAF VNLDGYR CALL FOR LOAD OF GYRO COMMANDS
0238	REF	17 LAST 236	43,2243 0 4555 0 TC BANKCALL
0239	REF	3 LAST 236	43,2244 20465 1 CADR GOXDSPF
0240	REF	3 LAST 236	43,2245 0 5423 1 TC TERNEXTV
0241			43,2246 0 2247 1 TC +1 PROCEED WITHOUT A LOAD
0242	REF	1	43,2247 3 2270 0 CAF IMUPINEV RE-DISPLAY OUR OWN VERB
0243	REF	18 LAST 237	43,2250 0 4555 0 TC BANKCALL
0244	REF	3 LAST 236	43,2251 20746 0 CADR EXDSPRET
0245	REF	19 LAST 237	43,2252 0 4555 0 TC BANKCALL CALL MODE SWITCH PROG
0246	REF	1	43,2253 17012 1 CADR IMUPINE
0247	REF	20 LAST 237	43,2254 0 4555 0 TC BANKCALL HIBERNATION
0248	REF	3 LAST 235	43,2255 17516 0 CADR IMUSTALL
0249	REF	5 LAST 236	43,2256 0 5423 1 TC ENDEXTVB
0250	REF	1	43,2257 3 2266 1 FINEK2 CAF LGYROBIN PINBALL LEFT COMMANDS IN OGC REGISTERS
0251	REF	21 LAST 237	43,2260 0 4555 0 TC BANKCALL
0252	REF	1	43,2261 17125 1 CADR IMPULSE
0253	REF	22 LAST 237	43,2262 0 4555 0 TC BANKCALL WAIT FOR PULSES TO GET OUT.
0254	REF	4 LAST 237	43,2263 17516 0 CADR IMUSTALL
0255	REF	6 LAST 237	43,2264 0 5423 1 TC ENDEXTVB
0256	REF	7 LAST 237	43,2265 0 5423 1 TC ENDEXTVB
0257	REF	5 LAST 230	43,2266 02757 0 LGYROBIN EOCADR OGC
0258			43,2267 06335 1 VNLDGYR VN 2593
0259			43,2270 12400 0 IMUPINEV VN 4200 FINE ALIGN VERB
02591	REF	4 LAST 79	43,2271 3 1322 0 QKMODCAD CA MODRCADR

L EXTENDED VERBS

02592				43,2272	0 0006	1		EXTEND		
02593	REP	2	LAST	161	43,2273	1 6711	1	BZF	TCQ	
02594	REP	8	LAST	233	43,2274	0 2120	0	TC	ALM/END	SOMEBODY IS USING MODECADR SO EXIT
R0260			GOLOADLV		VERB 50			DESCRIPTION		
R0261					AND OTHER PLEASE					
R0262					DO SOMETHING VERBS					
R0263					PLEASE PERFORM, MARK, CALIBRATE, ETC.					
R0264					1. PRESSING ENTER ON DSKY INDICATES REQUESTED ACTION HAS BEEN PERFORMED, AND THE PROGRAM DOES THE					
R0266					SAME RECALL AS A COMPLETED LOAD.					
R0267					2. THE EXECUTION OF A VERB 33 (PROCEED WITHOUT DATA) INDICATES THE REQUESTED ACTION IS NOT DESIRED.					
0269	REP	1			43,2275	0 4447	1	GOLOADLV	TC	FLASHOFF
0270	REP	1			43,2276	3 4215	0	CAF	PINSUPBT	
0271					43,2277	0 0006	1	EXTEND		
0272	REP	2	LAST	182	43,2300	01 007	1	WRITE	SUPERBNK	TURN ON FE7
0273	REP	9	LAST	232	43,2301	0 4574	0	TC	POSTJUMP	
0274	REP	1			40,2000			SBANK=	PINSUPER	
0275	REP	1			43,2302	62001	1	CADR	LOADLV1	
R0276			V60		VERB 60					
0277					43,2303	0 0006	1	V60	EXTEND	SET ASTRONAUT TOTAL ATTITUDE (N17) EQUAL TO PRESENT ATTITUDE
0278	REP	4	LAST	229	43,2304	3 0033	1	DCA	CDUX	
0279	REP	1			43,2305	53-334	0	DXCH	CPHIX	
0280	REP	4	LAST	219	43,2306	3 0034	0	CA	CDUZ	
0281	REP	2	LAST	238	43,2307	55-335	1	TS	CPHIX +2	
0282	REP	2	LAST	233	43,2310	0 2121	1	TC	GOPIN	
R0283			V61		VERB 61					
0284	REP	5	LAST	197	43,2311	0 5447	0	V61	TC	DOWNFLAG
0285	REP	1			43,2312	00006	1	ADRES	NEEDLFLG	SET NEEDLFLG TO 0 (FLAGWRD0,BIT9), PHASE PLANE A/P FOLLOWING ERROR DISPLAYED
0286	REP	3	LAST	238	43,2313	0 2121	1	TC	GOPIN	
R0287			V62		VERB 62					
0288	REP	3	LAST	226	43,2314	0 5435	0	V62	TC	UPFLAG
0289	REP	2	LAST	238	43,2315	00006	1	ADRES	NEEDLFLG	SET NEEDLFLG TO 1 (FLAGWRD0,BIT9), TOTAL ATTITUDE ERROR DISPLAYED
0290	REP	4	LAST	238	43,2316	0 5435	0	TC	UPFLAG	
02902	REP	1			43,2317	00220	1	ADRES	N22ORN17	SET N22ORN17 TO 1 (FLAGWRD9,BIT6), COMPUTE TOTAL ATTITUDE ERROR WRT N22
02904	REP	4	LAST	238	43,2320	0 2121	1	TC	GOPIN	
R02905			V63		VERB 63					
02906	REP	5	LAST	238	43,2321	0 5435	0	V63	TC	UPFLAG
02907	REP	3	LAST	238	43,2322	00006	1	ADRES	NEEDLFLG	SET NEEDLFLG TO 1 (FLAGWRD0,BIT9), TOTAL ATTITUDE ERROR DISPLAYED
02908	REP	6	LAST	238	43,2323	0 5447	0	TC	DOWNFLAG	SET N22ORN17 TO 0 (FLAGWRD9,BIT6),



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L EXTENDED VERBS

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02909 REF 2 LAST 238 43,2324 00220 1  
029093 REF 5 LAST 238 43,2325 0 2121 1

ADRES N22ORN17  
TC GOPIN

COMPUTE TOTAL ASTRONAUT ATTITUDE ERROR

L EXTENDED VERBS

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ALINTIME	VERB 55	DESCRIPTION
P0291		1. SET EXT VERB DISPLAY BUSY FLAG.
R0292		2. DISPLAY FLASHING V25,N24 (LOAD DELTA TIME FOR AGC CLOCK.
R0293		3. REQUIRE EXECUTION OF VERB 23.
R0294		4. ADD DELTA TIME, RECEIVED FROM INPUT REGISTER, TO THE COMPUTER TIME.
R0295		5. RELEASE EXT VERB DISPLAY SYSTEM
R0297		
0298	REP 1	COUNT 04/R33
0299	REP 4 LAST 237	43,2326 0 2076 1 ALINTIME TC TBSXACT
0300	REP 1	43,2327 3 2357 1 CAP VNLODDT
0301	REP 23 LAST 237	43,2330 0 4555 0 TC BANKCALL
0302	REP 1	43,2331 20465 1 CADR GOMARKP
0303	REP 5 LAST 238	43,2332 0 5423 1 TC ENDEXT
0304	REP 6 LAST 240	43,2333 0 5423 1 TC ENDEXT
0305	REP 1	43,2334 4 2356 1 CS DEC23
0306	REP 27 LAST 231	43,2335 6 0154 1 AD MPAC
0307		43,2336 0 0008 1 EXTEND
0308	REP 1	43,2337 1 2341 1 BZF UPDATIVE
0309	REP 7 LAST 240	43,2340 0 5423 1 TC ENDEXT
0310		43,2341 0 0004 0 UPDATIVE INHINT
0311	REP 22 LAST 232	43,2342 3 4714 1 CAP ZERO
0312	REP 28 LAST 240	43,2343 54 156 1 TS MPAC +2
0313	REP 19 LAST 217	43,2344 54 001 1 TS L
0314	REP 7 LAST 219	43,2345 52 025 1 DXCH TIME2
0315	REP 29 LAST 240	43,2346 52 155 1 DXCH MPAC
0316	REP 2 LAST 74	43,2347 53*052 0 DXCH DSPTEM2 +1
0317	REP 30 LAST 240	43,2350 20 155 1 DAS MPAC
0318	REP 1	43,2351 0 7226 0 TC TPAGREE
0319	REP 31 LAST 240	43,2352 52 155 1 DXCH MPAC
0320	REP 8 LAST 240	43,2353 20 025 1 DAS TIME2
0321		43,2354 0 0003 1 RELINT
0322	REP 8 LAST 240	43,2355 0 5423 1 UPDATIVE TC ENDEXT
0323		43,2356 00027 1 DEC23 DEC 23
0324		43,2357 06230 0 VNLODDT VN 2524

TERMINATE  
 PROCEED  
 DATA IN OR RESEQUENCE(UNLIKELY)  
 RECALL LEFT VERB IN MPAC  
 GO AHEAD WITH UPDATE ONLY IF RECALL  
 WITH V23 (DATA IN).  
 DELTA TIME IS IN DSPTEM1, +1.  
 NEEDED FOR TP AGREE  
 ZERO T1 d 2 WHILE ALIGNING.  
 INCREMENT  
 FORCE SIGN AGREEMENT.  
 NEW CLOCK.  
 V 23  
 V25N24 FOR LOAD DELTA TIME



L EXTENDED VERBS.

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REF	VERB	DESCRIPTION
R0325	SYSTEST	VERB 92
R0326		OPERATE SELECTED SYSTEM TEST
R0327		1. REQUIRE POO OR POO- OR TURN ON OPERATOR ERROR.
R0328		2. TURN OFF DAP IF IT IS ON.
R0329		3. DISPLAY FLASHING V21,N01 (LOAD TEST NUMBER 1 THRU 17).
R0330		4. UPON ENTRY OF TEST NUMBER, SCHEDULE TSELECT WITH PRIORITY 20.
R0332	TSELECT	
R0333		1. IF LOADED TEST NUMBER IS VALID, GO TO THAT TEST ROUTINE, OTHERWISE TURN ON OPERATOR ERROR AND REPEAT LOAD REQUEST DISPLAY. (NO. 3 ABOVE)
R0335		
0336	REF 2 LAST 202	E5,1425 EBANK= OPLACE
0337	REF 1	COUNT 04/EXTVB
0338	REF 1	43,2360 0 2715 0 SYSTEST TC CHKPOOH
0339	REF 1	43,2361 0 2721 1 TC EXDAPOFF
0340	REF 1	43,2362 3 4675 1 CAP PRIO20
0342	REF 2 LAST 179	43,2363 0 5042 1 TC FINDVAC
0343	REF 3 LAST 241	E5,1425 EBANK= OPLACE
0344	REF 1	30,2000 SBANK= IMUSUPER
0345	REF 1	43,2364 02002 1 ZCADR REDO
0345	REF 1	43,2365 66065 1
0346	REF 6 LAST 239	43,2366 0 2121 1 TC GOPIN
R0347	REDO AND TSELECT ARE NOW IN SYSTEM TEST.	
0348	REF 2 LAST 230 TO 240	214 214* COUNT* 55/EXTVB
R0349	CKOPTVB	VERB 85 DESCRIPTION
R0350		OPTICAL VERIFICATION FOR PRELAUNCH.
R0351		1. SCHEDULE GCMPVER, OPTICAL VERIFICATION SUBPROGRAM, WITH PRIORITY 17.
0353	REF 4 LAST 226	43,2367 0 5253 0 CKOPTVB TC CHECKMM
0354		43,2370 00002 0 MM 02 I WONDER IF PRELAUNCH IS RUNNING
0355	REF 9 LAST 238	43,2371 0 2120 0 TC ALM/END NOT RUNNING OPERATOR ERROR
0356		43,2372 0 0004 0 INHINT
0357	REF 3 LAST 189	43,2373 3 4763 1 CAP PRIO16 PRELAUNCH OPTICAL VERIFICATION
0358	REF 3 LAST 241	43,2374 0 5042 1 TC FINDVAC
0359	REF 4 LAST 241	E5,1425 EBANK= OPLACE
0360	REF 2 LAST 209	43,2375 02000 0 ZCADR COMPVER STANDARD LEADIN TO GCMPVER.
0360		43,2376 66065 1
0361	REF 7 LAST 241	43,2377 0 2121 1 TC GOPIN
R0362	V 78....	TO CHANGE GYROCOMPASS AZIMUTH
0363	REF 5 LAST 241	43,2400 0 5253 0 CHAZPCGC TC CHECKMM IS IT PRELAUNCH
03631		43,2401 00002 0 MM 02
03632	REF 10 LAST 241	43,2402 0 2120 0 TC ALM/END NO - OPERA TOR ERROR



L EXTENDED VERBS

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0364	REP	4	LAST	241	43,2403	3 4763	1
0365	REP	4	LAST	241	43,2404	0 5042	1
0366	REP	14	LAST	212	E5,1871		
0367	REP	2	LAST	209	43,2405	03736	0
0367					43,2408	68085	1
0368	REP	3	LAST	195	43,2407	0 5301	0
0369					43,2410	00174	0
0370	REP	8	LAST	241	43,2411	0 2121	1

CAP	PRIO16
TC	PINDVAC
EBANK=	XSM
ZCADR	AZIMHC01
TC	PHASCHG
OCT	00174
TC	GOPIN

PRELAUNCH AZIMUTH CHANGE



L EXTENDED VERBS

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PO371	IMUATTCK	VERB 43	DESCRIPTION
R0372		LOAD IMU ATTITUDE ERROR METERS	
R0373		1. REQUIRE PROGRAM 00 ACTIVE, COARSE ALIGN ENABLE BIT OFF AND ZERO ICDU BIT OFF.	
R0375		2. IF QUID REP RELEASE OR LIPTOFF HAS OCCURRED REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG, OTHERWISE ALLOW CURRENT EXT VERB DISPLAY TO BE OVER-RIDDEN.	
R0377		3. REMOVE COARSE ALIGN ENABLE AND IMU ERROR COUNTER ENABLE	
R0379		4. DISPLAY FLASHING V25,N22 (LOAD NEW ICDU ANGLES).	
R0380		5. UPON PROCEED OR ENTER RESPONSE, INITIALIZE CURRENT DAC AND COMMAND VALUES, ENABLE ERROR COUNTERS	
R0381		TRANSFER LOADED VALUES TO REGISTERS, AND SEND COMMANDS.	
R0383		6. IF BUSY FLAG SET, RESET IT TO RELEASE EXT VERB DISPLAY.	
R0384			
0385	REF 2	LAST 241 43,2412 0 2715 0	IMUATTCK TC CRKPOCH.
0386	REF 1	43,2413 3 2471 1	CA OCTAL30 CHECK IF IMU ZERO AND IMU COARSE ARE ON
0387		43,2414 0 0006 1	EXTEND
0388	REF 21	LAST 218 43,2415 02 012 0	RAND CHAN12
0389	REF 68	LAST 231 43,2416 10 000 0	CCS A
0390	REF 11	LAST 241 43,2417 1 2120 1	TCF ALM/END NOT ALLOWED IF IMU COARSE OR IMU ZERO ON
0391	REF 1	43,2420 0 2457 0	TC OKLFBTS IS IT BEFORE OR AFTER LIPTOFF
0392	REF 5	LAST 240 43,2421 0 2076 1	TC TESTXACT AFTER
0393	REF 1	43,2422 4 4726 1	CS OCT50 REMOVE COARSE AND ECTR ENABLE.
0394		43,2423 0 0006 1	EXTEND
0395	REF 22	LAST 243 43,2424 03 012 1	WAND CHAN12
0396	REF 2	LAST 234 43,2425 3 2173 0	CAP VNLODCDU
0397	REF 24	LAST 240 43,2426 0 4555 0	TC BANKCALL
0398	REF 4	LAST 237 43,2427 20465 1	CADR GOXDSPP
0399	REF 1	43,2430 1 2444 0	TCF TRMATCK
0400		43,2431 0 2432 0	TC +1
0401	REF 4	LAST 198 43,2432 3 4752 0	CAP EBANK6
0402	REF 8	LAST 236 43,2433 54 003 0	TS EBANK SET E6 FOR NEEDLES.
0403	REF 5	LAST 212 E6,1476	EBANK= AK
0404	REF 25	LAST 243 43,2434 0 4555 0	TC BANKCALL INITIALIZE CURRENT DAC AND
0405	REF 1	43,2435 42427 0	CADR NEEDLE11 COMMAND VALUES
0406	REF 26	LAST 243 43,2436 0 4555 0	TC BANKCALL ENABLE ERROR COUNTERS.
0407	REF 1	43,2437 42446 1	CADR NEEDLER2
0408	REF 4	LAST 231 43,2440 3 4711 1	CAP TWO 4 MS MIN.
0410	REF 10	LAST 228 43,2441 0 5140 1	TC WAITLIST
0411	REF 6	LAST 243 E6,1476	EBANK= AK
0412	REF 1	43,2442 02447 1	2CADR ATTCK1
0412	REF 1	43,2443 66106 0	
0413	REF 2	LAST 243 43,2444 0 2457 0	TRMATCK TC OKLFBTS IS IT BEFORE OR APRER LIPTOFF
0414	REF 9	LAST 240 43,2445 1 5423 0	TCF ENDEXT AFTER
0415	REF 9	LAST 242 43,2446 0 2121 1	TC GOPIN



L EXTENDED VERBS

0416				43,2447	0 0008	1	ATTCK1	EXTEND		TRANSFER LOADED VALUES TO DESIRED REGS.
0417	REP	5	LAST	77	43,2450	3 1158	1	DCA	THETAD	
0418	REP	7	LAST	243	43,2451	53=477	0	DXCH	AK	
0419	REP	6	LAST	244	43,2452	31=157	0	CAE	THETAD +2	
0420	REP	8	LAST	244	43,2453	55=500	1	TS	AK +2	
0421	REP	17	LAST	228	43,2454	0 4633	0	TC	IBNKCALL	SENDS COMMANDS LIMITED TO +,- 384 PULSES
0422	REP	1			43,2455	42462	1	CADR	NEEDLES	AND LEAVES ERROR COUNTERS ENABLED.
0423	REP	11	LAST	229	43,2456	0 5213	1	TC	TASKOVER.	
0424	REP	12	LAST	156	43,2457	3 4706	1	CKLPTBTS	CAP BITS	HAS LIFTOFF OCCURRED
0425	REP	3	LAST	183	43,2460	7 0101	0	MASK	FLAGWRD5	
0426	REP	67	LAST	243	43,2461	10 000	0	CCS	A	
0427	REP	27	LAST	233	43,2462	0 0002	0	TC	O	YES
0428	REP	13	LAST	244	43,2463	3 4706	1	CAP	BITS	
0429					43,2464	0 0008	1	EXTEND		
0430	REP	4	LAST	161	43,2465	02 030	0	RAND	CHAN30	
0431	REP	68	LAST	244	43,2466	10 000	0	CCS	A	
0432	REP	2	LAST	131	43,2467	1 6708	1	TCF	Q+1	
0433	REP	28	LAST	244	43,2470	0 0002	0	XACT00	TC O	YES
0434					43,2471	00030	1	OCTAL30	OCT 30	
0435	REP	3	LAST	243	43,2472	0 2715	0	VB64	TC CHKPOCH	DEMAND PROGRAM 00.
0436	REP	6	LAST	243	43,2473	0 2076	1	TC	TESTXACT	IF DISPLAY SYS. NOT BUSY,MAKE IT BUSY.
0437					43,2474	0 0004	0	INHINT		
0438	REP	1			43,2475	3 4677	0	CAP	PRIQ4	
0439	REP	5	LAST	242	43,2476	0 5042	1	TC	FINDVAC	
0440	REP	2	LAST	88	E4,1720			EBANK=	RHO5B	
0441	REP	1			43,2477	03565	1	ZCADR	SBANDANT	CALC.,DISPLAY S-BAND ANTENNA ANGLES.
0441	REP	1			43,2500	64104	0			
0442	REP	3	LAST	198	43,2501	0 5112	0	TC	ENDORJOB	

R0443 ENATMA VERB 58 DESCRIPTION  
R0444 ENABLE AUTOMATIC ATTITUDE MANEUVER

R0445 VERB58 RESETS STIKFLAG TO ENABLE R61 TO PERFORM AUTOMATIC TRACKING MANEUVERS, AFTER INTERRUPTIONS BY RHC ACT-  
R0447 IVITY.

0448	REP	7	LAST	238	43,2502	0 5447	0	ENATMA	TC DOWNFLAG	RESET STIKFLAG.
0449	REP	2	LAST	195	43,2503	00020	0	ADRES	STIKFLAG	BIT 14 FLAG 1
0450	REP	10	LAST	243	43,2504	0 2121	1	TC	GOPIN	

R0451 STRQCN VERB 68 DESCRIPTION  
R0452 STROKE TEST SETUP/ENABLE  
R0453 1. SET EXT VERB DISPLAY BUSY FLAG  
R0454 2. SCHEDULE STRKTST1 WITH PRIORITY 30.  
R0455 3. RELEASE EXT VERB DISPLAY.

L EXTENDED VERBS

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0456	REP	2	LAST	102	E6,1635		EBANK=	TSTVCDT			
0457	REP	5	LAST	193	43,2505	4 0102 0	STROKON	CS	FLAGWRD8	V68	PERMITTED ONLY DURING TVC
0458	REP	4	LAST	193	43,2508	7 4105 0		MASK	OCT80000		
0459					43,2507	0 0008 1		EXTEND			
0460	REP	12	LAST	243	43,2510	6 2120 0		BZMP	ALM/END		NOT TVC....FLASH OF ERROR LIGHT
0461	REP	4	LAST	193	43,2511	3 4371 0		CAP	PRI030		JOB REQUEST, TO SET UP STROKE TEST,
0463	REP	6	LAST	225	43,2512	0 5027 1		TC	NOVAC		INCLUDING INITIALIZATIONS
0464	REP	2	LAST	102	E6,1614			EBANK=	STROKER		
0465	REP	1			43,2513	03446 1		2CADR	STRCTSTI		
0465	REP	1			43,2514	40108 1					
0466	REP	11	LAST	244	43,2515	0 2121 1		TC	GOPIN		
R0467					STABLISH	VERB 46		DESCRIPTION			
R0468					ESTABLISH G AND N CONTROL						
R0469					1. IF TVC DAP IS ON, ALARM AND RETURN OTHERWISE REQUIRE EXT VERB DISPLAY SYSTEM						
R0471					AVAILABLE, SET BUSY FLAG AND GO TO DAPPIG TO DETERMINE VEHICLE CONFIGURATION.						
0473	REP	6	LAST	245	43,2516	4 0102 0	STABLISH	CS	FLAGWRD8	VB 46	
0474	REP	5	LAST	245	43,2517	7 4105 0		MASK	OCT80000		NOT PERMITTED WHEN TVC DAP IS ON.
0475					43,2520	0 0008 1		EXTEND			
0476					43,2521	6 2523 1		BZMP	+2		
0477	REP	13	LAST	245	43,2522	0 2120 0		TC	ALM/END		
0478	REP	5	LAST	243	43,2523	3 4752 0		CAP	EBANK8		SET EBANK TO E6
0479	REP	9	LAST	243	43,2524	54 003 0		TS	EBANK		
0480	REP	10	LAST	238	43,2525	0 4574 0		TC	POSTJUMP		
0481	REP	1			43,2526	65521 1		CADR	DAPPIG		



L EXTENDED VERBS

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R0482 CREWMANU VERB 49 DESCRIPTION  
R0483 START AUTOMATIC ATTITUDE MANEUVER  
R0484 1. REQUIRE PROGRAM 00 ACTIVE.  
R0485 2. SET EXT VERB DISPLAY BUSY FLAG.  
R0486 3. SCHEDULE R62DISP WITH PRIORITY 10.  
R0487 4. RELEASE EXT VERB DISPLAY.

R0488 R62DISP  
R0489 1. DISPLAY FLASHING V06,N22 (DECIMAL DISPLAY NEW ICDU ANGLES). UPON IMMEDIATE RETURN, SET-UP GROUP  
R0490 4 FOR RESTART OF DISPLAY SEQUENCE.  
R0491 RESPONSES  
R0492 A. TERMINATE  
R0493 1. GO TO GOTOPOCH.  
R0494 B. PROCEED  
R0495 1. SET 3AXISFLG TO INDICATE MANEUVER IS SPECIFIED BY 3 AXIS.  
R0496 2. EXECUTE R60CSM (ATTITUDE MANEUVER).  
R0498 3. ZERO GROUP 4 (END R62).  
R0499 C. ENTER  
R0500 1. REPEAT FLASHING V06,N22.  
R0501

0502	REF	4	LAST	244	43,2527	0 2715 0	CREWMANU TC	CHKPOCH	DEMAND POO
0503	REF	7	LAST	244	43,2530	0 2076 1	TC	TESTACT	
05031	REF	1			43,2531	3 4676 1	CAF	PRI010	
05032	REF	6	LAST	244	43,2532	0 5042 1	TC	FINDVAC	
0504	REF	1			1155		EBANK=	CPHI	
0505	REF	1			43,2533	02330 0	2CADR	R62DISP	
0505	REF	1			43,2534	56102 1			
0506	REF	4	LAST	244	43,2535	0 5112 0	TC	ENDOFJOB	



L EXTENDED VERBS

REF	VERB	DESCRIPTION	
	DAPDISP	VERB 48. DESCRIPTION	
		LOAD AUTOPILOT DATA (ROUTINE R03)	
		0. CHECKPAIL AND RETURN IF TVC.	
		1. REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG.	
		2. LOWER PRIORITY TO 10.	
		3. DISPLAY FLASHING V04,N46 (DISPLAY AUTOPILOT CONFIGURATION)	
		4. UPON PROCEED RESPONSE, EXECUTE S41.2.	
		5. DISPLAY FLASHING V06,N47 (DISPLAY CM WGT., LEM WGT.)	
		6. UPON PROCEED RESPONSE EXECUTE S40.14.	
		7. DISPLAY FLASHING V06,N48 (DISPLAY PITCH TRIM, YAW TRIM)	
		8. UPON PROCEED RESPONSE, RELEASE EXTENDED VERB DISPLAY SYSTEM	
0527	REF 3 LAST 241 TO 247'	103 317* COUNT* 33/EXTVB	
0528	REF 7 LAST 245	43,2538 4 0102 0 DAPDISP CS FLAGWRD8	
0529	REF 6 LAST 245	43,2537 7 4105 0 MASK OCT80000	
0530		43,2540 0 0008 1 EXTEND	
0531		43,2541 6 2543 1 BZPF +2	
0532	REF 14 LAST 245	43,2542 0 2120 0 TC ALM/END	
			TVC = 10, CS YIELDS 01, BZPF TO CONTINUE RETURN IF TVC
0533	REF 8 LAST 246	43,2543 0 2078 1 TC TESTXACT	
05331	REF 27 LAST 243	43,2544 0 4555 0 TC BANKCALL	
05332	REF 1	43,2545 64000 0 CADR DAPDISP1	
0536		42,2000 BANK 42	
0537	REF 1	42,2000 SETLOC EXTVB8	
0538		42,2000 BANK	
0539	REF 1	COUNT 24/R03	
0540	REF 6 LAST 245	42,2000 3 4752 0 DAPDISP1 CAP EBANK8	
0541	REF 10 LAST 245	42,2001 54 003 0 TS EBANK	
05415	REF 2 LAST 246	42,2002 3 4876 1 CAP PRIO10	
05416	REF 1	42,2003 0 5103 0 TC PRIOCHNG	
0542	REF 1	42,2004 3 2061 1 DONQUN46 CAP V04N46	
0543	REF 28 LAST 247	42,2005 0 4555 0 TC BANKCALL	
0544	REF 5 LAST 243	42,2006 20485 1 CADR GOXDSPF	
			R1 R2 DAPDATR1 DAPDATR2 GOXDSP ROUTINES USED FOR EXTENDED VERBS.
0545	REF 10 LAST 243	42,2007 0 5423 1 TC ENDEXT	
0546		42,2010 0 2012 0 TC +2	
0547	REF 1	42,2011 0 2004 1 TC DONQUN46	
			EXT. VBS GO TO ENDEXT, NOT ENDOPJOB.
05471	REF 11 LAST 210	42,2012 3 1468 1 CA DAPDATR1	
05472	REF 17 LAST 198	42,2013 7 4707 1 MASK BIT4	
05473	REF 69 LAST 244	42,2014 10 000 0 CCS A	
05474	REF 1	42,2015 1 2054 0 TCP MAXIN	
05475	REF 8 LAST 244	42,2016 0 5447 0 TC DOWNFLAG	
05476	REF 1	42,2017 00212 0 ADRES MAXDBFLO	
0548	REF 29 LAST 247	42,2020 0 4555 0 MAXOUT TC BANKCALL	
0549	REF 1	42,2021 40148 0 CADR S41.2	
0550	REF 1	42,2022 3 2060 0 DONQUN47 CAP V06N47	
			R1 R2 R3







L EXTENDED VERBS

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R0580 RPER (PERIGEE RADIUS), RAPO (APOGEE RADIUS), HPER (PERIGEE  
R0581 HEIGHT ABOVE LAUNCH PAD OR LUNAR LANDING SITE), HAPO (APOGEE  
R0582 HEIGHT AS ABOVE), TPER (TIME TO PERIGEE), TPF (TIME TO  
R0583 INTERSECT 300 KFT ABOVE PAD OR 35KFT ABOVE LANDING SITE).  
R0584 FLASH MONITOR V16N44 (HAPO, HPER, TPF) TPF IS -59M59S IF IT WAS  
R0585 NOT COMPUTABLE, OTHERWISE IT INCREMENTS ONCE PER SECOND.  
R0586 ASTRONAUT HAS OPTION TO MONITOR TPER BY KEYING IN N 32 E.  
R0587 DISPLAY IS IN KMS, IS NEGATIVE (AS WAS TPF), AND INCREMENTS  
R0588 ONCE PER SECOND ONLY IF TPF DISPLAY WAS -59M59S.

R0589 2. IF AVERAGE G IS ON'  
R0590 CALLS SR30.1 APPROX EVERY TWO SECS. STATE VECTOR IS ALWAYS  
R0591 FOR THIS VEHICLE. V82 DOES NOT DISTURB STATE VECTOR. RESULTS  
R0592 OF SR30.1 ARE RAPO, RPER, HAPO, HPER, TPER, TPF.  
R0593 FLASH MONITOR V16N44 (HAPO, HPER, TPF).  
R0594 IF MODE IS P11, THEN CALL DELRSPL SO ASTRONAUT CAN MONITOR  
R0595 RESULTS BY N50E. SPLASH COMPUTATION DONE ONCE PER TWO SECS.

R05951 ADDENDUM' HAPO AND HPER SHOULD BE CHANGED TO READ HAPOX AND HPERX IN THE  
R05952 ABOVE REMARKS.

0596	REF	9	LAST	247	43,2546	0	2076	1	V82PERF	TC	TESTXACT
0597	REF	1			43,2547	3	4756	1		CAP	PRIOT
0598	REF	2	LAST	247	43,2550	0	5103	0		TC	PRIOCHNG
0599	REF	11	LAST	245	43,2551	0	4574	0		TC	POSTJUMP
0600	REF	1			43,2552	46332	1			CADR	V82CALL

\*\*\*\*\* V82CALL MUST NOT BE A FINDVAC JOB.

R0601 VB83PERF VERB 83 DESCRIPTION  
R0602 REQUEST RENDEZVOUS PARAMETER DISPLAY (R31)  
R0603 1. SET EXT VERB DISPLAY BUSY FLAG.  
R0604 2. SCHEDULE V83CALL WITH PRIORITY 10.  
R0605 A. DISPLAY  
R0606 R1 RANGE  
R0607 R2 RANGE RATE  
R0608 R3 THETA

0609	REF	10	LAST	249	43,2553	0	2076	1	V83PERF	TC	TESTXACT
0610					43,2554	0	0004	0		INHINT	
0611	REF	2	LAST	198	43,2555	4	0105	1		CS	FLAGWRD9
0612	REF	18	LAST	247	43,2556	7	4707	1		MASK	BIT4
0613	REF	3	LAST	249	43,2557	26	105	1		ADS	FLAGWRD9
0614	REF	3	LAST	222	43,2560	3	4754	0		CAP	PRIOS
0615	REF	7	LAST	245	43,2561	0	5027	1		TC	NOVAC
0616	REF	4	LAST	202	E4,1770					EBANK=	SUBEXIT
0617	REF	1			43,2562	03150	0			ZCADR	R31CALL
0617	REF	1			43,2563	72064	0				
0618	REF	5	LAST	246	43,2564	0	5112	0		TC	ENDOFJOB

SET R31 FLAG-BIT 4 FLAGWRD9



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0619	REP	11	LAST	249	43,2565	0	2076	1	V85PERP	TC	TESTINACT
0620					43,2566	0	0004	0		INHINT	
0621	REP	19	LAST	249	43,2567	4	4707	1		CS	BIT4
0622	REP	4	LAST	249	43,2570	7	0105	1		MASK	FLAGWRDg
0623	REP	5	LAST	250	43,2571	54	105	1		TS	FLAGWRDg
0624	REP	2	LAST	231	43,2572	0	2580	0		TC	V83PERP +5

RESET R31 FLAG TO INDICATE R34

L EXTENDED VERBS

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P0825	GOTOR21 VERB 57											
R0828	GOTOR23- VERB 54 DESCRIPTION											
R0827	SET UP MARKING FOR R22(REND TRACK DATA PROC)											
R0828	1. SET EXT VERB DISPLAY BUSY FLAG											
R0829	2. IF REND (P20 RUNNING) + TRACK (TRACKING ALLOTTED) FLAGS ARE SET,											
R0830	SCHEDULE R21 OR R23 WITH PRIORITY 16, OTHERWISE TURN ON ALARM 408											
R0831	3. RELEASE EXT VERB DISPLAY SYSTEM											
0832	REP	9	LAST	247	43,2573	0	5447	0	GOTOR21	TC	DOZFLG	CLEAR R23FLG
0833	REP	1			43,2574	0	0025	0		ADRES	R23FLG	BIT 9 FLAG 1
0834					43,2575	0	2800	0		TC	+3	
0835	REP	7	LAST	248	43,2578	0	5435	0	GOTOR23	TC	UPFLG	SET R23FLG
0836	REP	2	LAST	251	43,2577	0	0025	0		ADRES	R23FLG	BIT 9 FLAG 1
0837	REP	12	LAST	250	43,2600	0	2078	1		TC	TESTACT	
0838	REP	8	LAST	199	43,2601	3	0074	1		CA	FLAGWRD0	VB 57 UNACCEPTABLE UNLESS BOTH
0839	REP	24	LAST	220	43,2602	7	4704	1		MASK	BIT7	RENDEZVOUS AND TRACK FLAGS ON
0840					43,2603	0	0008	1		EXTEND		
0841	REP	1			43,2604	1	2827	1		BZF	R22ALARM	
0842	REP	7	LAST	197	43,2605	3	0075	0		CA	FLAGWRD1	
0843	REP	14	LAST	244	43,2608	7	4708	0		MASK	BIT5	
0844					43,2607	0	0008	1		EXTEND		
0845	REP	2	LAST	251	43,2610	1	2827	1		BZF	R22ALARM	
0846	REP	8	LAST	251	43,2611	3	0075	0		CA	FLAGWRD1	TEST R23FLG
0847	REP	17	LAST	218	43,2612	7	4702	1		MASK	BIT9	
0848					43,2613	0	0008	1		EXTEND		
0849	REP	1			43,2614	1	2822	1		BZF	REGR21	R21
0850	REP	5	LAST	242	43,2615	3	4783	1		CAP	PRI016	
0852	REP	8	LAST	249	43,2618	0	5027	1		TC	NOVAC	
0853	REP	12	LAST	228	E7,1725					EBANK=	MRK(RUF)1	
0854	REP	1			43,2617	0	2447	1		2CADR	R23CSM	
0854	REP	1			43,2620	7	8087	1				
0855	REP	6	LAST	249	43,2621	0	5112	0		TC	ENDOFJOB	
0856	REP	6	LAST	251	43,2622	3	4783	1	REGR21	CAP	PRI016	
0858	REP	9	LAST	251	43,2623	0	5027	1		TC	NOVAC	
0859	REP	13	LAST	251	E7,1725					EBANK=	MRK(RUF)1	
0860	REP	1			43,2624	0	2445	0		2CADR	R21CSM	
0860	REP	1			43,2625	7	8087	1				
0861	REP	7	LAST	251	43,2628	0	5112	0		TC	ENDOFJOB	
0862	REP	20	LAST	236	43,2627	0	5537	0	R22ALARM	TC	ALARM	VERB 57 WAS SELECTED AND NEITHER REND
0863					43,2630	0	0408	0		OCT	00406	NOR TRACK FLAG WERE ON.
0864	REP	14	LAST	248	43,2631	0	5423	1		TC	ENDEXT	



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	VERB	86	DESCRIPTION
R0665			V86 IS TO R23 AS MARK REJECT IS TO R21
R0666			V86 IS TO R23 AS MARK REJECT IS TO R21
R0667			V86 IS THE MARK REJECT FOR R23 (THE BACKUP MARKING ROUTINE)
0668	REF 14	LAST 251	E7,1725 EBANK= MRKBUF1
0669	REF 1		43,2832 3 4753 1 V86PERP CAP EBANK7 BACKUP MARK REJECT (R23)
0670	REF 11	LAST 247	43,2833 58 003 1 XCH EBANK
0671	REF 8	LAST 224	43,2834 3 7718 0 CA NEGONE
0672	REF 15	LAST 252	43,2835 55*725 1 TS MRKBUF1
0673	REF 12	LAST 245	43,2836 0 2121 1 TC GOPIN



## L EXTENDED VERBS

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POBB9	TRACKTRM	VERB	56	DESCRIPTION
R0690				TERMINATE TRACKING (P20)
R0691				1. KNOCK DOWN RENDEZVOUS, TRACK, AND UPDATE FLAGS.
R0692				2. REQUIRE P20 NOT RUNNING ALONE OR GO TO GOTOPOCH (REQUEST PROGRAM 00).
R0694				3. REQUIRE R22 RUNNING OR GO TO PINBRCH.
R0695				4. IF INTEORATION RUNNING, STALL UNTIL IT IS COMPLETED, THEN ZERO GROUPS 2 AND 3 TO KILL R21 + R22.
R0697				3. KNOCK DOWN RENDEZVOUS, R22, R21, TRACK, UPDATE, AND TARG1 FLAGS.
R0699				4. GO TO ENEMA (SOFTWARE RESTART).
R0700				REFERENCE
R0701				P20 RENDEZVOUS NAVIGATION.
R0702				R21 RENDEZVOUS TRACKING SIGHTING MARK.
R0703				R22 RENDEZVOUS TRACKING DATA PROCESSING.
0704	REP	25	LAST 251	43,2837 3 4704 0 TRACKTRM CA BIT7 IS REND FLAG ON
0705	REP	9	LAST 251	43,2840 7 0074 0 MASK FLAGWRD0
0706				43,2841 0 0006 1 EXTEND
0707	REP	13	LAST 252	43,2842 1 2121 0 BZF GOPIN NO
0708	REP	10	LAST 251	43,2843 0 5447 0 TC DOWNFLAG
0709	REP	1		43,2844 00010 0 ADRES RNDVZFLG
0710	REP	15	LAST 251	43,2845 3 4706 1 CA BITS IS TRACK FLAG ON
0711	REP	9	LAST 251	43,2846 7 0075 1 MASK FLAGWRD1
0712				43,2847 0 0006 1 EXTEND
0713	REP	14	LAST 253	43,2850 1 2121 0 BZF GOPIN NO
0714	REP	11	LAST 253	43,2851 0 5447 0 TC DOWNFLAG
0715	REP	1		43,2852 00031 0 ADRES TRACKFLG
07151	REP	12	LAST 253	43,2853 0 5447 0 TC DOWNFLAG
07152	REP	1		43,2854 00027 1 ADRES UPDATFLG
0716	REP	13	LAST 253	43,2855 0 5447 0 TC DOWNFLAG
0717	REP	2	LAST 197	43,2856 00007 0 ADRES IMUSE
07173	REP	7	LAST 247	43,2857 3 4752 0 CAF EBANK6
07174	REP	12	LAST 252	43,2860 54 003 0 TS EBANK
071749				43,2861 0 0004 0 INHINT
07175	REP	33	LAST 248	43,2862 0 4555 0 TC HANKCALL
07176	REP	3	LAST 198	43,2863 45245 0 CADR STOPRATE
07177	REP	9	LAST 252	43,2864 3 7716 0 CAF NEGONE
07178	REP	20	LAST 236	43,2865 55=303 1 TS OPTIND
0718	REP	2	LAST 195	43,2866 0 6006 1 TC INTPRET
0719				43,2867 77624 1 CALL
0720	REP	3	LAST 204	43,2870 27371 1 INTSTALL DONT INTERRUPT INTEGRATION
0721				43,2871 77776 1 EXIT



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0767	REP	18	LAST	254	43,2714	0 2121 1		TC	GOPIN
0768	REP	5	LAST	197	43,2715	3 1011 0	CHKPOOH	CA	MODREG
0769					43,2716	0 0006 1		EXTEND	
0770	REP	3	LAST	238	43,2717	1 6711 1		BZF	TCQ
0771	REP	15	LAST	247	43,2720	1 2120 1		TCF	ALM/END
0772					43,2721	0 0006 1	EXDAPOFF	EXTEND	
0773	REP	1			43,2722	3 2731 0		DCA	IDLECADR
0774	REP	4	LAST	183	43,2723	53=313 0		DXCH	TSLOC
0775	REP	7	LAST	247	43,2724	4 4105 0		CS	OC780000
0776	REP	8	LAST	247	43,2725	7 0102 0		MASK	FLAGWRD6
0777	REP	9	LAST	255	43,2726	54 102 0		TS	FLAGWRD6
0778	REP	29	LAST	244	43,2727	0 0002 0		TC	Q
0779	REP	10	LAST	211	E6,1425			ERANK=	PACTOFF
0780	REP	3	LAST	199	43,2730	03143 1	IDLECADR	2CADR	TS IDLOC
0780					43,2731	12106 0			

SET TS TO IDLE.

RESET DAPBITS 1 AND 2.

L EXTENDED VERBS

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- R0781 VERB 89 DESCRIPTION RENDEZVOUS FINAL ATTITUDE ROUTINE (R63)
- R0782 CALLED BY VERB 89 ENTER DURING P00. PRIO 10 USED. CALCULATES AND
- R0783 DISPLAYS FINAL GIMBAL ANGLES TO POINT CSM +X AXIS OR PREFERRED AXIS
- R0784 (UNIT(Z)COS55 DEG + UNIT(X)SIN55 DEG) AT LM.
- R0785 1. KEY IN V 89 E ONLY IF IN PROG 00. IF NOT IN P00, OPERATOR ERROR AND
- R0786 EXIT R63, OTHERWISE CONTINUE.
- R0787 2. IF IN P00, DO IMU STATUS CHECK (R02BOTH). IF IMU ON AND ITS
- R0788 ORIENTATION KNOWN TO CGC, CONTINUE.
- R0789 3. FLASH DISPLAY V 04 N 08. R2 INDICATES WHICH SPACECRAFT AXIS IS TO
- R0790 BE POINTED AT LM. INITIAL CHOICE IS PREFERRED AXIS. (R2=1).
- R0791 ASTRONAUT CAN CHANGE TO (+X) AXIS (R2 NOT= 1) BY V 22 E 2 E. CONTINUE
- R0792 AFTER KEYING IN PROCEED.
- R0793 4. SET PREFERRED ATTITUDE FLAG ACCORDING TO OPTION DESIRED. SET FLAG
- R0794 FOR PREFERRED AXIS. RESET FLAG FOR X AXIS.
- R0795 5. CURRENT TIME IS STORED AND R63COMP IS CALLED
- R0796 R63COMP JOB
- R0797 UPDATES CSM AND LM STATE VECTORS USING CONIC EQUATIONS
- R0798 CALCULATES BOTH PREFERRED AND X AXIS TRACKING ATT FROM CSM TO LM.
- R0799 DESIRED GIMBAL ANGLES AS INDICATED BY PREFERRED ATTITUDE FLAG
- R0800 ARE STORED FOR LATER R60CSM CALL.
- R0801 6. FLASH DISPLAY V 06 N18 AND AWAIT RESPONSE.

- R0802 7. RECYCLE- RETURN TO STEP 5.
- R0803 TERMINATE- EXIT R63 ROUTINE
- R0804 PROCEED- RESET 3AXISPLG AND CALL R60CSM FOR ATTITUDE MANEUVER.

0805	REP	5	LAST	246	43,2732	0	2715	0	V89PERF	TC	CHKPOCH	DEMAND P00
0806	REP	13	LAST	251	43,2733	0	2076	1		TC	TESTACT	
0807					43,2734	0	0004	0			INHINT	
0808	REP	3	LAST	247	43,2735	3	4676	1		CAP	PRIO10	
0809	REP	7	LAST	246	43,2736	0	5042	1		TC	PINDVAC	
0810	REP	2	LAST	88	E4,1715					EBANK=	P21TIME	
0811	REP	1			43,2737	0	03601	0		ZCADR	V89CALL	
0811	REP	1			43,2740	7	0064	1				
0812	REP	8	LAST	251	43,2741	1	5112	1		TCF	ENDOFJOB	
0813					43,2742	0	0004	0	WMATRXNG	INHINT		
0814	REP	26	LAST	228	43,2743	4	4712	0		CS	HIT1	VB 86 - CLEAR RENDWPLG TO REINITIALIZE W-MATRIX



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0815	REP	4	LAST	244	43,2744	7 0101 0	MASK	FLAGWRD5		
0816	REP	5	LAST	257	43,2745	54 101 0	TS	FLAGWRD5		
08164	REP	15	LAST	254	43,2746	0 5447 0	TC	DOWNFLAG	RESET ORBFLAG	
08166	REP	2	LAST	203	43,2747	00086 1	ADRES	ORBFLAG		
0817	REP	19	LAST	255	43,2750	0 2121 1	TC	GOPIN		
0818	REP	1			43,2751			GOSHSUM	EQUALS SHOWSUM	
0819	REP	6	LAST	258	43,2751	0 2715 0	SHOWSUM	TC	ORXPOCH	
0820	REP	14	LAST	258	43,2752	0 2076 1	TC	TESTXACT	*	
0821	REP	1			43,2753	3 4712 1	CAP	S+1	*	
0822	REP	2	LAST	80	43,2754	55=376 0	TS	SKEEP6	* SHOWSUM OPTION	
0823	REP	1			43,2755	3 4714 1	CAP	S+ZERO	*	
0824	REP	3	LAST	179	43,2758	55=362 0	TS	SMODE	* TURN OFF SELF-CHECK	
0825	REP	1			43,2757	3 3243 1	CA	SELFADRS	*	
0826	REP	3	LAST	188	43,2760	55=361 0	TS	SELFRET	*	
0827	REP	1			43,2761	0 3520 0	TC	STSHOSUM	* ENTER ROPECHK	
0828	REP	2	LAST	80	43,2762	23=372 0	SDISPLAY	LXCH	SKEEP2	
0829	REP	2	LAST	80	43,2763	23=373 1		LXCH	SKEEP3	
0830	REP	1			43,2764	3 3242 0	NOKILL	CA	ADRS1	
0831	REP	32	LAST	240	43,2765	54 156 1	TS	MPAC +2	*	
0832	REP	1			43,2766	3 2777 1	CA	VNCON	* 0501	
0833	REP	34	LAST	253	43,2767	0 4555 0	TC	BANKCALL	*	
0834	REP	8	LAST	248	43,2770	20465 1	CADR	GOKDSPF	*	
0835					43,2771	0 2774 1	TC	+3	*	
0836	REP	1			43,2772	0 3631 0	TC	NXTBNK	*	
0837	REP	1			43,2773	0 2764 0	TC	NOKILL	*	
08375	REP	2	LAST	257	43,2774	3 3243 1	CA	SELFADRS		
08376	REP	2	LAST	80	43,2775	55=371 1	TS	SKEEP1		
0838	REP	15	LAST	251	43,2776	0 5423 1	TC	ENDEXT	*	
0839					43,2777	01201 0	VNCON	VN	501	
0840	REP	3	LAST	257	43,3000	3 1376 1	ENDSUMS	CA	SKEEP6	
0841					43,3001	0 0008 1		EXTEND	*	
0842	REP	2	LAST	189	43,3002	1 3334 1	BZF	SELFCHK	* ROPECHK, START SELFCHK AGAIN.	
0843	REP	2	LAST	257	43,3003	0 3520 0	TC	STSHOSUM	* START SHOWSUM AGAIN.	
R0844	VERB	79	REQUEST LUNAR LANDMARK SELECTION. RESTRICTED TO POO.							
0845	REP	7	LAST	257	43,3004	0 2715 0	CALLR35	TC	ORXPOCH	
0846	REP	15	LAST	257	43,3005	0 2076 1		TC	TESTXACT	
0847	REP	4	LAST	249	43,3008	3 4754 0		CAP	PRIO5	
0849	REP	8	LAST	256	43,3007	0 5042 1		TC	FINDVAC	
0850	REP	2	LAST	88	43,1725			ERANK=	KLOOCPNT	
0851	REP	1			43,3010	03215 1	ZCADR	LNDMKSEL		
0851	REP	1			43,3011	62064 1				

L EXTENDED VERBS

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0852 REP 9 LAST 256 43,3012 0 5112 0 TC ENDOFJOB R35 WILL DO ENDEXT
R0853 VB 76 SET PREFERRED ATTITUDE FLAG - DRIVE TO PREFERRED.
0854 REP 10 LAST 254 43,3013 0 5435 0 SETPRFLG TC UPFLAG
0855 REP 1 43,3014 00120 1 ADRES PRPTRCAT BIT 10 FLAG 5
0856 REP 20 LAST 257 43,3015 0 2121 1 TC GOPIN
R0857 VB 77 RESET PREFERRED ATTITUDE FLAG - DRIVE TO +X-AXIS ATT.
0858 REP 16 LAST 257 43,3016 0 5447 0 RESETPRF TC DOWNFLAG
0859 REP 2 LAST 258 43,3017 00120 1 ADRES PRPTRCAT BIT 10 FLAG 5
0860 REP 21 LAST 258 43,3020 0 2121 1 TC GOPIN
R0861 VB 87 SET VHF RANGE FLAG - ALLOWS R22 TO ACCEPT RANGE DATA.
0862 REP 3 LAST 253 43,3021 0 6006 1 SETVHFLG TC INTPRET
0863 43,3022 77414 0 SET EXIT
0864 REP 2 LAST 195 43,3023 04466 1 VHFPRFLAG
0865 REP 22 LAST 258 43,3024 0 2121 1 TC GOPIN
R0866 VB 88 RESET VHF RANGE FLAG - STOPS ACCEPTANCE OF RANGE DATA.
0867 REP 4 LAST 258 43,3025 0 6006 1 RESETVHF TC INTPRET
0868 43,3026 77414 0 CLEAR EXIT
0869 REP 3 LAST 258 43,3027 04666 0 VHFPRFLAG
08695 REP 1 43,3030 0 5520 0 TC TRFAILOR TRACKER FAIL LIGHT
0870 REP 23 LAST 258 43,3031 0 2121 1 TC GOPIN
R0871 VERB 66. VEHICLES ARE ATTACHED. - MOVE THIS VEHICLE STATE VECTOR TO
R0872 OTHER VEHICLE STATE VECTOR.

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R0873 USE SUBROUTINE GENTRAN.

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0874 REP 1 E3,1554 EBANK= RRECTHIS
0875 REP 4 LAST 256 43,3032 3 4676 1 ATTACHED CAP PRIO10
0876 REP 9 LAST 257 43,3033 0 5042 1 TC FINDVAC
08761 REP 2 LAST 258 E3,1554 EBANK= RRECTHIS
08762 REP 1 43,3034 03037 0 2CADR ATTACHIT
08762 REP 1 43,3035 66103 0
08763 REP 10 LAST 258 43,3036 0 5112 0 TC ENDOFJOB
0877 REP 5 LAST 258 43,3037 0 6006 1 ATTACHIT TC INTPRET
0878 43,3040 77624 1 CALL
0879 REP 4 LAST 253 43,3041 27371 1 INTSTALL

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L - EXTENDED VERBS

08791				43,3042	43014	0	SET	BCN	
08792	REP	1		43,3043	04064	1		MOONOTH	
08793	REP	1		43,3044	04303	0		MOONTHIS	
08794				43,3045	87050	0		+3	
08795				43,3046	77614	1	CLEAR		
08796	REP	2	LAST	259	43,3047	04284		MOONOTH	
0880				43,3050	77776	1	EXIT		
0881	REP	1		43,3051	3 3076	0	CAF	OCTS1	
0882	REP	5	LAST	222	43,3052	0 5475	TC	GENTRAN	
0883	REP	3	LAST	258	43,3053	01554	ADRES	RRECTHIS	
0884	REP	1		43,3054	01628	1	ADRES	RRECTOIH	
08845				43,3055	0 0003	1	TACHEXIT	RELINT	
088455	REP	6	LAST	258	43,3056	0 6006	TC	INTPRET	
088457				43,3057	77624	1	CALL		
088459	REP	1		43,3060	26662	1		PTOACSM	
088461				43,3061	45154	0	LXA,2	CALL	
088463	REP	2	LAST	87	43,3062	02150		PCDY	
088465	REP	1		43,3063	20237	0		SVDWN1	
088467				43,3064	77624	1	CALL		
088469	REP	1		43,3065	20283	1		SVDWN2	
088471				43,3066	77776	1	EXIT		
0885	REP	1		43,3067	3 3077	1	CAF	TCPINAD	
0886	REP	1		43,3070	50 120	1	INDEX	FIXLOC	
0887	REP	7	LAST	227	43,3071	54 052	TS	QPRET	
0888	REP	13	LAST	254	43,3072	0 4574	TC	POSTJUMP	
0889	REP	1		43,3073	27406	0	CADR	INTWAKE	
0890				43,3074	77634	0	TCPIN	RTB	
0891	REP	3	LAST	232	43,3075	21176		PINBRNCH	
0892				43,3076	00051	0	OCTS1	OCT	51
0893	REP	1		43,3077	67074	0	TCPINAD	CADR	TCPIN
R089302 VERB 47. MOVE LM STATE VECTOR INTO OM STATE VECTOR.									
089304	REP	5	LAST	258	43,3100	3 4676	LMTOCMSV	CAF	PRI010
089305	REP	10	LAST	258	43,3101	0 5042		TC	FINDVAC
089306	REP	4	LAST	259	43,1554			EBANK=	RRECTHIS
089307	REP	1		43,3102	03105	0		2CADR	LMTOCM
089307	REP	1		43,3103	66103	0			
089308	REP	11	LAST	258	43,3104	0 5112		TC	ENDOFJOB
089309	REP	7	LAST	259	43,3105	0 6006	LMTOCM	TC	INTPRET
08931				43,3106	77624	1		CALL	
089312	REP	5	LAST	258	43,3107	27371			INTSTALL
089314				43,3110	43014	0		SET	BCN
089316	REP	2	LAST	259	43,3111	04063			MOONTHIS
089318	REP	3	LAST	259	43,3112	04304			MOONOTH

OUR STATE VECTOR INTO OTHER VIA GENTRAN

UPDATE RN, VN, R-OTHER, V-OTHER





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0931	REP	1		43,3147	00221 0		ADRES	QUITFLAG	
0932	REP	23	LAST	240	43,3150	3 4714 1	CAP	ZERO	
0933	REP	14	LAST	259	43,3151	0 4574 0	TC	POSTJUMP	
0934	REP	1		43,3152	10010 1		CADR	V37	
0949	REP	5	LAST	207	E5,1751		EBANK=	LANDMARK	
0950	REP	7	LAST	260	43,3153	0 5253 0	V52	TC	CHECKMM
0951					43,3154	00028 0	MM	22	
0952	REP	18	LAST	260	43,3155	0 2120 0	TC	ALM/END	
09521	REP	1		43,3156	3 3174 0		CAP	LANDBANK	
09522	REP	13	LAST	253	43,3157	54 003 0	TS	EBANK	
0953	REP	3	LAST	260	43,3160	4 4758 0	CS	PRI07	
0954	REP	6	LAST	261	43,3161	7 1751 1	MASK	LANDMARK	
0955	REP	7	LAST	261	43,3162	55=751 1	TS	LANDMARK	
0956	REP	25	LAST	227	43,3163	3 1330 0	CA	MARKSTAT	
0957	REP	1		43,3164	54 021 0		TS	SR	
0958	REP	2	LAST	261	43,3165	3 0021 1	CA	SR	
0959	REP	3	LAST	261	43,3166	3 0021 1	CA	SR	
0960	REP	4	LAST	261	43,3167	7 4756 0	MASK	PRI07	
09601	REP	70	LAST	247	43,3170	4 0000 0	CS	A	
0961	REP	5	LAST	257	43,3171	6 4754 0	AD	PRI05	
0962	REP	8	LAST	261	43,3172	27=751 1	ADS	LANDMARK	
0963	REP	24	LAST	258	43,3173	0 2121 1	TC	GOPIN	
09631	REP	9	LAST	261	43,3174	02751 0	LANDBANK	ECADR	
R2000							LANDMARK	LANDMARK	

AT NEXT TIMESTEP

GO TO POO

IS P22 OPERATING

NO

YES SET BITS 12,11,10 OF LANDMARK =  
BITS 14,13,12 OF MARKSTAT AFTER  
ADDING 1 TO THEM TO GET OFFSET  
MARK NO.

R20001 VERB 67 ASTRONAUT DISPLAY OF W MATRIX

20002	REP	17	LAST	260	43,3175	0 2076 1	V67	TC	TESTXACT
2001	REP	6	LAST	261	43,3176	3 4754 0		CAP	PRI05
2003	REP	12	LAST	260	43,3177	0 5042 1		TC	FINDVAC
2004	REP	4	LAST	91	E5,1400			EBANK=	W
2005	REP	1		43,3200	03574 1			ZCADR	V67CALL
2005	REP	1		43,3201	60105 0				
2006	REP	13	LAST	260	43,3202	0 5112 0		TC	ENDOFJOB
R2007	VB	44.							
2008	REP	12	LAST	260	43,3203	0 5435 0	SETSURP	TC	UPFLAG
2009	REP	2	LAST	204	43,3204	00177 0		ADRES	SURFFLAG
2010	REP	25	LAST	261	43,3205	1 2121 0		TCF	GOPIN
R2011	VB	45.							
2012	REP	18	LAST	260	43,3206	0 5447 0	RESTSRP	TC	DOWNFLAG
2013	REP	3	LAST	261	43,3207	00177 0		ADRES	SURFFLAG
2014	REP	26	LAST	261	43,3210	1 2121 0		TCF	GOPIN



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