

TEST NO. V-20060
REVISION 034
DATE MARCH 17, 1972
EFFECTIVITY AS-511 & SUBS



**JOHN F. KENNEDY
SPACE CENTER**

**RELEASED
FOR AS 511**

**LAUNCH VEHICLE OPERATIONS FOR
SUPPORT OF SPACE VEHICLE
COUNTDOWN DEMONSTRATION TEST
AND LAUNCH COUNTDOWN**

**VOLUME II OF IV
PARTIAL REVISION
ASSEMBLED FOR CDDT**

Prepared For
LAUNCH VEHICLE OPERATIONS

Prepared By
**THE BOEING COMPANY
ATLANTIC TEST CENTER
LAUNCH T-LAUNCH OPERATIONS**

**THIS TCP CONTAINS
HAZARDOUS OPERATIONS**

THE PAGES IN THIS PARTIAL REVISION
REPLACE CORRESPONDING PAGES IN REV.
033 RELEASE. REV. 034 INCORPORATES
THE FOLLOWING PCR'S:

XB-420-54
B-389-55
N-284-56
N-285-57
I-244-58

TCP NO V-20060, VOL II
REVISION 034
DATE MARCH 17, 1972
NO OF PAGES 47 THIS REV;
701 TOTAL
EFFECTIVITY AS-511 & SUBS

LAUNCH VEHICLE OPERATIONS FOR
SUPPORT OF SPACE VEHICLE COUNTDOWN
DEMONSTRATION TEST AND LAUNCH COUNTDOWN

VOLUME II OF IV

**THIS TCP CONTAINS
HAZARDOUS OPERATIONS**

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A. INTRODUCTION

1. THIS LAUNCH VEHICLE TEST AND CHECKOUT PROCEDURE IS A TIME SEQUENCE OF OPERATIONS REQUIRED TO PREPARE THE LAUNCH VEHICLE FOR FLIGHT, THIS VOLUME CONTAINS THE OPERATIONS NECESSARY TO COMPLETE PREPARATION OF THE LAUNCH VEHICLE & GSE FOR INITIATION OF THE AUTOMATIC TERMINAL COUNT SEQUENCE.
2. LAUNCH VEHICLE TEST AND CHECKOUT PERSONNEL WILL USE THIS PROCEDURE AS THE OFFICIAL DOCUMENT FOR LAUNCH VEHICLE OPERATIONS, THIS DOCUMENT IS ONE OF FIVE RELATED DOCUMENTS USED DURING LAUNCH OPERATIONS, THE OTHER FOUR DOCUMENTS ARE:
 - (A) SPACECRAFT COUNTDOWN PROCEDURE K-0007
 - (B) LUNAR MODULE COUNTDOWN PROCEDURE KL-0007
 - (C) SPACE VEHICLE COUNTDOWN PROCEDURE (INCLUDES INFORMATION TO DIRECT INTERFACE OPERATIONS AMONG LV, SC, SUPPORT & RANGE)
V-40310 (CDDT ONLY) V-40300 (CD ONLY)
 - (D) APOLLO/SATURN V LAUNCH MISSION RULES AS-511 K-V-05,10/11
3. IN ADDITION, UNDER EMERGENCY CONDITIONS SPECIFIED THEREIN, THE SATURN V LAUNCH VEHICLE EMERGENCY PROCEDURE, V-20056, WILL BE USED.

B. CDDT & COUNTDOWN PROCEDURE EXPLANATION

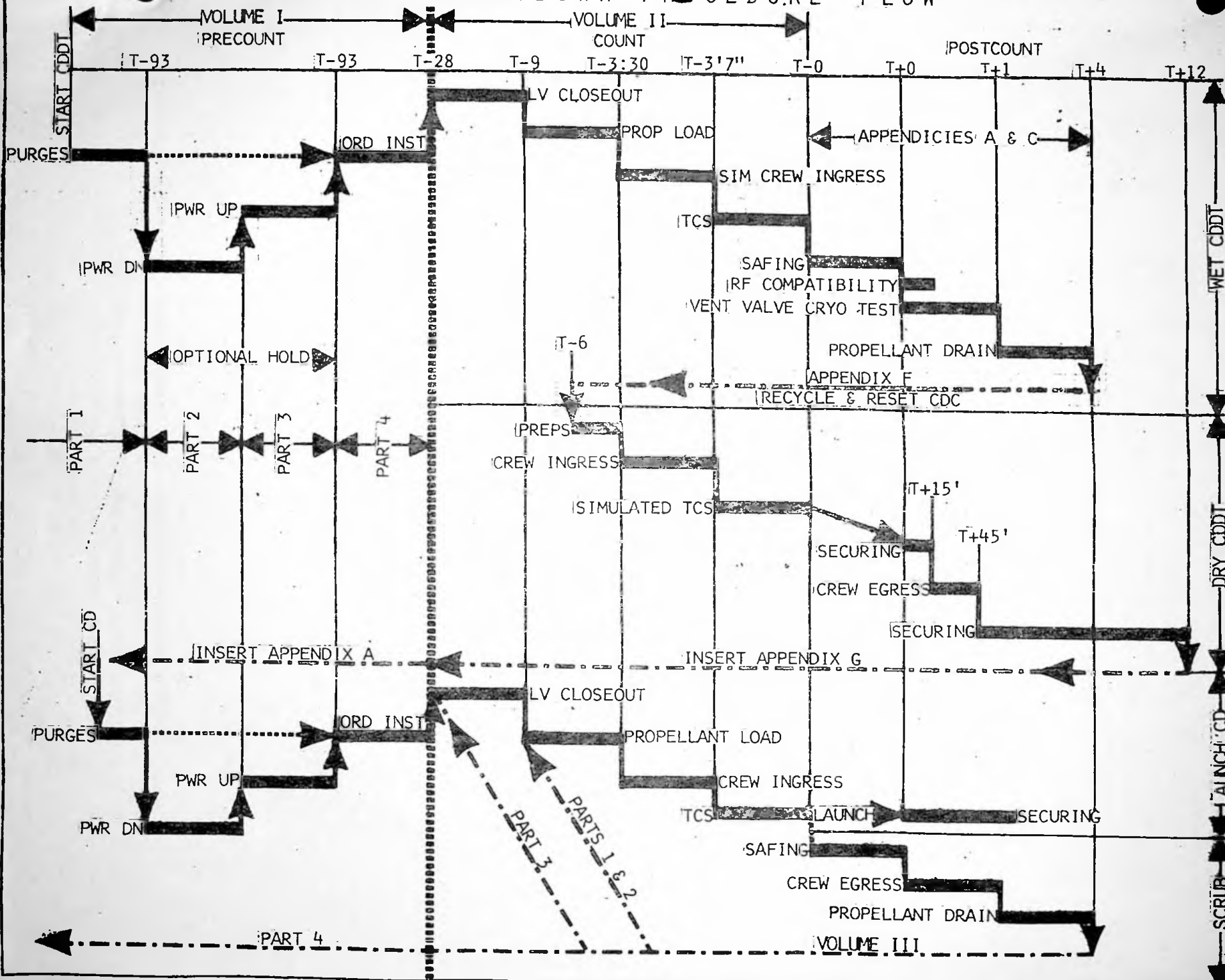
1. THE CDDT/CD WILL BE TREATED AS ONE PROCEDURE BUT WILL BE PUBLISHED SEPARATELY AS FOLLOWS:
 - (A) IN THE ISSUE RELEASED FOR CDDT, THE PAGES IN THE PROCEDURE HAVING A STEP UNIQUE TO CDDT WILL BE MARKED "CDDT ONLY". SUCH PAGES WILL HAVE A COUNTERPART PAGE CONTAINED IN APPENDIX G MARKED "CD ONLY". THIS ISSUE OF THE PROCEDURE WILL BE PROMINENTLY MARKED ON THE FRONT COVER "ASSEMBLED FOR CDDT".
 - (1) PAGES WITH BLACK BARS ARE TO BE USED ONLY DURING THE COUNTDOWN DEMONSTRATION TEST.
 - (B) FOLLOWING CDDT, THE "CDDT ONLY" PAGES WILL BE REPLACED BY THE "CD ONLY" PAGES, DRY CDDT PAGES (APPENDIX F) WILL BE REMOVED, ALL APPROVED PERMANENT PROCEDURE CHANGES WILL BE INCORPORATED, THE PROCEDURE REVISION NUMBER WILL BE INCREASED, THE FRONT COVER WILL BE PROMINENTLY MARKED "ASSEMBLED FOR CD" AND THE PROCEDURE WILL BE REPUBLISHED AND REDISTRIBUTED.
 - (1) PAGES WITH BLACK DIAMONDS ARE TO BE USED ONLY DURING THE LAUNCH COUNTDOWN.
 - (C) THE "ASSEMBLED FOR CD" VERSION WILL NOT BE DISTRIBUTED UNTIL ABOUT 4 CALENDER DAYS PRIOR TO THE START OF CD TO AVOID THE RISK OF HAVING THE TWO PROCEDURES CONFUSED.

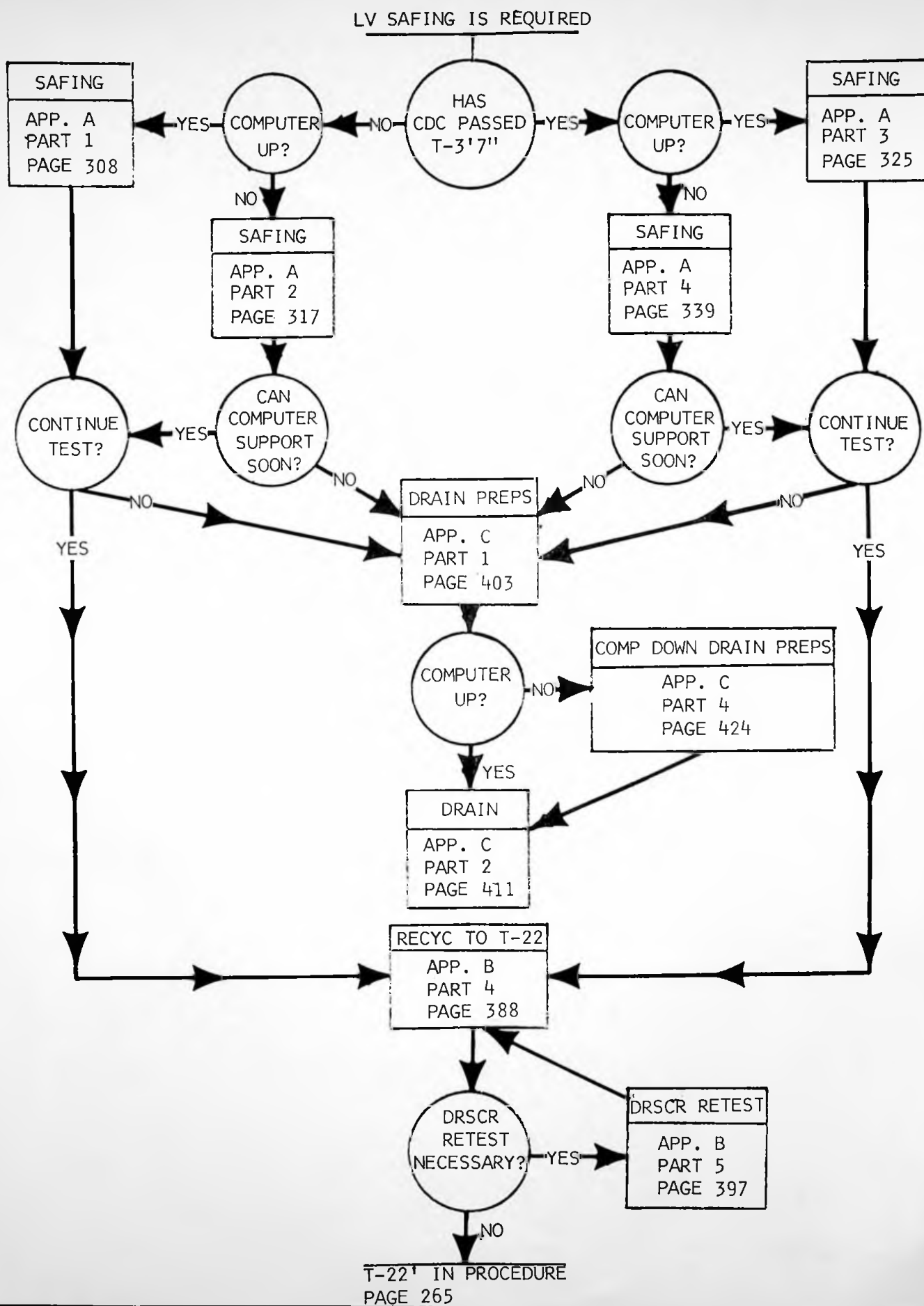
ICDDT & COUNTDOWN PROCEDURE FLOW

LV CDDT & CD, VOL 11
DATE: FEBRUARY 7, 1972
REVISION 033

APOLLO/SATURN

PAGE 5251.60
TEST NOV-20060, VOL 11
VEHICLE AS-511





C. CODES IN THE REMARKS COLUMN

REMARKS -----	EXPLANATION -----
1. ***	INDICATES A SEQUENCE NORMALLY PERFORMED BY A COMPUTER PROGRAM BUT WHICH MAY BE PERFORMED MANUALLY IF THE PROGRAM IS NOT EXECUTED,
2. (VALJ)	INDICATES A SEQUENCE WHICH MUST BE COMPLETE BEFORE THE IVAR (IDENTIFIED WITHIN PARENTHESIS) IS EXECUTED,
3. XB-1-1	IDENTIFIES A PCR WHICH HAS BEEN INCORPORATED AT THAT POINT IN THE PROCEDURE,
4. TCPI	SEE PARAGRAPH D,1 BELOW.
5. *	INDICATES INFORMATION UNIQUE TO THE CDDT,
6. #	INDICATES INFORMATION UNIQUE TO THE LCD,
7. +	INDICATES START OR COMPLETION OF TASK DEPICTED WITH BAR ON A BARCHART IN THIS TCP,
8. AS-511	INDICATES INFORMATION VALID FOR AS-511 ONLY.

D. INTEGRATED TCP INTERFACE

1. SPECIFIC SEQUENCES IDENTIFIED IN THIS TCP WITH THE SYMBOL TCPI (TEST & CHECKOUT PROCEDURE INTERFACE) HAVE BEEN COORDINATED WITH OTHER ORGANIZATIONS WHOSE CORRESPONDING TCP'S ARE USED DURING THIS TEST. IT IS THE RESPONSIBILITY OF THE ORGANIZATION INITIATING A CHANGE TO A TCPI SEQUENCE TO ENSURE THAT COORDINATION WITH AFFECTED ORGANIZATIONS IS ACCOMPLISHED THROUGH THE INTEGRATION SUPPORT CONTRACTOR. PROBLEMS RESULTING FROM THE COORDINATION WILL BE RESOLVED BY LV-OMO-1 PRIOR TO THE DLO PRE-TEST BRIEFING, AND LV-OMO-3 FROM THE TIME OF DLO PRE-TEST BRIEFING THROUGH COMPLETION OF THE TEST.

E. SAFETY

1. THE LAUNCH VEHICLE COUNTDOWN DEMONSTRATION AND COUNTDOWN OPERATIONS ARE CONSIDERED TO BE HAZARDOUS FOR THE FOLLOWING REASONS:
 - (A) SPACECRAFT HYPERGOLICS WILL BE ON BOARD,
 - (B) RP-1 WILL BE ON BOARD,
 - (C) SPACE VEHICLE ORDNANCE WILL BE INSTALLED AND CONNECTED,
 - (D) SPACE VEHICLE PROPELLANT TANKS AND GAS STORAGE SPHERES WILL BE PRESSURIZED,
 - (E) HAZARDOUS ENVIRONMENTAL CONDITIONS MAY BE ENCOUNTERED (INERT ATMOSPHERES, WORK AT HEIGHTS, RADIATION AND ENGINE GIMBALLING),
 - (F) HEAVY EQUIPMENT MOVEMENTS WILL BE REQUIRED,
 - (G) SPACE VEHICLE CRYOGENIC LIQUIDS (LOX, LM2 & SHE) WILL BE LOADED,
 - (H) THE FLIGHT CREW WILL INGRESS AND THE HATCH WILL BE CLOSED,
 - (I) THE SPACE VEHICLE WILL BE LAUNCHED (CD ONLY),

REVISION RECORD PAGE (PRIOR REVISIONS)

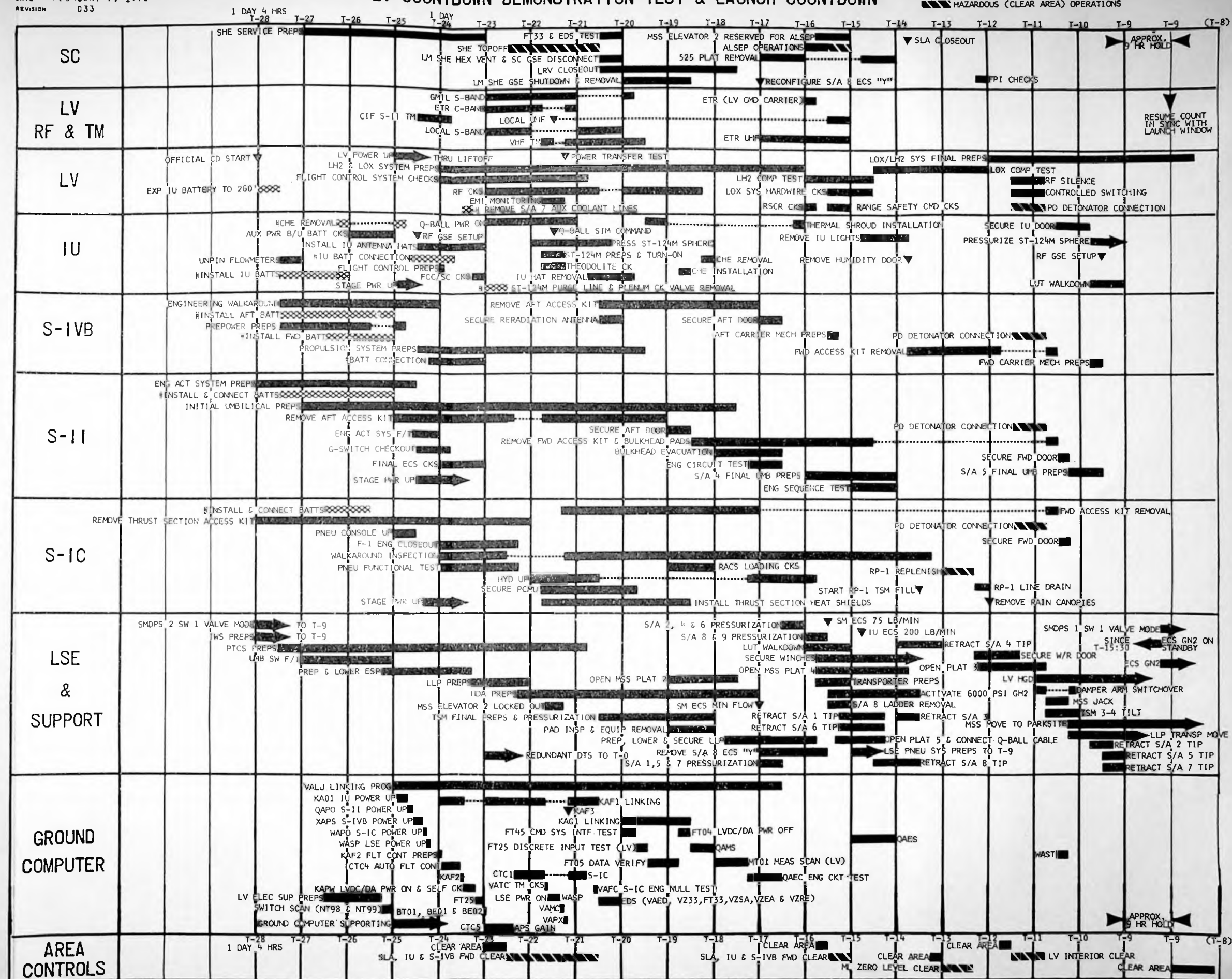
REV.	REASON
BASIC	INITIAL RELEASE FOR AS-504 1/17/69 (CDDT)
001	PARTIAL REVISION FOR AS-504 2/3/69 (CDDT)
002	SECOND RELEASE FOR AS-504 2/19/69 (CD)
003	PRERELEASE FOR AS-505 3/3/69
004	INITIAL RELEASE FOR AS-505 3/29/69 (CDDT)
005	PARTIAL REVISION FOR AS-505 4/18/69 (CDDT)
006	SECOND RELEASE FOR AS-505 5/7/69 (CD)
007	PRERELEASE FOR AS-506 4/24/69
008	INITIAL RELEASE FOR AS-506 5/26/69 (CDDT)
009	PARTIAL REVISION FOR AS-506 6/17/69 (CDDT)
010	SECOND RELEASE FOR AS-506 7/3/69 (CD)
011	PRERELEASE FOR AS-507 8/13/69
012	INITIAL RELEASE FOR AS-507 9/19/69 (CDDT)
013	PARTIAL REVISION FOR AS-507 10/16/69 (CDDT)
014	SECOND PARTIAL REVISION FOR AS-507 10/23/69 (CDDT)
015	SECOND RELEASE FOR AS-507 10/29/69 (CD)
016	PRERELEASE FOR AS-508 1/19/70
017	INITIAL RELEASE FOR AS-508 2/13/70 (CDDT)
018	PARTIAL REVISION FOR AS-508 3/12/70 (CDDT)
019	SECOND RELEASE FOR AS-508 3/26/70 (CD)
020	PARTIAL REVISION FOR AS-508 4/2/70 (CD)
021	SECOND PARTIAL REVISION FOR AS-508 4/6/70 (CD)
022	CONTINGENCY CD FOR AS-508 (NOT RELEASED)
023	PRERELEASE FOR AS-509 11/04/70
024	INITIAL RELEASE FOR AS-509 12/09/70 (CDDT)
025	PARTIAL REVISION FOR AS-509 1/06/71 (CDDT)
026	SECOND PARTIAL REVISION FOR AS-509 1/11/71 (CDDT)
027	SECOND RELEASE FOR AS-509 1/18/71 (CD)
028	PRERELEASE FOR AS-510 4/22/71
029	INITIAL RELEASE FOR AS-510 6/11/71 (CDDT)
030	PARTIAL REVISION FOR AS-510 7/1/71 (CDDT)
031	SECOND RELEASE FOR AS-510 7/19/71 (CD)

REVISION RECORD PAGE (CURRENT VEHICLE)

PAGES AFFECTED

REV.	REVISED	ADDED	DELETED	REASON/SUPPORTING DOCUMENT
032	ALL			DERIVED FROM REV 031 BY: INCORPORATING AS-510 CDDT PERMANENT PCR'S D-97-60, XB-331-62, XB-337-63, XB-336-66, N-259-69 & N-256-70 WHICH WERE NOT COMPLETELY INCORPORATED IN PRIOR REVISIONS. INCORPORATING AS-510 CD PERMANENT PCR'S N-258-72, XB-345-73, N-259-74, I-221-75, N-261-76, N-265-77, XB-353-78, B-355-79, XB-352-80, XB-350-81, D-99-82, N-260-83, B-358-84 & XB-361-85. WHICH WERE NOT INCORPORATED IN PRIOR REVISIONS. INCORPORATING AS-511 PCR'S I-225-1, XB-401-2, XB-400-3, XB-403-4, XB-402-5, XB-405-6, B-362-8, B-363-9, N-268-10, N-269-11, B-364-12, B-365-13, D-101-14, I-226-15, I-227-16, I-228-17, I-229-18, D-103-19, B-367-20 & XB-407-21 PRE-RELEASE FOR AS-511 DATED DECEMBER 14, 1971
033	ALL			INCORPORATES PCR'S N-272-22, N-274-23, B-372-24, B-375-25, I-232-26, XB-408-27, B-376-28, B-377-29, B-379-30, B-380-31, D-106-32, I-233-33, I-234-34, I-235-35, B-381-36, I-237-37, I-238-38, B-384-39, E-1-40, N-280-41, B-385-42, I-239-43, I-240-44, XB-416-45, B-386-46, XB-412-47, N-282-48, XB-418-49, I-241-50, I-242-51, I-243-52 & XB-417-53 INITIAL RELEASE FOR AS-511 CDDT
034	COVER, 2, 9, 10, 18, 19, 51, 99, 106, 125, 131, 137, 147, 148, 201, 226, 269, 403, 460, 461, 469, 514, G106, G125, G201, G226 & G403	NONE	NONE	PARTIAL REVISION FOR AS-511 CDDT INCORPORATES PCR'S XB-420-54, B-389-55, N-284-56, N-258-57 & I-244-58.

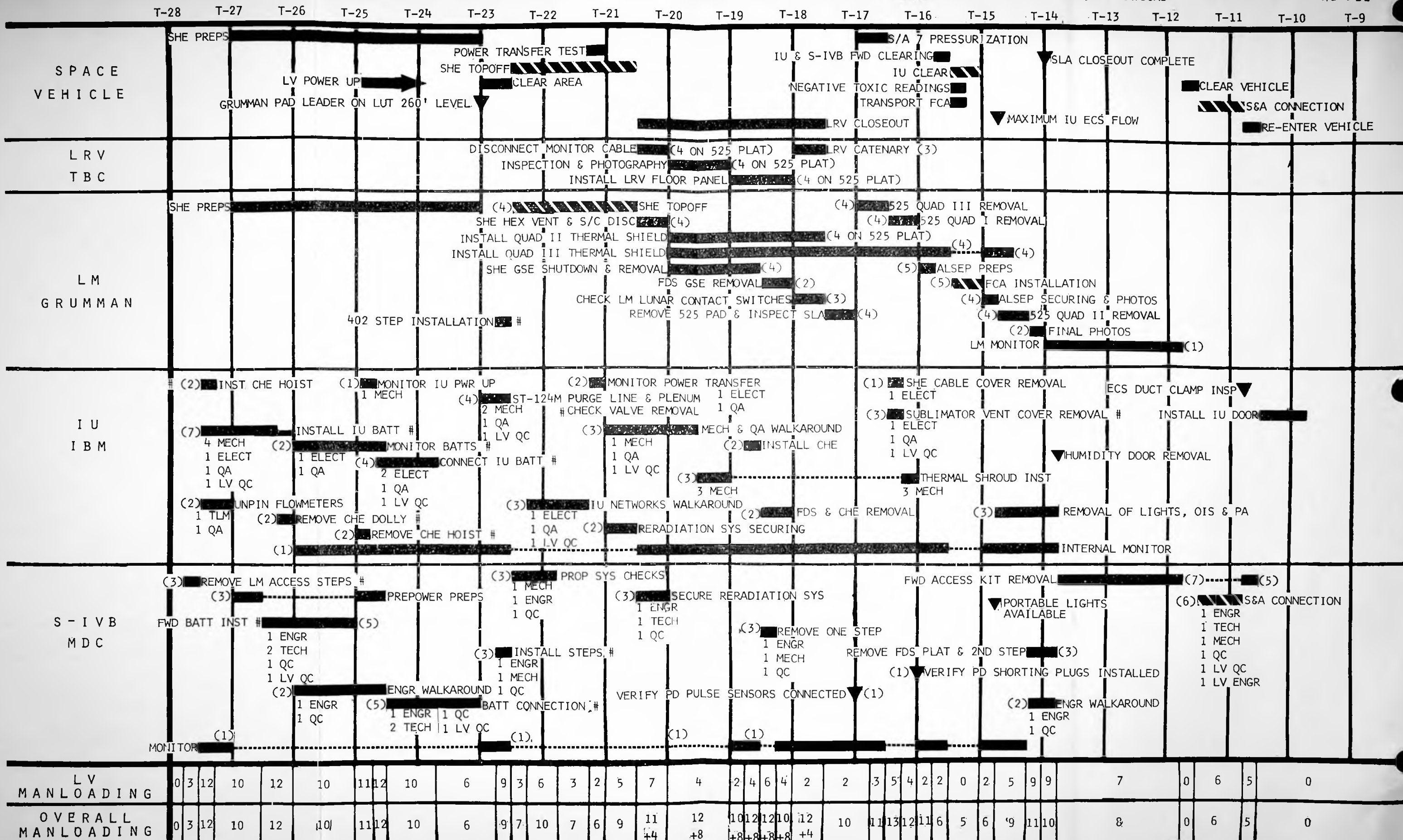
LIST OF EFFECTIVE PAGES				Date 03/15/72		Effectivity AS-511		Test Number V-20060, VOL II		Revision 034		Page 10	
Page No.	Rev.	Page No.	Rev.	Page No.	Rev.	Page No.	Rev.	Page No.	Rev.	Page No.			
COVER	034	515 THRU		G166	033	410	033						
2	034	528	033	G169-G174	033	G411	033						
3 THRU 8	033	G12	033	177	033	412	033						
9 & 10	034	G15	033	G178	033	G419-G421	033						
11 THRU 17	033	27	033	179	033	G433&G434	033						
18 & 19	034	G28	033	G180	033								
20 THRU		G37 - G39	033	185	033								
50	033	40	033	G186	033								
51	034	G41 - G44	033	G193	033								
52 THRU		G47	033	194	033								
98	033	48	033	G201	034								
99	034	G49 - G51	033	202 & 203	033								
100 THRU		52 & 53	033	G204&G205	033								
105	033	G54	033	206	033								
106	034	55	033	209	033								
107 THRU		G56 & G57	033	G210	033								
124	033	58	033	213	033								
125	034	G59	033	G214	033								
126 THRU		60	033	215	033								
130	033	G63	033	G216	033								
131	034	64	033	217	033								
132 THRU		G65 & G66	033	G218-G225	033								
136	033	G71	033	G226	034								
137	034	72 & 73	033	227	033								
138 THRU		G74	033	G228-G234	033								
146	033	G79 & G80	033	G239	033								
147 & 148	034	G83 - G85	033	240	033								
149 THRU		86 & 87	033	G245-G249	033								
200	022	G88 - G91	033	250	033								
201	034	92	033	G251	033								
202 THRU		G93	033	525&253	033								
225	033	94	033	G254&G255	033								
226	034	99	033	256	033								
227 THRU		G100	033	259	033								
268	033	105	033	G260&G261	033								
269	034	G106	034	262 & 263	033								
270 THRU		G111	033	G264&G265	033								
292	033	112	033	266	033								
293 THRU		G117	033	G273	033								
306	OMITTED	118	033	274	033								
307 THRU		G119-G124	033	287	033								
402	033	G125	034	G288	033								
403	034	G126&G127	033	G291-G306	033								
404 THRU		128	033	G325&G326	033								
459	033	141	033	329	033								
460 & 461	034	G142&G143	033	G330	033								
462 THRU		144	033	331	033								
468	033	G153	033	G332&G333	033								
469	034	154	033	334	033								
470 THRU		G161	033	G397	033								
513	033	162	033	398	033								
514	034	165	033	G403-G409	033								

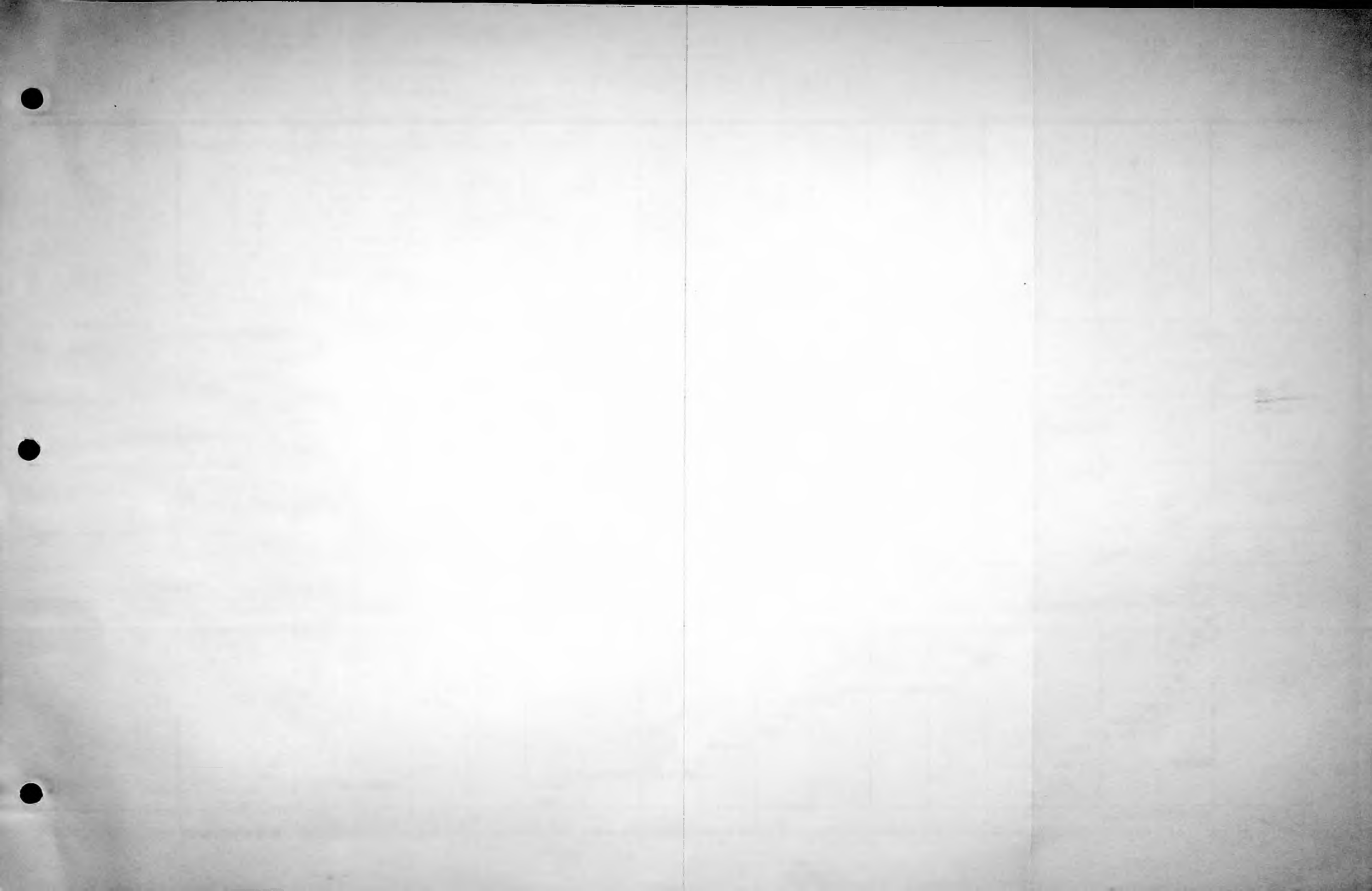


IU S-IVB AREA MANLOADING

CD ONLY

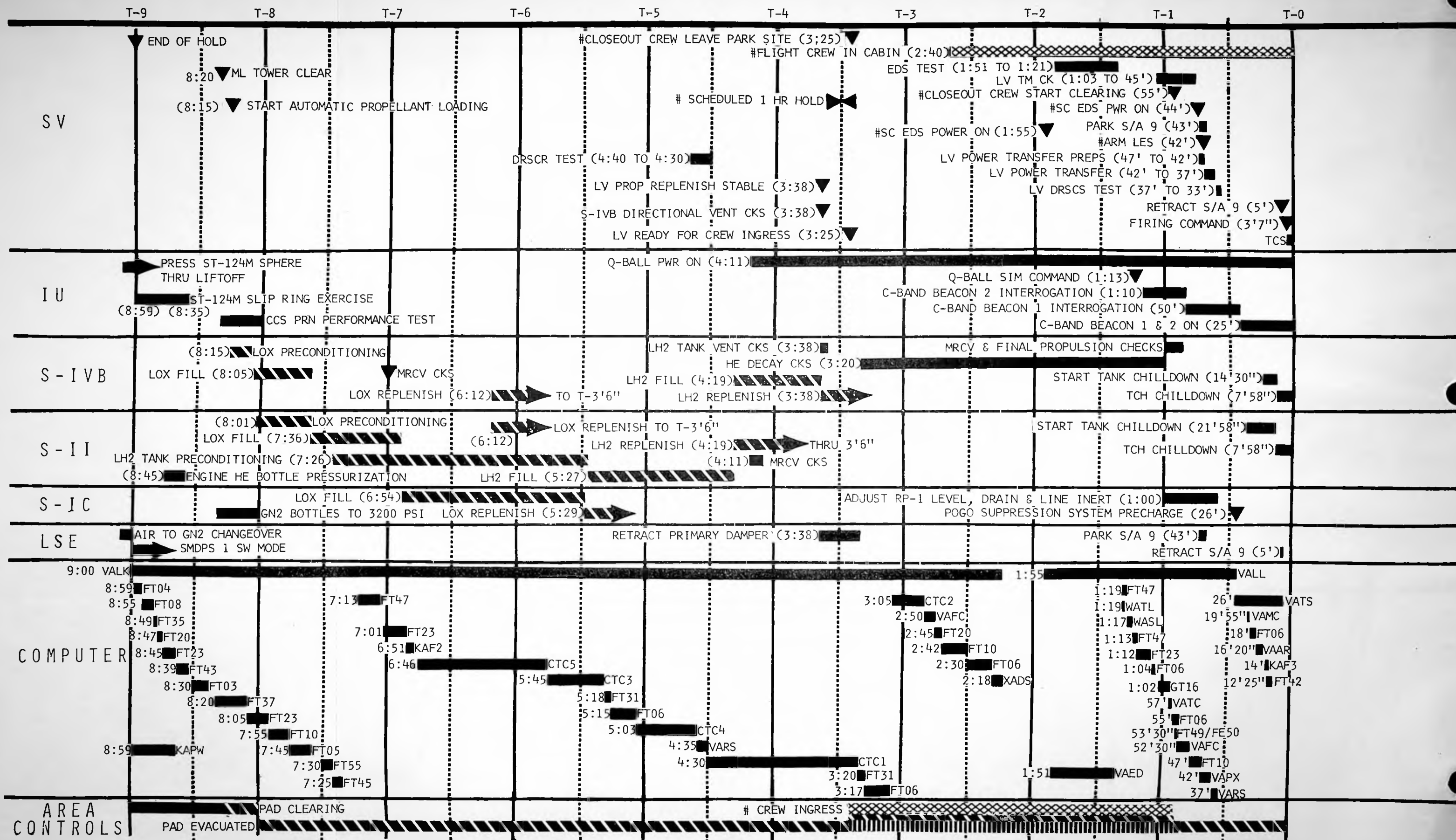
HAZARDOUS (CLEAR AREA) OPERATIONS



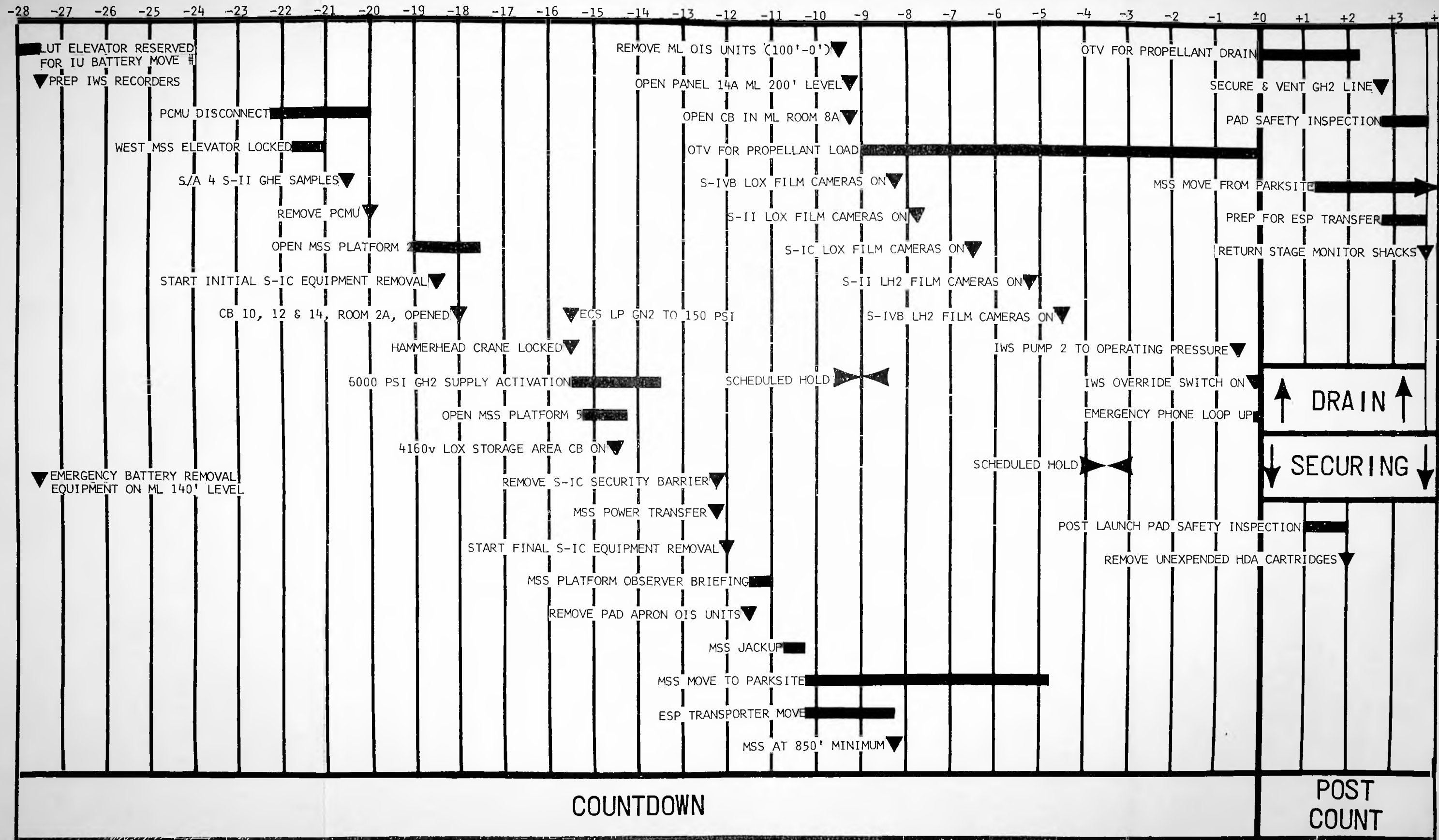


LV CDDT & CD AFTER T-9 HR HOLD

|||||** CDDT ONLY
||||| # CD ONLY
||||| HAZARDOUS (CLEAR AREA) OPERATIONS



LV CD SUPPORT REQUIREMENTS



LV COUT & CD, VOL II
DATE: FEBRUARY 7, 1972
REVISION 033

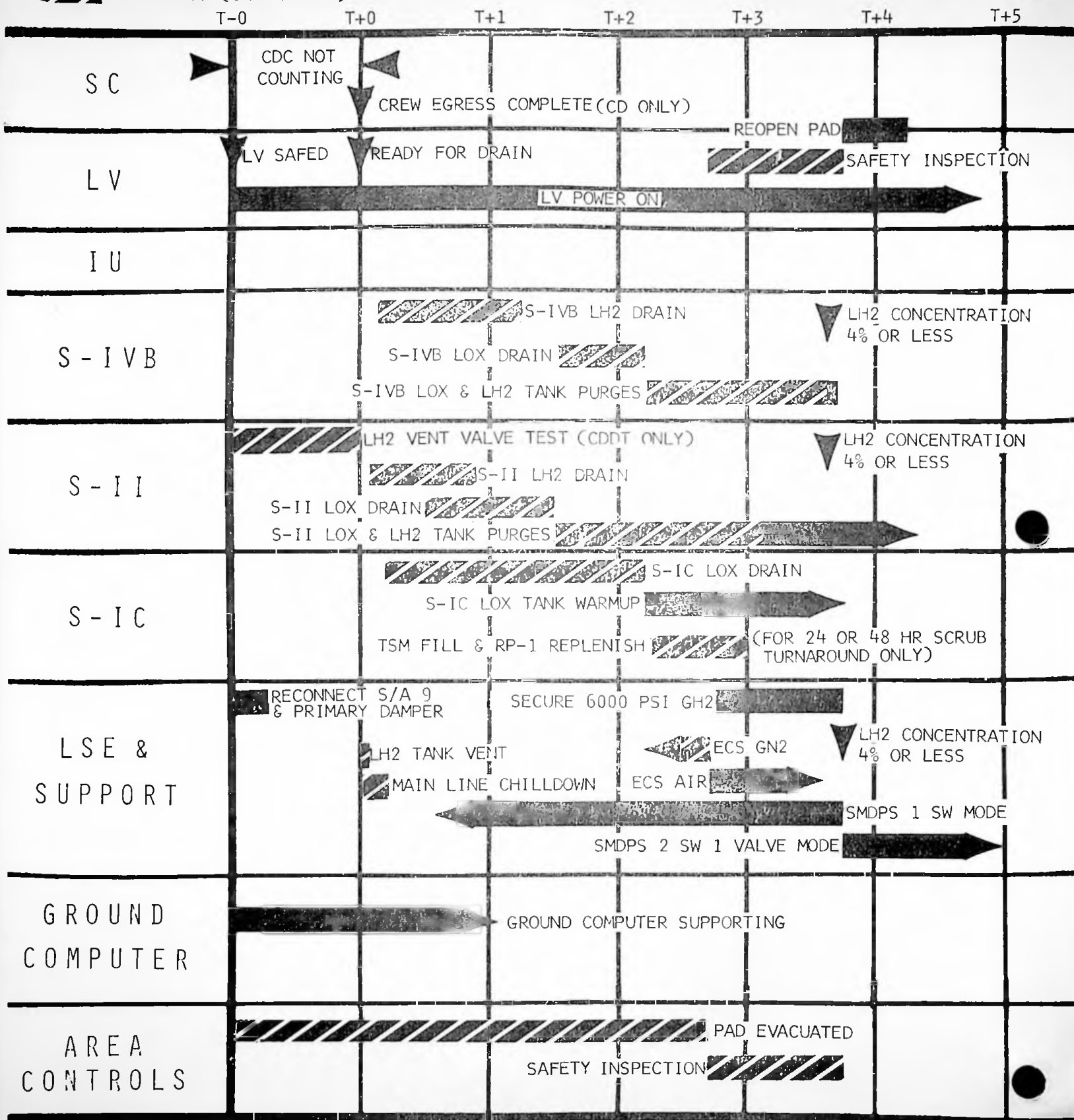
APOLLO/SATURN

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PAGE 16
TEST NOV-20060, VOL II
VEHICLE AS-511

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LV DRAIN OPERATIONS

 HAZARDOUS (CLEAR AREA) OPERATIONS



REFERENCED TEST AND CHECKOUT PROCEDURES

THE TEST AND CHECKOUT PROCEDURES REFERENCED IN THIS DOCUMENT ARE TABULATED BELOW. THE REVISION LEVEL SHOWN IS THE ONE TO BE USED DURING THE LAUNCH VEHICLE COUNTDOWN DEMONSTRATION AND COUNTDOWN. CORRECTIONS AND CHANGES MUST BE PROCESSED IN ACCORDANCE WITH T1-2-17.

S-IC STAGE & GSE TEST AND CHECKOUT PROCEDURES

B-389-55

S-II STAGE TEST AND CHECKOUT PROCEDURES

TCP NO.	REV.	TITLE	
V-21008	009	ELEC CONNECTION OF S-IC PAD EBM DETS	(HAZARDOUS)
V-21009	004	ELEC CONNECTION OF S-IC PD S&A UNIT	(HAZARDOUS)
V-21010	007	S&A DEVICE CHECKOUT	(HAZARDOUS)
V-21012	006	ELEC CONNECTION OF S-IC WM EBM DETS	(HAZARDOUS)
V-21013	004	ELEC CK OUT OF S-IC ERA DETS	(HAZARDOUS)
V-21014	009	ELEC INSTL/REMOVAL OF HV IGNITERS	(HAZARDOUS)
V-21018	010	FLT BATT ACTIVATION & CHECKOUT	(HAZARDOUS)
V-21032	004	LCC/MLE ELEC CABLE VERIFICATION	
V-21035	009	PREPS OF S-IC ESE TO SUPPORT LAUNCH CD	
V-21036	006	S-IC STAGE ESE POST LAUNCH CHECK LIST	
V-21036	010	S-IC POWER ON	
V-21097	005	S-IC POWER OFF	
V-21194	009	LSE POWER ON & OFF REMOTE CONTROL (LCC)	
V-21246	004	INSTALLATION OF S-IC FLIGHT BATTERIES	(HAZARDOUS)
V-21321	003	ELEC INSTALLATION OF S-IC HDA JMD	(HAZARDOUS)
V-21439	005	EMERG BACKUP BATT OPERATIONAL TEST	
V-24010	000	S-IC INTERNAL WORK PLATFORM REMOVAL	(HAZARDOUS)
V-24011	006	WALKHEAD PROTECTION EQUIPMENT REMOVAL	(HAZARDOUS)
V-24320	004	S-IC FORWARD UNBILICAL RECONNECTION	
V-24327	009	S-IC PNEU SYS CDDT AND LAUNCH PREPS	(HAZARDOUS)
V-25003	003	RP-1 STANDBY	
V-25077	004	DTS DAILY OPERATIONS	
V-25159	005	DTS PREPS FOR PROP LOAD OPS	
V-25160	005	DTS/GSE SYSTEM PAD SECURING	
V-25340	009	LOX PREPS FOR VEHICLE LOADING/HDA A	(HAZARDOUS)
V-25342	004	LOX SYS SECURING AFTER LOX LOADING/MAIN	(HAZARDOUS)
V-25344	004	TOTAL LOX SYS DEMONSTRATION A	
V-25345	004	LOX SYS SECURING AFTER LAUNCH/HDA A	(HAZARDOUS)
V-25389	010	RP-1 AUTO LEVEL ADJUST/LINE INERT	(HAZARDOUS)
V-26222	006	SOP FOR THE PNEU DIST SYS	(HAZARDOUS)
V-26247	007	ECS DAILY OPS/LC-39A	(HAZARDOUS)
V-27087	004	HGD SYSTEM OPERATING PROCEDURE	
V-27093	004	LOX & FUEL LIQUID LEVEL & LOAD ELECTRONICS TESTS	
V-27096	009	VHM MEAS GSE STA TEST SUPPORT PREPS	
V-27175	011	LCC MEAS STA OPS, CAL & MAINT	
V-28016	006	TM CONFIGURATION CHECKS	
V-28041	007	S-IC R/S CLOSED LOOP CHECKS	
V-28184	005	S-IC AND GSE TM SUPPORT	
V-29003	007	S-IC STAGE ORD INST AT PAD	(HAZARDOUS)
V-29005	006	F-1 ENGINE ORDNANCE INSTALLATION	(HAZARDOUS)
V-31031	005	INS ELECTRICAL POWER OPERATIONS	
V-31032	004	ECS NETWORKS PREOPERATIONAL CHECKOUT	
V-31045	009	S&TSM/LA-ELEC SUPPORT FOR CDDT & LAUNCH	
V-34030	006	S-IC FLT CONTROL SYS PREPS	
V-34032	008	S-IC PROPULSION SYS PREPS	(HAZARDOUS)
V-35004	007	LM2 SYSTEM PREP FOR VEHICLE LOADING	
V-36032	004	S-II AFT S/A LOCAL CONTROL OPERATION	
V-36039	007	TSM SYS PREP & OPS FOR CDDT AND CD	(HAZARDOUS)
V-36043	008	SMPS LAUNCH CONFIGURATION PREPS	(HAZARDOUS)
V-36064	005	PNEU DIST SYS LAUNCH CONFIGURATION PREPS	
V-36069	006	HDA & S/A CONTROL & SUPPORT OPS	(HAZARDOUS)
V-36070	006	PLATFORMS & TRANSPORTED LAUNCH PREPS	(HAZARDOUS)
V-36071	005	S-IC INTERTANK S/A EXT & CARRIER RECONNECT	(HAZARDOUS)
V-36074	007	ECS PROP LOAD OPS/LC-39A & B	(HAZARDOUS)
V-36077	007	S-IC INTERTANK S/A SUPPORT CDDT & CD	(HAZARDOUS)
V-36078	006	S-IC FWD S/A SUPPORT CDDT & CD	
V-36079	005	HYD DISTRIBUTION SYS PREPS FOR CD	
V-36086	007	S-II INTERMEDIATE S/A SUP CDDT & CD	
V-36091	006	S-II FWD S/A SUPPORT CDDT & CD	
V-36092	006	S-IVB AFT S/A SUPPORT CDDT & CD	
V-36093	007	S-IVB FWD S/A SUPPORT CDDT & CD	
V-36094	006	SM S/A SUPPORT OPS CDDT & CD	
V-36095	007	CM ACCESS ARM SUPPORT CDDT & CD	(HAZARDOUS)
V-36086	007	DRKS SUPPORT CDDT & CD	
V-36087	005	LSE MECH OPS	
V-36112	004	D-HALL COVER REMOVAL SYSTEM PREPS/MLE	(HAZARDOUS)
V-36113	006	INDUSTRIAL WATER SYSTEM LAUNCH PREPS	(HAZARDOUS)
V-37038	006	HGD SYSTEM MAINTENANCE	(HAZARDOUS)
V-38000	009	ORSCS PAD STAGE AND VEHICLE SUPPORT	
V-26266	003	S-IC EMERG ACCESS PLATFORM OPS	(HAZARDOUS)

TCP NO.	REV.	TITLE	
V-21100	008	E006 ENGINE SAFETY CIRCUITS	
V-21103	011	B011 S-II STAGE POWER APPLICATION	
V-21111	007	B013 S-II BATTERY INSTALLATION	
V-21249	007	B016 S-II BATTERY REMOVAL (CDDT ONLY)	
V-21438	004	B022 FINAL STAGE ELECTRICAL CHECKS (CDDT ONLY)	
V-21452	002	G141 S-II FINAL LUT ELECTRICAL CHECKS	
V-24116	008	J001 PROPELLANT LINES VACUUM CHECK (CD ONLY)	
V-24431	001	0003 S-II STAGE AND LUT INSPECTION	
V-25149	008	M010 PROP LEVEL & DEPLETION SENSOR F/T	
V-25311	008	L009 PURGE & VACUUM SYSTEM SECURING	
V-26276	010	G058 S-II PURGE SYS OPS FOR PROP LOADING	
V-26507	001	G147 S-II STG ACCESS EQUIPMENT INST/REMOVAL	(HAZARDOUS)
V-27149	007	X030 INSTR SETUP & CAL FOR ENG SEQ & VALVE TIMING	
V-27154	005	G031 LCC RECORDER, FUNCT SETUP & VERIFICATION	
V-27183	004	0032 MEASUREMENT STATION CHECKOUT/TEST	
V-27208	006	X044 S-II FINAL AIRBORNE MEASUREMENTS CLOSEOUT	
V-28135	002	G050 PCM/TM C/O EQUIP TEST (STAGE MODULE EQUIP)	
V-28144	008	R014 S-II TM OPERATION ALL READINESS CHECK	
V-28181	002	G125 FM/FM TM C/O EQUIP TEST (STAGE MODULE)	
V-29024	007	K008 S&A DEVICE INSTL & C/O (CD ONLY)	(HAZARDOUS)
V-29038	007	S009 PULSE SENSOR REMOVAL	
V-29050	008	K010 INERT S&A DEVICE INSTALLATION (CDDT ONLY)	(HAZARDOUS)
V-30029	014	M020 STAGE & GSE PREPS FOR CDDT & CD	(HAZARDOUS)
V-30975	001	2037 MISC EQUIP SECURING	(HAZARDOUS)
V-34014	009	E023 PROPULSION SYS TEST OPERATIONS	(HAZARDOUS)

S-IVB STAGE TEST AND CHECKOUT PROCEDURES

TCP NO.	REV.	TITLE	
V-21413	005	VEHICLE BATTERY MONITORING (CD ONLY)	
V-30539	010	S-IVB SUPPORT & PREPS FOR CDDT & CD	(HAZARDOUS)

INSTRUMENT UNIT TEST AND CHECKOUT PROCEDURES

TCP NO.	REV.	TITLE	
V-21222	014	AUXILIARY DAILY POWER ON PROCEDURE	
V-21223	022	IU POWER APPLICATION/REMOVAL	
V-21243	013	PRIMARY LAUNCH VEHICLE SUPPORT	
V-21255	004	SH SEL VEHICLE TEST	
V-21479	001	IU BATT ACT, MON & DISCHARGE TCP	(HAZARDOUS)
V-22006	010	GROUND COMPUTER DAILY/TEST OPERATIONS	
V-23068	013	ST-124M SLIP RING EXERCISE	
V-24443	001	IU PREPS FOR HYPERGOL LOADING	
V-26549	001	IU EQUIPMENT PRESSURIZATION	(HAZARDOUS)
V-28069	021	IU RF SYSTEM SUPPORT	
V-28072	006	IU STAGE MODULE TCE POWER UP SEQUENCE	
V-31008	007	ML/DCE REMOTE OPERATING PROCEDURE	
V-31062	016	IBM SUPPLEMENTAL TO S/A CDDT AND CD	(HAZARDOUS)
V-33011	010	ST-124M SYSTEM OPERATIONS	
V-33033	007	FLT COMPUTER SYS TEST CDDT & LAUNCH	
V-34017	007	MECH SYSTEMS SUPPORT OF IU POWER	
V-34046	007	IU ACCESS DOOR INSTALLATION AND REMOVAL	
V-34047	016	IU HEAVY COMPONENT INSTL & REMOVAL	
V-36036	009	IU PNEUMATIC CONSOLE SET UP	

INTEGRATED TEST AND CHECKOUT PROCEDURES

TCP NO.	REV.	TITLE	
V-20056	014	SATURN V LAUNCH VEH EMERG PROCEDURE	(HAZARDOUS)
V-20081	003	VERIFICATION TESTS AFTER LIGHTNING STRIKE	(HAZARDOUS)
V-21096	010	EDS OVERALL AND COUNTDOWN TEST	
V-35014	021	LV LOX/LM2 LOAD & DRAIN OPS	(HAZARDOUS)
V-35015	015	LV LOX/LM2 SYS PURGE VOL I	(HAZARDOUS)
V-35019	005	LV LOX/LM2 SYS PURGE VOL II	(HAZARDOUS)

LV TEST AND CHECKOUT PROCEDURES

TCP NO.	REV.	TITLE	
V-28009	007	TM CHECKOUT EQUIPMENT DAILY READINESS TEST	

AUTOMATED PROGRAMS INDEX

THE AUTOMATED PROGRAMS (IVARIS) EXECUTED DURING THE COURSE OF THIS TEST AND CHECKOUT PROCEDURE ARE TABULATED BELOW. THE REVISION LEVEL SHOWN IS THE ONE TO BE USED DURING THE LAUNCH VEHICLE COUNTDOWN DEMONSTRATION AND COUNTDOWN. CORRECTIONS AND CHANGES MUST BE PROCESSED IN ACCORDANCE WITH TI-2-17.

IVAR	REV	TITLE	REMARKS	IVAR	REV	TITLE	REMARKS
BE01	010	S-IC PROPELLANT TEMPERATURE MONITOR		BT01	019	MEASUREMENTS CALIBRATION TEST	
BE02	008	S-IC PROPELLANT LEVEL MONITOR		BT98	017	DISCRETE INITIALIZATION/REINITIALIZATION	
BT01	000	PROPELLANT MONITOR UPDATE TEST PROGRAM		BT99	005	DISCRETE EXECUTIVE ACTION TABLE MODIFY	
CS80	026	DDAS INTERFACE ROUTINE		QAEC	009	S-II ENGINE CIRCUITRY TEST	
CTC1	048	GAIN TEST		QAES	001	S-II ENGINE SEQUENCE TEST	
CTC2	034	CONTROL COMPUTER RELAY REDUNDANCY TEST		QALS	001	S-II LEVEL & DEPLETION SENSOR TEST	
CTC3	023	CONTROL COMPUTER COMPARATOR TEST		JAMS	003	S-II MAINSTAGE CALIPS TEST	
CTC4	043	EDS CONTROL RATE GYRO TEST		JAPO	008	S-II STAGE POWER ON	
CTC5	036	APS GAIN TEST		VAAR	000	FINAL ATTITUDE RATE COMMANDS	
FE50	007	ACCELEROMETER MONITOR TEST		VAED	003	EDS TEST	
FT03	009	LVDC/LVDA SWITCH SELECTOR INTERFACE TEST		VAFC	001	FLIGHT CONTROL UTILITY PROGRAM	
FT04	031	LVDC POWER ON/OFF AND/OR REDUNDANCY TEST		VALJ	000	T-25 HR LINKING PROGRAM	
FT05	015	LVDC DATA LOAD AND/OR VERIFY TEST		VALK	000	T-9 HR LINKING PROGRAM	
FT06	009	LVDC GIMBAL ANGLE READ & PLATFORM DRIFT TEST		VALL	001	T-1:51 HR LINKING PROGRAM	
FT08	006	LVDC CORE MAP LOAD AND/OR PRINT TEST		VAMC	000	MEASURING SYSTEM RAPID CALIBRATION	
FT10	012	LVDC LADDER OUTPUT TEST		VAPX	001	LAUNCH VEHICLE POWER TRANSFER	
FT20	006	LVDC/LVDA SELF TEST		VAR5	000	LAUNCH VEHICLE DRSCN TEST	
FT23	010	LVDC SECTOR SUMCHECK TEST		VAR9	001	LAUNCH VEHICLE RECYCLE TO T-22 MINUTES	
FT25	023	LVDC/LVDA DISCRETE INPUT TEST		VATC	000	LAUNCH VEHICLE TELEMETRY CALIBRATION	
FT31	002	LVDC ACCELEROMETER PULSE COUNT TEST		VATS	001	TERMINAL SEQUENCE PROGRAM	
FT33	006	LVDC/LVDA DISCRETE OUTPUT TEST		VZEA	003	ENGINE OUT ABORT TEST	
FT35	003	LVDC/LVDA DDAS TEST		VAEC	003	ENGINE SEQUENCE TEST	
FT37	026	SIMULATED FLIGHT INITIALIZE TEST		VZKF	003	RATE EXCESSIVE ABORT TEST	
FT42	028	PREPARE TO LAUNCH TEST		VZSA	003	SPACE VEHICLE ABORT TEST	
FT43	010	LVDC COMPUTER INTERFACE UNIT TEST		VZ33	003	LVDA/LVDC DISCRETE OUTPUT TEST	
FT45	011	LVDC COMMAND SYSTEM TEST		HAPO	001	S-IC DAILY POWER ON	
FT47	007	PREFLIGHT COMMAND TEST		HASL	000	S/A PRESSURE LEVEL TEST	
FT49	009	ACCELEROMETER MONITOR DISPLAY CONTROL		HASP	008	LSE POWER ON	
FT55	019	LVDC TELEMETRY TEST		HAST	000	S-IC CALIPS CHECKOUT	
GE01	029	AZIMUTH LAYING AND PLOT MONITOR		HASV	001	S-IC STAGE SYSTEMS VERIFICATION TEST	
GT16	028	AZIMUTH LAYING PROGRAM		HATL	000	TSM PRESSURE LEVEL TEST	
KAF1	000	F/C T-24 HR LINKING PROGRAM		XAIC	003	S-IVB INITIAL SWITCH SCAN	
KAF2	000	F/C OAT PREPS		XAUS	000	S-IVB COUNTDOWN DISCRETE SCAN	
KAF3	000	F/C THRUST VECTOR READ		XAPS	002	S-IVB STAGE & GROUND POWER APPLICATION	
KAG1	000	LVDC/LVDA T-20 HR LINKING PROGRAM		XASS	002	S-IVB SWITCH SELECTOR RESET	
KAPN	000	LVDC/LVDA POWER ON					
KASH	000	IU SWITCH SELECTOR TEST					
KA01	015	IU STAGE POWER APPLICATION					
ME01	019	RACS RAPID CONTROL ROUTINE					

LAUNCH OPERATIONS COMMUNICATIONS

COMPLEX 39 PA SYSTEM:

TO BE UTILIZED FOR ADMINISTRATIVE PHONE CALL ANNOUNCEMENTS, "T"
COUNT ANNOUNCEMENTS, PAGING SPECIFIC PERSONNEL TO AN OIS CHANNEL,
OPERATIONAL & EMERGENCY ANNOUNCEMENTS, AND FOR PAD ACCESS
ANNOUNCEMENTS.

INTERCOMMUNICATIONS:

THE TEST AND CHECKOUT OPERATIONAL COMMUNICATIONS ARE TO BE UTILIZED
AS ASSIGNED OR INDICATED IN THE PROCEDURE. TEST SUPERVISORY
PERSONNEL MUST BE AVAILABLE AT THE FOLLOWING STATIONS,

		ACTIVE -----	MONITOR -----
SV TEST SUPERVISOR (DLO)	CVTS	111	
LV TEST CONDUCTOR (LVO)	CLTC	121	
S-IC TEST CONDUCTOR (TBC)	C1TC	181	121
S-II TEST CONDUCTOR (NR)	C2TC	171	121
S-IVB TEST CONDUCTOR (MDC)	C4TC	161	121
IU TEST CONDUCTOR (IBM)	CUTC	151	121
SYSTEMS SAFETY (BENDIX)	CPSS	141	121
TEST SUPPORT CONTROLLER	CTSC	112	

LV EMERGENCY COMMUNICATIONS

IN THE EVENT OF AN OIS FAILURE, THE YELLOW POINT TO POINT PHONE SYSTEM WILL BE UTILIZED FOR EMERGENCY COMMUNICATIONS. THE STATIONS LISTED BELOW HAVE THE YELLOW PHONES ON OR NEAR THEIR CONSOLE AND ARE TO BECOME ACTIVE ON THIS NETWORK. PRIOR TO CRYOGENIC LOADING A COMMUNICATIONS CHECK WILL BE PERFORMED BY CLTC WITH THE STATIONS LISTED.

LVO:

CLTC (LV TEST CONDUCTOR)
CLCS (LV ELEC ENGINEER)
CLMS (LV MECH ENGINEER)
CIAR (LV CHIEF ENGINEER)
CLBC (G.F. CORN)
CLPS (LV PROP SYS ENGINEER)

S-1C:

C1TC (S-1C TEST CONDUCTOR)
C1MS (S-1C MEAS. SYS.)
CHGD (HAZARDOUS GAS DET.)
C1PE (S-1C PROP & MECH)
C1NE (S-1C ELEC NETS)
CWCP (IND. WATER CONTROL)
CPDC (PNEU. DIST. SYS.)
CSAC (S/A CONTROL COOR.)
CHDA (HOLD DOWN ARM CONTROL)
CECS (ECS CONTROL)
CCRP (RP-1 CONTROL)
CCLO (LOX CONTROL)
CCLH (LH2 CONTROL)
RPDC (PROP DC PWR NETS)

S-II:

C2TC (S-II TEST CONDUCTOR)
C2EV (S-II EVENTS DISPLAY)
C2AE (S-II ENGINES)
C2SP (S-II PRESSURIZATION)
C2PM (S-II PROP MON.)
C2NP (S-II NETS)
C2IP (S-II MEAS.)

S-IVB:

C4TC (S-IVB TEST CONDUCTOR)
C4ES (S-IVB ELECTRONIC SYS)
C4PS (S-IVB PROPUL SYS)
R4PS (PROP STRIP CHARTS)
R4SC (ELECT STRIP CHARTS)

S-IU:

CUTC (IU TEST CONDUCTOR)
CUNP (IU NETS & SW SEL.)
CCAP (AUX. POWER)
CLGK (GUID. CRT KYBD)
CUPC (ST-124M PLATFORM)
CUFS (FLIGHT CONTROL INTEG)
BGCC (GROUND COMP.)

DLO:

CVTS (TEST SUPERVISOR)

SUPPORT:

BCFM (LCC MEAS.)
BCWC (FIREX CONTROL)

LS00 GROUND POWER POWER SUPPLY ENGINEER
LSP1 S-C PREPARE UNIT
LSP2 RELAY RACKS AND SEQUENCER RACK
LSP3 STAGE MONITOR/OPERATIONS COORDINATOR
LSP4 HANDLING & ORDNANCE ENGINEER, THRUST STRUCTURE, S-C
LSP5 TM & OF THRUST STRUCTURE
LSP6 POWER DISTRIBUTION RACKS (ROOM 8B)
LSP7 S-C RELAY RACKS (1 THROUGH 5) (ROOM 7A)
LSP8 CONTROL ELECTRONIC ENGINEER
LSP9 JUNCTION
LSP10 S-C
LSP11 S-C
LSP12 S-C
LSP13 S-C
LSP14 S-C
LSP15 S-C
LSP16 S-C
LSP17 S-C
LSP18 S-C
LSP19 S-C
LSP20 S-C
LSP21 S-C
LSP22 S-C
LSP23 S-C
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LSP89 S-C
LSP90 S-C
LSP91 S-C
LSP92 S-C
LSP93 S-C
LSP94 S-C
LSP95 S-C
LSP96 S-C
LSP97 S-C
LSP98 S-C
LSP99 S-C
LSP100 S-C

OIS-RF CHANNELIZATION LC-39

AS-508 & SUBS

LO 111 TEST SUPER. R C U	LV 121 L/V TEST COND. R C U	IN 131 DATA DISPLAY (CIF)	SF 141 PAD SAFETY	LV 151 IU TEST COND.	LV 161 S-IVB TEST COND.	LV 171 S-11 TEST COND.	LV 181 S-1C TEST COND.	LS 211 CHIEF S/C TEST COND. U	LS 221 CSM PAD LEADER	LS 231 LM PAD LEADER	IS 241 PHOTO	IN 251 INST CONTROLLER	SO 261 SUPPORT CONTROLLER
TS 112 TEST SUPPORT CONTROLLER R C	IN 122 FAC & ENVIRON. MEAS. C	LV 132 LAUNCHER SYSTEMS	LV 142 S/V PNEU. ECS	LV 152 IU MECH.	LV 162 S-IVB MECH. & ORD.	LV 172 S-11 GND & STAGE PNEUM.	LV 182 S-1C MECH. & ORD.	LS 212 CSM STC U	LS 222 CSM TPE	LS 232 LM STE	LS 242 LM STC U	LS 252 LM TROUBLE SHOOTING	IS 262 INSL SUPPORT CONTROLLER
IN 113 OTV CONTROL ENG. C	LV 123 L/V FLIGHT CONTROL	LV 133 L/V IDENTIFIER	LV 143 L/V FUEL	LV 153 IU FLIGHT COMP.	LV 163 S-IVB PROP. (STAGE)	LV 173 S-11 PROP.	LV 183 S-1C PROP.	LS 213 CSM INST. U	LS 223 CSM EPS	LS 233 LM EPS	LS 243 LM INST.	IN 253 FACILITY & ENVIRON. MEAS.	SO 263 HPG GN 2 & HE PURGING
LV 114 L/V STAB. & LAYING C	LV 124 LSE ELECT.	LV 134 L/V PROP. ELECT.	LV 144 S-1C MEAS. & MGD	LV 154 IU ELECT. (STAGE)	LV 164 S-IVB GND. PNEUMATICS	LV 174 S-11 ELECT. (STAGE)	LV 184 S-1C ELECT. (STAGE)	LS 214 CSM COMM. U	LS 224 CSM F/C CRYO	LS 234 LM RADAR	LS 244 LM COMM. U	IN 254 FACILITY & ENVIRON. MEAS.	SO 264 HPG MON. SYS.
SO 115 CRAWLER OPS C	LV 125 L/V TROUBLE SHOOTING	LV 135 L/V TROUBLE SHOOTING	LV 145 L/V DDAS	LV 155 RCA 110A GND COMP.	LV 165 S-IVB ELEC. SYSTEM	LV 175 S-11 GND ELECT.	LV 185 S-1C GND ELECT.	LS 215 CSM GEN	LS 225 CSM SCS	LS 235 LM SCS	LS 245 LM GEN	IN 255 FACILITY & ENVIRON. MEAS.	SO 265 HPG ELECT. CONT'S
LV 116 S-1C MEAS. C	LV 126 S-11 LEAK DETECT.	LV 136 SERVICE ARM (MECH)	LV 146 IU MEAS. (GND)	LV 156 IU TM	LV 166 S-IVB STATUS MONITORING	LV 176 S-11 TM	LV 186 S-1C TM	LS 216 CSM RCS SA	LS 226 CSM SPS SA	LS 236 LM RCS SA	LS 246 LM PROP. SA	IN 256 CIF TELEM. GND STA.	SO 266 O2 FAC OPNS
IN 117 OIS CONTROL ENG C	LV 127 L/V TM	LV 137 L/V RF	LV 147 CNTD'N CLOCK & DEE 6	LV 157 IU RF	TS 167 SUPPORT TROUBLE SHOOTING	LV 177 LV QAL	LV 187 S-1C RF	LS 217 CSM AERO- MED	LS 227 CSM ECS	LS 237 LM ECS	LS 247 SC Q/C	IN 257 CIF TELEM. GND STA.	IN 267 KSC TIMING
LV 118 SERVICE ARM MECH. C	LV 128 S-11 MEAS.	LV 138 S-IVB DDAS & MEAS.	LV 148 IU MEAS.	LV 158 IU GND ELECT.	LV 168 S-IVB RF & TM	LV 178 S-11 FLIGHT CONTROL & HYDRAULICS	188 PAGING	LS 218 CSM GSE	LS 228 CSM ACE	LS 238 LM ACE	LS 248 LM GSE	LO 258 TEST SUPER (BACK-UP)	LS 268 CSM TROUBLE SHOOTING

R = AVAILABLE TO ETR
U = AVAILABLE TO USB - MILA
SA = FOR TEMPORARY USE DURING SERVICE ARM OPERATIONS
C = AVAILABLE TO CRAWLER TRANSPORTER/MOBILE LAUNCHER
BY MICROWAVE DURING TRANSFER OPERATIONS

APPROVED

P. J. Duffin Jr. 1/22/70
LO/PLN

LAUNCH VEHICLE TM FREQUENCIES

STAGE -----	LINK -----	FREQUENCY -----
S-IC	AF-1	256,2 MHZ
	AP-1	244,3
S-II	BF-1	241,5
	BF-2	234,0
	BP-1	248,6
S-IVB	CP-1	258,5
IU	DF-1	250,7
	DP-1	245,3

LAUNCH VEHICLE RF FREQUENCIES

SYSTEM -----	LOCATION -----	RECEIVE -----	TRANSMIT -----
RSCR	S-IC	450 MHZ	-
RSCR	S-II	450	-
RSCR	S-IVB	450	-
C-BAND RADAR	IU	5690	5765 MHZ
CCS	IU	2101.8	2282,5

LAUNCH PAD ACCESS CONTROL

DUE TO HAZARDS WHICH EXIST DURING THIS TEST, CONTROL OF PERSONNEL IN THE PAD AREA IS MANDATORY, THE FOLLOWING IS A SUMMARY OF SYSTEMS SAFETY ITEMS RELATING TO THE LAUNCH VEHICLE PORTION OF THE COUNTDOWN.

WARNING LIGHTS:

RED PAD CLOSED CONDITION 1

THIS CONDITION EXISTS DURING EXTREMELY HAZARDOUS OPERATIONS. ACCESS TO THE PAD AREA DURING THIS PERIOD OF TIME SHALL BE PROHIBITED OR SHALL BE RIGIDLY CONTROLLED BY CVTS AND CPSS. ACCESS SHALL BE BY SPECIAL PERMISSION ONLY.

FLASHING HAZARDOUS ACCESS CONDITION 2
AMBER

THIS CONDITION EXISTS DURING HAZARDOUS OPERATIONS ON THE PAD WHEN ONLY SPECIFIED TASKS MAY BE WORKED.

AMBER LIMITED ACCESS CONDITION 3

THIS CONDITION EXISTS DURING HAZARDOUS OPERATIONS IN THE PAD AREA WHEN ONLY ACCESS TO THE IMMEDIATE AREA MUST BE CONTROLLED. PERSONNEL ENTERING THE CONTROLLED ACCESS AREA MUST OBSERVE THE PRECAUTIONS ESTABLISHED FOR THE AREA.

GREEN PAD OPEN CONDITION 4

THIS CONDITION EXISTS WHEN THE PAD AREA IS OPEN FOR NORMAL WORK. PAD ACCESS BADGES WILL BE REQUIRED AND PAD SECURITY WILL BE IN EFFECT.

PAD ACCESS ROAD BLOCKS:

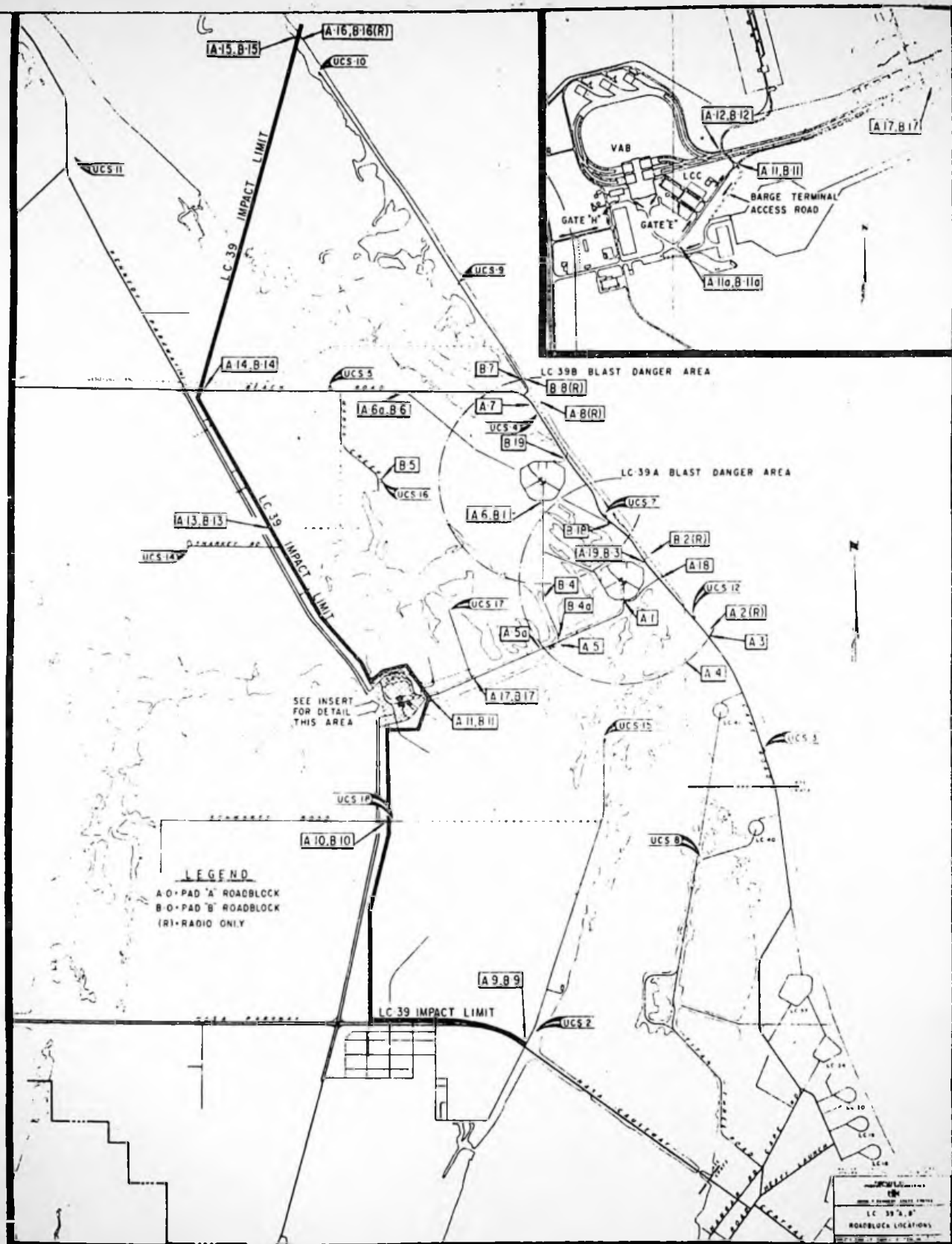
1. LIMITED ACCESS IN EFFECT AT GATES A2 THROUGH A8, THE 7000 FT BLAST DANGER AREA, TO T-9 HRS. (ONE HR PRIOR TO START OF LV CRYOGENIC PROPELLANT TANKING).
2. HAZARDOUS ACCESS IN EFFECT AT GATES A15 THROUGH A21, THE EXPANDED LAUNCH DANGER AREA, FROM T-9 HRS TO T-45 MIN.
3. PAD CLOSED IN EFFECT AT GATES A15 THROUGH A21, THE EXPANDED LAUNCH DANGER AREA, FROM T-45 MIN UNTIL THE S/V TEST SUPERVISOR SHALL DECLARE THE SPECIAL CONTROL AREA IS OPEN FOR LIMITED ACCESS.

CD ONLY

RESTRICTED ACCESS CONDITIONS (NET CDDT AND COUNTDOWN)

1. T-22:30 HRS TO T-20:30 HRS: THE LM DESCENT AREA INTERNAL TO SLA, IU & S-IVB FORWARD AREA WILL BE CLEARED FOR LM SHE TOPOFF.
2. T-19 HRS TO T-10:45 HRS: MSS PLATFORM OPENINGS WILL REQUIRE LOCAL CLEARING WHICH WILL BE CONTROLLED BY S/V TEST SUPERVISOR.
3. T-15:30 HRS TO T-15:00 HRS: THE SLA, IU, S-IVB FORWARD, S/A 7 AND A 10 FOOT PATHWAY UP THE MSS TO PLATFORM 3A WILL BE CLEARED FOR ALSEP FCA INSTALLATION. RADIATION AREA CONTROL WILL BE IN EFFECT FROM T-15:45 HRS TO LIFTOFF (OR T+18 HRS IF SCRUBBED FOR THIS MONTH). #
4. T-13 HRS TO T-12:20 HRS: LUT ZERO LEVEL WILL BE CLEARED (EXCEPT PATH TO ELEVATOR) FOR RP-1 REPLENISH OPERATIONS
5. T-11:30 HRS TO T-10:45 HRS: THE INTERIOR OF THE LV (EXCEPT FOR THE CSM AND S-IC BOATTAIL) WILL BE CLEARED OF ALL PERSONNEL NOT REQUIRED FOR ORDNANCE (LV PROPELLANT DISPERSION S&A DEVICE) CONNECTIONS.
6. T-8:59 HRS TO T-8:05 HRS: ALL PERSONNEL WILL BE LEAVING THE BLAST DANGER AREA,
7. T-8:05 HRS TO T-3:25 HRS: THE BLAST DANGER AREA WILL BE EVACUATED.
8. T-3:25 TO T-45 MIN: THE LAUNCH DANGER AREA WILL REMAIN CLEARED OF ALL PERSONNEL NOT REQUIRED FOR FLIGHT CREW INGRESS OPERATIONS,
9. T-45 MIN AND ON: THE EXPANDED LAUNCH DANGER AREA WILL BE CLEARED OF ALL PERSONNEL UNTIL THE S/V TEST SUPERVISOR DECLARES THE SPECIAL CONTROL AREA OPEN AT T+2 HRS AFTER LAUNCH. #

EMERGENCY AND PAD CREWS WILL BE STATIONED IN VAB HIGH BAY NO. 3 WITH REQUIRED EQUIPMENT AND VEHICLES.



TELEVISION CAMERA LOCATIONS

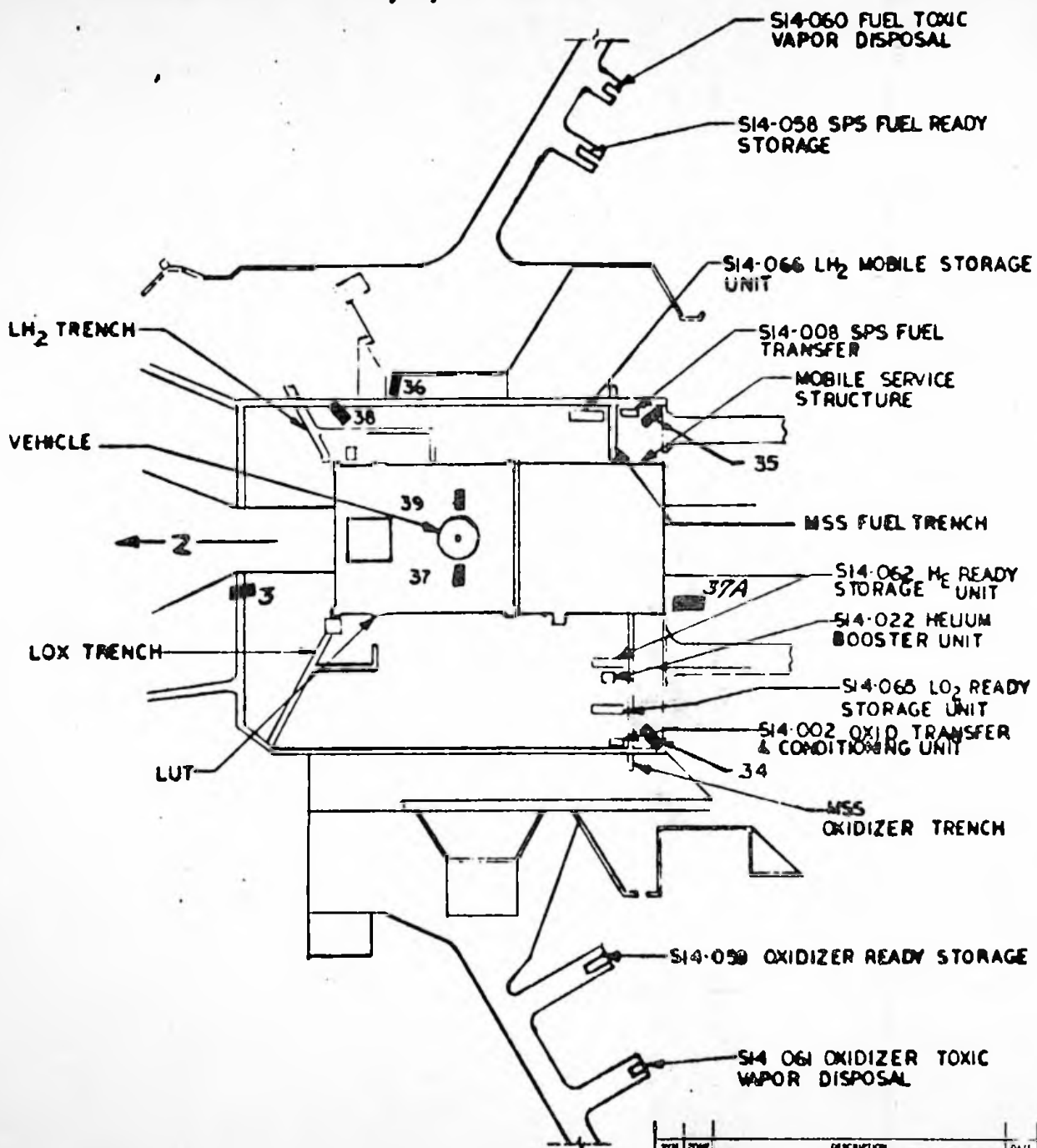
CAMERA NO.	LOCATION	SUBJECT VIEWED
1	ML ROOM 4A	HYDRAULIC SERVICE UNIT
2	ML ROOM 15A	COMPUTER TAPE DECK
3	NORTH SIDE OF ML	LH2 VENT PIPING FLAME DEFLECTOR
4	ML ROOM 15A	COMPUTER ASTRONICS EQUIPMENT
5, 6 & 7	ML 0' LEVEL	TSM 1-2, 3-2, 3-4, & S-1C LOX VENT VALVE
9	ML 180' LEVEL	S-11 GSE AND STAGE INSULATION
10	ML 30' LEVEL	LOX VALVE COMPLEX
11	ML 60' LEVEL	ML DECK
12	ML 100' LEVEL	S-1C INTERTANK AREA & CARRIER ASSEMBLY
13	ML 120' LEVEL	LH2 VALVE COMPLEX
14	ML 120' LEVEL	LOX VALVE COMPLEX
15	ML 130' LEVEL	S/A 4 & RETRACTION S-11 UMB DRAIN
16	ML 130' LEVEL	S/A 4
17	ML 180' LEVEL	S-11 LH2 HEAT EXCHANGER
18	ML 200' LEVEL	LH2 VALVE COMPLEX
19	ML 200' LEVEL	LOX VALVE COMPLEX & S-1VB PNEU CONSOLE
20	ML 220' LEVEL	S/A 6, 7, 10
21	ML 240' LEVEL	S/A 6 & LH2 UMBILICAL
22	ML 240' LEVEL	S/A 5 S-1VB APS MODULE
23	ML 240' LEVEL	S-1VB HEAT EXCHANGER & VALVE PANEL
24	ML 260' LEVEL	S/A 7 AND S-1VB UMB, S-11 H2 VENT VALVE
25	ML 300' LEVEL	WHITE ROOM, SC INTERIOR
26	ML 320' LEVEL	S/A 8, LES & S/A 9
27	ML 340' LEVEL	S/A 9, CM, SM, 4/R, Q-BALL COVER & DAMPER
28	LUX STORAGE FACILITY	LOX TANKS, PUMP & LINES
29	LUX STORAGE FACILITY	LOX TANKS, PUMP & LINES
30	LH2 STORAGE FACILITY	LH2 STORAGE TANKS & LINES
31	PERIMETER CAMERA SITE 1	S/V, LH2 STORAGE TANK, VALVES AND LINES
32	LH2 STORAGE FACILITY	LH2 STORAGE TANKS & LINES
33	RP-1 STORAGE FACILITY	RP-1 STORAGE TANK PUMPS, VALVES & LINES
34	PAD APRON SW CORNER	VEHICLE, LOX VENT VALVE AT 120' LEVEL
35	PAD APRON SE CORNER	VEHICLE, LOX VENT VALVE AT 120' LEVEL
36	PAD APRON CENTER E SIDE	VEHICLE
37	ON PAD W. SIDE OF FLAME TRENCH	S-1C ENGINES
37A	PAD SURFACE	LH2 TANKER GAUGES
38	MSS S. LEG NW CORNER PAD APRON	LH2 EXPANSION JOINTS, DISCONNECT TOWER
39	PAD SURFACE E. FLAME TRENCH	S-1C ENGINES
46	MSS 22' LEVEL SE SIDE	RCS & CRYOGENIC FUEL TRANSFER CONSOLES
47	MSS 22' LEVEL SW SIDE	RCS & CRYOGENIC FUEL TRANSFER CONSOLES
48	MSS 45' LEVEL	FUEL GSE ON PAD
49	MSS 45' LEVEL	OXIDIZER GSE ON PAD
52	MSS 265' LEVEL	LH FUELING FUNCTIONS
53	PLATFORM 3 SOUTH	FUEL LINES, OXIDIZER AND FUEL FILL PORTS, UMB DISCONNECTS, RCS
54	MSS 300' LEVEL PLATFORM 4A	FUEL LINES, OXIDIZER AND FUEL FILL PORTS, UMB DISCONNECTS, RCS
55	MSS 300' LEVEL PLATFORM 4A	FUEL LINES, OXIDIZER AND FUEL FILL PORTS, UMB DISCONNECTS, RCS
56	MSS 310' LEVEL PLATFORM 4C	UMB DISCONNECT, FLUID LINES AND GSE INTERFACE
57	MSS 310' LEVEL PLATFORM 4C	UMB DISCONNECT, FLUID LINES AND GSE INTERFACE
AAS-1	ML 330' LEVEL	SPACE VEHICLE ML 0' LEVEL
AAS-2	ML 330' LEVEL	SPACE VEHICLE
AAS-3	CAMERA SITE #2	SPACE VEHICLE
AAS-4	CAMERA SITE #5	SPACE VEHICLE
ETR	UCS #17	LV VERTICAL MOTION

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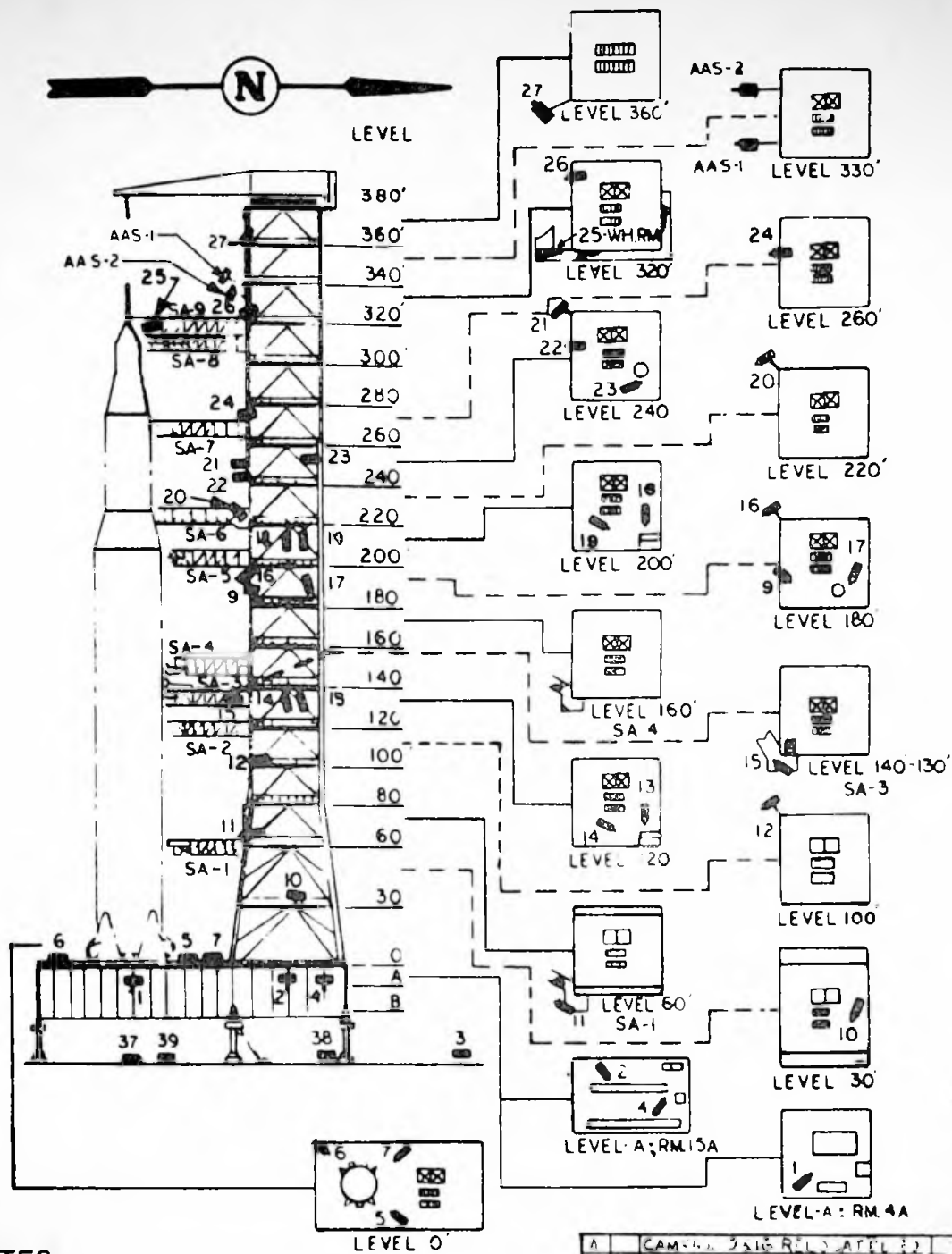
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ENGINEER: []					
[]					
[]					
[]					
SUBMITTED: []		APPROVED: [] DATE: [] SIZE: []			
[]		FEC/TV-10277			

NOTES:

1. CAM 37A ON PORTABLE PEDESTAL.
2. 2X EXTENDERS-CAM 3, 34, 35 AND 38



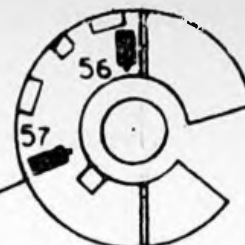
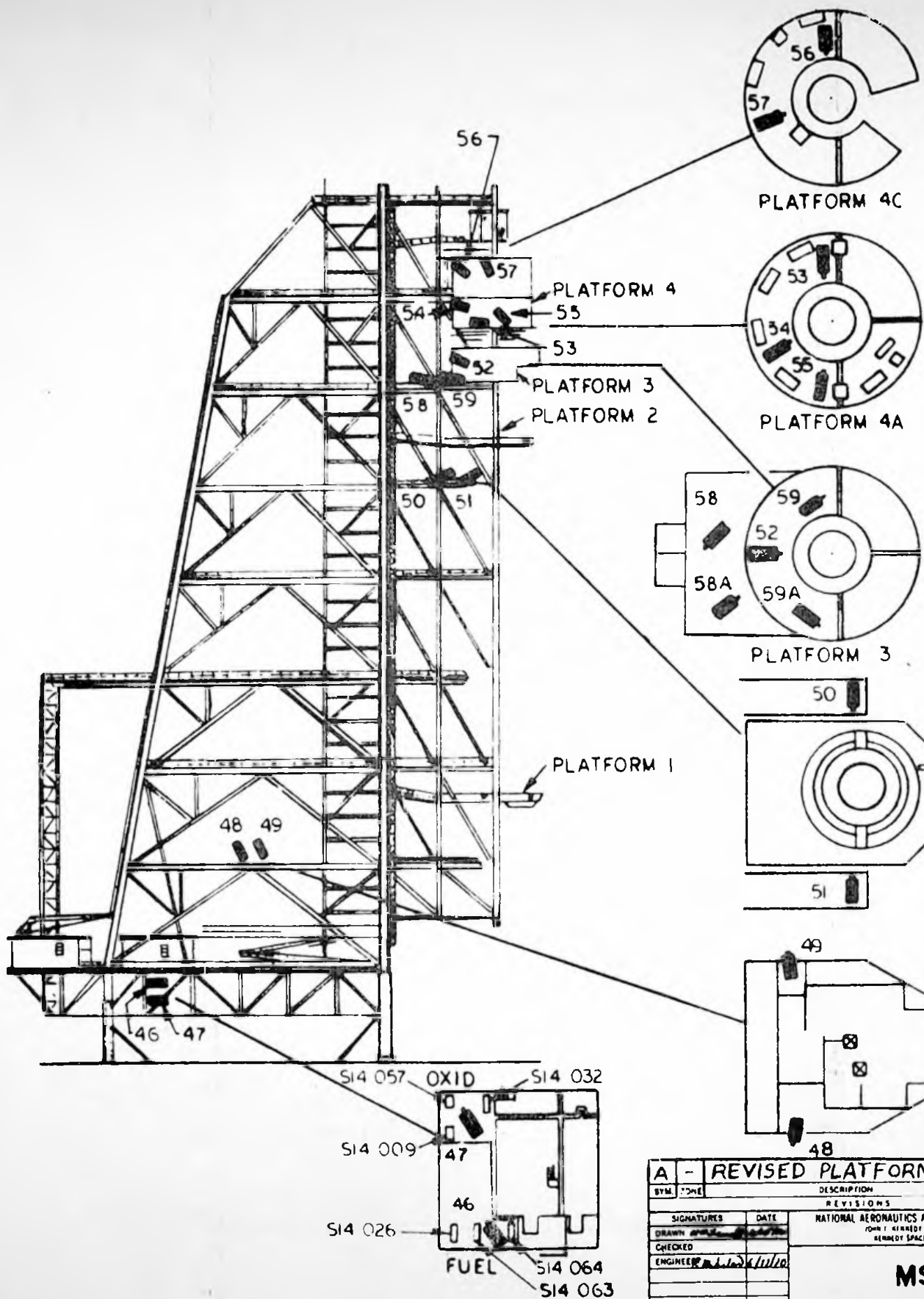
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TITLE				
PRICE				
REVISIONS				
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION				
JOHN F. KENNEDY SPACE CENTER				
KSC-100-100-100-100				
CAMERA LOCATIONS				
PAD A & B				
PAD DETAILS				
FEC/TV-10277				
PAGE 8 OF 11				



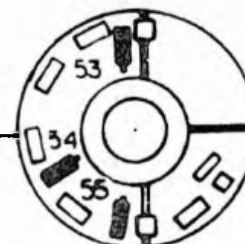
NOTES

1. UPSIDE DOWN CAMERAS 13, 14, 18 AND 19.
2. 2X EXTENDER-CAM 3, 9 AND 16.

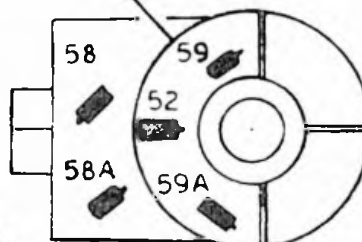
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CHECKED		DATE		NASA		DATE	
ENGINEER		DATE		KIMBERLY SPACE CENTER, FLORIDA		DATE	
SUBMITTED		DATE		VEHICLE / LUT		DATE	
APPROVED		DATE		CAMERA LOCATIONS		DATE	
DATE		DATE		FEC/TV-10278		DATE	
DATE		DATE		PAGE NO		PAGE NO	



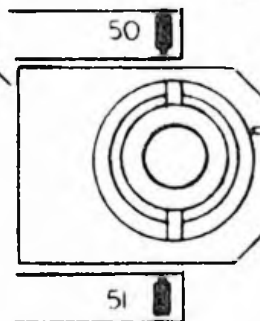
PLATFORM 4C



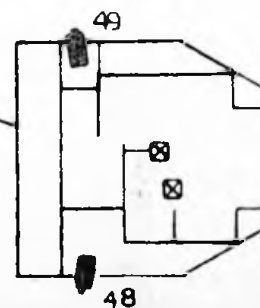
PLATFORM 4A



PLATFORM 3



PLATFORM 1



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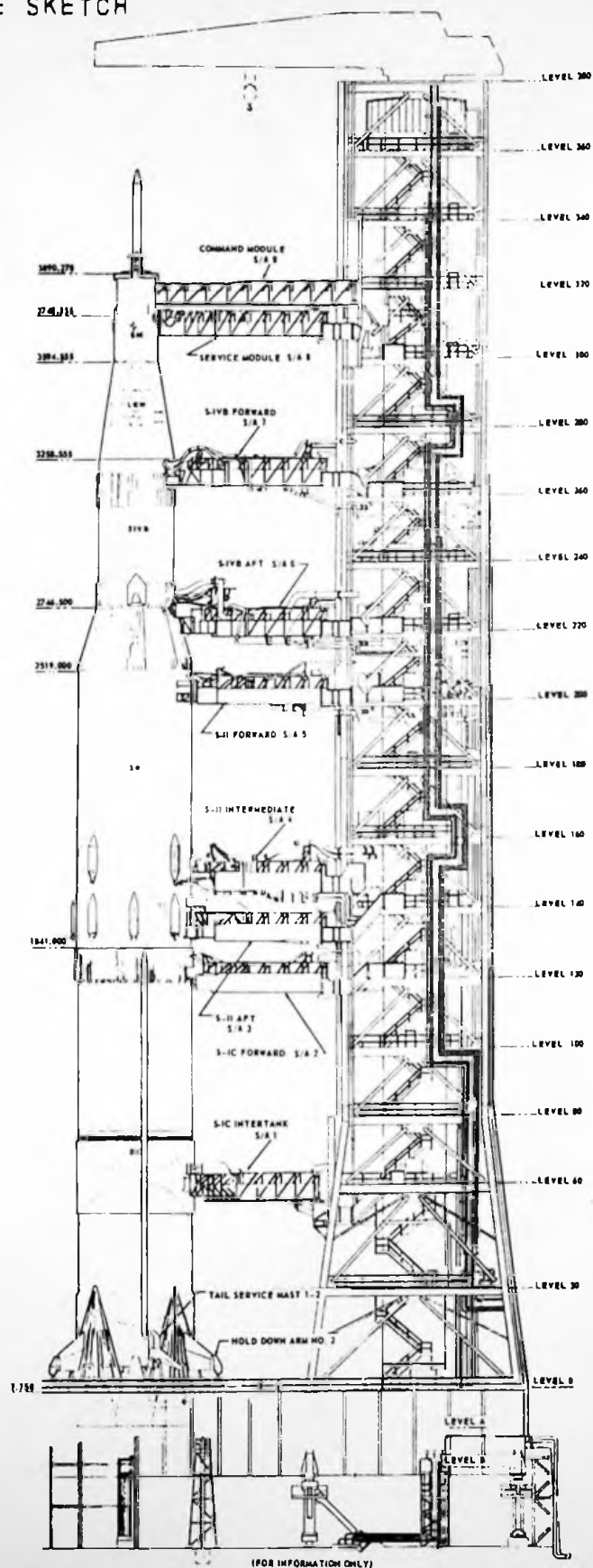
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BY	TIME	DESCRIPTION	
SIGNATURES			
DATE			
CHECKED			
ENGINEER			
SUBMITTED			
DATE			
SIZE			
DWG NO			
TITLE			
PROJ NO			
SHEET 1 OF 1			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 JOHN F. KENNEDY SPACE CENTER NASA
 KENNEDY SPACE CENTER FLORIDA

MSS
CAMERA LOCATIONS

FEC/TV-10279

ML/SV REFERENCE SKETCH



LV PROPELLANT LOADING SCHEDULE:

LOADING SEQUENCE -----	TIME ----	REQUIRED MSS DISTANCE FROM LV -----
START REPLENISH LINE CHILLDOWN	T-8:15	850 FT.
START S-IVB LOX	T-8:05	850 FT.
START MAIN LINE CHILLDOWN	T-8:01	850 FT.
START S-II LOX	T-7:36	850 FT.
START S-II LH2 PRECONDITIONING	T-7:26	850 FT.
START S-IC LOX	T-6:54	850 FT.
LOX ALL STAGE REPLENISH	T-5:29	3600 FT.
START S-II LH2	T-5:27	3600 FT.
100% S-II LH2	T-4:19	4600 FT.
START S-IVB LH2	T-4:19	4600 FT.
100% S-IVB LH2	T-3:38	4800 FT.

LAUNCH OPERATIONS

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TEST NO. 20060, VOL II
VEHICLE AS-511

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
VOLUME II ----- COUNT -----						
T-26:00 - 1 DAY 4 HRS 0' 0"						
	111	1	CLTC	CVTS	VERIFY ML ELEVATOR 1 RESERVED FOR 30 MINUTES FOR LV BATTERY MOVE	# TCP
	171	2	C2TC	C2FC	START S-II ENGINE ACTUATION SYSTEM PREPS PER V-30029 (M020) TASK 13 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	261	3	C2TC	BOSC	S-II WILL NEED 4 SCOTT AIR PACKS (LVN-15) AT ML 140 FT LEVEL IN 30 MINUTES TO SUPPORT EMERGENCY BATTERY REMOVAL CREW.	# TCP
	171	4	C2TC	U2SE	PICK UP 4 PROXIMITY FIRE SUITS (LVN-26) AT LC39 FIRE STATION AND DELIVER TO ML 140 FT LEVEL IN 30 MINUTES TO SUPPORT EMERGENCY BATTERY REMOVAL CREW.	#
	181	5	C1TC	L1IC	START THRUST STRUCTURE AND HEAT SHIELD INSTRUMENTATION PROTECTIVE COVERS REMOVAL PER V-27195 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	6	C1TC	C1PE	START REMOVAL OF THRUST STRUCTURE INTERNAL ACCESS EQUIPMENT PER V-24010 (HAZARDOUS).	
T-27:45 - 1 DAY 3 HRS 45' 0"						
	161	1	C4TC	S4TM	START VISICORDER SETUP PER V-30539, SECT J, PART 3 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	2	C4TC	S4MF	REMOVE LM ACCESS STEPS PER V-30539, APPENDIX D, PART 1 (NON-HAZARDOUS). REPORT WHEN COMPLETE. (COORDINATE DIRECTLY WITH GRUMMAN PAD LEADER)	#

KSC FORM 23-81B (REV. 4/71)

LAUNCH OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-27:30 - 1 DAY 3 HRS 30' 0"	161	22	C4TC	S4CE L4CE S4HY S4MA S4ML	START S-IVB ENGINEERING WALKAROUND AFT, ESE AND ML.	
	161	23	C4TC	C4PP L4CE	START S-IVB PREPOWER PREPS PER V-30539, SECT J, PART 6 AND APPENDIX A (NON-HAZARDOUS).	
	171	24	C4TC	C2TC	INSTALL S-II/S-IVB SEPARATION SIMULATION JUMPER FOR ENGINE SEQUENCE (X02-220 A2J7), REMOVE WHEN ENGINE SEQUENCE IS COMPLETE.	
	171	25	C2TC	L2RR	INSTALL JUMPER J7 IN X02-220A2 FOR S-IVB ENGINE SEQUENCE TEST. REMOVE JUMPER UPON C2TC REQUEST.	
		25-1			VERIFICATION BY LV-QAL: INSTALLED _____ REMOVED _____	
T-27:00 - 1 DAY 3 HRS 0' 0"	121	1	CLTC	C1TC C2TC C4TC	START UMBILICAL RELEASE SENSOR CHECK PER V-31045 (NON-HAZARDOUS) AND V-30539 SECT I (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	2	C1TC	CSPP	START UMBILICAL RELEASE SENSOR CHECKS PER V-31045 (NON-HAZARDOUS).	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
T-26:30 - 1 DAY 2 HRS 30' 0"						
		161	1	C4TC	S4MF S4PC S4CE	INSTALL S-IVB FORWARD BATTERIES PER V-30539, SECT H, PART 3 (HAZARDOUS). #
		181	2	C1TC	C1NE	INSTALL AND CONNECT S-IC FLIGHT BATTERIES PER V-21204 (HAZARDOUS). START FINAL ML ESE CLOSEOUT PER V-21035 (NON-HAZARDOUS). START FLIGHT CONTROL PREPS PER V-33030 (NON-HAZARDOUS). #
		181	3	C1TC	C1NE	CDDT ONLY *
		181	4	L1TC	C1TC	STAGE INSTRUMENTATION COVERS REMOVED
		121	5	CLTC	CUTC	START LV ELECTRICAL SUPPORT PREPS PER V-31062, APPENDIX B (NON-HAZARDOUS).
T-26:15 - 1 DAY 2 HRS 15' 0"						
		121	1	CLTC	CUTC	START ALTERNATE FIRING ROOM ELECTRICAL SUPPORT PREPS PER V-21243, PART 1A (NON-HAZARDOUS).
		181	2	C1TC	C1PE	START F-1 ENGINE CLOSEOUT PER V-34012 (HAZARDOUS).
T-26:10 - 1 DAY 2 HRS 10' 0"						
		151	1	CUTC	SUVM	REMOVE CHE DOLLY #
T-26:00 - 1 DAY 2 HRS 0' 0"						
		161	1	C4TC	S4CE	START FINAL ENGINEERING WALKAROUND FWD

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-26:00 - 1 DAY 2 HRS 0' 0"					CD ONLY	
	151	2	CUTC	SUVM	VERIFY IO FLIGHT BATTERY INSTALLATION COMPLETE	#
	151	3	CUTC	SUVM	VERIFY CHE DOLLY HAS BEEN REMOVED	#
	151	4	CUTC	SUVE	START MONITORING FLIGHT BATTERIES PER V-21479 (HAZARDOUS).	#
	171	5	C2TC	U2SI	FOLD BACK AND REMOVE SECTIONS OF A7-84 PLATFORM FOR CTC1 ENGINE GIMBALING PER V-26507 (G147) TASK 2 & 18 (NON-HAZARDOUS) IN CONJUNCTION WITH V-30029 (M020) TASK 13 (NON-HAZARDOUS).	
	171	6	C2TC	U2A2	START PREPS FOR G SWITCH FINAL CHECKOUT PER V-30029 (M020) TASK 6 (NON-HAZARDOUS).	
	171	7	C2TC	U2AN U2QC	START AFT INTERSTAGE NON-FLIGHT HARDWARE REMOVAL AND INSPECTION PER V-30029 (M020) TASK 47 (NON-HAZARDOUS).	
	121	8	CLTC	CUTC	START AUXILIARY POWER BACKUP BATTERY CHECKS	
	151	9	CUTC	CCAP	START BACKUP BATTERY CHECKS ON AUXILIARY POWER SUPPLIES PER V-31062, APPENDIX J. REPORT WHEN COMPLETE. (NON-HAZARDOUS).	
T-25:30 - 1 DAY 1 HRS 30' 0"						
	161	1	C4TC	C4PS	START PROPULSION PREPOWER PREPS PER V-30539, SECTION J, PART 2 (NON-HAZARDOUS).	
	161	2	C4TC	C4PP V4MS S4TM L4CE S4HY	VERIFY PREPOWER PREPS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
T-25:30 - 1 DAY 1 HRS 30' 0"						
	181	3	C1TC	C1NE	VERIFY F/C PREPS COMPLETE PER V-33030 (NON-HAZARDOUS).	
	171	4	C2TC	B2TM	SETUP TCE GROUND STATION PER V-28181 (G125) (NON-HAZARDOUS) & V-28135 (G050) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	5	C1TC	C1NE	VERIFY FLIGHT BATTERIES INSTALLED AND CONNECTED.	#
	181	6	C1TC	R1SC	MONITOR VOLTAGE AND CURRENT PER V-21204 (HAZARDOUS) FOR 1D10 AND 1D20. REPORT ANY ANOMALIES TO C1NE ON CH 181.	#
	181	7	C1TC	B1TM	START S-IC TM GSE READINESS CHECK PER V-28186 (NON-HAZARDOUS).	
T-25:15 - 1 DAY 1 HRS 15' 0"						
	121	1	CUTC	CLTC	SUPPORT PREPS ARE COMPLETE - READY TO APPLY S-II & S-IVB SWITCH POWER,	
	121	2	CLTC	C2TC C4TC	APPLY SWITCH POWER. REPORT WHEN COMPLETE	
	121	3	CLTC	CUTC	SWITCH POWER IS ON - INITIALIZE DISCRETES	
	151	4	CUTC	BGCC	INITIALIZE DISCRETES PER V-22006 (PROGRAMS NT99 & NT98). REPORT WHEN SWITCH SCAN IS BEING DISPLAYED. (NON-HAZARDOUS).	
	181	5	C1TC	CPDC	PREP ESP FOR LOWERING PER V-36070 (HAZARDOUS). REPORT WHEN READY TO LOWER.	

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LAUNCH OPERATIONS

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 VEHICLE AS-511

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-25:05 - 1 DAY 1 HRS 5' 0"	121	1	CUTC	CLTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION.	
	121	2	CLTC	C2TC C4TC CUTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION - REPORT WHEN SATISFACTORY.	
	151	3	CUTC	CLVN	ML COMPUTER INHIBIT - AUTO	
	151	4	CUTC	CLVN	COMPUTER TEST SWITCH ON AND VERIFY DISCRETE CYCLING	
	151	5	CUTC	CCPM	START REDUNDANT POWER SUPPLY AND APPLY 400 HZ POWER PER V-21222. REPORT WHEN COMPLETE. (NON-HAZ)	
	121	6	CLTC	CUTC	SWITCH SCAN IS SATISFACTORY - BRING UP COMPUTER.	
T-25:02 - 1 DAY 1 HRS 2' 0"	151	1	CUTC	CUIP CUCP CUNP	VERIFY PANEL SWITCHES ARE CONFIGURED PER V-21223 TO SUPPORT KA01 (IU POWER APPLICATION) (NON-HAZARDOUS)	
T-25:00 - 1 DAY 1 HRS 0' 0"	151	1	CUTC	BGCC	ENTER \$GO AND REPORT WHEN COMPUTER SUPPORTING.	
	121	2	CUTC	CLTC	GROUND COMPUTER IS SUPPORTING	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-25:00 - 1 DAY 1 HRS 0' 0"						
	188	3	CLTC	ALL	GROUND COMPUTER IS SUPPORTING	
		3-1			*** NOTE ALL DISPLAY CONSOLE OPERATORS, PRIOR TO SELECTING ANY COMPUTER PROGRAM, ACCOMPLISH THE FOLLOWING (NOT REQUIRED DURING LINKING PROGRAMS):	
					1. MOMENTARILY DEPRESS TV TRANSMIT	
					2. TYPE "1"	
					3. MOMENTARILY DEPRESS EXECUTE	
					4. MOMENTARILY DEPRESS CLEAR	
		4			NOTE ----	
					WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS TO DO THESE FUNCTIONS MANUALLY. PROGRAMS WILL NORMALLY BE DONE AT THE TIME SHOWN BUT MAY, AFTER COORDINATION ON CH 121, BE CALLED EARLY BY CLES (VALJ) OR DELAYED BY CLFK (KAF1)/CLGK (KAPW, KAG1)/ C1PK (VALJ)	
	121	5	CLTC	C1PK	REQUEST & EXECUTE VALJ (T-25 LINKING PROG) REPORT WHEN COMPLETE.	
	171	6	C2TC	C2NP	START BACKUP BATTERY CHECKS PER V-21103 (B011) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	7	C1TC	RRSC	RECORDERS ON	
	121	8	CUTC	CLTC	BACKUP BATTERY CHECKS ARE COMPLETE.	

LAUNCH OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 55' 0"	151	1	***	CUNP	REQUEST & EXECUTE KA01 (IU POWER UP). REPORT WHEN COMPLETE.	***
-24 HRS 50' 0"	121	1	CLTC	BTMC	START TCE PREPS PER V-28009. REPORT WHEN COMPLETE.	
	181	2	C1TC	V1MS	START S-IC VEHICLE MEASURING STATION PREPS PER V-27098 (NON-HAZARDOUS).	
	151	3	BUTM	CUTC	TCE STATION SETUP IS COMPLETE.	
	171	4	R2SC	C2TC	LCC MEASURING STATION SETUP IS COMPLETE.	
	171	5	V2MS	C2TC	VAB MEASURING STATION SETUP IS COMPLETE.	
-24 HRS 45' 0"	121	1	CUTC	CLTC	ALTERNATE FIRING ROOM IS SUPPORTING.	
	151	2	C2TC	CUTC	CLOSE S-II 400 HZ CIRCUIT BREAKER	
	171	3	C2TC	R2SC	VERIFY READY FOR S-II STAGE AND ESE POWER	
	151	4	C2TC	CUTC	LOAD S-II POWER UP SEQUENCE COMPARE TABLE.	
	161	5	C4TC	C4PS	VERIFY S-IVB PREPOWER PREPS COMPLETED.	
-24 HRS 40' 0"	121	1	CUTC	CLTC	IU STAGE POWER ON AND COOLING IS SUPPORTING.	
	151	2	CUNE	CUTC CUES	VERIFY LIFTOFF LIGHT OFF (HARDWIRE CHECKS).	

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TEST NO. 20060, VOL. 11

VEHICLE

AS-511

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 40' 0"					CD ONLY	
	121	3	CLTC	CUTC	START ELECTRICAL CONNECTION OF LAUNCH VEHICLE FLIGHT BATTERIES	#
	151	4	CUTC	CUNE SUVE RUBM	CONNECT IU FLIGHT BATTERIES PER V-21479 ON CH 154 (HAZARDOUS)	#
	171	5	***	C2NP	REQUEST AND EXECUTE GAPO (S-II POWER UP) OR APPLY STAGE AND ESE POWER PER V-21103 (B011) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	***
		6		C2NP	GDDT ONLY	*
		7		C2NP	GDDT ONLY	*
	171	8	C2TC	R2SC	ALL RECORDERS ON	
	171	9	C2TC	L2PD	CLOSE S-II AUX MOTOR PUMP 400 HERTZ POWER CIRCUIT BREAKERS X01-266A5-1 CB-1, X01-266A5-2 CB-1, X01-266A5-3 CB-1 AND X01-266A5-4 CB-1.	
	151	10	C2TC	CUTC	VERIFY S-II 400 HZ BREAKER CLOSED.	
	171	11	C2TC	L2PD	INSTALL CIRCUIT BREAKER LOCKS PER V-30029 (M020) TASK 14 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	12	C2TC	C2FC	S-II/IU 400 HZ BREAKERS CLOSED	
	171	13	C2TC	C2NP R2SC	CYCLE MAIN, INSTR AND IGN BATTERY BLEED SWITCHES TO VERIFY NOTED BUS CURRENT RECORDERS READ APPROXIMATELY 8 AMPS.	
	171	14	C2TC	B2TM	START PCM/DDAS CHECKS PER V-28144 (R014) TASK 1 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 35' 0"					CD ONLY	
	161	1	C4TC	ALL	S-IVB POWER WILL BE APPLIED PER V-30539, APP B (NON-HAZARDOUS)	
	151	2	CUTC	SUVM	VERIFY CHE HOIST REMOVED	#
	171	3	C2TC	C2PV	ACTIVATE PURGE AND VACUUM SYSTEM AS A CONTINUATION OF THE PREPS PER V-26276 (G058) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	4	C2FC	C2TC	S-II ENGINE ACTUATION SYSTEM PREPS ARE COMPLETE.	
	171	5	C2TC	C2IP	PLACE GROUND POWER TO ON.	
	171	6	U2SI	C2TC	A7-84 PLATFORMS SECURED FOR ENGINE GIMBALLING,	
	171	7	C2TC	C2FC	START EAS FUNCTIONAL CHECKOUT PER V-30029 (M020) TASK 16 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
-24 HRS 33' 0"						
	121	1	C2TC	CLTC	S-II ESE & STAGE POWER HAS BEEN APPLIED. QAPO HAS TERMINATED SATISFACTORILY.	
	171	2	C2TC	C2GP	CONTINUE S-II GROUND PNEUMATICS ACTIVATION PER V-30029 (M020) TASK 15 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	3	***	C4NK	REQUEST & EXECUTE XAPS (S-IVB POWER UP). REPORT WHEN COMPLETE. (CONSOLE 11)	***
-24 HRS 30' 0"						
	121	1	CLTC	CGIC	VERIFY CIF READY TO SUPPORT LV COUNTDOWN	TCPI
	151	2	CUTC	SURF	START ANTENNA COUPLER INSTALLATION AND CONFIGURE PER V-28069. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	

LAUNCH OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CO ONLY						
-24 HRS 30' 0"	151	3	CUTC	VURF	START GSE SETUP PER V-28069. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	171	4	U2J2	C2TC	PROPULSION SYSTEM WALKDOWN IS COMPLETE	
	181	5	C1TC	B1TM	VERIFY TM GSE PREPS COMPLETE	
	111	6	CLTC	CVTS	REQUEST RANGE CLEARANCE FOR S-II TM LINK BF-2 (240.0 MHZ)	TCPI
	121	7	CLTC	B2TM ETMS BTMC	PREPARE STATION RECORDING EQUIPMENT TO SUPPORT G SWITCH TEST PER V-30029, TASK 53 (NON-HAZARDOUS).	
-24 HRS 20' 0"	181	1	***	C1NK	REQUEST AND EXECUTE WAPO (S-IC POWER UP) REPORT WHEN COMPLETE.	***
	181	2	C1TC	C1NE	START TCS FUNCTIONAL TEST PER V-21035 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	3	C4TC	C4ES	CONNECT S-IVB FLIGHT BATTERIES PER V-30539, SECT H, PART 4 (NON-HAZARDOUS).	#
	165	4	C4ES	C4N3	MONITOR BATTERY VOLTAGES, CURRENTS AND TEMPERATURES AND RECORD DATA PER V-21413 (NON-HAZARDOUS)	#
	165	5	C4ES	C4NP	VERIFY 4D10, 4D20, 4D30 & 4D40 BATTERY INDICATIONS ON	
	165	6	C4ES	C4NP	APPLY 4D10 LOAD AND/OR BATTERY MONITOR TO ENABLE AS REQUIRED TO STABILIZE BATTERY VOLTAGE.	#
	165	7	C4ES	C4NP	BATTERY MONITOR TO AUTO AFTER BATTERY VOLTAGES ARE RECORDED.	
	161	8	C4TC	C4PS	START PROPULSION FINAL CHECKS PER V-30539, SECT K, PARTS 1 THRU 6 (NON-HAZARDOUS)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 20' 0"	121	9	BTMC	CLTC	TCE PREPS COMPLETE PER V-28009 (NON-HAZARDOUS).	
	121	10	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK ON	
-24 HRS 15' 0"	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY STAGE AND GROUND POWER APPLIED	
	111	2	CLTC	CVTS	LV POWER IS ON.	TCPI
	181	3	***	CLSK	REQUEST & EXECUTE WASP (LSE POWER UP), REPORT WHEN COMPLETE.	
-24 HRS 10' 0"	181	1	C1TC	C1NE	VERIFY CIRCUIT BREAKER LOCKS HAVE BEEN INSTALLED PER V-21035 (NON-HAZARDOUS).	
	181	2	C1TC	C1NP	POSITION 1D181 BUS TO ON. VERIFY INDICATION	
	181	3	C1TC	V1MS	VERIFY S-IC VEHICLE MEASURING STATION PREPS COMPLETED PER V-27098 (NON-HAZARDOUS).	
	181	4	C1TC	B1TM	START S-IC TM DDAS CHECKS PER V-28186 (NON-HAZARDOUS).	
	181	5	C1TC	C1EN	PLACE IGNITORS INSTALLED TO ARM MOMENTARILY THEN AUTO AND VERIFY ALL IGNITOR AND HYPERGOL INSTALLED INDICATIONS ON	
	181	6	C1TC	C1PE	START PROPULSION SYSTEM FUNCTIONAL TEST PER V-34012 (HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 10' 0"	181	7	C1TC	C1PE C1NE	VERIFY READY TO LOWER ENGINE SERVICE PLATFORM.	
	181	8	C1TC	CPDC	START LOWERING ENGINE SERVICE PLATFORM PER V-36070 (HAZARDOUS).	
	181	9	CLSK	C1TC	42D100 POWER IS UP. WASP IS COMPLETE	
	181	10	C1TC	CSPP	TRANSFER SMDPS TO 42D100 POWER PER V-21194, APP G, PART II (NON-HAZARDOUS)	
-24 HRS 5' 0"	121	1	CLTC	CUFS	START FLIGHT CONTROL SYSTEM PREPS ON CH 123.	(KAF2)
	123	2	CUFS	CUSP CUGA	PLACE ALL FCC, CCIS AND EDS/CRG PANEL SWITCHES TO AUTO	(KAF2)
	151	3	CUFS	CUES	VERIFY EDS MODE SWITCH IN MONITOR POSITION AND WILL REMAIN THERE UNTIL COMPLETION OF CTC4.	(KAF2)
	151	4	CLFK	BGCC	MOUNT CTC4/CSBO SCALE FACTOR TAPE ON IODC 1-3. REPORT WHEN COMPLETE.	
	121	5	CLTC	C2TC	PREPARE FOR G SWITCH FINAL CHECKOUT	
	121	6	CLTC	BTMC ETMS	TM TAPE RECORDING ON	
	171	7	C2TC	C2IP	RF COUPLER TO ANTENNA	
	171	8	C2TC	C2IP	BF-2 TRANSMITTER ON AND MARK ON CH 171	
-24 HRS 0' 0"	181	1	C1TC	CCLO	START LOX SYSTEM PREPS FOR LOADING PER V-25340 (HAZARDOUS).	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 0' 0"					GO ONLY	
	181	2	C1TC	CCLH	START LH2 SYSTEM PREPS FOR LOADING PER V-35004 (NON-HAZARDOUS).	
	161	3	C4TC	S4HY S4CE L4CE S4ML	VERIFY FINAL ENGINEERING WALKAROUND AFT, ESE AND ML IS COMPLETE.	
	121	4	CLTC	C1NP C2NP C4NP CUNP	SWITCH SELECTOR INHIBIT - OFF	
	181	5	C1TC	C1NE	VERIFY COMPLETION OF FLIGHT BATTERY INSTALLATION	#
	181	6	C1TC	C1PE C1NE	START FINAL THRUST SECTION WALKAROUND (QUAD 1). LV-QAL PARTICIPATION REQUIRED.	
	181	7	C1TC	C1PE	REMOVE FINAL PORTION OF S-IC THRUST STRUCTURE INTERNAL ACCESS EQUIPMENT PER V-24010 (HAZARDOUS).	
	181	8	C1TC	C1MS	VERIFY ML MEASURING EQUIPMENT LOX/FUEL DIGITAL/ANALOG CONVERTER IS TURNED ON AND CALIBRATED.	
	123	9	***	CLFK	REQUEST & EXECUTE KAF1 LINKING PROGRAM, OPTION 1 (KAF2 GYRO PREPS, CTC4 & KAF2 FCC PREPS),	***
	123	10	***	CLFK	REQUEST & EXECUTE KAF2 (FLIGHT CONTROL PREPS) WITH THE FOLLOWING OPTIONS: PRIMARY OPTION 3 (EDS/CRG PREPS) SECONDARY OPTION 1 (COMPARATORS RESET)	***
	171	11	C2FC	C2TC	S-II EAS FUNCTIONAL CHECKOUT IS COMPLETE	
	181	12	C1TC	CPDC	REMOVE GIMBAL PLATFORMS FROM AROUND ENGINES PER V-36070 (HAZARDOUS) AS REQUIRED BY PROPULSION SYSTEM ENGINEER. USE TAG LINE TO KEEP SECTION FROM FALLING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 0' 0"						
	151	13	CUTC	CCAP LRPR	INSTALL AUXILIARY POWER CIRCUIT BREAKER LOCKING PINS PER V-31062, APPENDIX E. REPORT WHEN COMPLETE (NON-HAZARDOUS).	
	181	14	C1TC	CECS	START ECS PREPS PER V-36074, PART A (HAZARDOUS)	
	171	15	C2TC	U2EC	START S-II FINAL ECS CHECKS PER V-30029 (M020) TASK 17 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	16	C2TC	U2MH	START FINAL ENGINEERING WALKDOWN OF ENGINE ACTUATION, ENGINE COMPARTMENT CONDITIONING AND THERMAL CONTROL SYSTEMS. REPORT WHEN COMPLETE.	
	171	17	C2TC	C2EC	START FINAL "G" SWITCH CHECKOUT AND SECURING PER V-30029 (M020) TASK 53 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
-23 HRS 55' 0"						
	121	1	CUFS	CLTC	KAF2 COMPLETE. STARTING CTC4.	
	123	2	***	CLFK	REQUEST AND EXECUTE CTC4 NORM OPTION (CRG CALIB TEST; P, Y, R AXES; POS & NEG; B1-LEVEL PKG; COMPARATOR TEST AND RATE EXCESSIVE TEST). REPORT WHEN COMPLETE.	***
	181	3	C1TC	C1PE	START S-IC PNEUMATIC SYSTEM FUNCTIONAL TEST PER V-24327 (HAZARDOUS).	
-23 HRS 50' 0"						
	161	1	C4TC	C4AL	VERIFY APS ENGINE VALVE POWER OFF AND SWITCH LOCK IS INSTALLED.	
	121	2	C4TC	CLTC	APS ENGINE VALVE POWER OFF AND WILL REMAIN OFF UNTIL T-9'58". SWITCH LOCK IS INSTALLED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 50' 0"	181	3	C1TC	B1TM	VERIFY S-IC TM DDAS CHECKS COMPLETED PER V-28186 (NON-HAZARDOUS)	
	181	4	C1TC	C1NE	VERIFY TCS FUNCTIONAL TEST IS COMPLETE	
-23 HRS 40' 0"	151	1	CUTC	CUNE	VERIFY IU BATTERY CONNECTIONS ARE COMPLETE	#
	171	2	C2EC	C2TC	FINAL G SWITCH CHECKOUT COMPLETE	
	171	3	C2TC	C2IP	BF-2 TRANSMITTER OFF AND MARK ON CH 171	
	171	4	C2TC	C2IP	RF COUPLER - AUTO	
	121	5	C2TC	CLTC	TM TAPE RECORDING NO LONGER REQUIRED	
	121	6	CLTC	BTMC ETMS	TM TAPE RECORDING OFF	
	111	7	CLTC	CVTS	RANGE CLEARANCE FOR S-II TM IS NO LONGER REQUIRED	TCP1
-23 HRS 30' 0"	121	1	CUFS	CLTC	CTC4 COMPLETE. STARTING KAF2 (FCC PREPS)	
	123	2	***	CLFK	REQUEST & EXECUTE KAF2 (FLT CONTROL PREPS) WITH THE FOLLOWING OPTIONS: PRIMARY OPTION 2 (FCC PREPS) SECONDARY OPTION 1 (COMPARATORS RESET)	***
	123	3	CUFS	CUSP	FLIGHT CONTROL COMPUTER SYSTEM POWER SWITCH - ON.	
	151	4	CLFK	BGCC	REMOVE CTC4/CS80 SCALE FACTOR TAPE FROM IODC 1-3.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-23 HRS 30' 0"	151	5	CUTC	SUVM	REMOVE S/A 7 AUX COOLANT LINES PER V-31062 PART III. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	#
-23 HRS 25' 0"	121	1	CUFS	CLTC	KAF2 AND KAF1 COMPLETE.	
	121	2	***	CLGK	REQUEST & EXECUTE KAPW (LVDC/LVDA POWER ON) PER V-33033, SECT I. (FT04, FT35, FT20, FT23 AND FT08) (NON-HAZARDOUS)	***
-23 HRS 16' 0"	181	1	C1TC	CSPP	VERIFY RELEASE SENSOR CHECKS ARE COMPLETE PER V-31045 (NON-HAZARDOUS).	
	181	2	C1TC	CSPP	START 43D100 & 43D200 BUS CHECKS PER V-21194 (NON-HAZARDOUS).	
	181	3	C1TC	CPDC	VERIFY ENGINE SERVICE PLATFORM IS REMOVED AND CONNECT WINCH CABLES TO LLP PER V-36070 (HAZARDOUS).	
	121	4	C1TC	CLTC	REQUEST CLOSED LOOP CLEARANCE FOR 450 MHZ FOR DRSCS PREPS (PROTECTION NOT REQUIRED)	
	111	5	CLTC	CVTS	REQUEST CLOSED LOOP CLEARANCE FOR 450 MHZ FOR DRSCS PREPS (PROTECTION NOT REQUIRED)	TCPI
	121	6	CLTC	BGCC	VERIFY DATA INPUT TAPE FOR BT01 MOUNTED ON IODC 1 STA 3.	(BT01
-23 HRS 15' 0"	121	1	CVTS	CLTC	SPACECRAFT IS READY FOR SC CONTROL OF SATURN ATTITUDE COMMAND CHECKS ON CH 212	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 15' 0"						
	121	2	CLTC	ALL	FOLLOWING PERSONNEL GO TO CHANNEL 212 TO SUPPORT SC CONTROL OF SATURN ATTITUDE COMMAND CHECKS: CUFS, CUSP, CUFE, CUCR, CUSW, C4FC, C4FS	TCPI
	212	3	MSTC	CUSP CUCR CUSW C4FC	VERIFY READY FOR SC CONTROL OF SATURN COMMAND TEST	TCPI
	212	4	MSTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 068 (SC CONTROL OF SATURN ENABLE \$MSIU068)	TCPI
	212	5	MSTC	SCDR	LV GUID SW - CMC	TCPI
	212	6	MGNR		SC CONTROL OF SAT LIGHT ON/SAT TAKEOVER ENABLE LIGHT ON	TCPI
	212	7	MSTC	CUSP	VERIFY SC CONTROL INDICATION ON	TCPI
	212	8	MSTC	SCDR	RHC2 ARMED	TCPI
	212	9	MSTC	CUSP	S-IVB COAST MODE SWITCH TO ON	TCPI
	212	10	MSTC	SCDR	RHC2 - (+) ROLL SOFT STOP	TCPI
	212	11	MSTC	CUCR C4FC	VERIFY PLUS ROLL COMMAND, I-IV AND III-II APS FIRING	TCPI
	212	12	MSTC	SCDR	RHC2 - (-) ROLL SOFT STOP	TCPI
	212	13	MSTC	CUCR C4FC	VERIFY MINUS ROLL COMMAND, I-II AND III-IV APS FIRING	TCPI
	212	14	MSTC	SCDR	RHC2 - (+) PITCH SOFT STOP	TCPI
	212	15	MSTC	CUCR C4FC	VERIFY PLUS PITCH COMMAND, I-P APS FIRING	TCPI
	212	16	MSTC	SCDR	RHC2 - (-) PITCH SOFT STOP	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 15' 0"					CD ONLY	
	212	17	MSTC	CUCR C4FC	VERIFY MINUS PITCH COMMAND, III-P APS FIRING	TCPI
	212	18	MSTC	SCDR	RHC2 - (+) YAW SOFT STOP	TCPI
	212	19	MSTC	CUCR C4FC	VERIFY PLUS YAW COMMAND, I-II AND III-II APS FIRING	TCPI
	212	20	MSTC	SCDR	RHC2 - (-) YAW SOFT STOP	TCPI
	212	21	MSTC	C4FC CUCR	VERIFY MINUS YAW COMMAND, I-IV AND III-IV APS FIRING	TCPI
	212	22	MSTC	SCDR	RHC2 - NEUTRAL THEN LOCK	TCPI
	212	23	MSTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 069 (CMD SC CONT OF SATURN DISABLE, SMSIU069)	TCPI
	212	24	MSTC	CUSP	VERIFY SC CONTROL INDICATION OFF	TCPI
	212	25	MSTC	CUSP	S-IVB COAST MODE SWITCH TO AUTO	TCPI
	212	26	MSTC	SCDR	LV GUID SW - IU	TCPI
	212	27	MSTC	CUSP CUCR CUSW C4FC	TEST COMPLETE. RETURN TO ASSIGNED CHANNELS	TCPI
	151	28	SUVM	CUTC	AUX COOLANT LINES REMOVED	#
-23 HRS 10' 0"						
	121	1	CUFS	CLTC	SC CONTROL OF SATURN ATTITUDE COMMAND CHECKS COMPLETE	
	121	2	CLTC	CLGK	SCO PERSONNEL SWITCHING TO CH 223 TO PERFORM FT25	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 10' 0"						
	111	3	CLTC	CVTS	REQUEST SCO PERSONNEL ON CH 223 TO PERFORM FT25.	TCPI
	121	4	CLGK	CLTC	LVDC/LVDA POWER ON COMPLETE	
	121	5	***	CLGK	REQUEST AND EXECUTE FT25 (SC DISCRETE INPUT TEST) ON CH 223	***
		5-1		CLGK	*** NOTE VERIFY DIN 4, 6, 9, 20, 22 & 23 OFF AND INT 2 & 7 OFF.	
	223	6	CLGK	SCDR	PANEL 2, LV S-II/S-IVB SWITCH TO LV STAGE.	TCPI
		6-1		CLGK	*** NOTE VERIFY INT 2 & DIN 22 ON	
	223	7	CLGK	SCDR	PANEL 2, LV S-II/S-IVB SWITCH TO OFF.	TCPI
		7-1		CLGK	*** NOTE VERIFY INT 2 & DIN 22 OFF	
	223	8	CLGK	SCDR	PANEL 2, LV GUID SWITCH TO CMC.	TCPI
		8-1		CLGK	*** NOTE VERIFY DIN 4 ON & DIN 9 OFF	
	223	9	CLGK	CLGK	TERMINATE FT25	
	223	10	***	CLGK	REQUEST & EXECUTE FT33 (ISSUE D04 ON) AND VERIFY.	***
	223	11	***	CLGK	TERMINATE FT33.	***
	223	12	***	CLGK	REQUEST & EXECUTE FT25.	***
		12-1		CLGK	*** NOTE VERIFY DIN 4 AND DIN 9 ON.	
	223	13	***	CLGK	TERMINATE FT25.	***
	223	14	***	CLGK	REQUEST & EXECUTE FT33 (ISSUE D04 OFF AND D06 ON) AND VERIFY.	***
	223	15	***	CLGK	TERMINATE FT33.	***
	223	16	***	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 069 (CMD SC CONTROL OF SATURN DISABLE, \$MSIU069)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 10' 0"	223	17	***	CLGK	REQUEST & EXECUTE FT25.	***
		17-1		CLGK	*** NOTE VERIFY DIN 4, 9 ON.	
	223	18	***	CLGK	TERMINATE FT25.	***
	223	19	***	CLGK	REQUEST & EXECUTE FT33 (ISSUE D06 OFF) AND VERIFY.	***
	223	20	***	CLGK	TERMINATE FT33.	***
	223	21	***	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 069 (CMD SC CONTROL OF SATURN DISABLE, \$MSIU069)	***
	223	22	***	CLGK	REQUEST & EXECUTE FT25.	***
		22-1		CLGK	*** NOTE DIN 4 ON AND DIN 9 OFF.	
	223	23	***	CLGK	TERMINATE FT25.	***
	223	24	***	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 068 (CMD SC CONTROL OF SATURN ENABLE, \$MSIU068)	***
	223	25	***	CLGK	REQUEST & EXECUTE FT25.	***
		25-1		CLGK	*** NOTE VERIFY DIN 4 AND DIN 9 ON.	
	223	26	CLGK	MGNS	TURN ON SATURN INJECTION SEQUENCE START	TCPI
	223	27	CLGK	SCDR	PANEL 2, LV TRANSLUNAR SWITCH TO SAFE.	TCPI
		27-1		CLGK	*** NOTE DIN 20 ON & DIN 6 OFF.	
	223	28	CLGK	MGNS	TURN OFF SATURN INJECTION SEQUENCE START	TCPI
		28-1		CLGK	*** NOTE VERIFY DIN 20 OFF & DIN 6 ON.	
	223	29	CLGK	SCDR	PANEL 2, LV TRANSLUNAR SWITCH TO INJECT.	TCPI
		29-1		CLGK	*** NOTE VERIFY DIN 6 OFF	
	223	30	CLGK	MGNS	TURN SATURN CUTOFF ON.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 10' 0"		30-1		CLGK	*** NOTE VERIFY DIN 23 AND INT 7 ON.	
	223	31	CLGK	MGNS	TURN SATURN CUTOFF OFF.	TCPI
		31-1		CLGK	*** NOTE VERIFY DIN 23 OFF AND INT 7 OFF.	
	223	32	CLGK	SCDR	PANEL 2, LV GUIDANCE SWITCH TO IU.	TCPI
		32-1		CLGK	*** NOTE VERIFY DIN 4, 6, 9, 20, 22 & 23 OFF AND INT 2 & 7 OFF.	
	223	33	CLGK	CLGK	TERMINATE FT25	
	223	34	***	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 069 (CMD SC CONTROL OF SATURN DISABLE, \$MSIU069)	***
	223	35	CLGK	SCDR MGNS	SUPPORT NO LONGER REQUIRED.	TCPI
-23 HRS 5' 0"	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL Q-BALL POWER IS COMING ON IN 5 MINUTES.	TCPI
-23 HRS 0' 0"	121	1	CLGK	CLTC	FT25 COMPLETE, (SC DISCRETE INPUT TEST).	
	111	2	CLTC	CVTS	VERIFY GRUMMAN PAD LEADER ON LUT LEVEL 260 FOR COORDINATION OF SLA CLOSEOUT.	TCPI
	188	3	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LM SHE TANK TOPOFF OPERATIONS.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 0' 0"		3-1			CD ONLY *****WARNING***** * * THE CONTROL AREA FOR LM * * SHE TANK TOPOFF * * OPERATIONS CONSISTS OF * * THE LM DESCENT AREA * * INTERNAL TO SLA, IU, * * AND S-IVB FORWARD. * * *****	TCPI
121	4	CLTC	SURF		VERIFY ANTENNA COUPLER INSTALLATION COMPLETE AND CONFIGURED FOR CCS CHECKS PER V-28069 (NON-HAZARDOUS).	
151	5	CUTC	SUVM		REMOVE ST-124M PURGE LINE AND PLENUM CHECK VALVE PER V-31062, PART III.	#
111	6	CLTC	CVTS		REQUEST CLEARANCE FOR ALL LV RF & TM SYSTEMS. VERIFY USB STATION READY TO SUPPORT COUNTDOWN.	TCPI
121	7	CLTC	B4TM BUTM		VERIFY TM RERADIATION SYSTEM INSTALLED	
121	8	CLTC	CUIP		VERIFY RF SILENCE OFF	
121	9	CLTC	CUIP		Q-BALL POWER ON Q-BALL HEATER POWER - ON	TCPI
171	10	C2TC	C2NP		START ONE POINT CAL PER V-30029 (M020) TASK 18 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
121	11	***	CPRK		REQUEST AND EXECUTE BT01 (PROPELLANT MONITOR UPDATE) AND BE01 AND BE02 (PROPELLANT MONITOR PROGRAMS).	***
	11-1		CPRK		*** NOTE VERIFY BE01 & BE02 OPERATION IS NORMAL AFTER BT01 TERMINATION, THEN TERMINATE BE01 & BE02.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 0' 0"		11-2			CPRK *** NOTE IF RCA 110A COMPUTER SUPPORT IS LOST AFTER T-23 HRS, THE FOLLOWING SEQUENCES ARE TO BE ACCOMPLISHED WHEN THE COMPUTER IS AGAIN SUPPORTING: 1. VERIFY THAT PROGRAMS BE01 AND BE02 MEMORY IN ML COMPUTER IS LOST. 2. REQUEST BGCC TO MOUNT BT01 PARAMETER TAPE ON STA 1-3. CPRK REINITIATE BT01 TEST PROGRAM. 3. IF T - TIME IS PAST T-8:20 HRS WHEN RCA-110A COMPUTER SUPPORT IS LOST, RE-INITIATE THE BE01 AND BE02 PROGRAMS WITH APPLICABLE OPTIONS AND SCAN RATES. REFERENCE: V-35014 (HAZARDOUS) OR V-25389 (HAZARDOUS).	
	121	12	CLTC	ALL	FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO SUPPORT APS GAIN TEST CTC5: CLFK CUCR CUGA C4FC C4HY CLGK CUFE CUSP C4FS	(CTC5)
	123	13	CUFS	C4FC C4HY	VERIFY PREPS COMPLETE AND S-IVB HYDRAULICS OFF	(CTC5)
	123	14	CUFS	CLGK	VERIFY READY TO SUPPORT CTC5 & CTC1	(CTC5)
	151	15	CUFS	BGCC	MASK THE FOLLOWING DISCRETES: SFUNC SE935-38 MMSK (MDI'S 0888-0911)	(CTC5)
	171	16	U2EC	C2TC	S-II FINAL ECS INSPECTION COMPLETE AND SYSTEM IN FLIGHT CONFIGURATION.	
	171	17	U2MH	C2TC	EAS/ENGINE COMPARTMENT CONDITIONING SYSTEM FINAL ENGINEERING WALKDOWN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 0' 0"					CD ONLY	
	181	18	C1TC	C1PE	PREPARE S-IC HYDRAULIC UNIT PER V-34012 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	19	C1TC	BRFS	TURN ON ML AND LCC GSE POWER	
	181	20	C1TC	RDTS	VERIFY BACKUP FIRING ROOM DTS IS SUPPORTING	
	171	21	C2TC	U2PF	START PROPELLANT FILL AND HAZARDOUS GAS DETECTION SYSTEMS INSPECTIONS PER V-30029 (M020) TASK 21 (NON-HAZARDOUS).	
	161	22	C4TC	S4CE	VERIFY FINAL ENGINEERING WALKAROUND FORWARD COMPLETE	
	161	23	C4TC	C4ES	VERIFY S-IVB FLIGHT BATTERIES CONNECTED	#
-22 HRS 59' 0"						
	121	1	CPRK	CLTC	BT01 COMPLETE	
	121	2	***	CLFK	REQUEST AND EXECUTE KAF1 OPTION 2 (CTC5 & CTC1)	***
	123	3	***	CLFK	REQUEST AND EXECUTE CTC5, OPTIONS AB, CD, EFG, H, J, (AO, A1, BURN, COAST, P, Y, R, ACTIVE AND APS POWER OFF). REPORT WHEN COMPLETE.	***
		3-1		CUNP	*** NOTE GROUP 1 RESET WILL BE ISSUED PERIODICALLY DURING THIS PROGRAM	
		3-2		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE	
	123	4	CUFS	CUGA	AFTER CTC5 AOGAIN TEST HAS STARTED, POSITION THE CRG/CSP POWER SWITCH TO OFF.	AS-51
	123	5	CUFS	CUGA CLFK	WHEN CTC5 DISPLAYS AN ERROR MESSAGE OF "MDO 1903 CANNOT BE TURNED ON", MANUALLY POWER ON THE CRG/CSP AND SET THE CSP YAW COMPARATOR. REPORT WHEN COMPLETE	AS-51

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 25' 0"	121	1	CLTC	CUIP	C-BAND BEACON 1 & 2 INHIBIT - OFF C-BAND BEACON 1 INHIBIT - ON	
	111	2	CLTC	CVTS	REQUEST RANGE INTERROGATE C-BAND BEACON #2. REPORT RANGE READOUTS TO VURF ON CHANNEL 137.	TCPI
	171	3	C4TC	C2TC	HAVE S-II/S-IVB SEPARATION SIMULATION JUMPER X02-220A2 REMOVED. REPORT WHEN COMPLETE.	
	121	4	CLTC	C4TC	VERIFY S-IVB ENGINE SEQUENCE TEST COMPLETE OR WILL NOT BE RUN PRIOR TO COMPLETION OF CTC1.	(CTC1)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 25' 0"	121	5	CLTC	ALL	THE FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO SUPPORT S-IVB, S-II FLIGHT CONTROL SYSTEM GAIN TEST (CTC1):	(CTC1)
					CLGK CUSP CUNP R4HY CUFE CUOR S4HY C2FC CUGA CLFK U2MH U2FE C2FE U2LH V2MS C4FC U2LF R2SC C4FS C4HY C4NP	
		5-1		CUFS	*** NOTE IF A DELAY IN EXECUTION OF ANY PROGRAM CALLED BY KAF1 IS DESIRED, PUT S-IC BURN MODE SWITCH IN OFF POSITION, TO CONTINUE, PUT S-IC BURN MODE SWITCH TO AUTO.	
		5-2		CUNP	*** NOTE GROUP 2 RESET WILL BE ISSUED PERIODICALLY DURING THIS PROGRAM.	
	123	6	CUFS	S4HY	VERIFY ENGINE AREA CLEAR FOR HYDRAULIC OPERATION	(CTC1)
	171	7	C2TC	C2IP	VERIFY GROUND POWER TO ON	(CTC1)
	123	8	CUFS	C4NP	4D411 POWER ON OR VERIFY ON	(CTC1)
	123	9	CUFS	C4HY	AUXILIARY PUMP POWER SWITCH TO AUTO	(CTC1)
	123	1	CUFS	CUGA	PLACE EDS/CONTROL RATE GYRO SYSTEM POWER SWITCH TO ON	(CTC1)
	151	2	CUFS	BGCC	UNMASK THE FOLLOWING DISCRETES: \$FUNC SE 935-38 MREL (MDI'S 0888-0911)	
-22 HRS 20' 0"	123	3	CUFS	CLFK	WHEN CTC5 IS COMPLETE MANUALLY TERMINATE PROGRAM.	AS-511
	123	3-1	CUFS	CUGA	RESET EDS/CONTROL RATE GYRO YAW COMPARATOR	AS-511
	121	4	CUFS	CLTC	CTC5 COMPLETE. STARTING CTC1.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 20' 0"	123	5	CUFS	CLFK	ENTER SPA TO CONTINUE WITH KAF1	AS-511

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 20' 0"		5-1	C4HY		*****CAUTION***** * * MONITOR HYDRAULIC * * SYSTEM TEMPERATURE. DO * * NOT EXCEED 190 DEG F. * * NOTIFY CUPS WHEN * * TEMPERATURE EXCEEDS 180 * * DEG F. * * ***** 5-2 *****WARNING***** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IVB ENGINE GIMBAL * * ENVELOPE * * *****	
	123	6	***	CLFK	REQUEST AND EXECUTE CTC1, OPTIONS AB, C, G, IJ, MN (A0, A1, S-IVB PRIMARY, P & Y, SW, PT, ZERO, SW. PT. 5). REPORT WHEN COMPLETE.	***
		6-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE.	
-22 HRS 15' 0"	151	1	CUTC	SUVE	START IU ELECTRICAL WALKAROUND. LV-QAL PARTICIPATION REQUIRED.	
	121	2	CLTC	GMIL	VERIFY GROUND STATION IN LOCK FROM CCS PCM SOURCE.	TCPI
	181	3	C1TC	CHDA	START HDA PRELAUNCH PREPS PER V-36069 (HAZARDOUS)	
	181	4	C1TC	CPDC	VERIFY REQUIRED LLP GIMBAL PLATFORM SECTIONS REMOVED AND WINCH CABLES CONNECTED TO LLP.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-22 HRS 15' 0"						
	181	5	C1TC	C1PE	VERIFY S-IC PNEUMATIC SYSTEMS FUNCTIONAL TEST COMPLETE	
	181	6	C1TC	C1PE	VERIFY S-IC AIRBORNE GN2 AND HELIUM BOTTLES CHARGED TO 1500 PSIG.	
	171	7	U2SI	C2TC	DDDT ONLY	*
	171	8	U2SI	C2TC	STA 114 A7-84 REMOVAL IS COMPLETE EXCEPT FOR BATTERY ACCESS REQUIREMENTS.	#
	123	9	CUFS	U2LH	VERIFY S-II ENGINE AREAS CLEAR FOR AUTOMATIC APPLICATION OF HYDRAULIC PRESSURE AND ENGINE GIMBALING	(CTC1)
	123	10	CUFS	C2FC	ALL CONTROL SWITCHES TO AUTO POSITION, EXCEPT AUX PUMPS SWITCH IN ENABLE POSITION, THERMAL CONTROL SWITCH IN OFF POSITION AND MAIN PUMP CASE BYPASS VALVE SWITCH IN CLOSED POSITION.	(CTC1)
	123	11	CUFS	R2SC V2MS	HYDRAULIC RECORDERS TO FAST SPEED (V2MS AT 2 MM/SEC)	(CTC1)
-22 HRS 10' 0"						
	123	1	CUFS	C4HY	AUXILIARY PUMP POWER SWITCH TO OFF.	(CTC1)
		2			*****WARNING***** * * RESUME PREVIOUS HAZARD * * LEVEL-END OF WARNING * * FOR S-IVB ENGINE GIMBAL * * ENVELOPE * * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 10' 0"		3			*****WARNING***** * * THE FOLLOWING SEQUENCE * * IS HAZARDOUS FOR THE * * S-II ENGINE GIMBAL * * ENVELOPE. * * *****	
	123	4	***	CLFK	REQUEST AND EXECUTE CTC1, OPTIONS AB, C, F, IJK, M (A0, A1, S-II GAIN, P, Y, R, SW PT ZERO). REPORT WHEN COMPLETE.	***
		4-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON THE SANDERS CONSOLE	
	121	5	C1TC	CLTC	REQUEST BOSC PROVIDE SUPPORT FOR PCMU DISCONNECT	
	261	6	CLTC	BOSC	REQUEST SUPPORT FOR PCMU DISCONNECT. TM SWITCH POSITIONING -----	TCPI
	121	7	CLTC	C1TC C2TC C4TC CUTC	POSITION TM CAL CONTROLS FOR VATC/VALJ AND REPORT WHEN READY	
	181	8	C1TC	C1IP	TM MODE SELECT - AUTO.	(VATC)
	181	9	C1TC	C1IP	TM CALIBRATOR - AUTO	(VATC)
	181	10	C1TC	C1IP	TM CAL MODE - AUTO	(VATC)
	181	11	C1TC	C1IP	PREFLT LEVELS - AUTO	(VATC)
	181	12	C1TC	C1IP	F1 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	181	13	C1TC	C1IP	LOX AND FUEL RACS POWER - AUTO	
	181	14	C1TC	C1IP	28 VDC RACS POWER - AUTO	(VAMC)

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-22 HRS 10' 0"						
	181	15	C1TC	C1IP	400 HZ CAL POWER - AUTO	(VAMC)
	121	16	C1TC	CLTC	S-IC READY FOR VALJ/VATC	
	171	17	C2TC	C2IP	GROUND POWER - ON	(VATC)
	171	18	C2TC	C2IP	RF COUPLER - AUTO	(VATC)
	171	19	C2TC	C2IP	TM CAL MODE - AUTO	(VATC)
	171	20	C2TC	C2IP	PREFLT LEVELS - AUTO	(VATC)
	171	21	C2TC	C2IP	FM/FM INFLT - AUTO	(VATC)
	171	22	C2TC	C2IP	PCM MODE - AUTO	(VATC)
	171	23	C2TC	C2IP	F1, F2 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	171	24	C2TC	C2NP	RACS POWER - AUTO	(VAMC)
	171	25	C2TC	C2IP	FREQ MEAS CAL - AUTO	(VAMC)
	121	26	C2TC	CLTC	S-II READY FOR VALJ/VATC	
	161	27	C4TC	C4IP	TM MODE SELECT - AUTO	(VALJ)
	161	28	C4TC	C4IP	TM CALIBRATE - AUTO	(VATC)
	161	29	C4TC	C4IP	P1 TRANSMITTER - AUTO	(VALJ)
	161	30	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP - AUTO	(VALJ/VAMC)
	161	31	C4TC	C4PU	PU OVEN AND INVERTER POWER - AUTO	(VALJ)
	121	32	C4TC	CLTC	S-IVB READY FOR VALJ/VATC	
	151	33	CUTC	CUIP	RF DUMMY LOAD - AUTO	(VALJ)
	151	34	CUTC	CUIP	F1 TM - AUTO	(VATC)
	151	35	CUTC	CUIP	TM CAL MODE TO INFLT THEN AUTO	(VATC)
	151	36	CUTC	CUIP	TM CALIBRATOR - AUTO	(VATC)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-22 HRS 10' 0"						
	151	37	CUTC	CUIP	PREFLT LEVELS - AUTO	(VATC)
	151	38	CUTC	CUIP	F1 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	121	39	CUTC	CLTC	IU READY FOR VALJ/VATC	
-22 HRS 5' 0"						
	121	1	CLTC	VURF	VERIFY CCS CHECKS COMPLETE.	
	121	2	CLTC	VURF	DISABLE LOCAL CCS CARRIER AND VERIFY.	
	111	3	CLTC	CVTS	CCS TRANSPONDER IS ON FOR UNLOCKED FREQUENCY READOUT. IU COMMAND SYSTEM IS DISABLED.	TCPI
	111	4	CLTC	CVTS	VERIFY C-BAND BEACON 2 READOUT COMPLETE. STANDBY FOR C-BAND BEACON 1.	TCPI
	121	5	CLTC	CUIP	C-BAND BEACON 2 INHIBIT - ON C-BAND BEACON 1 & 2 INHIBIT - OFF C-BAND BEACON 2 INHIBIT - ON	
	111	6	CLTC	CVTS	REQUEST RANGE INTERROGATE C-BAND BEACON 1. REPORT READOUTS TO VURF ON CH 137.	TCPI
-22 HRS 0' 0"						
	181	1	C1TC	BRFS	START DRSCS CHECKS PER V-38000, SECT 13 (NON-HAZARDOUS)	
	171	2	C2NP	C2TC	ONE POINT CALIBRATION IS COMPLETE	
	111	3	CLTC	CVTS	REQUEST GMIL INTERROGATE IU CCS AND REPORT GO/NO GO. REPORT READOUT TO VURF ON CHANNEL 137. COMMAND DECODER IS ON. IU COMMAND SYSTEM IS DISABLED.	TCPI
	151	4	CUTC	UUPC	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 0' 0"	151	5	CUTC	CUCP	PRESSURIZE ST-124M GN2 SPHERE TO 1700 PER V-34017 (NON-HAZARDOUS).	
		5-1			*****CAUTION***** * * ST-124M SUPPLY SPHERE * * WILL BE PRESSURIZED TO * * 1700 PSI. * * *****	
	151	6	CUTC	LUNW	ST-124M HEATERS FROM STANDBY TO NORMAL.	
	181	7	C1TC	C1PE C1NE	VERIFY THRUST SECTION FINAL WALK THROUGH IS COMPLETE AND AREA IS READY FOR FINAL CLOSEOUT	
	188	8	CLTC	ALL	FOLLOWING STATIONS SWITCH TO CH 123 TO SUPPORT S-IC FLIGHT CONTROL SYSTEM GAIN TEST: C1FE C1PC C1HP C1FC L1EP	(CTC1)
		9			*****WARNING***** * * THE FOLLOWING THREE * * SEQUENCES ARE * * HAZARDOUS. * * *****	
	123	10	CUFS	C1PC	LOW LOX DOME PURGE ON	(CTC1)
	123	11	CUFS	L1EP	VERIFY S-IC ENGINE AREA CLEAR FOR GIMBALING	(CTC1)
	123	12	CUFS	C1HP	APPLY S-IC HYDRAULICS. REPORT WHEN COMPLETE.	(CTC1)
	123	1	***	CLFK	REQUEST AND EXECUTE CTC1, OPTIONS B, C, E, IJK, M (A1, S-IC GAIN, P, Y, R, SW PT ZERO). REPORT WHEN COMPLETE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 55' 0"		1-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE	
	123	2	CUFS	C2FC	RETURN PANEL SWITCHES TO COUNT CONFIGURATION. ALL FUNCTIONAL SWITCHES DOWN OR OFF EXCEPT ALL ACCUM CONTROL SWITCH IN AUTO AND METER SWITCHES OPTIONAL.	
	123	3	CUFS	R2SC	RECORDERS TO SLOW SPEED	
	123	4	CUFS	V2MS	RECORDERS TO OFF	
	171	5	C2FE	C2TC	FLIGHT CONTROL TEST CTC1 IS COMPLETE.	
	171	6	C2FC	C2TC	ENGINE GIMBALING IS COMPLETE. PERSONNEL ARE IN PROCESS OF REMOVING EQUIPMENT	
-21 HRS 50' 0"	181	1	C1TC	CSPP	VERIFY 43D100 & 43D200 BUS CHECKS COMPLETE PER V-21194 (NON-HAZARDOUS)	
	181	2	C1TC	C1PE	DISCONNECT & SECURE FUSU (OR PCMU) PER V-24327 (HAZARDOUS).	
-21 HRS 47' 0"	121	1	CLTC	ETMS BTMC	TM TAPE RECORDING - ON.	
-21 HRS 45' 0"	123	1	CUFS	CUSP	VERIFY/ACCOMPLISH NO MODE LIGHTS ILLUMINATED	
	123	2	CUFS	C1PC	LOW LOX DOME PURGE OFF.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 45' 0"						
	123	3	CUFS	ALL	ALL PERSONNEL CONCERNED WITH FLIGHT CONTROL CHECKS RETURN TO CHANNEL 121	
	121	4	CUFS	CLTC	FLIGHT CONTROL SYSTEMS GAIN TEST (CTC1) AND KAF1 COMPLETE.	
	111	5	CLTC	CVTS	VERIFY C-BAND INTERROGATION COMPLETE. STANDBY TO MONITOR POWER TRANSFER AT T-21:15.	TCPI
	121	6	CLTC	CUIP	C-BAND BEACON #1 INHIBIT ON C-BAND BEACON #1 AND #2 INHIBITS OFF	
		6-1		CUIP	*** NOTE BOTH BEACONS ON	
	121	7	CLTC	ETMS	VERIFY CIF READY TO SUPPORT TM CHECKS.	
	121	8	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT TEST	
	121	9	CLTC	CGIC	REQUEST ELECTROMAGNETIC COMPATIBILITY MONITORING (ALLOW FIVE MINUTES TO OPERATING STEPS)	TCPI
	181	10	C1TC	C1PE	START FINAL INSTALLATION OF BASE HEAT SHIELD ACCESS PANELS PER V-29003 (HAZARDOUS).	
	121	11	***	C1IP C2IP C4IP CUIP	VERIFY RF SILENCE OFF	***
	121	12	CLTC	C2NP C4NP CUNP	SWITCH SELECTOR INHIBIT OFF	
	121	13	***	C2IP	VERIFY GROUND POWER ON (CAL POWER)	***
	121	14	***	C1IP	TM MODE SELECT SWITCH - ANTENNA.	***
	121	15	***	C2IP	RF COUPLER TO ANTENNA	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	PAGE	REMARKS
-21 HRS 45' 0"							
	121	16	***	C4IP	TM MODE SELECT SWITCH TO COAX.		***
	121	17	***	CUIP	RF DUMMY LOAD - ON.		***
	121	18	***	CUIP	F1 TM - ON.		***
	121	19	***	CUIP	TM CAL MODE TO INFLIGHT THEN AUTO.		***
	121	20	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED OVER CHANNEL 121.		***
	121	21	***	C1IP	F1 & P1 RF - ON.		***
	121	22	***	C2IP	F1, F2, & P1 RF - ON.		***
	121	23	***	C4IP	P1 - ON THEN AUTO		***
	121	24	***	CUIP	F1 AND P1 RF - ON		***
	121	25	***	C1IP CUIP	TM CALIBRATOR POWER - ON.		***
	121	26	***	C1IP C2IP CUIP	TM CAL MODE - PREFLIGHT & PREFLIGHT LEVELS - 50%		***
	121	27	C1PK	CLTC	TELEMETRY TRANSMITTER TURN-ON COMPLETE		
	121	28	CLTC	ETMS	START TM PARAMETERS CHECK (DELAY 5 MINUTES MINIMUM FOR TM TRANSMITTER WARM UP)		
-21 HRS 40' 30"	121	1	CLTC	ALL	VATC WILL START EXECUTING IN 30 SECONDS. FLUCTUATING MEASUREMENTS MAY OCCUR DURING NEXT 3 MINUTES.		

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
-21 HRS 40' 0"	121	11	***	CLIK	REQUEST & EXECUTE VATC (TM PREFLIGHT CALIBRATION), REPORT WHEN COMPLETE.	***
	171	12	C2TC	C2IP	START S-II STAGE INSTRUMENTATION CLOSEOUT PER V-27208 (X044) TASKS 6-4 & 7 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#
-21 HRS 37' 0"	121	1	CLIK	CLTC	VATC COMPLETE.	
	121	2	***	CLSK	REQUEST & EXECUTE WASP (43D100 & 43D200 POWERUP AND BATTERY SWITCHOVER). REPORT WHEN COMPLETE.	
-21 HRS 35' 0"	111	1	CLTC	CVTS	REQUEST MTPE MONITOR CHANNEL 121 FOR Q-BALL SIM COMMAND IN 5 MINUTES AND PROVIDE READINGS TO VUMS ON CH 148.	TCPI
-21 HRS 30' 0"		1		CLTC CUIP	*** NOTE VATC MUST BE COMPLETE PRIOR TO ISSUING Q-BALL SIM COMMAND.	
	121	1-1	CLTC	CUIP	Q-BALL SIM COMMAND ON FOR 10 SECONDS	TCPI
	121	1-2	CUIP	ALL	3-2-1, MARK	TCPI
	121	2	CLTC	GMIL	VERIFY READY FOR CCS HIGH GAIN.	TCPI
	121	3	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 064 (CCS HIGH GAIN, SMSIU064)	
	161	4	C4TC	S4MA	START FINAL CLOSEOUT OF FLAME IMPINGEMENT CURTAIN.	

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-21 HRS 25' 0"	121	1	CLSK	CLTC	WASP COMPLETE.	
	188	2	CLTC	ALL	DDAS MEASUREMENTS MAY BE INTERRUPTED DURING THE ONE MINUTE CIF-DRS CHECKS.	
	121	3	CLTC	RDAS	BACKUP FIRING ROOM TAPE RECORDER ON.	
	121	4	CLTC	RDAS	ESE DRS SYNCHRONIZER TO POSITION 3.	
	121	5	CLTC	RDAS	PCM/PCM/FM CONTROL SWITCH TO SWITCHED AND VERIFY ALL STAGE DRS SYNC TO CIF DATA.	
	121	6	CLTC	RDAS	PCM/PCM/FM CONTROL SWITCH TO NORMAL.	
	121	7	CLTC	RDAS	ESE DRS SYNCHRONIZER TO POSITION 2 AND VERIFY ALL DRS SYNC TO UMBILICAL DATA.	
	121	8	CLTC	RDAS	BACKUP FIRING ROOM TAPE RECORDER OFF.	
-21 HRS 20' 0"	121	1	***	C1IP	LOX AND FUEL RACS POWER - ON	***
	121	2	***	C1IP	28 VDC RACS POWER ON	***
	121	3	***	CLIK	REQUEST & EXECUTE VAMC (MEAS SYS RAPID CAL) ALL STAGES. REPORT WHEN COMPLETE.	***
		3-1		ALL	*** NOTE STAGE MEASUREMENTS WILL BE INTERRUPTED DURING VAMC	
		3-2		C1IP	*** NOTE 28 VDC RACS AND 400 HZ POWER - ON	
	181	4	C1TC	CSPP	VERIFY FIRING SYSTEM BATTERY SWITCHOVER TEST COMPLETE AND REMOVE 43D100 AND 43D200 POWER	
	161	5	C4TC	R4PU	PU STRIP CHARTS ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 17' 0"						
	121	1	CLIK	CLTC	VAMC COMPLETE	
		1-1		C1IP	*** NOTE 28 VDC RACS AND 400 HZ POWER - OFF	
	121	2	***	C1IP	LOX & FUEL RACS POWER - OFF	***
	161	3	***	C4PU	PU OVEN AND INVERTER POWER ON THEN AUTO	***
	181	4	C1TC	BRFS	VERIFY DRSCS/GSE READY TO SUPPORT LV POWER TRANSFER TEST	
	111	5	CLTC	CVTS	REQUEST GMIL VERIFY CCS INTERROGATION COMPLETE. STANDBY TO MONITOR CCS DURING POWER TRANSFER. COMMAND DECODER ON. IU COMMAND SYSTEM IS DISABLED.	TCPI
	111	6	CLTC	CVTS	LV PROCEEDING WITH POWER TRANSFER. REQUEST RANGE INTERROGATE AND MONITOR C-BAND FOR ANY CHANGES AND GMIL MONITOR CCS FOR ANY CHANGES. REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN.	TCPI
		6-1			*** NOTE BOTH C-BAND BEACONS ON	
	121	7	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS. POWER TRANSFER TEST PREPS -----	(VAPX)
	111	8	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL UHF COMMAND CARRIER (PROTECTION REQUIRED)	TCPI (VAPX)
	121	9	CUPC	CLTC	ST-124M POWER ON COMPLETE.	
	121	10	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR ENABLE - OFF SYSTEM STATUS SWITCH - OFF S&A SWITCH - SAFE	(VAPX)
	121	11	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE.	(VAPX)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
-21 HRS 17' 0"						
	161	39	C4TC	R4E1 R4HY R4SC	RECORDERS FAST.	(VAPX)
	161	40	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP TO OFF THEN AUTO	(VAPX)
	161	41	C4TC	C4EP	VERIFY CHILLDOWN PUMP SWITCHES ARE OFF	(VAPX)
	161	42	C4TC	C4EP	CLOSE LOX AND LH2 CHILLDOWN VALVES.	(VAPX)
	161	43	C4TC	C4NP C4PP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	(VAPX)
		43-1			GDDT ONLY	*
	161	44	C4TC	C4NP C4NK R4E1 C4HY R4SC	VERIFY READY FOR POWER TRANSFER.	(VAPX)
	161	45	C4TC	C4NP	EMERGENCY POWER TRANSFER SWITCH OFF.	(VAPX)
	161	46	C4TC	C4NP	POWER TRANSFER SWITCH TO AUTO	(VAPX)
	121	47	C4TC	CLTC	S-IVB READY FOR POWER TRANSFER PROGRAM REQUEST.	(VAPX)
	151	48	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	(VAPX)
	151	49	CUTC	CUNP	GDDT ONLY	(VAPX) *
	151	50	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER.	(VAPX)
		50-1		CUTC CUNP	*** NOTE IU TO REMAIN ON INTERNAL POWER FOR 3 MINUTES	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 17' 0"	151	51	CUTC	CUNP	POWER TRANSFER TEST TO AUTO	(VAPX)
	121	52	CUTC	CLTC	IU READY FOR POWER TRANSFER PROGRAM REQUEST.	(VAPX)
	121	53	CLTC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL/EXTERNAL SECURE STAGES FROM POWER TRANSFER ON STAGE TC CHANNELS.	
		53-1		ALL	*** NOTE S-IC & S-II ON INTERNAL POWER FOR 30 SEC; S-IVB FOR 45 SEC; IU FOR 3 MINUTES. REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125.	
		53-2		CUCR CUGA	*** NOTE VAPX WILL TORQUE THE ROLL GYROS TO +9 DEG/SEC CAUSING THE S-IC ENGINES TO GIMBAL	
-21 HRS 15' 0"		54			NOTE ----- IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN.	
					POWER TRANSFER TEST -----	
	121	1	CLTC	C1PK	REQUEST & EXECUTE VAPX (T-21 HOUR OPTION)	
	121	2	VAPX	BRFS	DRSCS RF CARRIER ON AND VERIFY	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"	161	3	VAPX	C4NP	BATTERY MONITOR ENABLE	***
	121	4	VAPX	C1DP C2DP C4DP	RSCR'S 1 & 2 INTERNAL AND VERIFY	***
		4-1		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 OFF.	
		4-2		B1RF B2RF B4RF CRSS	*** NOTE ALL RSCR LIMITER VOLTAGES RECEIVED	
		5		C4HY	*****CAUTION***** * * MONITOR HYDRAULIC * * SYSTEM TEMPERATURE. DO * * NOT EXCEED 190 DEG F. * * NOTIFY C4TC WHEN * * TEMPERATURE EXCEEDS 180 * * DEG F. * * *****	
		6			*****WARNING***** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IVB ENGINE GIMBAL * * ENVELOPE. * * *****	
	161	7	VAPX	C4HY	FLIGHT MODE ON THEN AUTO.	***
	121	8	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3".	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"					CD ONLY	
	121	9	C1PK	ALL	VAPX WILL TRANSFER STAGES INTERNAL IN 5 SEC. 5-4-3-2-1 MARK	
	121	10	VAPX	C1NP C2NP C4NP CUNP	TRANSFER TO INTERNAL POWER	***
		10-1		C1FR CUDE	*** NOTE IU READY TO LAUNCH MAY CYCLE OFF THEN ON (MAX TIME OF ONE SECOND)	
		10-2		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		10-3		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	
		10-4		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		10-5		C1NP	GDDT ONLY	*
		10-6		C1FR	*** NOTE S-IC POWER TRANSFER COMPLETE ON (DEE 0082 ON)	
		10-7		R1SC	*** NOTE VOLTAGE FOR STAGE BUSES 1D11 & 1D21 AND VOLTAGE AND CURRENT FOR BUSES 1D10 & 1D20.	
		10-8		C1NP	*** NOTE +1D111, +1D211, +1D121 BUS INDICATIONS OFF	
		10-9		R2SC	*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL: MAIN BATT CURRENT (XM0021-207) ----- MAIN DC BUS VOLTAGE 2D11 (XM0020-207) ----- INSTR BATT CURRENT (XM0024-207) -----	
					(CONTINUED)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-21 HRS 15' 0"					INSTR DC BUS VOLTAGE 2D21 (XM0023-207) ----- RECIRC BUS CURRENT (XM0114-207) ----- RECIRC DC BUS VOLTAGE 2D51 (XM0111-207) ----- IGN DC BUS VOLTAGE 2D61 (XM0125-207) -----	
-21 HRS 14' 30"	121	1	C1PK	ALL	S-IC & S-II TRANSFERED EXTERNAL DISPLAYED	
	181	2	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
		2-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		2-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
		2-3		C1NP	*** NOTE BUS 1D121 ON	
		2-4		C1NP	*** NOTE BUS 1D211 ON	
		2-5		C1NP	*** NOTE BUS 1D111 ON	
		2-6		C1NP	CDDT ONLY	*
	181	3	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE AND 1D10 & 1D20 VOLTAGE AND CURRENT DURING INTERNAL THEN REPORT TO CLES ON CH 125,	
	181	4	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	5	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		5-1		C2NP	*** NOTE MAIN BUS EXTERNAL ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 14'30"					CD ONLY	
		5-2	C2NP		*** NOTE INST BUS EXTERNAL ON	
		5-3	C2NP		*** NOTE RECIRC BUS EXTERNAL ON	
		5-4	C2NP		*** NOTE POWER TRANSFER COMPLETE OFF	
	171	6	C2NP	C2TC	S-II POWER TRANSFER TEST IS COMPLETE.	
	171	7	C2TC	C2NP	REMOVE PM POWER	
	171	8	C2TC	C2NP	IGN BATT BLEED TO OFF	#
	171	9	C2TC	C2NP	VERIFY STAGE ON EXTERNAL POWER	
	121	10	C2TC	CLTC	S-II POWER TRANSFER IS COMPLETE	
	171	11	C2TC	R2SC	READOUT RECORDED BUS VOLTAGES TO CLES ON CH 125	
-21 HRS 14'15"		1		C4NP	*** NOTE AFTER 45 SECONDS ON INTERNAL, THE FOLLOWING SUBSEQUENCES WILL OCCUR,	
	161	1-1	VAPX	C4NP	POWER TRANSFER EXTERNAL THEN AUTO.	***
	161	1-2	VAPX	C4NP	BATTERY MONITOR DISABLE THEN AUTO.	***
	161	2	C4TC	C4NP C4NK	VERIFY POWER TRANSFER INTERNAL/EXTERNAL COMPLETE.	
		3		C4HY	*** NOTE 30 SECONDS AFTER POWER TRANSFER EXTERNAL THE FOLLOWING SUBSEQUENCE WILL OCCUR.	
	161	3-1	VAPX	C4HY	FLIGHT MODE OFF THEN AUTO.	***
		4			*****WARNING***** * * RESUME PREVIOUS HAZARD * * LEVEL - END OF WARNING * * FOR S-IVB ENGINE GIMBAL * * ENVELOPE. * *****	

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-21 HRS 14' 15"					CD ONLY	
	161	5	C4TC	C4NP	EMERGENCY POWER TRANSFER TO EXTERNAL	
	161	6	C4TC	C4NP	DDDT ONLY	*
	161	7	C4TC	C4NP	4D411 POWER OFF	
	161	8	C4TC	C4NK	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	161	9	C4TC	C4EP	OPEN LOX AND LH2 CHILLDOWN VALVES	
	121	10	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE AND ACCEPTABLE,	
-21 HRS 12' 0"	151	1	CUTC	CUNP	VERIFY IU GROUND POWER ON AND POWER TRANSFER COMPLETE OFF.	
		1-1		CUDE	*** NOTE 0777 & 0779 OFF, 0781 ON	
	151	2	CUTC	CUNP	POWER TRANSFER TO EXTERNAL	
	151	3	CUTC	CUNP	DDDT ONLY	*
	151	4	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	5	CUTC	RUBM	READOUT VOLTAGE AND CURRENTS TO CLES ON CH 125	
				BUS	VOLTAGE	CURRENT
				----	-----	-----
				6D10	-----	-----
				6D20	-----	-----
				6D30	-----	-----
				6D40	-----	-----

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 12' 0"						
	151	6	CUTC	ALL	ALL STATIONS RETURN TO CH 121	
	121	7	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE	
	121	8	VAPX	C1DP C2DP C4DP	VERIFY EBW'S EXTERNAL AND NOT CHARGED	***
		8-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED,	
		8-2		RRSC	*** NOTE PROPER DRSCS INDICATIONS DURING POWER TRANSFER (DRSCS RECORDER)	
	121	9	VAPX	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO AND VERIFY RSCR POWER OFF	***
	121	10	VAPX	BRFS	DRSCS RF CARRIER - OFF	***
	121	11	C1PK	CLTC	VAPX IS COMPLETE.	
	121	12	CLTC	ALL	ALL RECORDERS - SLOW SPEED,	
	121	13	CLTC	CLVN	DESTRUCT SYSTEM - OFF. DELIVER DESTRUCT SYSTEM KEY TO CPSS. REPORT WHEN COMPLETE.	
	121	14	CLTC	C1DP C2DP C4DP	VERIFY SAFETY BUS OFF	
	121	15	CLTC	C1DP C2DP C4DP	STATUS SYSTEM SWITCH - SAFE	
	123	16	CUFS	CUCR CUGA C1FE	VERIFY ATTITUDE RATE COMMAND UNDISTURBED BY POWER TRANSFER	
	121	17	CUFS	CLTC	FLIGHT CONTROL SYSTEM IS SECURE FROM POWER TRANSFER	
	111	18	CLTC	CVTS	POWER TRANSFER TEST IS COMPLETED. DESTRUCT SYSTEM KEY RETURNED TO CPSS. LOCAL COMMAND CARRIER IS OFF. VERIFY	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 12' 0"					CD ONLY	
					C-BAND AND CCS HAD NO CHANGES.	
	121	19	CUPC	CLTC	THEODOLITE CHECKS COMPLETE. MSS NUMBER 2 ELEVATOR MAY BE RELEASED NOW.	
	121	20	CLTC	CUPC	POWER DOWN ST-124M SYSTEM PER V-33011 (LEAVE HEATER SWITCH ON AND ST-124M HEATERS TO NORMAL). (NON-HAZARDOUS)	
	111	21	CLTC	CVTS	THEODOLITE CHECKS ARE COMPLETE, RELEASE MSS NUMBER 2 ELEVATOR.	TCPI
	121	22	CLTC	CGIC	ELECTROMAGNETIC COMPATIBILITY MONITORING NO LONGER REQUIRED.	TCPI
	171	23	C2TC	C2NP	VERIFY BATTERY PERFORMANCE IS SATISFACTORY AND OK TO REMOVE BATTERY ACCESS PLATFORMS.	#
	171	24	C2TC	U2SI U2SE	POWER TRANSFER TEST IS COMPLETE, FINAL STA 114 (A7-84) BATTERY ACCESS PLATFORMS MAY NOW BE REMOVED PER V-26507 (G147), TASK 11 (NON-HAZARDOUS), AND FINAL STA 30 (A7-84) ACCESS PLATFORMS MAY NOW BE REMOVED PER V-26507 (G147), TASK 10 (NON-HAZARDOUS).	#
	181	25	C1TC	C1PE	START REMOVAL OF S-IC FWD SKIRT BULKHEAD COVERS AND ACCESS PLATFORMS EXCEPT AS REQUIRED FOR S&A DEVICE CONNECTION PER V-24011 & V-24010	†
	181	26	C1TC	C1NE C1PE	START FORWARD SKIRT WALK THROUGH WHEN BULKHEAD COVERS AND PLATFORMS ARE CLEARED, LV-QAL PARTICIPATION REQUIRED.	
	151	27	CUTC	SUVE	VERIFY IU ELECTRICAL WALKAROUND COMPLETE AND SATISFACTORY	
		27-1			VERIFICATION BY LV-QAL	
	151	28	CUTC	SUVE	VERIFY POSITIVE PURGE ON CROSSOVER DISTRIBUTOR (214-6281) AND ON OAT POWER DISTRIBUTOR (8025A2). USE PURGE VALIDATION TOOL (JB20256).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS	
-21 HRS 12' 0"							
	161	29	***	C4PU	PU OVEN AND INVERTER POWER OFF THEN AUTO	***	
	121	30	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS OFF IN THE SEQUENCE LISTED AND MARKED OVER CHANNEL 121	***	
	121	31	***	C1IP	F1, P1 RF - OFF	***	
	121	32	***	C1IP	TM CALIBRATOR OFF THEN AUTO.	***	
	121	33	***	C2IP	F1, F2, P1 RF - OFF	***	
	121	34	***	C4IP	P1 OFF THEN AUTO.	***	
	121	35	***	C4IP	TM MODE SELECT TO ANTENNA	***	
	121	36	***	CUIP	F1 & P1 RF - OFF	***	
	121	37	***	CUIP	F1 TM OFF	***	
	121	38	***	CUIP	RF DUMMY LOAD OFF	***	
	121	39	***	CUIP	TM CALIBRATOR OFF.	***	
	121	40	CLTC	ETMS BTMC	TM TAPE RECORDING OFF		
	121	41	CLTC	ETMS	REPORT OUT OF TOLERANCE PARAMETERS TO BLTM ON CHANNEL 127 WHEN ANALYSIS IS COMPLETE.		
	121	42	CLTC	CUIP	C-BAND BEACON 1 - OFF C-BAND BEACON 2 - OFF		
	188	43	CLTC	ALL	THE FOLLOWING STATIONS ARE TO SWITCH TO CHANNEL 123 TO SUPPORT IU/S-IC FLIGHT CONTROL SYSTEM GAIN TEST (CTC1) AND S-IC ENGINE NOT ZERO GAIN TEST (VAFC):	(CTC1)	
				CLGK	CUSP	C1FE	L1EP
				CUIE	CUCR	C1FC	C1PC
				CUGA	CLFK	C1HP	CUNP

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 12' 0"						
	123	44	CUFS	CLGK	VERIFY READY TO SUPPORT CTC1 & VAFC	(CTC1)
	123	45	CUFS	CUSP	VERIFY ALL CCIS PANEL SWITCHES IN AUTO	(CTC1)
	123	46	CUFS	CUGA	VERIFY ALL EDS/CONTROL RATE GYRO PANEL SWITCHES IN AUTO POSITION EXCEPT SYSTEM POWER	(CTC1)
		46-1		CUNP	*** NOTE GROUP 2 RESET WILL BE ISSUED PERIODICALLY THROUGHOUT THIS PROGRAM	
	123	47	CUFS	C1HP	VERIFY S-IC HYDRAULICS SUPPORTING	(CTC1)
	123	48	CUFS	L1EP	VERIFY S-IC ENGINE AREA CLEAR FOR GIMBALING	(CTC1)
	123	49	CUFS	C1PC	VERIFY/ACCOMPLISH LOW LOX DOME PURGE ON	(CTC1)
-21 HRS 10' 0"						
	123	1	***	CLFK	REQUEST & EXECUTE KAF1 LINKING PROGRAM OPTION 3 (KAF3, CTC1 & VAFC)	***
		1-1	CUFS		*** NOTE IF A DELAY IN EXECUTION OF ANY PROGRAM CALLED BY KAF1 IS DESIRED, PUT S-IC BURN MODE SWITCH IN OFF POSITION, TO CONTINUE, PUT S-IC BURN MODE SWITCH TO AUTO.	
	123	2	***	CLFK	REQUEST & EXECUTE KAF3 (THRUST VECTOR READ). REPORT WHEN COMPLETE.	***
	161	3	C4TC	R4PU	PU STRIP CHARTS OFF	
-21 HRS 9' 0"						
	121	1	CUFS	CLTC	KAF3 COMPLETE. STARTING CTC1	
	123	2	***	CLFK	REQUEST AND EXECUTE CTC1, OPTIONS A, C, E, IJK, M (A0, S-IC GAIN, P, Y, R, SW PT ZERO). REPORT WHEN COMPLETE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 9' 0"		2-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE	
-21 HRS 5' 0"	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL Q-BALL POWER WILL BE TURNED OFF IN 5 MIN.	TCPI
-21 HRS 0' 0"	121	1	CLTC	CUIP	Q-BALL POWER OFF Q-BALL HEATER POWER OFF	TCPI
	151	2	CUTC	LUQI SUVN	START IU MECHANICAL WALKAROUND PER V-31062, PART III. (NON-HAZARDOUS)	
	121	3	CLTC	ETMS	VERIFY OUT OF TOLERANCE PARAMETERS REPORTED TO BLTM.	
	181	4	C1TC	CSPP	HAVE USAE AND LASE START LUT WALKDOWN	
	161	5	C4TC	S4MA	START AFT INTERSTAGE FINAL WALKAROUND	
	181	6	C1TC	CHCU	PREP HCU PER V-36079 (NON-HAZARDOUS), REPORT WHEN COMPLETE	
	261	7	C2TC	BOSC	S-II WILL BE READY FOR PURGE AND VACUUM DEW POINT GHE SAMPLES (2 EACH) ON S/A 4 IN 30 MINUTES. (LVN-4 & LVN-5).	TCPI
-20 HRS 55' 0"	111	1	CLTC	CVTS	REQUEST GMIL BRING DOWN IU CCS CARRIER AND REPORT CARRIER IS OFF. IU COMMAND SYSTEM IS DISABLED.	TCPI
	121	2	CLTC	VURF	ENABLE LOCAL CCS CARRIER AND VERIFY CCS IN LOCK.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 55' 0"	111	3	CLTC	CVTS	LOCAL CCS CARRIER IS ON. CCS TRANSPONDER AND COMMAND DECODER ARE ON. IU COMMAND SYSTEM IS DISABLED	TCP1
	121	4	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 063 (CCS OMNI, SMSIU063)	
-20 HRS 45' 0"	151	1	CUTC	BUTM	VERIFY READY FOR SECURING TM RERADIATION SYSTEM.	
	151	2	CUTC	SUVE	START SECURING TM RERADIATION SYSTEM PER V-31062, PART III. (NON-HAZARDOUS)	
	121	3	CLTC	SURF	REMOVE C-BAND ANTENNA COUPLERS PER V-28069 (NON-HAZARDOUS)	
	181	4	C1TC	LPLX	VERIFY PTCS PREPS COMPLETED PER V-25159 (NON-HAZARDOUS)	
-20 HRS 35' 0"	121	1	CUFS	CLTC	CTC1 COMPLETE. STARTING VAFC	
	123	2	***	CLFK	REQUEST & EXECUTE VAFC (FLIGHT CONTROL UTILITY PROGRAM) PRIMARY OPTION 2 (S-IC ENGINE NOT ZERO TEST). REPORT WHEN COMPLETE.	***
	181	3	C1TC	C1NE	VERIFY READY TO SUPPORT EDS TEST.	
	121	4	CLTC	C1TC C2TC C4TC CUTC	START PREPS FOR EDS TEST PER V-21096 (NON-HAZARDOUS). REPORT WHEN READY TO SUPPORT EDS TEST.	(VAED)
	171	5	C2TC	C2AE C2EC C2NP	PREP FOR EDS TEST. REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 30' 0"						
	188	1	CVTS	PA	LM SHE TANK TOPOFF IS COMPLETED. THE CONTROL AREA IS OPEN FOR NORMAL WORK.	TCPI
	121	2	CVTS	CLTC	S/C READY FOR IBM SUPPORT OF LRV BATTERY MONITOR CABLE DISCONNECTION.	TCPI
	121	3	CLTC	CUTC	S/C READY FOR LRV BATTERY MONITOR CABLE DISCONNECTION	
	151	4	CUTC	SUVE	DISCONNECT CABLE 6281W201 FROM LRV BATTERY MONITOR BOX J5 (CABLE FROM LRV BATTERY MONITOR BOX TO CROSSOVER), REPORT WHEN COMPLETE.	
	123	5	CUFS	ALL	ALL STATIONS CONCERNED WITH S-IC ALL ENGINES NULL TEST RETURN TO CHANNEL 121.	
	121	6	CUFS	CLTC	VAFC & KAF1 ARE COMPLETE.	(VAED)
	121	7	CLTC	CUSP	VERIFY NO MODE LIGHTS ILLUMINATED.	
	121	8	CLTC	CUFC	CONTROL COMPUTER SYSTEM POWER - OFF	
	121	9	CLTC	CUGA	CONTROL/EDS RATE GYRO SYSTEM POWER - OFF	
	121	10	CLTC	CUFS	PLACE ALL CCIS AND EDS/CRG PANEL SWITCHES - OFF	
	121	11	CLTC	C1HP	TURN OFF S-IC HYDRAULIC UNIT	
		12			*****WARNING***** * * RESUME PREVIOUS HAZARD * * LEVEL - END OF WARNING * * FOR S-IC ENGINE GIMBAL * * ENVELOPE. * * *****	
	121	13	CLTC	C1PC	AFTER S-IC HYDRAULIC UNIT IS OFF, TURN LOW LOX DOME PURGE OFF.	
	111	14	CLTC	CVTS	LV READY FOR EDS TEST. REQUEST SCO PERSONNEL SWITCH TO CHANNEL 223.	TCPI

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-20 HRS 30' 0"	121	15	CVTS	CLTC	SCO PERSONNEL STANDING BY TO SUPPORT EDS TEST	TCPI
	121	16	CLTC	ALL	ALL LV PERSONNEL SUPPORTING EDS TEST GO TO CH 223 ACTIVE AND MONITOR CH 121	
	121	17	***	CEDK	PERFORM EDS TEST PER V-21096 (PROGRAM VZ33, FT33, VAED, VZEA, VZRE, VZSA). (\$PR1 OPTION). REPORT WHEN COMPLETE.	***
	161	18	C4TC	S4MA	VERIFY FLAME IMPINGEMENT CURTAIN CLOSEOUT COMPLETE.	
	161	19	C4TC	S4MA S4PC	START REMOVAL OF AFT ACCESS KIT PER V-30539, SECT M, PART 1 (HAZARDOUS)	+
	181	20	C1TC	CTS1	START FINAL TSM PREPS PER V-36039 (NON-HAZARDOUS)	+
		21			NOTE ---- CTS1 REQUIRES USE OF OTV CAMERAS 5, 6 & 7 UNTIL T+0	
	171	22	C2TC	C2PV	SAMPLE PURGE SYSTEMS PER V-26276 (G058) (NON-HAZARDOUS).	
	161	23	C4TC	S4CE	DISCONNECT S-IVB RERADIATION SYSTEM PER V-30539, SECT L. (NON-HAZARDOUS)	+
	121	24	C4TC	CLTC	VERIFY OPEN LOOP CLEARANCE ON 258.5 MHZ FOR VEHICLE ANTENNA CHECKS.	
-20 HRS 20' 0"	121	1	CLTC	CUTC	VERIFY TM RADIATION SYSTEM IN FLIGHT CONFIGURATION	
	121	2	CLTC	CUIP	RF DUMMY LOAD OFF	

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					CD ONLY	
-20 HRS 20' 0"						
	121	3	CLTC	RTMC	TM TAPE RECORDING - ON	
	121	4	CLTC	CUIP	P1 - RF ON	
-20 HRS 15' 0"						
	151	1	CUTC	CUCP	EDDT ONLY	*
	151	2	CUTC	CUCP	SECURE ST-124M AIR BEARING SYSTEM PER V-34017,	#
	151	3	CUTC	CUCP	SETUP HIGH PRESSURE REGULATOR PER V-36038. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	121	4	C1TC	CLTC	PROCEEDING WITH HDA SAFETY PIN REMOVAL	
	188	5	CLTC	ALL	HOLDDOWN ARM SAFETY PINS WILL BE REMOVED AT THIS TIME. PERSONNEL USE CAUTION IN THE HOLDDOWN ARM AREA	
	181	6	C1TC	CHDA	REMOVE SAFETY PINS PER V-36069 (HAZARDOUS)	
	121	7	C4TC	CLTC	REQUEST ETMS TO MONITOR CH 127 FOR S-IVB TM VEHICLE ANTENNA SIGNAL RECEPTION TEST.	
-20 HRS 0' 0"						
	121	1	CEDK	CLTC	EDS TEST IS COMPLETE	
	111	2	CLTC	CVTS	EDS TEST IS COMPLETE	TCPI
	121	3	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF.	
	121	4	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 082 (CMD SYS ENABLE, SMSIU082)	(FT45)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 0' 0"						
	111	5	CLTC	CVTS	IU COMMAND SYSTEM IS ENABLED	TCPI
	121	6	CLTC	VURF	VERIFY READY TO SUPPORT FT45	(FT45)
	121	7	CLTC	CUCS	VERIFY ACS IN COMP/COMP MODE	(FT45)
	121	8	***	CLGK	REQUEST & EXECUTE KAG1 (LINKING PROGRAM)	***
	121	9	***	CLGK	REQUEST & EXECUTE FT45 (COMMAND SYSTEM INTERFACE TEST)	***
	121	10	CLTC	ETMS	VERIFY RECEPTION OF TM LINK DP1	
	121	11	CLTC	CUIP	P1 RF - OFF	
	181	12	C1PE	C1TC	PCMU IS CLEAR FOR MOVE TO FALLBACK AREA	
	121	13	C1TC	CLTC	REQUEST BTIS SUPPORT REMOVAL OF PCMU,	
	262	14	CLTC	BTIS	REMOVE PCMU FROM ML ZERO LEVEL TO VAB FALLBACK AREA	TCPI
	121	15	CLTC	RLDE	LOAD CDDT WET OR COUNTDOWN SEQUENCE COMPARE TABLE AND START AND STOP SEQUENCE COMPARE ROUTINE PER CARE INSTRUCTIONS	
	171	16	C2GP	C2TC	S-II GROUND PNEUMATICS ACTIVATED	
	181	17	C1TC	CSPP	START HARDWARE FUNCTIONAL CHECKS PER V-31045 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	151	18	CUTC	SUVE	VERIFY CABLE 6281W201 (CABLE FROM LRV BATT MON BOX TO X-OVER) IS DISCONNECTED FROM LRV BATT MON BOX, CAPPED AND SECURED FOR LAUNCH.	
	121	19	CLTC	C1TC	START HARDWARE CHECKS PER V-21035 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	20	C1TC	C1NE	START HARDWARE CHECKS PER V-21035 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	21	C4TC	S4CE	VERIFY S-IVB RERADIATION SYSTEM DISCONNECTED	?

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 59' 0"						
	121	1	C2TC	CLTC	STARTING S-II HARDWARE FUNCTIONAL TEST.	
	171	2	C2TC	C2NP	START S-II HARDWARE FUNCTIONAL TEST PER V-30029 (M020) TASK 99 (NON-HAZARDOUS).	
-19 HRS 55' 0"						
	121	1	CLGK	CLTC	FT45 COMPLETE	
	121	2	CLTC	BTMC	TM TAPE RECORDING OFF	
	121	3	CLTC	CUNP	ISSUE IU STAGE LOGIC RESET	
	121	4	CLTC	CUIP	COMMAND DECODER - OFF CCS TRANSPONDER - OFF	
	111	5	CLTC	CVTS	IU COMMAND SYSTEM IS DISABLED.	TCPI
	121	6	CLTC	SURF	START FINAL CCS ANTENNA COUPLER REMOVAL PER V-28069 (NON-HAZARDOUS)	
	121	7	CLTC	VURF	POWER DOWN RF GSE PER V-28069 (NON-HAZARDOUS)	
	121	8	C2TC	CLTC	S-II HARDWARE FUNCTIONAL TEST COMPLETE.	
-19 HRS 45' 0"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	START PREPS FOR FT25 (LV DISCRETE INPUT TEST). REPORT WHEN READY TO SUPPORT.	(FT25)
	171	2	C2TC	C2AE	ALL ENGINE EMERGENCY CUTOFF TO AUTO	(FT25)
	171	3	C2TC	C2NP	STAGE SELECT TO OFF	(FT25)
	171	4	C2TC	C2AE	ENGINE SS CUTOFF NO. 1 & NO. 2 TO RESET THEN AUTO.	(FT25)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 45' 0"	171	5	C2TC	C2EC	MAINSTAGE OK SWITCHES TO AUTO	(FT25)
	171	6	C2TC	C2EC	ENGINE CUTOFF TO AUTO	(FT25)
	171	7	C2TC	C2NP	PM POWER TO AUTO	(FT25)
	171	8	C2TC	C2NP	SIM LAUNCH TO AUTO	(FT25)
	171	9	C2TC	C2PU	ALL SWITCHES TO AUTO	(FT25)
	161	10	C4TC	C4ET	ENGINE CONTROL POWER TO AUTO	(FT25)
	161	11	C4TC	C4ET	MAINSTAGE OK SIM TO AUTO	(FT25)
	161	12	C4TC	C4ET	ENGINE COMPONENT TEST POWER ON	(FT25)
	161	13	C4TC	C4OH	VOTING CIRCUIT ENABLE TO AUTO	(FT25)
	161	14	C4TC	C4OH	VOTER CIRCUIT TEMP #1 SIM TO AUTO	(FT25)
	161	15	C4TC	C4OH	VOTER CIRCUIT TEMP #2 SIM TO AUTO	(FT25)
	161	16	C4TC	C4OH	VOTER CIRCUIT TEMP #3 SIM TO AUTO	(FT25)
	161	17	C4TC	C4SP	MODE SELECT TO BURNER THEN AUTO.	(FT25)
	151	18	CUTC	CUES	MODE SWITCH TO TEST AND VERIFY 1D199 BUS ON	(FT25)
	151	19	CUTC	BGCC	LOAD FT25 TAPE ON IODC 1-3.	(FT25)
	151	20	BGCC	CUTC	FT25 TAPE LOADED.	(FT05)
-19 HRS 42' 0"	121	1	CLTC	C1NP C4NP CUNP	SWITCH SELECTOR INHIBIT OFF	(FT25)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 40' 0"						
	121	1	***	CLGK	REQUEST AND EXECUTE FT25 (LV DISCRETE INPUT TEST). REPORT WHEN READY FOR INTERSTAGE OPTION.	***
	121	2	***	CLGK	ENTER \$P32 AND \$P1 TO CONTINUE	***
-19 HRS 30' 0"						
	151	1	CUTC	LUQI SUVM	VERIFY IU MECHANICAL WALK AROUND COMPLETE AND SATISFACTORY.	
	151	2	CUTC	SUVM	START PARTIAL THERMAL ISOLATION SHROUD INSTALLATION PER V-31062, PART III. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	†
	121	3	CLGK	CLTC	LV DISCRETE INPUT TEST (FT25) IS COMPLETE	†
	121	4	CLTC	C1TC C2TC C4TC CUTC	SECURE FROM LV DISCRETE INPUT TEST, REPORT WHEN COMPLETE.	
	171	5	C2TC	C2AE	ALL ENG EMER CUTOFF TO CUTOFF	
	171	6	C2TC	C2EC	CUTOFF TO OFF (ENG 201 THRU 205).	
	171	7	C2TC	C2EC	MAINSTAGE OK PRESSURE SWITCH TO AUTO (ENG 201 THRU 205)	
	171	8	C2TC	C2NP	SWITCH SELECTOR INHIBIT TO ON.	
	161	9	C4TC	C4OH	LOX SHUT DOWN VALVE (SW-SEL) TO CLOSE THEN AUTO	
	161	10	C4TC	C4OH	LH PROPELLANT VALVE (SW-SEL) TO CLOSE THEN AUTO	
	161	11	C4TC	C4SP	MODE SELECT TO AMBIENT.	
	161	12	C4TC	C4OH	VERIFY BURNER SYSTEM RELAY RESET ON AND REPRESS SYSTEM LAUNCH MODE IND ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 30' 0"						
	161	13	C4TC	C40H	VOTING CIRCUIT ENABLE OFF	
	161	14	C4TC	C4ET	ENGINE CONTROL POWER OFF	
	161	15	C4TC	C4ET	MAINSTAGE OK SIM OFF	
	161	16	C4TC	C4ET	ENGINE COMPONENT TEST POWER OFF	
	151	17	CUTC	CUES	EDS MODE SWITCH TO MONITOR	
	151	18	CUTC	BGCC	REMOVE FT25 TAPE FROM IODC 1-3 AND MOUNT LVDC FLIGHT PROGRAM TAPE ON IODC 1-3	
	151	19	BGCC	CUTC	LVDC FLIGHT PROGRAM TAPE ON IODC 1-3	
	181	20	C1TC	C1NP	SWITCH SELECTOR INHIBIT - ON	
	181	21	CWCP	C1TC	INDUSTRIAL WATER SYSTEM INITIAL PREPS ARE COMPLETE PER V-36113 (HAZARDOUS)	
	171	22	C2TC	U2AN U2QC	START FWD INTERSTAGE NON-FLIGHT HARDWARE REMOVAL AND INSPECTION PER V-30029 (M020) TASK 47 (NON-HAZARDOUS).	
-19 HRS 25' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT05 (DATA VERIFY)	***
-19 HRS 0' 0"						
	171	1	U2PF	C2TC	PROPELLANT FILL AND HAZARDOUS GAS DETECTION SYSTEM WALK AROUND INSPECTIONS ARE COMPLETE.	
	171	2	C2TC	U2SE	VERIFY S-II AFT COMPARTMENT READY FOR CLOSE OUT	
	181	3	C2TC	C1TC	REMOVAL OF S-II AFT ACCESS KIT IS COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 0' 0"	118	16	CSAC	CSA1	START PRELAUNCH PREPS PER V-36077 (NON-HAZARDOUS).	
	118	17	CSAC	CSA2	START PRELAUNCH PREPS PER V-36078 (NON-HAZARDOUS).	
	118	18	CSAC	CSA4	START PRELAUNCH PREPS PER V-36080 (NON-HAZARDOUS).	
	118	19	CSAC	CSA5	START PRELAUNCH PREPS PER V-36081 (NON-HAZARDOUS).	
	118	20	CSAC	CSA6	START PRELAUNCH PREPS PER V-36082 (NON-HAZARDOUS).	
	118	21	CSAC	CSA7	START PRELAUNCH PREPS PER V-36083 (NON-HAZARDOUS).	
	118	22	CSAC	CSA8	START PRELAUNCH PREPS PER V-36084 (NON-HAZARDOUS).	
	118	23	CSAC	CSA9	START PRELAUNCH PREPS PER V-36085 (HAZARDOUS).	
	181	24	C1TC	CSPP	START RACK/CONSOLE VERIFICATION PER V-31045 (NON-HAZARDOUS).	
	121	25	CLTC	SURF	VERIFY IU ANTENNA COUPLERS HAVE BEEN REMOVED.	
	171	26	C2TC	C2AE	START PREPS FOR QAMS (MAINSTAGE OK PRESSURE SWITCH CHECKOUT) PER V-34014 (E023), SEC 2A (NON-HAZARDOUS).	
	151	27	CUTC	SUVM	VERIFY PARTIAL THERMAL ISOLATION BOTTOM SHROUD INSTALLATION IS COMPLETE.	
-18 HRS 45' 0"	151	1	CUTC	SUVM	INSTALL CHE ASSEMBLY	
	121	2	CLGK	CLTC	FT05 COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 45' 0"	121	3	***	CLGK	POWER OFF LVDC/DA PER V-33033, SECT IV REPORT WHEN COMPLETE (NON-HAZARDOUS).	***
	121	4	CLGK	CLTC	KAG1 IS TERMINATED	
		5		C2AE C2PK	NOTE ----- VERIFICATION OF S-II INTERSTAGE DOOR CLOSEOUT WILL BE REQUIRED BEFORE QAMS CAN BE EXECUTED. VALJ WILL CALL QAMS AT T-18 HR 30'0".	
	121	6	CLTC	CUTC	VERIFY READY TO START HARDWIRE FUNCTIONAL CHECKS	
	121	7	CLTC	CUES	EDS MODE SWITCH TO LAUNCH	
	121	8	CLTC	RLDE	VERIFY DEE 4319 ON (EDS READY)	
	121	9	CLTC	CUES	EDS MODE SWITCH TO MONITOR	
	121	10	CLTC	RLDE	VERIFY DEE 4319 OFF	
	111	11	CLTC	CVTS	REQUEST SC READY SWITCH ON THEN OFF FROM CSAT PANEL, REPORT WHEN COMPLETE.	TCPI
	121	12	CLTC	RLDE	VERIFY DEE 2149 ON THEN OFF (S-IC SC READY FOR LAUNCH)	
	121	13	CLTC	CRSS	PLACE BYPASS SWITCH ON THEN OFF, REPORT WHEN COMPLETE	
	121	14	CLTC	RLDE	VERIFY DEE 0163 ON THEN OFF (RANGE SAFE)	
-18 HRS 30' 0"	171	1	U2SI	C2TC	S-II AFT DOOR IS SECURED	
	171	2	C2TC	U2SE	VERIFY OK TO REMOVE A7-38 ACCESS KIT AND A7-91 PROTECTIVE PADS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 30' 0"	171	3	C2TC	U2SI	START REMOVAL OF A7-38 ACCESS KIT AND A7-91 PROTECTIVE PADS PER V-26507 (G147) TASKS 9, 14, 17 & 21 (NON-HAZARDOUS), EXCEPT THOSE SECTIONS NEEDED FOR PD CONTAINER 223 ACCESS.	
		3-1		U2SI	*** NOTE DO NOT BEGIN REMOVAL OF A7-91 PROTECTIVE PADS UNTIL S-IVB AFT ACCESS KIT REMOVAL HAS STARTED.	
		4	C2TC	U2AN	START STAGE LIGHT, OIS AND EMERGENCY LIGHT REMOVAL FROM FWD INTERSTAGE PER V-30575 (Z037) TASKS 2, 4 & 6 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	121	5	C2TC	CLTC	S-II READY TO EXECUTE QAMS (MAINSTAGE CALIPS TEST)	
	171	6	***	C2AE	EXECUTE QAMS (MAINSTAGE CALIPS TEST) PER V-34014 (E023) SEC 2A (NON-HAZARDOUS) AFTER AFT DOOR IS SECURED. REPORT WHEN COMPLETE.	***
	181	7	C1TC	C1PE	VERIFY INSTALLATION OF BASE HEAT SHIELD ACCESS PANELS COMPLETE.	
	121	8	C1TC	CLTC	REQUEST BTIS PROVIDE SUPPORT FOR INITIAL REMOVAL OF S-IC STORAGE CABINETS AND FIN & FAIRING PLATFORMS.	
	262	9	CLTC	BTIS	START INITIAL REMOVAL OF S-IC STORAGE CABINETS AND FIN & FAIRING PLATFORMS. COORDINATE INITIAL REMOVAL NOW AND ADDITIONAL REMOVAL AT T-12 HRS WITH BOEING PERSONNEL.	TCPI
	171	10	C2PV	C2TC	PURGE SYSTEMS SAMPLING IS COMPLETE	
	151	11	CUTC	SUVM	VERIFY CHE ASSEMBLY IS INSTALLED	
	121	12	CUTC	CLTC	CHE INSTALLATION IS COMPLETE	
	121	13	CVTS	CLTC	LM SHE TOPOFF LINES HAVE BEEN DISCONNECTED. YOU ARE CLEARED TO REMOVE FDS FROM THE IU/S-IVB	TCPI

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-18 HRS 30' 0"						
	121	14	CLTC	C4TC CUTC	COORDINATE DIRECTLY WITH LM PERSONNEL AND REMOVE FDS FROM THE IU/S-IVB	
	161	15	C4TC	S4MF	REMOVE FIRST LM ACCESS STEP PER V-30539, APPENDIX D, PART 1 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
-18 HRS 15' 0"						
	151	1	CUTC	CUIP	MEASUREMENT TRANSFER - AUTO S-II BURN TEST AND S-IVB COAST TEST-AUTO (60X-607A6-CCIS PANEL)	(MT01)
	121	2	CLTC	ALL	DISPLAY OPERATORS DO NOT CALL DISPLAY DESCRIPTIONS (FORMAT SELECT) UNTIL MT01 IS COMPLETE.	
	151	3	CUTC	BGCC	REMOVE DISPLAY DESCRIPTION TAPE FROM IODC 2-6	
	151	4	CUTC	BGCC	VERIFY/MOUNT MT01 DATA TAPE ON 2-9 AND SCRATCH TAPE ON 1-3	(MT01)
	111	5	CLTC	CVTS	LV RF & TM SYSTEMS ARE OFF	TCPI
	151	6	CUTC	SUVM	REMOVE CHE ASSEMBLY. REPORT WHEN COMPLETE.	
-18 HRS 2' 0"						
	181	1	C1TC	V1ME	VERIFY RACS LOADING SYSTEM CHECKS COMPLETE	(MT01)
	121	2	C1TC	CLTC	S-IC READY FOR MT01	
	171	3	C2AE	C2TC	QAMS (MAINSTAGE OK PRESSURE SWITCH VERIFICATION) COMPLETE.	
	121	4	C2TC	CLTC	QAMS COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 2' 0"					GO ONLY	
	121	5	***	C4IP	PRELAUNCH CHECKOUT GROUP ON.	*** (MT01)
	121	6	***	CLIK	ISSUE S-IVB ALL RACS RUN	*** (MT01)
	121	7	***	C1IP	28 VOLT RACS, LOX & FUEL RACS AND 400 HZ POWER - ON.	***
	121	8	***	C2NP	RACS POWER ON	***
	121	9	***	CLIK	COMMAND RACS, SII-ALL-ALL-RUN	***
	121	10	C2TC	CLTC	S-II READY FOR MT01	
	188	11	CLTC	ALL	STAGE MEASUREMENTS WILL BE INTERRUPTED DURING MT01 (MEAS SCAN).	
-18 HRS 0' 0"						
	121	1	***	CLIK	REQUEST & EXECUTE MT01 (MEAS SCAN VEHICLE OPTION)	***
		2		CLIK	NOTE ----- SWITCH ACTION IN NEXT STEP TO BE ACCOMPLISHED JUST PRIOR TO S-IC PORTION OF MT01 SCAN	(MT01)
	121	2-1	CLIK	C1IP	HARDWIRE MEASUREMENT TRANSFER TO TELEMETER.	
	171	3	C2TC	R2DP	CCDT ONLY	*
	181	4	C1TC	BRFS	START DRSCS FINAL CHECKS PER V-38000, SECT 14 (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 0' 0"	181	5	CPDC	C1TC	REQUEST BOSC HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED	
	121	6	C1TC	CLTC	REQUEST BOSC HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED.	
	261	7	CLTC	BOSC	HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED.	TCPI
	181	8	C1TC	CTS1	VERIFY PRESSURIZATION COMPLETE AND REMOVE TSM SERVICE PLATFORMS	
	171	9	C2TC	C2PV	START COMMON BULKHEAD EVACUATION PER V-26276 (G058) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	151	10	CUTC	SUVE	REMOVE SHE IU CABLE RACK COVER ASSEMBLY. REPORT WHEN COMPLETE.	
-17 HRS 45' 0"	181	1	C1TC	C1PE	VERIFY READY FOR REMOVAL OF LUT LEVEL ZERO PLATFORM SECTIONS	
	181	2	C1TC	CPDC	PREPARE LLP FOR LOWERING.	
-17 HRS 30' 0"	171	1	U2MU U2PF	C2TC	TASK 24 SENSOR REINSTALLATION AND TASK 22 INITIAL UMBILICAL PREPS ARE COMPLETE.	
	121	2	C2TC	C1TC	INSTALL JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS ENABLE)	
	181	3	C1TC	C1NE	VERIFY/INSTALL JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS ENABLE)	(QAEC)
		3-1			VERIFICATION BY LV-QAL -----	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 30' 0"	171	4	C2TC	C2AE	ALL SWITCHES TO AUTO EXCEPT COMPONENT TEST POWER TO OFF	(QAEC)
	171	5	C2TC	C2EC C2RP	ALL SWITCHES TO AUTO	(QAEC)
	171	6	C2TC	C2AE	VERIFY START VENT CONTROL PRESS ON LIGHT ON	(QAEC)
	171	7	C2TC	C2NP	STAGE SELECT TO OFF	(QAEC)
	171	8	C2TC	C2EC C2PK	VERIFY READY TO SUPPORT QAEC	
-17 HRS 15' 0"	121	1	CLIK	CLTC	MT01 COMPLETE.	
	151	2	CUTC	BGCC	REMOVE MT01 TAPE FROM IODC 2-9 AND LOAD DISPLAY DESCRIPTION TAPE ON IODC 2-6.	
	121	3	CLTC	ALL	MT01 IS COMPLETE. DISPLAY DESCRIPTIONS (FORMAT SELECT) CAN NOW BE CALLED.	
	121	4	CLTC	C1IP	HARDWIRE MEASUREMENT TO GROUND.	
	121	5	***	C1IP	28 VOLT RACS, LOX & FUEL RACS AND 400 HZ POWER - OFF.	***
	121	6	***	C2NP	RACS POWER OFF	***
	171	7	C2NP	C2TC	RACS POWER OFF	
	181	8	C1TC	C1IP	FUEL AND LOX RACS POWER SWITCH TO OFF AND VERIFY	
	151	9	CUTC	CUIP	MEAS TRANSFER - OFF S-II BURN TEST & S-IVB COAST TEST-OFF (60X-607A6-CISS PANEL)	
	121	10	***	C4IP	PRELAUNCH CHECKOUT GROUP OFF THEN AUTO	***
	181	11	C1TC	C1PE CHDA CTS1	VERIFY READY FOR LOWERING LUT ZERO LEVEL PLATFORM	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 15' 0"		12			*****WARNING***** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IC ENGINE GIMBAL * * ENVELOPE. * * *****	
	181	13	C1TC	C1PC	TURN ON LOW LOX DOME PURGE.	
	181	14	C1TC	C1HP	APPLY S-IC HYDRAULICS. REPORT WHEN COMPLETE.	
	181	15	C1TC	C1PC	AFTER HYDRAULICS IS APPLIED TURN LOW LOX DOME PURGE OFF.	
	181	16	C1TC	CPDC	VERIFY LLP PREPS FOR LOWERING COMPLETE AND LOWER LLP PER V-36070 (HAZARDOUS). REPORT WHEN COMPLETE.	
	188	17	C1TC	ALL	THE LUT LEVEL PLATFORM IS BEING LOWERED. THE FLAME WELL OF THE LUT IS NOW AN UNPROTECTED PAD AREA	
	118	18	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8 CSA9	VERIFY PRELAUNCH TOWER PREPS COMPLETE	
	181	19	C1TC	CSAC	VERIFY LSE MECHANICAL PRELIMINARY PREPS COMPLETE.	
	121	20	C2TC	CLTC	S-II READY TO EXECUTE QAEC (S-II ENGINE CIRCUITRY CHECKOUT)	
	121	21	***	C2PK C2EC	REQUEST & EXECUTE QAEC (S-II ENGINE CIRCUITRY CHECKOUT)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 5' 0"	181	1	CSAC	C1TC	REQUEST CLEARANCE TO PRESSURIZE S/A'S 1, 5 AND 7	
-17 HRS 0' 0"	121	1	CVTS	CLTC	REDUCE S/A 8 ECS FLOWRATE TO MINIMUM. REPORT WHEN COMPLETE.	TCPI
	121	2	CLTC	C1TC	REDUCE S/A 8 ECS FLOWRATE TO MINIMUM. REPORT WHEN COMPLETE.	
	181	3	C1TC	CECS	ESTABLISH MINIMUM POSSIBLE FLOW FOR SM DUCT AND JUMPER LIMIT SWITCH ON FLOW CONTROL VALVE IF REQUIRED. REPORT WHEN COMPLETE.	
	181	4	C1TC	CSAC	CLEAR TO PRESSURIZE S/A'S 1, 5 AND 7. REPORT WHEN COMPLETE.	
	121	5	CVTS	CLTC	RECONFIGURE S/A 8 ECS "Y" DUCT TO FLIGHT CONFIGURATION. REPORT WHEN COMPLETE.	TCPI
	121	6	CLTC	C1TC	RECONFIGURE S/A 8 ECS "Y" DUCT TO FLIGHT CONFIGURATION PER V-36084 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	7	C1TC	CSAC	RECONFIGURE S/A 8 ECS DUCT TO LAUNCH CONFIGURATION. REPORT WHEN COMPLETE.	
	118	8	CSAC	CSA8	RECONFIGURE S/A 8 ECS "Y" DUCT TO FLIGHT CONFIGURATION PER V-36084 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	9	C4TC	S4MA	VERIFY AFT ACCESS KIT REMOVAL COMPLETED.	
	181	10	C1TC	C1PE	VERIFY REMOVAL OF S-IC FORWARD ACCESS KIT EXCEPT AS REQ'D FOR S&A DEVICE CONNECTION.	
	181	11	C1TC	C1NE	VERIFY PD PULSE SENSOR UNITS CONNECTED	
	161	12	C4TC	S4MA	INSTALL AFT INTERSTAGE ACCESS DOOR PER V-30539, SECT M, PART 2 (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 0' 0"	161	13	C4TC	S4PC	REMOVE STAGE MONITOR HUT. REPORT WHEN COMPLETE.	
	181	14	C1TC	BRFS	VERIFY READY FOR RANGE SUPPORT OF DRSCS PREPS.	
	121	15	C1TC	CLTC	READY FOR RANGE TO SUPPORT DRSCS PREPS.	
	111	16	CLTC	CVTS	REQUEST RANGE SUPPORT DRSCS PREPS ON CHANNEL 137 PER V-38000, SECT 14 (NON-HAZARDOUS).	TCPI
	118	17	CSAC	CSAD	START DRRS PREPS PER V-36086 (NON-HAZARDOUS)	
	118	18	CSAC	CSA1	PRESSURIZE S/A 1 PER V-36077 (NON-HAZARDOUS)	
	118	19	CSAC	CSA5	PRESSURIZE S/A 5 PER V-36081 (NON-HAZARDOUS)	
	118	20	CSAC	CSA7	PRESSURIZE S/A 7 PER V-36083 (NON-HAZARDOUS)	
-16 HRS 45' 0"	171	1	C2TC	C2DP	VERIFY PD PULSE SENSOR UNITS CONNECTED.	
	181	2	CPDC	C1TC	LLP LOWERING COMPLETE	
	181	3	C1TC	C1HP C1PC	APPLY LOW LOX DOME PURGE, TURN OFF S-IC HYDRAULICS, AND THEN TURN OFF LOW LOX DOME PURGE.	
		4			*****WARNING***** * * RESUME PREVIOUS HAZARD * * LEVEL - END OF S-IC * * ENGINE GIMBAL ENVELOPE * * HAZARD. * * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 45' 0"	161	5	C4TC	S4CE	VERIFY PD PULSE SENSOR UNITS CONNECTED.	
-16 HRS 35' 0"	181	1	CSAC	C1TC	S/A'S 1, 5 & 7 PRESSURIZED. REQUEST CLEARANCE TO PRESSURIZE S/A'S 2, 4 & 6.	
	181	2	C1TC	CSA1 CSAC	DDDT ONLY	*
-16 HRS 30' 0"	181	1	C1TC	CSAC	CLEAR TO PRESSURIZE S/A'S 2, 4 & 6. REPORT WHEN COMPLETE.	
	151	2	CUTC	SUVM	REMOVE SUBLIMATOR VENT COVERS PER V-31062, PART III. REPORT WHEN COMPLETE (NON-HAZARDOUS).	#
	121	3	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK ON	
	121	4	CLTC	C1TC C2TC C4TC	INSTALL PD RSCR ENABLE JUMPERS FOR DRSCS TESTS AND REPORT COMPLETION	
	181	5	C1TC	L1RS	INSTALL PD RSCR ENABLE JUMPER J5 ON PANEL X02-121A2.	
		5-1			VERIFICATION BY LV-QAL	
	171	6	C2TC	L2RR	INSTALL PD RSCR ENABLE JUMPER J2 ON PANEL X02-220A2	
		6-1			VERIFICATION BY LV-QAL	
	161	7	C4TC	L4JR	INSTALL PD RSCR ENABLE JUMPER E2 ON PANEL X02-423A2	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 30' 0"		7-1			VERIFICATION BY LV-QAL	
	121	8	CLTC	C1TC C2TC C4TC	VERIFY PD PULSE SENSOR UNITS CONNECTED	
	161	9	C4TC	S4MA	VERIFY AFT ACCESS DOOR INSTALLED AND READY FOR FINAL S/A 6 CARRIER PREPARATION.	
	118	10	CSAC	CSA2	PRESSURIZE S/A 2 PER V-36078 (NON-HAZARDOUS)	
	118	11	CSAC	CSA4	PRESSURIZE S/A 4 PER V-36080 (NON-HAZARDOUS)	
	118	12	CSAC	CSA6	PRESSURIZE S/A 6 PER V-36082 (NON-HAZARDOUS)	
	151	13	C1TC	CUTC	THE Q-BALL COVER WILL BE INSTALLED IN APPROXIMATELY 1 HOUR. 1U PERSONNEL WILL BE REQUIRED ON STATION TO MONITOR THE OPERATION.	
	171	14	C2PV	C2TC	COMMON BULKHEAD EVACUATION COMPLETED. ALL PURGE CIRCUITS ACTIVATED.	
		15	***	C2EC	QAEC (ENGINE CIRCUITRY CHECKOUT) COMPLETE.	***
	171	16	C2EC	C2TC	QAEC (ENGINE CIRCUITRY CHECKOUT) COMPLETE.	
	121	17	C2TC	CLTC	QAEC COMPLETE.	
	121	18	C1PK	CLTC	VALJ HAS TERMINATED.	
	171	19	C2TC	V2MS	QAEC IS COMPLETE. PREP FOR DRSCR TESTS. REPORT WHEN READY.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 15' 0"	111	1	CLTC	CVTS	S/A 9 WILL BE PRESSURIZED IN 15 MINUTES. LOCAL CLEARING WILL BE CONTROLLED BY S/A PERSONNEL.	TCPI
	111	2	CLTC	CVTS	ADVISE CPSS THAT PD ENABLE JUMPERS ARE INSTALLED.	TCPI
	151	3	CUTC	SUVM	VERIFY SUBLIMATOR VENT COVER REMOVAL IS COMPLETE.	#
	151	4	CUTC	SUVM	VERIFY CHE REMOVAL COMPLETE.	
	151	5	CUTC	SUVE	VERIFY SHE CABLE RACK COVER REMOVAL COMPLETE.	
	151	6	CUTC	SUVM	INSTALL FINAL THERMAL ISOLATION SHROUD PER V-31062, PART III. REPORT WHEN COMPLETE (NON-HAZARDOUS).	
-16 HRS 5' 0"	181	1	CSAC	C1TC	S/A'S 2, 4 & 6 AND PRIMARY DAMPER PRESSURIZED. REQUEST CLEARANCE TO PRESSURIZE S/A'S 8 & 9	
	181	2	C1TC	CSA2 CSAC	GGDT ONLY	*
-16 HRS 0' 0"	151	1	CUTC	SUVM	VERIFY FINAL THERMAL ISOLATION SHROUD INSTALLATION IS COMPLETE.	
	181	2	C1TC	CSAC	CLEAR TO PRESSURIZE S/A'S 8 & 9. REPORT WHEN COMPLETE.	
	118	3	CSAC	CSA1 CSA4 CSA6	START PRECLOSEOUT CHECKLIST	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 0' 0"					CD ONLY	
	181	4	C1TC	L1LS	START SECOND LUT WALKDOWN. VERIFY NO EQUIPMENT REMAINS ON PAD APRON. REPORT WHEN COMPLETE.	
		4-1			VERIFICATION BY LV-QAL -----	
	118	5	CSAC	CSA8	PRESSURIZE S/A 8 PER V-36084 (NON-HAZARDOUS)	
	118	6	CSAC	CSA9	PRESSURIZE S/A 9 PER V-36085 (HAZARDOUS)	
	171	7	C2TC	U2MU U2PF	START S/A 4 FINAL UMBILICAL PREPS PER V-30029 (M020) TASK 25 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	8	C2TC	C2SP	DDDT ONLY	
	181	9	C1TC	CCLH	START LH2 COMPONENT TEST PER V-35004 (NON-HAZARDOUS).	
	161	10	C4TC	S40R	VERIFY SHORTING PLUGS INSTALLED ON PD DETONATORS AND CDF NOT CONNECTED TO S&A'S.	
	121	11	CLTC	BRFS	VERIFY DRSCS/GSE READY TO SUPPORT DRSCR OPEN LOOP TEST	
	111	12	CLTC	CVTS	VERIFY THE RANGE READY TO SUPPORT OPEN LOOP DRSCR TEST WITH TEST CODE PLUGS. REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN.	TCPI
	111	13	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER 1 - ON AND VERIFY.	TCPI
	121	14	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 0' 0"					CD ONLY	
					DRSCR OPEN LOOP TEST (TEST CODE PLUGS) -----	
	121	15	CLTC	RLDE	DDDT ONLY	*
	18A	16	CLTC	ALL	ALL PERSONNEL SUPPORTING LV RSCR TEST MONITOR CHANNEL 121 & TC CHANNELS	
	121	17	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEMS STATUS SWITCH - SAFE S&A SWITCH - SAFE	
	121	18	CLTC	C4DP	PULSE SENSOR POWER ON	
	121	19	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE.	
		19-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON	
	121	20	CLTC	RRSC	VERIFY DRSCS RECORDERS ON	
	121	21	CLTC	BTMC	TM TAPE RECORDER - ON TO SUPPORT DRSCR TEST.	
	111	22	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR TEST.	TCPI
	121	23	CLTC	C1DP C2DP C4DP	SYSTEM STATUS SWITCH - OFF.	
		24		C2NP	CYCLE MAIN/INSTR BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE	#
	121	25	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL & VERIFY.	
		25-1		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 OFF.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-15 HRS 53' 0"						
	121	10	CLTC	C1DP C2DP C4DP	GDDT ONLY	*
		10-1		CRSS	GDDT ONLY	*
	121	11	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		11-1		CRSS	CDDT ONLY	*
	121	12	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 AND 2 CUTOFF NOT RECEIVED	#
		12-1		CRSS BRFS	*** NOTE CUTOFF NOT RECEIVED	#
	121	13	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 AND 2 NOT CHARGED	#
		13-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	#
-15 HRS 50' 0"						
	121	1	CLTC	SRO	SWITCH TO RANGE SAFETY COMMAND TRANSMITTER #2.	
		1-1		B1RF B2RF B4RF CRSS	*** NOTE ALL RSCR LIMITER VOLTAGES RECEIVED.	
	121	2	CLTC	RRSC	RECORDERS - FAST SPEED.	
	121	3	CLTC	SRO	ON YOUR MARK SEND TEST CUTOFF COMMAND CONTINUOUSLY.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 50' 0"					GO ONLY	
		12-1		CRSS	DDDT ONLY	*
	121	13	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 AND 2 CUTOFF NOT RECEIVED.	#
		13-1		CRSS BRFS	*** NOTE CUTOFF NOT RECEIVED	#
	121	14	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 AND 2 NOT CHARGED	#
		14-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	#
-15 HRS 45' 0"						
	121	1	CLTC	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO.	
	121	2	CLTC	C1DP C2DP C4DP	VERIFY RSCR POWER OFF.	
	121	3	CLTC	CLVN	DESTRUCT SYSTEM - OFF. DELIVER DESTRUCT SYSTEM KEY TO CPSS. REPORT WHEN COMPLETE.	
	121	4	CLTC	BTMC	TELEMETRY TAPE RECORDER - OFF & RELOAD FOR DRSCR CLOSED LOOP TEST (APPROX 3 MIN FOR RELOAD).	
	121	4-1	CITC	CLTC	GROUNDING STRAPS REMOVED. READY FOR MSS PLAT 4 OPENING.	XB-420-54
	111	4-2	CLTC	CVTS	MSS PLAT 4 IS AVAILABLE FOR OPENING.	TCPI XB-420-54
	111	5	CLTC	CVTS	DRSCR OPEN LOOP TEST COMPLETE. REQUEST RANGE SAFETY COMMAND TRANSMITTERS - OFF. DESTRUCT SYSTEM KEY RETURNED TO CPSS.	TCPI
	188	6	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR ALSEP FCA INSTALLATION. RADIATION AREA CONTROL IS IN EFFECT	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 45' 0"		6-1			*****WARNING***** * * THE CONTROL AREA FOR * ALSEP FCA INSTALLATION * CONSISTS OF THE SLA, * IU, S-IVB FWD, S/A 7 * AND A 10 FT PATHWAY UP * THE MSS TO PLATFORM 3A. * *****	TCPI
181	7	C1TC	CECS		CONFIGURE ECS TO SUPPORT ALSEP. REPORT WHEN COMPLETE. (CONFIGURE REDUNDANT BLOWER FOR SUPPORT).	
121	8	C1TC	CLTC		REQUEST ACCF (CCF GN2) REPORT TO CECS ON CH 142 FOR ECS SUPPORT.	
261	9	CLTC	BOSC		REQUEST ACCF REPORT TO CECS ON CH 142 FOR ECS SUPPORT.	TCPI
	9-1	CLTC			*** NOTE CCF GN2 BACKUP SUPPORT FOR ALSEP FCA PRIMARY COOLING WILL BE SIMULATED DURING CDDT, HOWEVER THE LP GN2 LINE WILL BE PRESSURIZED TO 150 PSIG.	
	10	C1FR CUEV			NOTE ---- CRSS WILL CONDUCT HOLDFIRE CHECKS WITH RSO & SRO DURING THE NEXT 30 MINUTES. THE RANGE SAFE INDICATION ON THE C1FR PANEL AND BOTH SRO/RSO PROCEED INDICATIONS ON IU EVENTS DISPLAY PANEL WILL CYCLE ON AND OFF DURING THESE CHECKS.	
111	11	CLTC	CVTS		REQUEST SRO TO RECONFIGURE TO FLIGHT CODE PLUGS	# TCP

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-15 HRS 45' 0"					CS ONLY	
	121	12	CLTC	RLDE	DDDT ONLY	*
	121	13	BOSC	CLTC	REQUEST S-II & S-IVB PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE LEAK CHECKS.	TCPI
	121	14	CLTC	C2TC C4TC	HAVE YOUR PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE LEAK CHECKS.	
	171	15	C2TC	C2GP U24A	REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE LEAK CHECKS.	
	181	16	C1TC	CPDC	VERIFY LLP LOWERED & SECURED AND PREP TRANSPORTER FOR MOVE TO SOUTH END OF PAD PER V-36070 (HAZARDOUS).	
	181	17	C1TC	CPDC	START SECURING LUT WINCHES PER V-36070 (HAZARDOUS).	
-15 HRS 35' 0"						
	261	1	CLTC	BOSC	VERIFY HAMMERHEAD CRANE IS SECURED FOR LAUNCH AND ACCESS HATCH TO 380' LEVEL IS UNLOCKED	TCPI
	121	2	CLTC	C1TC	HAMMERHEAD CRANE IS SECURED FOR LAUNCH AND ACCESS HATCH IS UNLOCKED	
	181	3	CUTC	C1TC	IU PERSONNEL ARE ON STATION TO MONITOR Q-BALL COVER INSTALLATION.	
	181	4	C1TC	CSAC	H/H CRANE IS SECURED FOR LAUNCH, PROCEED WITH Q-BALL COVER LAUNCH PREPS PER V-36112 (HAZARDOUS).	
	161	5	C4TC	U4PN	VERIFY GH2 INLET HANDVALVE (A-11982) ON MODEL 438 HEX IS CLOSED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 35' 0"	121	6	CLTC	C2TC C4TC	VERIFY READY TO ACTIVATE 6000 PSI GH2 SUPPLY	
	261	7	CLTC	ROSC	ACTIVATE 6000 PSI GH2 SUPPLY.	TCPI
	111	8	CLTC	CVTS	REQUEST SCO PERSONNEL ON CH. 223 FOR ABORT LIGHT VERIFICATION. REQUEST EDS POWER ON.	TCPI
	181	9	CSAC	C1TC	S/A'S 8 & 9 PRESSURIZED	
-15 HRS 30' 0"	151	1	CUTC	PUPL	START LUT EQUIPMENT REMOVAL. LV-QAL PARTICIPATION REQUIRED.	
	121	2	CVTS	CLTC	INCREASE SM ECS FLOW RATE TO 75 +/- 5 LB/MIN	TCPI
	121	3	CLTC	C1TC	INCREASE SM ECS FLOW RATE TO 75 +/- 5 LB/MIN	
	181	4	C1TC	CECS	INCREASE SM ECS FLOW RATE TO 75 +/- 5 LB/MIN.	
	161	5	C4TC	S4MA	START FINAL S/A 6 CARRIER PREPARATION PER V-30539, SECT N (NON-HAZARDOUS).	
	118	6	CSAC	CSA8	START PRECLOSEOUT CHECKLIST	
	181	7	CSAC	C1TC	STARTING S/A 8 CLOSEOUT	
	121	8	C1TC	CLTC	STARTING S/A 8 CLOSEOUT	
	111	9	CLTC	CVTS	ADVISE SC QC THAT LV IS STARTING S/A 8 CLOSEOUT	TCPI
	121	10	CVTS	CLTC	CLEAR TO REMOVE THE S/A 8 EMERGENCY EGRESS LADDER & DOOR ASSEMBLY.	TCPI
	121	11	CLTC	C1TC	REMOVE S/A 8 EMERGENCY EGRESS LADDER & DOOR ASSEMBLY.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 30' 0"	181	12	C1TC	CSAC	REMOVE S/A 8 EMERGENCY EGRESS LADDER & DOOR ASSEMBLY.	
	118	13	CSAC	CSA8	REMOVE EMERGENCY EGRESS LADDER & DOOR ASSEMBLY.	
	118	14	CSAC	CHCU	SECURE ONE PUMP AND VERIFY OTHER PUMP IS RUNNING	
	111	15	CLTC	CVTS	VERIFY THE RANGE READY FOR RANGE SAFETY COMMAND CLOSED LOOP CHECKS.	TCPI
	111	16	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP THE LOCAL UHF CMD CARRIER & RANGE READY TO SUPPORT DRSCR CLOSED LOOP TEST ON CH. 121. 450 MHZ OPEN LOOP PROTECTION IS REQUIRED	TCPI
					DRSCR CLOSED LOOP TEST -----	
	111	17	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCPI
	121	18	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	
	188	19	CLTC	ALL	ALL PERSONNEL SUPPORTING LV RS CMD CHECKS SWITCH TO CHANNEL 121 AND MONITOR STAGE TC CHANNEL.	
	121	20	CLTC	BTMC	TM TAPE RECORDING ON TO SUPPORT DRSCS CLOSED LOOP TEST.	
		20-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR CHECK,	
	121	21	CLTC	C1DP C2DP C4DP	VERIFY THE FOLLOWING SWITCH POSITIONS: PD RSCR ENABLE - OFF SYSTEMS STATUS SWITCH - OFF S&A STATUS SWITCH - SAFE	
	121	22	CLTC	RRSC	VERIFY DRSCS RECORDERS ON	
	121	23	CLTC	C4ET	ENGINE CONTROL POWER - ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 30' 0"	121	24	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE	
		24-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	25	CLTC	C1DP C2DP C4DP	EBW GROUND POWER - ON VERIFY EBW'S 1 & 2 CHARGED	
		25-1		CRSS	*** NOTE ALL EBW'S CHARGED.	
	121	26	CLTC	BRFS	SIGNAL GENERATOR SELECTOR - NO. 1 AND VERIFY REMOTE MONITOR HYBRID.	
		26-1		C2NP	CYCLE MAIN/INSTR BATT BLEED SWITCHES TO MAINTAIN BATT VOLTAGES IN TOLERANCE (CD ONLY).	
	121	27	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 TRANSFER - INTERNAL	
	121	28	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 POWER ON AND INTERNAL POWER ON.	
		28-1		CRSS	*** NOTE ALL RSCR'S ON INTERNAL POWER.	
	121	29	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 CHARGING VOLTAGES DECREASE TO ZERO.	
		29-1		CRSS	*** NOTE EBW CHARGING VOLTAGES DECREASE TO ZERO,	
	121	30	CLTC	B1RF B2RF B4RF	VERIFY LIMITER VOLTAGES OK.	
		30-1		CRSS	*** NOTE ALL LIMITER VOLTAGE INDICATIONS RECEIVED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 30' 0"	121	31	CLTC	C1DP C2DP C4DP	EBW'S 1 & 2 GROUND POWER - OFF	
	181	32	C1TC	CCRP	START FINAL RP-1 SYSTEM PREPS PER V-25389 (HAZARDOUS).	
	171	33	C2IP	C2TC	S-II GSE LUT WALKDOWN IS COMPLETE.	
	181	34	C1TC	CCLO	START LOX SYSTEM HARDWIRE CHECKS PER V-25340 (HAZARDOUS).	
-15 HRS 25' 0"	181	1	C1TC	C1NE C1PE	VERIFY SHORTING PLUGS INSTALLED ON PD DETONATORS & CDF NOT CONNECTED TO S&A	
	171	2	C2TC	C2DP	VERIFY SHORTING PLUGS INSTALLED ON PD DETONATORS AND CDF NOT CONNECTED TO S&A	
	121	3	CLTC	C1TC C2TC C4TC	VERIFY SHORTING PLUGS INSTALLED ON PD DETONATORS AND CDF NOT CONNECTED TO S&A'S	
-15 HRS 20' 0"	121	1	C1TC	CLTC	READY FOR CONNECTION OF Q-BALL COVER RETRACT CABLE. GROUNDING STRAPS REMOVED.	XB-420-54
	111	2	CLTC	CVTS	MSS PLATFORM 5 IS AVAILABLE FOR OPENING IN CONJUNCTION WITH Q-BALL CABLE CONNECTION.	TCPI
	181	3	C1TC	CSAC	CONNECT Q-BALL COVER RETRACT CABLE IN CONJUNCTION WITH PLATFORM 5 MOVEMENT.	
	121	4	CLTC	C1DP C2DP C4DP	SAFE & ARM TO ARM FOR 2 SECONDS THEN AUTO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 20' 0"	121	4-1	CLTC	C1FR	*** NOTE ORDNANCE PREPS COMPLETE ON	
		4-2		CRSS	*** NOTE ALL S&A'S ARMED	
		5		C1DP C2DP C4DP	SAFE S&A DEVICE AND REPORT SAFED. LEAVE SWITCH IN SAFE POSITION.	
		5-1		CRSS	*** NOTE ALL S&A'S SAFE	
		5-2		C1FR	*** NOTE ORDNANCE PREPS COMPLETE OFF	
		6		C1DP C2DP C4DP	PD RSCR ENABLE - ON	
		6-1		C1DP C2DP C4DP CRSS	*** NOTE PD BLOCKED INDICATIONS OFF	
		7		C2AE	ALL ENGINE EMERGENCY CUTOFF TO CUTOFF.	
		8		C2AE	VERIFY ENGINE CUTOFF SAFE ON.	
		9		RRSC	RECORDERS - FAST SPEED.	
		10		SRO	ON YOUR MARK SIMULTANEOUSLY SEND CUTOFF AND PD ON CLOSED LOOP LINKS FOR 7 SECONDS.	
		11		ALL	3-2-1-MARK	
		12		RRSC	RECORDERS - SLOW SPEED.	
		13		CUEF	VERIFY ABORT REQUEST A & B ON.	
		14		C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 CUTOFF RECEIVED IMMEDIATELY AND PD RECEIVED AFTER 4 SECONDS	
	223	15	CLTC	SCDR	VERIFY ABORT LIGHT ON.	TCP!

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-15 HRS 20' 0"		15-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED IMMEDIATELY AND PD RECEIVED AFTER 4 SECONDS	
	121	16	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 ON INTERNAL AND CHARGED.	
		16-1		CRSS	*** NOTE ALL EBW'S CHARGED.	
	121	17	CLTC	C4ET	VERIFY ENGINE CONTROL POWER INDICATION OFF	
		17-1		C4ET	*** NOTE NON PROGRAM CUTOFF ON.	
		17-2		C4ET	*** NOTE ENGINE CUTOFF ON.	
	121	18	CLTC	C2AE	VERIFY ENGINE CUTOFF SAFE OFF	
	121	19	CLTC	C1CS	VERIFY ENGINE CUTOFF.	
	121	20	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 FIRED AFTER 4 SECONDS	
		20-1		CRSS	*** NOTE ALL EBW'S FIRED AFTER 4 SECONDS	
	121	21	CLTC	RRSC	VERIFY 4 SECOND DELAY BETWEEN INITIATION OF CUTOFF & PD COMMANDS.	
	121	22	CLTC	C1DP C2DP C4DP	PULSE SENSORS - RESET THEN AUTO.	
	121	23	CLTC	C1DP C2DP C4DP	VERIFY EBW'S FIRED - OFF	
		23-1		CRSS	*** NOTE EBW'S FIRED - OFF	
	121	24	CLTC	C1DP C2DP C4DP	EBW'S #2 THEN #1 TRANSFER - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED.	

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-15 HRS 20' 0"		24-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	25	CLTC	C2AE	ENGINE SWITCH SELECTOR CUTOFF 1 AND 2 OFF THEN AUTO.	
	121	26	CLTC	C4ET	VERIFY ENGINE CONTROL POWER ON.	
	121	27	CLTC	CUEF	VERIFY ABORT REQUEST A & B OFF	
	223	28	CLTC	SCDR	VERIFY ABORT LIGHT OFF.	TCPI
	121	29	CLTC	C2AE	VERIFY ENGINE CUTOFF SAFE ON.	
	121	30	CLTC	C1CS C4ET	VERIFY ENGINE CUTOFF INDICATIONS OFF.	
	121	31	CLTC	C2AE	ALL ENGINE EMERGENCY CUTOFF TO AUTO AND VERIFY ENGINE CUTOFF SAFE OFF.	
	121	32	CLTC	C4ET	ENGINE CONTROL POWER - OFF.	
	121	1	CLTC	C1DP C2DP C4DP	PD RSCR ENABLE - OFF	
-15 HRS 15' 0"		1-1		C1DP C2DP C4DP CRSS	*** NOTE PD BLOCKED INDICATIONS ON	
	111	2	CLTC	CVTS	ABORT LIGHT CHECK COMPLETE. LV NO LONGER REQUIRES EDS POWER.	TCPI
	121	3	CLTC	BRFS	SIGNAL GENERATOR SELECT SWITCH - POSITION 2.	
	121	4	CLTC	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	
		4-1		CRSS	*** NOTE LIMITER VOLTAGE INDICATIONS	

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-15 HRS 15' 0"						
	121	5	CLTC	RRSC	RECORDERS - FAST SPEED.	
	121	6	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS.	
	121	7	SRO	ALL	3-2-1-MARK	
	121	8	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	9	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 CUTOFF RECEIVED.	
		9-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED.	
	121	10	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 CHARGED AND ON INTERNAL POWER.	
		10-1		CRSS	*** NOTE ALL EBW'S CHARGED.	
	121	11	CLTC	RRSC	RECORDERS - FAST SPEED.	
	121	12	CLTC	SRO	ON YOUR MARK SEND PD ON CLOSED LOOP LINKS FOR 3 SECONDS.	
	121	13	SRO	ALL	3-2-1-MARK	
	121	14	CLTC	RRSC	RECORDER - SLOW SPEED.	
	121	15	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED.	
		15-1		CRSS BRFS	*** NOTE PD INDICATIONS.	
	121	16	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 REMAIN CHARGED.	
		16-1		CRSS	*** NOTE ALL EBW'S REMAIN CHARGED.	

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-15 HRS 15' 0"	121	17	CLTC	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 FIRED INDICATORS REMAIN OFF.	
		17-1		CRSS	*** NOTE ALL EBW'S FIRED INDICATORS REMAIN OFF.	
	121	18	CLTC	RRSC	RECORDERS - FAST SPEED.	
	121	19	CLTC	SRO	ON YOUR MARK SEND SAFE COMMAND ON CLOSED LOOP LINKS FOR 3 SEC.	
	121	20	SRO	ALL	3-2-1-MARK	
	121	21	CLTC	RRSC	RECORDERS - SLOW SPEED.	
	121	22	CLTC	C2DP C4DP	VERIFY RSCR'S 1 & 2 POWER OFF & EBW'S 1 & 2 DISCHARGED.	
		22-1		CRSS	*** NOTE S-II AND S-IVB RSCR'S OFF & EBW'S DISCHARGED.	
		22-2		B2RF CRSS B4RF	*** NOTE S-II & S-IVB LIMITER VOLTAGES ZERO.	
	121	23	CLTC	C1DP	VERIFY RSCR'S 1 & 2 REMAIN ON INTERNAL & S-IC EBW'S 1 & 2 REMAIN CHARGED	
		23-1		CRSS	*** NOTE S-IC RSCR'S REMAIN ON INTERNAL AND S-IC EBW'S REMAIN CHARGED	
	121	24	CLTC	C1DP C2DP C4DP	EBW'S 1 & 2 TRANSFER - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED	
		24-1		CRSS	*** NOTE S-IC EBW'S NOT CHARGED	
	121	25	CLTC	BRFS	SIG GEN-SELECT #1.	
		25-1		CRSS BRFS	*** NOTE S-IC LIMITER VOLTAGES RECEIVED.	

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-15 HRS 15' 0"	121	26	CLTC	C2DP C4DP	RSCR'S 1 & 2 TRANSFER - EXTERNAL THEN INTERNAL	
	121	27	CLTC	B2RF B4RF	VERIFY S-II AND S-IVB LIMITER VOLTAGES OK	
		27-1		CRSS	*** NOTE S-II & S-IVB LIMITER VOLTAGES RECEIVED.	
	121	28	CLTC	BTMC	TM TAPE RECORDING - OFF AND RELOAD.	
		28-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (COUNTDOWN ONLY)	
	181	29	C1TC	C1NE C1PE	VERIFY ACCESS TO 118 SECTION NO LONGER REQUIRED.	
	171	29-1	C1TC	C2TC	NOTE ----- VERIFY ALL S-II WORK IN THE S/A 4 UMBILICAL AREAS IS COMPLETE EXCEPT SAFING PIN REMOVAL & A7-64 PURGE - BAG CLOSEOUT.	N-284-56
	181	30	C2TC	C1TC	YOU ARE CLEAR TO ATTACH S/A 4 UMBILICAL WITHDRAWAL LANYARDS.	
	181	31	C1TC	CSAC	VERIFY PRECLOSEOUT CHECKLIST COMPLETED AND RETRACT S/A 1 EXTENSION PLATFORM AND CLOSE SAFETY GATE. REPORT WHEN COMPLETE.	
	118	32	CSAC	CSA1	START FINAL TOWER PREPS PER V-36077 (NON-HAZARDOUS).	
	181	33	C1TC	CSAC	YOU ARE CLEARED TO COMPLETE S/A 4 FINAL UMBILICAL PREPS PER V-36080 (NON-HAZARDOUS).	

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-15 HRS 15' 0"						
	118	34	CSAC	CSA4	COMPLETE S/A 4 FINAL UMBILICAL PREPS.	
	161	35	C4TC	S4MA	VERIFY AFT CARRIER PREPS COMPLETE AND READY TO RETRACT S/A 6 TIP.	
	181	36	C4TC	C1TC	READY FOR S/A 6 TIP RETRACTION.	
	181	37	C1TC	CSAC	VERIFY PRECLOSE OUT CHECK LIST COMPLETE. RETRACT SERVICE ARM EXTENSION PLATFORM AND CLOSE SAFETY GATE FOR S/A 6. REPORT WHEN COMPLETE.	
	118	38	CSAC	CSA6	START FINAL TOWER PREPS PER V-36082 (NON-HAZARDOUS).	
	181	39	C1TC	CECS	VERIFY ECS CONFIGURED TO SUPPORT GN2 STANDBY (HAND VALVES CLOSED)	
	121	40	C1TC	CLTC	ECS IS CONFIGURED FOR GN2 STANDBY (HAND VALVES CLOSED)	
	111	41	CLTC	CVTS	ECS IS CONFIGURED FOR GN2 STANDBY (HAND VALVES CLOSED)	TCPI
		41-1			*****WARNING***** * * ECS IS TO BE CONFIGURED * * FOR GN2 STANDBY WITH * * HANDVALVES CLOSED WHILE * * THE ALSEP FUEL CAPSULE * * IS INSTALLED IN THE * * VEHICLE, FOR AN * * EMERGENCY INVOLVING THE * * FUEL CAPSULE, THE * * HANDVALVES WILL NOT BE * * OPENED UNTIL DIRECTED * * BY CVTS, * * *****	TCPI

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-15 HRS 7' 0"	121	1	CLTC	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO AND VERIFY RSCR'S OFF.	
		1-1		B1RF B2RF CRSS B4RF	*** NOTE RSCR LIMITER VOLTAGE INDICATIONS OFF.	
	121	2	CLTC	CLVN	DESTRUCT SYSTEM - OFF & RETURN DESTRUCT SYSTEM KEY TO CPSS. REPORT WHEN COMPLETE.	
	121	3	CLTC	C1DP C2DP C4DP	VERIFY SAFETY BUS OFF.	
	121	4	CLTC	BRFS	SIGNAL GENERATOR SELECTOR - STANDBY.	
	111	5	CLTC	CVTS	RANGE SAFETY COMMAND CHECKS COMPLETE.	TCPI
	111	6	CLTC	CVTS	LOCAL COMMAND CARRIER IS OFF & DESTRUCT SYSTEMS KEY RETURNED TO CPSS.	TCPI
	121	7	CLTC	C1DP C2DP C4DP	STATUS SYSTEMS - SAFE.	
	171	8	C2TC	V2MS	DRSCR TESTS ARE COMPLETE. PREP FOR QAES. REPORT WHEN READY.	
-15 HRS 0' 0"	121	1	CLTC	C1TC C2TC C4TC	REMOVE PD ENABLE JUMPERS. REPORT WHEN COMPLETE.	
	181	2	C1TC	L1RS	REMOVE PD ENABLE JUMPER J5 ON PANEL X02-121A2	
		2-1			VERIFICATION BY LV-QAL	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 0' 0"						
	171	3	C2TC	L2RR	REMOVE PD ENABLE JUMPER J2 ON PANEL X02-220A2.	
		3-1			VERIFICATION BY LV-QAL	
	161	4	C4TC	L4JR	REMOVE PD ENABLE JUMPER E2 ON PANEL X02-423A2	
		4-1			VERIFICATION BY LV-QAL	
	121	5	CLTC	C4DP	PULSE SENSOR POWER OFF.	
	111	6	CLTC	CVTS	ADVISE CPSS THAT PD ENABLE JUMPERS HAVE BEEN REMOVED.	TCPI
	121	7	CLTC	CRSS	VERIFY RF OPEN-LOOP AND CLOSED-LOOP DRSCS CHECKS COMPLETED.	
	188	8	CLTC	ALL	ALL PERSONNEL WHO SUPPORTED LV RANGE SAFETY COMMAND CHECKS RETURN TO ASSIGNED CHANNELS	
	121	9	C2TC	CLTC	S-II READY TO EXECUTE QAES (ENGINE SEQUENCE TEST).	
	171	10	C2TC	C2AE	START ENGINE SEQUENCE TEST (QAES) PER V-34014 (E023) (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	11	C1TC	CPDC	START PNEUMATIC DISTRIBUTION PREPS FOR LAUNCH PER V-36064 (NON-HAZARDOUS).	
	171	12	C2TC	U2E0	REMOVE S-II PD EBW PULSE SENSORS PER V-30029 (M020) TASK 23 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	188	13	CVTS	PA	ALSEP FCA INSTALLATION COMPLETE. THE CONTROL AREA IS OPEN FOR NORMAL WORK. RADIATION AREA CONTROL IS STILL IN EFFECT.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14 HRS 45' 0"	151	1	CUTC	SUVM SUVE	START REMOVAL OF IU LIGHTS & OIS AND SECURE LIGHT SYSTEM GN2 PURGE PER V-26549. REPORT WHEN COMPLETE. (HAZARDOUS)	
	121	2	CVTS	CLTC	INCREASE IU ECS FLOW TO MAXIMUM	TCPI
	121	3	CLTC	C4TC CUTC	IU ECS AIR FLOW WILL BE INCREASED TO 200 LB/MIN AT THIS TIME.	
	121	4	CLTC	C1TC	PROCEED WITH IU AIR FLOW INCREASE.	
	181	5	C1TC	CECS	INCREASE IU AIR FLOW TO 200 LB/MIN. REPORT WHEN COMPLETE.	
-14 HRS 43' 0"	121	1	C1TC	CLTC	REQUEST POWER COORDINATOR HAVE 4160 VOLT BREAKERS TURNED ON AT LOX STORAGE AREA SUBSTATION. (924-1 AND 924-2)	
	262	2	CLTC	BTIS	HAVE 4160 V BREAKERS TURNED ON AT LOX STORAGE AREA SUBSTATION (924-1 & 924-2).	TCPI
-14 HRS 35' 0"	181	1	C1TC	C1MS	VERIFY LOX/FUEL DAC POWER ON	
-14 HRS 30' 0"	111	1	CLTC	CVTS	VERIFY READY FOR S/A 8 EXTENSION PLATFORM RETRACTION.	TCPI
	121	2	CLTC	C1TC	READY FOR S/A 8 EXTENSION PLATFORM RETRACTION.	
	181	3	C1TC	CSAC	VERIFY PRECLOSEOUT CHECKLIST COMPLETE, RETRACT S/A 8 EXTENSION PLATFORM AND CLOSE SAFETY GATE. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-14 HRS 30' 0"						
	118	4	CSAC	CSAB	START FINAL TOWER PREPS PER V-36084 (NON-HAZARDOUS).	
	181	5	C1TC	CCLO	VERIFY LOX SYSTEM CHECKS COMPLETE AND START PROPELLANT COMPONENT TEST PER V-25340 (HAZARDOUS).	
	171	6	U2SI	C2TC	REMOVAL OF THE FORWARD ACCESS KIT COMPLETE, EXCEPT AT ACCESS DOOR OF CONTAINER 223.	
	171	7	C2SP	C2TC	GDDT ONLY	*
	181	8	C1TC	CSAC	VERIFY Q-BALL COVER RETRACT CABLE CONNECTED.	
-14 HRS 15' 0"						
	181	1	CSAC	C1TC	S/A 1 & 6 CLOSEOUT COMPLETE.	
	161	2	C4TC	S4MF	REMOVE FDS PLATFORM PER V-30539, SECT P (HAZARDOUS). (COORDINATE DIRECTLY WITH LM PAD LEADER.) REPORT WHEN COMPLETE.	
	161	3	C4TC	S4MF	START WALKAROUND OF FORWARD SKIRT AREA.	
-14 HRS 0' 0"						
	171	1	U2MU U2PF	C2TC	S/A 4 FINAL UMBILICAL PREPS ARE COMPLETE.	
	171	2	C2TC	U2SE	VERIFY READY FOR S/A 3 RETRACTION & S/A 4 TIP RETRACTION.	
	181	3	C2TC	C1TC	READY FOR S/A 3 RETRACTION & S/A 4 TIP RETRACTION.	
	181	4	C1TC	CSAC	YOU ARE CLEARED TO COMPLETE S/A 4 FINAL TOWER PREPS AND PREP AND RETRACT S/A 3 PER V-36032 (NON-HAZARDOUS).	

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-14 HRS 0' 0"						
	121	18	C2TC	C1TC	JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS) IS NO LONGER REQUIRED.	
	171	19	C2TC	L2RR	REMOVE JUMPER J4 IN X02-220A2 (ENG COMP TEST POWER).	
		19-1			VERIFICATION BY LV-QAL	
	181	20	C1TC	C1NE	REMOVE JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS).	
		20-1			VERIFICATION BY LV-QAL	
	171	21	U2EO	C2TC	PD ERW PULSE SENSOR REMOVAL COMPLETE.	
	171	22	C2TC	C2AE C2EC C2RP	START ENGINE/RECIRC PANEL STATUS CHECKS PER V-30029 (M020) TASK 19 (NON-HAZARDOUS), REPORT WHEN COMPLETE.	
	161	23	C4TC	S4MF	REMOVE SECOND LM ACCESS STEP PER V-30539, APPENDIX D, PART 1 (NON-HAZARDOUS) (COORDINATE DIRECTLY WITH LM PAD LEADER). REPORT WHEN COMPLETE.	
	121	24	CVTS	CLTC	LM 525 PLATFORM REMOVAL IS COMPLETE. CLEAR TO START S-IVB FWD KIT REMOVAL.	TCPI
-13 HRS 55' 0"						
	171	1	C2AE	C2TC	ENGINE/RECIRC PANEL STATUS CHECKS COMPLETED.	
	151	2	CUTC	SUVM	REMOVE ACCESS HUMIDITY DOOR AND STORE, REPORT WHEN COMPLETE.	

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-13 HRS 45' 0"	161	1	C4TC	S4MF	VERIFY WITH LM PAD LEADER THAT 525 PLATFORM REMOVAL IS COMPLETE.	
	151	2	CUTC	SUVE	VERIFY IU LIGHTS AND OIS REMOVAL COMPLETE.	
	161	3	C4TC	S4MF	VERIFY FINAL WALKAROUND OF FWD SKIRT AREA IS COMPLETE	
	151	4	CUTC	UUVM SUVE	VERIFY IU READY FOR ACCESS KIT REMOVAL	
	121	5	C4TC	CLTC	VERIFY IU AND S/C CLEAR FOR PARTIAL REMOVAL OF S-IVB FWD ACCESS KIT.	
	161	6	C4TC	S4MF	START FORWARD ACCESS KIT REMOVAL PER V-30539, SECT P (HAZARDOUS).	
	121	7	CVTS	CLTC	CLEAR TO CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7. (COMPLETION REQUIRED FOR MSS PLAT 3 OPENING)	TCPI
	121	8	CLTC	C1TC	CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7. REPORT WHEN COMPLETE.	
	181	9	C1TC	CSAC	CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7. REPORT WHEN COMPLETE.	
	118	10	CSAC	CSA7	REMOVE PENETRABLE BARRIER AND CLOSE AND LOCK EMERGENCY EGRESS GATES. REPORT WHEN COMPLETE.	
-13 HRS 30' 0"	121	1	BOSC	CLTC	6000 PSI GH2 SUPPLY ACTIVATED. (CROSS COUNTRY LINE LEAK CHECKED AND PRESSURIZED).	TCPI
	121	2	CLTC	C2TC C4TC	6000 PSI GH2 SUPPLY ACTIVATED.	
	171	3	C2TC	C2GP	START GH2 PREPS PER V-30029 (M020) TASK 27 (HAZARDOUS). REPORT WHEN COMPLETE.	

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-13 HRS 30' 0"						
	161	4	C4TC	C4PS	START GH2 PREPS PER V-30539, SECT K, PART 7 (HAZARDOUS).	
	161	5	C4TC	S4SY	STANDBY ON LUT 240 FT LEVEL TO PERFORM GH2 SNIFFER CHECKS	
	121	6	C1TC	CLTC	RP-1 REPLENISH WILL START IN 30 MINUTES. REQUEST PERMISSION TO PROCEED AT THAT TIME.	
	181	7	C1TC	CCRP	START FINAL PREPS FOR RP-1 REPLENISH INCLUDING TSM FILL PER V-25389 (HAZARDOUS).	
	111	8	CLTC	CVTS	RP-1 REPLENISH WILL START IN 30 MINUTES	TCPI
	121	9	CLTC	C1TC C2TC C4TC CUTC	IN 15 MINUTES, LUT ZERO LEVEL WILL BE CLEARED FOR 40 MINUTES FOR RP-1 REPLENISH, A PATHWAY TO THE ELEVATORS WILL BE PROVIDED FOR ACCESS.	
	181	10	CSAC	C1TC	S/A 8 CLOSEOUT COMPLETE.	
-13 HRS 15' 0"						
	188	1	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LV RP-1 REPLENISH OPERATIONS	TCPI
		1-1			*****WARNING***** * * THE CONTROL AREA FOR LV * * RP-1 REPLENISH * * OPERATIONS CONSISTS OF * * THE ML ZERO LEVEL. A * * CONTROLLED WALKWAY WILL * * BE OPEN TO THE * * ELEVATORS. * * *****	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-13 HRS 0' 0"	181	1	CSAC	C1TC	S/A 4 CLOSEOUT COMPLETE	
	121	2	CVTS	CLTC	CLEAR TO START RP-1 REPLENISH	TCPI
	121	3	CLTC	C1TC	CLEAR TO START RP-1 REPLENISH.	
	181	4	C1TC	CCRP	START RP-1 REPLENISH PER V-25389 (HAZARDOUS).	
	181	5	C1TC	V1ME	MONITOR CH 143 TO SUPPORT RP-1 REPLENISH	
-12 HRS 20' 0"	121	1	C1TC	CLTC	VERIFY READY FOR WHITE ROOM MSS DOOR LOCK INSTALLATION.	
	111	2	CLTC	CVTS	VERIFY READY FOR WHITE ROOM MSS DOOR LOCK INSTALLATION AND S/A 9 HANGER REMOVAL (S/A 9 LOAD LIMITED TO 5 PEOPLE WITH HANGERS REMOVED)	TCPI
	181	3	C1TC	CSAC	INSTALL WHITE ROOM MSS DOOR POSITIVE LOCK AND REMOVE S/A 9 HANGERS.	
	118	4	CSAC	CSA9	INSTALL WHITE ROOM MSS DOOR POSITIVE LOCK, POST LOAD LIMIT WARNING SIGN AND REMOVE S/A 9 HANGERS PER V-36085 SECT J (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	5	C1TC	CCRP	VERIFY RP-1 REPLENISH COMPLETE AND LINE DRAIN IN PROGRESS.	
	121	6	C1TC	CLTC	RP-1 REPLENISH IS COMPLETE	
	111	7	CLTC	CVTS	RP-1 REPLENISH IS COMPLETE	TCPI
	188	8	CVTS	PA	LV RP-1 REPLENISHING OPERATIONS ARE COMPLETE. THE CONTROL AREA IS OPEN FOR NORMAL WORK.	TCPI
	121	9	C1TC	CLTC	S/A 7 EMERGENCY ACCESS GATE IS CLOSED AND LOCKED. GROUNDING STRAPS REMOVED. READY FOR MSS PLAT 3 OPENING.	XB-420-54

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12 HRS 20' 0"	111	10	CLTC	CVTS	MSS PLAT 3 IS AVAILABLE FOR OPENING.	TCP1 KB-420-54
	181	11	C1TC	V1MS	SECURE VEHICLE MEASURING GSE PER V-27098 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	12	C1TC	U1FN	DISCONNECT PD PULSE SENSORS AND REMOVE PER V-21008 (HAZARDOUS).	
	181	13	C1TC	CECS	REDUCE THE ECS FLOWRATE TO MINIMUM FOR THE S-IC FORWARD UPPER DUCT AND TO ZERO FOR THE FORWARD LOWER DUCT, REPORT WHEN COMPLETE.	
-12 HRS 15' 0"	121	1	MSTC	CLTC	VERIFY READY FOR FPI CALS. SEND V4MS TO CH 212.	TCP1
	121	2	CLTC	V4MS	REPORT S-IVB FUEL & LOX TANK PRESSURE READINGS TO MSTC ON CHANNEL 212. S-IVB D177-408, D178-408, D179-406 & D180-406.	TCP1
	121	3	C1TC	CLTC	REQUEST SUPPORT TO REMOVE STAGE MONITOR SHACK AND S-IC STAGE SECURITY BARRIER.	
	121	4	CLTC	CGIC	DISCONNECT OIS & PHONE FROM S-IC STAGE MONITOR SHACK.	TCP1
	262	5	CLTC	BTIS	REMOVE THE S-IC STAGE MONITOR SHACK, AND THE S-IC STAGE SECURITY BARRIER.	TCP1
	121	6	CVTS	CLTC	MSS PLATFORM OBSERVERS ARE TO REPORT TO PVTs AT THE BASE OF THE MSS LOW RISE ELEVATOR FOR BRIEFING IN 45 MINUTES.	TCP1
		6-1	CLTC		*** NOTE THE POSITION OF PLATFORM 1 WILL DETERMINE WHICH STAGE (S-IC OR S-II) PROVIDES OBSERVERS.	

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-12 HRS 15' 0"	121	7	CLTC	C1TC C2TC C4TC CUTC	MSS PLATFORM OBSERVERS ARE TO REPORT TO PVTS AT THE BASE OF THE MSS LOW RISE ELEVATOR FOR BRIEFING IN 45 MINUTES.	
-12 HRS 5' 0"	261	1	C2TC	BOSC	VERIFY MSS PLAT 1 IS LOCATED AT AND WILL REMAIN AT STA 1848.	TCPI
-12 HRS 0' 0"	171	1	U2FM	C2TC	FWD AND AFT MONITOR HUTS ARE REMOVED	
	171	2	C2TC	C2DP	CONFIGURE ORDNANCE & PD PANEL FOR S&A CONNECTION PER V-30029 (M020) TASK 28 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	3	C2DP	C2TC	ORDNANCE & PD PANELS ARE CONFIGURED FOR S&A CONNECTION.	
	171	4	C2TC	U2EO	PREP FOR PD EBW FIRING UNIT STRAY VOLTAGE CHECKS PER V-29050 (K010) (HAZARDOUS) (CDDT) V-29024 (K008) (HAZARDOUS) (CD). REPORT WHEN COMPLETE.	
	161	5	C4TC	C4SM	START CONTROL PANEL SETUPS AND INERT S&A REMOVAL PER V-30539, SECT Q, PART 1 (NON-HAZARDOUS).	
	181	6	C1TC	CCLO	VERIFY COMPONENT TEST IS COMPLETE AND START LOX SYSTEM FINAL PREPS FOR LOADING PER V-25340 (HAZARDOUS).	
	181	7	C1TC	CCLH	VERIFY PROPELLANT COMPONENT TESTS COMPLETED PER V-35004 (NON-HAZARDOUS).	
	181	8	C1TC	CCLH	START LH2 FINAL SYSTEMS PREPS FOR LOADING PER V-35004 (NON-HAZARDOUS).	
	121	9	C1TC	CLTC	REQUEST CPSS RELEASE TCS KEY TO C1SP	
	111	10	CLTC	CVTS	REQUEST CPSS RELEASE TCS KEY TO C1SP FOR IGNITION SOURCE VOLTAGE CHECKS.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12 HRS 0' 0"	181	11	C1TC	C1EN	IGNITORS INSTALLED SWITCH TO ARM MOMENTARILY AND VERIFY ALL IGNITORS AND HYPERGOLS INSTALLED	
	181	12	C1TC	C1SP	VERIFY TCS POWER SUPPLY OFF	
	181	13	C1TC	C1NP	1D152 BUS ON	
	181	14	C1TC	C1SP	ARM TCS	
	181	15	C1TC	C1FR	VERIFY IGNITION SOURCE VOLTAGE OK	
	181	16	C1TC	C1SP	SAFE TCS AND RETURN TCS KEY TO CPSS	
	181	17	C1TC	C1NP	1D152 BUS OFF	
	121	18	C1TC	CLTC	TCS SAFE AND TCS KEY RETURNED TO CPSS	
	111	19	CLTC	CVTS	IGNITION SOURCE VOLTAGE CHECKS COMPLETE. TCS HAS BEEN SAFED AND TCS KEY HAS BEEN RETURNED TO CPSS.	TCPI
	121	20	CLTC	C1TC	REMOVE ACCESS DOOR RAIN CANOPIES AND STORE.	
	181	21	C1TC	C1PE	REMOVE ACCESS DOOR RAIN CANOPIES AND STORE.	
	181	22	CCRP	C1TC	RP-1 LINE DRAIN COMPLETED.	
-11 HRS 45' 0"	161	1	C4TC	S4MF	VERIFY FWD ACCESS KIT REMOVAL COMPLETE EXCEPT FOR PLATFORMS REQUIRED FOR S&A CONNECTION	
	188	2	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL, EXCEPT PERSONNEL WORKING IN THE CSM, CLEAR THE CONTROL AREA FOR LV S&A ORDNANCE OPERATIONS.	TCPI
		2-1			*****WARNING***** * * THE CONTROL AREA FOR * S&A CONNECTION IS THE (CONTINUED)	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 45' 0"					* SPACE VEHICLE INTERIOR * * EXCEPT FOR THE CSM AND * * S-IC BOATTAIL. * * * *****	
	181	3	C1TC	CPDC	VERIFY LUT WINCHES SECURED	
	121	4	CVTS	CLTC	STARTING MSS OIS TRANSFER FROM PAD HARDLINE TO UHF. CRAWLER TRANSPORTER OIS CHANNEL ASSIGNMENTS ARE IN EFFECT.	TCPI
-11 HRS 30' 0"					S&A DEVICE CONNECTIONS -----	
	121	1	CLTC	C1DP C2DP C4DP	VERIFY STATUS SYSTEMS SWITCH SAFE AND S&A SWITCH SAFE.	
	121	2	CLTC	C1DP C2DP C4DP	VERIFY S&A SAFE INDICATION	
	181	3	C1TC	C1NP	VERIFY/POSITION SWITCH SELECTOR INHIBIT TO ON.	
	181	4	C1TC	C1NP	RESET STAGE LOGIC AND VERIFY STAGE LOGIC ZERO ON.	
	181	5	C1TC	C1NE	VERIFY S-IC ORDNANCE AND PD PANELS CONFIGURED FOR CONTROLLED SWITCHING AND PD EBW CONNECTION PER V-21008 (HAZARDOUS).	
	121	6	CLTC	CUTC	PREPARE IU STAGE FOR RF SILENCE AND CONTROLLED SWITCHING PER V-31062, APPENDIX C.	
	121	7	CLTC	C1TC C2TC C4TC CUTC	VERIFY ORDNANCE AND PD PANELS IN CORRECT CONFIGURATION FOR S&A CONNECTION AND (CONTINUED)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 30' 0"					LV READY FOR RF SILENCE & CONTROLLED SWITCHING PER TI 2-13	
	111	8	CLTC	CVTS	REQUEST RF SILENCE ON. LV CONTROLLED SWITCHING AND CONTROLLED SWITCHING ACROSS LV/SC INTERFACE IS IN EFFECT.	TCPI
	188	9	CVTS	PA	RF SILENCE IS NOW IN EFFECT ON THE SPACE VEHICLE. CONTROLLED SWITCHING IS NOW IN EFFECT ON THE LV AND ACROSS THE LV/SC INTERFACE.	TCPI
	121	10	CLTC	CUDE	VERIFY DEE 755 (RF SILENCE) ON	
	121	11	CVTS	CLTC	CPSS READY FOR PD DETONATOR & CDF CONNECTION	TCPI
	121	12	CLTC	C1TC C2TC C4TC	CONNECT PD DETONATORS AND CDF	
	161	13	C4TC	C4SM	START S&A CONNECTIONS PER V-30539. SECT Q, PART 2 (HAZARDOUS).	
	181	14	C1TC	C1NE	CONNECT S-1C PD DETONATORS PER V-21008 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	15	C1TC	C1PE	CONNECT PDS CDF ASSEMBLIES PER V-29003 (HAZARDOUS).	
	171	16	C2TC	U2E0	CONDUCT PD STRAY VOLTAGE CHECKS PER V-29050 (K010) (CDDT) (HAZARDOUS) V-29024 (K008) (CD) (HAZARDOUS) REPORT WHEN COMPLETE.	
	171	17	C2TC	U2H0	CONNECT PD DETONATORS AND CDF PER V-29050 (K010) (CDDT) (HAZARDOUS) V-29024 (K008) (CD) (HAZARDOUS)	
	171	18	C2GP	C2TC	GH2 PREPS ARE COMPLETE.	
	121	19	CGIC	CLTC	OIS UNITS WILL BE REMOVED FROM THE PAD APRON AT THIS TIME (COUNTDOWN ONLY).	TCPI
	118	20	CSAC	CSA2 CSA5 CSA7	START PRECLOSEOUT CHECKLIST	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-11 HRS 30' 0"	121	21	CVTS	CLTC	MSS OIS TRANSFER FROM PAD TO CRAWLER TRANSPORTER IS COMPLETE.	TCPI
-11 HRS 25' 0"	261	1	C2TC	BOSC	DDT ONLY	* TCP
-11 HRS 15' 0"	121	1	CVTS	CLTC	VERIFY READY FOR MSS POWER TRANSFER FROM PAD TO CRAWLER TRANSPORTER	TCPI
-11 HRS 0' 0"	121	1	CVTS	CLTC	A HOLD OF - HOURS -- MINUTES WILL START AT T-9 HRS,	TCPI
		1-1		CLTC	*** NOTE CVTS WILL NOTIFY CLTC OF CHANGES IN HOLD TIME IN EXCESS OF 15 MINUTES DURATION.	TCPI
	121	2	CLTC	C1TC C2TC C4TC CUTC	A HOLD OF - HRS -- MINUTES WILL START AT T-9 HRS,	
	121	3	CLTC	C1TC C2TC CUTC C4TC	VERIFY PURGE BOX VALIDATION.	
	121	4	CVTS	CLTC	REQUEST PURGE BOX VALIDATION STATUS	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 0' 0"		5			NOTE ----- FOR THE NEXT 15 MINUTES CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERA 27 & AA3 OR AA4.	
	111	6	CLTC	CVTS	VERIFY PREVAILING WINDS DO NOT EXCEED REDLINE VALUES FOR FREE STANDING S/V.	TCPI
		7			NOTE ----- REDLINE WINDSPEED IS 39 KNOTS PEAK WINDS AT 530 FT ABOVE GROUND LEVEL. IF HIGHER WINDS ARE PREDICTED, DAMPER SWITCHOVER MAY PROCEED ONLY IF BENDING MOMENT ASSESSMENT INDICATES SATISFACTORY CONDITIONS. (LO DIRECTOR'S CONCURRENCE WITH ASSESSMENT IS REQUIRED)	TCPI
	121	8	CVTS	CLTC	CLEAR TO DISCONNECT AUX DAMPER	TCPI
	121	9	CLTC	C1TC	DISCONNECT AUX DAMPER	
	181	10	C1TC	CSAC	DISCONNECT AUX DAMPER. REPORT WHEN COMPLETE.	
	118	11	CSAC	CSAD	DISCONNECT AUX DAMPER PER V-36086 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	12	U2HO	C2TC	PD DETONATORS & CDF CONNECTED	
	171	13	C2TC	U2HO	START CLOSEOUT OF PD CONTAINER PER V-30029 (M020) TASK 29 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	121	14	C1TC	CLTC	TSM PERSONNEL ON STATION FOR MSS MOVE. REQUEST SUPPORT FOR ESP TRANSPORTER MOVE.	
	261	15	CLTC	BOSC	TSM PERSONNEL ARE ON STATION FOR MSS MOVE.	TCPI
	262	16	CLTC	BTIS	VERIFY READY TO SUPPORT ESP TRANSPORTER MOVE.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 50' 0"						
	121	1	C1TC	CLTC	AUX DAMPER DISCONNECT COMPLETE AND S/A 9 HANGERS HAVE BEEN REMOVED.	
	121	2	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY FOR MSS JACKING.	
	121	3	CLQS	CLTC	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL-QCP-11 IS COMPLETE.	
	111	4	CLTC	CVTS	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL-QCP-11 IS COMPLETE. AUX DAMPER DISCONNECTED & LV READY FOR MSS JACKING BUT NOT FOR MOVE.	TCPI
	181	5	C1TC	CTS1	START TSM 3-4 PROTECTIVE HOOD TOWER TILT-BACK PER V-36039 (HAZARDOUS) AFTER MSS JACKING HAS PROVIDED ADEQUATE CLEARANCE.	
-10 HRS 45' 0"						
	161	1	C4TC	C4SM	VERIFY COMPLETION OF S&A CONNECTIONS	
	171	2	U2HO	C2TC	PD CONTAINER CLOSEOUT COMPLETE.	
	171	3	C2TC	U2SI	START FINAL REMOVAL OF A7-38 PER V-26507 (G147) TASK 9 (NON-HAZARDOUS).	
	121	4	CLTC	C1TC C2TC C4TC	VERIFY PD DETONATOR AND CDF CONNECTIONS COMPLETED.	
	181	5	C1TC	C1PE C1NE	START FINAL REMOVAL OF S-IC FWD SKIRT PROTECTION, AUXILIARY LIGHTING AND INTERNAL WORK PLATFORM SEGMENTS PER V-29003 (HAZARDOUS) & V-21035 (NON-HAZARDOUS).	

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-10 HRS 45' 0"	121	6	CLTC	C1TC C2TC C4TC CUTC	VERIFY LV READY TO REMOVE RF SILENCE & CONTROLLED SWITCHING.	
	111	7	CLTC	CVTS	RF SILENCE AND CONTROLLED SWITCHING ARE NO LONGER REQUIRED. LV ORDNANCE CONNECTION IS COMPLETE.	TCPI
	188	8	CVTS	PA	LV PD DETONATOR CONNECTION IS COMPLETED. RF SILENCE AND CONTROLLED SWITCHING ARE NO LONGER IN EFFECT. THE CONTROL AREA IS OPEN FOR NORMAL WORK.	TCPI
	121	9	C1TC	CLTC	FACILITY AIR STANDBY PANEL WILL BE ACTIVATED & FACILITY AIR SYSTEM WILL BE CHARGED WITH GN2.	
		10			*****WARNING***** * * THE FACILITY AIR SYSTEM * * WILL BE CHARGED WITH * * GN2. PERSONNEL SHOULD * * AVOID USE OF AIR TOOLS * * INSIDE ENCLOSED AREAS. * * *****	
	181	11	C1TC	CPDC	ACTIVATE FACILITY AIR STANDBY PANEL PER V-26222 (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	12	CVTS	CLTC	PLATFORM 3 IS OPEN AND SECURE.	TCPI
	151	13	C4TC	CUTC	VERIFY IU CLEAR FOR FINAL REMOVAL OF S-IVB FORWARD ACCESS KIT.	
	161	14	C4TC	S4MF	START FINAL REMOVAL OF S-IVB FWD ACCESS KIT PER V-30539, SECT R (NON-HAZARDOUS).	
	181	15	C1TC	CECS	RETURN THE ECS FLOWRATE TO NORMAL FOR THE S-IC FORWARD UPPER AND LOWER DUCTS. REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 35' 0"	121	1	CVTS	CLTC	GMIL BRINGING UP CCS S-BAND & VHF CARRIERS FOR GMIL TESTING	TCPI
		1-1		CLTC	*** NOTE LV FREQUENCIES 2101.8 (CCS), 2282.5 (CCS), 245.3 (DP-1) & 258.5 (CP-1) MHZ WILL BE UTILIZED.	TCPI
-10 HRS 30' 0"	181	1	C1TC	C1PE	VERIFY FWD SKIRT BULKHEAD PROTECTION & INTERNAL ACCESS EQUIPMENT REMOVED.	
	181	2	C1TC	C1PE C1NE	VERIFY S-IC FWD SKIRT AREA WALK THROUGH COMPLETE AND AREA READY FOR FINAL CLOSURE.	
	181	3	C1TC	C1PE	START INSTALLING AND SECURING S-IC FWD ACCESS DOOR PER V-24010 (HAZARDOUS).	
	121	4	C1TC	CLTC	NOTIFY S-II, S-IVB, IU, EDS & SC THAT S-IC THRUST OK SIGNALS WILL BE CYCLED ON AND OFF. REQUEST CLEARANCE TO START THRUST OK PRESSURE SWITCH TEST (WAST).	
	121	5	CLTC	C2TC C4TC CUTC	S-IC THRUST OK SIGNALS WILL BE CYCLED ON AND OFF DURING THE NEXT 15 MINUTES.	
	111	6	CLTC	CVTS	ADVISE SCO PERSONNEL THAT S-IC THRUST OK SIGNALS WILL BE CYCLED ON AND OFF DURING THE NEXT 15 MINUTES.	TCPI
	181	7	C1TC	C1PE	PREPARE FOR THRUST OK PRESSURE SWITCH TEST (WAST) PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	8	C1TC	C1PK	CALL UP WAST PROGRAM UPON C1PE REQUEST AND NOTIFY C1TC PRIOR TO EXECUTION.	
	161	9	C4TC	S4MF	VERIFY FWD ACCESS KIT REMOVAL COMPLETED AND READY TO INSTALL IU DOOR.	

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-10 HRS 30' 0"	161	10	CUTC	C4TC	VERIFY S-IVB FWD AREA CLEAR FOR IU ACCESS DOOR INSTALLATION.	
	151	11	CUTC	SUVE	VERIFY READY TO INSTALL IU ACCESS DOOR.	
	151	12	CUTC	UUVN	INSTALL AND SECURE IU ACCESS DOOR PER V-34046. (NON-HAZARDOUS)	
	181	13	C1TC	CWCP	START INDUSTRIAL WATER SYSTEM FINAL PREPS PER V-36113 (HAZARDOUS).	
	171	14	U2SI	C2TC	FINAL REMOVAL OF A7-38 IS COMPLETE.	
	171	15	C2TC	U2SE	VERIFY S-II FORWARD COMPARTMENT READY FOR CLOSEOUT.	
	171	16	U2QC	C2TC	VERIFY REMOVAL OF ALL NON-FLIGHT HARDWARE PER V-30029 (M020) TASK 47 (NON-HAZARDOUS) AND THE INSPECTION PER V-24411 (Q003) (NON-HAZARDOUS) FOR THE FORWARD INTERSTAGE COMPARTMENT IS COMPLETE.	
	171	17	C2TC	U2SI	SECURE S-II FORWARD ACCESS DOOR. REPORT WHEN COMPLETE.	
	161	18	C4TC	S4ML	START FINAL LUT WALKAROUND.	
-10 HRS 20' 0"	181	1	CTS1	C1TC	TSM PROTECTIVE TOWER CLEAR FOR MSS MOVE.	
	121	2	C1TC	CLTC	TSM 3-4 TOWER CLEAR FOR MSS MOVE.	
	151	3	CUTC	LGCC	START LUT EVACUATION PROCEDURE PER V-22006. REPORT WHEN COMPLETE (VERIFY 28V #1 SWITCH ON 1504A1A6 DIST IS LEFT ON). (NON-HAZARDOUS)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 15' 0"						
	121	1	CVTS	CLTC	MSS JACKING IS COMPLETE	TCPI
	121	2	CLTC	C1TC C2TC C4TC CUTC	VERIFY YOU ARE READY FOR MSS MOVE.	
	111	3	CLTC	CVTS	LV CLEAR FOR MSS MOVE.	TCPI
	121	4	CVTS	CLTC	MSS IN MOTION.	TCPI
	181	5	C1PK	C1TC	WAST IS COMPLETE	
	121	6	C1TC	CLTC	WAST IS COMPLETE	
	181	7	C1TC	C1PE	VERIFY FWD SKIRT ACCESS DOOR SECURED	
	181	8	C1TC	C1PE	SECURE FROM TOK PRESSURE SWITCH TEST PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	9	U2SI	C2TC	FWD ACCESS DOOR IS SECURED.	
	171	10	C2TC	C2SP	START ULLAGE PRESSURE SWITCH (CALIPS) VERIFICATION PER V-30029 (M020) TASK 86 (NON-HAZARDOUS), AFTER FWD AND AFT ACCESS DOORS ARE SECURED. REPORT WHEN COMPLETE.	
	171	11	C2TC	U2MU	START ARM 5 FINAL UMBILICAL PREPS PER V-30029 (M020) TASK 33 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	12	C2TC	C1TC	YOU ARE CLEAR TO ATTACH S/A 5 UMBILICAL WITHDRAWAL LANYARDS	
		12-1		C2TC	*****WARNING***** * * VERIFY ALL S-II WORK IN * * THE S/A 5 UMBILICAL * * AREA IS COMPLETE EXCEPT * * SAFING PIN REMOVAL * * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 15' 0"	181	13	C1TC	CSAC	VERIFY S/A 5 PRE CLOSEOUT CHECKLIST COMPLETE AND START FINAL CLOSEOUT, COORDINATE WITH STAGE PERSONNEL TO RETRACT TIP AND CLOSE SAFETY GATE, REPORT WHEN COMPLETE.	
	118	14	CSAC	CSA5	COORDINATE WITH STAGE PERSONNEL ON ARM TO START FINAL CLOSEOUT PER V-36081 (NON-HAZARDOUS),	
	181	15	CPDC	C1TC	FACILITY AIR STANDBY PANEL ACTIVATION COMPLETE.	
-10 HRS 10' 0"		1			NOTE ---- FOR THE NEXT 15 MINUTES CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERAS 27 & AA3 OR AA4.	
	121	2	CVTS	CLTC	READY FOR PRIMARY DAMPER CONNECTION	TCPI
	121	3	CLTC	C1TC	CONNECT PRIMARY DAMPER	
	181	4	C1TC	CSAC	CONNECT PRIMARY DAMPER. REPORT WHEN COMPLETE	
	118	5	CSAC	CSAD	CONNECT PRIMARY DAMPER PER V-36086 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	188	6	CSAD	PA	PRIMARY DAMPER WILL BE CONNECTED AT THIS TIME, VEHICLE MOTION AND GAS VENTING WILL OCCUR	
	181	7	C1TC	CTS1	ERECT TSM 3-4 PROTECTIVE TOWER PER V-36039 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	8	C1TC	CPDC	MOVE TRANSPORTER AND PLATFORMS TO LAUNCH POSITION ON HILL OF PAD AND SECURE FOR LAUNCH PER V-36070 (HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-10 HRS 10' 0"	118	9	CSAC	CSA9	START FINAL CLOSEOUT OF S/A 9 LSE SYSTEMS.	
-10 HRS 5' 0"	121	1	C1TC	CLTC	PRIMARY DAMPER CONNECTED	
	111	2	CLTC	CVTS	PRIMARY DAMPER ARM CONNECTION COMPLETE	TCP1
	181	3	C1TC	CPDC	DEACTIVATE FACILITY AIR STANDBY PANEL PER V-26222 (HAZARDOUS). REPORT WHEN COMPLETE.	
		4			*****WARNING***** * * THE FACILITY AIR SYSTEM * * HAS BEEN PURGED OF GN2 * * AND IS BACK IN ITS * * NORMAL CONFIGURATION. * * *****	
-10 HRS 0' 0"	171	1	C2TC	C2PV	GDDT ONLY	
- 9 HRS 45' 0"	181	1	C1TC	CSAC	VERIFY S/A 2 PRECLOSEOUT CHECKLIST COMPLETE AND START FINAL CLOSEOUT, RETRACT TIP AND CLOSE SAFETY GATE, REPORT WHEN COMPLETE.	
	118	2	CSAC	CSA2	COORDINATE WITH STAGE PERSONNEL ON ARM TO START FINAL CLOSEOUT PER V-36078 (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 45' 0"		3			*****WARNING***** * * THE FOLLOWING SEQ IS * HAZARDOUS. * *****	
	181	4	C1TC	C1PE	REMOVE BLOCKS FROM FORWARD UMBILICAL CARRIER.	
	151	5	CUTC	UUVM	VERIFY IU ACCESS DOOR IS INSTALLED.	
	121	6	CUTC	CLTC C4TC	IU ACCESS DOOR IS SECURED. READY FOR S-IVB FINAL S/A 7 CARRIER PREPARATION.	
	151	7	CUTC	PUPL	START LUT WALKDOWN. LV-GAL PARTICIPATION REQUIRED.	
	161	8	C4TC	S4MF	START FINAL S/A 7 CARRIER PREPARATION PER V-30539, SECT S (NON-HAZARDOUS).	
	121	9	CVTS	CLTC	HAVE S/A 9 PERSONNEL REPORT TO S/A 9 IN 15 MINUTES FOR CO2 SYSTEM VERIFICATION	TCPI
	121	10	CLTC	C1TC	HAVE S/A 9 PERSONNEL REPORT TO S/A 9 IN 15 MINUTES FOR CO2 SYSTEM VERIFICATION.	
	181	11	C1TC	CSA9	REPORT TO S/A 9 WITH BOEING QUALITY IN 15 MINUTES FOR CO2 SYSTEM VERIFICATION PER V-36085 (HAZARDOUS).	
	121	1	CVTS	CLTC	GMIL TESTING IS COMPLETE. GMIL CCS S-BAND CARRIER IS OFF.	TCPI
	161	2	S4MF	C4TC	FINAL S/A 7 CARRIER PREPARATION IS COMPLETE.	
- 9 HRS 30' 0"	181	3	C4TC	C1TC	READY FOR S/A 7 TIP RETRACTION.	
	181	4	C1TC	CSAC	VERIFY PRE-CLOSEOUT CHECKLIST COMPLETED AND START S/A 7 FINAL CLOSEOUT. RETRACT TIP AND CLOSE SAFETY GATE. REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 30' 0"						
	121	5	C1TC	CLTC	STARTING S/A 7 FINAL CLOSEOUT	
	111	6	CLTC	CVTS	ADVISE SC QC THAT LV IS STARTING S/A 7 FINAL CLOSEOUT	TCPI
	118	7	CSAC	CSA7	COORDINATE WITH STAGE PERSONNEL ON S/A 7 TO START FINAL CLOSEOUT PER V-36083 (NON-HAZARDOUS).	
	151	8	C4TC	CUTC CUCP	S/A 7 UMBILICAL LOCK IS REMOVED.	
	121	9	CVTS	CLTC	SC CCS SWITCH IN BLOCK POSITION FOR FT-47 AT T-7:13 HRS	TCPI
	181	10	C1TC	CPDC	VERIFY PNEUMATIC DISTRIBUTION SYSTEM PREPS COMPLETED PER V-36064 (NON-HAZARDOUS) EXCEPT SMDPS IN 2 SWITCH 1 VALVE MODE AND FACILITY AIR STANDBY PANEL ACTIVATION.	
	171	11	C2SP	C2TC	ULLAGE PRESSURE SWITCH (CALIPS) VERIFICATION IS COMPLETE	
	171	12	U2MU	C2TC	S/A 5 FINAL UMBILICAL PREPS ARE COMPLETE.	
	171	13	C2TC	U2SE	VERIFY READY TO RETRACT S/A 5 TIP.	
	181	14	C2TC	C1TC	READY TO RETRACT S/A 5 TIP.	
	121	15	CGIC	CLTC	OIS UNITS WILL BE REMOVED FROM 100 FT TO 0 FT LEVELS OF ML (COUNTDOWN ONLY).	TCPI
	181	16	C1TC	C1PE	VERIFY PROPULSION PREPS COMPLETE EXCEPT PREFILL TOPPING PER V-34012 (HAZARDOUS).	
	181	17	C1TC	CSAC	VERIFY Q-BALL COVER RETRACT SYSTEM PREPS COMPLETED PER V-36112 (HAZARDOUS).	

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- 9 HRS 15' 0"						
	161	1	C4TC	C4QC	VERIFY NON-FLIGHT HARDWARE TAG LOG IS COMPLETE.	
		1-1			VERIFICATION BY LV-QAL -----	
	181	2	C1TC	CLTC	REQUEST BOSC TO REPORT TO LASE IN ML ROOM 8A TO SUPPORT THE OPENING OF CIRCUIT BREAKERS PER V-31045 (NON-HAZARDOUS).	
	261	3	CLTC	BOSC	REPORT TO LASE IN ML ROOM 8A TO SUPPORT THE OPENING OF CIRCUIT BREAKERS IN PANEL L-14A (200 FT LEVEL) AND PANELS L-21, L-22, P-16 & P-19 (IN ML BASE)	TCPI
	181	4	C1TC	CSPP	TURN OFF EMERGENCY LIGHTING AND HDA FACILITY AC CIRCUIT BREAKERS PER V-31045 (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 15' 0"	181	5	C1TC	V1MS	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
				RULE MEAS		
				NO. NO.	MEASUREMENT DESCRIPTION	
				----	----	
				2-131 D8-101	PRESS, COMBUSTION CHAMBER	
				2-132 D8-102	PRESS, COMBUSTION CHAMBER	
				2-133 D8-103	PRESS, COMBUSTION CHAMBER	
				2-134 D8-104	PRESS, COMBUSTION CHAMBER	
				2-135 D8-105	PRESS, COMBUSTION CHAMBER	
				2-147 VK39-115	TOK PRESS SW 1 ENG 3	
				2-148 VK42-115	TOK PRESS SW 1 ENG 4	
				2-151 VK54-115	FINAL TOK C/O ENG 3	
				2-152 VK55-115	FINAL TOK C/O ENG 4	
	171	6	C2TC	V2MS	REPORT STATUS AS OF T-21:45 OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
				RULE MEAS		
				NO. NO.	MEASUREMENT DESCRIPTION	
				----	----	
				2-344 D13-201	PRESS, THRUST CHAMBER, ENG 1	
				2-345 D13-202	PRESS, THRUST CHAMBER, ENG 2	
				2-346 D13-203	PRESS, THRUST CHAMBER, ENG 3	
				2-347 D13-204	PRESS, THRUST CHAMBER, ENG 4	
				2-348 D13-205	PRESS, THRUST CHAMBER, ENG 5	
				2-420 VK231-203	PRESS, MNSTG OK SW A, ENG 3	
				2-423 K285-203	DEPRESS MNSTG OK SW A, ENG 3	
				2-433 VK421-207	EDS ALL ENGINES CUTOFF 2	
	161	7	C4TC	C4DP		
				C4N3		
				V4MS	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
				RULE MEAS		
				NO. NO.	MEASUREMENT DESCRIPTION	
				----	----	
				2-518 D1-401	PRESS, THRUST CHAMBER	
				2-561 VK14-401	MNSTG OK PRESS SW 1	
				2-562 VK157-401	MNSTG OK PRESS SW 2	
				2-563 K158-401	MNSTG OK PRESS SW 1 DEPRESS	
				2-564 K159-401	MNSTG OK PRESS SW 2 DEPRESS	
				2569A M30-411	F/U 1 EBW VOLTAGE	
				2569B M31-411	F/U 2 EBW VOLTAGE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶▶▶▶▶▶▶▶▶▶ CD ONLY ▶▶▶▶▶▶▶▶▶▶						
- 9 HRS 15' 0"	151	8	CUTC	CUEF	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS: RULE MEAS NO. NO. MEASUREMENT DESCRIPTION ----- 2-754 VK75-602 SC EDS/MAN C/O OF LV ENGS 2-755 VK84-602 EDS PITCH/YAW RATE EXCESSIVE	
- 9 HRS 10' 0"	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY ALL HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS ARE GO AND READY TO TRANSFER LMR MONITOR RESPONSIBILITY TO THE EASTERN TEST RANGE.	
- 9 HRS 5' 0"	121	1	CLTC	CVTS	ALL HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS ARE GO. VERIFY EASTERN TEST RANGE ASSUMES MONITORING RESPONSIBILITY AT THIS TIME.	TCPI
	171	2	C2TC	U2LN	VERIFY ELECTRICAL WALK AROUND COMPLETE PER V-21452 (G141) (NON-HAZARDOUS).	
HOLDING - 9 HRS 0' 0"					----- STARTING SCHEDULED HOLD ----- -----	
	121	1	CLTC	CGIC	VERIFY TV CAMERAS READY FOR VEHICLE LOADING OPERATIONS.	TCPI
	181	2	C1TC	CSPP	VERIFY LUT WALKDOWN COMPLETE	
	181	3	C1TC	C1NE	VERIFY REMOVAL OF OFF-LUT CABLE ASSYS 5086W1, 5087W1 AND 5086CB1W1 PER V-21035 (NON-HAZARDOUS).	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"					----- STARTING SCHEDULED HOLD ----- -----	CONT'D -----
181		4	C1TC	C1NE	VERIFY S-IC LUT ESE LAUNCH PREPS COMPLETE PER V-21035 (NON-HAZARDOUS) AND PERSONNEL CLEARING PAD.	
181		5	C1TC	C1MS	VERIFY READY TO SUPPORT PROPELLANT LOADING.	
181		6	C1TC	CHDA	VERIFY HDA FINAL PREPS ARE COMPLETE AND HDA PERSONNEL CLEAR OF PAD.	
181		7	C1TC	CSAC	VERIFY PAD MANUAL PREPS COMPLETE AND PERSONNEL CLEARING PAD	
181		8	C1TC	HRFS	VERIFY LUT GSE OPERATION SATISFACTORY AND PERSONNEL CLEAR OF PAD.	
181		9	CSA9	C1TC	S/A 9 CO2 SYSTEM VERIFICATION IS COMPLETE.	
121		10	C1TC	CLTC	S/A 9 CO2 VERIFICATION IS COMPLETE.	
111		11	CLTC	CVTS	S/A 9 CO2 VERIFICATION IS COMPLETE.	TCPI
161		12	C4TC	C4PS	START FINAL PROPULSION PANEL VERIFICATION PER V-30539, SECT T, PART 1 (NON-HAZARDOUS).	
151		13	CUTC	PUPL	VERIFY LUT WALKDOWN AND LUT EQUIPMENT REMOVAL IS COMPLETE	
		13-1			VERIFICATION BY LV-QAL	
121		14	CLTC	CLQS	VERIFY THAT THE JUMPER AUDITS IN THE LCC AND ML ARE COMPLETE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"					----- STARTING SCHEDULED HOLD ----- NOTE ----- ALL LV OPERATORS ARE REQUIRED TO CHECK THEIR PROCEDURES DURING THE HOLD TO VERIFY THAT PCR'S FROM T-8 HRS 59' THROUGH APPENDIX E (LISTED BELOW) HAVE BEEN INCORPORATED. (INCLUDING PCR'S TO VOL IV)	CONT'D -----
	PCR ---	15	PAGE -----	TIME -----	STATIONS AFFECTED ----- THIS INFORMATION TO BE PROVIDED IN A MEMO TO BE DISTRIBUTED AT THIS TIME BY THE INTEGRATED TEST & CHECKOUT PROCEDURES TEST MONITOR.	
HOLDING - 9 HRS (240' 0")					---4:00 HOURS PRIOR TO RESUMING COUNT--- ----- 171 1 C2TC C2GP START FINAL GROUND PNEU SYS INSPECTION AND WALK AROUND PER V-30029 (M020) TASK 31 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
HOLDING - 9 HRS (120' 0")						
---2:00 HOURS PRIOR TO RESUMING COUNT--- -----						
121		1	CLTC	C1TC	ARM HDA EXPLOSIVE RELEASE	
181		2	C1TC	LAS1	HOLDDOWN ARMS EXPLOSIVE RELEASE #1 AND #2 POWER MODULES TO ON AND VERIFY CIRCUIT BREAKERS ARE LOCKED ON.	
		2-1			VERIFICATION BY LV-QAL	
181		3	C1TC	CHDA	VERIFY HOLDDOWN ARMS SECONDARY RELEASE SYSTEM READY FOR LAUNCH	
181		4	C1TC	CSAC	FIRING POWER BEING APPLIED MOMENTARILY	
181		5	C1TC	CSPP	CLOSE LSE OVERRIDE POWER MODULE CIRCUIT BREAKER PER V-31045 (NON-HAZARDOUS), REPORT WHEN COMPLETE. [DEE-6 (4174) ON]	
121		6	CLTC	C1TC	CLEAR TO REQUEST & EXECUTE WASP (LSE POWER ON)	
181		7	C1TC	CLSK	CALL UP WASP PROGRAM UPON CSPP REQUEST AND NOTIFY C1TC PRIOR TO EXECUTION. REPORT WHEN COMPLETE.	
181		8	C1TC	CSAC	VERIFY THE FOLLOWING INDICATIONS ON: T-187 LSE PREPS COMPLETE LSE READY FOR S/A 1 RETRACT T-16.2 LSE READY FOR S/A 2 RETRACT T-8.9 READY LESS S/A 1, 2 SAFE ANGLE	
181		9	C1TC	CLDE	VERIFY DEE-6 (4229, 4052, 4219, 4233) ON	
181		10	C1TC	CSAC	CDDT ONLY	*
181		11	C1TC	CLDE	CDDT ONLY	*
181		12	C1TC	C1FR	VERIFY THE FOLLOWING INDICATIONS ON: LAUNCH SUPPORT PREPS COMPLETE LSE READY FOR S/A 1 RETRACT READY TO RETRACT S-IC FWD UMB	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CDDT ONLY						
HOLDING - 9 HRS (75' 0")					---1:15 HOURS PRIOR TO RESUMING COUNT---	
	171	1	U2PE U2PV	C2TC	CLOSEOUT OF LUT LEVEL 180 PER V-30029 (M020) TASK 64 (NON-HAZARDOUS) COMPLETE.	
HOLDING - 9 HRS (60' 0")					---1:00 HOUR PRIOR TO RESUMING COUNT---	
	121	1	CVTS	CLTC	STARTING ML PRESSURIZATION TASK. PRESSURIZATION WILL OCCUR IN APPROX. 1 HOUR.	TCPI
	186	2	CLTC	ALL	TAIL SERVICE MAST SAFETY CABLES WILL BE REMOVED AT THIS TIME. PERSONNEL USE EXTREME CAUTION IN AREA OF HOLDDOWN ARMS AND TAIL SERVICE MASTS.	
	121	3	CLTC	C1TC	REMOVE SAFETY CABLES AND START FINAL CLOSEOUT OF TAIL SERVICE MASTS	
	111	4	CLTC	CVTS	VERIFY CSM S-BAND ON AND VHF ON IN RELAY MODE CDDT ONLY	* TCP
	181	5	C1TC	CTS1	START TSM FINAL LAUNCHER PREPS PER V-36039 (HAZARDOUS).	
	181	6	C1TC	CECS	VERIFY RESC READY TO RECORD ECS MEASUREMENTS	
	181	7	C1TC	C1PE	APPLY HYDRAULICS TO THE F-1 ENGINES AND START PREFILL OPERATIONS PER V-34012 (HAZARDOUS).	
	171	8	C2TC	C2PV	VERIFY LH2 VENT VALVE CHECKOUT SYSTEM INDICATES 14.7 TO 15.2 PSIA CDDT ONLY	*
	121	9	C1TC	CLTC	REQUEST ACCF (CCF GN2) TO REPORT TO CECS ON CH 142 FOR ECS SUPPORT	
	261	10	CLTC	BOSC	REQUEST ACCF TO REPORT TO CECS ON CH 142 FOR ECS SUPPORT	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CDDT ONLY						
HOLDING - 9 HRS (60' 0")					---1:00 HOUR PRIOR TO RESUMING COUNT---	CONT'D
	121	11	CVTS	CLTC	SC EDS POWER COMING ON.	* TCP
	171	12	C2TC	U2LN L2RR	START FINAL CLOSEOUT OF ML "A" LEVEL PER V-21452 (G141) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
HOLDING - 9 HRS (45' 0")					---45 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY LV COMPARTMENTS CLOSED OUT AND READY TO SWITCH ECS FROM AIR TO GN2.	
	111	2	CLTC	CVTS	ALL LV COMPARTMENTS CLOSED OUT AND READY TO SWITCH ECS FROM AIR TO GN2.	TCPI
HOLDING - 9 HRS (40' 0")					---40 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	CUTC	CLTC	REQUEST CLEARANCE TO PRESSURIZE ST-124M SUPPLY SPHERE TO FLIGHT PRESSURE (3000 PSI)	
	151	2	CUTC	CUCP	PRESSURIZE ST-124M SUPPLY SPHERE TO 3000 PSI PER V-31062 PART III. REPORT WHEN SYSTEM STABILIZED (NON-HAZARDOUS).	
		2-1			*****CAUTION***** * * IU STAGE ST-124M SUPPLY * * SPHERE WILL BE * * PRESSURIZED TO 3000 PSI * * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS (20' 0")					---20 MINUTES PRIOR TO RESUMING COUNT--- -----	CONT'D
	261	6	C2TC	HOSC	VERIFY TWO EACH BENDIX LIFE SUPPORT PERSONNEL ON STATION READY TO SUPPORT S-II STAGE ENTRY RED CREW WITH THE FOLLOWING EQUIPMENT IN A SCAPE VAN: 4 K BOTTLES BREATHING AIR 2 100 FT HARDLINES 1 2X4 HARDLINE MANIFOLD 4 50 FT HARDLINES WITH OIS CABLES 4 HARDLINE BREATHING MASKS WITH OIS HARNESS AND FULLY CHARGED MINI BOTTLES BREATHING AIR. (LVR-2 & LVR-7)	TCPI
HOLDING - 9 HRS (15' 0")					---15 MINUTES PRIOR TO RESUMING COUNT--- -----	
	121	1	CVTS	CLTC	CHANGE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 1 SWITCH MODE. REPORT WHEN COMPLETE	TCPI
	121	2	CLTC	C1TC	CHANGE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 1 SWITCH MODE. REPORT WHEN COMPLETE	
	181	3	C1TC	CPDC	CHANGE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 1 SWITCH MODE. REPORT WHEN COMPLETE	

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HOLDING - 9 HRS (10' 0")					---10 MINUTES PRIOR TO RESUMING COUNT---	
	181	1	C1TC	CTS1	VERIFY TSM FINAL PREPS ARE COMPLETE AND TSM PERSONNEL CLEAR OF PAD	
	181	2	C1TC	CWCP	VERIFY INDUSTRIAL WATER SYSTEM LAUNCH PREPS COMPLETED.	
	181	3	C1TC	C1PE	VERIFY S-IC MECHANICAL PREPS COMPLETED AND PERSONNEL CLEARING PAD	
	181	4	C1TC	CCLH	VERIFY LH2 SYSTEMS FINAL PREPS FOR LOADING COMPLETE AND PERSONNEL CLEARING PAD.	
	181	5	C1TC	CCRP	VERIFY RP-1 PREPS COMPLETE.	
	181	6	C1TC	CSPP	PLACE LSE POWER OVERRIDE SWITCH TO ON AND VERIFY	
	181	7	C1TC	CSPP	VERIFY LUT ELECTRICAL PREPS COMPLETE PER V-31045 (NON-HAZARDOUS) AND PERSONNEL ARE CLEARING PAD.	
	121	8	C1TC	CLTC	S-IC ELECTRICAL LAUNCH PREPS COMPLETE	
	181	9	C1TC	RPDC	VERIFY DTS/DEE PAD CLEARING COMPLETED PER V-25160 (NON-HAZARDOUS).	
	262	10	CLTC	BTIS	VERIFY REGULAR CAMERAS OPERATIONAL AND HAVE BPHO SWITCH TO CH 181 TO SUPPORT PROPELLANT LOADING.	TCPI
	161	11	C4TC	C4NP	VERIFY SW SEL INHIBIT OFF.	(VALK)
	161	12	C4TC	R4PU	PU STRIP CHARTS ON	(VALK)
	161	13	C4TC	C4PU	PU OVEN & INVERTER POWER-AUTO.	(VALK)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"					--- JUST PRIOR TO RESUMING COUNT ---<br/ -----	
	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO START PAD CLEARING OPERATIONS.	
	111	2	CLTC	CVTS	LV READY TO START PAD CLEARING OPERATIONS, REQUEST SECURITY TO LOCK ROOM 1P4 AND DELIVER KEYS TO CLTC	TCPI
	188	3	CVTS	PA	THE CLOCK WILL START ON MY MARK AT T-9 HRS 0 MIN 0 SEC.	TCPI
	188	4	CVTS	PA	5-4-3-2-1, MARK.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 59' 0"					CO ONLY	
	188	1	CVTS	PA	ALL PERSONNEL NOT POSSESSING T-9 HOUR HAZARDOUS BADGES ARE TO CLEAR THE BLAST DANGER AREA,	TCPI
	121	2	CLTC	C1PK	REQUEST AND EXECUTE VALK LINKING PROGRAM.	
		2-1			NOTE ---- WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS TO DO THESE FUNCTIONS MANUALLY. PROGRAMS WILL NORMALLY BE DONE AT THE TIME SHOWN BUT MAY, AFTER COORDINATION ON CH 121, BE CALLED EARLY BY CLES OR DELAYED BY C1PK.	
	161	3	***	C4PU	PU OVEN AND INVERTER POWER ON THEN AUTO.	***
	121	4	***	CLGK	POWER ON LVDC/DA PER V-33033, SECT I. REPORT WHEN COMPLETE (KAPW, FT04, FT35, FT20, AND FT23 AND FT08) (NON-HAZARDOUS)	***
	171	5	C2TC	C2NP	PM POWER ON	
	171	6	C2TC	C2PM	VERIFY HAZARDOUS GAS DETECTION SYSTEM READY FOR PROPELLANT LOADING AND START FINAL STATUS CHECKS PER V-30029 (M020) TASK 35 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	7	C2TC	R2DP	CDDT ONLY	*
	161	8	C4TC	C4PS	START FINAL PREPS FOR LOADING PER V-30539, SECT I, PART 2 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 59' 0"	151	9	CUTC	CUPC	START ST-124M SLIP RING EXERCISE PER V-23068 (NON-HAZARDOUS).	
	181	10	C1TC	RDTS	TURN ON THE ALT FR PTCS TANKING COMPUTER 28 VDC SWITCHES ON PANEL 5341 AND 5333.	
	181	11	C1TC	RDTS	TURN ON ALL ALT FR TANKING COMPUTER AUTO AND MANUAL POWER SWITCHES	
	181	12	C1TC	CPDC	VERIFY FACILITY AIR STANDBY PANEL HAS BEEN ACTIVATED AND PERSONNEL ARE CLEARING PAD	
- 8 HRS 55' 0"	121	1	CVTS	CLTC	GMIL BRINGING UP CCS S-BAND CARRIER FOR MCC COMMAND VALIDATION TEST. VERIFY COMMAND DECODERS ARE OFF.	TCPI
	181	2	C1TC	CECS	VERIFY ECS OPERATIONS COMPLETE AND PERSONNEL ARE CLEARING PAD	
- 8 HRS 50' 0"	188	1	CLTC	ALL	ALL PERSONNEL ASSIGNED YELLOW POINT TO POINT PHONES GO ACTIVE ON THE PHONE NET FOR COMMUNICATIONS CHECK.	
	171	2	C2TC	C2RP	START RECIRC BOTTLE PRESSURIZATION TO 3000 PSI PER V-30029 (M020), TASK 37 (HAZARDOUS).	
	151	3	C4TC	CUTC	REQUEST DISCRETES 3662, 3663, 3664 & 3669 (S-IVB LH2 POINT LEVEL SENSORS) BE FLAGGED.	
	151	4	CUTC	RLDE	FLAG DISCRETES 3662, 3663, 3664 & 3669 (S-IVB LH2 POINT LEVEL SENSORS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
- 8 HRS 45' 0"	171	1	C2TC	C2AE	START ENGINE HELIUM BOTTLE PRESSURIZATION TO 3000 PSI PER V-30029 (M020), TASK 38 (HAZARDOUS).	
- 8 HRS 40' 0"	121	1	CLTC	CUSW	VERIFY ESE/LVDA IN ESE POSITION.	(FT43)
	121	2	CLTC	C1NP C2NP	SWITCH SELECT INHIBIT TO ON TO SUPPORT FT43.	(FT43)
	121	3	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF	(FT43)
	171	4	C2PM	C2TC	FINAL PANEL STATUS CHECKS ARE COMPLETE.	
- 8 HRS 39' 0"	121	1	CLGK	CLTC	LVDC/LVDA POWER ON IS COMPLETE.	
	121	2	***	CLGK	REQUEST & EXECUTE FT43 (COMPUTER INTERFACE)	***
		2-1		C4NP	*** NOTE FT43 WILL ISSUE STAGE SELECT AND ADDRESS TO THE S-IVB STAGE WITH NO READ COMMANDS.	
- 8 HRS 35' 0"	171	1	C2AE	C2TC	ENGINE HELIUM BOTTLE PRESSURIZATION COMPLETE	
	161	2	C4TC	C4NP	4D411 POWER ON	
	161	3	C4TC	C4NP	CDDT ONLY	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 35' 0"	161	4	C4TC	C4HY	MANUALLY CYCLE AUX HYD PUMP ON AND OFF TO MAINTAIN SYSTEM OIL TEMPERATURE ABOVE -10 DEG F, COORDINATE ALL SWITCH ACTIONS WITH C4TC PRIOR TO EXECUTION. TEMPERATURES MAY BE ALLOWED TO DECREASE BELOW THIS LIMIT IN THE EVENT OF INTERFERENCE WITH IU CONTROL COMPUTER FUNCTIONAL TEST.	
		4-1			*****CAUTION***** * * DO NOT ALLOW HYDRAULIC * * SYSTEM FLUID TEMPS TO * * DECREASE BELOW -25 * * DEG F, * * *****	
	151	5	CUPC	CUTC	ST-124M SLIP RING EXERCISE COMPLETE	
	151	6	CUTC	CUPC	TURN ON ST-124M SYSTEM AND START DRIFT CHECKS PER V-33011 (NON-HAZARDOUS).	
	171	7	C2RP	C2TC	RECIRC BOTTLE PRESSURIZATION IS COMPLETE	
- 8 HRS 32' 0"	121	1	CLGK	CLTC	FT43 COMPLETE	
	121	2	CLTC	C1NP C2NP	SWITCH SELECTOR INHIBIT TO OFF TO SUPPORT FT03.	(FT03)
	121	3	CLTC	CUSW	LVDA/ESE SWITCH TO LVDA POSITION	(FT03)
- 8 HRS 31' 0"	181	1	C1TC	CCLO	VERIFY LOX SYSTEM FINAL PREPS FOR LOADING PER V-25340 (HAZARDOUS) ARE COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 31' 0"						
	181	2	C1TC	CHGD	VERIFY GN2 PURGE READY FOR PROPELLANT LOADING	
	181	3	C1TC	CPDC	VERIFY PLATFORM TRANSPORTER IS AT LAUNCH POSITION AND SECURED AND ALL PERSONNEL CLEAR OF PAD.	
	171	4	C2TC	C2SP	VERIFY SHROUD PURGE VALVE - OPEN	
	171	5	C2TC	C2EV	VERIFY S-II READY FOR LOX & LH2 LOADING LIGHTS ON	
	171	6	C2TC	C2PM	VERIFY READY FOR LOX & LH2 LOADING	
	161	7	C4TC	C4PS C4ES C4SM	VERIFY READY FOR PROPELLANT LOADING.	
	161	8	C4TC	S4PC	VERIFY ALL S-IVB PERSONNEL HAVE CLEARED THE PAD	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 30' 0"	121	1	CVTS	CLTC	MCC COMMAND VALIDATION TEST IS COMPLETE. GMIL CCS S-BAND CARRIERS ARE OFF.	TCPI
	121	2	***	CLGK	REQUEST & EXECUTE FT03 (LVDC/LVDA SWITCH SELECT INTERFACE TEST AUTOMATIC OPTION)	***
		2-1		C1NP C2NP C4NP CUNP	*** NOTE STAGES WILL BE TESTED IN THE FOLLOWING SEQUENCE - IU, S-IVB, S-II & S-IC	
					ADDR. READ ---- 000 NO 337 NO 200 NO 100 NO 040 NO 020 NO 010 NO 004 NO 002 NO 001 NO 377 NO 377 YES MULTIPLE STAGE SELECTION WILL BE AS FOLLOWS: IU & S-IVB IU & S-II IU & S-IC S-IVB & S-II S-IVB & S-IC S-II & S-IC AN ADDRESS OF 377 WILL BE ISSUED WITH EACH MULTIPLE STAGE SELECT. REPORT ANY ANOMALIES TO CLTC.	
	171	3	C2TC	C2TV	VERIFY S-II OTV CAMERAS READY FOR PROPELLANT LOADING	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 30' 0"	121	4	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO START PROPELLANT LOADING PER V-35014 (HAZARDOUS).	
	121	5	CLTC	CGIC	VERIFY READY TO SUPPORT PROPELLANT LOADING AND HAVE BCFM SWITCH TO CH 133 FOR LOX COMMUNICATIONS CHECKS	TCPI
	188 121	6	CLTC	ALL	ALL PERSONNEL REQUIRED FOR LV LOX PROPELLANT LOADING REPORT FOR COMMUNICATIONS CHECKS ON CH 133.	
- 8 HRS 27' 0"	171	1	C2TC	C2AE	BEGIN START TANK PURGE PER V-30029 (M020), TASK 68 (NON-HAZARDOUS).	
- 8 HRS 25' 0"	111	1	CLTC	CVTS	ALERT MSTC THAT THE PRN MODULATION OF CSM S-BAND UP-LINK WILL BE DISABLED IN 5 MINUTES FOR APPROXIMATELY 20 MINUTES.	TCPI
	171	2	C2TC	C2SP	VERIFY LOW LEVEL PURGE VALVE OPEN AND OPEN LIGHT ON	
- 8 HRS 23' 0"	121	1	CLGK	CLTC	FT03 COMPLETE	
	121	2	CLTC	CUSW	LVDA/ESE SWITCH TO ESE	(FT37)
	121	3	CLTC	ETMS	TM RECORDERS ON	(FT37)
	121	4	CLTC	ECOP	VERIFY CIF IS READY TO SUPPORT FT37 (PREPARE TO LAUNCH - REPEATABLE SIM FLT OPTION)	(FT37)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 23' 0"						
	121	5	CLTC	ECOP	INITIATE GUIDANCE REAL TIME REDUCTION PROGRAM	(FT37)
	171	6	C2TC	C2AE	START LOX DOME AND GG INJECTOR PURGE PER V-30029 (M020) TASK 40 (HAZARDOUS).	
		6-1		C2PU R2SC	*** NOTE MEASUREMENTS G006-201 THROUGH 205 WILL BE ACTIVE DURING LOX DOME AND GG INJECTOR PURGE PER V-30029 (M020) TASK 40 (HAZARDOUS).	
	171	7	C2TC	C2RP	(IF FT43, FT03 NOT COMPLETE, DELAY THIS STEP). START ACCUMULATOR FILL SYSTEM PURGE PER V-30029 (M020) TASK 30 (HAZARDOUS).	
- 8 HRS 22' 0"						
	161	1	C4TC	C4PS	VERIFY READY FOR ENGINE PURGES.	
	161	2	C4TC	C4SP	OPEN CONTROL AND REPRESS SUPPLY.	
	161	3	C4TC	C4P2	MONITOR D-18 AND D-50.	
	161	4	C4TC	C4ET	CT HELIUM CONTROL SOLENOID ON.	
	161	5	C4TC	C4EP	ENGINE PUMP PURGE TO ENABLE.	
	161	6	C4TC	C4EP	CLOSE CHILLDOWN VALVES	
- 8 HRS 20' 0"						
	111	1	CLTC	CVTS	LV READY TO START CROSS COUNTRY LINE CHILLDOWN. VERIFY ML/UMBILICAL TOWER IS CLEAR OF NON-ESSENTIAL PERSONNEL AND MSS IS REQUIRED DISTANCE FROM S/V (850 FT).	TCPI
		1-1		ALL	*** NOTE 10 MINUTES AFTER LOX FILL COMMAND, S-IVB SLOW FILL WILL START AUTOMATICALLY	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
- 8 HRS 20' 0"						
	121	2	***	CLGK	REQUEST & EXECUTE FT37 (PREPARE TO LAUNCH TEST - REPEATABLE SIM FLIGHT OPTION)	***
		2-1		CLGK	*** NOTE NOTIFY VURF (CH 151) WHEN SYNC RESET ACTION IS COMPLETE.	
	181	3	C1TC	CECS	VERIFY ECS GN2 FLOW FOR 1 HOUR	
	181	4	C1TC	C1NP	HEATER POWER - ON	
	181	5	C1TC	C1EH	HEATER POWER TO ENABLE	
		5-1		C1EH	*** NOTE HEATERS CYCLING	
		5-2		C1DE	*** NOTE DEE 2033 ON (S-IC READY FOR LOX LOADING)	
	181	6	C1TC	CWCP	VERIFY IWS MANUAL ARMING BUS - ON	
	181	7	C1TC	C1PC	PRESSURIZE S-IC GN2 CONTROL & PURGE BOTTLES TO 3200 PSI PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	8	C2TC	C2NP	HEATER POWER AND BATTERY HEATERS ON	
	171	9	C2NP	C2NK	CDDT ONLY	*
		10		C2NP	CDDT ONLY	*
	171	11	C2TC	C2FC	MANUALLY CYCLE INDIVIDUAL AUX HYDRAULIC PUMPS ON AND OFF TO MAINTAIN SYSTEM OIL TEMP WITHIN +20 TO +120 DEG F ENVELOPE PER V-30029 (M020) TASK 36 (HAZARDOUS). COORDINATE ALL SWITCH ACTIONS WITH C2TC AND CUF5 PRIOR TO EXECUTION.	
	181	12	C1TC	CPRK	RECALL BE02 AT A 10 SECOND SCAN RATE AND ALL STAGES OPTION.	
	111	13	CLTC	CVTS	VERIFY CLEARANCE FOR IU CCS RF SYSTEM.	TCPI
	111	14	CLTC	CVTS	REQUEST GMIL DISABLE CSM S-BAND UP-LINK PRN MODULATION (FOR APPROXIMATELY 20 MINUTES) AND VERIFY.	TCPI

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- 8 HRS 20' 0"						
	111	15	CLTC	CVTS	REQUEST GMIL VERIFY CCS CARRIER IS OFF.	TCPI
	121	16	CLTC	VURF	ENABLE LOCAL CCS CARRIER & VERIFY.	
	121	17	CLTC	CUIP	CCS TRANSPONDER POWER-ON.	
	121	18	CLTC	VURF	VERIFY CCS IN LOCK.	
	121	19	CLTC	CUNP	VERIFY SWITCH SELECTOR INHIBIT OFF	
	121	20	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 063 (CCS OMNI, SMSIU063).	
	121	21	CLTC	CUIP	COMMAND DECODER POWER-ON.	
	111	22	CLTC	CVTS	LOCAL CCS CARRIER IS ON. CCS TRANSPONDER AND COMMAND DECODER ARE ON. (IU COMMAND SYSTEM IS DISABLED)	TCPI
	121	23	CLTC	VURF	START CCS RF CHECKS PER V-28069 (NON-HAZARDOUS).	
- 8 HRS 18' 0"						
	171	1	CRTC	CRAE	START TURBOPUMP PURGE PER V-30029 (M020) TASK 41 (NON-HAZARDOUS).	
- 8 HRS 13' 0"						
	121	1	CLTC	C1TC	YOU HAVE CLEARANCE TO START CROSS COUNTRY LINE CHILLDOWN.	
		1-1			NOTE ----	
					FROM NOW THRU T+G THE FOLLOWING STATIONS REQUIRE ACCESS TO THE NOTED TV CAMERAS	
					CSA4 - CAMERAS 15, 16, 36	
					CSA5 - CAMERAS 15, 20, 21, 36	
					(CONTINUED)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 15' 0"					CSA6/7 - CAMERAS 20, 21, 22, 24, 36	
	121	2	C1TC	CLTC	LOX FILL COMMAND HAS BEEN GIVEN (AUTOMATIC PROPELLANT LOADING INITIATED)	
	121	3	CLGK	CLTC	FT37 COMPLETE. REPEATABLE SIM FLIGHT IS IN PROCESS,	
	261	4	CLM4	BOSC	REQUEST PRESENT GH2 BATTERY PRESSURE	TCP1
- 8 HRS 10' 0"						
	171	1	C2TC	C2PV	START COMMON BULKHEAD EVACUATION	
		1-1		C2PV	*** NOTE IF THE COMMON BULKHEAD VACUUM DEFINED BY THE LMR CANNOT BE ATTAINED BY T-1 HR, USE THE J-RING EVACUATION. WITH THE CONCURRENCE OF C2TC, CYCLE THE VACUUM PUMPS AND VALVES AS NECESSARY TO MAINTAIN THE PURGE AND VACUUM CIRCUITS OPERATION. THE COMMON BULKHEAD PRESSURE IS TO BE MAINTAINED BELOW 3 PSIA AND THE VACUUM PUMPS RUN CONTINUOUSLY FROM T-3 HRS,	
	171	2	C2RP	C2TC	ACCUMULATOR FILL SYSTEM PURGE COMPLETED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 10' 0"	171	3	C2TC	C2RP	LH2 PREVALVES TO CLOSE THEN INHIBIT. VERIFY LH2 PREVALVES CLOSED - ON	
		3-1		C2RP	*****CAUTION***** * * MONITOR LH FEED DUCT * * PRESS (D092-201/205) * * DURING PROPELLANT TANK * * CHILLDOWN, IF PRESSURE * * EXCEEDS 35 PSIA: * * * 1. PLACE RECIRC RESET * * TO RESET THEN * * INHIBIT * * * 2. ALL PREVALVES LOX * * RETURN VALVES TO * * OPEN * * * 3. REPEAT SEQ 3, 6 & 7 * * *****	
	171	4	C2TC	C2RP	LH2 PUMP AND RETURN LINE VALVES TO CLOSE VERIFY RETURN LINE VALVES OPEN - OFF	
	171	5	C2TC	C2RP	LOX OVERRIDE TO OPEN.	
	171	6	C2TC	C2RP	ALL PREVALVES LOX RETURN VALVES TO CLOSE VERIFY LOX PREVALVES CLOSED - ON. VERIFY LOX RETURN LINE VALVES OPEN REMAINS ON,	
	171	7	C2TC	C2RP	ACCUMULATOR BLEED VALVE TO CLOSE THEN INHIBIT.	
	171	8	C2TC	C2RP	START LOX HE INJECTION PURGE PER V-30029 (M020), TASK 39 (HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 5' 0"						
	121	1	CLGK	CLTC	REPEATABLE SIM FLIGHT COMPLETE	(FT23)
	121	2	***	CLGK	REQUEST & EXECUTE FT23 (LVDC SECTOR SUM CHECK)	***
	121	3	CLTC	ECOP	STOP REAL TIME REDUCTION PROGRAM	
	121	4	CLTC	ETMS	TM RECORDERS OFF	
	121	5	C1TC	CLTC	STARTING S-IVB SLOW FILL (FAST FILL WILL NOT START UNTIL CLEARANCE RECEIVED).	
	121	6	CVTS	CLTC	PAD CLEARING OPERATIONS HAVE BEEN COMPLETED, CLEAR TO START S-IVB LOX FAST FILL	TCPI
	121	7	CLTC	C1TC	PAD IS CLEAR FOR S-IVB LOX FAST FILL	
	171	8	C2AE	C2TC	START TANK PURGE IS COMPLETE	
- 8 HRS 1' 0"						
	121	1	C1TC	CLTC	STARTING LOX MAINLINE CHILLDOWN AT S-IVB 5%.	
- 8 HRS 0' 0"						
	181	1	C1TC	C1NE	START S-IC LCC ESE CLOSEOUT PER V-21035 (NON-HAZARDOUS), REPORT WHEN COMPLETE.	
	151	2	CUTC	BGCC	VERIFY/MOUNT VLA DATA LOAD TAPE ON IODC 1-3, REPORT WHEN COMPLETE,	
	121	3	CLTC	VURF	VERIFY READY FOR CSM UP-LINK PRN MODULATION.	
	111	4	CLTC	CVTS	REQUEST GMIL BRING UP PRN MODULATION ON CSM UP-LINK,	TCPI

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- 7 HRS 55' 0"						
	121	1	CLGK	CLTC	FT23 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST FULL RANGE OPTION).	***
- 7 HRS 54' 0"						
	171	1	C2PM	C2TC	S-II LOX TANK CHILLDOWN IN PROGRESS	
	171	2	C2TC	C2AE C2RP	START THRUST CHAMBER JACKET PURGE PER V-30029 (M020) TASK 42 (NON-HAZARDOUS) AND SECURE LOX DOME, GG, HE INJ AND TURBO PUMP PURGES.	
		2-1		C2PU R2SC	*** NOTE MEASUREMENTS G006-201 THROUGH 205 WILL BE ACTIVE DURING SECURING OF LOX DOME AND GG INJECTOR PURGES	
- 7 HRS 45' 0"						
	121	1	CLGK	CLTC	FT10 COMPLETE.	
	121	2	***	CLGK	REQUEST & EXECUTE FT05 (VLA DATA LOAD)	***
- 7 HRS 39' 0"						
	171	1	C1TC	C2TC	STARTING S-II LOX LOADING. ALL SUPPORT PERSONNEL SWITCH TO CH 133.	
	171	2	C2AE	C2TC	S-II ENGINE PURGES COMPLETED	
- 7 HRS 36' 0"						
	121	1	C1TC	CLTC	S-IVB LOX LOADING TO 99% IS COMPLETED. STARTING S-II LOX LOADING. HAVE ALL PERSONNEL REQUIRED FOR S-II LH2 PRECONDITIONING REPORT FOR COMM CHECKS ON CH 143.	

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- 7 HRS 36' 0"						
	188	2	CLTC	ALL	ALL PERSONNEL REQUIRED FOR S-II LH2 PRECONDITIONING REPORT FOR COMM CHECK ON CH 143.	
	111	3	CLTC	CVTS	STARTING S-II LOX LOADING.	TCPI
	171	4	C2TC	C2PU	REPORT WHEN LOX DEPLETION SENSORS ARE COVERED. (LOX 1/2% TO 1% MASS)	
		4-1		C2PU	*** NOTE SENSORS REGISTER INTERMITTENT WET/DRY SIGNALS DURING INITIAL LOADING PHASE.	
	171	5	C2PU	C2TC	ALL LOX DEPLETION SENSORS ARE WET	
	171	6	C2TC	C2RP	VERIFY ENGINE PURGES ARE COMPLETE. ALL PREVALVES LOX RETURN LINE VALVES TO OPEN. VERIFY LOX PREVALVES OPEN - ON.	
	171	7	C2TC	C2RP	LOX OVERRIDE TO CLOSE.	
	161	8	C4TC	C4PS	START LOX CHILLDOWN PUMP CHECKS AND LOX VENT CHECKS PER V-35014 (HAZARDOUS).	
- 7 HRS 35' 0"						
	121	1	CLGK	CLTC	FTOS COMPLETE (GIVE DATE OF VLA DATA LOADED).	
	151	2	CUTC	BGCC	REMOVE VLA TAPE FROM IODC 1-3	
	121	3	CLTC	EYMS BTMC	TM RECORDERS ON	(FT55)
	121	4	CLTC	ECOP	START REAL TIME REDUCTION PROGRAM	(FT55)
- 7 HRS 30' 0"						
	121	1	CLTC	RLDE	GIVE CDC/OMY TIME CORRELATION ON EVERY HALF HOUR UNTIL T-0 AND UPON ENTERING AND TERMINATION OF HOLDS.	

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▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
- 7 HRS 30' 0"						
	121	2	***	CLGK	REQUEST & EXECUTE FT55 (LVDA TM TEST)	***
	121	3	CLTC	VURF	VERIFY READY TO SUPPORT FT45.	(FT45)
	121	4	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 082 (CMD SYS ENABLE, SMSIU082).	(FT45)
	111	5	CLTC	CVTS	IU COMMAND SYSTEM IS ENABLED	TCPI
	121	6	CLTC	CUCS	VERIFY ACS IN COMP/COMP MODE.	(FT45)
	161	7	C4TC	C4PS	PROCEED WITH AMBIENT SPHERE PRESSURIZATION	
	161	8	C4PS	C4SP	CLOSE COLD HE SUPPLY	
	161	9	C4PS	C4HC	INCREASE HE SUPPLY PRESSURE TO 3100 +/- 100 PSIA.	
		9-1		C4HC	*** NOTE PRESSURE TO BE MAINTAINED FOR 1 HOUR MINIMUM	
	161	10	C4PS	R4PS	REPORT WHEN AMBIENT SPHERES ARE STABILIZED	
	161	11	C4PS	C4AL	OPEN 3000 PSI SUPPLY	#
	161	12	C4PS	R4PS	MONITOR APS SYSTEMS FOR STABILIZATION	#
- 7 HRS 26' 0"						
	121	1	C1TC	CLTC	STARTING S-II LH2 PRECONDITIONING	
- 7 HRS 25' 0"						
	121	1	CLGK	CLTC	FT55 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT45 (CMD SYS - INTERFACE)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 20' 0"						
	121	1	CLGK	CLTC	FT45 COMPLETED	
	121	2	CLTC	CUNP	ISSUE IU STAGE LOGIC RESET	(FT47)
	111	3	CLTC	CVTS	IU COMMAND SYSTEM IS DISABLED. REQUEST USB CCS CARRIER ON AND VERIFY	(FT47) TCPI
	121	4	CLTC	VURF	DISABLE LOCAL CCS CARRIER & VERIFY	(FT47)
	111	5	CLTC	CVTS	LOCAL CCS CARRIER IS DISABLED. REQUEST GMIL VERIFY S-BAND CCS IS IN LOCK.	TCPI (FT47)
	121	6	CVTS	CLTC	USB/CCS TRANSPONDER IN LOCK AND CLEAR TO ENABLE IU COMMAND SYSTEM	(FT47) TCPI
	111	7	CLTC	CVTS	REQUEST GMIL MONITOR CH 121 AND REPORT WHEN READY TO SUPPORT FT47.	(FT47) TCPI
	171	8	C2TC	C2RP	LH2 PREVALVES TO CLOSE, HOLD, PLACE RECIRC RESET TO RESET, THEN INHIBIT. RELEASE AND PLACE LH PREVALVES TO INHIBIT.	
		8-1		C2RP	*** NOTE ACCUMULATOR BLEED VALVE OPEN - ON	
- 7 HRS 13' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT47, (PREFLIGHT COMMAND SYS TEST) (HOUSTON). (OPTION \$P1)	***
	121	2	CLGK	CLTC	FLIGHT COMPUTER READY FOR COMMANDS	
	111	3	CLTC	CVTS	LV READY FOR HOUSTON PREFLIGHT COMMANDS REQUEST HFLT REPORT ON CH. 121	TCPI
	121	4	HFLT	ALL	TERMINATE COMMAND ON MY MARK	
	121	5	HFLT	ALL	3, 2, 1, MARK	
	121	6	CLTC	ETOM	VERIFY AVP ONLY.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 13' 0"	121	7	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 082 (COMMAND SYS ENABLE, \$MSIU082),	
	121	8	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 1)	
	121	9	HFLT	ALL	3 - 2 - 1, MARK SINGLE WORD DUMP, LOCATIONS 200 THROUGH 206	
	121	10	CLTC	ETOM	VERIFY AVP, CRP AND SINGLE WORD DUMP	
	121	11	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 2)	
	121	12	HFLT	ALL	3 - 2 - 1, MARK SECTOR DUMP FOR OTU	
	121	13	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP	
	121	14	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 3)	
	121	15	HFLT	ALL	3 - 2 - 1, MARK SECTOR DUMP FOR NAV UPDATE	
	121	16	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP	
	121	17	CLTC	HFLT	VERIFY HOUSTON COMMANDS COMPLETE.	
- 7 HRS 5' 0"	181	1	C1TC	C1PC	OPERATE ENGINE THERMAL CONDITIONING PURGE AS REQUIRED TO MAINTAIN ENGINE TEMPERATURE	
- 7 HRS 3' 0"	121	1	***	CLGK	REQUEST AND EXECUTE FT47 (PREFLIGHT CMD SYS TEST) (HOUSTON) (OPTION SP3)	***
	121	2	CLGK	CLTC	FT47 COMPLETE	
	121	3	CLTC	ECOP	TERMINATE REAL TIME REDUCTION PROGRAM.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 3' 0"						
	121	4	CLTC	ETMS BTMC	TM RECORDERS OFF	
	121	5	CLTC	CUIP	COMMAND DECODER POWER OFF CCS TRANSPONDER POWER OFF	
	121	6	CLTC	CUNP	ISSUE IU STAGE LOGIC RESET	
	111	7	CLTC	CVTS	IU CCS RF SYSTEM IS OFF. CLEAR TO BRING DOWN GMIL CCS CARRIER. REQUEST GMIL REPORT IU CCS GO/NO-GO TO VURF ON CH 137.	TCPI
	111	8	CLTC	CVTS	HOUSTON PREFLIGHT COMMAND SYSTEM TEST IS COMPLETE.	TCPI
- 7 HRS 1' 0"						
	121	1	***	CLOK	REQUEST & EXECUTE FT23 (LVDC SECTOR SUM CHECKS).	***
	181	2	C1TC	ALL	PERSONNEL SUPPORTING LOX LOADING GO TO CH 133 ACTIVE.	
- 7 HRS 0' 0"						
	161	1	C4TC	C4PS	START MIXTURE RATIO CONTROL VALVE (MRCV) CHECKS ON CH 161. REPORT WHEN COMPLETE.	
	161	2	C4PS	V4MS	VERIFY READY TO RECORD K7, K219, D18 & G17.	
	161	3	C4PS	C4ET C4PU R4PS	VERIFY READY FOR MRCV CHECKS.	
	161	4	C4PS	C4PU	MRCV CMD NO. 1 OPEN (OCTAL 002) AND VERIFY RELAYS RESET IND OFF AND MRCV OPEN CMD ON IND ON.	
	161	5	C4PS	C4PU	MRCV CMD NO. 2 OPEN (OCTAL 117).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 0' 0"		161	6	C4PS	C4ET	CT HELIUM CONTROL SOLENOID ON.
			6-1		C4ET	*** NOTE LOX AND LH BLEED VALVES CLOSE.
		161	7	C4PS	R4PS	VERIFY MRCV OPENS.
		161	8	C4PS	C4PU	MRCV CMD NO. 1 CLOSE (OCTAL 055).
			8-1		C4PU	*** NOTE MRCV OPEN CMD ON IND CFF.
		161	9	C4PS	C4PU	MRCV CMD NO. 2 CLOSE (OCTAL 036).
			9-1		C4PU	*** NOTE RELAYS RESET IND ON.
		161	10	C4PS	R4PS	VERIFY MRCV CLOSES.
		161	11	C4PS	C4PU	MRCV CMD NO. 2 OPEN THEN NO. 1 OPEN, DELAY 5 SECONDS, THEN MRCV CMD NO. 1 AND NO. 2 CLOSE.
		161	12	C4PS	R4PS	VERIFY MRCV OPENS THEN CLOSES.
		161	13	C4PS	C4ET	CT HELIUM CONTROL SOL OFF.
		161	14	C4PS	V4MS	REPORT MRCV VALVE MOTION TIMES AND VOLTAGE CHANGE TO C4PS.
		121	1	CLTC	CUFS	START FLIGHT CONTROL SYSTEM PREPS ON CH 123 (KAF2)
		123	2	CUFS	CUSP CUGA	PLACE ALL FCC, CCIS AND EDS/CRG PANEL SWITCHES TO AUTO. (KAF2)
- 6 HRS 54' 0"		181	1	C1TC	C1PC	LOW LOX DOME PURGE SWITCH TO AUTO (KAF2)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6 HRS 54' 0"	181	2	C1TC	C1CS	POSITION LOX LEVEL SIMULATE SWITCHES TO WET WHEN FIRST INDICATION OF SENSORS WET IS NOTED. WHEN C1LO HAS TERMINATED LOX BUBBLING, POSITION LOX LEVEL SIMULATE SWITCHES TO AUTO AND VERIFY LOX LEVEL DRY INDICATIONS ARE OFF.	
	121	3	C1TC	CLTC	S-II LOX LOADING TO 99% IS COMPLETED AND STARTING S-IC LOX LOADING.	
	171	4	C2TC	C2SP	CYCLE THE LOX VENT VALVES CLOSED AND OPEN AT LEAST EVERY HOUR.	
		4-1		C2TC C2SP	NOTE ----- IF THE VALVES SHOULD INADVERTENTLY NOT BE CYCLED AS SPECIFIED, THEY SHOULD BE CYCLED A MINIMUM OF FIVE TIMES TO ASSURE NORMAL OPERATION. THE FIRST THREE CYCLES SHALL USE THE OVERRIDE CLOSE ASSIST.	
	111	5	CLTC	CVTS	STARTING S-IC LOX LOADING.	TCPI
- 6 HRS 51' 0"		5-1			NOTE ----- FOR THE NEXT 1 HR AND 25 MIN, CSA1 REQUIRES ACCESS TO TV CAMERAS 7, 11 & 12.	
	121	1	CLGK	CLTC	FT23 COMPLETE	
	121	2	***	C1PC	LOW LOX DOME PURGE ON FOR FLIGHT CONTROL SYSTEM CHECKS	*** (KAF2)
	123	3	***	CLFK	REQUEST & EXECUTE KAF2 (FLT CONTROL PREPS) WITH THE FOLLOWING OPTIONS: PRIMARY OPTION 1 (FCC & GYRO PREPS) SECONDARY OPTION 1 (COMPARATORS RESET)	***
	123	4	CUFS	CUSP	FLIGHT CONTROL COMPUTER SYSTEM POWER - ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6 HRS 47' 0"	121	1	CUFS	CLTC	KAF2 COMPLETE.	
	121	2	CLTC	ALL	THE FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO PREPARE FOR CTC5: CLGK CLFK CUGA CUCR CUFE C4FC CUSP C4FS	(CTC5)
	123	3	CUFS	CLGK	VERIFY READY TO SUPPORT CTC5.	(CTC5)
	151	4	CUFS	BGCC	MASK THE FOLLOWING DISCRETES: \$FUNC SE 935-38 MMSK (MDI'S 0888-0911)	(CTC5)
- 6 HRS 46' 0"	121	1	CLTC	C1TC C2TC C4TC CUTC	DISPLAY DESCRIPTIONS (FORMAT SELECTS) MUST BE COORDINATED WITH CLTC PRIOR TO EXECUTION UNTIL COMPLETION OF VALK.	
	171	2	C2TC	C2NK C2PK	DISPLAY DESCRIPTIONS (FORMAT SELECTS) MUST BE COORDINATED WITH C2TC PRIOR TO EXECUTION UNTIL COMPLETION OF VALK.	
	121	3	***	C1PC	LOW LOX DOME PURGE ON FOR CTC5	***
	123	4	***	CLFK	REQUEST & EXECUTE CTC5 NORM OPTION (LVDC & CRG INPUTS; BURN & COAST MODES; P, Y AND R AXES; SPARE & ACTIVE; APS POWER OFF).	***
		4-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE.	
	123	5	CUFS	CUGA	AFTER CTC5 AO GAIN TEST HAS STARTED, POSITION THE CRG/CSP POWER SWITCH TO OFF	AS-511
	123	6	CUFS	CUGA CLFK	WHEN CTC5 DISPLAYS ERROR MESSAGE "MDO 1903 CANNOT BE TURNED ON", MANUALLY POWER ON THE CRG/CSP AND SET THE CSP YAW COMPARATOR. REPORT WHEN COMPLETE.	AS-511

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6 HRS 46' 0"	123	7	CUFS	CLFK	ENTER THE RETRY OPTION (\$PD) TO CTC5	AS-511
- 6 HRS 30' 0"	161	1	C4PS	C4HC	DECREASE HE SUPPLY TO 1500 +/- 100 PSIA	
	161	2	C4PS	C4SP	OPEN COLD HE SUPPLY	
		2-1		C4SP	*** NOTE RAPID CYCLING OF LOX AND LH2 REPRESS VENTS REQUIRED FOR NEXT TWO SEQUENCES TO PREVENT EXCESSIVE PRESSURE DROP	
	161	3	C4PS	C4SP	DECREASE LOX REPRESS PRESSURE 100-150 PSI BELOW ENGINE BOTTLE PRESSURE	
	161	4	C4PS	C4SP	DECREASE LH2 REPRESS PRESSURE 100-150 PSI BELOW LOX REPRESS BOTTLE PRESSURE	
	161	5	C4PS	R4PS	VERIFY DELTA P'S ARE SATISFACTORY	
- 5 HRS 45' 0"	123	1	CUFS	CLFK	WHEN CTC5 IS COMPLETE, MANUALLY TERMINATE PROGRAM	AS-511
	121	2	CUFS	C1PK	ENTER \$PA TO CONTINUE WITH VALK	AS-511
	123	3	CUFS	CUGA	CRG/CSP SYSTEM POWER SWITCH TO OFF THEN AUTO	AS-511
	121	4	CUFS	CLTC	CTC5 COMPLETE. STARTING CTC3,	
	121	5	***	C1PC	LOW LOX DOME PURGE ON FOR CTC3	***
	123	6	***	CLFK	REQUEST AND EXECUTE CTC3, OPTIONS A, CD, EF (LVDC, INPUTS; BURN AND COAST MODE; P.Y. AXES). REPORT WHEN COMPLETE.	***
	151	7	CUFS	BGCC	UNMASK THE FOLLOWING DISCRETES: \$FUNC SE 935-38 MREL (MDI'S 0888-0911)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
- 5 HRS 32' 0"	171	1	C2PM	C2TC	J-RING TEMP IS BELOW MINUS 160 DEG F. READY FOR LH2 LOADING.	
	171	2	C1TC	C2TC	READY TO START LH2 LOADING. ALL SUPPORT PERSONNEL GO TO CH 143.	
- 5 HRS 29' 0"	121	1	C1TC	CLTC	S-IC LOX LOADING IS COMPLETED AND ALL STAGE LOX REPLENISH HAS BEEN INITIATED. REQUEST CLEARANCE TO START LH2 LOAD.	
	121	2	CLTC	C1TC	CDDT ONLY	
	181	3	C1TC	CCL0	CDDT ONLY	
	171	4	C2TC	C2PM C2RP R2SC	CDDT ONLY	
	181	5	C1TC	C1LO	CYCLE LOX VENTS CLOSED THEN AUTO AS REQUIRED TO MAINTAIN ULLAGE PRESSURE AND VENT VALVE OPERATION	
	181	6	C1TC	C1RP	PRESSURIZE HE BOTTLES TO 3200 PSI PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	161	7	C4TC	C4PS	VERIFY READY FOR LH2 LOAD.	
	171	8	C2TC	C2EV	VERIFY READY FOR LH2 LOADING ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 5 HRS 27' 0"	121	1	C2TC	CLTC	PRECONDITIONING TO MINUS 160 DEG F IS COMPLETE. READY FOR LH2 LOADING.	
	121	2	C4TC	CLTC	READY FOR LH2 LOADING.	
	121	3	CLTC	C1TC	START S-II LH2 LOADING	
	111	4	CLTC	CVTS	STARTING S-II LH2 LOADING.	TCPI
		5			NOTE ----- C2TV REQUIRES CONTROL OF OTV CAMERAS 9, 16, 34 & 35 DURING LH2 LOADING OF S-II STAGE. VIDEO TAPE REQUIRED AS DIRECTED BY C2TV	
- 5 HRS 18' 0"	121	1	CUFS	CLTC	CTC3 COMPLETE	
	121	2	***	C1PC	LOW LOX DOME PURGE OFF	***
	121	3	***	CLGK	REQUEST & EXECUTE FT31 (ACCELEROMETER PULSE COUNT Z).	***
- 5 HRS 15' 0"	121	1	CLGK	CLTC	FT31 COMPLETE	
	121	2	***	CUPC	REQUEST & EXECUTE FT06 (DRIFT CHECKS OPTION)	***
	151	3	CLFK	BGCC	MOUNT CTC4/CSB0 SCALE FACTOR TAPE ON IODC 1-3. REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 5 HRS 8' 0"						
	121	1	CLTC	ALL	THE FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO PREPARE FOR FLIGHT CONTROL SYSTEM GAIN TEST (CTC1): CLGK CUCR C2FC C4HY CUSP CLFK CUFE C1FE V2MS R4HY C2FE CUFS CUGA R2SC C4FS C4FC	(CTC4)
	123	2	CUFS	C1FE	VERIFY READY TO SUPPORT CTC1	(CTC4)
	123	3	CUFS	C2FC	ALL CONTROL SWITCHES TO AUTO POSITION EXCEPT AUX PUMPS SWITCH IN ENABLE POSITION. THERMAL CONTROL SWITCH IN OFF POSITION AND MAIN PUMP CASE BYPASS VALVE SWITCH IN CLOSED POSITION.	(CTC4)
		3-1		CLFK	*** NOTE ADVISE C2FC PRIOR TO S-II PROGRAM EVENTS SO R2SC AND V2MS CAN BE COMMANDED TO SWITCH TO FAST SPEED ON RECORDERS.	
	123	4	CUFS	C2FE	VERIFY READY TO SUPPORT CTC1	(CTC4)
	123	5	CUFS	C4HY	AUX HYDRAULIC PUMP POWER SWITCH TO AUTO.	(CTC4)
	123	6	CUFS	C4FC	VERIFY READY TO SUPPORT CTC1	(CTC4)
	151	7	CUFS	CUES	VERIFY EDS MODE SWITCH IN MONITOR POSITION AND WILL REMAIN THERE UNTIL COMPLETION OF CTC4	(CTT4)
	123	8	CUFS	CUGA	CONTROL EDS RATE GYRO SYSTEM POWER ON.	(CTC4)
- 5 HRS 5' 0"						
	171	1	C2PM	C2TC	RECIRC ENABLE ON. (LH2 10% MASS).	
	171	2	C2TC	C2RP	LOX HELIUM INJECTION TO START. (TO SUPPORT S-II LOX PTCS CALIBRATION)	
	171	3	C2TC	C2RP	RECIRC RESET TO RESET THEN INHIBIT	
	171	4	C2TC	C2RP	VERIFY LH2 PREVALVES OPEN - ON AND RECIRC. RESET - ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 5 HRS 5' 0"		4-1			C2RP *** NOTE RECORD LH PREVALVE CRYO OPENING TIME IN APPENDIX OF V-30029 (M020) MAXIMUM ALLOWABLE IS 1 SEC.	
	171	5	C2TC	U2SE	S-II LH2 FILL HAS STARTED.	
- 5 HRS 3' 0"						
	121	1	CUPC	CLTC	FT06 COMPLETE	
	123	2	***	CLFK	REQUEST & EXECUTE CTC4 NORM OPTIONS (CRG CALIB TEST; P, Y & R AXES; POS & NEG; BI-LEVEL PKG; COMPARATOR TEST & RATE EXCESSIVE TEST), REPORT WHEN COMPLETE.	***
- 5 HRS 0' 0"						
	121	1	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1.	(VARS
	151	2	CUTC	RGCC	CDDT ONLY	*
	121	3	CLTC	C1TC	CDDT ONLY	*
	181	4	C1TC	CCLO	CDDT ONLY	*
- 4 HRS 45' 0"						
	181	1	CCLO	C1TC	CDDT ONLY	*
	121	2	C1TC	CLTC C2TC	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 HRS 45' 0"						
	171	3	C2TC	C2RP	CDDT ONLY	*
- 4 HRS 40' 0"						
					DRSCR CLOSED LOOP TEST -----	
	111	1	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED)	TCPI (VARSD)
	111	2	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING FLIGHT CODE PLUGS	TCPI (VARSD) #
	111	3	CLTC	CVTS	CDDT ONLY	TCPI (VARSD) *
	111	4	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCPI (VARSD)
	121	5	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	(VARSD)
	121	6	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - SAFE S & A SWITCH - SAFE	(VARSD)
	121	7	CLTC	BTMC	TM TAPE RECORDER ON	(VARSD)
		7-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR TESTS.	
	121	8	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	(VARSD)
	111	9	CLTC	CVTS	LOCAL CMD CARRIER COMING ON.	TCPI
		10		C2NP	CYCLE MAIN/INSTR BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE (CD ONLY).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 40' 0"	171	11	C2TC	C2RP	LH2 PUMP DISCHARGE AND RETURN LINE VALVES TO OPEN.	
	171	12	C2TC	C2RP	START LH2 RECIRC PUMP TEST PER V-30029 (M020) TASK 61 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
- 4 HRS 36' 0"	121	1	***	C1PC	LOW LOX DOME PURGE ON	*** (CTC1)
- 4 HRS 35' 0"	121	1	CUFS	CLTC	CTC4 COMPLETE	
	151	2	CLFK	BGCC	REMOVE CTC4/CSRO SCALE FACTOR TAPE FROM IODC 1-3	
		3			NOTE ----	
					IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN.	
	121	4	***	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-4 HR OPTION).	***
	121	5	VARs	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	***
	121	6	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 35' 0"		6-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
121	7	C1PK	C1DP C2DP C4DP		SYSTEM STATUS SWITCH - OFF	
121	8	VARs	BRFS		SIG GEN SELECTOR ON AND VERIFY REMOTE MONITOR TO HYBRID	***
121	9	VARs	C1DP C2DP C4DP		RSCR'S 1 & 2 - INTERNAL AND VERIFY	***
121	10	VARs	B1RF B2RF B4RF		VERIFY RSCR LIMITER VOLTAGES OK	***
	10-1		CRSS		*** NOTE LIMITER VOLTAGES RECEIVED.	
121	11	VARs	C1DP C2DP C4DP		VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***
	11-1		CRSS		*** NOTE ALL EBW'S NOT CHARGED	
121	12	VARs	C1DP C2DP C4DP		AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF, SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO	***
121	13	C1PK	CLTC		READY FOR SRO CUTOFF COMMAND	
121	14	CLTC	RRSC		RECORDERS - FAST SPEED	
121	15	CLTC	SRO		ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS	
121	16	SRO	ALL		3-2-1 - MARK	
121	17	VARs	C1DP C2DP C4DP		SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARK
- 4 HRS 35' 0"	121	18	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	19	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	***
		19-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		19-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
	121	20	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***
		20-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	21	VARs	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	***
	121	22	C1PK	RRSC	VERIFY CUTOFF COMMANDS RECEIVED	
	121	23	C1PK	CLTC	READY FOR SRO PD COMMAND	
	121	24	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	25	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	26	SRO	ALL	3-2-1 - MARK	
	121	27	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	28	VARs	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	***
		28-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 35' 0"	121	29	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	***
		29-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
	121	30	VARs	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO AND VERIFY RSCR'S OFF.	***
		30-1		B1RF B2RF B4RF CRSS	*** NOTE RSCR LIMITER VOLTAGE INDICATIONS OFF.	
	121	31	C1PK	RRSC	VERIFY PD COMMANDS RECEIVED	
	121	32	C1PK	C1DP C2DP C4DP	STATUS SYSTEMS - SAFE	
	121	33	C1PK	CLVN	DESTRUCT SYSTEM - OFF AND RETURN DESTRUCT SYSTEM KEY TO CPSS, REPORT WHEN COMPLETE.	
	121	34	VARs	C1DP C2DP C4DP	VERIFY SAFETY BUS - OFF.	***
	121	35	VARs	BRFS	SIGNAL GENERATOR SELECTOR TO STANDBY AND HYBRID TO SELECT MONITOR NO. 1	***
	121	36	C1PK	CLTC	VARs COMPLETE.	
- 4 HRS 30' 0"	171	37	C2RP	C2TC	LH2 RECIRC PUMP TEST COMPLETE.	
	121	1	***	C1PC	LOW LOX DOME PURGE ON FOR CTC1	***
	123	2	***	CLFK	REQUEST & EXECUTE CTC1 WITH THE FOLLOWING OPTIONS AB, C, GH, IJ, M-B, D, GH, IJ, N-AB, C, EF, IJ, O-AB, C,	***

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▶ ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
- 4 HRS 30' 0"					EF, K, M (S-IVB, AO, A1, SPO, PRIM & SPARE, PITCH & YAW - S-IVB, A1, SP6, PRIM & SPARE, PITCH & YAW - S-IC S-II, AO, A1, SP2, PITCH & YAW - S-IC S-II, AO, A1, ROLL AXIS, SPO)	
		2-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE.	
	121	3	CLTC	BTMC	TM TAPE RECORDER OFF AND RELOAD	
		3-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (COUNTDOWN ONLY)	
	111	4	CLTC	CVTS	RANGE SAFETY COMMAND CHECKS COMPLETE, LOCAL COMMAND CARRIER IS OFF AND DESTRUCT SYSTEM KEY RETURNED TO CPSS	TCPI
	181	5	CCLO	C1TC	CDDT ONLY	*
	121	6	C1TC	CLTC	CDDT ONLY	*
	151	7	CUTC	BGCC	CDDT ONLY	*
- 4 HRS 22' 0"						
	161	1	C1TC	C4TC	READY FOR LH2 LOADING. ALL SUPPORT PERSONNEL GO TO CH 143.	
	151	2	C4TC	CUTC	REQUEST FLAG ON DISCRETES 3662, 3663, 3664 & 3669 (S-IVB LH2 POINT LEVEL SENSORS) BE REMOVED.	
	151	3	CUTC	RLDE	REMOVE FLAG ON DISCRETES 3662, 3663, 3664 & 3669 (S-IVB LH2 POINT LEVEL SENSORS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 19' 0"	121	1	C1TC	CLTC	S-II LH2 LOADING IS COMPLETED AND S-IVB LH2 LOADING IN PROGRESS.	
	171	2	C2TC	C2SP	CYCLE THE LH2 VALVES CLOSED THEN OPEN AT LEAST EVERY HOUR.	
		2-1		C2TC C2SP	NOTE ----- IF THE VALVES SHOULD INADVERTENTLY NOT BE CYCLED AS SPECIFIED, THEY SHOULD BE CYCLED A MINIMUM OF 5 TIMES TO ASSURE NORMAL OPERATION, THE FIRST THREE CYCLES SHALL UTILIZE THE EMERGENCY CLOSE ASSIST.	
	173	3	C2TC	C2GP	PERIODICALLY CYCLE THE START TANK LINE VENT OPEN (10 SECONDS MINIMUM) UNTIL THE PRESSURE HAS STABILIZED THEN CLOSE, UP TO THE INITIATION OF START TANK CHILLDOWN. VERIFY THE A7-71 LH2 LIQUID LEVEL IS CONSTANT PRIOR TO EACH CYCLE OF THE START TANK LINE VENT.	
- 4 HRS 16' 0"	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL THAT Q-BALL POWER IS COMING ON IN APPROXIMATELY 5 MINUTES	TCPI
	161	2	C4TC	C4EV	REPORT WHEN LH2 10% INDICATION IS ON.	
	151	3	C4TC	CUTC	REQUEST DISCRETES 3662, 3663, 3664 & 3669 (S-IVB POINT LEVEL SENSORS) BE FLAGGED.	
	151	4	CUTC	RLDE	FLAG DISCRETES 3662, 3663, 3664 & 3669 (S-IVB POINT LEVEL SENSORS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 11' 0"	121	1	CLTC	CUIP	Q-BALL POWER ON Q-BALL HEATER POWER - ON	TCPI
		1-1		CUIP	*** NOTE Q-BALL POWER SWITCH WILL BE LEFT IN ON POSITION UNTIL T-47 MIN	
	121	2	C2TC	CLTC	STARTING MRCV TEST	
	171	3	C2TC	C2PU	START MRCV TEST. REPORT WHEN COMPLETE.	
		3-1		C2PU	*** NOTE ALLOW 2 SECONDS DELAY MINIMUM BETWEEN COMMANDS TO MRCV'S.	
	171	4	C2PU	C2NP	SWITCH SELECTOR INHIBIT OFF	
	171	5	C2PU	C2AE	VERIFY ENGINE 201 THRU 205 HELIUM BOTTLE PRESSURE IS 1400 PSIA OR GREATER	
	171	6	C2PU	V2MS	VERIFY READY TO SUPPORT MRCV TIMING (MEASUREMENTS K6-201, K125-201 AND G006-201 THRU 205)	
	171	7	C2PU	R2SC	G006-201 THRU 205 RECORDERS TO FAST	
	171	8	C2PU	C2AE	ALL HELIUM SOL SW TO ON	
	171	9	C2PU	C2AE	ALL HELIUM CONT SOL ON LIGHT - ON	
	171	10	C2PU	V2MS	MEASURE TIME FROM K6-201 ON TO WHEN G006-201 THRU 205 REACHES LOW ENGINE MIXTURE RATIO (EMR) POSITION AND VERIFY THE TIME IS LESS THAN ONE SECOND FOR EACH VALVE.	
	171	11	C2PU	R2SC	VERIFY G006-201 THRU 205 INCREASED 1.3 TO 1.8 VDC.	
	171	12	C2PU	C2PK	VERIFY ENGINE REG OUT PRESS D012-201 THRU 205 IS 415 +/- 25 PSIA.	
		13		C2PU	MRCV COMMAND NO. 1 SW - HIGH EMR.	
		14		C2PU	RESET LIGHT - OFF	
		15		C2PU	CHECKOUT RESET LIGHT - OFF.	

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- 4 HRS 11' 0"	171	16	C2PU	C2EV	ENG 201 THRU 205 MRCV SOL CMD ON LIGHT OFF	
	171	17	C2PU	V2MS	MEASURE TIME FROM K125-201 OFF TO WHEN G006-201 THRU 205 REACHES HIGH EMR POSITION AND VERIFY THE TIME IS LESS THAN 1.2 SECOND FOR EACH VALVE.	
	171	18	C2PU	R2SC	VERIFY G006-201 THRU 205 DECREASED 1.3 TO 1.8 VDC.	
		19		C2PU	MRCV COMMAND NO. 2 SW - LOW EMR.	
		20		C2PU	CHECKOUT RESET LIGHT - ON	
	171	21	C2PU	C2EV	ENG 201 THRU 205 MRCV SOL CMD ON LIGHT ON	
	171	22	C2PU	R2SC	VERIFY G006-201 THRU 205 INCREASED 1.3 TO 1.8 VDC.	
		23		C2PU	MRCV COMMAND NO. 1 SW - LOW EMR.	
		24		C2PU	RESET LIGHT - ON	
	171	25	C2PU	C2AE	ALL HELIUM SOL TO OFF.	
	171	26	C2PU	C2AE	ALL HELIUM CONT SOL ON LIGHT - OFF	
	171	27	C2PU	R2SC	VERIFY G006-201 THRU 205 DECREASED 1.3 TO 1.8 VDC.	
- 4 HRS 5' 0"	171	1	C2PU	C2TC	MRCV TEST IS COMPLETE	
	121	2	C2TC	CLTC	MRCV TEST IS COMPLETE	

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▶ ▶ ▶ ▶ ▶ CS ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
- 4 HRS 0' 0"						
	171	1	C2TC	C2RP	START LOX HE INJ/ACCUMULATOR TEST PER V-30029 (M020) TASK 45 (HAZARDOUS). REPORT WHEN COMPLETE.	#
	121	2	CLTC	C1TC C4TC	CDDT ONLY	*
	181	3	C1TC	CCL0	CDDT ONLY	*
- 3 HRS 45' 0"						
	161	1	C4TC	C4PS	WHEN LH2 LOADING REACHES 100% START CHILLDOWN PUMP CHECKS PER V-35014 (HAZARDOUS).	
	123	2	CUFS	C4HY	AUXILIARY PUMP POWER SWITCH TO OFF	
	171	3	C2RP	C2TC	LOX HE INJ/ACCUMULATOR TEST COMPLETED	#
- 3 HRS 38' 0"						
	121	1	C1TC	CLTC	S-IVB LH2 LOADING IS COMPLETED AND REPLENISH INITIATED. LOX & LH2 STABLE AT 100%.	
	121	2	CLTC	C4TC	START LH2 DIRECTIONAL VENT CHECK. REPORT WHEN COMPLETE.	
	111	3	CLTC	CVTS	LV CRYO LOADING IS COMPLETE AND NORMAL REPLENISH HAS BEEN ESTABLISHED.	TCPI
		4			NOTE ----- FOR THE NEXT 5 MINUTES, CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERAS 27 & AA3 OR AA4.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 38' 0"						
	121	5	CLTC	C1TC	RETRACT PRIMARY DAMPER	
	181	6	C1TC	CSAC	RETRACT PRIMARY DAMPER. REPORT WHEN COMPLETE	
	118	7	CSAC	CSAD	RETRACT PRIMARY DAMPER PER V-36086 (NON-HAZARDOUS).	
	161	8	C4TC	C4PS	START LH2 DIRECTIONAL VENT CHECK, AND LH2 AND LOX TANK VENT CHECKS ON CH 161.	
	143	9	C4PS	C4HU	POSITION S-IVB REPLENISH VALVE OVERRIDE CLOSE SWITCH TO CLOSE	
	161	10	C4PS	C4PR	VERIFY LH2 REPLENISH VALVE CLOSED	
	161	11	C4PS	C4SP	LH2 L/R OPEN ON THEN OFF	
	161	12	C4PS	C4SP	VERIFY CLOSED IND ON AND LH2 VENT BOOST CLOSE AND L/R LATCH RESET COMMANDS IND ON.	
	161	13	C4PS	C4SP	VERIFY LH2 TANK VENT CLOSED.	
	161	14	C4PS	C4SP	DIR VENT TO FLIGHT THEN AUTO. VERIFY FLIGHT POSITION.	
	161	15	C4PS	C4SP	DIR VENT TO GROUND THEN AUTO. VERIFY GROUND POSITION.	
	161	16	C4PS	C4SP	OPEN LH2 TANK VENT.	
	143	17	C4PS	C4HU	POSITION S-IVB REPLENISH VALVE OVERRIDE SWITCH TO NORMAL. VERIFY NORMAL REPLENISH HAS BEEN ESTABLISHED.	
	161	18	C4PS	C4SP	CLOSE LOX TANK VENT THEN OPEN	
	161	19	C4PS	C4SP	LOX TANK NPV OPEN, LATCH, CLOSE, THEN UNLATCH.	
	161	20	C4PS	C4SP	VERIFY VALVE IN AN INTERMEDIATE POSITION	
	161	21	C4PS	C4SP	LOX TANK NPV OPEN THEN CLOSE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 38' 0"					CD ONLY	
	161	22	C4PS	C4SP	VERIFY FULL CLOSED IND ON, AND LOX VENT/NPV BOOST CLOSE AND NPV LATCH COMMAND RELAYS RESET IND. ON.	
	121	23	C4TC	CLTC	S-IVB VENT CHECKS COMPLETE. READY FOR CREW INGRESS	
- 3 HRS 30' 0"	171	1	C2TC	C2AE C2RP	START PROPULSION SYSTEM BOTTLE DECAY TEST PER V-30029 (M020) TASK 34 (NON-HAZARDOUS).	#
- 3 HRS 25' 0"	111	1	CLTC	CVTS	LV READY FOR CREW INGRESS	TCPI
		2	CLTC		*** NOTE TIME FOR SC GROUND CLOSEOUT CREW TO LEAVE MSS PARKSITE.	
- 3 HRS 20' 0"	123	1	CUFS	C2FC	RETURN PANEL CONTROL SWITCHES TO COUNT CONFIGURATION.	
		1-1		C2FC	ALL FUNCTIONAL SWITCHES TO OFF OR DOWN POSITION, EXCEPT ALL ACCUMULATOR CONTROL IN AUTO AND AUX PUMPS IN ENABLE	
	171	2	C2FE	C2TC	FLIGHT CONTROL TEST CTC1 IS COMPLETE.	
	171	3	C2FC	C2TC	REQUEST PERMISSION TO ESTABLISH EAS MANUAL TEMPERATURE CONTROL MODE.	
		4		C2FC	VERIFY ACCUMULATORS UNLOCKED	
	171	5	C2FC	R2SC V2MS	HYDRAULIC RECORDERS ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 20' 0"						
		6		C2FC	S-II AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 - ON. ALLOW SYSTEM PRESSURES TO STABILIZE.	
		7		C2FC	OPEN MAIN PUMP BYPASS VALVE AND ALLOW MAIN PUMP FLUID TEMPS TO STABILIZE WITH RESERVOIR FLUID TEMPS.	
		8		C2FC	MAIN PUMP BYPASS VALVE - CLOSE	
		9		C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROLS - ON	
		10		C2FC	S-II AUXILIARY HYDRAULIC PUMPS ENGINES 1, 2, 3 & 4 - OFF. NOTE NORMAL SHUTDOWN	
		11		C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON AND ALL ACCUMULATORS LOCK COMMAND LIGHT OFF	
	171	12	C2FC	V2MS	HYDRAULIC RECORDERS OFF	
	171	13	C2FC	C2TC	EAS MANUAL THERMAL CONTROL MODE HAS BEEN ESTABLISHED	
		13-1		C2FC	*** NOTE MANUALLY CYCLE INDIVIDUAL AUX HYDRAULIC PUMPS ON AND OFF TO MAINTAIN SYSTEM OIL TEMPERATURES WITHIN LIMITS PER V-30029 (M020) TASK 36 (HAZARDOUS). COORDINATE ALL SWITCH ACTIONS WITH C2TC AND CUFS PRIOR TO EXECUTION.	
	123	14	CUFS	ALL	ALL S-IC, S-II & S-IVB PERSONNEL CONCERNED WITH FLIGHT CONTROL CHECKS RETURN TO CHANNEL 121	
	121	15	CUFS	CLTC	CTC1 COMPLETE	
	121	16	***	C1PC	LOW LOX DOME PURGE OFF	***
	121	17	***	CLGK	REQUEST & EXECUTE FT31 (ACCELEROMETER PULSE COUNT X & Y).	***
	161	18	C4TC	C4PS	CONDUCT HELIUM DECAY CHECKS AND FUNCTIONALS ON CH 161.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 20' 0"					CD ONLY	
	161	19	C4PS	R4PS C4P2	VERIFY HELIUM HAS STABILIZED AND READY FOR DECAY CHECKS.	
	161	20	C4PS	C4SP	CLOSE COLD HELIUM SUPPLY VALVE	
	161	21	C4PS	C4SP	OPEN COLD HELIUM LINE VENT FOR 15 MINUTES THEN CLOSE	
	161	22	C4PS	C4HC	CDDT ONLY	*
	161	23	C4PS	C4ET	ENGINE CONTROL POWER ON	
		23-1			*****CAUTION***** * * C4ET ENGINE CONTROL * * POWER OFF UPON ANY * * CHANGE OF STATE OF THE * * ENGINE * * *****	
	161	24	C4PS	C4ET	VERIFY IGNITION DETECTED ON	
	161	25	C4PS	C4ET	SWITCH SELECTOR CUTOFF 1 ON THEN OFF	
	161	26	C4PS	C4ET	SWITCH SELECTOR CUTOFF 2 AUTO THEN OFF	
	161	27	C4PS	C4ET	LIQUID LEVEL SENSOR CUTOFF TO ARM	
	161	28	C4PS	C4ET	MONITOR FOR ANY ENGINE CUTOFF	
	161	29	C4PS	C4SP	MODE SELECT TO BURNER THEN AUTO	
	161	30	C4PS	C4OH	VOTING CIRCUIT ENABLE ON	
	161	31	C4PS	C4OH	VERIFY REPRESS SYS LAUNCH MODE IND OFF	
	161	32	C4PS	C4OH	VOTING CKT TEMP SIM #1 TO LOW AND #2 TO HIGH. VERIFY NO MALFUNCTION.	
	161	33	C4PS	C4OH	VOTING CKT TEMP SIM #2 TO AUTO AND #3 TO HIGH. VERIFY NO MALFUNCTION.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
- 3 HRS 20' 0"						
	161	34	C4PS	C40H	VOTING CKT TEMP SIM #1 TO HIGH AND #3 TO LOW. VERIFY NO MALFUNCTION.	
	161	35	C4PS	C40H	VOTING CKT TEMP SIM #1 TO AUTO.	
	161	36	C4PS	C40H	MONITOR FOR A BURNER MALFUNCTION.	
	181	37	CSAC	C1TC	PRIMARY DAMPER IS RETRACTED & LATCHED	
	121	38	C1TC	CLTC	PRIMARY DAMPER IS RETRACTED & LATCHED	
	111	39	CLTC	CVTS	PRIMARY DAMPER IS RETRACTED & LATCHED	TCPI
	181	40	C1TC	C1PE	CDDT ONLY	*
	151	41	CUTC	BGCC	CDDT ONLY	*
- 3 HRS 17' 0"						
	121	1	CLGK	CLTC	FT31 COMPLETE	
	121	2	***	CUPC	REQUEST & EXECUTE FT06 (DRIFT CKS OPTION)	***
- 3 HRS 15' 0"						
	121	1	CLTC	C1TC C4TC	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 55' 0"					CD ONLY	
	181	1	C1TC	CCL0	CDDT ONLY	*
		2		CCL0	CDDT ONLY	*
	133	3	CCL0	C20U CP02	CDDT ONLY	*
	133	4	CCL0	C20U	CDDT ONLY	*
	133	5	CCL0	C20U	CDDT ONLY	*
	133	6	CCL0	CP02	CDDT ONLY	*
	133	7	CCL0	CP02	CDDT ONLY	*
	133	8	CCL0	RLDR	CDDT ONLY	*
	181	9	CCL0	C1TC	CDDT ONLY	*
	121	10	C1TC	CLTC C2TC	CDDT ONLY	*
- 2 HRS 50' 0"						
	121	1	CUFS	CLTC	CTC2 COMPLETE	
	121	2	***	C1PC	LOW LOX DOME PURGE OFF	***
	123	3	***	CLFK	REQUEST & EXECUTE VAFC (FLIGHT CONTROL UTILITY PROGRAM) PRIMARY OPTION 3 (CONTROL COMPUTER SC INPUT TEST). REPORT WHEN COMPLETE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 2 HRS 42' 13"		1		C2EC	CDDT ONLY	*
- 2 HRS 42' 10"		1		C2RP	CDDT ONLY	*
- 2 HRS 42' 9"		1		C2RP	CDDT ONLY	*
		2		C2RP	CDDT ONLY	*
		2-1		C2RP	CDDT ONLY	*
		3			CDDT ONLY	*
- 2 HRS 42' 0"	121	1	CLGK	CLTC	FT20 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST - FULL RANGE OPTION)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 2 HRS 41'15"		1	C2EC		CDDT ONLY	*
- 2 HRS 40' 0"		1	CLTC		*** NOTE TIME FOR START OF FLIGHT CREW INGRESS	
		2	CLTC		*****WARNING***** * * UPON CVTS OR LOM * * ANNOUNCEMENT THAT AN * * EMERGENCY EGRESS IS * * ORDERED, IMMEDIATELY * * START SAFING THE LV PER * * APPENDIX A IF NOT IN * * SAFED CONDITION ALREADY * * *****	
	161	3	C4PS	C40H	VOTING CKT TEMP SIM #2 TO AUTO AND #1 TO LOW	
	121	4	CLTC	C1TC C2TC C4TC	CDDT ONLY	*
	181	5	C1TC	CCLH	CDDT ONLY	*
- 2 HRS 35'45"		1	C2RP		CDDT ONLY	*
		1-1	C2RP		CDDT ONLY	*
		1-2	C2RP		CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 2 HRS 33' 0"	121	10	C2TC	CLTC	CDDT ONLY	*
- 2 HRS 30' 0"	121	1	CLGK	CLTC	FT10 COMPLETE	
	121	2	***	CUPC	REQUEST & EXECUTE FT06 (DRIFT CHECKS)	***
	151	3	CUTC	BGCC	UNMASK THE FOLLOWING DISCRETES. REPORT WHEN COMPLETE. \$ FUNC SE 937-02 MREL \$ FUNC SE 937-05 MREL \$ FUNC SE 937-01 MREL \$ FUNC SE 937-20 MREL \$ FUNC SE 937-45 MREL	
	171	4	C2TC	C2NP	STAGE SELECT TO INHIBIT	
	171	5	C2TC	C2AE C2RP	CDDT ONLY	*
- 2 HRS 27' 0"		1			NOTE ---- C2TV REQUIRES VIDEO TAPE TV SCAN OF S-II SIDEWALL INSULATION UTILIZING CAMERAS 9, 16, 34 & 35	
	113	2	C2TC	BTVE	START VIDEO TAPE OF SWITCHER MONITOR NO. 86 AT REQUEST OF C2TV ON CH 113. DISCONTINUE VIDEO TAPING AT REQUEST OF C2TV.	N-284-56
- 2 HRS 25' 0"	161	1	C4PS	C4ET	CUTOFF SENSOR POWER OFF	
		1-1		C4DE	*** NOTE DEE 3662, 3663, 3664 & 3669 OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 25' 0"	161	2	C4PS	C4ET	VERIFY NONPROGRAMMED CUTOFF ON	
	161	3	C4PS	C4ET	VERIFY WET INDICATIONS OFF	
	161	4	C4PS	C4ET	LIQUID LEVEL SENSOR CUTOFF TO DISARM	
	161	5	C4PS	C4ET	VERIFY NONPROGRAMMED CUTOFF INDICATION OFF	
	161	6	C4PS	C4ET	CUTOFF SENSOR POWER ON. VERIFY WET INDICATIONS.	
		6-1		C4DE	*** NOTE DEE 3662, 3663, 3664 & 3669 ON	
	161	7	C4PS	C4ET	ENGINE READY BYPASS ON THEN OFF AND VERIFY ENGINE CUTOFF LOCKIN OFF	
	161	8	C4PS	C4ET	ENGINE CONTROL POWER OFF.	
	161	9	C4PS	C4OH	VOTING CKT TEM SIM #1 TO AUTO	
	161	10	C4PS	C4OH	VOTING CIRCUIT ENABLE OFF.	
	161	11	C4PS	C4SP	MODE SELECT TO AMBIENT	
	161	12	C4PS	C4OH	VERIFY REPRESS SYS LAUNCH MODE IND ON.	
- 2 HRS 18' 0"	121	1	CUPC	CLTC	FT06 COMPLETE	
	121	2	***	C4NK	REQUEST AND EXECUTE XADS (CONSOLE 11) (S-IVB COUNTDOWN DISCRETE SCAN). REPORT WHEN COMPLETE.	***
- 2 HRS 13' 0"	121	1	C4NK	CLTC	XADS COMPLETE	
	121	2	C1PK	CLTC	VALK COMPLETE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
2 HRS 0' 0"						
	181	10	C1TC	C1PC	LOW LOX DOME PURGE - AUTO	(VALL)
	121	11	C1TC	CLTC	S-IC READY FOR VALL	
	171	12	C2TC	C2IP	GROUND POWER - ON	(VALL)
	171	13	C2TC	C2IP	RF COUPLER - AUTO	(VALL)
	171	14	C2TC	C2IP	TM CAL MODE - AUTO	(VALL)
	171	15	C2TC	C2IP	PREFLT LEVELS - AUTO	(VALL)
	171	16	C2TC	C2IP	FM/FM INFLT - AUTO	(VALL)
	171	17	C2TC	C2IP	PCM MODE - AUTO	(VALL)
	171	18	C2TC	C2IP	F1, F2 AND P1 RF TRANSMITTER - AUTO	(VALL)
	121	19	C2TC	CLTC	S-II READY FOR VALL	
	161	20	C4TC	C4IP	TM MODE SELECT - AUTO	(VALL)
	161	21	C4TC	C4IP	TM CALIBRATE - AUTO	(VALL)
	161	22	C4TC	C4IP	P1 TRANSMITTER - AUTO	(VALL)
	121	23	C4TC	CLTC	S-IVB READY FOR VALL	
	151	24	CUTC	CUIP	RF DUMMY LOAD - AUTO	(VALL)
	151	25	CUTC	CUIP	F1 TM - AUTO	(VALL)
	151	26	CUTC	CUIP	TM CAL MODE TO INFLT THEN AUTO	(VALL)
	151	27	CUTC	CUIP	TM CALIBRATOR - AUTO	(VALL)
	151	28	CUTC	CUIP	PREFLT LEVELS - AUTO	(VALL)
	151	29	CUTC	CUIP	F1 & P1 RF TRANSMITTER - AUTO	(VALL)
	121	30	CUTC	CLTC	IU READY FOR VALL	
	151	31	CUTC	BGCC	CDDT ONLY	*

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▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
- 1 HRS 21' 0"						
	121	1	CEDK	CLTC	EDS PROGRAM COMPLETE.	(FT47)
	121	2	CEDK	CLTC	EDS TEST COMPLETE.	
	111	3	CLTC	CVTS	EDS TEST COMPLETE, REQUEST HFLT REPORT ON CH 121 FOR HOUSTON PREFLIGHT COMMANDS.	TCPI
	121	4	CLTC	RLDE	LOAD SEQUENCE COMPARE GW69 FOR WATL/WASL AND START GROUP 1.	(WATL WASL)
	121	5	CLTC	CUEV	REPORT TO CRSS ON CH 137 TO SUPPORT HOLD FIRE CHECKS	
	121	6	CVTS	CLTC	EDS POWER IS OFF. CSM READY FOR Q-BALL CAL.	# TCPI
	181	7	C1TC	CSAC	VERIFY S/A'S READY FOR WASL.	(WASL)
	181	8	C1TC	CTS1	VERIFY TSM'S READY FOR WATL.	(WATL)
	121	9	C1TC	CLTC	S/A'S AND TSM'S READY FOR WATL & WASL.	(WATL WASL)
	121	10	CVTS	CLTC	USB/CCS TRANSPONDER IN LOCK. CLEAR TO TURN ON COMMAND DECODER.	(FT47) TCPI
	121	11	CLTC	CUIP	COMMAND DECODER ON	(FT47)
	121	12	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF.	(FT47)
	121	13	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 063 (CCS OMNI, SMSIU063).	(FT47)
	121	14	CLTC	CUNK	CDDT ONLY	* (FT47)
		14-1		CUES	CDDT ONLY	*
	111	15	CLTC	CVTS	GDDT ONLY	* TCPI
	121	16	CLTC	ECOP	START REAL TIME REDUCTION PROGRAM.	(FT47)
	121	17	CLTC	BTMC	TM TAPE RECORDING ON.	(FT47)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 19' 0"	121	16	HFLT	ALL	TERMINATE COMMAND ON MY MARK.	(FT47)
	121	17	HFLT	ALL	3, 2, 1, MARK.	(FT47)
	121	18	CLTC	ETOM	VERIFY AVP ONLY.	(FT47)
	121	19	CLTC	HFLT	VERIFY HOUSTON COMMANDS COMPLETE.	TCPI
- 1 HRS 17' 0"	121	1	CLSK	CLTC	WATL COMPLETE.	
	121	2	***	CLSK	REQUEST AND EXECUTE WASL.	***
- 1 HRS 15' 0"	121	1	CLTC	CUIP	C-BAND 1 AND 2 ON C-BAND 1 AND 2 INHIBITS ON	
	261	2	CLM4	BOSC	REQUEST PRESENT GH2 BATTERY PRESSURE	TCPI
- 1 HRS 14' 0"	121	1	CLSK	CLTC	WASL COMPLETE.	
- 1 HRS 13' 0"	121	1	***	CLGK	REQUEST AND EXECUTE FT47 (PREFLIGHT COMMAND SYSTEM TEST) (HOUSTON) (OPTION SP3).	***
	121	2	CLGK	CLTC	FT47 COMPLETE.	
	121	3	CLTC	ECOP	TERMINATE REAL TIME REDUCTION PROGRAM.	
	111	4	CLTC	CVTS	HOUSTON PREFLIGHT COMMAND SYSTEM TEST COMPLETE. REQUEST GMIL REPORT IU CCS GO/NO-GO TO VURF ON CH 137.	TCPI

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- 1 HRS 13' 0"	121	5	CLTC	MTPE	VERIFY READY FOR Q-BALL SIM COMMAND.	TCPI
	121	6	CLTC	CUIP	GIVE Q-BALL SIM COMMAND FOR 10 SECONDS ON YOUR MARK.	TCPI
	121	7	CUIP	ALL	3, 2, 1, MARK.	TCPI
	111	8	CLTC	CVTS	REQUEST MTPE SUPPLY Q-BALL SIM COMMAND READING TO VUMS ON CH 148.	TCPI
- 1 HRS 12' 0"	121	1	***	CLGK	REQUEST AND EXECUTE FT23 (LVDC SECTOR SUM CHECK).	***
- 1 HRS 10' 0"	121	1	CLTC	VURF	VERIFY C-BAND BEACON NO. 2 READY FOR INTERROGATION.	
	121	2	CLTC	CUIP	C-BAND 1 AND 2 INHIBITS OFF C-BAND 1 INHIBIT ON	
	111	3	CLTC	CVTS	READY TO START C-BAND BEACON 2 CHECKS, REPORT GO/NO-GO AND RANGE READOUT TO VURF ON CH 137.	TCPI
- 1 HRS 6' 0"	121	1	CLTC	BTMC ETMS	VERIFY TM TAPE RECORDING ON	
	121	2	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT TEST.	
	121	3	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK - ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 5' 0"						
	121	1	CLTC	CUPC	VERIFY ST-124M PREPS COMPLETE. READY FOR FT06.	(FT06)
	111	2	CLTC	CVTS	REQUEST GMIL REMOVE CCS S-BAND CARRIER AND MEASURE UNLOCKED FREQUENCY, "IU COMMAND SYSTEM IS DISABLED".	TCPI
	121	3	CLGK	CLTC	FT23 COMPLETE TELEMETRY TURN ON ----- (FOLLOWS FT23 IMMEDIATELY)	
	121	4	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED OVER CH 121,	***
	121	5	***	C1IP	TM MODE SELECT SWITCH TO ANTENNA.	***
	121	6	***	C1IP	F1 & P1 RF ON	***
	121	7	***	C1IP	TM CALIBRATOR ON	***
	121	8	***	C1IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT.	***
	121	9	***	C2IP	RF COUPLER TO ANTENNA	***
	121	10	***	C2IP	VERIFY GROUND POWER ON (CAL POWER).	***
	121	11	***	C2IP	F1, F2 & P1 RF ON	***
	121	12	***	C2IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT.	***
	121	13	***	C4IP	TM MODE SELECT SWITCH TO ANTENNA.	***
		14	***	C4IP	P1, ON THEN AUTO.	***
	121	15	***	CUIP	RF DUMMY LOAD OFF.	***
	121	16	***	CUIP	<u>F1 TM ON</u>	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 5' 0"						
		17	***	CUIP	F1 AND P1 RF ON	***
	121	18	***	CUIP	TM CALIBRATOR ON	***
	121	19	***	CUIP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT.	***
	121	20	C1PK	CLTC	TELEMETRY TRANSMITTER TURN-ON COMPLETE (DELAY 5 MINUTES MINIMUM FOR TM TRANSMITTER WARM UP)	
	121	21	CLTC	ETMS	START TM PARAMETERS QUICK SCAN CHECK	
	121	22	CLTC	ETMS	VERIFY CIF READY TO SUPPORT TM CHECKS.	
	111	23	CLTC	CVTS	VERIFY CCS CARRIER ON FOR LAUNCH.	TCPI
	121	24	CLTC	CGIC	START ELECTROMAGNETIC COMPATIBILITY MONITORING.	TCPI
	121	25	CLTC	RLDE	ENTER/VERIFY CDC MODE.	
	121	26	CLTC	C1TC	REQUEST CSA9 SWITCH TO CHANNEL 111 ACTIVE AND REPORT TO CVTS FOR S/A 9 OPERATIONS.	
		26-1			NOTE ----- FROM NOW UNTIL LIFTOFF, CSA9 WILL RESPOND ONLY TO CVTS ON CH 111.	
	181	27	C1TC	CSAC	REQUEST CSA9 SWITCH TO CHANNEL 111 ACTIVE AND REPORT TO CVTS TO OPERATE S/A 9 AS DIRECTED.	
	111	28	CLTC	CVTS	CSA9 WILL REPORT ON CHANNEL 111. CONFIRM WHEN COMMUNICATIONS HAVE BEEN SATISFACTORILY ESTABLISHED.	TCPI

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					CD ONLY	
1 HRS 4' 0"	121	1	***	CUPC	REQUEST AND EXECUTE FT06 (GIMBAL ANGLE READ).	***
1 HRS 2' 0"	121	1	CUPC	CLTC	FT06 COMPLETE	(GT16)
	121	2	***	CUPC	REQUEST AND EXECUTE GT16 (AZIMUTH LAYING PROGRAM).	***
1 HRS 0' 0"	181	1	C1TC	CCRP	START RP-1 LEVEL ADJUST AND LINE INERTING PER V-25389 (HAZARDOUS).	
	161	2	C4PS	C4TC	HELIUM DECAY CHECK IS COMPLETE AND READY TO RE-ESTABLISH FLOW AND START FINAL PROPULSION CHECKS.	
	161	3	C4PS	C4HC	CDDT ONLY	
	161	4	C4PS	C4SP	OPEN LOX PREPRESS VALVE FOR 20 SECONDS THEN AUTO.	
	161	5	C4PS	C4SP	OPEN COLD HELIUM LINE VENT.	
	161	6	C4PS	C4SP	OPEN COLD HELIUM SUPPLY.	
	161	7	C4PS	C4SP	CLOSE COLD HELIUM LINE VENT.	
	161	8	C4PS	C4AL	OPEN 3000 PSI HE SUPPLY IF REQUIRED.	#
	161	9	C4PS	C4ET C4PU R4PS V4MS	VERIFY READY FOR MRCV CHECKS	
	161	10	C4PS	C4PU	MRCV COMMAND NO. 1 & NO. 2 OPEN	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 0' 0"						
		10-1		C4PU	*** NOTE RELAYS RESET INDICATION OFF AND MRCV OPEN COMMAND INDICATION ON	
	161	11	C4PS	C4ET	CT HELIUM CONTROL SOLENOID ON	
		11-1		C4ET	*** NOTE LOX & LH2 BLEED VALVES CLOSED	
		12		C4PS	DELAY 5 SECONDS -----	
	161	12-1	C4PS	C4PU	MRCV COMMAND NO. 1 & NO. 2 CLOSE	
		13		C4PS	DELAY 5 SECONDS -----	
	161	13-1	C4PS	C4PU	MRCV COMMAND NO. 1 & NO. 2 OPEN	
		14		C4PS	DELAY 5 SECONDS -----	
	161	14-1	C4PS	C4PU	MRCV COMMAND NO. 1 & NO. 2 CLOSE	
	161	15	C4PS	C4ET	CT HELIUM CONTROL SOLENOID OFF.	
	161	16	C4PS	R4PS	VERIFY MRCV OPERATION SATISFACTORY	
	161	17	C4PS	V4MS	REPORT MRCV VALVE MOTION TIMES AND VOLTAGE CHANGE TO C4PS	
	161	18	C4PS	C4ET	ENGINE CONTROL POWER ON.	
	161	19	C4PS	C4ET	VERIFY IGNITION DETECTED IND ON.	
	161	20	C4PS	C4ET	SW SELECTOR CUTOFF NO. 1 - ON	
	161	21	C4PS	C4ET	VERIFY THE FOLLOWING: 1. ENGINE CUTOFF ON. 2. NON-PROGRAMMED CUTOFF OFF, 3. ENGINE CUTOFF LOCKIN ON.	
	161	22	C4PS	C4ET	ENGINE IGNITION POWER - ON.	
	161	23	C4PS	C4ET	VERIFY ENGINE READY ON AND ENGINE CUTOFF LOCKIN OFF.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 0' 0"						
	161	24	C4PS	C4HN	LOX UMBILICAL PURGE SUPPLY - AUTO.	
	161	25	C4PS	C4HN	HEAT EXCHANGER CIRCUIT #1 VENT OPEN FOR 20 SECONDS, THEN AUTO	(VATS)
	161	26	C4PS	C4SP	LOX VENT CLOSE THEN OPEN	
	161	27	C4PS	C4SP	LH2 VENT CLOSE THEN OPEN	
	161	28	C4PS	C4SP	VERIFY DIRECTIONAL VENT IN AUTO.	
	161	29	C4PS	C4EP	LOX AND LH2 CHILLDOWN PUMPS TO AUTO.	(VAPX/VATS)
	161	30	C4PS	C4EP	LOX AND LH2 PREVALVES CLOSE, OPEN, THEN AUTO	(VAPX/VATS)
	161	31	C4PS	C4EP	OPEN START TANK PURGE	
	161	32	C4PS	C4EP	OPEN START TANK VENT	
	161	33	C4PS	C4EP	DELAY 5 MINUTES THEN CLOSE START TANK PURGE AND START TANK VENT.	
	161	34	C4PS	C4EP	START TANK VENT - AUTO	(VATS)
	161	35	C4PS	C4EP	START TANK SUPPLY VENT - AUTO	(VATS)
	161	36	C4PS	C4EP	START TANK SUPPLY VALVE - AUTO	(VATS)
	161	37	C4PS	C4EP	THRUST CHAMBER PURGE SUPPLY - AUTO	(VATS)
	161	38	C4PS	C4EP	THRUST CHAMBER CHILLDOWN SUPPLY - AUTO	(VATS)
-59' 0"						
	121	1	CLTC	CUFS	PREPARE FOR AND START FLIGHT CONTROL SYSTEM TEST ON CH 123. MONITOR CH 121. REPORT WHEN COMPLETE.	(VAFC)
	188	2	CLTC	ALL	FOLLOWING STATIONS SWITCH TO CHANNEL 123 FOR FLIGHT CONTROL SYSTEM NULL TEST: CUFE CUFS C1FE C4FC CUCR R2SC CUGA C1FC C4FS CLFK C2FE V2MS C4HY CUSP C2FC R4SC	(VAFC)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-59' 0"	123	3	CUFS	C2FC	ALL CONTROL SWITCHES TO AUTO POSITION EXCEPT AUX PUMP SWITCH IN ENABLE	(VAFC)
	123	4	CUFS	V2MS	HYDRAULIC RECORDERS ON AT 2 MM/SEC.	(VAFC)
	123	5	CUFS	C4HY	FLIGHT MODE TO AUTO.	(VAFC/VAPX)
	123	6	CUFS	R4SC	STRIP CHARTS TO FAST	(VAFC/VAPX)
-57' 30"	188	1	CLTC	ALL	VATC WILL START EXECUTING IN 30 SECONDS, FLUCTUATING MEASUREMENTS MAY OCCUR DURING THE NEXT 2 MINUTES.	
		1-1	BGCC		*** NOTE LCC GENERAL MESSAGE NO. 0510 "NO S/S OUTPUT S-IVB" MAY OCCUR DURING NEXT 2 MINUTES.	
-57' 0"	121	1	CUPC	CLTC	GT16 AND AZIMUTH LAYING COMPLETE.	
	121	2	***	CLIK	REQUEST & EXECUTE VATC (LV TM CAL CKS)	***
-55' 0"	121	1	CLIK	CLTC	VATC COMPLETE	
		2			NOTE ----- FT06, FT49, VAFC & FT10 WILL BE EXECUTED CONSECUTIVELY AND NOT NECESSARILY AT THE CDC TIMES SHOWN.	
	121	3	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-55' 0"	121	4	CLTC	ETMS	REPORT OUT OF TOLERANCE PARAMETERS TO BLTM ON CH 127 WHEN ANALYSIS IS COMPLETE	
-53'30"	121	1	CUPC	CLTC	FT06 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MONITOR PROG)	***
-52'30"	121	1	CLGK	CLTC	FT49 COMPLETE, FE50 MONITOR PROGRAM IN PROGRESS	
	121	2	***	C1PC	LOW LOX DOME PURGE ON FOR VAFC.	***
	123	3	***	CLFK	REQUEST & EXECUTE VAFC (FLIGHT CONTROL UTILITY PROGRAM) PRIMARY OPTION 1 (NULL TEST) SECONDARY OPTION 1 (S-II STAGE) SECONDARY OPTION 2 (S-IVB STAGE) SECONDARY OPTION 3 (S-IC STAGE) REPORT WHEN COMPLETE.	***
-52' 0"	161	1	C4PS	C4TC	FINAL PROPULSION CHECKS ARE COMPLETE	
-51'25"	181	1	C1TC	C1PC	VERIFY THERMAL CONDITIONING PURGE ON AND MAINTAIN FOR THE REMAINDER OF THE COUNT.	
-50' 0"	111	1	CLTC	CVTS	VERIFY C-BAND BEACON 2 READOUTS COMPLETE AND READY FOR C BAND BEACON 1.	TCPI
	121	2	CLTC	CUIP	C-BAND 2 INHIBIT ON THEN OFF. C-BAND 1 INHIBIT OFF. C-BAND 2 INHIBIT ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-50' 0"	111	3	CLTC	CVTS	REQUEST RANGE READOUT OF C-BAND BEACON 1. REPORT READOUTS TO VURF ON CHANNEL 137.	TCPI
	111	4	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN AND TCS ARM KEY TO C1SP	TCPI (VAPX)
	121	5	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	(VAPX)
	121	6	CLTC	C1SP	OBTAIN TCS ARM KEY FROM CPSS	
-48'30"		1		C2RP	VERIFY LOX HE INJ RECVR PRESS METER AT APPROXIMATELY 3000 PSIA.	
		2		C2RP	LOX HE INJECTION TO START	
		2-1		C2RP	*** NOTE HE INJ ORIFICE OUT PRESS METER INDICATES PRESS RISE TO APPROX 240 PSIA	
	171	3	C2RP	C2TC	LOX HE INJECT IN PROGRESS	
-47' 0"	121	1	CUFS	CLTC	VAFC COMPLETE	
		1-1		C2FC	*** NOTE ENGINES 1, 2, 3 & 4 ACCUMULATOR LOCKUP ON LIGHTS - ON	
	123	2	CUFS	V2MS	HYDRAULIC RECORDERS OFF	
	121	3	CLTC	CUFS	START ATTITUDE COMMAND TEST ON CH 123. REPORT WHEN COMPLETE.	(FT10)
	121	4	CLTC	CLGK	GO TO CH 123 TO SUPPORT ATTITUDE COMMAND TEST.	(FT10)
	121	5	***	C1PC	VERIFY LOW LOX DOME PURGE ON FOR FT10.	***
	123	6	***	CLGK	REQUEST FT10 LADDER OUTPUT TEST, AUTO OPTION.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
-47' 0"	121	17	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - OFF S&A SWITCH - SAFE	(VAPX)
	121	18	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE.	(VAPX)
		18-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	19	CLTC	C1TC C2TC C4TC CUTC	PREPARE FOR VAPX AND VATS DURING FT10 ON STAGE TC CHANNEL. REPORT WHEN COMPLETE.	
	181	20	C1TC	C1NP	VERIFY INTERNAL AND EXTERNAL BUSES ARE CORRECT FOR POWER TRANSFER.	(VAPX)
		20-1		C1NP	CDDT ONLY	*
	181	21	C1TC	C1NP	BATTERY INSTALLED ENABLE TO ON - THEN AUTO	(VAPX)
		21-1		C1NP	*** NOTE S-IC READY FOR POWER TRANSFER ON THEN OFF	
	181	22	C1TC	C1NP	VERIFY POWER TRANSFER SWITCH - AUTO.	(VAPX)
	181	23	C1TC	C1NE R1SC	VERIFY READY FOR POWER TRANSFER	(VAPX)
	121	24	C1TC	CLTC	VAPX PREPS COMPLETE.	
	171	25	C2TC	C2NP C2RP C2PM C2PC C2PK R2SC	START VAPX PREPS. REPORT WHEN COMPLETE.	(VAPX)
	171	26		C2NP	BATTERY INSTALLED ON AUTO	(VAPX)
	171	27		C2NP	VERIFY MAIN, INSTR, AND RECIRC BUS TRANSFER SWITCHES TO AUTO	(VAPX)

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					CD ONLY	
-47' 0"	161	35	C4TC	C4NP	CDDT ONLY	* (VAPX)
	161	36	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP TO OFF THEN AUTO	(VAPX) (VATS)
		36-1		C4IP	*** NOTE TM READY	
	161	37	C4TC	C4HY	VERIFY OR POSITION FLT MODE SW IN AUTO.	(VAPX) (VATS)
	161	38	C4TC	C4EP	VERIFY LOX AND LH2 READY TO START INDICATION ON	(VAPX)
	161	39	C4TC	C4NK C4NP C4HY C4PS R4EI R4SC	VERIFY READY FOR POWER TRANSFER TEST.	(VAPX)
	161	40	C4TC	C4NP	EMERGENCY POWER TRANSFER OFF	(VAPX)
	161	41	C4TC	C4NP	POWER TRANSFER SWITCH TO AUTO	(VAPX)
	121	42	C4TC	CLTC	VAPX PREPS COMPLETE.	
	151	43	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER	(VAPX)
	151	44	CUTC	CUNP	CDDT ONLY	(VAPX) *
	151	45	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER	(VAPX)
	151	46	CUTC	CUNP	POWER TRANSFER TEST TO AUTO	(VAPX)
		46-1		CUTC CUNP	*** NOTE IU TO REMAIN ON INTERNAL POWER FOR 3 MINUTES	
	121	47	CUTC	CLTC	VAPX PREPS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-47' 0"					VATS PREPS -----	
	181	48	C1TC	C1SP	SEQUENCER POWER AUTO	(VATS)
	181	49	C1TC	C1NP	STAGE LOGIC TO AUTO	(VATS)
	181	50	C1TC	C1CS	LOX AND FUEL LEVEL SENSORS TO AUTO	(VATS)
	181	51	C1TC	C1IP	28 VDC RACS POWER AND 400 HZ POWER TO AUTO.	(VATS)
	181	52	C1TC	CSPP C1PP	POWER SUPPLY COMMIT TO AUTO	(VATS)
	121	53	C1TC	CLTC	S-IC READY FOR VATS.	
	171	54	C2TC	C2NP	STAGE SELECT TO OFF	(VATS)
	171	55	C2TC	C2AE C2EC C2IP C2NP C2RP C2PU C2FC C2SP	START VATS PREPS, REPORT WHEN COMPLETE.	
		56		C2IP	FREQUENCY MEASURING CAL TO AUTO	(VATS)
	171	57		C2NP	CDDT ONLY	(VATS)
	171	58		C2RP	LH PUMPS 1 THROUGH 5 TO AUTO.	(VATS)
	171	59		C2RP	LH PREVALVES TO AUTO.	(VATS)
	171	60		C2AE	HE BOTTLE SUPPLY VALVE TO AUTO.	(VATS)
	171	61		C2AE	HE BOTTLE SUPPLY LINE VENT TO AUTO.	(VATS)
	171	62		C2AE	START TANK SUPPLY VALVE TO AUTO.	(VATS)
	171	63		C2AE	START TANK SUPPLY LINE VENT TO AUTO.	(VATS)
	171	64		C2AE	START TANK ALL VENT TO AUTO.	(VATS)
	171	65		C2AE	TCH PURGE TO AUTO.	(VATS)
	171	66		C2AE	TCH CHILLDOWN TO AUTO.	(VATS)

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-47' 0"						
	171	67		C2PU	VERIFY ALL WET SIMS TO AUTO	(VATS)
	171	68		C2EC	MAINSTAGE OK'S TO AUTO FOR ALL ENGINES.	(VATS)
	171	69		C2SP	LOX DISCONNECT PRESS SW TO AUTO.	(VATS)
	171	70		C2SP	LOX SUPPLY VALVE SW TO AUTO.	(VATS)
	171	71		C2NP	RACS POWER TO AUTO	(VATS)
	171	72		C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	(VATS)
	121	73	C2TC	CLTC	S-II READY FOR VATS.	
	161	74	C4TC	C4PP	POWER SUPPLY COMMIT TO AUTO	(VATS)
	161	75	C4TC	C4PP	PLUG SUPERVISION POWER TO AUTO	(VAT)
	161	76	C4TC	C4SP	LOX & LH2 VENT SWITCHES TO AUTO	(VATS)
	151	77	CUTC	CUCP	VERIFY PUMP PRESSURE SWITCH ACTIVATE - AUTO	(VATS)
	151	78	CUTC	CUIP	Q-BALL POWER TO AUTO Q-BALL HEATER POWER TO AUTO	(VATS)
		78-1		CUIP	*** NOTE Q-BALL POWER ON	
	151	79	CUTC	CUES	THRUST OK INHIBIT A & B SWITCHES TO AUTO	(VATS)
	151	80	CUTC	ALL	ALL PERSONNEL INVOLVED IN POWER TRANSFER AND VATS PREPS RETURN TO CH 121	
	121	81	CUTC	CLTC	IU READY FOR VATS.	
	111	82	CLTC	CVTS	REQUEST RANGE MONITOR C-BAND AND GMIL MONITOR IU CCS DURING POWER TRANSFER TEST	TCPI

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					CD ONLY	
-45' 0"	171	1	C2TC	R2DP	CDDT ONLY	*
-44' 0"	121	1	CVTS	CLTC	SC EDS POWER IS ON	# TCPI
	181	2	C1TC	CWCP	START FINAL IWS PREPS PER V-36113	
	261	3	CLTC	ROSC	BRING INDUSTRIAL WATER SYSTEM SECOND PUMP TO OPERATIONAL PRESSURE OF 165 +/- 10. REPORT WHEN COMPLETE.	TCPI
-43' 0"		1			NOTE ----- FOR THE NEXT 40 MINUTES, CSA9 REQUIRES EXCLUSIVE CONTROL OF CAMERA 26 & 27	
	161	2	C4TC	R4E1 R4HY	STRIP CHARTS TO FAST	(VAPX)
	121	3	CLTC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL/EXTERNAL SECURE STAGES FROM POWER TRANSFER ON STAGE TC CHANNELS.	(VAPX)
		3-1		ALL	*** NOTE S-IC & S-II STAGES ON INTERNAL POWER FOR 30 SECONDS; S-IV FOR 45 SECONDS; IU FOR 3 MINUTES. REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125.	
	111	4	CVTS	CSA9	ON YOUR MARK, RETRACT S/A 9 TO 12 DEGREE PARK POSITION PER V-36085 (HAZARDOUS). REPORT WHEN COMPLETE.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-42' 0"		1		CLTC	*** NOTE TIME FOR ARMING LES	
	123	2	***	CLGK	TERMINATE FT10. REPORT WHEN COMPLETE.	***
	121	3	CUFS	CLTC	FT10 COMPLETE	
		4			NOTE ----	
					IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN	
	121	5	CLTC	C1PK	REQUEST & EXECUTE VAPX (POWER TRANSFER TEST) (T-30 MIN OPTION)	***
	121	6	VAPX	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID	***
	121	7	VAPX	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED	***
	121	8	VAPX	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	***
	121	9	VAPX	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL AND VERIFY	***
	121	10	VAPX	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	***
		10-1		CRSS	*** NOTE LIMITER VOLTAGES RECEIVED.	
	121	11	VAPX	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-42' 0"		11-1		CRSS	*** NOTE ALL ERW'S NOT CHARGED	
		11-2		CUCR CUGA	*** NOTE VAPX WILL TORQUE ROLL GYROS TO +9 DEG/SEC CAUSING THE S-IC ENGINES TO GIMBAL	
	123	12	VAPX	CUGA	S-IC ATTITUDE RATE COMMAND +9 DEG/SEC ROLL AND HOLD DURING POWER TRANSFER.	***
	161	13	VAPX	C4NP	BATTERY MONITOR ENABLE	***
	161	14	VAPX	C4HY	FLIGHT MODE ON THEN AUTO (PERFORM OR VERIFY).	***
	161	15	VAPX	C4EP	DELAY (FOR HYD SYS STABILIZATION) THEN LH2 CHILLDOWN PUMP ON THEN AUTO	***
	161	16	VAPX	C4EP	DELAY 8 SECONDS (FROM LH2 CHILLDOWN PUMP ON) THEN LOX CHILLDOWN PUMP ON THEN AUTO.	***
	161	17	VAPX	C4EP	DELAY 5 SECONDS (FROM LOX CHILLDOWN PUMP ON) THEN LOX AND LH2 PREVALVES CLOSED THEN AUTO.	***
	121	18	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3".	
	121	19	C1PK	ALL	VAPX WILL TRANSFER STAGES INTERNAL IN 5 SEC.	
	121	20	C1PK	ALL	5-4-3-2-1, MARK	
	121	21	VAPX	C1NP C2NP C4NP CUNP	TRANSFER TO INTERNAL POWER.	***
		21-1		C1FR CUDE	*** NOTE IU READY TO LAUNCH MAY CYCLE OFF THEN ON (MAX TIME OF ONE SECOND)	
		21-2		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		21-3		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	

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					CD ONLY	
-42' 0"		21-4		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		21-5		C1NP	GDDT ONLY	*
		21-6		C1FR	*** NOTE S-IC POWER TRANSFER COMPLETE ON (DEE 0082 ON).	
		21-7		C1NP	*** NOTE BUS +1D121 OFF	
		21-8		C1NP	*** NOTE BUS +1D111 OFF	
		21-9		C1NP	*** NOTE BUS +1D211 OFF	
		21-10		R1SC	*** NOTE RECORD VOLTAGE FOR STAGE BUSES 1D11 AND 1D21, RECORD VOLTAGE AND CURRENT FOR BUSES 1D10 & 1D20.	
	153	22	RLDE		ESTABLISH COMMUNICATION WITH HOUSTON VIA CH 153 AND GIVE HOUSTON CDC/GMT TIME CORRELATION.	
		22-1	RLDE		*** NOTE IF ANY HOLD IS GREATER THAN 10 MIN. GIVE ANOTHER CDC/GMT TIME CORRELATION TO HOUSTON	
-41' 30"						
	121	1	C1PK	ALL	S-IC & S-II TRANSFERED EXTERNAL DISPLAYED	
	181	2	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
		2-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		2-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
	181	3	C1TC	C1NP	BATTERY INSTALLED ENABLE SWITCH TO AUTO	
		3-1		C1NP	*** NOTE BUS 1D121 ON	
		3-2		C1NP	*** NOTE BUS 1D211 ON	
		3-3		C1NP	*** NOTE BUS 1D111 ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-41'30"					CD ONLY	
		3-4	C1NP		DDT ONLY	*
181		4	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE & 1D10, 1D20 VOLTAGE AND CURRENT DURING INTERNAL, THEN REPORT TO CLES ON CH 125.	
181		5	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
121		6	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		6-1	C2NP		*** NOTE MAIN, INST & RECIRC BUSES EXTERNAL ON	
		6-2	C2NP		*** NOTE POWER TRANSFER COMPLETE OFF	
		7	R2SC		*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL: MAIN BATT CURRENT (XM0021-207) ----- MAIN DC BUS VOLTAGE 2D11 (XM0020-207) ----- INSTR BATT CURRENT (XM0024-207) ----- INSTR DC BUS VOLTAGE 2D21 (XM0023-207) ----- RECIRC BUS CURRENT (XM0114-207) ----- RECIRC DC BUS VOLTAGE 2D51 (XM0111-207) ----- IGN DC BUS VOLTAGE 2D61 (XM0125-207) -----	
171		8	C2TC	C2RP	RECIRC RESET TO RESET, THEN INHIBIT	
		8-1	C2PC		*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-41'30"		8-2		C2RP	*** NOTE LH2 PREVALVES OPEN ON. LH2 PUMP INLET PRESSURE DECAY.	
	171	9	C2TC	C2RP	LOX HE INJECTION TO AUTO	
	121	10	C2TC	CLTC	S-II POWER TRANSFER TEST IS COMPLETE	
	171	11	C2TC	R2SC	READOUT RECORDED BUS VOLTAGES TO CLES ON CH 125.	
-41'15"		1		C4NP	*** NOTE AFTER 45 SECONDS ON INTERNAL THE FOLLOWING SUBSEQUENCES WILL OCCUR:	
	161	1-1	VAPX	C4NP	POWER TRANSFER EXTERNAL THEN AUTO.	***
	161	1-2	VAPX	C4NP	BATTERY MONITOR DISABLE THEN AUTO	***
	161	2	C4TC	C4NK C4NP	VERIFY POWER TRANSFER INTERNAL/EXTERNAL COMPLETE.	
-40'45"		1		C4EP C4HY	*** NOTE 30 SECONDS AFTER POWER TRANSFER EXTERNAL THE FOLLOWING SUBSEQUENCES WILL OCCUR:	
	161	1-1	VAPX	C4EP	LOX & LH2 PREVALVES OPEN THEN AUTO	***
	161	1-2	VAPX	C4EP	LOX & LH2 CHILLDOWN PUMPS OFF THEN AUTO	***
	161	1-3	VAPX	C4HY	FLIGHT MODE OFF THEN AUTO (VERIFY CHILLDOWN PUMPS OFF BEFORE TURNING OFF HYD PUMP)	***
	161	2	C4TC	C4NK	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	161	3	C4TC	C4DE	TRANSMIT THE FOLLOWING DEE TIMES TO C4PS: S/S OCTAL 151 READ COMMAND ON 2647 AND 2648 OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-40' 45"	121	4	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE AND ACCEPTABLE.	
-39' 0"	151	1	CUTC	CUNP	VERIFY IU GROUND POWER ON AND POWER TRANSFER COMPLETE OFF.	
		1-1		CUDE	*** NOTE 0777 & 0779 OFF, 0781 ON	
	151	2	CUTC	CUNP	POWER TRANSFER SWITCH TO EXTERNAL.	
	151	3	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	4	CUTC	RUBM	READOUT VOLTAGES AND CURRENTS TO CLES ON CH 125	
				BUS	VOLTAGE	CURRENT
				----	-----	-----
				6D10	-----	-----
				6D20	-----	-----
				6D30	-----	-----
				6D40	-----	-----
	121	5	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE.	
	121	6	C1PK	CLTC	VAPX COMPLETE	
	121	7	CLTC	ALL	RECORDERS SUPPORTING POWER TRANSFER TO SLOW	
	123	8	CUFS	CUCR CUGA	VERIFY ATTITUDE RATE COMMAND UNDISTURBED DURING POWER TRANSFER	
	123	9	CUFS	ALL	ALL FLIGHT CONTROL PERSONNEL RETURN TO CH 121	
		10		RRSC	*** NOTE DRSCS MEASUREMENTS OK DURING PWR TRANSFER	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-39' 0"	111	11	CLTC	CVTS	REQUEST CLEARANCE TO PROCEED WITH DRSCR TEST WITH SRO ON CH 121.	TCPI
-37' 0"	121	1	CLTC	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-40 MINUTE FRT/CDDT/CD OPTION)	
	121	2	VARs	C1DP C2DP C4DP	AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF, SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO	***
	121	3	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND	
	121	4	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	5	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS	
	121	6	SRO	ALL	3, 2, 1, - MARK	
	121	7	VARs	C1DP C2DP C4DP	SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF	***
	121	8	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	9	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	***
		9-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		9-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
	121	10	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***

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-37' 0"		10-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	11	VARs	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	***
	121	12	C1PK	RRSC	VERIFY CUTOFF COMMANDS RECEIVED	
	121	13	C1PK	CLTC	READY FOR SRO PD COMMAND	
	121	14	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	15	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	16	SRO	ALL	3-2-1 - MARK	
	121	17	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	18	VARs	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	***
		18-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED	
	121	19	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	***
		19-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
	121	20	C1PK	RRSC	VERIFY PD COMMANDS RECEIVED	
	121	21	C1PK	CLTC	READY FOR RANGE TRANSMITTER ON. REPORT WHEN TURNED ON.	
	111	22	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 CARRIER ON. REPORT WHEN TURNED ON.	TCPI
		22-1		CLTC C1PK	*** NOTE - DO NOT PROCEED UNTIL TRANSMITTER IS REPORTED ON	
	121	23	CLTC	C1PK	RANGE TRANSMITTERS ON. ENTER \$PR1 TO CONTINUE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-37' 0"	121	24	VARS	BRFS	SIG GEN SELECTOR - STANDBY	***
		24-1		B1RF B2RF B4RF CRSS	*** NOTE ALL LIMITER VOLTAGES RECEIVED.	
-35' 0"	181	1	CCRP	C1TC	RP-1 LEVEL ADJUST AND LINE INERTING ARE COMPLETED PER V-25389 (HAZARDOUS).	
-33' 0"	121	1	C1PK	CLTC	VARS COMPLETE	
	181	2	***	C1CS	POSITION LOX LEVEL SIMULATE WET SWITCHES TO SIMULATE	***
	111	3	CLTC	CVTS	DRSCR TEST IS COMPLETE. LOCAL COMMAND CARRIER IS OFF.	TCPI
	121	4	CLTC	BTMC	TM TAPE RECORDER OFF AND RELOAD	
		4-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (COUNTDOWN ONLY)	
	121	5	C1PK	CLTC	VALL DISPLAYING ZT96/VATS RUN OPTION	
		6		CLTC CLGK RGCC	CDDT ONLY	*
	121	6-1	CLGK	CLTC	CDDT ONLY	(ZT96) *
	111	6-2	CLTC	CVTS	CDDT ONLY	* TCPI (ZT96)
	121	6-3	CLTC	RCDC	CDDT ONLY	(ZT96) *

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-27' 0"						
	161	2	C4TC	C4AL	REMOVE SWITCH LOCK FROM APS VALVE POWER SWITCH AND POSITION SWITCH TO AUTO	(VATS)
	121	3	C4TC	CLTC	S-IVB READY FOR VATS.	
	121	4	CLTC	CRSS	VERIFY PROCEED ON & BYPASS IS OFF	(VATS)
		4-1		C1FR	*** NOTE RANGE SAFE - ON	
		4-2		CUEV	*** NOTE BOTH SRO/RSO PROCEED INDICATIONS ON	
		5		CUPC	NOTE ----	
					THE FOLLOWING SEQUENCE WILL BE PERFORMED ONLY IF THE SANDERS DISPLAY CONSOLES ARE SUPPORTING.	
		6		CUPC	EXECUTE GE01 TO AGREE WITH PLOT AZIMUTH.	
		6-1		CUPC	*** NOTE IF CUMULATIVE HOLDS OCCUR PRIOR TO EXECUTION OF FT42 THAT WOULD CAUSE A FLIGHT AZIMUTH CHANGE IN EXCESS OF 5 DEG, CUPC ENTER \$FUNCGE01/005 AND THE AZIMUTH UPDATE.	
-26' 0"	121	1	CLTC	C1PK	REQUEST & EXECUTE VATS (TERMINAL SEQUENCE PROG PR2/PR4)	
		1-1		ALL	NOTE ----	
					WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS	

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-26' 0"					TO DO THE FUNCTIONS MANUALLY. DURING VATS, IF A TIME CRITICAL EVENT DOES NOT OCCUR WITHIN 10 SECONDS AFTER THE EXPECTED TIME, THE OPERATORS INDICATED WILL DO THE FUNCTIONS MANUALLY AND REPORT THIS ACTION.	
181		2	C1TC	C1PE	PRECHARGE POGO SUPPRESSION SYSTEM.	
181		3	C1TC	R1SC	GO TO CHANNEL 182 ACTIVE TO SUPPORT POGO SUPPRESSION SYSTEM PRECHARGE.	
182		4	C1PE	C1LO	LOX BUBBLING TO DUCTS 1 AND 3. VERIFY PROPER LIGHT INDICATION. TWO DUCT BUBBLING SHALL REMAIN ON DURING REMAINDER OF COUNT.	
182		5	C1PE	R1SC	STAND-BY TO MONITOR POGO TEMPERATURE MEASUREMENTS C335-115, C327-115, C339-115 & C331-115	
		6			*****CAUTION***** * * * * THE FOLLOWING SEQ IS * * * HAZARDOUS. * * * * * *****	
182		7	C1PE	C1RP	VERIFY LOX BUBBLING HAS BEEN ON FOR MINIMUM OF ONE MINUTE THEN POSITION POGO SUPPLY VALVES NO. 1 AND NO. 2 TO OPEN FOR ONE MINUTE AND THEN TO CLOSE. VERIFY PROPER LIGHT INDICATIONS.	
182		8	C1PE	R1SC	VERIFY ONE OF FOUR POGO MEASUREMENTS GO FROM ON SCALE TO OFF SCALE HIGH.	
181		9	C1PE	R1SC	POGO SUPPRESSION SYSTEM PRECHARGE COMPLETE. RETURN TO CHANNEL 121.	
181		10	C1PE	C1TC	POGO SUPPRESSION SYSTEM PRECHARGE COMPLETE.	
161		11	***	C4PP	PLUG SUPERVISION POWER OFF THEN AUTO	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-25' 0"						
	121	1	CVTS	CLTC	RANGE INTERROGATION OF C-BAND BEACON 1 IS COMPLETE. VERIFY C-BAND BEACON 2 IS COMING ON.	TCP1
	121	2	CLTC	CUIP	C-BAND BEACON 1 INHIBIT - ON C-BAND BEACON 1 & 2 INHIBIT - OFF	
	111	3	CLTC	CVTS	CDDT ONLY	* TCP
-24' 0"						
	171	1	C2TC	C2AE	MONITOR ENGINE CHILLDOWN BY THE CLOCK AT T-22 MINUTES	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20'30"	121	1	CLTC	ALL	VAMC WILL START EXECUTING AT 19' 55", FLUCTUATING MEASUREMENTS MAY OCCUR DURING NEXT 2 MINUTES.	
-20' 0"	181	1	C1TC	C1PE	VERIFY S-IC GN2 & HELIUM SYSTEM PRESSURIZED TO FLIGHT PRESSURE	
	181	2	C1TC	C1PC	VERIFY/ACCOMPLISH LOW LOX DOME PURGE ON.	
	181	3	C1TC	CTS1	OPEN PRESSURE SUPPLY VALVE 3.	
	161	4	C4TC	R4HY R4EI R4SC	RECORDERS TO FAST	
	161	5	C4TC	C4PS	MONITOR/START CHILLDOWN BY THE CLOCK	
-19'55"	121	1	***	CLIK	REQUEST & EXECUTE VAMC (MEAS SYSTEM RAPID CALIBRATION).	***
-19' 0"	121	1	CLIK	CLTC	VAMC COMPLETE	
		1-1		C4IP	*** NOTE TM READY	
	181	2	C1TC	C1CS	VERIFY PROPER RESPONSE (DRY) OF LOX & FUEL LEVEL CUTOFF SENSORS TO VAMC.	
-18'45"		1	***	C4HY	FLIGHT MODE - ON THEN AUTO	***
	161	2	C4TC	R4HY	REPORT WHEN HYDRAULIC SYSTEM IS STABILIZED	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18' 0"	121	1	CLTC	ECOP	VERIFY CIF READY TO SUPPORT GUIDANCE REAL TIME PROGRAM.	
	121	2	***	CLGK	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ), REPORT WHEN COMPLETE.	***
-16' 20"	121	1	CLGK	CLTC	FT06 COMPLETE	
		2			NOTE ----	
					IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN.	
	121	3	***	CLFK	REQUEST & EXECUTE VAAR (S-IC ATTITUDE RATE COMMAND TEST)	***
	121	4	VAAR	CUSP	VERIFY CONTROL COMPUTER IN S-IC BURN MODE	***
	121	5	VAAR	CUGA	ATTITUDE RATE COMMANDS - (PLUS 1.5 DEG/SEC PITCH AND YAW, AND PLUS 7 DEG/SEC ROLL)	***
-16' 0"	181	1	C1TC	C1SP	CUTOFF RESET - ON MOMENTARILY.	
		1-1		C1FR	*** NOTE PROPELLANT DEPLETED FAILURE INDICATION OFF	
	181	2	C1TC	C1EN	ARM IGNITORS INSTALLED - ON THEN AUTO, VERIFY HYPERGOL AND IGNITORS INSTALLED INDICATIONS REMAIN ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15' 0"	121	1	CLFK	CLTC	VAAR COMPLETE	
-14' 30"		1		C4ET	AT C4PS COMMAND, CT HELIUM CONT SOL ON AND OFF.	
		2	***	C4EP	OPEN START TANK VENT	***
		3	***	C4EP	OPEN START TANK SUPPLY VALVE.	***
	161	4	C4PS	C4TC	START TANK CHILLDOWN IS IN PROGRESS	
	121	5	C4TC	CLTC	S-IVB START TANK CHILLDOWN IS IN PROGRESS	
-14' 25"		1	***	C4SP	LOX TANK VENT CLOSED FOR 3 SECONDS THEN OPEN THEN AUTO.	***
		2	***	C4SP	LH TANK VENT CLOSED FOR 3 SECONDS THEN OPEN THEN AUTO.	***
-14' 0"		1			*****CAUTION***** * * THE FOLLOWING SEQUENCE * * IS HAZARDOUS * * *****	
	181	2	C1TC	C1LO	LOX FLIGHT VENTS TO CLOSE THEN AUTO	
		2-1		C1LO	*** NOTE LOX FLIGHT VENTS OPEN	
	121	3	CLTC	ECOP	START GUIDANCE REAL TIME REDUCTION PROGRAM	(FT42)
	181	4	***	C1NP	STAGE LOGIC RESET	***
		4-1		C1NP	*** NOTE STAGE LOGIC ZERO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14' 0"	121	5	***	C1SP	SEQUENCER POWER ON	***
		5-1		C1SP	*** NOTE ALL VOLTAGES NORMAL	
		5-2		C1SP	*** NOTE SEQUENCER RESET	
	171	6	***	C2RP	VERIFY OK TO OPERATE RECIRC PUMPS ON	***
	121	7	***	CLFK	REQUEST & EXECUTE KAF3 (THRUST VECTOR READ)	***
	171	8	C2TC	C2FC	S-II AUXILIARY HYDRAULIC PUMPS 1, 2, 3, & 4 - ON, THEN AUTO AT 2 SECOND INTERVALS.	N-285-57
-12'58"	121	1	CLFK	CLTC	KAF3 COMPLETE	
		2	***	C2AE	TCH PURGE TO ON	***
		2-1		C2AE	*** NOTE TCH PURGE ON	
	171	3	C2AE	C2TC	TCH JACKET PURGE IN PROGRESS.	
		3-1		C2SP	CYCLE LOX AND LH VENT VALVES INDIVIDUALLY CLOSED THEN OPEN, A MINIMUM OF FOUR TIMES EACH, TO VERIFY PROPER VENT VALVE MICRO SWITCH OPERATION.	
		4	***	C4EP	OPEN THRUST CHAMBER PURGE SUPPLY	***
	171	5	***	C2FC	MAIN PUMP BYPASS VALVE - CLOSE THEN AUTO	***
	171	6	***	C2FC	THERMAL CONTROL - ON THEN AUTO	***
	171	7	***	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL OFF THEN AUTO	***
-12'53"	171	1	***	C2FC	MAIN PUMP BYPASS VALVE - OPEN THEN AUTO	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12'30"		1	***	C4HN	OPEN HEAT EXCHANGER CIRCUIT #1 VENT.	***
		1-1		C4EP C4HN	*** NOTE STANDBY TO CYCLE HEAT EXCHANGER CIRCUIT NO. 1 VENT AND START TANK SUPPLY VENT IF REQUESTED BY R4PS.	
		1-2		C2EC	*** NOTE IGNITION DETECTED ON, ENGINES 1 THRU 5	
-12'25"	121	1	***	CLGK	REQUEST & EXECUTE FT42 (PREPARE TO LAUNCH)	***
	121	2	CLTC	CLGK	READOUT LV FIRING AZIMUTH ON CH 111 WHEN READY	
-12' 0"		1	RLDE		SELECT EST AND ENTER, THEN CDC & ENTER	
		1-1	RLDE		*** NOTE IF HOLD OCCURS, GIVE ANOTHER CDC/GMT TIME CORRELATION TO HOUSTON	
	153	2	RLDE	HFLT	T- _____ OCCURRED AT GMT _____	
	153	3		HFLT	VERIFY RECEIPT OF TIME CHECK	
		3-1		C2NP	*** NOTE RESET FOR FIRING COMMAND ON.	
-11' 0"	181	1	C1TC	C1PU	START S-1C FUEL JACKET TOPPING PER V-34012 (HAZARDOUS).	
	261	2	CLTC	ROSC	PLACE INDUSTRIAL WATER SAFETY OVERRIDE SWITCH TO OVERRIDE	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10'45"	181	1	C1TC	C1LO	VERIFY/ACCOMPLISH S-IC LOX BUBBLING TO DUCTS 1 & 3.	
-10' 0"	121	1	CLGK	CLTC	FT42 COMPLETE AND LVDC IN PREPARE TO LAUNCH MODE	
	111	2	CLGK	CVTS HFLT SRO	LV FIRING AZIMUTH IS DEG MIN SEC	TCPI
		2-1	CLGK		*** NOTE READOUT NEW FIRING AZIMUTH FOLLOWING ANY HOLDS.	
9'58"	161	1	***	C4AL	APS ENGINE VALVE POWER ON	***
9'55"		1	***	C2RP	LH2 PUMPS NO. 1 THRU 5 TO START THEN INHIBIT AT 2 SEC INTERVALS (MINIMUM)	***
	171	2		C2PC	VERIFY AS RECIRC BUS CURRENT INCREASES WITH EACH PUMP START.	
		3	***	C2RP	WAIT 5 SEC (MINIMUM) THEN PLACE LH2 PREVALVES TO CLOSE THEN INHIBIT	***
		3-1		C2RP	*** NOTE ALL ENG INLET LH2 PRESS METERS INDICATE PRESS RISE	
	171	4	C2RP	C2TC	RECIRC ACTIVATION COMPLETE	
		5		C2EV	*** NOTE RECIRC READY FOR LAUNCH IS ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7'58"		1	***	C4EP	OPEN THRUST CHAMBER CHILLDOWN VALVE	***
		2	***	C4EP	CLOSE THRUST CHAMBER PURGE SUPPLY	***
	161	3	C4PS	C4TC	THRUST CHAMBER CHILLDOWN IS IN PROGRESS	
	121	4	C4TC	CLTC	S-IVB TCH CHILLDOWN IS IN PROGRESS	
		4-1			*****CAUTION***** * * S-IVB THRUST CHAMBER * * CHILLDOWN SHALL NOT * * EXCEED 20 MINUTES * * ACCUMULATED AND SHALL * * BE ON FOR AT LEAST * * 7' 40" CONTINUOUSLY * * PRIOR TO S-IC IGNITION * * COMMAND * * *****	
		5	***	C2AE	TCH CHILLDOWN TO ON	***
		5-1		C2AE	*** NOTE TCH CHILLDOWN ON	
		6	***	C2AE	TCH PURGE TO OFF	***
		6-1		C2AE	*** NOTE TCH PURGE OFF	
		6-2		C2AE	*** NOTE ALL TCH JACKET TEMP METERS INDICATE TEMP DROP	
	171	7	C2AE	C2TC	THRUST CHAMBER JACKET PURGE IS COMPLETED, AND TCH CHILLDOWN IN PROGRESS.	
		7-1			*****CAUTION***** * * S-II THRUST CHAMBER * * CHILLDOWN SHALL NOT * * EXCEED 13 MINUTES * * ACCUMULATED AND SHALL * * BE ON FOR AT LEAST * * 7' 40" CONTINUOUSLY * * PRIOR TO S-IC IGNITION * * COMMAND. * * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7'58"	181	16	C1TC	C1RP	S-IC FUEL FLIGHT VENT TO AUTO	
		16-1		C1RP	*** NOTE FUEL FLIGHT VENT CLOSED	
	181	17	C1TC	C1RP	PRESSURIZE S-IC FUEL TANK TO APPROX 2 PSIG. REPORT WHEN COMPLETE.	
	121	18	CLTC	ETOM	VERIFY GUIDANCE TM SATISFACTORY	
- 7'50"	171	1	***	C2FC	S-II AUXILIARY HYDRAULIC PUMPS ENGINES 1, 2, 3 & 4 - ON THEN AUTO	***
	171	2	***	C2FC	THERMAL CONTROL - OFF THEN AUTO	***
- 7' 0"	181	1	CTS1	C1TC	TSM'S READY FOR LAUNCH.	
	181	2	CSAC	C1TC	SERVICE ARMS READY FOR LAUNCH.	
		2-1		C1FR	*** NOTE LAUNCH SUPPORT PREPS COMPLETE.	
		2-2		CLDE	*** NOTE DEE-6 (0168) ON	
- 6'30"	121	1	CLTC	CUES	EDS MODE TO LAUNCH.	
		1-1		C1FR CUES	*** NOTE EDS READY.	
	121	2	CLTC	C1NP C2NP CUNP	INHIBIT SWITCH SELECTOR AND RESET COUNTERS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6'15"	151	1	***	CUCP	PUMP PRESSURE SWITCH ACTIVATE ON	***
		1-1		CUCP	*** NOTE PUMP PRESSURE ACTIVATE INDICATION ON	
	151	2	***	CUIP	Q-BALL HEATER POWER - OFF	***
- 6' 0"	181	1	C1TC	C1PU	VERIFY F-1 ENGINE THRUST CHAMBER PREFILL TOPPING COMPLETE.	
	151	2	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - ON (SENSE CONTROL PANEL BITS 21 & 22)	
	121	3	C1TC	CLTC	PROPULSION PREPS COMPLETE	
	121	4	CLTC	BPHO	START S-IC, S-II & S-IVB LOX AND LH2 FILM CAMERAS	
		4-1		BPHO	*** NOTE LOX & LH2 CAMERAS MAY BE STOPPED UPON COMPLETION OF TCS PLUS ONE MINUTE	
- 5'30"		1	***	C4EP	CLOSE START TANK VENT.	***
		2	***	C4HN	CLOSE HEAT EXCHANGER CIRCUIT #1 VENT.	***
		2-1		R4PS	*** NOTE MONITOR START TANK PRESSURE STABILIZATION	
	121	3	CLTC	CWCP	VERIFY IWS AUTO/ARM BUS - ON	
	121	4	CLTC	C1DP C2DP C4DP	S & A TO ARM FOR 2 SECONDS THEN AUTO	
		4-1		CRSS	*** NOTE ALL S&A ARM INDICATORS ON.	
		4-2		C1FR	*** NOTE ORDNANCE PREP COMPLETE.	
		4-3		C2TC	*** NOTE PD SYSTEM READY.	

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- 5' 30"		4-4		C4TC	*** NOTE PD SYSTEM READY.	
		4-5		C1NP	*** NOTE READY FOR LAUNCH POWER	
	121	5	CLTC	C1NP	POWER FUNCTION SELECTOR - LAUNCH AND VERIFY ALL STAGES READY FOR POWER TRANSFER ON.	
		5-1		C1NP	*** NOTE LAUNCH BUS 1D161 ON AND PRELAUNCH BUS 1D151 OFF	
		5-2		C1NP	*** NOTE BATT #1 & #2 ON.	
		5-3		C1FR	*** NOTE HYPERGOLS INSTALLED - ON.	
		5-4		C1FR	*** NOTE IU AND SC READY FOR LAUNCH.	
- 5' 25"						
	121	1	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY AND VERIFY	***
		1-1		CLDE	*** NOTE DEE-6 (3637) ON	
- 5' 7"						
		1	***	C2SP	LOX DISCONNECT PRESSURE - ON	***
		2	***	C2SP	LOX SUPPLY VALVE - OPEN	***
		2-1		C2SP	*** NOTE LH2 LOW PRESS VENT MODE - ON.	
- 5' 0"						
		1			NOTE ----	
					FOR THE NEXT 5 MIN CSA1 REQUIRES EXCLUSIVE CONTROL OF CAMERA 11.	
		2	***	C4EP	CLOSE START TANK SUPPLY VALVE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
5' 0"		3	***	C4EP	OPEN START TANK SUPPLY VENT.	***
		4		R4PS	REPORT INDICATION OF START TANK AND ENGINE BOTTLE PRESSURE INCREASE TO C4PS.	
	111	5	CVTS	CSA9	RETRACT S/A 9. REPORT WHEN RETRACTED	TCPI
		5-1			NOTE ----- CSA9 REQUIRES EXCLUSIVE USE OF CAMERA 36 UNTIL S/A 9 IS RETRACTED.	
4' 58"		1	***	C4EP	LH2 CHILLDOWN PUMP - ON THEN AUTO	***
4' 50"		1	***	C4EP	LOX CHILLDOWN PUMP - ON THEN AUTO.	***
		1-1		C4EV C4TC	*** NOTE PREPS COMPLETE ON. (DEE-1947)	
4' 45"		1	***	C4EP	LOX & LH2 PREVALVES CLOSE THEN AUTO.	***
	161	2	C4PS	C4TC	S-IVB CHILLDOWN SEQUENCE COMPLETE.	
	121	3	C4TC	CLTC	S-IVB CHILLDOWN SEQUENCE IS COMPLETE	
	161	4	C4TC	C4NP	SWITCH SELECTOR - INHIBIT	
	161	5	C4TC	ALL	ALL S-IVB PERSONNEL RETURN TO CH 121.	
4' 37"		1	***	C2AE	START TANK ALL VENT TO OFF	***
		2	***	C2AE	HELIUM BOTTLE SUPPLY VALVE TO OFF	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4'37"		2-1		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - OFF	
		3	***	C2AE	HELIUM BOTTLE SUPPLY LINE VENT TO VENT	***
		3-1		C2AE	*** NOTE HE BOTTLE SUPPLY LINE VENT OPEN - ON	
	171	4	C2AE	C2TC	START TANK PRESSURIZATION IN PROGRESS.	
	171	5	C2TC	ALL	ALL S-II PERSONNEL RETURN TO CH 121	
	151	6	CUTC	ALL	ALL IBM PERSONNEL RETURN TO CH 121	
	181	7	C1TC	ALL	ALL S-IC PERSONNEL GO TO CHANNEL 121	
- 4'30"						
	121	1	CLTC	C1SP	ARM TCS.	
		1-1		C1FR	*** NOTE TCS READY.	
		1-2		C1FR	*** NOTE IGNITION SOURCE VOLTAGE OK.	
		2	CLTC		*****CAUTION***** * * S-IVB CHILLDOWN MUST BE * * COMPLETE PRIOR TO NEXT * * STEP * * *****CAUTION*****	
	121	2-1	CLTC	CUSW	LVDA/ESE TO LVDA.	
		3		RDAS	*** NOTE REPORT ALL DRS STATION SYNC ERRORS ON CH 121 UNTIL T-19 SECS AS THEY OCCUR	
- 4'10"						
	121	1	***	CUES	THRUST OK INHIBIT A & B SWITCHES TO OFF	***
		1-1		SCDR	*** NOTE LV ENGINE 1 THROUGH 5 LIGHTS ON IN SC (CD ONLY)	TCP!

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- 4' 0"	121	1	CVTS	CLTC	CLEARED FOR LAUNCH.	TCPI
		1-1		ALL	*** NOTE DISPLAY OPERATORS, DO NOT CALL UP DISPLAY DESCRIPTIONS AFTER TCS START. *****	
	111 121	2	CVTS	ALL	COUNT TIME ANNOUNCEMENTS ----- -3'30" TO -0'40" EVERY 10 SECONDS -0'40" TO -0'15" EVERY 5 SECONDS -0'11" TO L/O EVERY 1 SECOND *****	TCPI
- 3'55"		1	***	C2FC	MAIN PUMP BYPASS VALVE CLOSED THEN AUTO	***
- 3'50"		1	***	C2FC	ALL ACCUMULATOR CONTROL - LOCK THEN AUTO	***
		1-1		C2FC	*** NOTE ACCUMULATOR LOCKUP INDICATIONS - ON	
		2	***	C2FC	S-II AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4, OFF THEN AUTO	***
		2-1		C2FC	*** NOTE AUXILIARY PUMPS POWER ON INDICATIONS - OFF.	
		2-2		C2FC	*** NOTE READY FOR LAUNCH INDICATION ON	
		2-3		C2TC C2EV	*** NOTE S-II PREP COMPLETE ON.	
		2-4		C1FR	*** NOTE IF MANUAL CUTOFF IS REQUESTED AND THE MANUAL CUTOFF HARDWIRE SWITCH FAILS TO GIVE CUTOFF, THEN C1SP WILL CYCLE THE TCS POWER SWITCH TO OFF THEN BACK TO ON TO GIVE CUTOFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 40"	121	1	C1FR		CLTC PREPARATIONS COMPLETE ON.	
- 3' 20"		1			*****CAUTION***** * * ALL LV STATIONS MONITOR * * CHANNEL 121 DURING * * TERMINAL SEQUENCE. * * *****CAUTION*****	
		2	***	C2SP	LOX SUPPLY VALVE - CLOSE	***
		3	***	C2AE	START BOTTLE SUPPLY VALVE TO OFF	***
		3-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
		4	***	C2AE	START TANK SUPPLY LINE VENT TO VENT	***
		4-1		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - ON	
- 3' 10"	121	1	C1FR		INITIATE FIRING COMMAND AND VERIFY (DO NOT RELEASE UNTIL YCS STARTS, AN OPTION 2 OR 3 HOLD IS ANNOUNCED OR SAFING PROCEDURE INITIATED)	
		1-1		C1FR	*** NOTE FIRING COMMAND ENABLED (C) DEE 0128.	
- 3' 6"		1	CLVN		COMPUTER TEST SWITCH OFF AND VERIFY	
	121	2	C1FR		VERIFY FIRING COMMAND IS ON (H) DEE 3171	
		2-1		C1FR	*** NOTE YCS READY OFF (C) DEE 0099	
		2-2		C1SP	*** NOTE YCS RESET OFF (C) DEE 0131	

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- 3' 6"		2-3		C1SP	*** NOTE TCS OUTPUT ON AND PULSE OK BLINKING ONCE PER SECOND (C) DEE 0055.	
		2-4		CSAC	*** NOTE T-186 TCS STARTED - ON (DEE-6 (4005) ON)	
		3	TCS		S-II LOX PRESS SEQUENCE ON -----	
		3-1		C2SP	*** NOTE LOX SUPPLY VALVE OPEN (DEE 1094)	
		3-2		C2SP	*** NOTE LOX TANK VENTS CLOSED ON (DEE 2540, 2542)	
		4	TCS		S-II LOX REPLENISH TERMINATE -----	
		4-1		C2OU	*** NOTE FLIGHT MASS ON	
		4-2		C2PM CCLO	*** NOTE S-II REPLENISH COMPLETED ON	
		4-3		C2PM CP02	*** NOTE S-II LOX DEBRIS VALVE CLOSED (DEE 1122)	
		4-4		C2OU	*** NOTE REPLENISH VALVE ENABLED OFF	
		4-5		CP02	*** NOTE S-II REPLENISH CLOSED.	
		4-6		CP02 C2PM	*** NOTE S-II LOX FILL & DRAIN CLOSED (DEE 1124)	
		4-7		CP02 C2PM	*** NOTE S-II UMB VENT VALVE OPEN	
		4-8		C2PM	*** NOTE LOX UMB PURGE VALVE OPEN (DEE 1126)	
		4-9		C2EV	*** NOTE LOX PROP READY FOR LAUNCH ON	
		4-10		CCLO	*** NOTE S-II UMB PURGE - ON.	

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- 3' 6"		5	TCS		S-IVB LOX REPLENISH TERMINATION -----	
		5-1		C40U	*** NOTE FLIGHT MASS ON.	
		5-2		CCL0 C4PR	*** NOTE S-IVB REPLENISH COMPLETED (H)	
		5-3		C40U	*** NOTE REPLENISH VALVE ENABLED OFF.	
		5-4		CP02 C4PR	*** NOTE S-IVB REPLENISH CLOSED (H)	
		5-5		CP02 C4PR	*** NOTE S-IVB LOX FILL & DRAIN CLOSED (H)	
		5-6		CP02 C4PR	*** NOTE S-IVB UMB VENT OPEN.	
		5-7		CCL0	*** NOTE S-IVB UMB PURGE ON.	
		5-8		R4PS	*** NOTE DEMAND ON D-14	
		6	TCS		S-II LH2 REPLENISH TERMINATION -----	
		6-1		C2PM CCLH	*** NOTE S-II REPLENISH COMPLETED ON	
		6-2		C2PM CPH1	*** NOTE S-II REPLENISH VALVE (A3310) CLOSED.	
		6-3		C2PM CPH1	*** NOTE LH2 S-II FILL & DRAIN VALVE (C128) CLOSED. (DEE 1129)	
		6-4		C2PM CPH1	*** NOTE S-II UMB LINE DRAIN VALVE (A3316) OPEN.	
		6-5		CPH1 C2PM	*** NOTE S-II UMB LINE PURGE VALVE (A9147) OPEN. (DEE 1131)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 6"		6-6		CCLH	*** NOTE S-II UMB LINE DRAIN ON	
		7	TCS		S-IVB LH2 REPLENISH TERMINATION -----	
		7-1		CCLH C4PR	*** NOTE S-IVB REPLENISH COMPLETED ON	
		7-2		CPH1	*** NOTE S-IVB REPLENISH VALVE (A3311) CLOSED	
		7-3		CPH1 C4PR	*** NOTE S-IVB FILL & DRAIN VALVE (D104) CLOSED (H)	
		7-4		CPH1	*** NOTE S-IVB UMB LINE DRAIN VALVE (A3317) OPEN	
		7-5		CPH1	*** NOTE S-IVB UMB LINE PURGE VALVE (A11773) OPEN.	
		7-6		CCLH	*** NOTE S-IVB UMB LINE DRAIN ON	
		8	TCS		S-IC LOX REPLENISH TERMINATE -----	
		8-1		C10U	*** NOTE FLIGHT MASS ON	
		8-2		C10U	*** NOTE REPLENISH VALVE ENABLE OFF	
		8-3		CP02	*** NOTE S-IC REPLENISH CLOSED	
		8-4		CP02	*** NOTE S-IC FILL & DRAIN (B239) CLOSED	
		8-5		CP02	*** NOTE S-IC UMB. VENT (A213) OPEN	
		8-6		CP01	*** NOTE REPLENISH LINE FLOW REMAINS AT 800 GPM.	
		8-7		CCLO C1LO	*** NOTE S-IC LOX REPLENISH COMPLETE	
		8-8		CCLO	*** NOTE S-IC UMB PURGE ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2'47"		1	TCS		S-IVB LOX TANK PREPRESS SEQUENCE -----	
		1-1		C4SP	*** NOTE LOX TANK PRESSURIZING (H)	
		1-2		C4SP	*** NOTE S-IVB LOX VENT CLOSING IMMEDIATELY (H)	
		1-3		C4EV	*** NOTE S-IVB LOX PRESSURIZATION COMMAND ON (C) DEE 1940	
		1-4		C4P2 R4PS	*** NOTE COLD HE REG OPERATION (D-105)	
- 2'32"		1	TCS		LUT COMPUTER INHIBIT ON -----	
		1-1		BGCC	*** NOTE COMPUTER TO IDLE MODE (DEE 3072)	
		1-2		BGCC	*** NOTE IF COMPUTER IDLE MODE CANNOT BE VERIFIED, HAVE CLVN PLACE ML/DCE IN MANUAL MODE	
- 2' 0"		1		C2SP	*** NOTE LOX ULLAGE PRESS SW. #1 AND/OR #2 ON (DEE 1098, 1099)	
		1-1		C2SP	*** NOTE LOX PRESS SYS READY FOR LAUNCH. (DEE 1102)	
	153	2	RLDE		COMM. CHECK WITH HOUSTON.	
- 1'42"		1	TCS		S-IC HYDRAULICS COMMIT AND CHECK +1D161 -----	
		1-1		C1HP	*** NOTE HYDRAULIC UNIT COMMITTED ON (DDAS) DEE 3245	

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- 1'37"		1	TCS		S-IC, S-II & S-IVB FUEL PREPRESS -----	
		1-1		C1RP	*** NOTE PREPRESS VALVE OPEN (C) DEE 0278.	
		1-2		C1RP	*** NOTE S-IC FUEL TANK IS PRESSURIZING	
		1-3		C2SP	*** NOTE LH2 PRESS SUPPLY VALVE OPEN (DEE 1110)	
		1-4		C2SP	*** NOTE LH2 DISCONNECT PRESS ON (DEE 1570)	
		1-5		C2SP	*** NOTE LH2 VENTS CLOSED ON (DEE 2548, 2550)	
		1-6		C4SP	*** NOTE S-IVB LH2 PREPRESS SUPPLY OPENS (C) DEE 1954 ON THEN OFF, DEE 1716 TO OFF THEN ON	
		1-7		C4EV	*** NOTE S-IVB FUEL TANK PRESSURIZATION COMMAND ON (C) DEE 1938 ON	
		1-8		C4SP	*** NOTE S-IVB LH2 VENT CLOSES IMMEDIATELY (H)	
		1-9		CPH1	*** NOTE S-II/S-IVB VENT LINE PURGE (A2984) OPEN.	
- 1'12"		1	TCS		S-IC TIME FOR LOX PREPRESS -----	
		1-1		C1LO	*** NOTE S-IC FLIGHT VENTS CLOSED (C) DEE 0014, 0017.	
		1-2		C1LO	*** NOTE LOX BUBBLING STOPPED (C) DEE 0007.	
		1-3		C1LO	*** NOTE PREPRESS VALVE OPEN (C) DEE 0022.	
		1-4		C1LO	*** NOTE S-IC LOX TANK IS PRESSURIZING	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1'12"		2		CPH1	*** NOTE S-II/S-IVB SWING ARM PURGE VALVE (A2983) OPEN	
- 1' 0"		1	TCS		INHIBIT S-IC INTERTANK SERVICE ARM AUTO ----- EXTEND, VALVES RESET, AUTO CHARGING & ----- PAD WATER ON -----	
		1-1		CWCP	*** NOTE FLAME DEFLECTOR COOLING VALVE OPENS	
		1-2		C2SP	*** NOTE LH2 ULLAGE PRESS SW #1 AND/OR #2 ON (DEE 1114, 1115)	
		1-3		C2EV	*** NOTE LH2 PROP. READY FOR LAUNCH ON (DEE 1130)	
		1-4		C2SP	*** NOTE LH2 PRESS SYS READY FOR LAUNCH. (DEE 1117)	
		1-5		CSAC	*** NOTE T-60 S/A 1 INHIBITS - ON (DEE-6 (3927) ON)	
- 0'50"		1	TCS		POWER TRANSFER INTERNAL -----	
		1-1		C1FR	*** NOTE S-IC POWER TRANSFER COMPLETE (C) DEE 0082 ON	
		1-2		C1NP C2NP C4NP CUNP	*** NOTE POWER TRANSFER COMPLETE (S-II DEE 3363) (S-IVB DEE 1843 ON)	
		1-3		CUDE	*** NOTE DEE 0779 AND 0777 ON, 0781 OFF.	
		1-4		CUCP	*** NOTE PUMP PRESSURE SWITCH ACTIVATE INDICATION OFF (DEE 0655 OFF)	

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- 0'50"		1-5		C2TC C2EV C2DE	*** NOTE S-II READY FOR LAUNCH - ON (DEE 1555)	
- 0'48"		1		C1LO	*** NOTE S-IC LOX PREPRESS IS OK (C) DEE 0015.	
		2		CIRP	*** NOTE FUEL PREPRESS AND FLIGHT PRESS OK (C) DEE 0270.	
- 0'47"		1		CUCP	*** NOTE PUMP PRESSURE SWITCH ACTIVATE INDICATION ON (DEE 0655 ON)	
- 0'40"		1	TCS		DISABLE S-IC FUEL & LOX FILL AND DRAIN ----- VALVES AND ENABLE S-IC PROPELLANTS ----- PRESSURIZED -----	
		1-1		CWCP	*** NOTE FLAME DEFLECTOR COOLING WATER ON. IF NO FLOW INDICATIONS, OPERATE FLAME DEFLECTOR QUENCH VALVE SWITCH TO OPEN POSITION AT T-14 SEC BY THE CLOCK	
		1-2		C1FR	*** NOTE S-IC PROPELLANTS PRESSURIZED (C) DEE 0171.	
		2	TCS		S-IVB TIME FOR DIRECTIONAL VENT TO ----- FLIGHT POSITION -----	
		2-1		C4SP	*** NOTE S-IVB DIRECTIONAL VENT TO FLIGHT POSITION (C) DEE 1714 ON	

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					CD ONLY	
- 0'40"		2-2		C4TC	*** NOTE S-IVB READY FOR LAUNCH (C) DEE 1966 ON	
- 0'30"		1	TCS		S-IC ENG HYD CHECKOUT VALVES TO STAGE ----- POSITION, RETRACT S-IC INTERTANK ----- SERVICE ARM. INHIBIT S-IC ----- FWD & INFLIGHT SERVICE ARMS AUTO EXTEND ----- & VALVES RESET. INHIBIT S-IC FWD ----- SERVICE ARM AUTO CHARGING. -----	#
		1-1		CSA1	CDDT ONLY	*
		1-2		CSA1	*** NOTE ALL SUPPLY AND RETURN VALVES OPEN (DDAS) DEE 3841 OFF, 3843 ON.	#
		1-3		C1EN	*** NOTE S-IC ENGINE (1-5) CHECKOUT VALVES TO STAGE POSITION (C) DEE 0112.	
		1-4		C2SP	*** NOTE LOX & LH2 SUPPLY VALVES CLOSED. (DEE 1095, 1111)	
		1-5		C2SP	*** NOTE LOX & LH2 SUPPLY LINE VENTS OPEN. (DEE 1017, 1404)	
		1-6		C2SP	*** NOTE LOX & LH2 DISC PRESS OFF (DEE 1569, 1570)	
		1-7		C2SP	*** NOTE LOX AND LH2 ACT PRESS VENTING (DEE 1105, 1551)	
		1-8		C2RP	*** NOTE PNEUM RECVR DISC ACT PRESS OFF - ON (DEE 1066)	
		1-9		C2RP	*** NOTE PNEUM RECVR SUPPLY VALVE OPEN-OFF. (DEE 1067)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 0'30"		1-10		C2GP	*** NOTE PNEUM. RECVR LINE VENT OPEN. (DEE 1068)	
		1-11		C2AE	*** NOTE START TANK VENT CONTROL PRESS ON - OFF, (DEE 1191)	
		1-12		C2PV	*** NOTE COMMON BULKHEAD VAC OFF	
		1-13		R2SC	*** VERIFY C050-327 & D072-327 WITHIN LIMITS	
		1-14		C2SP	*** NOTE LOW LEVEL PURGE VALVE CLOSED. (DEE 1108)	
		1-15		CSAC	*** NOTE T-30 S/A 1 RETRACT AND LSE INHIBITS - ON (DEE-6 (3959) ON)	
- 0'22"		1	TCS		GUIDANCE REF ALERT AND INSTRUMENT ----- HEATER POWER DISABLE -----	
	121	2	CUEV		VERIFY GUIDANCE ALERT. (DEE 0870 ON)	
		2-1		C1FR	*** NOTE IU READY FOR LAUNCH - OFF.	
		2-2		C1FR	*** NOTE PREPS COMPLETE - OFF (C) DEE 0159.	
		2-3		C1NP	*** NOTE HEATER POWER LIGHT OFF	
- 0'20"		1	TCS		CLOSE S-IC LOX INTERCONNECT VALVES -----	
		1-1		C1LO C1FR	*** NOTE LOX INTERCONNECT VALVES CLOSED. (C) DEE 2027, 2029, 2031.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
0'17"		1	TCS		GUIDANCE REF RELEASE -----	
		2	TCS		PD RSCR ENABLE -----	
121		3	CUEV		VERIFY GUIDANCE RELEASE (DEE 0869 ON).	
		3-1		C1FR	*** NOTE IU READY FOR LAUNCH - ON,	
		3-2		C1FR	*** NOTE PREPS COMPLETE - ON (C) DEE 0159,	
153		4	RLDE		GRR OCCURRED AT _____ SEC _____ MS	
153		5	HFLT		VERIFY RECEIPT OF GRR TIME	
		5-1		C1DP C2DP C4DP	*** NOTE RSCR'S 1 & 2 PD BLOCKED OFF, (DEE 1012, 1013) (C) DEE 0038, 0039, DEE 1673, 1674	
		5-2		C4ET	*** NOTE NON PROGRAMMED CUTOFF NOT ON DEE 1948 NOT ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
01 8.9 "		2-4		C4SP	*** NOTE S-IVB COLD HELIUM SUPPLY VENT OPENS	#
		2-5		C2AE	*** NOTE YCH CHILLDOWN - OFF (DEE 1193)	#
		2-6		C4SP	*** NOTE S-IVB GROUND PREPRESS SUPPLY VENT OPENS	#
		2-7		C4SP	*** NOTE S-IVB CONTROL & REPRESS SUPPLY CLOSES	#
		2-8		C4EP	*** NOTE S-IVB YCH CHILLDOWN SUPPLY CLOSES.	#
		2-9		C4EP	*** NOTE S-IVB CONTROL BOTTLE SUPPLY VENT OPENS.	#
		2-10		C2PM	*** NOTE LOX UMB PURGE VALVE OPEN - OFF.	#
		2-11		CTS1	*** NOTE PURGE VALVES #1 & #2 OPEN. (COMP) DEE 1617 & 1618 ON	#
		2-12		CPDC	*** NOTE Q-BALL COVER RETRACT VALVE OPEN (COMP) DEE 1597 ON	#
		2-13		CSAC	*** NOTE T-8.9 IGNITION COMMAND - ON (DEE-6 (4007) ON)	#
01 8.8 "		1	TCS		START S-IC IGNITER NO. 1 -----	#
01 8.7 "		1	TCS		START S-IC IGNITER NO. 2 -----	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
0' 7.2"					CD ONLY	
		1	TCS		TIME FOR S-IC LINKS BURNED -----	#
	121	2	C1FR		S-IC LINKS ARE BURNED (C) DEE 0102, 0103	#
		2-1		C1FR	*** NOTE ENGINES ARMED ON (C) DEE 0174	#
0' 6.70"						
		1	TCS		START S-IC ENG 105 -----	#
		1-1		C1FR	*** NOTE ENG 105 START ON (C) DEE 0222	#
0' 6.47"						
		1	TCS		START S-IC ENG 104 -----	#
		1-1		C1FR	*** NOTE ENG 104 START ON (C) DEE 0224	#
0' 6.45"						
		1	TCS		START S-IC ENG 101 -----	#
		1-1		C1FR	*** NOTE ENG 101 START ON (C) DEE 0230	#
0' 6.42"						
		1	TCS		START S-IC ENG 103 -----	#
		1-1		C1FR	*** NOTE ENG 103 START ON (C) DEE 0228	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
0' 0.05"		1	TCS		TIME FOR THRUST CHECKS -----	#
0' 0"		1	TCS		S-IC TIME FOR COMMIT AND S-II FLEC ----- DEADFACE COMPLETION -----	#
	121	1-1		C1FR	*** NOTE TIME FOR COMMIT (C) DEE 0117	#
		2	C1FR		COMMIT.	#
		2-1		C1FR	*** NOTE ALL HOLDDOWN ARMS RELEASED. (C) DEE 2143	#
		2-2		CHDA	*** NOTE CONTROL SWITCHES ARMED (COMP) DEE 1620 & 1622 ON	#
		2-3		CHDA	*** NOTE ARMING RELAYS OK (DDAS) DEE 4204 & 4205 ON	#
		2-4		CHDA	*** NOTE HDA RELEASE VALVES 1 AND 2 OPEN (COMP) DEE 1611 & 1615 ON	#
		2-5		CHDA	*** NOTE ARMS 1, 2, 3, 4 LANYARD PLUG IN - OFF. (DDAS) DEE 4020, 4021, 4022 & 4023 OFF	#
		2-6		CHDA	*** NOTE ALL ARMS HOLDING OFF (COMP) DEE 1613 OFF	#
		2-7		C1EH	*** NOTE S-IC ENG 101-105 HEATER POWER OFF.	#
		2-8		C1HP	*** NOTE S-IC HYDRAULIC UNIT SHUTDOWN SEQUENCE IN PROGRESS.	#
		2-9		C2NP	*** NOTE COMMIT BUS 2D131 ZERO.	#
		2-10		C2NP	*** NOTE IND BUS 2D119 ZERO.	#
		2-11		C2EV	*** NOTE COMMIT BUS 2D131 OFF.	#

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0' 0"					GO ONLY	
		2-12		C2EV	*** NOTE IND BUS 2D119 OFF.	#
		2-13		C2EV	*** NOTE S-IC COMMIT.	#
		2-14		CSAC	*** NOTE COMMIT - ON	#
0' 0"					OFF.	
	121	1		C2EV	*** NOTE FWD & AFT UMBILICAL PLUG CONN	#
		2	CLTC		LIFTOFF (PANEL LIGHT AND OTV)	#
		2-1		CUEV	*** NOTE LIFTOFF.	#
		2-2		C1FR	*** NOTE LIFTOFF (C) DEE 0092	#
		2-3		C4PR	*** NOTE S-IVB LH2 DEBRIS VALVE CLOSED.	#
		2-4		C4PR	*** NOTE S-IVB LOX DEBRIS VALVE CLOSED.	#
		2-5		CHDA	*** NOTE PRIMARY AND SECONDARY CONTROL SWITCHES CLOSED (DDAS) DEE 4198, 4199, 4201 & 4202 ON	#
		2-6		CSA4 CSA5 CSA6 CSA7 CSA8	*** NOTE ALL SUPPLY & RETURN VALVES OPEN (DDAS) DEE 3898, 3925, 3951, 3978 & 4046 ON	#
		2-7		CTS1 CTS2 CTS3	*** NOTE HYD RETURN VALVES #1 & #2 CLOSE LIGHT AND UMBILICAL PLATE MATED LIGHT OFF (DDAS) DEE 4081, 4083, 4110, 4112, 4139, 4141, 4237, 4238 & 4239 ON	#
		2-8		CWCP	*** NOTE LUT SERVICE ARM QUENCH ON (7500 GPM).	#
		2-9		CWCP	MANUALLY OPERATE LUT DECK FLUSH VALVE TO OPEN POSITION AS LIFTOFF ANNOUNCED OVER OIS, PLUS OPERATOR COUNT OF 2 SECONDS.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
+ 1' 0"						
	171	12	C2TC	C2GP	START TANK LINE VENT OPEN UNTIL D079-327 INDICATES APPROXIMATELY ZERO, THEN CLOSE	#
	171	13	C2TC	C2AE	HE BOTTLES SUPPLY VALVE TO OFF	#
	171	14	C2TC	C2AE	START TANK VENT CONT PRESS TO OFF	#
	171	15	C2TC	C2RP	PNEUM RECEIVER SUPPLY VALVE TO OFF	#
	171	16	C2TC	C2RP	RECEIVER ACT DISC TO OFF	#
	171	17	C2TC	C2SP	LOX AND LH ACT PRESS SW'S TO OFF	#
	171	18	C2TC	C2SP	LOX AND LH VENT VALVE SW'S TO CLOSE	#
	171	19	C2TC	C2SP	LOX DISCONNECT PRESS SW TO CLOSE	#
	171	20	C2TC	C2GP	HE PRESS SEL SW TO 1000 PSIG.	#
	171	21	C2TC	C2PV	POSITION ALL SWITCHES TO AUTO EXCEPT: HELIUM SUPPLY VALVE - OFF AUX HELIUM SUPPLY VALVE - OFF LOW SCALE SELECT - HIGH COMMON BULKHEAD VACUUM - PURGE J-RING VACUUM - PURGE	
	171	22	C2TC	C2NP	STAGE POWER SWITCH TO OFF.	#
	171	23	C2TC	C2NP	SECURE ALL GROUND ESF POWER SUPPLIES EXCEPT 2D100 PER V-21103 (R011) (NON-HAZARDOUS). 2D100 POWER TO STAY ON UNTIL GROUND PNEMATICS IS SECURED.	#
+ 2' 0"						
	181	1	C1TC	CCLO	SECURE LOX PUMPS AND VENT STORAGE TANK	#
	181	2	C1TC	CCLH	VERIFY AUTO LAUNCH SECURING IN PROGRESS PER V-35014 (HAZARDOUS).	#

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▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
+ 2'30"						
	171	1	C2TC	C2PM	VERIFY LOX AND LH2 DEBRIS VALVES CLOSED	#
	171	2	C2TC	C2PM	VERIFY LOX AND LH2 UMBILICAL PURGE VALVES CLOSED	#
	181	3	C1TC	RRSC	RECORDERS OFF	#
+ 5' 0"						
	181	1	C1TC	CWCP	START INDUSTRIAL WATER SYSTEM SHUTDOWN PER V-36113 (HAZARDOUS).	#
	181	2	C1TC	CSPP	POWER SUPPLY COMMIT OFF	#
	181	3	C1TC	CSPP	PLACE 42D100 LOCKUP ENABLE SWITCH TO OFF AND VERIFY.	#
	181	4	C1TC	CSPP	REMOVE LSE 42D100, 43D100 & 43D200 POWER PER V-21194.	#
+ 5'30"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY IMMEDIATE SECURING OPERATIONS COMPLETE.	#
					POST LAUNCH SECURING OPERATIONS -----	#
+ 6' 0"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	CONTINUE SECURING OPERATIONS.	#
	111	2	CLTC	CVTS	LV STARTING FINAL SECURING OPERATIONS.	# TCP
	121	3	CVTS	CLTC	VERIFY LH2 SYSTEM INERTING HAS STARTED.	# TCP

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+ 6' 0"					CD ONLY	
151		4	CUTC	CUNP	SECURE IU GROUND POWER PER V-21223, REPORT WHEN COMPLETE. (LEAVE SWITCH POWER ON) (NON-HAZARDOUS)	#
151		5		CUTC	TERMINATE ALTERNATE FIRING ROOM SUPPORT	#
181		6	C1TC	BRFS	SECURE DRSCS GSE PER V-38000 (NON-HAZARDOUS) (IF COMPUTER NOT SUPPORTING, C1TC REQUEST MDO 0449 BE ISSUED OFF) (MUX NONE. ADDRESS 18. DATA BIT 17 UP)	#
181		7	C1TC	CHGD	SECURE HGD SYS PER V-37038 (HAZARDOUS).	#
181		8	C1TC	CCL0	SECURE LOX SYSTEM PER V-25345 (HAZARDOUS).	#
181		9	C1TC	CCLH	SECURE LH2 SYSTEM PER V-35015, VOL II (HAZARDOUS).	#
161		10	C4TC	C4HN	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II (HAZARDOUS) ON CH 143	#
171		11	C2TC	C2PM	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II (HAZARDOUS) ON CH 143	#
181		12	C1TC	CCRP	SECURE RP-1 SYSTEM PER V-25003 (HAZARDOUS).	#
181		13	C1TC	RPDC RDTs RDE3	SECURE DEE-3, DTS AND PROPELLANT POWER, AFTER COMPLETION OF PROPELLANT MECH AND ECS SECURING PROCEDURES.	#
181		14	C1TC	RDTs RPDC	SECURE ALTERNATE FIRING ROOM DTS AND PROPELLANT POWER	#
121		15	CLTC	BTMC	SECURE TM TAPE RECORDING AFTER LOSS OF TM SIGNAL	#
		16		CUTC	CHILLED WATER SUPPLY TO THE ML 110A IS OFF. PROCEED WITH SECURING THE LUT 110A	#
151		17	CUTC	CLVN	ML DCE TO MANUAL MODE	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
+ 6' 0"						
	151	18	CUTC	BGCC	DC POWER OFF THE ML 110A	#
	151	19	CUTC	CCPM	23T500 OUTPUT POWER OFF (DO NOT TRANSFER TO FACILITY POWER)	#
	151	20	CUTC	ALL	POST LAUNCH OPERATIONS WILL BE PERFORMED PER V-31062, PART VII	#
	181	21	C1TC	V1ME	SECURE VEHICLE MEASURING GSE PER V-27098 (NON-HAZARDOUS).	#
	181	22	C1TC	R1TM	SECURE TCE PER V-28186 (NON-HAZARDOUS).	#
+20' 0"						
	151	1	CUTC	RLDE	TERMINATE MAG TAPE AND POWER OFF THE DEE-6 COMPUTER	#
+ 1 HRS 0' 0"						
		1			NOTE ----	#
					A SAFETY INSPECTION OF THE LAUNCH PAD WILL BE CONDUCTED BY SAFETY AND CONTRACTOR PERSONNEL FROM T +1 HR TO T +2 HRS. LAUNCH VEHICLE PERSONNEL WILL NOT BE GIVEN ACCESS TO THE AREA UNTIL THE SAFETY INSPECTION IS COMPLETE AND SAMPLES OF THE LH2 SKID FILTERS AND TRANSFER LINE INDICATE LESS THAN 4% GH2.	
	111	2	CLTC	CVTS	REQUEST CPSS TO CLEAR APPROVED BENDIX PERSONNEL INTO FACILITY HIGH PRESSURE GH2 AREA TO SECURE AND VENT 6000 PSI GH2 TRANSFER LINE.	# TCP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 1 HRS 0' 0"					CD ONLY	
	121	3	BOSC	CLTC	REQUEST S-II & S-IVB PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE SECURING & INERTING WITH GHE.	
	121	3-1	CLTC	C2TC C4TC	HAVE YOUR PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE SECURING & INERTING WITH GHE.	
+ 2 HRS 0' 0"						
	111	1	CLTC	CVTS	VERIFY SAFETY INSPECTION COMPLETE AND SPECIAL CONTROL AREA OPEN FOR LIMITED ACCESS	# TCP
	188	2	CVTS	ALL	SPECIAL CONTROL AREA OPEN FOR LIMITED ACCESS	# TCP
	121	3	CLTC	C1TC C2TC C4TC CUTC	THE SPECIAL CONTROL AREA IS OPEN FOR LIMITED ACCESS	#
	121	4	CVTS	CLTC	6000 PSI GH2 TRANSFER LINE SECURED AND VENTED.	# TCP
	121	5	CLTC	C2TC C4TC	6000 PSI GH2 TRANSFER LINE VENTED. START GH2 SYSTEM PURGES.	#
	161	6	C2TC	C4TC	VERIFY GHE PURGE SUPPLY AVAILABLE FOR GH2 SYSTEM PURGE.	#
	171	7	C2TC	C2GP	START POST LAUNCH GH2 CIRCUIT PURGE PER V-30029 (M020) TASK 46 (HAZARDOUS).	#
	161	8	C4TC	C4PS	START GH2 SYSTEM PURGE & GSE SECURING PER V-30539, SECT U, PART 2 (HAZARDOUS).	#
	181	9	C1TC	C1PE	SECURE HYDRAULIC UNIT PER V-34012 (HAZARDOUS) AFTER LAUNCH AREA IS OPEN.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
2 HRS 0' 0"						
	181	10	C1TC	C1PE	SECURE INERT PREFILL UNIT PER V-34012 (HAZARDOUS) AFTER LAUNCH AREA IS OPEN.	#
	181	11	C1TC	C1PE	SECURE PNEUMATIC CONSOLES PER V-21036 (NON-HAZARDOUS) (POST LAUNCH CHECKLIST) AFTER LAUNCH AREA IS OPEN.	#
	121	12	C1TC	CLTC	REQUEST ORDNANCE PERSONNEL REMOVE HOLDDOWN ARM UNEXPENDED POWER CARTRIDGES PER V-36069 (HAZARDOUS). OBTAIN CLEARANCE THROUGH GUARD STATIONS TO LUT ZERO LEVEL.	#
	111	13	CLTC	CVTS	REQUEST ORDNANCE PERSONNEL REMOVE HDA UNEXPENDED POWER CARTRIDGES PER V-36069 (HAZARDOUS).	# TCP
	181	14	C1TC	C1NE	SECURE S-IC ESE PER V-21036 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#
	181	15	C1TC	CSAC	SECURE SYSTEMS ON CHANNEL 118	#
	118	16	CSAC	CSA1	SECURE S/A 1 PER V-36077 (NON-HAZARDOUS)	#
	118	17	CSAC	CSA2	SECURE S/A 2 PER V-36078 (NON-HAZARDOUS)	#
	118	18	CSAC	CSA3	SECURE S/A 3 PER V-36032 (NON-HAZARDOUS)	#
	118	19	CSAC	CSA4	SECURE S/A 4 PER V-36080 (NON-HAZARDOUS)	#
	118	20	CSAC	CSA5	SECURE S/A 5 PER V-36081 (NON-HAZARDOUS)	#
	118	21	CSAC	CSA6	SECURE S/A 6 PER V-36082 (NON-HAZARDOUS)	#
	118	22	CSAC	CSA7	SECURE S/A 7 PER V-36083 (NON-HAZARDOUS)	#
	118	23	CSAC	CSA8	SECURE S/A 8 PER V-36084 (NON-HAZARDOUS)	#
	118	24	CSAC	CSA9	SECURE S/A 9 PER V-36085 (HAZARDOUS)	#
	118	25	CSAC	CSAD	SECURE DRRS PER V-36086 (NON-HAZARDOUS)	#
	181	26	C1TC	CTS1	SECURE TSM'S PER V-36039 (HAZARDOUS)	#
	181	27	C1TC	CHDA	SECURE HDS/SACS PER V-36069 (HAZARDOUS).	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 0' 0"					CD ONLY	
	118	28	CSAC	CHCU	SECURE HCU PER V-36079 (NON-HAZARDOUS)	#
	171	29	C2TC	U2SE U2MU U2SI U2PE U2PV U2LN	INSPECT S-II LUT EQUIPMENT FOR POST LAUNCH STATUS. REPORT RESULTS TO C2TC ON CHANNEL 171.	#
	171	30	C2TC	U2LN	START CIRCUIT BREAKER LOCK REMOVAL PER V-30029 (M020) TASK 48 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#
	171	31	C2TC	C2GP	START POST LAUNCH GROUND PNEU SECURING PER V-30029 (M020) TASK 49 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#
	171	32	C2TC	U2PV	START POST LAUNCH SECURING PER V-30029 (M020) TASK 50 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#
	181	33	C1TC	CECS	SECURE PAD ECS PER V-36074 (HAZARDOUS)	#
	181	34	C1TC	CPDC	SECURE PNEU DIST SYSTEM PER V-36064 (NON-HAZARDOUS) AND SMDPS PER V-36063 (HAZARDOUS).	#
		35			*****WARNING***** * * THE FACILITY AIR SYSTEM * * HAS BEEN PURGED OF GN2 * * AND IS BACK IN ITS * * NORMAL CONFIGURATION, * * *****	#
	181	36	C1TC	CSAC	SECURE Q-BALL COVER PNEUMATIC RETRACT SYSTEM PER V-36112 (HAZARDOUS).	#
	171	37	C2TC	C2NP	POWER DOWN ESE PER V-21103 (B011) (NON-HAZARDOUS) WHEN C2GP REPORTS GROUND PNEUMATICS ARE SECURED.	#

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▶ ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
+ 2 HRS 0' 0"						
	171	38	C2TC	U2LN	OPEN CIRCUIT BREAKERS PER V-21103 (B011) (NON-HAZARDOUS. REPORT WHEN COMPLETE.	#
	121	39	C1TC	CLTC	REQUEST POWER COORDINATOR HAVE 4160 VOLT BREAKERS TURNED OFF AT LOX STORAGE AREA SUBSTATION (A106, A107, A126 & A127) (924-1 & 924-2)	#
	262	40	CLTC	BTIS	TURN OFF 4160 V BREAKERS AT LOX STORAGE AREA SUBSTATION (A106, A107, A126 & A127) (924-1 & 924-2)	# TCP
+ 2 HRS 30' 0"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	REPORT WHEN COMPUTER SUPPORT IS NO LONGER REQUIRED.	#
		2		CUTC	COUNTCLOCK MAY BE SECURED AFTER S-IVB TLI (TLI OCCURS BETWEEN T+2:45 AND T+4:30)	#
	121	3	CLTC	CUTC	SECURE LV ELECTRICAL SUPPORT EQUIPMENT PER PROCEDURE V-31062, APPENDIX A. REPORT WHEN COMPLETE (NON-HAZARDOUS)	#
	161	4	C4TC	C4ES	CONTINUE POST LAUNCH SECURING PER V-30539, SECT U, PART 3 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 LV					APPENDIX A - LV SAFING PROCEDURE ----- PART 1 PRIOR TO T-3:07 MIN ----- (COMPUTER SUPPORTING). CONDITIONS: * FIRING COMMAND NOT ISSUED * TCS FUNCTIONS NOT INITIATED * HOLD COUNT SOURCE NOT CUTOFF * HOLD CALLED BETWEEN T-22 MIN AND TCS (T-00:03:07) * ALL PERSONNEL MONITORING CH 121	
		1		C2AE	TCH CHILLDOWN TO OFF THEN AUTO	
		2		C4EP	TCH CHILLDOWN VALVE CLOSE THEN AUTO.	
		3		C2AE	START TANK SUPPLY VALVE TO OFF THEN AUTO	
		4		C2AE	START TANK ALL VENT TO ALL VENT	
		4-1		C2AE	*** NOTE IF START TANKS FAIL TO VENT, USE EMERGENCY VENT. NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY WHEN EMERGENCY VENT IS USED.	
		5		C2SP	LOX SUPPLY VALVE TO CLOSE THEN AUTO	
	121	6	CLTC	C1NP	POWER CONTROL FUNCTION SELECTOR TO PRELAUNCH	
	121	7	CLTC	C1SP	CUTOFF RESET	
	121	7-1		BGCC	*** NOTE COMPUTER IN GO MODE.	
	121	8	CLTC	C4AL	APS ENGINE VALVE POWER OFF.	
	121	9	CLTC	C1SP	TCS - SAFE AND SEQUENCER POWER OFF THEN AUTO	
	121	10	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 LV						
	121	11	CLTC	C1DP C2DP C4DP	SAFE & ARM DEVICE - SAFE.	
	121	12	CLTC	CUSW	LVDA/ESE SWITCH TO ESE.	
	121	13	CLTC	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON.	
	121	14	CLTC	CUFC	VERIFY FLIGHT CONTROL SYSTEM IN A SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	15	CLTC	CLIK CLGK C1PK CLCP	TERMINATE PROGRAM BEING EXECUTED.	
		15-1		CLGK	*** NOTE TERMINATE FE50	
		15-2		CLGK	*** NOTE TERMINATE GE01 IF FT42 HAS BEEN PREVIOUSLY EXECUTED	
		15-3		C1PK	*** NOTE TERMINATE VATS IF EXECUTING	
	121	16	CLTC	CHCU	START CKT BYPASS SWITCHES OFF	
		16-1		CLDE	*** NOTE DEE-6 (1482, 1485, 4221, 4222) OFF	
		17	RLDE		*** NOTE ENTER EST MODE.	
	121	18	CLTC	C1TC C2TC C4TC CUTC	SAFE YOUR STAGES & GSE, ESTABLISH HOLD CONDITION, REPORT WHEN COMPLETE.	
	121	19	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
		19-1		CLDE	*** NOTE DEE-6 (3637) OFF	
	121	20	CLTC	ECOP	TERMINATE REAL TIME GUIDANCE REDUCTION	
	111	21	CLTC	CVTS	LV IS SAFED, HOLD CONDITION ESTABLISHED	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 LV	121	22	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR DRAIN PROCEDURE)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 S-IC					PART 1 PRIOR TO T-3:07 MIN ----- (COMPUTER SUPPORTING) S-IC SAFING -----	
181		1	C1TC	CCRP	EVALUATE S-IC STAGE FUEL LOAD FOR POSSIBLE REPLENISH AND/OR FUEL LEVEL ADJUST REQUIREMENTS.	
181		2	C1TC	CPRK	REINITIALIZE BE01 WITH THE "I" OPTION & THEN THE "Z" OPTION AT A 10 SEC SCAN RATE	
181		3	C1TC	CPRK	AFTER 35 TO 45 MIN REVERIFY S-IC, RP-1 MAX F WITH CCRP & S-IC, LOX MAX L WITH CCLO	
181		4	C1TC	C1PC	CONTINUE THERMAL CONDITIONING PURGE OPERATION,	
181		5	C1TC	C1LO	LOX BUBBLING TO AUTO	
181		6	C1TC	CCLO	CONTINUE LOX REPLENISH TO ALL STAGES.	
181		7	C1TC	CCLH	CONTINUE LH2 REPLENISH TO S-II & S-IVB STAGES,	
181		8	C1TC	CTS1	VERIFY AND/OR OPERATE PSV #3 SWITCH TO DOWN	
		8-1			*** NOTE DEE-6 (1493, 1505 & 1517) OFF AND (4094, 4123 & 4152) ON	
181		9	C1TC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
181		10	C1TC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
121		11	C1TC	CLTC	S-IC SAFED. HOLD CONDITION ESTABLISHED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 S-II					PART 1 PRIOR TO T-3:07 MIN ----- (COMPUTER SUPPORTING)	
					S-II SAFING -----	
	171	1	C2TC	C2AE	VERIFY TCH CHILLDOWN IN AUTO.	
		1-1		C2AE	*** NOTE TCH CHILLDOWN OFF	
	171	2	C2TC	C2AE	VERIFY START TANK ALL VENT IN ALL VENT	
	171	3	C2TC	C2AE	VERIFY START TANK SUPPLY VALVE IN AUTO.	
		3-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
	171	4	C2TC	C2AE	START TANK SUPPLY LINE VENT TO VENT THEN AUTO.	
	171	5	C2TC	C2AE	HE BOTTLE SUPPLY VALVE TO OFF THEN AUTO.	
	171	6	C2TC	C2AE	HE BOTTLE SUPPLY LINE VENT TO VENT.	
		7		C2AE	USE ALL HE SOLENOID SWITCH TO KEEP HE BOTTLE PRESSURES BELOW 3000 PSIA.	
	171	8	C2TC	C2AE	VERIFY/PLACE TCH PURGE TO OFF THEN AUTO.	
	171	9	C2TC	C2PV	MAINTAIN PURGE AND VACUUM SYSTEM OPERATIONS.	
	171	10	C2TC	C2FC	MAIN PUMP BYPASS VALVE TO CLOSE THEN AUTO.	
	171	11	C2TC	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL - ON THEN AUTO.	
	171	12	C2TC	C2FC	ALL ACCUMULATOR CONTROL - UNLOCK THEN AUTO.	
		12-1		C2FC	*** NOTE INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	
	171	13	C2TC	C2FC	AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 AND 4 - OFF THEN AUTO.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 S-II						
	171	14	C2FC	C2TC	HYDRAULICS SAFED AND IN HOLD CONDITION.	
	171	15	C2TC	C2RP	RECIRC RESET TO RESET THEN INHIBIT.	
		15-1		C2NP	*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS.	
		15-2		C2RP	*** NOTE LH PREVALVES OPEN - ON	
		15-3		C2RP	*** NOTE RECIRC RESET AND RECIRC STOP RESET - ON	
	171	16	C2TC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51.	
	171	17	C2TC	C2SP	LOX DISCONNECT PRESS - CLOSE THEN AUTO	
		17-1		C2SP	*** NOTE LOX & LH VENT VALVES OPEN.	
		17-2		C2SP	*** NOTE LOX & LH SUPPLY VALVES CLOSED.	
		17-3		C2SP	*** NOTE LOX & LH SUPPLY LINE VENTS CLOSED.	
		17-4		C2SP	*** NOTE LOX & LH ACT PRESSURE ON.	
		17-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN.	
		17-6		C2SP	*** NOTE SHROUD PURGE VALVE OPEN.	
		17-7		C2GP	*** NOTE GN SUPPLY ON.	
		17-8		C2GP	*** NOTE GH PRESSURE ON.	
		17-9		C2GP	*** NOTE 3000 PSIG HE PRESS ON.	
		17-10		C2GP	*** NOTE 3000 PSIG EMERG HE PRESS ON.	
		17-11		C2GP	*** NOTE SECONDARY HE PRESS ON.	
		17-12		C2GP	*** NOTE HE F & D LINE INERT ON.	
		17-13		C2GP	*** NOTE HE ACT PNEU PRESS ON.	
		17-14		C2GP	*** NOTE HE TURBO START GH VENT ON.	
		17-15		C2GP	*** NOTE LOX & LH HE TANK PRESS ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A1 S-II		17-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON.	
		17-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON.	
		17-18		C2GP	*** NOTE AMB HE TCH PURGE ON.	
	171	18	C2SP	C2TC	PRESSURIZATION SYSTEM SAFED AND HOLD CONDITION ESTABLISHED.	
	171	19	C2GP	C2TC	GROUND PNEUMATICS SAFED AND IN HOLD CONDITION.	
	171	20	C2PM	C2TC	PROPELLANT MONITOR SAFED AND IN HOLD CONDITION.	
	171	21	C2AE	C2TC	ENGINE PURGES ARE COMPLETE AND HOLD CONDITION ESTABLISHED.	
	171	22	C2PV	C2TC	PURGE AND VACUUM SYSTEM IN HOLD CONDITION.	
	121	23	C2TC	CLTC	S-II SAFED, HOLD CONDITION ESTABLISHED.	

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A1 S-IV					PART 1 PRIOR TO T-3:07 MIN ----- (COMPUTER SUPPORTING) S-IVB SAFING -----	
161		1	C4TC	C4EP	START TANK SUPPLY VALVE CLOSE THEN AUTO.	
161		2	C4TC	C4EP	ON C4PS COMMAND OPEN START TANK VENT.	
161		3	C4TC	C4ET	VENT ENGINE CONTROL BOTTLE AS REQUIRED TO MAINTAIN PRESSURE BELOW 3200 PSIA MAX BY CYCLING C.T. HELIUM CONTROL.	
161		4	C4TC	C4NP	SWITCH SELECTOR INHIBIT - OFF	
161		5	C4TC	C4EP	LOX & LH2 PREVALVES - OPEN THEN AUTO	
161		6	C4TC	C4EP	LOX & LH2 CHILLDOWN PUMPS - OFF THEN AUTO	
161		7	C4TC	C4HY	FLIGHT MODE OFF THEN AUTO.	
161		8	C4TC	C4HN	HEAT EXCHANGER CKT 1 VENT CLOSE THEN AUTO.	
161		9	C4TC	C4EP	THRUST CHAMBER PURGE SUPPLY CLOSE THEN AUTO.	
161		10	C4TC	C4SP	LOX VENT SWITCH TO OPEN	
161		11	C4TC	C4SP	LH2 VENT SWITCH TO OPEN	
161		12	C4TC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
121		13	C4TC	CLTC	S-IVB SAFED. HOLD CONDITION ESTABLISHED.	

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A1 IU					PART 1 PRIOR TO T-3:07 MIN ----- (COMPUTER SUPPORTING) IU SAFING -----	
	151	1	CUTC	CUES	EDS MODE SWITCH TO MONITOR THRUST OK SWITCH A & B TO INHIBIT THEN AUTO	
	151	2	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22)	
	151	3	CUTC	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK) IF LVDC IS NOT IN MODE SORT,	
	151	4	CUTC	CUNP	SWITCH SELECTOR INHIBIT - ON	
	121	5	CUTC	CLTC	IU SAFED. HOLD CONDITION ESTABLISHED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A2 LV 1					APPENDIX A - LV SAFING PROCEDURE ----- PART 2 PRIOR TO T-3:07 MIN ----- (COMPUTER DOWN) CONDITIONS: * FIRING COMMAND NOT ISSUED * TCS FUNCTIONS NOT INITIATED * HOLD COUNT SOURCE NOT CUTOFF * HOLD CALLED BETWEEN T-22 MIN & TCS (T-00103:07)	
	188	1	CLTC	ALL	A HOLD CONDITION EXISTS, THE COMPUTER IS NOT SUPPORTING. ALL PERSONNEL MONITOR CHANNEL 121.	
		2		C2SP	LOX SUPPLY VALVE TO CLOSE THEN AUTO	
		3		C2AE	TCH CHILLDOWN TO OFF.	
	121	4	CLTC	C1NP	POWER CONTROL FUNCTION SELECTOR TO PRELAUNCH	
	121	5	CLTC	C1SP	CUTOFF RESET, TCS TO SAFE AND SEQUENCER POWER OFF	
	121	6	CLTC	C1DP C2DP C4DP	SAFE & ARM TO SAFE	
	121	7	CLTC	CLVN	ML/DCE TO MANUAL MODE	
	121	8	CLTC	CUSW	LVDA/ESE TO ESE	
	121	9	CLTC	C4NP	SWITCH SELECTOR INHIBIT TO OFF	
	121	10	CLTC	C4NP	EMERGENCY POWER TRANSFER SWITCH - EXTERNAL	
	121	11	CLTC	C4AL	APS ENGINE VALVE POWER OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A2 LV 1						
	121	12	CLTC	CLVN	ISSUE THE FOLLOWING MDO'S ON OR OFF SIMULTANEOUSLY BY SETTING UP THE DCE BIT PATTERN DEFINED FOR EACH GROUP. (ANNOUNCE OVER OIS CH 121 AS EACH GROUP IS ISSUED) PER V-31008 (NON-HAZARDOUS):	
		12-1		ALL	*** NOTE ALL PANEL OPERATORS POSITION SWITCHES TO POSITION INDICATED IN PARENTHESES AFTER EACH GROUP IS ISSUED.	
	121	12-2		CLVN	GRP 1 - MUX 21, 22. ADDRESS 12. DATA BIT 5 DN. 1805 ON (CUSP - S-II BURN TEST MODE ON).	
		12-3		CUSP	*** NOTE FLIGHT CONTROL IN SAFE CONFIGURATION FOR LADDER DRIFT	
	121	12-4		CLVN	GRP 2 - MUX 21, 22. ADDRESS 16. DATA BIT 17 DN, 18 DN. 1913 ON (CUES-TOK INHIBIT A SW TO AUTO) 1914 ON (CUES-TOK INHIBIT B SW TO AUTO)	
	121	12-5		CLVN	GRP 3 - MUX 22. ADDRESS 6. DATA BIT 1 UP, 16 UP, 18 UP, 19 DN. 1153 OFF (C2AE-START TANK SUPPLY VALVE TO OFF THEN AUTO) 1168 OFF (C2AE-TCH PURGE TO OFF THEN AUTO) 1170 OFF (C2AE - HE BOTTLE SUPPLY VALVE TO OFF THEN AUTO) 1171 ON (C2AE - HE BOTTLE SUPPLY LINE VENT TO VENT)	
	121	12-6		CLVN	GRP 4 - MUX 22. ADDRESS 10. DATA BIT 6 UP 1254 OFF (C2FC - MAIN PUMP BYPASS VALVES CLOSE THEN AUTO)	
	121	12-7		CLVN	GRP 5 - MUX 22. ADDRESS 3. DATA BIT 23 UP. 1103 OFF (C2SP - LOX DISC PRESS TO CLOSE THEN AUTO)	
	121	12-8		CLVN	GRP 6 - MUX 22. ADDRESS 9. DATA BIT 22 DN. 1246 ON (C2FC - ENG 1 ACCUM CONTROL - ON THEN AUTO)	

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A2 LV 1						
	121	12-9		CLVN	GRP 7 - MUX 22. ADDRESS 10. DATA BIT 0 DN, 2 DN, 4 DN. 1248 ON (C2FC - ENG 2 ACCUM CONTROL - ON THEN AUTO) 1250 ON (C2FC - ENG 3 ACCUM CONTROL - ON THEN AUTO) 1252 ON (C2FC - ENG 4 ACCUM CONTROL - ON THEN AUTO)	
	121	12-10		CLVN	GRP 8 - MUX 21. ADDRESS 1. DATA BIT 21 DOWN THEN REISSUE WITH DATA BIT 21 UP. 0549 ON/OFF (C2FC - ALL ACCUM CONTROL TO UNLOCK THEN AUTO)	
	121	12-11		CLVN	GRP 9 - MUX 22. ADDRESS 5. DATA BIT 23 DN. 1151 ON (C2AE - START TANKS SUPPLY LINE TO VENT THEN AUTO)	
	121	12-12		CLVN	GRP 10 - MUX 22. ADDRESS 9. DATA BIT 21 UP, 23 UP. 1245 OFF (C2FC - AUX HYD PUMP 1 TO OFF THEN AUTO) 1247 OFF (C2FC - AUX HYD PUMP 2 TO OFF THEN AUTO)	
	121	12-13		CLVN	GRP 11 - MUX 22. ADDRESS 10. DATA BIT 1 UP, 3 UP. 1249 OFF (C2FC - AUX HYD PUMP 3 TO OFF THEN AUTO) 1251 OFF (C2FC - AUX HYD PUMP 4 TO OFF THEN AUTO)	
	121	12-14		CLVN	GRP 12 - MUX 21, 22. ADDRESS 2. DATA BIT 11 UP, 12 UP. 1571 OFF (C4EP - TCH PURGE SUPPLY CLOSE THEN AUTO) 1572 OFF (C4EP - TCH CHILLDOWN CLOSE THEN AUTO)	
	121	12-15		CLVN	GRP 13 - MUX 21, 22. ADDRESS 8. DATA BIT 15 UP. 1719 OFF (C4EP - START TANK SUPPLY CLOSE THEN AUTO)	

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A2 LV 1						
	121	12-16		CLVN	GRP 14 - MUX 21, 22. ADDRESS 6. DATA BIT 21 UP. 1677 OFF (C4HN - HEX CIR #1 VENT CLOSE THEN AUTO)	
	121	12-17		CLVN	GRP 15 - MUX NONE. ADDRESS 10. DATA BIT 13 UP, 15 UP. 0253 OFF (CTS1 - TSM 1-2 PSV #3 CLOSE) 0255 OFF (CTS1 - TSM 3-2 PSV #3 CLOSE)	
	121	12-18		CLVN	GRP 16 - MUX NONE. ADDRESS 14. DATA BIT 14 UP. 0350 OFF (CTS1 - TSM 3-4 PSV #3 CLOSE)	
	121	12-19		CLVN	GRP 17 - MUX 22. ADDRESS 5. DATA BIT 10 DN THEN REISSUE WITH DATA BIT 10 UP. 1138 ON THEN OFF (C2RP - RECIRC RESET TO RESET THEN INHIBIT)	
	121	12-20		C2NP	*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS.	
	121	13	CLTC	CUSW	ISSUE THE FOLLOWING OCTALS. REPORT WHEN COMPLETE. S-IVB 151 (C4EP - LOX & LH PREVALVES OPEN THEN AUTO) S-IVB 042 (C4EP - LOX CHILLDOWN PUMP OFF THEN AUTO) S-IVB 153 (C4EP - LH2 CHILLDOWN PUMP OFF THEN AUTO) S-IVB 074 (C4HY - FLIGHT MODE OFF THEN AUTO)	
	121	14		CLVN	GRP 18 - MUX NONE. ADDRESS BIT 11. DATA BIT 12 UP. 0276 OFF (C1LO - LOX BUBBLING TO AUTO).	
	121	15	CLTC	C2AE	START TANK ALL VENT TO ALL VENT	
		15-1		C2AE	*** NOTE IF START TANKS FAIL TO VENT, USE EMERGENCY VENT. NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY WHEN EMERGENCY VENT IS USED.	

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A2 LV 1						
		16		C2AE	USE ALL HE SOLENOID SW TO KEEP HE BOTTLE PRESSURES BELOW 3000 PSIA.	
		17		C4EP	ON C4PS COMMAND OPEN START TANK VENT.	
		18		C4ET	USE HE CONTROL SOLENOID TO MAINTAIN ENGINE CONTROL BOTTLE PRESSURE BELOW 3200 PSIA MAX	
		19		C4HN	AT C4PS COMMAND CLOSE 6000 GH2 INLET.	
		20		C4SP	LOX & LH2 VENT SWITCHES TO OPEN	
	121	21	CLTC	CHCU	START CKT BYPASS SWITCHES TO OFF	
	121	22	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	
	121	23	CLTC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
	121	24	CLTC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
		25		CLTC	*** NOTE CUSW MUST BE COMPLETE PRIOR TO NEXT STEP	
	121	26	CLTC	C4NP	SWITCH SELECTOR INHIBIT TO ON	
	121	27	CLTC	CCRP	EVALUATE FUEL LOAD FOR POSSIBLE REPLENISH AND/OR FUEL LEVEL ADJUST IN SUPPORT OF A RECYCLE.	
		27-1			NOTE ---- PROPELLANT PROGRAMS BT01, BE01 & BE02 MAY HAVE TO BE REINITIATED.	
	121	28	CLTC	CCLO	MAINTAIN ALL STAGE LOX REPLENISH AT 100% PER V-35014 (HAZARDOUS).	
	121	29	CLTC	C1LO	LOX BUBBLING TO AUTO	
	121	30	CLTC	CCLH	MAINTAIN S-II AND S-IVB LH2 REPLENISH AT 100% PER V-35014 (HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A2 LV	1					
	121	31	CLTC	CUSP	VERIFY FLIGHT CONTROL IS IN A SAFE CONFIGURATION FOR LADDER DRIFT	
	121	32	CLTC	CLGK	OFF AUTO ON SWITCH TO OFF	
	121	33	CLTC	CUDE	VERIFY 728 (HALT) AND 730 (MEMORY RELEASE) ARE ON,	
	121	34	CLTC	ECOP	STOP GUIDANCE REDUCTION PROGRAM	
	121	35	CLTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22)	
		36	RLDE		*** NOTE ENTER EST MODE	
	121	37	CLTC	CUES	EDS MODE SW TO MONITOR	
	121	38	CLTC	C1TC C2TC C4TC CUTC	VERIFY STAGES SAFED AND HOLD CONDITION ESTABLISHED & AWAITING COMP SUPPORT,	
	121	39	CLTC	CUTC	REINITIALIZE GROUND COMPUTER PER V-31062, APP F. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	111	40	CLTC	CVTS	LAUNCH VEHICLE SAFE. HOLD CONDITION ESTABLISHED AND AWAITING COMPUTER SUPPORT,	TCPI

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A2 LV 2					HOLDING FOR COMPUTER SUPPORT -----	
	121	1	CUTC	CLTC	COMPUTER SUPPORTING	
	121	2	CLTC	CLGK	POWER ON LVDC/LVDA PER V-33033 SECTION I. REPORT WHEN COMPLETE (APPROX. 20 MIN.) (NOT REQUIRED IF PROCEEDING TO SCRUR) (NON-HAZARDOUS).	
	121	3	CLTC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51 (NON-HAZARDOUS).	
		3-1		C2SP	*** NOTE LOX & LH VENT VALVES OPEN	
		3-2		C2SP	*** NOTE LOX & LH SUPPLY VALVES CLOSED	
		3-3		C2SP	*** NOTE LOX & LH SUPPLY LINE VENTS CLOSED	
		3-4		C2SP	*** NOTE LOX & LH ACT PRESSURE ON	
		3-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN	
		3-6		C2GP	*** NOTE GN SUPPLY ON	
		3-7		C2GP	*** NOTE GH PRESSURE ON	
		3-8		C2GP	*** NOTE 3000 PSIG HE PRESS ON	
		3-9		C2GP	*** NOTE 3000 PSIG EMERG HE PRESS ON	
		3-10		C2GP	*** NOTE SECONDARY HE PRESS ON	
		3-11		C2SP	*** NOTE SHROUD PURGE VALVE OPEN	
		3-12		C2GP	*** NOTE HE F & D LINE INERT ON.	
		3-13		C2GP	*** NOTE HE ACT PNEU PRESS ON.	
		3-14		C2GP	*** NOTE HE TURBO START GH VENT ON.	
		3-15		C2GP	*** NOTE LOX & LH HE TANK PRESS ON.	
		3-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON.	
		3-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON.	

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A2 LV 2		3-18		C2GP	*** NOTE AMB HE TCH PURGE ON.	
	121	4	CLTC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
	121	5	CLTC	C4HN	VERIFY OPEN OR OPEN 6000 PSI GH2 INLET	
	121	6	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
	171	7	C2AE	C2TC	ENGINE PURGES ARE COMPLETE	
	121	8	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO START RECYCLE OR SCRUB.	
	111	9	CLTC	CVTS	COMPUTER SUPPORT REESTABLISHED, LAUNCH VEHICLE READY TO START RECYCLE OR SCRUB	TCPI
	121	10	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR DRAIN PROCEDURE)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
A3	LV				APPENDIX A LV SAFING PROCEDURE ----- PART 3 T-3:06 MIN TO T+0 ----- (COMPUTER SUPPORTING) CONDITIONS: * AUTOMATIC OR MANUAL CUTOFF ISSUED. * ALL PERSONNEL MONITORING CHANNEL 121	
	121	1	C1PE	C1FR	*****CAUTION***** * * IF CAUSE FOR CUTOFF IS * * NO LIFTOFF AND NO * * AUTOMATIC CUTOFF (AT * * IGNITION PLUS 17 * * SECONDS) GIVE CUTOFF * * COMMAND (HOLD FOR 3 SEC * * AND RELEASE) AND ADVISE * * CLTC CUTOFF RECEIVED * * AND ENGINES OUT. * * *****	
		2		CUSW	LVDA/ESE TO ESE	
		3		C1NE	REPORT CAUSE OF CUTOFF WHEN DETERMINED	
		3-1		C1FR	*** NOTE (IF CUTOFF IS AFTER IGN) CUTOFF COMPLETE ON	
		3-2		C1EN	*** NOTE ALL MAIN VALVES CLOSED	
		3-3		C1EN	*** NOTE ALL CHECKOUT VALVES IN GROUND POSITION	
		4		C2AE	TCH CHILLDOWN TO OFF.	
	121	5	CLTC	C2AE	CDDT ONLY	*
	172	6		C2AE R2AE	CDDT ONLY	*

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A3	LV					
		13		C4EP	TCH CHILLDOWN VALVE CLOSE THEN AUTO	
	121	14	CLTC	C1SP	TCS - SAFE AND SEQUENCER POWER - OFF THEN AUTO	
		14-1		C1FR	*** NOTE CUTOFF ON	
	121	15	CLTC	C1DP C2DP C4DP	SAFE AND ARM - SAFE	
		15-1		C1FR	*** NOTE FIRING COMMAND OFF	
	121	16	CLTC	CUSW	VERIFY LVDA/ESE TO ESE	
	121	17	CLTC	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON.	
	121	18	CLTC	CUSP	VERIFY FLIGHT CONTROL SYSTEM IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	19	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	
	121	20	CLTC	CSA1	IF S/A 1 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF	
	121	21	CLTC	CSA2	IF S/A 2 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF AND SAFE ALL YOUR CHARGING SYSTEMS	
		22			*****CAUTION***** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS. * * *****	
	121	23	CLTC	C1LO	LOX FLIGHT VENTS TO OPEN	
	121	24	CLTC	C1NP	POWER FUNCTION SELECTOR - PRELAUNCH	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A3 LV		25	CLTC		*****CAUTION***** * * IF CUTOFF BETWEEN T-20 * * SEC AND T-8.9 SEC (IGN * * COMMAND), ACCOMPLISH * * THE FOLLOWING SUBSTEPS: * * *****	
121		25-1	CLTC	C1LO	VERIFY LOX INTERCONNECT VALVES 1, 3 & 4 OPEN & 2 CLOSED.	
121		25-2	CLTC	C1LO	VERIFY LOX BUBBLING DUCTS 1 & 3 ON. CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	
		26	CLTC		*****CAUTION***** * * IF CUTOFF AFTER T-8.9 * * (IGN COMMAND) & CUTOFF * * RESET CANNOT BE GIVEN * * WITHIN 3 MINUTES FROM * * INTERCONNECT CLOSURE * * (T-20 SEC), ACCOMPLISH * * THE FOLLOWING SUBSTEPS: * * *****	
121		26-1	CLTC	C1LO	VERIFY MANUAL ACTION IS BEING TAKEN TO ESTABLISH S-IC THERMAL PUMPING.	
		26-2		C1LO	NOTE LOX BUBBLING SWITCH TO DUCTS 1 & 3.	
		26-3		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 SWITCHES TO CLOSE.	
		26-4		C1LO	LOCK UP COMMAND DISABLE TO ON.	
121		26-5	C1LO	C1EN	PREVALVE EMERGENCY SWITCH TO OPEN. VERIFY ALL LOX PREVALVES OPEN.	
		26-6		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 TO OPEN. NOTE OPEN INDICATION.	
		26-7		C1LO	NOTE BUBBLING DUCTS 1 & 3 ON. CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A3 LV						
	121	27	CLTC	C1PC	VERIFY LOX DOME PURGE ON	
	121	28	CLTC	C1PE	VERIFY ALL LOX DUCT CONDITIONS SATISFACTORY & READY TO RESET CUTOFF.	
	121	29	CLTC	C1SP	CUTOFF - RESET.	
	121	30	CLTC	C1FR	VERIFY CUTOFF - OFF	
		30-1		C1LO	*** NOTE LOX PREVALVES OPEN.	
		30-2		C1LO	*** NOTE INTERCONNECT VALVES 1, 3 & 4 OPEN AND 2 CLOSED.	
		30-3		C1LO	*** NOTE BUBBLING DUCTS 1 & 3 ON.	
		31			*****CAUTION***** * * RESUME PREVIOUS HAZARD * * LEVEL - END OF CAUTION * * *****	
	121	32	CLTC	CLVN	ML COMPUTER INHIBIT TO AUTO.	
		32-1		BGCC	*** NOTE COMPUTER IN GO MODE.	
	121	33	CLTC	CWCP	FLAME DEFLECTOR COOLING OFF.	
		34		C4SP	*** NOTE DIRECTIONAL VENT IN GROUND POSITION AND LH2 VENT OPEN.	
		35		C4SP	AT C4PS COMMAND, LOX TANK VENT OPEN	
		35-1		C1PK	*** NOTE TERMINATE VATS IF EXECUTING	
	121	36	CLTC	C1TC C2TC C4TC CUTC	SAFE YOUR STAGES AND GSE, ESTABLISH A HOLD CONDITION. REPORT WHEN COMPLETE.	
	121	37	CLTC	ECOP	TERMINATE GUIDANCE REDUCTION PROGRAM.	

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A3 S-IC					PART 3 T-3:06 MIN TO T+0 ----- (COMPUTER SUPPORTING) S-IC SAFING -----	
181		1	C1TC	CSA1	VERIFY S/A 1 CONNECTED OR EXTEND & RECONNECT PER V-36071 (NON-HAZARDOUS),	
181		2	C1TC	C1RP	ADJUST FUEL TANK PRESSURE TO 18-20 PSIA	
181		3	C1TC	C1LO	WHEN 10 MINUTE BUBBLING PERIOD IS COMPLETE (IF REQUIRED) PLACE LOX BUBBLING SWITCH TO AUTO.	
181		4	C1TC	C1EN	VERIFY LOX & FUEL PREVALVES OPEN.	
181		5	C1TC	C1PC	CONTINUE THERMAL CONDITIONING PURGE.	
		5-1		C1EN	*** NOTE ALL ENG VALVES CLOSED	
		5-2		C1EH	*** NOTE HEATER POWER ON.	
		5-3		C1PC	*** NOTE LOX DOME & GG INJECTION PURGE VENT VALVES CLOSED.	
		5-4		C1PC	*** NOTE PURGE FILL AND DRAIN VALVE OPEN	
		5-5		C1PC	*** NOTE CONTROL PRESS FILL & DRAIN VALVE OPEN.	
		5-6		C1PC	*** NOTE GN2 BOTTLE GROUND VENT CLOSED.	
		5-7		C1PC	*** NOTE GN2 BOTTLE LOW & HIGH FILL VALVES OPEN.	
		5-8		C1HP	*** NOTE HYDRAULIC UNIT COMMITTED OFF.	
		5-9		C1HP	*** NOTE HYDRAULIC PRESSURE OK	
		5-10		C1RP	*** NOTE HE GND ISOLATION VALVE OPEN.	
		5-11		C1RP	*** NOTE HE BOTTLE HIGH FILL VALVES OPEN.	
		5-12		C1RP	*** NOTE HE BOTTLE GROUND VENT CLOSED.	

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A3 S-II					CD ONLY PART 3 T-3:06 MIN TO T+0 ----- (COMPUTER SUPPORTING) S-II SAFING ----- NOTE ---- ODDT ONLY	
		1				
171		2	C2TC	C2AE	VERIFY TCH CHILLDOWN IN OFF	
171		3	C2TC	C2AE	VERIFY START TANK ALL VENT IN ALL VENT.	
		4		C2AE	USE ALL HE SOLENOID SWITCH TO KEEP HE BOTTLE PRESSURES BELOW 3000 PSIA.	
171		5	C2TC	C2PV	MAINTAIN PURGE AND VACUUM SYSTEM OPERATIONS.	
171		6	C2TC	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL - ON THEN AUTO.	
171		7	C2TC	C2FC	ALL ACCUMULATOR CONTROL - UNLOCK THEN AUTO.	
		7-1		C2FC	*** INDIVIDUAL ACCUMULATOR LOCK LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	
171		8	C2TC	C2RP	RECIRC RESET TO RESET THEN INHIBIT	
		8-1		C2RP	*** NOTE RECIRC RESET AND RECIRC STOP RESET - ON.	
171		9	C2TC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
171		10	C2TC	C2SP	LOX DISCONNECT PRESS TO CLOSE THEN AUTO	

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A3 S-II						
		10-1		C2SP	*** NOTE LOX & LH VENT VALVES OPEN	
		10-2		C2SP	*** NOTE LOX & LH SUPPLY VALVES CLOSED	
		10-3		C2SP	*** NOTE LOX & LH SUPPLY LINE VENTS CLOSED	
		10-4		C2SP	*** NOTE LOX & LH ACT PRESS ON	
		10-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN	
		10-6		C2GP	*** NOTE GN SUPPLY ON	
		10-7		C2GP	*** NOTE GH PRESSURE ON	
		10-8		C2GP	*** NOTE 3000 PSIG HE PRESS ON	
		10-9		C2GP	*** NOTE 3000 PSIG EMERGENCY HE PRESS ON	
		10-10		C2GP	*** NOTE SECONDARY HE PRESS ON	
		10-11		C2SP	*** NOTE SHROUD PURGE VALVE OPEN	
		10-12		C2GP	*** NOTE HE F & D LINE INERT ON	
		10-13		C2GP	*** NOTE HE ACT PNEU PRESS ON	
		10-14		C2GP	*** NOTE HE TURBO START GH VENT ON	
		10-15		C2GP	*** NOTE LOX & LH HE TANK PRESS ON	
		10-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON	
		10-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON	
		10-18		C2GP	*** NOTE AMB HE TCH PURGE ON	
	171	11	C2SP	C2TC	PRESSURIZATION SYSTEM SAFED AND HOLD CONDITION ESTABLISHED.	
	171	12	C2GP	C2TC	GROUND PNEUMATICS SAFED AND HOLD CONDITION ESTABLISHED.	
	171	13	C2PM	C2TC	PROPELLANT MONITOR SAFED AND HOLD CONDITION ESTABLISHED.	
	171	14	C2AE	C2TC	ENGINE PURGES ARE COMPLETE AND HOLD CONDITION ESTABLISHED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A3 S-II						
	171	15	C2PV	C2TC	PURGE SYSTEM SAFED AND HOLD CONDITION ESTABLISHED.	
	121	16	C2TC	CLTC	S-II SAFED HOLD CONDITION ESTABLISHED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A3 S-IV					PART 3 T-3:06 MIN TO T+0 ----- (COMPUTER SUPPORTING) S-IVB SAFING -----	
	161	1	C4TC	C4NP	SWITCH SELECTOR INHIBIT - OFF	
	161	2	C4TC	C4EP	AT C4PS COMMAND OPEN START TANK VENT/EMERGENCY DUMP	
	161	3	C4TC	C4ET	VENT ENGINE CONTROL BOTTLE AS REQUIRED TO MAINTAIN PRESSURE BELOW 3200 PSIA BY CYCLING CT HELIUM CONTROL	
	161	4	C4TC	C4EP	LOX AND LH2 PREVALVES OPEN THEN AUTO	
	161	5	C4TC	C4EP	LOX CHILLDOWN PUMP OFF THEN AUTO	
	161	6	C4TC	C4EP	LH2 CHILLDOWN PUMP OFF THEN AUTO	
	161	7	C4TC	C4HY	FLIGHT MODE OFF, THEN AUTO	
	161	8	C4TC	C4SP	LH2 VENT SWITCH TO OPEN	
	161	9	C4TC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
	121	10	C4TC	CLTC	S-IVB SAFED AND HOLD CONDITION ESTABLISHED.	

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A3 IU					PART 3 T-3106 MIN TO T+0 ----- (COMPUTER SUPPORTING) IU SAFING -----	
151		1	CUTC	CUSP	VERIFY FLIGHT CONTROL SYSTEM IN SAFE CONFIGURATION FOR LADDER DRIFT	
151		2	CUTC	CLGK	TERMINATE GE01 IF GRR HAS NOT OCCURRED	
151		3	CUTC	CLGK	TERMINATE FE50 IF GRR HAS NOT OCCURRED OR IF FE50 DID NOT TERMINATE AFTER GRR	
151		4	CUTC	CUES	EDS MODE SWITCH TO MONITOR TOK SWITCH A & B TO INHIBIT THEN AUTO DEPRESS LIFTOFF RESET	
151		5	CUTC	CUEV	VERIFY GRRA & GRR REMOVED.	
151		6	CUTC	CLGK	REQUEST AND EXECUTE FT20 (LVDC SELF CHECK). REPORT WHEN COMPLETE. (APPROX 4 MINUTES)	
151		7	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22)	
151		8	CUTC	CLVN	COMPUTER TEST SWITCH ON. VERIFY DISCRETE CYCLING	
121		9	CUTC	CLTC	IU SAFED AND HOLD CONDITION ESTABLISHED	
		10	CUTC		*** NOTE PERFORM FOLLOWING SUBSEQUENCES IF CUTOFF OCCURS PRIOR TO GRR (T-17 SECONDS)	
151		10-1	CUTC	CLGK	REQUEST & EXECUTE FT23 (SECTOR SUM CHECKS). REPORT WHEN COMPLETE. (APPROX 6 MINUTES)	
151		10-2	CUTC	CLTC	FT23 (SECTOR SUM CHECKS) IN PROGRESS	
		11	CUTC		*** NOTE PERFORM FOLLOWING SUBSEQUENCES IF CUTOFF OCCURS AFTER GRR (T-17 SECONDS)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A3 IU	151	11-1	CUTC	CLGK	REQUEST & EXECUTE FT37 (REPEATABLE SIM FLIGHT) AND FT23 (SECTOR SUM CHECKS) (APPROX 18 MINUTES). REPORT WHEN COMPLETE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1					APPENDIX A LV SAFING PROCEDURE ----- PART 4 T-3:06 MIN TO T+0 ----- (COMPUTER DOWN) CONDITIONS: * AUTOMATIC OR MANUAL CUTOFF ISSUED	
	121	1	C1PE	C1FR	*****CAUTION***** * IF CAUSE FOR CUTOFF IS * NO LIFTOFF AND NO * AUTOMATIC CUTOFF (AT * IGNITION PLUS 17 * SECONDS). GIVE CUTOFF * COMMAND (HOLD FOR 3 SEC * AND RELEASE) AND ADVISE * CLTC CUTOFF RECEIVED * AND ENGINES OUT. *****	
		2		CUSW	LVDA/ESE TO ESE	
	188	3	CLTC	ALL	CUTOFF OBSERVED, THE COMPUTER IS NOT SUPPORTING, ALL PERSONNEL MONITOR CHANNEL 121	
		4		C1NE	REPORT CAUSE OF CUTOFF WHEN DETERMINED	
		5		C2AE	TCH CHILLDOWN TO OFF.	
		6		C1NP C2NP C4NP CUNP	*** NOTE STAGE POWER EXTERNAL (HARDLINE INDICATIONS)	
		6-1		CUDE	*** NOTE 0777 (PWR XFER COMPLETE) AND 0779 (IU STAGE POWER) OFF, 0781 (IU GND POWER) ON	
	121	7	CLTC	CLVN	ML/DCE TO MANUAL MODE	
	121	8	CLTC	C1SP	TCS TO SAFE AND SEQ POWER OFF THEN AUTO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1						
121		9	CLTC	C1DP C2DP C4DP	SAFE & ARM TO SAFE	
121		10	CLTC	CUSW	VERIFY LVDA/ESE TO ESE	
121		11	CLTC	C2NP C4NP	SWITCH SELECTOR INHIBIT TO OFF	
121		12	CLTC	C4AL	APS ENGINE VALVE POWER TO OFF	
121		13	CLTC	C1NP	POWER CONTROL FUNCTION SELECTOR PRELAUNCH	
		13-1		C1NP	*** NOTE LAUNCH BUS 1D161 OFF.	
		13-2		C1NP	*** NOTE PRELAUNCH BUS 1D151 ON.	
121		14	CLTC	C4NP	EMERGENCY POWER TRANSFER SWITCH - EXTERNAL	
		15			*****CAUTION***** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS. * * *****	
121		16	CLTC	C1LO	LOX FLIGHT VENTS TO OPEN	
		17	CLTC C1LO		*****CAUTION***** * * IF CUTOFF BETWEEN T-20 * * SEC & T-8.9 SEC (IGN * * COMMAND) ACCOMPLISH THE * * FOLLOWING SUBSTEPS. * * *****	
121		17-1	CLTC	C1LO	VERIFY LOX INTERCONNECT VALVES 1, 3, & 4 OPEN & 2 CLOSED.	
121		17-2	CLTC	C1LO	VERIFY SWITCH LOX BUBBLING DUCTS 1 & 3 ON. CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1		18		CLTC C1LO C1PC	*****CAUTION***** * * IF CUTOFF AFTER T-8.9 * * SEC (IGN COMMAND) 8 * * CUTOFF RESET CANNOT BE * * GIVEN WITHIN 3 MINUTES * * FROM INTERCONNECT * * CLOSURE (T-20 SEC) * * ACCOMPLISH THE * * FOLLOWING SUBSTEPS. * * *****	
	121	18-1	CLTC	C1LO	VERIFY MANUAL ACTION IS BEING TAKEN TO ESTABLISH S-IC THERMAL PUMPING.	
		18-2		C1LO	*** NOTE LOX BUBBLING SWITCH TO DUCTS 1 & 3.	
		18-3		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 SWITCHES TO CLOSE.	
		18-4		C1LO	LOCK UP COMMAND DISABLE TO ON.	
	121	18-5	C1LO	C1EN	PREVALVE EMERGENCY SWITCH TO OPEN.	
		18-6		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 TO OPEN. NOTE CLOSED INDICATIONS EXTINGUISHED.	
		18-7		C1LO	CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	
	121	18-8	CLTC	C1PC	VERIFY LOX DOME PURGE ON.	
	121	19	CLTC	C1PE	VERIFY LOX DUCT CONDITIONS SATISFACTORY FOR CUTOFF RESET	
	121	20	CLTC	C1SP	RESET CUTOFF	
		20-1		C1FR	*** NOTE CUTOFF - OFF	
		20-2		C1LO	*** NOTE INTERCONNECT VALVES 1, 3 & 4 CLOSED LIGHTS EXTINGUISHED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV	1					
	121	21	CLTC	CUES	MODE SWITCH TO MONITOR. DEPRESS LIFTOFF RESET	
	121	22	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	
	121	23	CLTC	CSA1	EXTEND AND RECONNECT S-IC INTERTANK ARM PER V-36071 (NON-HAZARDOUS), IF ARM HAS BEEN RETRACTED.	
	121	24	CLTC	C1RP	ADJUST S-IC FUEL TANK PRESSURE TO 18-20 PSIA.	
		25			*****WARNING***** * * RESUME PREVIOUS HAZARD * * LEVEL - END OF CAUTION * * *****	
	121	26	CLTC	CWCP	FLAME DEFLECTOR COOLING OFF	
	121	27	CLTC	CLVN	ISSUE THE FOLLOWING MDOS ON OR OFF SIMULTANEOUSLY BY SETTING UP THE DCE BIT PATTERN DEFINED FOR EACH GROUP. (ANNOUNCE OVER OIS CH. 121 AS EACH GROUP IS ISSUED) PER V-31008 (NON-HAZARDOUS):	
		27-1			*** NOTE ALL PANEL OPERATORS PLACE SWITCHES TO POSITION INDICATED IN PARENTHESES AFTER EACH GROUP IS ISSUED	
	121	27-2		CLVN	GRP 1 - MUX 21, 22. ADDRESS 12. DATA BIT 5 DN. 1805 ON (CUSP - S-II BURN TEST MODE - ON)	
		27-3		CUSP	*** NOTE FLIGHT CONTROL IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	27-4		CLVN	GRP 2 - MUX 21, 22. ADDRESS 16. DATA BIT 17 DN, 18 DN. 1913 ON (CUES-TOK INHIBIT A SW TO AUTO) 1914 ON (CUES-TOK INHIBIT B SW TO AUTO)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1						
121		27-5		CLVN	GRP 3 - MUX 22. ADDRESS 9. DATA BIT 22 DN. 1246 ON (C2FC - ENG 1 ACCUM CONTROL ON THEN AUTO)	
121		27-6		CLVN	GRP 4 - MUX 22. ADDRESS 10. DATA BITS 0 DN, 2 DN, 4 DN. 1246 ON (C2FC - ENG 2 ACCUM CONTROL ON THEN AUTO) 1250 ON (C2FC - ENG 3 ACCUM CONTROL ON THEN AUTO) 1252 ON (C2FC - ENG 4 ACCUM CONTROL ON THEN AUTO)	
121		27-7		CLVN	GRP 5 - MUX 21. ADDRESS 1. DATA BIT 21 DN THEN REISSUE WITH DATA BIT 21 UP. 0549 ON/OFF (C2FC - ALL ACCUM CONTROL TO UNLOCK THEN AUTO)	
121		27-8		CLVN	GRP 6 - MUX 22. ADDRESS 3. DATA BIT 23 UP. 1103 OFF (C2SP - LOX DISC PRESS TO CLOSE THEN AUTO)	
121		27-9		CLVN	GRP 7 - MUX 21, 22. ADDRESS 2. DATA BIT 12 UP. 1572 OFF (C4EP - TCH CHILLDOWN CLOSED THEN AUTO)	
121		27-10		CLVN	GRP 8 - MUX NONE. ADDRESS 10. DATA BIT 13 UP, 15 UP. 0253 OFF (CTS1 - TSM 1-2 PSV 3 CLOSE) 0255 OFF (CTS1 - TSM 3-2 PSV 3 CLOSE)	
121		27-11		CLVN	GRP 9 - MUX NONE. ADDRESS 14. DATA BIT 14 UP. 0350 OFF (CTS1 - TSM 3-4 PSV 3 CLOSE)	
121		27-12		CLVN	GRP 10 - MUX 22. ADDRESS 5. DATA BIT 10 DN THEN REISSUE WITH DATA BIT 10 UP. 1138 ON/OFF (C2RP - RECIRC RESET TO RESET THEN INHIBIT)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1						
	121	28	CLTC	CUSW	ISSUE THE OCTALS IN SEQUENCE NOTED. REPORT WHEN COMPLETE. S-IVB 151 (C4EP - LOX & LH PREVALVES OPEN THEN AUTO) S-IVB 042 (C4EP - LOX CHILLDOWN PUMP OFF THEN AUTO) S-IVB 153 (C4EP - LH2 CHILLDOWN PUMP OFF THEN AUTO) S-IVB 074 (C4HY - FLIGHT PUMP MODE OFF THEN AUTO)	
	121	29	CLTC	C2AE	START TANKS ALL VENT TO ALL VENT	
		29-1		C2AE	*** NOTE IF START TANKS FAIL TO VENT, USE EMERGENCY VENT. NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY WHEN EMERGENCY VENT IS USED.	
		30		C2AE	USE ALL HE SOLENOID SW TO KEEP HE BOTTLE PRESSURES BELOW 3000 PSIA	
		31		C4EP	ON C4PS COMMAND OPEN START TANK VENT/EMERGENCY DUMP	
		32		C4ET	USE HE CONTROL SOLENOID TO MAINTAIN ENGINE CONTROL BOTTLE PRESSURE BELOW 3200 PSIA MAX	
		33		C4SP	*** NOTE LH2 TANK VENT OPEN	
		34		C4SP	AT C4PS COMMAND, LOX VENT OPEN.	
	121	35	CLTC	CCL0	REVERT LOX SYSTEM	
	121	36	CLTC	CCLH	REVERT LH2 SYSTEM IF REPLENISH COMPLETE	
	121	37	CLTC	CCRP	EVALUATE FUEL LOAD FOR POSSIBLE REPLENISH AND/OR FUEL LEVEL ADJUST IN SUPPORT OF A RECYCLE.	
		37-1			NOTE ---- PROPELLANT PROGRAMS BT01, BE01 & BE02 MAY HAVE TO BE REINITIATED.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 1						
	121	38	CLTC	CHCU	START CKT BYPASS SWITCHES - OFF	
	121	39	CLTC	CSA2	IF S/A 2 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF AND SAFE ALL YOUR CHARGING SYSTEMS	
		40		CLTC	*** NOTE CUSW MUST BE COMPLETE PRIOR TO NEXT STEP	
	121	41	CLTC	C4NP	INHIBIT SWITCH SELECTOR	
	121	42	CLTC	RLDE	GIVE DEMAND PRINTOUT TO ALL STAGE PRINTERS. REPORT WHEN COMPLETE.	
	121	43	CLTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22)	
	121	44	CLTC	CUSP	VERIFY FLIGHT CONTROL IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	45	CLTC	CLGK	ON AUTO OFF SWITCH TO OFF	
		45-1		CUDE	*** NOTE 728 (HALT) AND 730 (MEMORY RELEASE) ARE ON	
	121	46	CLTC	ECOP	TERMINATE REAL TIME GUIDANCE REDUCTION PROGRAM.	
		47		RLDE	*** NOTE ENTER EST MODE	
	121	48	CLTC	C1TC C2TC C4TC CUTC	VERIFY STAGE SAFED AND HOLD CONDITION ESTABLISHED.	
	121	49	CLTC	CUTC	REINITIALIZE GROUND COMPUTER PER V-31062 APPENDIX F, REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	111	50	CLTC	CVTS	LAUNCH VEHICLE SAFED. HOLD CONDITION ESTABLISHED AND AWAITING COMPUTER SUPPORT.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 2					HOLDING FOR COMPUTER SUPPORT -----	
121		1	CUTC	CLTC	COMPUTER SUPPORTING	
121		2	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
121		3	CLTC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO,	
181		4	C1TC	C1IP B1TM	IF S/A 2 IS RETRACTED, ACCOMPLISH FOLLOWING SUBSEQUENCES	
181		4-1	C1TC	C1IP	P-1 & F-1 TRANSMITTERS OFF THEN AUTO ON YOUR MARK.	
181		4-2	C1IP		P-1 OFF, MARK F-1 OFF, MARK	
121		5	CLTC	CSA2	IF S/A 2 IS RETRACTED, VALVES RESET SWITCH TO RESET THEN OFF AND VERIFY,	
121		6	CLTC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
121		7	CLTC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
121		8	CLTC	CLGK	POWER ON LVDC-LVDA PER V-33033 SECTION I. IF CUTOFF OCCURED AFTER GRR, REQUEST & EXECUTE FT37 (REPEATABLE SIM FLT) AND FT23 (SECTOR SUM CHECKS). REPORT WHEN COMPLETE. (NOT REQUIRED IF PROCEEDING TO SCRUB) (APPROXIMATELY 40 MIN) (NON-HAZARDOUS)	
121		9	CLTC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51 (NON-HAZARDOUS)	
171		9-1		C2SP	*** NOTE LOX & LH VENT VALVES OPEN	
171		9-2		C2SP	*** NOTE LOX & LH SUPPLY VALVES CLOSED	
171		9-3		C2SP	*** NOTE LOX & LH SUPPLY LINE VENTS CLOSED	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 2						
	171	9-4		C2SP	*** NOTE LOX & LH ACT PRESSURE ON	
	171	9-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN	
		9-6		C2GP	*** NOTE GN SUPPLY ON	
		9-7		C2GP	*** NOTE GH PRESSURE ON	
	171	9-8		C2GP	*** NOTE 3000 PSIG HE PRESS ON	
	171	9-9		C2GP	*** NOTE 3000 PSIG EMERG HE PRESS ON	
	171	9-10		C2GP	*** NOTE SECONDARY HE PRESS ON	
	171	9-11		C2SP	*** NOTE SHROUD PURGE VALVE OPEN	
		9-12		C2GP	*** NOTE HE F & D LINE INERT ON	
		9-13		C2GP	*** NOTE HE ACT PNEU PRESS ON	
		9-14		C2GP	*** NOTE HE TURBO START GH VENT ON	
		9-15		C2GP	*** NOTE LOX & LH HE TANK PRESS ON	
		9-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON	
		9-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON	
		9-18		C2GP	*** NOTE AMB HE TCH PURGE ON	
	171	10	C2AE	C2TC	ENGINE PURGES ARE COMPLETE	
	121	11	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY FOR RECYCLE OR SCRUB	
	111	12	CLTC	CVTS	COMPUTER SUPPORT REESTABLISHED. LAUNCH VEHICLE READY TO START RECYCLE OR DRAIN OPERATIONS.	TCPI
		13			NOTE ---- IF S/A 2 IS RETRACTED, THERE WILL BE NO INDICATION IN THE HGD SYSTEM FOR S-1C FWD/S-II AFT.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
A4 LV 2	121	14	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR DRAIN PROCEDURE)	

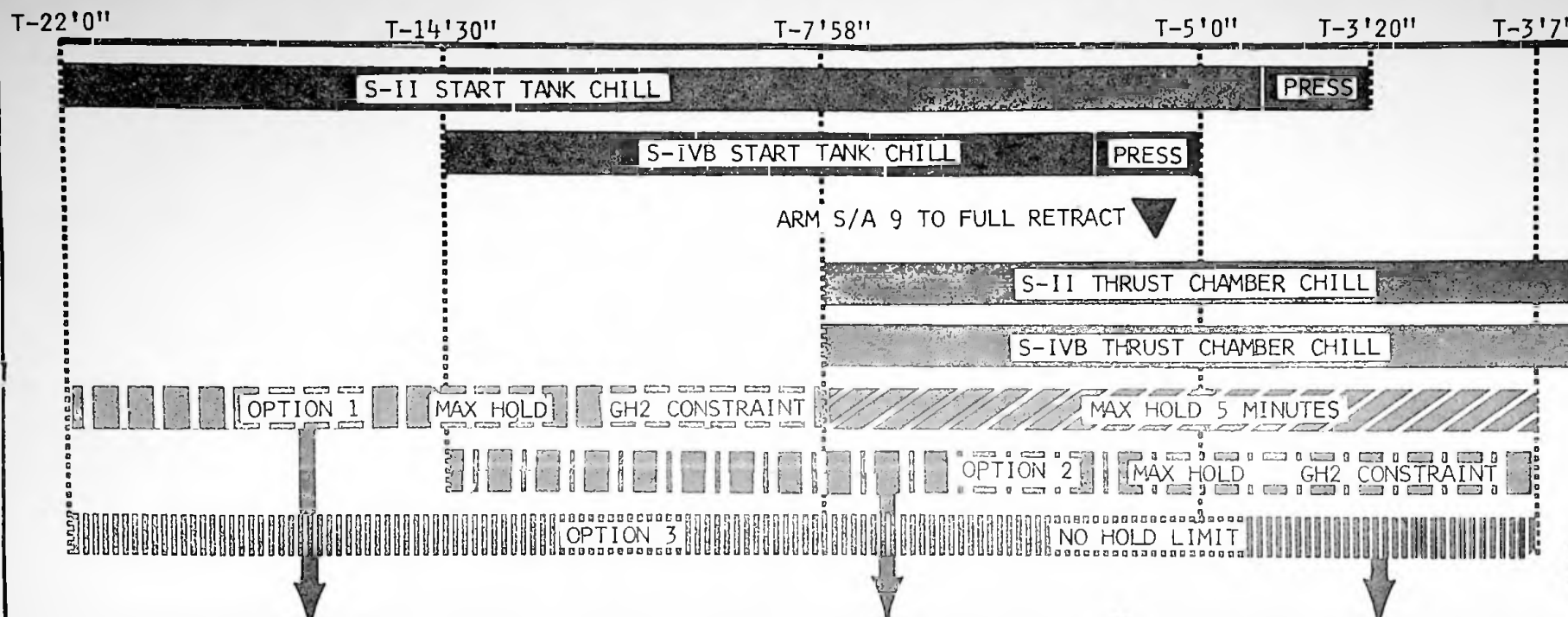
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APPENDIX B

LV HOLD AND RECYCLE PROCEDURES



HOLD OPTIONS

CLOCK HOLDS AT T-TIME

1. COMPUTER WILL SELECT OPT 1 PRIOR TO T-7'58". AFTER T-7'58", OPT 1 DECISION MUST BE ANNOUNCED ON CH 121 PRIOR TO CLOCK STOP.
2. AFTER T-7'58" AND CLOCK IS STOPPED, TWO GMT VALUES ARE DISPLAYED:
 - (A) GMT AFTER WHICH OPT 2 IS NOT AVAILABLE WITHOUT TCH WARMUP.
 - (B) GMT AFTER WHICH PICKUP NOT ALLOWED.
3. AFTER CVTS IS TOLD TO PICKUP, ABOUT 20 SECONDS IS REQUIRED FOR S-II HYD SECURING PRIOR TO CLOCK START IF HOLD AFTER T-3'55".

CLOCK HOLDS AT T-TIME (BEFORE T-7'58") OR RESET TO T-8'00"

1. GO INTO OPT 2 FROM OPT 1 BEFORE T-7'58". COMPUTER WILL SELECT OPT 2 FOR ANY HOLD AFTER T-7'58", IF AVAILABLE WITHOUT TCH WARMUP, UNLESS MANUALLY OVERRIDDEN. AFTER T-7'58" COMPUTER WILL SELECT OPT 1 IF OPT 2 NOT AVAILABLE WITHOUT TCH WARMUP.
2. ABOUT 10 MINUTES MINIMUM IS REQUIRED TO TURNAROUND TO SAME T-TIME FOR HOLDS AFTER T-7'58".
3. START TANKS WILL BE PRESSURIZED. HOLD TIME LIMITED BY GH2 SUPPLY. START TANK RECHILLS PERFORMED AS REQUIRED. FIVE MINUTE MAXIMUM NOTICE IS REQUIRED TO PICKUP.
4. AFTER RECYCLE & PICKUP AT T-8', OPT 2 HOLD REPEAT NOT POSSIBLE AFTER DISPLAYED T-TIME UNLESS TCH WARMUP TIME IS MET DURING REPEAT HOLD. OPT 1 HOLD AVAILABILITY LIMITED TO DISPLAYED TIME.

CLOCK RESET TO T-22'00"

1. GO INTO OPT 3 FROM OPT 1 OR OPT 2.
2. ABOUT 15 MINUTES MAX RECYCLE TIME BEFORE READY TO RESUME COUNT AT T-22'00".
3. AFTER CLOCK RESET TO T-22', NO HOLD LIMIT.

APPENDIX B

T-22' TO T-3'7" HOLD OPTIONS

SELECTION OF OPTION

A. T-22' TO T-7'58". HOLD AND EXERCISE OPTIONS 1, 2 (IF AVAILABLE) OR 3.

1. OPTION 1

- (A) CONTINUE START TANK CHILLDOWNS.
- (B) HOLD LIMITED BY GH2 CAPACITY.
- (C) COUNT CAN BE RESUMED MOMENTARILY.
- (D) CAN SUBSEQUENTLY SELECT OPTION 2 (IF AVAILABLE) OR 3 BY KEYBOARD ENTRY TO CONSERVE GH2.
- (E) CAN SAFE FOR SCRUB OR RECYCLE PER APPENDIX A1 (OR A2 IF COMPUTER DOWN).
- (F) VATS AUTOMATICALLY SELECTS OPTION 1 UNTIL T-7'58"

2. OPTION 2 (AFTER T-14'30")

- (A) CONTINUE START TANK CHILLDOWN TO PROVIDE CONTINUOUS CHILL OF 17'23" (S-II) & 9'0" (S-IVB) ENDING WITH PRESSURIZATION.
- (B) HOLD LIMITED BY GH2 SUPPLY, START TANK RECHILLED AS REQUIRED. FIVE MINUTE NOTICE MAY BE REQUIRED TO PICKUP COUNT.
- (C) CAN SUBSEQUENTLY SELECT OPTION 3 BY KEYBOARD ENTRY, OR SAFE FOR SCRUB OR RECYCLE PER APPENDIX A1 (OR A2 IF COMPUTER IS DOWN).
- (D) SELECT OPTION 2 BY KEYBOARD ENTRY AFTER VATS AUTOMATICALLY SELECTS OPTION 1.
- (E) VATS PROGRAM WILL RESUME WITH CDC PICK UP.

(CONTINUED)

A. T-22' TO T-7'58". HOLD AND EXERCISE OPTIONS 1, 2 (IF AVAILABLE) OR 3.

3. OPTION 3

- (A) TERMINATE START TANK CHILLDOWNS.
- (B) HOLD LIMITED BY LAUNCH WINDOW.
- (C) COUNTDOWN CLOCK WILL BE RECYCLED TO T-22 MINUTES.
- (D) CAN SAFE FOR SCRUB OR RECYCLE PER APPENDIX A1 (OR A2 IF COMPUTER DOWN).
- (E) SELECT OPTION 3 BY KEYBOARD ENTRY

B. T-7'58" TO T-3'7". HOLD IMMEDIATELY & EXERCISE OPT 1, 2 OR 3.

1. OPTION 1 (ONLY FOR HOLD LESS THAN 5 MINUTES)

- (A) ANNOUNCE OPTION 1 HOLD DECISION ON CH 121 PRIOR TO STOPPING CLOCK SO CLES CAN ACCOMPLISH (G) BELOW
- (B) CONTINUE ALL CHILLDOWNS.
- (C) TOTAL ACCUMULATED OPTION 1 HOLDS LIMITED TO 5 MINUTES.
- (D) COUNT CAN BE RESUMED MOMENTARILY.
- (E) CAN SUBSEQUENTLY SELECT OPTION 2 OR 3 (SUBJECT TO LMR LIMITS) BY KEYBOARD ENTRY.
- (F) IF HOLD EXCEEDS 5 MINUTES, MUST SELECT OPTION 2 OR 3 OR SAFE LV PER APPENDIX A1 (OR A2 IF COMPUTER DOWN) AND RECYCLE TO T-22' PER APPENDIX B4 OR DRAIN PER APPENDIX C.
- (G) SELECT OPTION 1 BY CLES DEPRESSING COMPUTER MANUAL PROCEED (CMP) SWITCH PRIOR TO HOLD OR SELECTED AUTOMATICALLY BY VATS IF OPTION 2 IS NOT AVAILABLE WITHOUT WARMUP.

(CONTINUED)

B. T-7'58" TO T-3'7". HOLD IMMEDIATELY & EXERCISE OPT 1, 2 OR 3.

2. OPTION 2

- (A) TERMINATE TCH CHILLDOWNS.
- (B) HOLD LIMITED BY GH2 SUPPLY, START TANK RECHILLED AS REQUIRED, FIVE MINUTE NOTICE MAY BE REQUIRED TO PICKUP COUNT.
- (C) COUNTDOWN CLOCK WILL BE RECYCLED TO T-8 MINUTES.
- (D) CONTINUE START TANK CHILLDOWN TO PROVIDE CONTINUOUS CHILL OF 17'23" (S-II) & 9'0" (S-IVB) ENDING WITH PRESSURIZATION UNLESS OPTION TO BYPASS PRESSURIZATION IS SELECTED.
- (E) CAN SUBSEQUENTLY SELECT OPTION 3 OR SAFE FOR SCRUB OR RECYCLE PER APPENDIX A1 (OR A2 IF COMPUTER DOWN).
- (F) VATS AUTOMATICALLY SELECTS OPTION 2 (IF AVAILABLE), UNLESS CLES DEPRESSES CMP SWITCH PRIOR TO HOLD.

3. OPTION 3

- (A) TERMINATE TCH AND START TANK CHILLDOWNS (VENT START TANK IF REQUIRED).
- (B) HOLD LIMITED BY LAUNCH WINDOW.
- (C) COUNTDOWN CLOCK WILL BE RECYCLED TO T-22 MINUTES.
- (D) CAN SAFE FOR SCRUB OR RECYCLE PER APP A1 (OR A2 IF COMPUTER DOWN).
- (E) SELECT OPTION 3 BY KEYBOARD ENTRY.

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 1					HOLD OPTION 1 ----- T-22' TO T-3'7" -----	
	121	1	C1PK	CLTC	OPTION 1 SELECTED	
	121 111	2	CLTC	ALL	THE COUNT IS HOLDING AT ----- MINUTES ----- SECONDS IN OPTION 1. CONTINUE CHILDDOWNS IN PROGRESS.	
		2-1	CLM4		*** NOTE COORDINATE WITH BOSC ON CH 261 FOR GH2 BATTERY PRESSURE. ---IF HOLD BETWEEN T-4'37" & T-3'20"--- -----	TCPI
		3	C2AE		1'17" AFTER T-4'37", START TANK SUPPLY VALVE TO OFF AND START TANK SUPPLY LINE VENT TO VENT.	
		3-1	C2AE		*** NOTE START TANK SUPPLY VALVE OPEN - OFF.	
		3-2	C2AE		*** NOTE START TANK SUPPLY LINE VENT OPEN - ON.	
	171	4	C2AE	C2TC	START TANK PRESSURIZATION COMPLETE. --- IF HOLD IS AFTER T-4'37" --- -----	
		5	C2AE		USE HE BOTTLE EMERGENCY VENT SWITCH TO KEEP HE BOTTLE PRESS BETWEEN 2800 & 3100 PSIA.	
		6	C2AE		USE START TANK EMERG VENT SW TO KEEP START TANK PRESS IN START BOX. COORDINATE WITH R2SC #1.	
		6-1			NOTE ----- NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY.	

LAUNCH OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 1					--- IF HOLD IS AFTER T-3'55" --- -----	
		7	***	C2FC	AUX PUMPS 1 THRU 4 ON THEN AUTO.	***
		8	***	C2FC	ALL ACCUMULATORS UNLOCK THEN AUTO.	***
		9	***	C2FC	DELAY 4 SEC, THEN PROCEED	***
		10	***	C2FC	MAIN PUMP BYPASS VALVE OPEN THEN AUTO	***
					--- IF HOLD IS AFTER T-7'58" --- -----	
		11		C1PK	*** NOTE S-II TCH CHILL HOLD CAPABILITY WILL BE EXCEEDED AT GMT.	
		12		C1PK	*** NOTE WITHOUT WARMUP, OPTION 2 IS NOT AVAILABLE AFTER GMT.	
					----- ADVISE CLTC WHEN TIME IS WITHIN ONE MINUTE.	
		13		CLTC	*** NOTE IF OPTION 1 TIME EXPIRES, OPTION 2 OR 3 OR CDC PICKUP SHOULD BE EXECUTED IMMEDIATELY.	
					--- IF HOLD IS AFTER T-5'0" --- -----	
		14		C4PS	NOTE	
					----- PERFORM THE FOLLOWING SUBSEQUENCES IF START TANK REDLINES ARE EXPECTED TO BE EXCEEDED.	
		14-1		C4ET	AT C4PS COMMAND, CT HELIUM CONTROL SOLENOID ON AND OFF	
		14-2		C4EP	AT C4PS COMMAND, START TANK EMERGENCY VENT OPEN THEN CLOSE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 1 -22' 0"						
TO - 3'55"					IF CDC BEFORE T-3'55" ----- --- JUST BEFORE COUNT RESUMES --- -----	
	121	1	CLTC	ALL	ALL PERSONNEL RETURN TO THE MAIN PROCEDURE, PAGE ---, --- MIN --- SEC.	
	111	2	CLTC	CVTS	LV IS READY TO RESUME COUNT ON YOUR MARK	TCPI
	111 121	3	CVTS	ALL	THE CLOCK WILL BE RESTARTED ON MY MARK. 5, 4, 3, 2, 1 - MARK.	TCPI
OPT 1 - 3'55"						
TO 3' 7"					IF CDC AFTER T-3'55" ----- --- JUST BEFORE COUNT RESUMES --- -----	
	121	1	CLTC	C2FC	SECURE AUX HYDRAULICS ON CVTS MARK	
	121	2	CLTC	ALL	ALL PERSONNEL RETURN TO THE MAIN PROCEDURE, PAGE ---, --- MIN --- SEC	
	111	3	CLTC	CVTS	LV IS READY TO RESUME THE COUNT 20 SECONDS FROM YOUR MARK.	TCPI
	111 121	4	CVTS	ALL	THE CLOCK WILL BE RESTARTED EXACTLY 20 SECONDS FROM MY MARK. 5 - 4 - 3 - 2 - 1 - MARK	TCPI
		4-1		C2FC	MAIN PUMP BYPASS VALVES - CLOSE THEN AUTO.	
		4-2		C2FC	ALL ACCUM CONTROL - LOCK, THEN AUTO.	
		4-3		C2FC	AUX PUMPS 1-4 OFF, THEN AUTO.	
		4-4		C2FC	*** NOTE READY FOR LAUNCH - ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2					HOLD OPTION 2 ----- T-14'30" TO T-3'7" -----	
121		1	C1PK	CLTC	OPTION 2 SELECTED	
121		2	CLTC	ALL	THE COUNT IS HOLDING AT ----- MINUTES ----- SECONDS IN OPTION 2.	
		2-1		CLTC C1PK C2AE C4PS	*** NOTE CONTINUE TIMED START TANK CHILLDOWNS THROUGH PRESSURIZATION, (MAY BE BYPASSED FROM KEYBOARD AFTER T-7' 58") ---IF AFTER T-7'58"--- -----	
121		3	CLTC	CUSW	LVDA/ESE TO ESE (PERFORM OR VERIFY).	
121		4	CLTC	C4NP	SWITCH SELECTOR INHIBIT - OFF (PERFORM OR VERIFY).	
121		5	CLTC	C1DP C2DP C4DP	SAFE & ARM TO SAFE (PERFORM OR VERIFY).	
		6	***	C2AE	TCH CHILLDOWN TO OFF	***
		6-1		C2AE	*** NOTE TCH CHILLDOWN OFF	
		7	***	C2AE	TCH PURGE TO ON	***
		7-1		C2AE	*** NOTE TCH PURGE ON	
171		8	C2AE	C2TC	TCH CHILLDOWNS HAVE BEEN TERMINATED. TCH JACKET PURGE IS ON.	

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OPT 2					---IF AFTER T-7'58"--- -----	CONT'D
		8-1		C2SP	IF HOLD TIME PLUS REMAINING COUNT TIME IS APPROXIMATELY 30 MINUTES OR MORE, CYCLE EACH LOX & LH2 VENT VALVE INDIVIDUALLY FROM OPEN TO CLOSE TO OPEN FOR 4 CYCLES TO VERIFY VENT VALVE SOLENOID OPERATION. AFTER COMPLETION OF CYCLING, ALL VENT VALVES ARE TO BE IN OPEN POSITION.	
		9	***	C4EP	CLOSE TCH CHILLDOWN VALVE	***
		9-1		C4EP	*** NOTE TCH CHILLDOWN SUPPLY CLOSED	
		10	***	C4EP	OPEN TCH PURGE SUPPLY	***
		10-1		C4EP	*** NOTE TCH PURGE SUPPLY ON	
	161	11	C4PS	C4TC	TCH CHILLDOWN HAS BEEN TERMINATED.	
		12		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 8 MIN, WARMUP UNTIL ----- GMT,	
		12-1		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 13 MIN, WARMUP UNTIL ----- GMT,	
		12-2		C1PK	*** NOTE PRIOR TO THIS TIME UNUSED DELTA CHILL TIME IS ----- MINS ----- SECS.	
		13	***	C2FC	THERMAL CONTROL ON THEN AUTO.	***
					---IF AFTER T-3'55"--- -----	
		14	***	C2FC	ALL ACCUMULATOR CONTROL TO UNLOCK THEN AUTO.	***
		15	***	C2FC	MAIN PUMP BYPASS VALVE OPEN THEN AUTO	***

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OPT 2					--- IF AFTER T-7'58" --- -----	
		16	***	C2FC	AUX PUMPS 1 THRU 4 OFF THEN AUTO	***
		16-1		C2FC	*** NOTE THERMAL CONTROL MAINTAINS FLUID TEMPS BETWEEN 80 DEG F & 120 DEG F. ADVISE C2TC OF CYCLIC ACTION.	
		16-2			NOTE ----- S-II PREPS COMPLETE LIGHT WILL CYCLE OFF DURING HOLD OPTION 2 OPERATIONS.	
					--- IF AFTER T-6'15" --- -----	
	151	17	***	CUIP	Q-BALL HEATER POWER ON THEN AUTO	***
					--- IF AFTER T-5'7" --- -----	
		18	***	C2SP	LOX SUPPLY VALVE - CLOSE, THEN AUTO	***
					--- IF AFTER T-4'10" --- -----	
	121	19	***	CUES	TOK SWITCH A & B TO INHIBIT THEN AUTO	*** TCPI
					--- IF AFTER T-4'45" --- -----	
	161	20	***	C4EP	LOX & LH2 PREVALVES - OPEN THEN AUTO	***
					--- IF AFTER T-4'50" --- -----	
	161	21	***	C4EP	LOX CHILLDOWN PUMP - OFF THEN AUTO	***

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OPT 2	161				--- IF AFTER T-4'58" --- -----	
		22	***	C4EP	LH2 CHILLDOWN PUMP - OFF THEN AUTO	***
					--- IF AFTER T-14'30" --- -----	
		23		ALL	*** NOTE IF CDC BETWEEN T-14'30" & T-7'58", COUNT MAY BE RESUMED MOMENTARILY.	
					--- IF BETWEEN -14'30" & -12' 30" --- -----	
		24	***	C4HN	TWO MINUTES AFTER START TANK CHILLDOWN BEGINS, OPEN HEAT EXCHANGER CIRCUIT 1 VENT	***
					--- IF AFTER T-14'30" --- -----	
		25		CLTC C2AE C4PS C1PK	*** NOTE IF AFTER T-7'58", START TANK PRESSURIZATION CAN BE BYPASSED WITH KEYBOARD ENTRY,	
		26	***	C2AE C4PS C4HN C4EP	NOTE ----- AT COMPLETION OF REQUIRED START TANK CHILLDOWNS OF 17'23" (S-II) & 9'0" (S-IVB), PERFORM THE FOLLOWING SUBSEQUENCES:	***
		26-1	***	C4HN	CLOSE HEX CIRCUIT #1 VENT.	***
		26-2	***	C4EP	CLOSE START TANK VENT, AFTER 30 SECONDS, CLOSE START TANK SUPPLY VALVE AND OPEN START TANK SUPPLY VENT.	***
		26-3	C4PS	C4TC	START TANK PRESSURIZATION COMPLETE.	
	161	26-4		C4ET	VENT ENGINE CONTROL BOTTLE ON C4PS COMMAND TO MAINTAIN PRESSURE BELOW 3200 PSIA	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2		26-5	***	C2AE	START TANK ALL VENT TO OFF. AFTER 1'17", START TANK SUPPLY VALVE TO OFF AND START TANK SUPPLY LINE VENT TO VENT.	***

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OPT 2					--- IF AFTER T-14'30" --- -----	CONT'D
		26-6	***	C2AE	HE BOTTLE SUPPLY VALVE TO OFF.	***
		26-7		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - OFF	
		26-8	***	C2AE	HE BOTTLE SUPPLY LINE VENT TO VENT.	***
		26-9		C2AE	*** NOTE HE BOTTLE SUPPLY LINE VENT OPEN - ON	
		26-10		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
		26-11		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - ON	
	171	26-12	C2AE	C2TC	START TANK PRESSURIZATION COMPLETE.	
		26-13		C2AE R2RL	USE HE BOTTLE EMERGENCY VENT SWITCHES TO KEEP HE BOTTLE PRESSURES BETWEEN 2800 & 3300 PSIA,	
		26-14		C2AE R2RL	*** NOTE IF START TANK RECHILL IS ANTICIPATED, MAINTAIN HE BOTTLE PRESSURES ABOVE 3200 PSIA	
		26-15		C2AE R2AE	DURING WARMUP USE START TANK EMERGENCY VENT SWITCHES TO KEEP START TANK PRESSURE BETWEEN THE UPPER LIMIT OF ALLOWABLE LIFTOFF ENVELOPE AND 1300 PSIA, ALLOW INDIVIDUAL TANKS TO SELF-REGULATE IF SETTLING OCCURS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2					--- IF AFTER T-14'30" --- -----	CONT'D
		26-16	C2AE R2AE		*** NOTE APPROX 45-65 MINUTES AFTER START TANK INITIAL PRESSURIZATION, THE WARMEST START TANK TEMPERATURE WILL BE APPROX -146 DEG F. AT -146 DEG F INITIATE THE FOLLOWING START TANK RECHILL.	
		26-17	C2AE		HE BOTTLE SUPPLY LINE VENT TO OFF	
		26-18	C2AE		HE BOTTLE SUPPLY VALVE TO PRESSURIZE	
		26-19	C2AE		START TANK SUPPLY LINE VENT TO OFF	
		26-20	C2AE		START TANK SUPPLY VALVE TO PRESSURIZE	
		26-21	C2AE		START TANK ALL VENT TO ALL VENT	
		26-22	C2AE		WAIT 4'0" THEN PLACE START TANK ALL VENT TO AUTO	
		26-23	C2AE		WAIT 1'17" THEN PLACE START TANK SUPPLY VALVE TO AUTO AND START TANK SUPPLY LINE VENT TO VENT THEN AUTO	
		26-24	C2AE		WAIT 3'0" THEN PLACE HE BOTTLE SUPPLY VALVE TO OFF, THEN AUTO AND HE BOTTLE SUPPLY LINE VENT TO VENT	
		26-25	C2AE R2RL		USE HE BOTTLE EMERGENCY VENT SWITCHES TO KEEP HE BOTTLE PRESSURES BETWEEN 2800 AND 3300 PSIA	
		26-26	C2AE R2RL		*** NOTE IF START TANK RECHILL IS ANTICIPATED, MAINTAIN HE BOTTLE PRESSURES ABOVE 3200 PSIA	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2					--- IF AFTER T-14'30" ---	CONT'D
		26-27		C2AE R2AE	DURING WARMUP USE START TANK EMERGENCY VENT SWITCHES TO KEEP START TANK PRESSURE BETWEEN THE UPPER LIMIT OF ALLOWABLE LIFTOFF ENVELOPE AND 1300 PSIA. ALLOW INDIVIDUAL TANKS TO SELF-REGULATE IF SETTLING OCCURS.	
		26-28		C2AE	*** NOTE NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY	
		26-29		C2AE R2AE	*** NOTE APPROX 35 MINUTES AFTER START TANK RECHILL, THE WARMEST START TANK TEMPERATURE WILL BE APPROX -146 DEG F. AT -146 DEG F. REPEAT START TANK RECHILL (SEQ 26-17 THRU 26-29).	
					--- IF AFTER T-7'58" --- -----	
	121	27	C1PK	CLTC	VATS IN SEMI AWAITING CDC RESET	
	121	28	CLTC	CVTS	RESET CDC TO T-8 MIN PER SPECIAL PROCEDURE: DIAL IN T-8 MIN 5 SEC, DEPRESS PRESET, DEPRESS COUNTDOWN, ALLOW COUNTDOWN TO REACH T-8 MIN THEN DEPRESS HOLD, TO RESUME COUNT DEPRESS COUNTDOWN ONLY.	
		29		C1PK	RESTART VATS AFTER CDC RESET	
		30		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 8 MIN, WARMUP UNTIL ----- GMT.	
						TCPI

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OPT 2					--- IF AFTER T-7'58" --- -----	CONT'D -----
		31		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 1.5 MIN, WARMUP UNTIL ----- GMT.	
		32		C1PK	*** NOTE PRIOR TO THIS TIME, UNUSED DELTA CHILL TIME IS -- MINS -- SECS & WITHOUT WARMUP, OPTION 2 WILL NOT BE AVAILABLE AFTER ----- CDC TIME.	
	121	33	C1PK	CLTC	OPTION 2 SECURING COMPLETE.	
	121	33-1		C1TC C2TC C4TC CUTC	*** NOTE IF SECURING NOT COMPLETE, REPORT TO CLTC.	
		33-2		C2TC C4TC	*** NOTE IF START TANK RECHILL IS REQUIRED, REPORT TO CLTC	
		34		C4PS	NOTE ----- PERFORM THE FOLLOWING SUBSEQUENCES IF START TANK REDLINES ARE EXPECTED TO BE EXCEEDED.	
		34-1		C4ET	AT C4PS COMMAND, CT HELIUM CONTROL SOLENOID ON AND OFF.	
	161	34-2	C4PS	C4EP	OPEN START TANK SUPPLY.	
	161	34-3	C4PS	C4EP	CLOSE START TANK SUPPLY VENT.	

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OPT 2					--- IF AFTER T-7'58" --- -----	CONT'D -----
	161	34-4	C4PS	C4EP	OPEN START TANK VENT.	
		34-5		C4HN C4EP	STANDBY TO CYCLE HEX CKT 1 VENT AND START TANK SUPPLY VENT AT C4PS COMMAND.	
	161	34-6	C4PS	R4PS	REPORT WHEN START TANK TEMP IS ADEQUATE.	
	161	34-7	C4PS	C4EP	CLOSE START TANK VENT THEN AUTO.	
	161	34-8	C4PS	C4EP	DELAY 30 SECONDS THEN CLOSE START TANK SUPPLY THEN AUTO AND OPEN START TANK SUPPLY VENT.	
					--- IF AFTER T-14'30" --- ----- (FOR HOLD GREATER THAN 30 MINUTES)	
	161	35	C4TC	C4PP	PLUG SUPERVISION POWER ON	
	161	36	C4TC	C4HY	CYCLE HYDRAULIC PUMP AS REQUIRED TO MAINTAIN TEMPERATURE LIMITS	
	161	37	C4TC	C4PS	AT YOUR DISCRETION CYCLE LOX AND LH2 VENT VALVES CLOSED FOR THREE SECONDS THEN OPEN - THEN AUTO	
	161	38	C4TC	C4EP	AT YOUR DISCRETION THRUST CHAMBER PURGE SUPPLY VALVE TO CLOSED	
					--- IF AFTER T-9'58" --- ----- (FOR HOLD GREATER THAN 30 MINUTES)	
	161	39	C4TC	C4AL	APS ENGINE VALVE POWER OFF	
					--- IF AFTER T-5'25" --- ----- (FOR HOLD GREATER THAN 30 MINUTES)	
	161	40	C4TC	C4PP	DC POWER SUPPLY COMMIT OFF - THEN AUTO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2					--- IF HOLD AFTER T-14'30" --- ----- --- 5 MINUTES BEFORE T-8' & COUNTING --- ----- (IF S-II RECHILL REQUIRED)	
		41		CLTC C2AE	NOTE ----	
					IF START TANK RECHILL LIMITS ARE EXPECTED TO BE EXCEEDED, PERFORM THE FOLLOWING S-II START TANK RECHILL 5 MINUTES PRIOR TO T-8 MINUTES AND COUNTING	
	121	42	C2AE	CLTC	START TANK RECHILL REQUIRED. ADVANCE WARNING OF COUNT PICKUP IS REQUIRED.	
		42-1		CLTC C2AE	NOTE ----	
					FIVE MINUTES BEFORE T-8 MINUTES AND COUNTING, PERFORM S-II START TANK RECHILL AS FOLLOWS:	
	121	43	CLTC	C2AE	PROCEED WITH START TANK RECHILL	
		44		C2AE	HE BOTTLE SUPPLY LINE VENT TO OFF	
		45		C2AE	HE BOTTLE SUPPLY VALVE TO PRESSURIZE	
		46		C2AE	START TANK SUPPLY LINE VENT TO OFF	
		47		C2AE	START TANK SUPPLY VALVE TO PRESSURIZE	

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OPT 2	171				--- IF HOLD AFTER T-14'30" --- ----- --- 5 MINUTES BEFORE T-8' & COUNTING --- ----- (IF S-II RECHILL REQUIRED)	CONT'D
		48		C2AE	START TANK ALL VENT TO ALL VENT	CONT'D
		48-1		C2AE	WAIT 4'0" THEN PLACE START TANK ALL VENT TO AUTO	CONT'D
		49		C2AE	WAIT 1'17" THEN PLACE START TANK SUPPLY VALVE TO AUTO AND START TANK SUPPLY LINE VENT TO VENT THEN AUTO	CONT'D
		50		C2AE	WAIT 3'0" THEN PLACE HE BOTTLE SUPPLY VALVE TO OFF THEN AUTO AND HE BOTTLE SUPPLY LINE VENT TO VENT.	
		51	C2AE	C2TC	START TANK PRESSURIZATION COMPLETE	
		52		C2AE	USE HE BOTTLE EMERGENCY VENT SWITCHES TO KEEP HE BOTTLE PRESSURES BETWEEN 2400-3300 PSIA.	
		53		C2AE	USE START TANK EMERGENCY VENT SWITCHES TO KEEP START TANK PRESSURE IN START BOX. COORDINATE WITH R2SC #1.	
		53-1		C2AE	*** NOTE NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY.	

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OPT 2 -14'30"						
TO - 7'58"						
					--- IF HOLD BETWEEN -14'30" & -7'58" --- -----	
					--- JUST BEFORE COUNT RESUMES --- ----- (FOR HOLD GREATER THAN 30 MINUTES)	
	161	1	C4TC	C4HY	VERIFY/POSITION FLIGHT MODE ON - THEN AUTO	
	161	2	C4TC	C4EP	VERIFY/POSITION THRUST CHAMBER PURGE SUPPLY VALVE AUTO	
	161	3	C4TC	C4SP	VERIFY/POSITION LOX AND LH2 VENTS OPEN - THEN AUTO	
	161	4	C4TC	C4PP	PLUG SUPERVISION POWER OFF - THEN AUTO	
					--- IF AFTER T-9'58" --- -----	
	161	5	C4TC	C4AL	APS ENGINE VALVE POWER - ON	
					--- JUST BEFORE COUNT RESUMES --- -----	
	121	6	CLTC	ALL	RETURN TO PAGE --- SEQUENCE -----.	
	121 111	7	CLTC	CVTS	LV READY FOR CDC PICKUP ON YOUR MARK	TCPI
	111 121	8	CVTS	ALL	THE COUNT WILL RESUME AT T- ' ' " ON MY MARK 5 - 4 - 3 - 2 - 1 - MARK	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 - 7'58"						
TO - 3' 7"						
					--- IF HOLD IS AFTER T-7'58" --- -----	
					--- JUST BEFORE COUNT RESUMES --- ----- (FOR HOLD GREATER THAN 30 MINUTES)	
	161	1	C4TC	C4HY	VERIFY/POSITION FLIGHT MODE ON - THEN AUTO	
	161	2	C4TC	C4EP	VERIFY/POSITION THRUST CHAMBER PURGE SUPPLY VALVE AUTO	
	161	3	C4TC	C4SP	VERIFY/POSITION LOX AND LH2 VENTS OPEN - THEN AUTO	
	161	4	C4TC	C4PP	PLUG SUPERVISION POWER OFF - THEN AUTO	
	161	5	C4TC	C4AL	APS ENGINE VALVE POWER - ON	
					--- JUST BEFORE COUNT RESUMES --- -----	
	121	6	C1PK	CLTC	VATS AT T-8 MIN AWAITING CDC PICKUP.	
	121	7	CLTC	ALL	RETURN TO T-7'58" PAGE 272 SEQUENCE 1	
	111 121	8	CLTC	CVTS	LV READY TO PICKUP AT T-8 ON YOUR MARK.	TCPI
	111 121	9	CVTS	ALL	THE COUNT WILL RESUME AT T-8 MIN ON MY MARK. 5 - 4 - 3 - 2 - 1 - MARK	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					HOLD OPTION 3 ----- T-22' TO T-3'7" -----	
	121	1	CLTC	ALL	THE COUNT IS HOLDING AT ----- MINUTES ----- SECONDS IN OPTION 3.	
	121	2	CLTC	CUSW	LVDA/ESE TO ESE (PERFORM OR VERIFY)	
	121	3	CLTC	C4NP	SWITCH SELECTOR INHIBIT - OFF (PERFORM OR VERIFY)	
	121	4	CLTC	C1DP C2DP C4DP	SAFE & ARM TO SAFE (PERFORM OR VERIFY)	
	121	5	CLTC	C1NP	FUNCTION SELECTOR TO PRELAUNCH (PERFORM OR VERIFY)	
	121	6	CLTC	C1SP	TCS TO SAFE AND SEQUENCER POWER TO OFF THEN AUTO	
	121	7	CLTC	CTS1	VERIFY OR CLOSE PRESSURE SUPPLY VALVE 3	
	121	8	CLTC	C4EP	START TANK SUPPLY VENT TO AUTO (PERFORM OR VERIFY),	
	121	9	CLTC	C1PK	COMMAND VATS TO OPTION 3	
					GO TO ONE OF THE FOLLOWING PAGES FOR THE APPROPRIATE HOLD TIME.	
					T-21'58" TO T-14'30" --- PAGE 374	
					T-14'30" TO T-12'25" --- PAGE 375	
					T-12'25" TO T-7'58" --- PAGE 377	
					T- 7'58" TO T-3' 7" --- PAGE 379	
					IF ENTERING HOLD OPTION 3 AFTER/FROM HOLD OPTION 2	
					T- 7'58" TO T-3' 7" --- PAGE 383	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					---IF HOLD BETWEEN -21'58" & -14'30"--- -----	
171		1	***	C2AE	START TANK ALL VENT TO VENT	***
171		2	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		2-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
171		3	C2AE	C2TC	START TANK CHILLDOWN HAS BEEN TERMINATED	
					--- IF AFTER T-18'45" --- -----	
161		4	***	C4HY	FLIGHT MODE OFF THEN AUTO	***
					--- IF AFTER T-21'58" --- -----	
121		5	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
171		6	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
171		7	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
171		8	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCK, THEN AUTO (PERFORM OR VERIFY)	***
171		9	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
171		10	***	C2FC	AUX PUMPS 1, 2, 3, & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
					COMPLETE FINAL SECURING STEPS ON PAGE 386	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					---IF HOLD BETWEEN -14'30" & -12'25"--- ----- --- IF AFTER T-12'58" --- -----	
	161	1	***	C4EP	TCH PURGE SUPPLY TO OFF, THEN AUTO	***
	171	2	***	C2AE	TCH PURGE TO OFF	***
		2-1		C2AE	*** NOTE TCH PURGE ON - OFF	
	171	3	C2AE	C2TC	TCH PURGE TERMINATED	
					--- IF AFTER T-14'30" --- -----	
	161	4	***	C4EP	CLOSE START TANK VENT	***
	161	5	***	C4HN	CLOSE HEAT EXCHANGER CIRCUIT #1 VENT	***
	161	6	***	C4EP	CLOSE START TANK SUPPLY VALVE	***
	161	7	***	C4EP	OPEN START TANK SUPPLY LINE VENT FOR 15 SECONDS THEN CLOSE	***
	161	8	C4PS	C4TC	START TANK CHILLDOWN TERMINATED	
	171	9	***	C2AE	START TANK ALL VENT TO VENT	***
	171	10	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		10-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
	171	11	C2AE	C2TC	START TANK CHILLDOWN HAS BEEN TERMINATED	
	161	12	***	C4HY	FLIGHT MODE OFF THEN AUTO	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					---IF HOLD BETWEEN -14'30" & -12'25"--- -----	CONT'D
	121	13	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	14	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
	171	15	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
	171	16	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCK, THEN AUTO (PERFORM OR VERIFY)	***
	171	17	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	18	***	C2FC	AUX PUMPS 1, 2, 3 & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
					COMPLETE FINAL SECURING STEPS ON PAGE 386 -----	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					---IF HOLD BETWEEN -12'25" & -7'58"--- -----	
161		1	***	C4EP	TCH PURGE SUPPLY TO OFF, THEN AUTO	***
171		2	***	C2AE	TCH PURGE TO OFF	***
		2-1		C2AE	*** NOTE TCH PURGE ON - OFF	
171		3	C2AE	C2TC	TCH JACKET PURGE HAS BEEN TERMINATED	
161		4	***	C4EP	CLOSE START TANK VENT	***
161		5	***	C4HN	CLOSE HEAT EXCHANGER CIRCUIT #1 VENT	***
161		6	***	C4EP	CLOSE START TANK SUPPLY VALVE	***
161		7	***	C4EP	OPEN START TANK SUPPLY LINE VENT FOR 15 SECONDS THEN CLOSE	***
161		8	C4PS	C4TC	START TANK CHILLDOWN AND TCH PURGE TERMINATED	
171		9	***	C2AE	START TANK ALL VENT TO VENT	***
171		10	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		10-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
171		11	C2AE	C2TC	START TANK CHILLDOWN HAS BEEN TERMINATED.	
161		12	***	C4HY	FLIGHT MODE OFF THEN AUTO	***
121		13	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
171		14	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
171		15	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
171		16	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCKED, THEN AUTO (PERFORM OR VERIFY)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					---IF HOLD BETWEEN -12'25" & -7'58"---	CONT'D
	171	17	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	18	***	C2FC	AUX PUMPS 1, 2, 3 & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	19	***	CLGK	TERMINATE GE01 AND VERIFY	***
	121	20	***	CLGK	TERMINATE FE50 AND VERIFY	***
	121	21	***	CUPC	VERIFY PLATFORM HAS STOPPED	***
		22		CLTC	IF VATS NOT EXECUTING, IMMEDIATELY PERFORM FOLLOWING TIME CRITICAL STEP	
	121	22-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	***
	121	23	***	C4AL	APS ENGINE VALVE POWER OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	24	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	25	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON	***
	121	26	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK). REPORT WHEN COMPLETE.	***
	121	27	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO OFF	***
	121	28	***	CUSP	VERIFY FCC IN S-IC BURN MODE	***
	121	29	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	30	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST). REPORT WHEN COMPLETE.	***
	121	31	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ). REPORT WHEN COMPLETE.	***
	121	32	***	CLGK	REQUEST & EXECUTE FT49/FE50. REPORT WHEN COMPLETE.	***
					COMPLETE FINAL SECURING STEPS ON PAGE 386	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					--- IF HOLD BETWEEN -7'58" & -3'7" --- -----	
	171	1	***	C2AE	TCH CHILLDOWN TO OFF	***
		1-1		C2AE	*** NOTE TCH CHILLDOWN ON OFF	
	161	2	***	C4EP	CLOSE THRUST CHAMBER CHILLDOWN VALVE	***
		2-1		C4EP	*** NOTE TCH CHILLDOWN SUPPLY CLOSED	
	161	3	***	C4EP	CLOSE START TANK VENT	***
	161	4	***	C4HN	CLOSE HEAT EXCHANGER CIRCUIT #1 VENT	***
	161	5	***	C4EP	CLOSE START TANK SUPPLY VALVE	***
	161	6	***	C4EP	OPEN START TANK SUPPLY LINE VENT FOR 15 SECONDS THEN CLOSE	***
	161	7	C4PS	C4TC	START TANK/TCH CHILLDOWN TERMINATED	
	171	8	***	C2AE	START TANK ALL VENT TO VENT	***
	171	9	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		9-1		C2AE	*** NOTE IF START TANKS FAIL TO VENT, USE EMERGENCY VENT. NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY WHEN EMERGENCY VENT IS USED.	
	171	10	C2AE	C2TC	START TANK AND TCH CHILLDOWN TERMINATED.	
					--- IF AFTER T-6'15" --- -----	
	151	11	***	CUIP	Q-BALL HEATER POWER ON THEN AUTO	***
					--- IF BETWEEN T-5'7" & T-3'20" --- -----	
	171	12	***	C2SP	LOX SUPPLY VALVE - CLOSE, THEN AUTO	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					--- IF HOLD BETWEEN -7'58" & -3'7" --- ----- --- IF AFTER T-4'10" --- -----	CONT'D -----
121	13	***	CUES		THRUST OK SWITCH A & B TO INHIBIT THEN AUTO	*** TCPI
					--- IF AFTER T-4'45" --- -----	
161	14	***	C4EP		LOX & LH2 PREVALVES - OPEN, THEN AUTO	***
					--- IF AFTER T-4'50" --- -----	
161	15	***	C4EP		LOX CHILLDOWN PUMP - OFF, THEN AUTO	***
					--- IF AFTER T-4'58" --- -----	
161	16	***	C4EP		LH CHILLDOWN PUMP - OFF, THEN AUTO	***
					--- IF AFTER T-7'58" --- -----	
161	17	***	C4HY		FLIGHT MODE OFF THEN AUTO	***
121	18	***	CSPP C1PP C4PP		COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
171	19	***	C2FC		MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
171	20	***	C2FC		INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
171	21	***	C2FC		ALL ACCUMULATORS CONTROL UNLOCKED, THEN AUTO (PERFORM OR VERIFY)	***
171	22	***	C2FC		HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					--- IF HOLD BETWEEN -7'58" & -3'7" --- ----- --- IF AFTER T-7'58" --- -----	CONT'D ----- CONT'D -----
	171	23	***	C2FC	AUX PUMPS OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	24	***	CLGK	TERMINATE GE01 AND VERIFY	***
	121	25	***	CLGK	TERMINATE FE50 AND VERIFY	***
	121	26	***	CUPC	VERIFY PLATFORM STOPPED	***
		27		CLTC	IF VATS NOT EXECUTING, IMMEDIATELY PERFORM FOLLOWING TIME CRITICAL STEP	
	121	27-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	***
	121	28	***	C4AL	APS ENGINE VALVE POWER OFF THEN AUTO (PERFORM OR VERIFY)	***
	121	29	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	30	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON	***
	121	31	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK). REPORT WHEN COMPLETE.	***
	121	32	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO OFF	***
	121	33	***	CUSP	VERIFY FCC IN S-IC BURN MODE	***
	121	34	***	CLPC	VERIFY LOW LOX DOME PURGE ON	***
	121	35	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST). REPORT WHEN COMPLETE.	***
	121	36	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ). REPORT WHEN COMPLETE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					--- IF HOLD BETWEEN -7'58" & -3'7" --- ----- --- IF AFTER T-7'58" --- -----	CONT'D ----- CONT'D -----
	121	37	***	CLGK	REQUEST & EXECUTE FT49/FF50 (ACCEL MONITOR PROGRAM). REPORT WHEN COMPLETE.	***
	121	38	CLTC	CHCU	PLACE START CIRCUIT BYPASS TO NORMAL	
	181	39	C1TC	CSA1	POSITION CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	
	181	40	C1TC	CSA1	POSITION LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
	181	41	C1TC	CSA1	POSITION UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
					COMPLETE FINAL SECURING STEPS ON PAGE 386 -----	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					IF ENTERING OPTION 3 AFTER/FROM OPTION 2 ----- ---IF HOLD BETWEEN T-7'58" & T-3'7"--- -----	
	161	1	***	C4EP	TCH PURGE SUPPLY TO OFF, THEN AUTO	***
	171	2	***	C2AE	TCH PURGE TO OFF	***
		2-1		C2AE	*** NOTE TCH PURGE ON - OFF	
	161	3	***	C4EP	CLOSE START TANK VENT	***
	161	4	***	C4HN	CLOSE HEAT EXCHANGER CIRCUIT #1 VENT	***
	161	5	***	C4EP	CLOSE START TANK SUPPLY VALVE	***
	161	6	***	C4EP	OPEN START TANK SUPPLY LINE VENT FOR 15 SECONDS THEN CLOSE.	***
	171	7	***	C2AE	START TANK ALL VENT TO VENT	***
	171	8	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		8-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
		8-2		C2AE	*** NOTE IF START TANKS FAIL TO VENT, USE EMERGENCY VENT. NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY WHEN EMERGENCY VENT IS USED.	
	171	9	C2AE	C2TC	START TANK CHILLDOWN TERMINATED.	
	161	10	***	C4HY	FLIGHT MODE OFF THEN AUTO	***
	121	11	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	12	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
	171	13	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
	171	14	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCK, THEN AUTO (PERFORM OR VERIFY)	***

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OPT 3					IF ENTERING OPTION 3 AFTER/FROM OPTION 2	CONT'D
					--- IF HOLD BETWEEN T-7'58" & T-3'7" ---	CONT'D
	171	15	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	16	***	C2FC	AUX PUMPS 1, 2, 3, & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	17	***	CLGK	TERMINATE GE01 AND VERIFY	***
	121	18	***	CLGK	TERMINATE FE50 AND VERIFY	***
	121	19	***	CUPC	VERIFY PLATFORM HAS STOPPED	***
		20		CLTC	IF VATS NOT EXECUTING, IMMEDIATELY PERFORM FOLLOWING TIME CRITICAL STEP	
	121	20-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	***
	121	21	***	C4AL	APS ENGINE VALVE POWER OFF THEN AUTO (PERFORM OR VERIFY)	***
	121	22	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	23	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON	***
	121	24	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK). REPORT WHEN COMPLETE.	***
	121	25	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO OFF	***
	121	26	***	CUSP	VERIFY FCC IN S-IC BURN MODE	***
	121	27	***	C1PC	VERIFY LOW LOX DOME PURGE ON.	***
	121	28	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST). REPORT WHEN COMPLETE.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					IF ENTERING OPTION 3 AFTER/FROM OPTION 2 ----- --- IF HOLD BETWEEN T-7'58" & T-3'7" --- -----	CONT'D ----- CONT'D -----
	121	29	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ), REPORT WHEN COMPLETE.	***
	121	30	***	CLGK	REQUEST & EXECUTE FT49/FE50, REPORT WHEN COMPLETE.	***
	121	31	CLTC	CHCU	PLACE START CIRCUIT BYPASS TO NORMAL.	
	181	32	C1TC	CSA1	POSITION CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	
	181	33	C1TC	CSA1	POSITION LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
	181	34	C1TC	CSA1	POSITION UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
					COMPLETE FINAL SECURING STEPS ON PAGE 386 -----	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					FINAL SECURING -----	
	121	1	C1PK	CLTC	OPT 3 SECURING IS COMPLETE	
	121	2	CLTC	CUES	EDS MODE SWITCH TO MONITOR	
	121	3	CLTC	C1TC C2TC C4TC CUTC	VERIFY OPT 3 SECURING IS COMPLETE.	
	111	4	CLTC	CVTS	OPTION 3 SECURING IS COMPLETE, RESET THE COUNTCLOCK TO -22'0".	TCPI
	121	5	CLTC	CUPC	(IF HOLD WAS AFTER T-12'25") REQUEST & EXECUTE GE01 (AZIMUTH LAYING & PLOT MONITOR). THE FIRING AZIMUTH MAY BE PERIODICALLY UPDATED.	
		5-1		C2AE	USE HE BOTTLE EMERGENCY VENT SWITCHES TO KEEP HE BOTTLE PRESSURES BETWEEN 2800 & 3100 PSIA.	
		5-2		C2SP	IF HOLD TIME PLUS REMAINING COUNT TIME IS APPROXIMATELY 30 MINUTES OR MORE, CYCLE EACH LOX & LH2 VENT VALVE INDIVIDUALLY FROM OPEN TO CLOSE TO OPEN FOR 4 CYCLES TO VERIFY VENT VALVE SOLENOID OPERATION. AFTER COMPLETION OF CYCLING, ALL VENT VALVES ARE TO BE IN OPEN POSITION.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3					FINAL SECURING ----- --- JUST BEFORE COUNT RESUMES --- -----	CONT'D
	121	1	CLTC	C1PK	RESTART VATS	
	171	2	***	C2AE	HE BOTTLE SUPPLY LINE VENT TO OFF	***
		2-1		C2AE	*** NOTE HE BOTTLE SUPPLY LINE VENT OPEN - OFF	
	171	3	***	C2AE	START TANK SUPPLY LINE VENT TO OFF	***
		3-1		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - OFF	
	171	4	***	C2AE	HE BOTTLE SUPPLY VALVE TO PRESSURIZE	***
		4-1		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - ON	
	121	5	C1PK	CLTC	VATS IS AT T-22 AWAITING CDC TO PICKUP	
	121	6	CLTC	ALL	ALL PERSONNEL RETURN TO T-22', PAGE 265 ---	
	111 121	7	CLTC	CVTS	LV READY TO PICKUP AT T-22 MIN ON YOUR MARK	TCPI
	111 121	8	CVTS	ALL	THE COUNT WILL RESUME AT T-22 MIN ON MY MARK. 5 - 4 - 3 - 2 - 1 - MARK	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP 84					APPENDIX B ----- PART 4 - RECYCLE TO T-22 MINUTES ----- CONDITIONS ----- * COMPUTER SUPPORTING * LAUNCH VEHICLE IN ESTABLISHED HOLD CONDITION	
188		1	CLTC	ALL	PROCEEDING TO RECYCLE, ALL PERSONNEL ACTIVE ON CHANNEL 121	
121		2	CLTC	C1TC C2TC C4TC CUTC	PREPARE FOR VARY, REPORT WHEN COMPLETE.	
181		3	C1TC	CSAC	PREP FOR WATL AND WASL. REPORT WHEN COMPLETE.	
181		4	C1TC	C1SP	SEQUENCER POWER AUTO.	
181		5	C1TC	C1NP	STAGE LOGIC AUTO.	
181		6	C1TC	C1CS	LOX AND FUEL LEVEL SENSORS TO AUTO.	
181		7	C1TC	C1IP	TM CALIBRATOR - AUTO	
181		8	C1TC	C1IP	TM CAL MODE AUTO.	
181		9	C1TC	C1IP	PREFLIGHT LEVELS AUTO.	
181		10	C1TC	C1IP	28 VDC RACS POWER AND 400 HZ POWER TO AUTO.	
181		11	C1TC	CSPP C1PP	POWER SUPPLY COMMIT TO AUTO.	
121		12	CLTC	C2TC	FOLLOWING STATIONS SWITCH TO CHANNEL 171 FOR S-II RE-CYCLE.	
					C2EC C2GP C2SP C2FC C2PV V2MS C2AE C2RP C2PU R2SC C2PM	
171		13	C2TC	C2RP	LOX HE INJECTION TO START, THEN AUTO.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	171	14	C2TC	C2AE	START TANK ALL VENT TO AUTO.	
	171	15	C2TC	C2AE	HE BOTTLE SUPPLY LINE VENT TO AUTO.	
	171	16	C2TC	C2AE	TCH CHILLDOWN TO AUTO.	
	171	17	C2TC	C2PU	VERIFY ALL WET SIMS IN AUTO.	
	171	18	C2TC	C2SP	LOX DISCONNECT PRESS SW TO AUTO.	
	171	19	C2TC	C2SP	LOX SUPPLY VALVE SW TO AUTO.	
	171	20	C2TC	C2NP	RACS POWER TO AUTO.	
	171	21	C2TC	C2FC	ALL CONTROL SWITCHES TO AUTO EXCEPT AUX PUMP SWITCH TO ENABLE.	
	171	22	C2TC	C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON, AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	
	171	23	C2FC	V2MS	HYDRAULIC RECORDERS ON AT 2 MM/SEC.	
	121	24	C2TC	CLTC	S-II READY FOR VARY.	
	161	25	C4TC	C4NP	EMERGENCY POWER TRANSFER SWITCH OFF	(VATS)
	161	26	C4TC	C4PP	PLUG SUPERVISION POWER - AUTO.	(VATS)
	161	27	C4TC	C4EP	START TANK VENT CLOSE THEN AUTO.	(VATS)
	161	28	C4TC	C4EP	CLOSE START TANK EMERGENCY DUMP.	
	161	29	C4TC	C4EP	START TANK SUPPLY VENT TO AUTO	(VATS)
	161	30	C4TC	C4SP	LOX & LH2 VENT SWITCHES TO AUTO.	(VATS)
	161	31	C4TC	C4PP	POWER SUPPLY COMMIT TO AUTO.	(VATS)
	161	32	C4TC	C4IP	TM CALIBRATE - AUTO	(VATS)
	161	33	C4TC	C4AL	APS ENGINE POWER TO AUTO.	(VATS)
	121	34	CLTC	CUSP	(IF LV SAFED PER APPENDIX A1 OR A3) S-IVB COAST TEST MODE SWITCH TO AUTO	
	121	35	CLTC	CUSP	(IF LV SAFED PER APPENDIX A2 OR A4) S-II BURN TEST MODE SWITCH TO AUTO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	121	36	CLTC	ECOP	TERMINATE GUIDANCE REDUCTION.	
	121	37	CLTC	CUIP	TM CAL MODE TO AUTO.	(VATC)
	121	38	CLTC	C1NP C2NP C4NP CUNP	SWITCH SELECTOR INHIBIT - OFF	
	121	39	CLTC	CWCP	START IWS RECYCLE OPERATIONS PER V-35113 (HAZARDOUS).	
	121	40	CLTC	CLGK	GO TO CH 123 TO SUPPORT ATTITUDE COMMAND TEST.	
	121	41	CLTC	CCLH	RE-ESTABLISH OR VERIFY LH2 REPLENISH PER V-35014 (HAZARDOUS).	
	121	42	CLTC	CSA1	VERIFY S/A 1 CONNECTED AND READY TO REINITIATE LOX REPLENISH	
	121	43	CLTC	CCLO	RE-ESTABLISH/VERIFY LOX REPLENISH	
	121	44	CLTC	CRSS	HOLD FIRE TO PROCEED & BYPASS - OFF	
	121	45	CLTC	C1PK	REQUEST & EXECUTE VARY (CDDT WET OR CD OPTION) (AUTO RECYCLE).	
	121	46	C1PK	CLTC	DISPLAYING S/A 2 AND GT16 OPTIONS. IF S/A 2 IS RETRACTED & GT16 IS REQUIRED ENTER \$PR1 IF S/A 2 IS NOT RETRACTED & GT16 IS REQUIRED, ENTER \$PR2 IF S/A 2 IS NOT RETRACTED & GT16 IS NOT REQUIRED, ENTER \$PR3 IF S/A 2 IS RETRACTED & GT16 IS NOT REQUIRED, ENTER \$PR4 FOR UNRESTRICTED SEMI, ENTER \$PR5.	
	121	47	***	CTS1	VERIFY OR OPERATE PSV #3 SWITCH TO DOWN.	***
	121	48	***	C1FR	VERIFY RANGE SAFE ON.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	121	49	***	C1DP C2DP C4DP	VERIFY S&A SAFE & PD BLOCKED.	***
	121	50	***	C1DP C2DP C4DP	VERIFY EBW'S EXTERNAL & DISCHARGED.	***
		51		CLTC	NOTE ----	
					SUBSEQUENCES TO BE PERFORMED ONLY IF S/A 2 HAS RETRACTED.	
	121	51-1	***	BGCC	ISSUE MDO 0016 ON (S-IC FWD LEVEL & PSI OK) AND VERIFY	***
	121	51-2	***	C1IP	ALL TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED ON CH 121.	***
	121	51-3	***	C1IP	F1, ON P1, ON	***
	121	52	***	CSAC	VERIFY FOLLOWING INDICATIONS ON: T-187 LSE PREPS COMPLETE LSE READY FOR S/A 1 RETRACT T-16.2 LSE READY FOR S/A 2 RETRACT T-8.9 READY LESS S/A 1, 2 SAFE ANGLE	***
		53	***	C1NP	VERIFY STAGE LOGIC ZERO	***
	121	54	C1PK	CLTC	VARY DISPLAYING WATL & WASL OPTIONS AS FOLLOWS: 1. RUN WATL & WASL 2. RUN WASL ONLY 3. RUN WATL ONLY 4. OMIT OR RUN MANUALLY	
		54-1		CLTC	*** NOTE IF MANUAL OPTION IS SELECTED, COMMAND CSAC (CH 121) TO START PRESSURE AND LEVEL CHECKS PER V-36039 & V-36087 AND TO REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	121	55	***	C1PC	LOW LOX DOME PURGE ON.	***
	121	56	***	CUNP	ISSUE IU STAGE LOGIC RESET (EDS GRP 1 & 2)	***
	121	57	***	CUSP	SELECT S-IC BURN MODE SWITCH ON THEN AUTO.	***
	121	58	CLTC	CUFS	START ATTITUDE COMMAND TEST ON CH 123. REPORT WHEN COMPLETE.	
	123	59	***	CLGK	REQUEST FT10 LADDER OUTPUT TEST, AUTO OPTION.	***
		59-1			NOTE ----- THE FT10 AUTO OPTION WILL DRIVE THE GUIDANCE LADDER TO +/- 2 DEG PITCH, +/- 2 DEG YAW AND +/- 5 DEG ROLL,	
	123	60	CUFS	CUCR	VERIFY VALVE CURRENTS AND BETA RESPONSE ON ALL ENGINES	
	123	61	***	CLGK	TERMINATE FT10	***
	123	62	CUFS	ALL	ATTITUDE COMMAND TEST COMPLETE. RETURN TO CH 121.	
	121	63	CUFS	CLTC	ATTITUDE COMMAND TEST COMPLETE.	
		64	***	C2AE	HELIUM BOTTLE LINE VENT OFF.	***
		64-1		C2AE	*** NOTE HELIUM BOTTLE SUPPLY LINE VENT OPEN - OFF	
		65	***	C2AE	ALL HELIUM CONTROL SOLENOIDS TO OFF.	***
		65-1		C2AE	*** NOTE ALL HE SOL - OFF	
		66	***	C2AE	HELIUM BOTTLE VENT 1-5 TO OFF.	***
		67	***	C2EC	HELIUM CONTROL SOLENOID 201 THRU 205 OFF	***
		67-1		C2EC	*** NOTE HE CONTROL SOLENOID 201 THRU 205 - OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4		68	***	C2AE	HE BOTTLE SUPPLY VALVE TO PRESSURIZE	***
		68-1		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - ON	
171		69	C2TC	C2FC	START EAS RECYCLE OPERATIONS	
171		70	***	C2FC	MAIN PUMP BYPASS VALVE - CLOSE, THEN AUTO	***
171		71	***	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL OFF, THEN AUTO.	***
171		72	***	C2FC	VERIFY ACCUMULATORS UNLOCKED.	***
171		73	***	C2FC	AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 TO ON. ALLOW SYSTEM PRESSURES TO STABILIZE	***
171		74	***	C2FC	OPEN MAIN PUMP BYPASS VALVE AND ALLOW MAIN PUMP FLUID TEMPS TO STABILIZE WITH RESERVOIR FLUID TEMPS.	***
171		75	***	C2AE	START TANK SUPPLY LINE VENT TO OFF.	***
		75-1		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - OFF	
171		76	***	C2FC	MAIN PUMP BYPASS VALVE - CLOSE, THEN AUTO	***
171		77	***	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL - ON, THEN AUTO.	***
171		78	***	C2FC	AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 TO OFF THEN AUTO. VERIFY NORMAL SHUTDOWN.	***
171		79	C2FC	V2MS	HYDRAULIC RECORDERS OFF	
		79-1		C2FC	*** NOTE INDIVIDUAL ACCUMULATOR LOCK LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF	
		79-2		C2FC	*** NOTE OPEN MAIN PUMP BYPASS VALVE DURING AUXILIARY PUMP OPERATIONS	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	171	80	C2AE	C2TC	ENG HE BOTTLE PRESSURIZATION TO 3000 PSI COMPLETE.	
	171	81	C2TC	R2SC C2AE C2EC C2FC C2GP C2PV C2PM C2PU C2RP C2SP	VERIFY READY TO PICK UP THE COUNT AT T-22 MINUTES	
	121	82	C2TC	CLTC	S-II RECYCLE COMPLETE.	
	121	83	CLTC	BTMC ETMS	VERIFY TM TAPE RECORDING ON	
		84		C2NP R2SC	CYCLE MAIN/INSTR BATT BLEED SWITCHES TO MAINTAIN BATT VOLTAGES IN TOLERANCE (CD ONLY)	
	121	85	***	CUIP	Q-BALL POWER ON THEN AUTO. Q-BALL HEATER POWER ON THEN AUTO.	***
	121	86	***	CUCP	PUMP PRESSURE SWITCH ACTIVATE - OFF THEN AUTO.	***
	121	87	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MON PROG). REPORT WHEN COMPLETE.	***
	188	88	CLTC	ALL	"VATC WILL START MOMENTARILY. FLUCTUATING MEASUREMENTS MAY OCCUR DURING THE NEXT 2 MINUTES"	
		88-1		BGCC	*** NOTE LCC GENERAL MESSAGE NO. 0510 "NO S/S OUTPUT S-IVB" MAY OCCUR DURING NEXT 2 MINUTES	
	121	89	***	CLIK	REQUEST & EXECUTE VATC (TM PREFLIGHT CAL). REPORT WHEN COMPLETE.	***
	161	90	***	C4EP	CLOSE START TANK SUPPLY VENT THEN AUTO	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B4						
	161	91	***	C4HN	VERIFY 6000 PSI GH2 OPEN.	***
	121	92	CLTC	RLDE	GIVE A DEMAND PRINTOUT ON ALL STAGE PRINTERS. REPORT WHEN COMPLETE.	
	121	93	***	C4NK	REQUEST & EXECUTE XADS (CONSOLE 11). REPORT WHEN COMPLETE.	***
	121	94	C1PK	CLTC	VARY DISPLAYING VARS RUN OPTION.	
		94-1		CLTC	*** NOTE IF DRSCR RETEST IS REQUIRED, TURN TO APPENDIX B, PART 5, PAGE 397.	--
	121	95	C1PK	CLTC	VARY READY FOR CDC RESET TO T-22 MINUTES	(VATS)
	111	96	CLTC	CVTS	SET COUNT CLOCK AT T-22 MINUTES.	TCPI (VATS)
	121	97	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ), IF THE GROUND COMPUTER HAS NOT BEEN IN CONTINUOUS SUPPORT, REQUEST & EXECUTE GT16 (AZIMUTH LAYING), REPORT WHEN COMPLETE.	***
		97-1	CLTC	CUPC	(IF HOLD WAS AFTER T-12'25") REQUEST & EXECUTE GE01 (AZIMUTH LAYING & PLOT MONITOR).	
	261	98	CLM4	BOSC	REQUEST PRESENT GH2 BATTERY PRESSURE	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP 84	121	99	***	C1PK	REQUEST & EXECUTE VATS (TERMINAL SEQUENCE LINKING PROGRAM, PR2/PR4).	***
		99-1			NOTE ----- WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS TO DO THE FUNCTIONS MANUALLY. PROGRAMS WILL NORMALLY BE DONE AT THE TIME SHOWN. ***** DURING VATS, IF A TIME CRITICAL EVENT DOES NOT OCCUR WITHIN 10 SECONDS AFTER THE EXPECTED TIME, THE OPERATORS INDICATED WILL DO THE FUNCTIONS MANUALLY AND REPORT THIS ACTION. *****	
	121	100	***	C4PP	PLUG SUPERVISION POWER OFF THEN AUTO	***
	121	101	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO RESUME COUNT	
	121	102	C1PK	CLTC	VATS AT T-22 MINUTES AWAITING CDC PICKUP	
	121	103	CLTC	RLDE	ENTER/VERIFY CDC MODE	
	121	104	CLTC	ALL	RETURN TO ASSIGNED CHANNELS TO RESUME THE COUNT AT T-22'0" PAGE 265, THE COUNT CLOCK WILL BE RESTARTED ON A MARK FROM CVTS,	
	111	105	CLTC	CVTS	LAUNCH VEHICLE READY TO RESUME COUNT, REQUEST A TIME COUNT AND MARK START OF COUNTDOWN CLOCK.	TCPI
		105-1		CVTS	*** NOTE USE A 5 COUNT FOR COUNT CLOCK START ON THE "ALL CALL" SYSTEM.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP 85						
	121	9	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	
	121	10	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - OFF S&A SWITCH - SAFE	
	121	11	CLTC	C1PK	IF S/A 2 IS CONNECTED, COMMAND VARY TO RUN VARS (FRT/CDDT/CD RECYCLE OPTION)	
	121	12	***	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (FRT/CDDT/CD RECYCLE OPTION)	***
		12-1			NOTE ----- IF THE DRSCR TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COM CH SHOWN.	
	121	13	VARs	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	***
	121	14	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE (PERFORM OR VERIFY)	
		14-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	15	C1PK	C1DP C2DP C4DP	SYSTEM STATUS SWITCH - OFF (PERFORM OR VERIFY)	
	121	16	VARs	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID.	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B5						
	121	17	C1PK	CLTC	READY FOR RANGE COMMAND TRANSMITTER OFF	
	111	18	CLTC	CVTS	REQUEST RANGE CARRIER OFF & VERIFY	TCPI
	121	19	VARs	C1DP C2DP C4DP	EBW'S 1 & 2 EXTERNAL THEN AUTO	***
	121	20	VARs	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL (PERFORM OR VERIFY)	***
		20-1		CRSS	*** NOTE ALL RSCR'S ON INTERNAL POWER	
	121	21	VARs	B1RF B2RF B4RF CRSS	VERIFY RSCR LIMITER VOLTAGES OK.	***
	121	22	VARs	C1DP C2DP C4DP	VERIFY EBW'S #1 & #2 EXTERNAL AND NOT CHARGED.	***
		22-1		CRSS	*** NOTE ALL EBWS NOT CHARGED.	
	121	23	VARs	C1DP C2DP C4DP	AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF, SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO	***
	121	24	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND.	
	121	25	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	26	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS.	
	121	27	SRO	ALL	3-2-1 MARK	
	121	28	VARs	C1DP C2DP C4DP	SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP B5						
	121	29	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	30	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL AND CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON.	***
		30-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		30-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON.	
	121	31	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED.	***
		31-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	32	VARs	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED.	***
	121	33	C1PK	RRSC	VERIFY CUT OFF COMMANDS RECEIVED	
	121	34	C1PK	CLTC	READY FOR SRO PD COMMAND.	
	121	35	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	36	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	37	SRO	ALL	3-2-1 MARK	
	121	38	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	39	VARs	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	***
		39-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED.	
	121	40	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	***

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APP B5		40-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
		41	C1PK	RRSC	VERIFY PD COMMANDS RECEIVED	
	121	42	C1PK	CLTC	READY FOR RANGE TRANSMITTER ON - VERIFY	
	111	43	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 CARRIER ON. REPORT WHEN TURNED ON,	TCPI
		43-1		CLTC	*** NOTE DO NOT PROCEED UNTIL TRANSMITTERS ARE ON	
	121	44	VARs	BRFS	SIG GEN SELECTOR - STANDBY	***
	121	45	VARs	B1RF B2RF B4RF CRSS	VERIFY RSCR LIMITER VOLTAGES OK.	***
	121	46	C1PK	CLTC	VARs COMPLETE	
	121	47	CLTC	BTMC	TM TAPE RECORDER OFF AND RELOAD	
		47-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (CD ONLY)	
	111	48	CLTC	CVTS	DRSCS TEST COMPLETE. LOCAL COMMAND CARRIER IS OFF	TCPI
	121	49	CLTC	ALL	ALL PERSONNEL TURN TO RECYCLE, APP B4. PAGE 395 , SEQ 95 -----	

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APOLLO/SATURN

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APPENDIX C

LV DRAIN OPERATIONS

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					CD ONLY	
APP C1 + 0' 0"						
121	29	CLTC	C1IP		CDDT ONLY	*
121	30	C1IP	ALL		CDDT ONLY	*
121	31	CLTC	C2IP		CDDT ONLY	*
121	32	C2IP	ALL		CDDT ONLY	*
121	33	CLTC	C4IP		CDDT ONLY	*
121	34	C4IP	ALL		CDDT ONLY	*
121	35	CLTC	CUIP		CDDT ONLY	*
121	36	CUIP	ALL		CDDT ONLY	*
121	37	CLTC	CUIP		CDDT ONLY	*
121	37-1	CUIP	ALL		CDDT ONLY	*
121	38	CLTC	CUIP C1IP		CDDT ONLY	*
121	39	CLTC	CUIP		CDDT ONLY	*
121	40	CLTC	CUIP		CDDT ONLY	*
121	41	CLTC	CUIP		CDDT ONLY	* TCP
121	42	CLTC	C1DP		CDDT ONLY	*
121	43	CLTC	C2DP		CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
APP C1 + 0' 0"						
	121	59	CVTS	CLTC	SC EDS POWER IS OFF	# TCP
	118	60	CSA9	CSAC	S/A 9 HAS BEEN RECONNECTED. CSA9 IS NOW ACTIVE ON CHANNEL 118.	
	181	61	CSAC	C1TC	S/A 9 IS RECONNECTED.	
	118	62	CSAC	CHCU	PLACE ONE PUMP IN STANDRY AND VERIFY OTHER PUMP IS RUNNING.	
		63			NOTE ---- WITH FLIGHT CREW ABOARD, IT WILL BE APPROXIMATELY ONE HOUR BEFORE ALL PERSONNEL WILL BE CLEAR OF THE CONTROL AREA FOR DRAIN OPERATIONS.	#
APP C1 + 0' 0"						
	121	1	CVTS	CLTC	CREW EGRESS IS COMPLETE. ALL PERSONNEL ARE CLEAR OF THE CONTROL AREA, LV DRAIN OPERATIONS MAY START.	# TCP
	121	2	CVTS	CLTC	GDDT ONLY	* TCP
		3			NOTE ---- FOR THE NEXT 15 MINUTES CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERAS 27 & AA3 OR AA4.	
	121	4	CLTC	C1TC	RECONNECT PRIMARY DAMPER	
	181	5	C1TC	CSAC	RECONNECT PRIMARY DAMPER	
	118	6	CSAC	CSAD	RECONNECT PRIMARY DAMPER PER V-36086 (NON-HAZARDOUS).	
	181	7	C1TC	CTS1	DISARM UMBILICAL SWITCH AND CLOSE UMBILICAL RELEASE SIMULATE VALVE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP C1 + 0' 0"						
	121	36	CLTC	C1SP	RETURN TCS KEY TO CPSS	
	121	37	CLTC	CLVN	RETURN DESTRUCT SYSTEM ENABLE KEY TO CPSS	
	111	38	CLTC	CVTS	TCS AND DESTRUCT SYSTEM ENABLE KEYS HAVE BEEN RETURNED TO CPSS	TCPI
		39			NOTE ----	
					CONTINUED IN APPENDIX C, PART 2.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP C2 + 0' 0"					CD ONLY	
					PART 2 -----	
					LV DRAIN -----	
181		1	C1TC	CCRP	SECURE RP-1 PANEL POWER	
181		2	C1TC	CCLO	START AUTO SIMULTANEOUS LOX DRAIN PREPS PER V-35014 ADDENDUM B-1 (HAZARDOUS). REPORT WHEN READY TO START DRAIN.	
171		3	C2SP	C2TC	CDDT ONLY	*
121		4	C2TC	CLTC	CDDT ONLY	*
121		5	CLTC	C2TC	CDDT ONLY	*
181		6	CCLO	C1TC	LOX DRAIN PREPS COMPLETED.	
121		7	CLTC	C1TC C2TC C4TC	VERIFY READY TO START SIMULTANEOUS PROPELLANT DRAIN	
111		8	CLTC	CVTS	RESET CDC TO T+0 AND START COUNT UP	TCPI
+ 0' 0"						
121		1	CLTC	C1TC	CLEARED TO START SIMULTANEOUS DRAIN OPERATIONS.	
181		2	C1TC	CCLH	START AUTO SIMULTANEOUS LH2 DRAIN OPERATIONS PER V-35014 ADDENDUM B-1 (HAZARDOUS). REPORT WHEN COMPLETE.	
181		3	C1TC	CCLO	START AUTO SIMULTANEOUS LOX DRAIN OPERATIONS PER V-35014 ADDENDUM B-1 (HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 5' 0"	181	1	CCLH	C1TC	S-II LH2 DRAIN IN PROCESS	
+ 8' 0"	181	1	CCLH	C1TC	S-IVB LH2 DRAIN IN PROCESS	
+10' 0"	181	1	CCLO	C1TC	S-IC LOX DRAIN STARTED	
	181	2	C1TC	C1CS	POSITION LOX LEVEL SIMULATE SWITCHES TO OFF THEN AUTO.	
+15' 0"	177	1	CLTC	CLQS	START/VERIFY START OF LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL-QCP-11 FOR MSS MOVE.	
+32' 0"	181	1	CCLO	C1TC	S-II LOX DRAIN STARTED (S-II LH2 APPROXIMATELY 50%)	
+54' 0"	181	1	CCLH	C1TC	S-II LH2 DRAIN IS COMPLETE	
+ 1 HRS 15' 0"	181	1	CCLH	C1TC	S-IVB LH2 DRAIN IS COMPLETE.	
	121	2	CLQS	CLTC	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL-QCP-11 IS COMPLETE,	
	111	3	CLTC	CVTS	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL-QCP-11 IS COMPLETE,	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 1 HRS 30' 0"	181	1	CCLO	C1TC	S-II LOX DRAIN IS COMPLETE. STARTING S-IVB LOX DRAIN.	
	121	2	CLTC	C1TC C2TC C4TC	START LH2 POST TANKING PURGE PER V-35015, VOL II (HAZARDOUS).	
	181	3	C1TC	CCLH	START LH2 SYSTEM PURGE PER V-35015, VOL II (HAZARDOUS).	
	171	4	C2TC	C2NP	REMOVE PM POWER	
	171	5	C2TC	C2SP C2RP	START POST TANKING PURGE PER V-35015, VOL II (HAZARDOUS). NOTIFY C2TC WHEN TANK PURGE HAS BEEN IN PROGRESS FOR 30 MINUTES.	
	171	6	C2TC	C2PM	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II (HAZARDOUS) ON CH 143.	
	171	7	C2TC	C2SP	LOW LEVEL PURGE OFF WHEN NOT REQUIRED.	
	171	8	C2TC	C2GP	START GH2 CIRCUIT SCRUB PURGE PER V-30029 (M020) TASK 54 (HAZARDOUS).	
+ 2 HRS 10' 0"	181	1	CCLO	C1TC	S-IVB LOX DRAIN COMPLETE	
	121	2	C1TC	CLTC	S-IVB LOX DRAIN COMPLETE.	
	161	3	C4TC	C4HN	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II (HAZARDOUS) ON CH 143.	
	161	4	C4TC	C4PU	PU POWER OFF THEN AUTO	
	161	5	C4TC	C4PU	LOADING MEASUREMENT ENABLE - OFF	
	181	6	CCLO	C1TC	S-IC LOX DRAIN COMPLETE	
	121	7	C1TC	CLTC	LOX DRAIN IS COMPLETE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 10' 0"	171	8	C2TC	C2FC	START EAS POST DRAIN PROCEDURE PER V-30029 (M020) TASK 55 (NON-HAZARDOUS).	
		8-1		CCL0 CCLH	*** NOTE PROPELLANTS SUPPORT WILL BE REQUIRED UNTIL COMPLETION OF S-II & S-IVB PURGES (APPROX T+7:30 HRS)	
	111	9	CLTC	CVTS	LV PROPELLANT DRAIN IS COMPLETE AND TANK PURGES ARE IN PROGRESS.	TCPI
+ 2 HRS 15' 0"	121	1	CVTS	CLTC	CLEAR TO START RP-1 REPLENISH (IF RECYCLING TO T-9 HRS)	TCPI
	121	2	CLTC	C1TC	START RP-1 REPLENISH (IF RECYCLING TO T-9 HRS)	
	181	3	C1TC	CCRP	APPLY RP-1 PANEL POWER AND START REPLENISH PER V-25389 (HAZARDOUS) (IF RECYCLING TO T-9 HRS).	
	121	4	CVTS	CLTC	MSS OBSERVERS ARE TO REPORT TO PVTS AT LAUNCH OPERATION TRAILER 179 AT THE PAD MAIN GATE FOR BRIEFING IN 45 MINUTES.	TCPI
	121	5	CLTC	C1TC C2TC C4TC CUTC	MSS OBSERVERS ARE TO REPORT TO PVTS AT LAUNCH OPERATION TRAILER 179 AT THE PAD MAIN GATE FOR BRIEFING IN 45 MINUTES.	
	171	6	C2TC	U2SE U2SI	MSS PLATFORM OBSERVERS WITH HEADSETS REPORT TO PVTS AT PAD MAIN GATE (TRAILER 179) FOR BRIEFING IN 45 MINUTES.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 40' 0"						
	171	1	C2TC	C2SP	VERIFY POST TANKING PURGE IN PROGRESS FOR MINIMUM OF 30 MINUTES AND READY FOR SAFETY INSPECTION TEAM TO ENTER PAD, CONTINUE POST TANKING PURGE AND SUPPORT TBC ON 4% GH2 SNIFFER CHECKS.	
	121	2	C2TC	CLTC	S-II LH2 PROPELLANT TANK PURGED FOR MINIMUM OF 30 MINUTES. READY FOR SAFETY INSPECTION TEAM TO ENTER THE PAD. (POST TANKING PURGE IS CONTINUING)	
	121	3	C4TC	CLTC	S-IVB LH2 PROPELLANT TANK HAS BEEN PURGED FOR MINIMUM OF 30 MINUTES AND READY FOR SAFETY INSPECTION TEAM TO ENTER PAD, POST TANKING PURGE WILL CONTINUE FOR 1 HOUR. SAMPLE CANNOT BE TAKEN PRIOR TO COMPLETION OF PURGE.	
	181	4	C1TC	CCLH	S-II & S-IVB TANKS HAVE BEEN PURGED FOR MINIMUM OF 30 MINUTES. VERIFY GSE READY FOR SAFETY INSPECTION TEAM TO ENTER PAD AND VERIFY LESS THAN 4% GH2 IN STAGE TANKS AND TRANSFER LINE BY SNIFFING AT SAMPLE PORTS ON VALVE SKIDS, VERIFY INITIAL SYSTEM SECURING CREW AT ROAD BLOCK TO FOLLOW SAFETY INSPECTION TEAM TO THE LUT AND TO THE LH2 STORAGE AREA. S-II TANK PURGES WILL BE TERMINATED FOR SAMPLES AT 120 FT SKID AND THEN CONTINUED. S-IVB TANK PURGES MUST BE COMPLETED (APPROXIMATELY 1 HOUR FROM NOW) PRIOR TO TAKING SAMPLES AT 200 FT SKID.	
	181	5	C1TC	CCLO	VERIFY INITIAL SYSTEM SECURING CREW AT ROAD BLOCK TO FOLLOW SAFETY INSPECTION TEAM TO THE LUT AND TO THE LOX STORAGE AREA. PURGE, INERT AND SECURE LOX SYSTEM PER V-25342 (HAZARDOUS).	
	171	6	C2TC	C2SP	SHROUD PURGE TO CLOSE	
	171	7	C2TC	U2IE U2SE	VERIFY S-II INSULATION PERSONNEL ARE AT ROADBLOCK TO ACCOMPANY SAFETY INSPECTION TEAM TO PAD APRON AND 140 FT LEVEL	
	161	8	C4TC	S4PC	VERIFY S-IVB PERSONNEL FOR INITIAL SYSTEM SECURING ARE AT ROADBLOCK TO ACCOMPANY SAFETY INSPECTION TEAM TO PAD APRON AND 240 FOOT LEVEL.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 40' 0"	161	9	C4TC	S4PC	VERIFY S-IVB PERSONNEL FOR S/A 6 & 7 UMBILICAL SECURING AND PROPELLANT TANKS SAMPLING ARE ASSEMBLED IN THE FALL BACK AREA.	
	181	10	C1TC	CECS	SWITCH ECS FROM GN2 TO AIR PER V-36074 PART D (HAZARDOUS). VERIFY HANDVALVE SECURING CREW AT ROADBLOCK TO FOLLOW SAFETY INSPECTION TEAM TO ECS ROOM.	
	181	11	C1TC	CHGD	SECURE HGD SYS PER V-37038 (HAZARDOUS).	
	181	12	C1TC	C1PE	VENT S-IC GN2 BOTTLES TO 1500 PSI PER V-24327 (HAZARDOUS).	
	181	13	C1TC	C1NP	HEATER POWER SWITCH TO OFF	
	121	14	C2TC	CLTC	S-II INSULATION PERSONNEL ARE AT ROADBLOCK TO ACCOMPANY SAFETY INSPECTION TEAMS TO PAD APRON AND 140 FT LEVEL.	
	121	15	C1TC	CLTC	ALL SYSTEMS ARE READY FOR SAFETY INSPECTION TEAMS TO ENTER THE PAD. LOX, LH2 AND ECS INITIAL SYSTEM SECURING CREWS ARE AT ROADBLOCK TO ACCOMPANY SAFETY INSPECTION TEAMS TO LUT, LOX & LH2 STORAGE AREAS AND ECS ROOM.	
	111	16	CLTC	CVTS	LV PROPELLANT DRAIN OPERATIONS ARE COMPLETE. LV IS READY FOR SAFETY INSPECTION TEAMS, INITIAL SYSTEM SECURING CREWS AND S-II INSULATION PERSONNEL TO ENTER THE PAD.	TCPI
	171	17	C2TC	U2SE	S-II PROPELLANT DRAIN IS COMPLETE AND ECS HAS SWITCHED FROM GN2 TO AIR. RELEASE RED CREW FROM STANDBY.	
	261	18	C2TC	BOSC	ECS HAS BEEN SWITCHED FROM GN2 TO AIR. BENDIX SUPPORT FOR S-II STAGE ENTRY IS NO LONGER REQUIRED (LVR-2 & LVR-7).	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 40' 0"		19			NOTE ---- A SAFETY INSPECTION OF THE LAUNCH PAD AND INITIAL SYSTEM SECURING OF HAZARDOUS SYSTEMS WILL BE CONDUCTED AT THIS TIME. DESIGNATED LAUNCH VEHICLE PERSONNEL WILL ACCOMPANY THE SAFETY INSPECTION TEAMS TO THE LUT, LOX & LH2 STORAGE AREAS AND ECS ROOM BUT WILL BE PRECEDED BY THEM. THE LUT AND PTCR MAY BE OPENED FOR STAGE ACCESS CREW ENTRY UPON CPSS VERIFICATION THAT: 1. THE S-II & S-IVB LH2 TANKS CONTAIN LESS THAN 4% GH2 BY SNIFFING PURGE GASES AT SAMPLE PORTS AT THE FILTERS ON FILL LINES. 2. THE LH2 TRANSFER LINE CONTAINS LESS THAN 4% GH2 BY SNIFFING PURGE GASES AT SAMPLE PORTS AT THE INLET TO VALVE SKIDS. 3. THE GN2 HANDVALVES HAVE BEEN CLOSED IN THE ECS ROOM. THE LOX & LH2 STORAGE AREAS MAY BE OPENED FOR ACCESS WHEN CPSS INSPECTION OF EACH AREA IS COMPLETE.	TCPI
	111	20	CLTC	CVTS	REQUEST CPSS TO CLEAR BENDIX PERSONNEL TO FACILITY HIGH PRESSURE GH2 AREA TO SECURE AND VENT 6000 PSI GH2 TRANSFER LINE	TCPI
	121	21	C1TC	CLTC	REQUEST SUPPORT PREPARE TO HAVE TWO 25 TON FORKLIFTS AND CABLES FOR ESP TRANSPORTER MOVE. FORKLIFTS SHOULD BE AT THE MSS ROAD BLOCK AT T+2 HRS 45 MIN AND READY TO PULL THE ESP TRANSPORTER AT THE START OF PAD OPENING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 40' 0"	262	22	CLTC	BTIS	REQUEST TWO 25 TON FORKLIFTS AND CABLES FOR ESP TRANSPORTER MOVE. FORKLIFTS SHOULD BE AT THE MSS ROAD BLOCK AT T+ 2 HRS 45 MIN AND READY TO PULL THE ESP TRANSPORTER AT THE BEGINNING OF PAD OPENING.	TCP1
	121	23	BOSC	CLTC	REQUEST S-II & S-IVB PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE SECURING & INERTING WITH GHE.	TCP1
	121	23-1	CLTC	C2TC C4TC	HAVE YOUR PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE SECURING & INERTING WITH GHE.	
	151	24		CUTC	TERMINATE ALTERNATE FIRING ROOM SUPPORT	
	181	25	C1TC	CCLH	VERIFY WHEN SYSTEM INERTING TO LESS THAN 4% GH2 AT 120 FT SKID IS SATISFACTORY BY COORDINATING WITH SECURING CREW ON LUT WITH SAFETY INSPECTION TEAM. REQUEST PERSONNEL TO BE STANDING BY AT 200 FT SKID FOR INERTING VERIFICATION AT +3:40 HRS.	
+ 2 HRS 45' 0"	171	1	C2FC	C2TC	EAS POST DRAIN PROCEDURES ARE COMPLETE	
	171	2	C2TC	C2IP	GROUND POWER TO OFF.	
	171	3	C2GP	C2TC	GH2 CIRCUIT SCRUB PURGE COMPLETE.	
		4			*****CAUTION***** * * THE FOLLOWING SEQUENCE * * IS HAZARDOUS * * *****	
	181	5	C1TC	C1PE	AFTER RESIDUAL LOX HAS BOILED OFF AS INDICATED BY MEASUREMENTS C242-101 THRU -105 & HEATERS CYCLING, TURN OFF ENG. HEATERS, THERMAL CONDITIONING PURGE & HEATER POWER.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
+ 2 HRS 45' 0"						
	181	6	C1TC	C1PE	SECURE APPLICABLE PORTIONS OF S-1C PNEUMATICS SYS PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	7	C1TC	CLTC	ECS SWITCHOVER FROM GN2 TO AIR IS COMPLETE. ECS GN2 IS IN STANDBY CONFIGURATION.	
	181	8	C1TC	CECS	CDDT ONLY	*
	121	9	C1TC	CLTC	CDDT ONLY	*
	261	10	CLTC	BOSC	CDDT ONLY	* TCP
+ 3 HRS 0' 0"						
	171	1	C2TC	C2PV	SECURE PURGE AND VACUUM SYSTEM PER V-25311 (L009) (NON-HAZARDOUS).	
		1-1			NOTE ----	
					IF REQUIRED, OPERATION WILL CONTINUE PER APPLICABLE SECTIONS OF V-26276 (G058) (NON-HAZARDOUS).	
+ 3 HRS 30' 0"						
	121	1	CLTC	C1TC	SEND TSM PERSONNEL TO ZERO LEVEL FOR TSM 3-4 TILT BACK.	
	181	2	C1TC	CTS1	SEND TSM PERSONNEL TO ZERO LEVEL FOR INSTALLING TSM SAFETY CABLES, RIGGING TSM 3-4 FOR TILT BACK AND SECURING TSM SYSTEMS.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 3 HRS 40' 0"					CD ONLY	
	121	1	C4TC	CLTC	S-IVB POST TANKING PURGES ARE COMPLETE. READY FOR SAMPLE TO BE TAKEN AT 200 FT SKID. REPORT WHEN SYSTEM INERTING IS SATISFACTORY FOR AREA OPENING.	
	121	2	CLTC	C1TC	S-IVB POST TANKING PURGES COMPLETE. READY FOR SAMPLE TO BE TAKEN AT 200' SKID. REPORT WHEN SYSTEM INERTING IS SATISFACTORY FOR AREA OPENING.	
	181	3	C1TC	CCLH	S-IVB READY FOR SAMPLE TO BE TAKEN AT 200' SKID. REPORT WHEN SYSTEM INERTING TO LESS THAN 4% GH2 AT 200' SKID IS SATISFACTORY BY COORDINATING WITH SECURING CREW ON LUT WITH SAFETY INSPECTION TEAM.	
	181	4	CCLH	C1TC	SYSTEM INERTING HAS BEEN VERIFIED SATISFACTORILY ON THE LUT	
	181	5	CECS	C1TC	CDDT ONLY	*
	181	6	CECS	C1TC	ECS IS CONFIGURED FOR GN2 STANDBY (HAND VALVES CLOSED)	#
		6-1			*****WARNING***** * * ECS IS TO BE CONFIGURED * * FOR GN2 STANDBY WITH * * HANDVALVES CLOSED WHILE * * ALSEP IS INSTALLED IN * * VEHICLE, FOR FCA * * EMERGENCY, THE HAND * * VALVES WILL NOT BE * * OPENED UNTIL DIRECTED * * BY CVTS. * * *****	#
		7			*****WARNING***** * * END ECS INERT * * ATMOSPHERE HAZARD - * * RESUME PREVIOUS HAZARD * * LEVEL. * * *****	

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▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀						
+ 3 HRS 40' 0"						
	121	8	C1TC	CLTC	CDDT ONLY	*
	111	9	CLTC	CVTS	CDDT ONLY	* TCP
	121	10	C1TC	CLTC	ECS IS CONFIGURED FOR GN2 STANDBY (HANDVALVES CLOSED), LH2 SYSTEM INERTING ON THE LUT IS ACCEPTABLE FOR AREA OPENING.	#
	111	11	CLTC	CVTS	ECS IS CONFIGURED FOR GN2 STANDBY (HANDVALVES CLOSED), LH2 SYSTEM INERTING ON THE LUT IS ACCEPTABLE FOR AREA OPENING.	# TCPI
+ 3 HRS 45' 0"						
	121	1	CVTS	CLTC	SAFETY INSPECTION IS COMPLETE. SPECIAL CONTROL AREA IS OPEN FOR REQUIRED PERSONNEL.	TCPI
	151	2	CUTC	CUCP	VENT ST-124M AIR BEARING SYSTEM PER V-34017. REPORT WHEN COMPLETE (NON-HAZARDOUS).	
	151	3	CUTC	CUCP	PUMP PRESSURE SWITCH ACTIVATE OFF THEN AUTO	
	121	4	CLTC	C1TC C2TC C4TC CUTC	SPECIAL CONTROL AREA IS OPEN FOR REQUIRED PERSONNEL.	
	121	5	BTIS	CLTC	25 TON FORKLIFTS & CABLES AT PAD GATE FOR MOVE OF ESP TO ML.	TCPI
	188	6	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX F FOR DRY CDDT OPERATIONS) (VOLUME III FOR LAUNCH VEHICLE SCRUB TO LAUNCH TURNAROUND OPERATIONS)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C3 S-II						
					PART 3 -----	
					S-II PREPARATIONS FOR PROPELLANT DRAIN -----	
171		1	C2TC	C2SP	GN2 PURGE VALVE TO AUTO.	
171		2	C2TC	C2SP	LH2 SUPPLY VALVE TO AUTO.	
171		3	C2TC	C2GP	LH2 DISCONNECT PRESS SW TO AUTO	
171		4	C2TC	C2GP	LOX DISCONNECT PRESS SW TO AUTO	
171		5	C2TC	C2GP	GH2 SUPPLY VALVE TO CLOSE.	
171		6	C2TC	C2GP	START TANK LINE VENT OPEN UNTIL D079-327 INDICATES APPROXIMATELY ZERO PSIG,	
171		7	C2TC	C2AE	START TANK ALL VENT TO ALL VENT	
171		8	C2TC	C2AE	START TANK SUPPLY LINE VENT TO VENT.	
171		9	C2TC	C2AE	START TANK SUPPLY VALVE TO PRESSURIZE.	
171		10	C2TC	C2GP	AFTER D079-327 INDICATES APPROXIMATELY ZERO PSIG, PUT GH2 REG VENTS TO OPEN,	
171		11	C2TC	C2AE	START TANK SUPPLY VALVE TO OFF	
171		12	C2TC	C2AE	START TANK SUPPLY LINE VENT TO OFF.	
171		13	C2TC	C2AE	START TANK PURGE SW TO ON, MAINTAIN PURGE FOR 10 MINUTES, THEN PLACE START TANK PURGE SW TO OFF.	
171		14	C2TC	R2SC	VERIFY START TANK PRESSURE (D016-201/205) AT ZERO.	
171		15	C2TC	C2AE	START TANK ALL VENT TO OFF.	
171		16	C2TC	C2GP	HE PRESS SEL SW TO 1000 PSIG.	
171		17	C2TC	C2AE	VERIFY ENGINE PURGES COMPLETE.	
171		18	C2TC	C2AE	USE ALL HE SOLENOID SWITCH TO VENT ENG HE BOTTLES BELOW 25 PSIA.	

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C3 S-II		18-1		C2PU R2SC	*** NOTE MEASUREMENTS 0006-201 THROUGH 205 WILL BE ACTIVE.	
171	19	C2TC	C2RP		PNEU SUPPLY VALVE TO OFF.	
171	20	C2TC	C2RP		LOX HE INJECTION TO START, THEN AUTO, WHEN RECEIVER PRESS APPROX. 1465 PSIA, HE INJECTION TO STOP, THEN AUTO.	
	20-1		C2SP		*** NOTE LOX HE INJECTION RECEIVER BEING VENTED INTO LOX TANK.	
171	21	C2TC	C2RP		USE RECIRC ACT SYSTEM VENT SWITCH TO VENT RECIRC RECEIVER TO APPROX. 1465 PSIA.	
171	22	C2TC	C2AE		VERIFY HE BOTTLE PRESSURES BELOW 25 PSIA.	
171	23	C2TC	C2AE		VERIFY START TANK PRESSURES BELOW 25 PSIA.	
171	24	C2TC	C2AE		ALL ENG EMERGENCY CUTOFF TO AUTO.	
171	25	C2TC	C2RP		VERIFY LOX HE INJECTION RECEIVER PRESSURE APPROX. 1465 PSIA.	
171	26	C2TC	C2RP		VERIFY RECIRC RECVR PRESS APPROX. 1465 PSIA.	
171	27	C2TC	C2RP		PNEUM SUPPLY VALVE TO PRESSURIZE.	
171	28	C2TC	C2GP C2PV C2PM C2SP		VERIFY READY FOR PROPELLANT DRAIN.	
171	29	C2TC	C2PV		MAINTAIN COMMON BULKHEAD VACUUM PER V-25311 (L009) (NON-HAZARDOUS) FOR PROPELLANT DRAIN.	
121	30	C2TC	CLTC		S-II READY FOR PROPELLANT DRAIN.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C4 LV					PART 4 ----- LV PREPS FOR COMPUTER DOWN DRAIN -----	
	121	1	CLTC	CUNP	ISSUE STAGE LOGIC RESET.	
	121	2	CLTC	CLVN	VERIFY/PLACE ML DCE TO MANUAL MODE	
	121	3	CLTC	CLVN	ISSUE THE FOLLOWING MDOS ON OR OFF SIMULTANEOUSLY BY SETTING UP THE DCE BIT PATTERN DEFINED FOR EACH GROUP (ANNOUNCE OVER OIS CH 121 AS EACH GROUP IS ISSUED) PER V-31008 (NON-HAZARDOUS):	
		3-1	ALL		*** NOTE ALL PANEL OPERATORS POSITION SWITCHES TO POSITION INDICATED IN PARENTHESIS AFTER THE GROUP IS ISSUED	
	121	3-2	CLVN		GRP 1 - MUX 22. ADDRESS 19. DATA BIT 3 UP, 4 UP, 19 UP, 22 UP. 1467 OFF (S-IC TM CAL POWER OFF) 1468 OFF (S-IC 400 HZ POWER OFF) 1483 OFF (S-IC F1-RF OFF) 1486 OFF (S-IC P1-RF OFF)	
	121	3-3	CLVN		GRP 2 - MUX 22. ADDRESS 20. DATA BIT 2 UP. 1490 OFF (S-IC 28V RACS POWER OFF)	
	121	3-4	CLVN		GRP 3 - MUX NONE. ADDRESS 9. DATA BIT 0 DN, 10 DN, 20 DN. 0216 ON (TSM 1-2 UMB RELEASE SIM VALVE CLOSE) 0226 ON (TSM 3-2 UMB RELEASE SIM VALVE CLOSE) 0236 ON (TSM 3-4 UMB RELEASE SIM VALVE CLOSE)	
	121	3-5	CLVN		GRP 4 - MUX 22. ADDRESS 5. DATA BIT 4 UP. 1132 OFF (C2RP-RECIRC RECEIVER SUPPLY VALVE TO OFF)	
	121	3-6	CLVN		GRP 5 - MUX 22. ADDRESS 2. DATA BIT 17 UP. 1073 OFF (C2GP-HE SELECT TO 1000 PSI)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C4 LV						
121		3-7		CLVN	GRP 6 - MUX 21. ADDRESS 2. DATA BIT 16 DN. 0568 ON (C2RP LOX HE INJ START)	
121		3-8		CLVN	GRP 7 - MUX 22. ADDRESS 10. DATA BIT 14 UP, 11 UP, 9 UP, 6 DN 1262 OFF (C2IP F1-RF OFF) 1259 OFF (C2IP F2-RF OFF) 1257 OFF (C2IP P1-RF OFF) 1254 ON (C2FC MAIN PUMP BYPASS VALVE OPEN)	
121		3-9		CLVN	GRP 8 - MUX 21. ADDRESS 7. DATA BIT 19 DN. 0691 ON (CCS TRANSPONDER OFF)	
121		3-10		CLVN	GRP 9 - MUX 21, 22. ADDRESS 13. DATA BIT 18 UP, 19 UP, 22 UP, 23 UP, 1842 OFF (IU TM CAL POWER OFF) 1843 OFF (IU F1-RF OFF) 1846 OFF (IU P1-RF OFF) 1847 OFF (IU F1-TM OFF)	
121		3-11		CLVN	GRP 10 - MUX 21, 22. ADDRESS 14. DATA BIT 4 UP, 6 UP 1852 OFF (C-BAND BEACON 1 OFF) 1854 OFF (COMMAND DECODER OFF)	
121		3-12		CLVN	GRP 11 - MUX 21, 22. ADDRESS 16. DATA BIT 12 UP, 16 UP. 1908 OFF (Q-BALL HEATERS OFF) 1912 OFF (C-BAND BEACON 2 OFF)	
121		3-13		CLVN	GRP 12 - MUX NONE. ADDRESS 18. DATA BIT 17 UP, 0449 OFF (ML/DRSCS/GSE POWER OFF)	
121		4	CLTC	C2AE	USE ALL HELIUM SOLENOID SWITCH TO VENT ENG HE BOTTLES BELOW 25 PSIA.	
		4-1		C2PU R2SC	*** NOTE MEASUREMENTS G006-20- THROUGH 205 WILL BE ACTIVE.	
121		5	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF.	
121		6	CLTC	CUSW	ISSUE IU OCTAL 164 (CMD C-BAND TRANSPONDERS 1 & 2 ON; INHIBIT OFF)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C4 LV						
	111	7	CLTC	CVTS	ALL LV RF SYSTEMS ARE OFF EXCEPT S-IVB P1 258.5 MHZ LINK.	TCPI
	121	8	CLTC	BRFS	LCC GSE POWER OFF AND SECURE PER V-38000 (NON-HAZARDOUS) SCRUB/RECYCLE PROCEDURE.	
	121	9	CLTC	CUNP	SWITCH SELECTOR INHIBIT ON	
	121	10	CLTC	CUPC	POWER DOWN ST-124M PER V-33011 (NON-HAZARDOUS)	
	121	11	CLTC	CUSP	FLT CONT COMP POWER SWITCH - OFF	
	121	12	CLTC	CUGA	CONTROL EDS RATE GYRO POWER SWITCH - OFF	
	121	13	CLTC	CLGK	ON-AUTO-OFF SWITCH TO OFF	
	121	14	CLTC	CUDE	VERIFY HALT (728) AND MEMORY RELEASE (730) ARE ON	
	121	15	CLTC	CTS1	DISARM UMBILICAL SWITCH	
	121	16	CLTC	C2GP	GH SUPPLY VALVE TO CLOSE	
	121	17	CLTC	C2GP	START TANK LINE VENT TO OPEN	
	121	18	CLTC	C2RP	USE RECIRC ACTUATION SYSTEM VENT SWITCH TO VENT PNEUMATIC RECEIVER TO 1465 PSIA.	
		18-1		C2AE	*** NOTE HE BOTTLE PRESS BELOW 25 PSIA	
		18-2		C2AE	*** NOTE START TANK PRESS BELOW 25 PSIA	
		18-3		C2RP	*** NOTE HE INJ RECVR PRESS APPROX 0 PSIA	
		18-4		C2RP	*** NOTE RECIRC RECVR PRESS APPROX 1465 PSIA	
	121	19	CLTC	C2PV	MAINTAIN COMMON BULKHEAD VACUUM PER V-25311 (L009) (NON-HAZARDOUS) FOR PROPELLANT DRAIN	
	121	20	CLTC	C1TC C2TC C4TC	VERIFY READY TO START PROPELLANT DRAIN.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C4 LV	121	21	CLTC	C1TC	START PROPELLANT DRAIN, PER APPENDIX C, PART 2, PAGE 411 .	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
C4 S-IV					S-IVB DRAIN PREPS - COMPUTER DOWN -----	
	121	1	CLTC	C4TC	IDENTIFY THE FOLLOWING STEPS REQUIRED FOR DRAIN PREPS:	
	121	2	CLTC	CLVN	ISSUE THE FOLLOWING MDO'S ON OR OFF SIMULTANEOUSLY BY SETTING UP THE DCE BIT PATTERN DEFINED FOR EACH GROUP (ANNOUNCE OVER OIS CH 121 AS EACH GROUP IS ISSUED) PER V-31008 (NON-HAZARDOUS):	
	121	2-1		CLVN	GRP 1 - MUX 21. ADDRESS 3. DATA BIT 3 UP, 7 UP, 579 OFF (LH TANK VENT OPEN OFF) 583 OFF (LOX TANK VENT OPEN OFF)	
	121	2-2		CLVN	GRP 2 - MUX 21, 22. ADDRESS 1. DATA BIT 15 UP, 1551 OFF (CIRCUIT NO. 2 SUPPLY OPEN OFF)	
	121	2-3		CLVN	GRP 3 - MUX 21, 22. ADDRESS 3. DATA BIT 14 UP, 19 UP, 1598 OFF (CONT & REPRESS SUPPLY OPEN OFF) 1603 OFF (COLD HELIUM SUPPLY OPEN OFF)	
	121	2-4		CLVN	GRP 4 - MUX 21, 22. ADDRESS 5. DATA BIT 20 UP, 1652 OFF (APS ENG VALVE POWER OFF)	
	121	2-5		CLVN	GRP 5 - MUX 21, 22. ADDRESS 6. DATA BIT 5 UP, 14 UP, 15 UP, 16 UP, 1661 OFF (APS 3000 HE SUPPLY OPEN OFF) 1670 OFF (DOME CROSSOVER OPEN OFF) 1671 OFF (CIRCUIT NO. 3 SUPPLY OPEN OFF) 1672 OFF (750 HELIUM SUPPLY OPEN OFF)	
	121	2-6		CLVN	GRP 6 - MUX 21, 22. ADDRESS 8. DATA BIT 7 UP, 8 UP, 12 UP, 14 UP, 1711 OFF (ENGINE CONTROL POWER OFF) 1712 OFF (ENGINE IGNITION POWER OFF) 1716 OFF (START TANK VENT OPEN OFF) 1718 OFF (START TANK SUPPLY VENT OPEN OFF)	
	121	2-7		CLVN	GRP 7 - MUX 21, 22. ADDRESS 10. DATA BIT 16 UP, 1768 OFF (START TANK EMERGENCY VENT OPEN OFF)	

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C4 S-IV						
121		2-8		CLVN	GRP 8 - MUX 21, 22. ADDRESS 3. DATA BIT 21 DN, 1605 ON (COLD HELIUM CROSSOVER OPEN)	
121		3	CLTC	CUSW	ISSUE S-IVB OCTAL 162 (S/S CUTOFF OFF).	
121		4	CLTC	C4DE	VERIFY DEE 1930 ON (LH LATCHING RELIEF CLOSED).	
121		4-1	CLTC	CLVN	IF NOT ON ----- ISSUE GRP 9 - MUX 21, 22. ADDRESS 8. DATA BIT 16 DN 1720 ON (LH LATCH RELIEF VALVE OPEN ON).	
121		5	CLTC	CLVN	ISSUE GRP 10 - MUX 21, 22. ADDRESS 8. DATA BIT 16 UP. 1720 OFF (LH LATCH RELIEF VALVE OPEN OFF)	
		5-1		C4DE	VERIFY DEE 1930 ON.	
121		6	CLTC	C4DE	VERIFY DEE 1676 ON (LOX NPV FULL CLOSE).	
121		6-1	CLTC	CUSW	IF NOT ON ----- ISSUE S-IVB OCTAL 114 (LOX TANK NPV OPEN ON). ISSUE S-IVB OCTAL 165 (LOX TANK NPV OPEN OFF).	
		7		C4DE	VERIFY DEE 1676 ON.	
121		8	CLTC	C4TC	CONTINUE S-IVB DRAIN PREPS PER V-30539, SECTION V (HAZARDOUS)	

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APPENDIX D

CONTINGENCY PROCEDURES

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP D1					APPENDIX D CONTINGENCY PROCEDURES ----- PART 1: T-42' MANUAL POWER TRANSFER ----- PREPS FOR POWER TRANSFER TEST -----	
	111	1	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCP1
	121	2	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	
	121	3	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1	
	121	4	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT POWER TRANSFER TEST	
	121	5	CLTC	BTMC	VERIFY TM TAPE RECORDER ON	
	121	6	CLTC	RRSC	DRSCS RECORDERS ON (PERFORM OR VERIFY)	
	111	7	CLTC	CVTS	LOCAL COMMAND CARRIER COMING ON	TCP1
		8		C2NP	CYCLE MAIN/INSTR BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE (CD ONLY)	
	121	9	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - OFF S&A SWITCH - SAFE	
	121	10	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE	
	121	11	CLTC	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED ON	
	121	12	CLTC	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP D1						
121	13	CLTC	C1DP C2DP C4DP		VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED	
121	14	CLTC	C1DP C2DP C4DP		RSCR'S 1 & 2 - INTERNAL AND VERIFY	
121	15	CLTC	B1RF B2RF B4RF		VERIFY RSCR LIMITER VOLTAGES OK	
121	16	CLTC	C1DP C2DP C4DP		VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED	
188	17	CLTC	ALL		ALL PERSONNEL SUPPORTING POWER TRANSFER TEST SWITCH TO INDIVIDUAL STAGE TC ACTIVE CHANNELS TO PREPARE FOR POWER TRANSFER.	
123	18	CUFS	CUGA		ATTITUDE RATE COMMANDS (PLUS 9 DEG/SEC ROLL), HOLD UNTIL POWER TRANSFER IS COMPLETE.	
121	19	CUFS	CLTC		FLIGHT CONTROL READY FOR POWER TRANSFER.	
181	20	C1TC	C1NP		VERIFY INTERNAL AND EXTERNAL BUSES ARE CORRECT FOR POWER TRANSFER.	
181	21	C1TC	C1NP		BATTERY INSTALLED ENABLE TO ON	
	21-1		C1NP		*** NOTE S-IC READY FOR POWER TRANSFER.	
181	22	C1TC	C1NE R1SC		VERIFY READY FOR POWER TRANSFER.	
181	23	C1TC	C1NP		ON MARK FROM CLTC TRANSFER TO INTERNAL.	
121	24	C1TC	CLTC		S-IC READY FOR POWER TRANSFER.	
	24-1		C2RP		*** NOTE OK TO OPERATE PUMPS LIGHT ON.	
171	25	C2TC	C2RP		LH2 RECIRC PUMPS TO START, THEN INHIBIT (AT 2 SECOND INTERVALS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
APP D1		25-1	C2PC		*** NOTE RECIRC BUS CURRENT INCREASES WITH EACH RECIRC PUMP START	
171		26	C2TC	C2RP	WAIT 5 SEC (MINIMUM) THEN LH2 PREVALVES TO CLOSE, THEN INHIBIT	
		26-1	C2RP		*** NOTE LH2 PREVALVES CLOSED - ON	
171		27	C2TC	C2RP	VERIFY LOX HE INJECTION IN START	
171		28	C2TC	C2NP	BATTERY INSTALLED TO ENABLE	
		28-1	C2NP		*** NOTE MAIN, INST AND RECIRC BATTERY CONNECTED - ON	
171		29	C2TC	C2NP	VERIFY SIM FLT BATT ENABLED (CDDT ONLY)	
171		30	C2TC	C2NP R2SC	VERIFY READY FOR POWER TRANSFER.	
171		31	C2TC	R2SC	RECORD S-II BUS VOLTAGE AND CURRENTS PER TABLE ON PAGE 447 WHILE ON INTERNAL POWER	
171		32	C2TC	C2NP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
121		33	C2TC	CLTC	S-II READY FOR POWER TRANSFER.	
161		34	C4TC	R4HY	HYD STRIP CHARTS TO FAST	
161		35	C4TC	C4HY	FLIGHT MODE ON THEN AUTO, (VERIFY WHEN SYSTEM IS STABILIZED).	
161		36	C4TC	C4EP	VERIFY LOX AND LH2 READY TO START INDICATION ON.	
161		37	C4TC	C4EP	LH2 CHILLDOWN PUMP - ON (WAIT 8 SECONDS BEFORE NEXT STEP).	
161		38	C4TC	C4EP	LOX CHILLDOWN PUMP - ON (WAIT 5 SECONDS BEFORE NEXT STEP).	
161		39	C4TC	C4EP	CLOSE LOX AND LH2 PREVALVES.	
161		40	C4TC	C4NP	STAGE BATTERY MONITOR TO ENABLE	
161		41	C4TC	C4NP	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
APP D1						
	161	42	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP OFF THEN AUTO	
	161	43	C4TC	C4NP C4PP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	161	44	C4TC	C4NP R4EI R4SC	VERIFY READY FOR POWER TRANSFER.	
	161	45	C4TC	C4NP	EMERGENCY POWER TRANSFER - OFF	
	161	46	C4TC	C4NP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	47	C4TC	CLTC	S-IVB READY FOR POWER TRANSFER.	
	151	48	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	151	49	CUTC	CUNP	CD ONLY	
	151	50	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER.	
	151	51	CUTC	CUNP	IU TO REMAIN ON INTERNAL FOR 3 MINUTES	
	151	52	CUTC	CUNP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	53	CUTC	CLTC	IU READY FOR POWER TRANSFER.	
APP D1					POWER TRANSFER TEST -----	
	121	1	CLTC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL SECURE STAGES FROM POWER TRANSFER ON STAGE "TC" CHANNELS	
		1-1		ALL	*** NOTE S-IC & S-II STAGES STAY INTERNAL FOR 30 SECONDS MINIMUM. S-IVB STAGE STAYS INTERNAL FOR 45 SECONDS MINIMUM. IU STAYS INTERNAL FOR 3 MINUTES MINIMUM. REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125.	
END OF TEST PROCEDURE V-20060, VOL 11						

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP D1						
	121	2	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3".	
	121	3	CLTC	C1NP C2NP C4NP CUNP	ON MY MARK TRANSFER TO INTERNAL POWER SIMULTANEOUSLY.	
	121	4	CLTC	ALL	5-4-3-2-1 "MARK"	
		4-1		C1FR CUDE	*** NOTE IU READY TO LAUNCH MAY CYCLE OFF THEN ON (MAX TIME OF ONE SECOND)	
		4-2		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		4-3		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	
		4-4		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		4-5		C2FR	*** NOTE S-IC POWER TRANSFER COMPLETE ON (DEE 0082)	
	181	5	C1TC	C1NP	VERIFY S-IC POWER TRANSFER COMPLETE ON	
		5-1		C1NP	*** NOTE BUS 1D121 OFF	
		5-2		C1NP	*** NOTE BUS 1D111 OFF	
		5-3		C1NP	*** NOTE BUS 1D211 OFF	
		5-4		R1SC	*** NOTE RECORD VOLTAGE FOR STAGE BUSES 1D11 AND 1D21, RECORD VOLTAGE AND CURRENT FOR BUSES 1D10 & 1D20.	
	181	6	C1TC	C1NP	POWER TRANSFER SWITCH EXTERNAL THEN AUTO,	
		6-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		6-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
	181	7	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
	181	8	C1TC	C1NP	BATTERY INSTALLED ENABLE SWITCH TO AUTO	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP D1						
		8-1		C1NP	*** NOTE BUS 1D121 ON	
		8-2		C1NP	*** NOTE BUS 1D211 ON	
		8-3		C1NP	*** NOTE BUS 1D111 ON	
	181	9	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE & 1D10, 1D20 VOLTAGE AND CURRENT DURING INTERNAL, THEN TO CLES ON CH 125.	
	181	10	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	11	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		11-1		C2NP	*** NOTE POWER TRANSFER COMPLETE ON	
		11-2		R2SC	*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL: MAIN BATT CURRENT (XM0021-207) ----- MAIN DC BUS VOLTAGE 2D11 (XM0020-207) ----- INSTR BATT CURRENT (XM0024-207) ----- INSTR DC BUS VOLTAGE 2D21 (XM0023-207) ----- RECIRC BUS CURRENT (XM0114-207) ----- RECIRC DC BUS VOLTAGE 2D51 (XM0111-207) ----- IGN DC BUS VOLTAGE 2D61 (XM0125-207) -----	
	171	12	C2TC	C2NP	TRANSFER MAIN, INSTR, & RECIRC TO EXTERNAL AFTER 30 SECONDS MINIMUM ON INTERNAL.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP D1						
		12-1		C2NP	*** NOTE MAIN, INST & RECIRC BUSES EXTERNAL ON	
		12-2		C2NP	*** NOTE POWER TRANSFER COMPLETE OFF	
	171	13	C2TC	C2RP	RECIRC, RESET TO RESET, THEN INHIBIT	
		13-1		C2PC	*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS	
		13-2		C2RP	*** NOTE LH2 PREVALVES OPEN ON. PUMP INLET PRESSURE DECAY.	
	171	14	C2TC	C2RP	LOX HE INJECTION TO AUTO	
	171	15	C2TC	C2NP	BATTERY INSTALLED ENABLE TO AUTO	
	171	16	C2TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	17	C2TC	CLTC	S-11 POWER TRANSFER TEST IS COMPLETE	
	171	18	C2TC	R2SC	READOUT RECORDED BUS VOLTAGES TO CLES ON CH 125.	
	161	19	C4TC	C4NP	VERIFY POWER TRANSFER COMPLETE	
	161	20	C4TC	C4NP	VERIFY STAGE ON INTERNAL POWER	
	161	21	C4TC	R4SC	VERIFY BUS VOLTAGE AND CURRENT WITHIN LIMITS	
	161	22	C4TC	C4NP	POWER TRANSFER SWITCH - EXTERNAL THEN AUTO	
	161	23	C4TC	C4NP	VERIFY STAGE ON EXTERNAL POWER	
	161	24	C4TC	C4NP	VERIFY POWER TRANSFER COMPLETE OFF	
	161	25	C4TC	R4PS	VERIFY CHILLDOWN PUMP DATA SATISFACTORY AND READY TO TURN PUMPS OFF	
	161	26	C4TC	C4EP	OPEN LOX & LH2 PREVALVES THEN AUTO.	
	161	27	C4TC	C4EP	LOX CHILLDOWN PUMP - OFF THEN AUTO	
	161	28	C4TC	C4EP	LH2 CHILLDOWN PUMP - OFF THEN AUTO	

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APP D1						
	161	29	C4TC	C4HY	FLIGHT MODE - OFF THEN AUTO	
	161	30	C4TC	R4HY	RECORDERS - SLOW AFTER PRESSURE DECAYS	
	161	31	C4TC	C4NP	STAGE BATTERY MONITOR TO AUTO	
	161	32	C4TC	R4SC	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	161	33	C4TC	C4DE	TRANSMIT THE FOLLOWING DEE TIMES TO C4PS: S/SEL CH 83 READ COMMAND ON 2647 AND 2648 OFF 1710 AND 1711 ON	
	161	34	C4TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	35	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE	
	151	36	CUTC	CUNP	VERIFY POWER TRANSFER COMPLETE & IU STAGE POWER ON	
	151	37	CUTC	RUBM	VERIFY BUS VOLTAGE AND CURRENT WITHIN LIMITS. READOUT VOLTAGES AND CURRENTS TO CLES ON CH 125	
		37-1		CUTC	*** NOTE DELAY NEXT STEP FOR 3 MINUTES	
	151	38	CUTC	CUNP	POWER TRANSFER TO EXTERNAL ON YOUR MARK	
	151	39	CUNP	ALL	3-2-1, MARK	
	151	40	CUTC	CUNP	VERIFY IU GROUND POWER ON AND POWER TRANSFER COMPLETE OFF.	
		40-1		CUDE	*** NOTE 0777 & 0779 OFF, 0781 ON	
	151	41	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	42	CUTC	ALL	ALL STATIONS RETURN TO CH 121	
	121	43	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE	
	121	44	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO SLOW	

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APP D1						
	121	45	CLTC	BTMC	TM TAPE RECORDERS - OFF & RELOAD	
	121	46	CLTC	CUFS	POWER TRANSFER TEST COMPLETE	
	123	47	CUFS	CUCR CUGA	VERIFY ATTITUDE RATE COMMAND UNDISTURBED DURING POWER TRANSFER	
	123	48	CUFS	CUGA	REMOVE PLUS ROLL ATTITUDE RATE COMMAND	
	123	49	CUFS	ALL	ALL FLIGHT CONTROL PERSONNEL RETURN TO CH 121	
	121	50	CUFS	CLTC	FLIGHT CONTROL SYSTEM TEST IS COMPLETE	

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APPENDIX E

PAD ACCESS DURING HAZARDOUS OPERATIONS

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APP E					APPENDIX E ----- PAD ACCESS DURING HAZARDOUS OPERATIONS -----	
121		1	CLTC	C1DP C2DP C4DP	VERIFY S&A SAFE AND SYSTEM STATUS SWITCH TO SAFE	
121		2	CLTC	C1TC	VERIFY PROPELLANT SYSTEMS IN SAFE CONDITION	
181		3	C1TC	CWCP	IWS MANUAL ARMING TO OFF AND VERIFY	
		3-1		CWCP	*** NOTE BE PREPARED TO OPERATE P-1 BOOSTER PUMP ON AND LUT RISER SUPPLY VALVE OPEN IF PERSONNEL REQUIRE ACCESS TO ML TOWER.	
121		4	CLTC	C1TC	VERIFY IWS MANUAL ARMING IS OFF AND READY TO OPERATE IWS P-1 BOOSTER PUMP ON AND LUT RISER SUPPLY VALVE TO OPEN IF PERSONNEL ACCESS TO ML TOWER REQUIRED.	
121		5	CLTC	C1TC C2TC C4TC CUTC	GO TO YOUR STAGE TC CHANNELS AND ASSESS YOUR PNEU SYSTEMS FOR STABLE CONDITIONS.	
151		6	CUTC	ALL	PREPARE FOR RF SILENCE & CONTROLLED SWITCHING AND PAD ACCESS DURING HAZARDOUS OPERATIONS PER V-31062, APP I (NON-HAZARDOUS).	
171		7	C2TC	C2FC	PREPARE ENGINE ACTUATION SYSTEMS FOR CONTROLLED SWITCHING PER V-30029 (M020) TASK 62 (NON-HAZARDOUS) IF AUTO THERMAL CONTROL MODE IS IN EFFECT, REPORT WHEN READY FOR CONTROLLED SWITCHING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP E						
	171	8	C2TC	C2AE C2RP C2GP	AT THE DIRECTION OF C2TC, DEPRESSURIZE THE S-II STAGE PNEUMATIC RECEIVERS TO 1/4 BURST PRESSURE PER V-30029 (M020) TASK 65 (NON-HAZARDOUS). REPORT WHEN PRESSURES ARE STABLE.	
	121	9	CLTC	C1TC C2TC C4TC CUTC	DO NOT INITIATE ANY STAGE TEST PROGRAMS UNTIL FURTHER NOTICE	
	121	10	CLTC	C1TC C2TC C4TC CUTC	VERIFY ALL PNEUMATIC SYSTEMS ARE STABLE & READY FOR CONTROLLED SWITCHING	
	188	11	CLTC	ALL	CONTROLLED SWITCHING IS IN EFFECT	
	121	12	CLTC	C1NE C2EV C4ES CUNE CSPP	REPORT TO CLES ON CH 125 TO ASSESS DEE-6 ACTIVITY.	
	121	13	CLTC	RLDE	MONITOR DEE-6 ACTIVITIES ON MASTER DEE PRINTER. REPORT ANY DEE-6 DISCRETE ACTION TO CLES ON CHANNEL 125.	
	121	14	CLTC	CVTS	LV IS IN A SAFE CONFIGURATION FOR CREW ENTRY TO PAD AREA	TCPI
		15			*****WARNING***** * * THE FOLLOWING * OPERATIONS WILL BE * PERFORMED PRIOR TO * CLEARING PERSONNEL ON * TO ML TOWER BUT ONLY IF * PERSONNEL REQUIRE * ACCESS TO ML TOWER. * *****	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
APP E						
	181	15-1	C1TC	CWCP	P-1 BOOSTER PUMP ON AND LUT RISER SUPPLY VALVE OPEN,	
	121	16	CLTC	C1TC C2TC C4TC CUTC	CREW ENTERING PAD WILL ESTABLISH COMMUNICATIONS WITH CLTC AND MAINTAIN COMMUNICATIONS WHILE ON THE PAD	
		17			*****CAUTION***** * * THE FOLLOWING * * OPERATIONS WILL BE * * PERFORMED ONLY IF * * PERSONNEL HAVE BEEN ON * * AND ARE NOW CLEAR OF ML * * TOWER, * * *****	
	181	17-1	C1TC	CWCP	P-1 BOOSTER PUMP OFF AND LUT RISER SUPPLY VALVE CLOSE.	
		18		ALL	WHEN CREW HAS CLEARED THE PAD, CONTROLLED SWITCHING WILL BE ENDED, INITIATION OF STAGE TEST PROGRAMS ALLOWED AND DEE-6 ACTIVITY ASSESSMENT ON CH 125 WILL BE DISCONTINUED.	
	171	19	C2TC	C2FC	RE-ESTABLISH COUNT CONFIGURATION PER V-30029 (M020) TASK 62 (HAZARDOUS), REPORT WHEN COMPLETE.	
	171	20	C2TC	C2AE C2RP C2GP	REPRESSURIZE PNEUMATIC RECEIVERS TO OPERATING PRESSURES PER V-30029 (M020) TASK 66 (HAZARDOUS), REPORT WHEN COMPLETE.	

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CDDT ONLY

APPENDIX F

DRY CDDT

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 3 HRS 45' 0"					APPENDIX F, PART 1 ----- RECONFIGURATION FOR DRY CDDT -----	
	121	1	CVTS	CLTC	CHANGE SMDPS FROM 1 SWITCH MODE TO 2 SWITCH 1 VALVE MODE. REPORT WHEN COMPLETE.	TCPI
	121	2	CLTC	C1TC	CHANGE SMDPS FROM 1 SWITCH MODE TO 2 SWITCH 1 VALVE MODE. REPORT WHEN COMPLETE.	
	181	3	C1TC	CPDC	CHANGE SMDPS FROM 1 SWITCH MODE TO 2 SWITCH 1 VALVE MODE. REPORT WHEN COMPLETE.	
	121	4	CLTC	C1TC C2TC C4TC CUTC	START PREPS FOR DRY CDDT	
	181	5	C1TC	CPDC	PERSONNEL REQUIRED FOR LLP AND TRANSPORTER WORK MAY NOW GO INTO THE PAD. MOVE ESP/LLP TRANSPORTER TO SERVICE POSITION PER V-36070 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	6	C1TC	CTS1	CONNECT TSM SAFETY CABLES AND START SECURING PER V-36039 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	7	C2TC	U2LN	REMOVE CIRCUIT BREAKER LOCKS PER V-30029 (M020) TASK 48 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	121	8	C1TC	CLTC	REQUEST SUPPORT RETURN STAGE MONITOR SHACK AND S-IC STAGE SECURITY BARRIERS.	
	262	9	CLTC	BTIS	RETURN STAGE MONITOR SHACK AND S-IC STAGE SECURITY BARRIER TO ML ZERO LEVEL.	TCPI
	181	10	C1TC	CPDC	SECURE S-IC UMBILICAL PURGE PANEL PER V-36064 (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 3 HRS 45' 0"	111	11	CLTC	CVTS	REQUEST PEHE TO PERFORM SNIFFER CHECKS IN IU/S-IVB FWD, S-IVB AFT, S-II FWD & S-IC FWD AREAS WHEN ACCESS DOORS ARE OPENED.	TCPI
		12			*****WARNING***** * * ACCESS TO THE LV * * INTERIOR WILL NOT BE * * PERMITTED UNTIL SAFETY * * HAS VERIFIED THAT THE * * OXYGEN LEVEL IS AT * * LEAST 18 PERCENT. * * *****	TCPI
	151	13	CUTC	CCAP LRPR	REMOVE LOCKING PINS FROM AUXILIARY POWER CIRCUIT BREAKERS PER V-31062, APPENDIX E. REPORT WHEN COMPLETE (NON-HAZARDOUS)	
	181	14	C1TC	CSAC	SEND PERSONNEL TO PAD TO EXTEND S/A TIPS	
	121	15	CLTC	C1TC	EXTEND S/A 3 & ALL S/A TIPS	
	121	16	CLTC	C1TC	POSITION & RAISE LLP	
	181	17	C1TC	CPDC	POSITION & RAISE LLP PER V-36070	
	181	18	C1TC	CSAC	EXTEND S/A 3 & ALL TIPS AND SECURE S/A 9	
	118	19	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8	EXTEND ARM TIPS & SECURE ARM	
	118	20	CSAC	USA3	EXTEND S/A 3 EXTEND TIP & SECURE ARM PER V-36032 (NON-HAZARDOUS).	
	118	21	CSAC	CSA9	SECURE S/A 9 PER V-36085 (HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
→ 3 HRS 45' 0"						
	181	22	C1TC	LAS1	HDA EXPLOSIVE RELEASE 1 & 2 POWER MODULES OFF AND VERIFY.	
	121	23	C1TC	CLTC	REQUEST BOSC TO REPORT TO LASE IN ML ROOM 8A TO SUPPORT CLOSING CIRCUIT BREAKERS PER V-31045 (NON-HAZARDOUS).	
	261	24	CLTC	BOSC	REPORT TO LASE IN ML ROOM 8A TO SUPPORT THE CLOSING OF CIRCUIT BREAKERS IN PANEL L-14A (200 FT LEVEL) AND PANELS L-21, L-22, P-16 & P-19 (IN ML BASE).	TCPI
	181	25	C1TC	CSPP	TURN ON EMERGENCY LIGHTING AND HDA FACILITY AC BREAKERS PER V-31045 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	26	C1TC	CHDA	SECURE HDA/SACS PER V-36069 (HAZARDOUS).	
	181	27	C1TC	CWCP	RECYCLE IWS FOR DRY CDDT PER V-36113 (HAZARDOUS).	
	181	28	C1TC	CSAC	SECURE Q-BALL COVER RETRACT SYSTEM PER V-36112 (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	29	C1TC	CLTC	REQUEST PCMU BE RETURNED TO ML ZERO LEVEL BY SUPPORT.	
	262	30	CLTC	BTIS	RETURN PCMU TO ML ZERO LEVEL	TCPI
	121	31	C1TC	CLTC	REQUEST POWER COORDINATOR HAVE 4160 VOLT BREAKERS TURNED OFF AT LOX STORAGE AREA SUBSTATION (A106, A107, A126, A127) (924-1 & 924-2)	
	262	32	CLTC	BTIS	TURN OFF 4160V BREAKERS AT LOX STORAGE AREA SUBSTATION (A106, A107, A126, A127) (924-1 & 924-2).	TCPI
	171	33	C2TC	B2TM	START LOX PUMP INLET PRESSURE CALIBRATION PER V-30029 (M020) TASK 106 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
* 4 HRS 0' 0"	111	1	CLTC	CVTS	VERIFY PREVAILING WINDS DO NOT EXCEED REDLINE VALUES FOR FREE STANDING SV.	TCPI
		1-1			NOTE ---- REDLINE WIND SPEED IS 39 KNOTS PEAK WINDS AT 520 FT ABOVE GROUND LEVEL. IF HIGHER WINDS PREDICTED, DAMPER SWITCHOVER MAY PROCEED ONLY IF BENDING MOMENT ASSESSMENT INDICATES SATISFACTORY CONDITIONS, (LO DIRECTORS CONCURRENCE WITH ASSESSMENT IS REQUIRED,)	
	121	2	CVTS	CLTC	CLEAR TO DISCONNECT AND RETRACT PRIMARY DAMPER.	TCPI
	115	3	C4TC	S4MM	VERIFY MSS PLATFORM MONITORS ON STATION.	
	121	4	CLTC	C1TC	DISCONNECT PRIMARY DAMPER & TILT TSM 3-4 TOWER.	
		4-1			NOTE ---- FOR NEXT 15 MINUTES, CSAD REQUIRES CONTROL OF TV CAMERAS 37 & 39.	
	181	5	C1TC	CSAD	DISCONNECT PRIMARY DAMPER PER V-36086 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	6	C1TC	LTSM	START TSM 3-4 PROTECTIVE TOWER TILT BACK PER V-36039 (HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 4 HRS 15' 0"	181	1	C1TC	LTSM	VERIFY TSM 3-4 PROTECTIVE TOWER RETRACTED TO CLEAR MSS.	
	181	2	C1TC	CSAD	VERIFY PRIMARY DAMPER RETRACTED AND LATCHED.	
	121	3	C1TC	CLTC	PRIMARY DAMPER IS DISCONNECTED & TSM TOWER RETRACTED.	
	121	4	CLTC	C2TC C4TC CUTC	VERIFY READY FOR MSS MATE.	
	111	5	CLTC	CVTS	PRIMARY DAMPER IS DISCONNECTED AND TSM TOWER RETRACTED. READY FOR MSS MATE.	TCPI
	181	6	C1TC	CPDC	SECURE FACILITY AIR STANDBY PANEL PER V-26222 (HAZARDOUS). REPORT WHEN COMPLETE.	
+ 4 HRS 30' 0"		6-1			*****WARNING***** * * THE FACILITY AIR SYSTEM * * HAS BEEN PURGED OF GN2 * * AND IS BACK IN NORMAL * * CONFIGURATION. RESUME * * PREVIOUS HAZARD LEVEL. * * *****	
	121	1	CVTS	CLTC	SC EDS POWER OFF	TCPI
	181	2	C1TC	C1PE	REMOVE STORAGE RACK DOOR BRAKE ANGLES ON ML 100 AND 120 FT LEVELS PER V-24010 (HAZARDOUS) AND V-24011 (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	3	CVTS	CLTC	MSS IS OVER MOUNTS. REPORT WHEN TSM 3-4 TOWER IS ERECTED AND MSS CAN BE LOWERED.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 4 HRS 30' 0"	121	4	CLTC	C1TC	ERECT TSM 3-4 TOWER. REPORT WHEN COMPLETE.	TCPI
	181	5	C1TC	LTSM	ERECT TSM 3-4 TOWER PER V-36039 (HAZARDOUS). REPORT WHEN ERECTED.	
	111	6	CLTC	CVTS	TSM 3-4 TOWER ERECTED AND CLEAR FOR LOWERING MSS ON MOUNTS. NOTIFY CLTC IF MSS MUST BE REPOSITIONED PRIOR TO LOWERING.	
+ 5 HRS 0' 0"	121	1	C1TC	CLTC	S/A 3 AND S/A TIPS 1, 2, 3, 4, 5, 6, 7 & 8 EXTENDED & CLEARED FOR ACCESS.	
	121	2	CLTC	C1TC C2TC C4TC	ALL SERVICE ARMS CLEAR FOR ACCESS, INSTALL UMBILICAL SAFETY LOCKS AND DISCONNECT WITHDRAWAL LANYARDS. REPORT WHEN COMPLETE.	
		2-1		C2TC	*****WARNING***** * * NO S-II WORK WILL BE * * ALLOWED IN THE S/A * * 4 & 5 UMBILICAL AREAS, * * EXCEPT FOR UMBILICAL * * SAFING PIN INSTALLATION, * * UNTIL THE UMBILICAL * * WITHDRAWAL LANYARDS * * HAVE BEEN DISCONNECTED, * * *****	
	181	3	C1TC	C1PE	INSTALL FWD UMBILICAL SAFETY BLOCKS. REPORT WHEN COMPLETE.	
	171	4	C2TC	U2LU	SECURE S/A 5 UMBILICALS PER V-30029 (M020) TASK 57 (HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
* 5 HRS 0' 0"	171	5	C2TC	U2MU U2PF	SECURE S/A 4 UMBILICALS PER V-30029 (M020) TASK 58 (HAZARDOUS). REPORT WHEN COMPLETE.	
	161	6	C4TC	S4MA	INSTALL AFT UMBILICAL SAFETY LOCKS AND REMOVE PNEUMATIC DISCONNECT LINE FROM AFT CARRIER PER V-30539, SECT V, PART 5A (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	7	C4TC	S4MR	COORDINATE WITH S4MA AND SAMPLE PROPELLANT TANKS AT FILL NOZZLE SAMPLE PORTS.	
	161	8	C4TC	S4MF	INSTALL FWD UMBILICAL SAFETY LOCK PER V-30539, SECT V, PART 5A (NON-HAZARDOUS)	
	121	9	C4TC	CLTC	FWD UMBILICAL SAFETY LOCK INSTALLED.	
	121	10	CLTC	CUTC	REMOVE IU DOOR	
	151	11	CUTC	UUVN	REMOVE IU DOOR PER V-34046. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	161	12	C4TC	S4SY	REPORT WHEN S-IVB FWD/IU SNIFFER CHECKS HAVE BEEN COMPLETED.	
	151	13	CUTC	UUPC	MANUALLY ADJUST HIGH PRESSURE REGULATOR AND REDUNDANT REGULATOR FROM 3100 +/- 100 TO 1700 +/- 100 PER V-36038. REPORT WHEN COMPLETE. (NON-HAZARDOUS).	
	151	14	CUTC	UUPC	CLOSE SUPPLY SYSTEM MANUAL VALVE (A12688). REPORT WHEN COMPLETE.	
	121	15	CVTS	CLTC	MSS IS ON MOUNTS READY FOR AUX DAMPER CONNECTION.	TCPI
		15-1			NOTE ---- FOR THE NEXT 15 MINUTES, CSAD REQUIRES CONTROL OF CAMERA 37.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 5 HRS 0' 0"						
	121	16	CLTC	C1TC	CONNECT AUX DAMPER.	
	161	17	C1TC	CSAD	CONNECT AUX DAMPER PER V-36086 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
+ 5 HRS 10' 0"						
	171	1	C2PV	C2TC	PURGE AND VACUUM SYSTEM SECURED	
	151	2	CUTC	CUCP	START ST-124M PURGE PER V-34017 (NON-HAZARDOUS).	
+ 5 HRS 15' 0"						
	121	1	CLTC	C4TC CUTC	REMOVE STAGE POWER. REPORT WHEN COMPLETE.	
	161	2	C4TC	C4ES	REMOVE S-IVB STAGE AND ESE POWER PER V-30539, APPENDIX C (NON-HAZARDOUS).	
	161	3	CUTC	C4TC	VERIFY READY FOR REMOVAL OF IU STAGE POWER	
	151	4	CUTC	CUNP	VERIFY SIMULATED OAT SWITCH OFF AND INDICATION OFF	
	151	5	CUTC	CUNP	REMOVE IU STAGE AND GROUND POWER PER V-21223, REPORT WHEN COMPLETE. (NON-HAZARDOUS).	
	181	6	C1TC	CCLO	START LOX STORAGE TANK SAMPLING AND FILL PER V-25331 (HAZARDOUS) AND V-25329 (HAZARDOUS).	
	261	7	C1TC	BOSC	SUPPORT LOX STORAGE FACILITY SAMPLING (REF LVB-1).	TCPI
	161	8	C4TC	S4MA	START REMOVAL OF S-IVB AFT ACCESS DOOR PER V-30539, SECT V, PART 5C (NON-HAZARDOUS).	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 5 HRS 15' 0"	161	9	C4TC	S4SY	REPORT WHEN S-IVB AFT SNIFFER CHECKS HAVE BEEN COMPLETED	
	121	10	C1TC	CLTC	AUX DAMPER IS CONNECTED.	
	111	11	CLTC	CVTS	AUX DAMPER IS CONNECTED.	TCPI
	121	12	CVTS	CLTC	STANDBY FOR OIS TRANSFER FROM CRAWLER TRANSPORTER TO PAD.	TCPI
+ 5 HRS 30' 0"	111	1	CLTC	CVTS	ECS FLOW RATE INTO THE IU WILL BE DECREASED TO 135 LB/MIN AT THIS TIME	TCPI
	121	2	CLTC	C1TC	PROCEED WITH IU AIR FLOW REDUCTION.	
	181	3	C1TC	CECS	DECREASE IU AIR FLOW TO 135 LB/MIN. REPORT WHEN COMPLETE.	
	151	4	UUVN	CUTC	IU ACCESS DOOR IS REMOVED	
	121	5	CVTS	CLTC	CPSS HAS APPROVED LV ACCESS THROUGH IU DOOR	TCPI
	121	6	CLTC	C4TC CUTC	IU ACCESS DOOR IS REMOVED AND SNIFFER CHECKS ARE COMPLETE.	
	121	7	CLTC	C4TC	INSTALL S-IVB FWD ACCESS KIT	
	161	8	C4TC	S4MF	START INSTALLATION OF S-IVB FWD ACCESS KIT PER V-30539, SECT V, PART 5B (HAZARDOUS).	
	181	9	C1TC	CSAC	VERIFY S/A SYSTEMS SECURED FROM WET CDDT	
	181	10	C1TC	CTS1	VERIFY TSM SAFETY CABLES INSTALLED AND TSM'S SECURED	
	181	11	C1TC	CHCU	SECURE HCU PER V-36079 (NON-HAZARDOUS)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 5 HRS 30' 0"	171	12	U2MU	C2TC	S/A 5 UMBILICAL SECURING COMPLETE. SAFETY PINS HAVE BEEN INSTALLED AND WITHDRAWAL LANYARDS REMOVED. SAFE TO WORK IN S-II FORWARD UMBILICAL AREA.	
	121	13	C2TC	CLTC	S-II FORWARD UMBILICALS HAVE BEEN SAFED	
	121	14	CLTC	C2TC	OPEN FORWARD ACCESS DOOR.	
	171	15	C2TC	U2SE U2SI U2FM U2SY	OPEN FORWARD ACCESS DOOR. U2SY PERFORM SNIFFER CHECKS WHEN DOORS ARE OPEN. REPORT TO C2TC ON CH 171.	
	121	16	C4TC	CLTC	S-IVB AFT ACCESS DOOR IS OPEN AND SNIFFER CHECKS ARE COMPLETE	
	121	17	CVTS	CLTC	CPSS HAS APPROVED ACCESS THROUGH S-IVB AFT DOOR	TCPI
	181	18	C1TC	CSPP	TRANSFER SMDPS TO 23D100 POWER AND SECURE 42D100 POWER PER V-21194, APP G, PART III (NON-HAZARDOUS).	
+ 5 HRS 45' 0"	171	1	U2SE	C2TC	S-II FORWARD ACCESS DOOR IS OPEN AND SNIFFER CHECKS HAVE BEEN ACCOMPLISHED	
	121	2	C2TC	CLTC	S-II FORWARD ACCESS DOOR IS OPEN AND SNIFFER CHECKS HAVE BEEN ACCOMPLISHED	
	121	3	CVTS	CLTC	CPSS HAS APPROVED ACCESS THROUGH S-II FORWARD DOOR	TCPI
	121	4	CVTS	CLTC	MSS OIS CONNECTED TO PAD	TCPI

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+ 5 HRS 55' 0"	171	1	U2MU	C2TC U2PF	S/A 4 UMBILICAL SECURING COMPLETE. SAFETY PINS HAVE BEEN INSTALLED AND WITHDRAWAL LANYARDS REMOVED. SAFE TO WORK IN S-II AFT UMBILICAL AREA.	
	121	2	C2TC	CLTC	S-II AFT UMBILICALS HAVE BEEN SAFED	
	171	3	C2TC	U2PF	START PROPELLANT FILL SECURING OPERATIONS PER V-30029 (M020) TASK 59 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	4	C2TC	C2PM	START LOX & LH2 POST CDDT LEAK CHECKS PER V-25406 (H023) (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	5	C1TC	CLTC	REQUEST BOSC PROVIDE SUPPORT TO RECONNECT PCMU. EMERGENCY ACCESS GATE ON S/A 7 IS CLOSED & LOCKED FOR MSS PLATFORM 3 CLOSING.	
	261	6	CLTC	BOSC	VERIFY READY TO SUPPORT PCMU RECONNECTION. EMERGENCY ACCESS GATE ON S/A 7 IS CLOSED & LOCKED FOR MSS PLATFORM 3 CLOSING.	TCPI
+ 6 HRS 15' 0"	261	1	C2TC	BOSC	S-II WILL BE READY FOR LH2 TANK H2, N2 & O2 CONTENT GHE SAMPLES (2 EACH) ON S/A 5 AND LUT 180 FT LEVEL AND A7-71 LH2 HEAT EXCHANGER H2 AND N2 CONTENT GHE SAMPLES (2 EACH) ON LUT 180 FT LEVEL IN 30 MINUTES.	TCPI
+ 6 HRS 45' 0"	181	1	C1TC	CPDC	VERIFY LLP RAISING COMPLETE.	
	181	2	C1TC	C1PE	START F-1 ENGINE SECURING PER V-34012 (HAZARDOUS). REPORT WHEN COMPLETE.	

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+ 6 HRS 45' 0"	181	3	C1TC	CPDC	RAISE ESP PER V-36070 (HAZARDOUS)	
	181	4	C1TC	LHDA	INSERT HDA SAFETY PINS PER V-36069 (HAZARDOUS), REPORT WHEN COMPLETE.	
	181	5	C1TC	L1IC	START HEAT SHIELD PROTECTIVE COVERS REINSTALLATION PER V-27195 (NON-HAZARDOUS), REPORT WHEN COMPLETE.	
	181	6	C1TC	C1PE	RECONNECT PCMU/FUSU PER V-24327 (HAZARDOUS),	
	171	7	C2SP	C2TC	POST TANKING PURGE PER V-35015, VOL II (HAZARDOUS) IS COMPLETE.	
	171	8	C2TC	C2SP	SECURE GROUND PNEUMATICS PER V-30029 (M020) TASK 56 (NON-HAZARDOUS), REPORT WHEN COMPLETE.	
	181	9	CPDC	C1TC	REQUEST BOSC HAVE CIRCUIT BREAKERS 10, 12 & 14 IN PANEL L-22 ROOM 2A CLOSED	
	261	10	C1TC	BOSC	CLOSE CIRCUIT BREAKERS 10, 12 & 14 IN PANEL L-22 ROOM 2A	TCPI
	171	1	C2SP	C2TC	GROUND PNEUMATICS SECURED	
	121	2	CLTC	C2TC	REMOVE STAGE AND ESE POWER, REPORT WHEN COMPLETE.	
+ 7 HRS 0' 0"	171	3	C2TC	C2NP	PLACE SIM FLT POWER TO OFF	
	171	4	C2TC	C2NP	REMOVE STAGE AND ESE POWER PER V-21103 (B011) (NON-HAZARDOUS),	
	121	5	C2TC	CLTC	S-11 STAGE AND ESE POWER IS SECURED	
	171	6	C2TC	R2SC V2MS B2TM	SECURE STATION SUPPORT	

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+ 7 HRS 0' 0"	171	7	C2TC	U2SI	START INSTALLATION OF S-II FWD ACCESS EQUIPMENT PER V-26507 (G147) TASKS 6 & 9 (NON-HAZARDOUS). REPORT WHEN COMPLETE	
+ 8 HRS 30' 0"	181	1	C1TC	CPDC	VERIFY ESP RAISING COMPLETE.	
	161	2	S4MF	C4TC	FWD ACCESS KIT INSTALLATION IS COMPLETE	
	121	3	C4TC	CLTC	S-IVB FWD ACCESS KIT INSTALLATION IS COMPLETE	
	121	4	CLTC	CUTC	INSTALL IU LIGHTS AND OIS	
	151	5	CUTC	SUVE SUVN	INSTALL IU LIGHTS AND OIS PER V-31062, PART IV. REPORT WHEN COMPLETE. (NON-HAZARDOUS).	
+ 9 HRS 0' 0"	181	1	C1TC	C1PE	VERIFY F-1 ENGINE SECURING COMPLETE PER V-34012 (HAZARDOUS).	
	181	2	C1TC	C1PE	SECURE S-IC PNEUMATICS PER V-24327 (HAZARDOUS).	
	151	3	CUTC	SUVN	REMOVE IU THERMAL ISOLATION BOTTOM SHROUDS PER V-31062 PART 5. REPORT WHEN COMPLETE. (HAZARDOUS)	
	151	4	SUVE	CUTC	IU LIGHTS AND OIS ARE INSTALLED.	
	161	5	C4TC	S4CE	CONNECT S-IVB RERADIATION SYSTEM PER V-30539, SECT V, PART 12 (NON-HAZARDOUS)	
	151	6	CUTC	SUVE	CONNECT IU TM RERADIATION ANTENNA PER V-31062, PART IV. (NON-HAZARDOUS)	

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+ 9 HRS 15' 0"	181	1	C1TC	RDTS	TERMINATE DTS SUPPORT IN BACKUP FIRING ROOM	
+ 9 HRS 30' 0"	181	1	C1PE	C1TC	STAGE PNEUMATICS SECURE AND READY TO SECURE STAGE POWER.	
	181	2	C1TC	C1NE	REMOVE STAGE POWER PER V-21097 (NON-HAZARDOUS).	
	121	3	C1TC	CLTC	S-IC STAGE PWR. REMOVED. COMPUTER SUPPORT NO LONGER REQUIRED.	
	121	4	CLTC	CUTC	SECURE LV ELECT SUPPORT EQUIPMENT PER V-31062, APPENDIX A. REPORT WHEN COMPLETE. (NON-HAZARDOUS).	
		5			*****WARNING***** * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * *****	
	181	6	C1TC	C1PE	OPEN S-IC FWD ACCESS DOOR. S-IC SAFETY ENGINEER PERFORM SNIFFER CHECKS WHEN DOOR IS OPEN AND REPORT TO C1TC ON CH 181.	
+ 9 HRS 35' 0"	121	1	C1TC	CLTC	S-IC FWD ACCESS DOORS REMOVED AND SNIFFER CHECKS ARE COMPLETE	
	121	2	CVTS	CLTC	CPSS HAS APPROVED ACCESS THROUGH S-IC FORWARD DOOR	TCPI
	181	3	C1TC	C1PE C1NE	START INSTALLATION OF S-IC FWD ACCESS AND BULKHEAD PROTECTION EQUIPMENT STAGE LIGHTING PER V-24010 (HAZARDOUS), V-24011 (HAZARDOUS) & V-21035 (NON-HAZARDOUS).	

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+ 9 HRS 45' 0"	121	1	CVTS	CLTC	REDUCE S/A 8 ECS FLOWRATE TO MINIMUM. REPORT WHEN COMPLETE.	TCPI
	121	2	CLTC	C1TC	REDUCE S/A 8 ECS FLOWRATE TO MINIMUM. REPORT WHEN COMPLETE.	
	181	3	C1TC	CECS	ESTABLISH MINIMUM POSSIBLE FLOW FOR SM DUCT AND JUMPER LIMIT SWITCH ON FLOW CONTROL VALVE IF REQUIRED. REPORT WHEN COMPLETE.	
	121	4	CVTS	CLTC	INSTALL S/A 8 ECS "Y". REPORT WHEN COMPLETE.	TCPI
	121	5	CLTC	C1TC	INSTALL S/A 8 ECS "Y". REPORT WHEN COMPLETE.	
	181	6	C1TC	USA8	RECONFIGURE S/A 8 ECS DUCT TO STANDBY CONFIGURATION. REPORT WHEN COMPLETE.	
+10 HRS 0' 0"	171	1	U2SI	C2TC	FORWARD ACCESS EQUIPMENT INSTALLATION IS COMPLETE	
	171	2	C2TC	U2SI	SECURE FORWARD ACCESS DOOR FOR DRY CDDT (ALL FASTENERS). REPORT WHEN COMPLETE.	
	161	3	C2TC	C4TC	S-II READY FOR S-IVB AFT ACCESS KIT INSTALLATION	
	161	4	C4TC	S4MA	INSTALL AFT ACCESS KIT PER V-30539 SECT V, PART 5D (HAZARDOUS).	

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+10 HRS 15' 0"	171	1	U2SI	C2TC	FORWARD ACCESS DOOR SECURED	
	121	2	C2TC	CLTC	S-II SECURED FOR DRY CDDT	
+11 HRS 15' 0"	121	1	CVTS	CLTC	INCREASE S/A 8 ECS FLOW RATE TO 100 LB/MIN. REPORT WHEN COMPLETE.	TCPI
	171	2	CLTC	C1TC	INCREASE S/A 8 ECS FLOW RATE TO 100 LB/MIN. REPORT WHEN COMPLETE.	
	181	3	C1TC	CECS	INCREASE S/A 8 ECS FLOW RATE TO 100 LB/MIN. REPORT WHEN COMPLETE.	
+13 HRS 0' 0"	161	1	S4MA	C4TC	AFT ACCESS KIT INSTALLATION IS COMPLETE	
	151	2	CUTC	SUVM	VERIFY IU THERMAL SHROUD REMOVAL IS COMPLETE.	
		3			--DELETED--	-244-58
	121	4	C2TC	CLTC	REQUEST MSS PLATFORM 1 BE POSITIONED AT STA 1848 FOR S-II INSULATION INSPECTION.	
	171	5	C2TC	U2IE	START INSULATION INSPECTION WHEN MSS PLATFORM 1 AVAILABLE. REPORT WHEN COMPLETE.	
	111	6	CLTC	CVTS	CLEAR TO CLOSE MSS PLATFORMS 1 & 2. POSITION PLATFORM 1 AT STA 1848 FOR S-II INSULATION INSPECTION.	TCPI
	171	7	C2TC	U2SE U2SI	INSPECT THE INTERSTAGE STATION O-RING FRAME ABLATIVE INSULATION FOR DEBONDING AND/OR HAIRLINE CRACKS. REPORT STATUS WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+14 HRS 0' 0"	121	1	CVTS	CLTC	S/C READY FOR IBM SUPPORT OF LRV CABLE CONNECTION.	TCPI
	121	2	CLTC	CUTC	S/C READY FOR LRV CABLE CONNECTION	
	151	3	CUTC	SUVE	CONNECT CABLE 6281W201 TO LRV BATTERY MONITOR BOX J5 (CABLE FROM LV BATTERY MONITOR BOX TO CROSSOVER). REPORT WHEN COMPLETE.	
+14 HRS 40' 0"	151	1	CUTC	BUTM	SETUP TCE GROUND STATION PER V-28072 (NON-HAZARDOUS).	
+15 HRS 0' 0"	121	1	C1TC	CLTC	REQUEST CLOSED LOOP CLEARANCE FOR 450 MHZ FOR DRSCS PREPS (PROTECTION NOT REQUIRED)	
	111	2	CLTC	CVTS	REQUEST CLOSED LOOP CLEARANCE FOR 450 MHZ. (PROTECTION NOT REQUIRED)	TCPI
	121	3	CVTS	CLTC	S/C READY FOR S-IVB DOME ACCESS TO CONNECT GOX CABLE.	TCPI
	121	4	CLTC	C4TC	S/C READY FOR S-IVB DOME ACCESS TO CONNECT GOX CABLE.	
		4-1			--DELETED--	I-244-58
+15 HRS 5' 0"	181	1	C1TC	BRFS	LUT AND LCC GSE POWER ON (IF COMPUTER IS NOT SUPPORTING, C1TC REQUEST MDO 0449 BE ISSUED ON)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+15 HRS 5' 0"	181	2	C1TC	V1MS	PREPARE VAB MEASURING STATION PER V-27098 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	181	3	C1TC	B1TM	PREPARE S-IC TM GSE PER V-28186 (NON-HAZARDOUS).	
	121	4	CLTC	CUTC	START LV ELECT SUPPORT PREPS PER V-31062. APPENDIX B. (NON-HAZARDOUS).	
	121	5	CLTC	CUTC	START ALTERNATE FIRING ROOM ELECTRICAL SUPPORT PREPS PER V-21243, PART IA. (NON-HAZARDOUS).	
+15 HRS 45' 0"	161	1	C4TC C4PP	L4CE C4PP	START S-IVB PREPOWER PREPS PER V-30539, APPENDIX A (NON-HAZARDOUS).	
+16 HRS 0' 0"	181	1	C1TC	CWCP	START IWS PREPS PER V-36113 (HAZARDOUS).	
	181	2	C1TC	C1PE	VERIFY INSTALLATION OF S-IC FWD ACCESS AND BULKHEAD PROTECTION EQUIPMENT COMPLETE OR ADEQUATELY SECURED FOR DRY CDDT.	
	181	3	C1TC	C1PE	CLOSE AND SECURE S-IC FWD ACCESS DOOR	
+16 HRS 5' 0"	181	1	C1TC	BRFS	START DRSCS CHECKS PER V-38000, SECT 14 (NON-HAZARDOUS).	
	121	2	CLTC	BTMC	START TCE PREPS PER V-28009 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+16 HRS 20' 0"	121	1	CUTC	CLTC	SUPPORT PREPS ARE COMPLETE. READY TO APPLY S-IC, S-II AND S-IVB SWITCH POWER	
	121	2	CLTC	C1TC C2TC C4TC	APPLY SWITCH POWER AND VERIFY	
	121	3	CLTC	CUTC	SWITCH POWER IS ON - INITIALIZE DISCRETES	
	151	4	CUTC	RGCC	INITIALIZE DISCRETES PER V-22006, (PROGRAMS NT99 AND NT98). REPORT WHEN SWITCH SCAN IS BEING DISPLAYED, (NON-HAZARDOUS).	
+16 HRS 25' 0"	171	1	C2TC	B2TM	SETUP TCE GROUND STATION PER V-28181 (G125) (NON-HAZARDOUS) AND V-28135 (G050) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	2	C2TC	R2SC	SETUP LCC MEASURING STATION PER V-27154 (G031) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	3	C2TC	V2MS	SETUP VAB MEASURING STATION PER V-27183 (G032) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
+16 HRS 30' 0"	121	1	CUTC	CLTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION	
	121	2	CLTC	C1TC C2TC C4TC CUTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION. REPORT WHEN SATISFACTORY.	

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+16 HRS 30' 0"	151	3	CUTC	CLVN	ML COMPUTER INHIBIT - AUTO	
	151	4	CUTC	CLVN	COMPUTER TEST SWITCH ON AND VERIFY DISCRETE CYCLING	
	151	5	CUTC	CCPM	START REDUNDANT POWER SUPPLY AND APPLY 400 HZ POWER PER V-21222. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	121	6	CLTC	CUTC	SWITCH SCAN IS SATISFACTORY. BRING UP COMPUTER.	
+16 HRS 35' 0"	121	1	CUTC	CLTC	ALTERNATE FIRING ROOM IS SUPPORTING.	
	151	2	CUTC	BGCC	ENTER \$ GO AND REPORT WHEN COMPUTER SUPPORTING	
	121	3	CUTC	CLTC	GROUND COMPUTER IS SUPPORTING	
	188	4	CLTC	ALL	GROUND COMPUTER IS SUPPORTING	
	121	5	BTMC	CLTC	TCE PREPS COMPLETE PER V-28009	
	111	6	CLTC	CVTS	LV APPLYING STAGE POWER	TCPI
	121	7	CLTC	C1TC	APPLY S-IC STAGE POWER. CLEAR TO RUN WAPO	
	181	8	C1TC	B1TM	VERIFY S-IC TM GSE PREPS COMPLETE	
	181	9	C1TC	C1NE	APPLY S-IC STAGE POWER PER V-21038 (NON-HAZARDOUS).	
	181	10	C1TC	C1NE	START FLIGHT CONTROL PREPS PER V-33030 (NON-HAZARDOUS).	

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+16 HRS 40' 0"	181	1	C1TC	B1TM	START S-IC TM DDAS CHECKS PER V-28186 (NON-HAZARDOUS).	
	121	2	C1TC	CLTC	S-IC STAGE POWER IS ON, WAPO IS COMPLETE	
	121	3	CLTC	CUTC	APPLY IU STAGE POWER, CLEAR TO RUN KA01	
	151	4	CUTC	BUTM	VERIFY TCE GROUND STATION SETUP COMPLETE	
	151	5	CUTC	UUPC	VERIFY/CLOSE ST-124M PURGE SUPPLY VALVE A12791. VERIFY SYSTEM CONFIGURED TO PRESSURIZE ST-124M GN2 SPHERE,	
	151	6	CUTC	CUNP	APPLY IU STAGE POWER PER V-21223. REPORT WHEN COMPLETE, (NON-HAZARDOUS)	
+16 HRS 55' 0"	121	1	CUTC	CLTC	IU STAGE POWER IS ON, COOLING IS SUPPORTING	
	151	2	CUTC	LUNW	ST-124M HEATERS FROM STANDBY TO NORMAL	
	151	3	CUTC	CUPC	ST-124M HEATERS ON	
	121	4	CLTC	C2TC	APPLY S-II STAGE POWER. CLEAR TO RUN QAPO	
	171	5	C2TC	R2SC V2MS	VERIFY READY FOR S-II STAGE POWER	
	171	6	C2TC	C2NP	APPLY S-II STAGE AND ESE POWER PER V-21103 (8011) OR QAPO (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	7	C2TC	C2NP	VERIFY VOLTAGE INDICATIONS ON 2D10, 2D20, 2D50 & 2D60 VOLTMETERS	
	171	8	C2TC	C2NP	PLACE SIM FLT POWER TO ENABLE AND VERIFY SIM FLT POWER ENABLED - ON	

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+16 HRS 55' 0"	171	9	C2TC	L2PD	VERIFY S-II (NR & IBM) 400 HZ CIRCUIT BREAKERS CLOSED	

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+17 HRS 0' 0"					START NEW TIME BASE ----- DRY CDDT - APPENDIX F, PART 2 -----	
- 6 HRS 0' 0"	188	1	CVTS	PA	THE COUNTCLOCK WILL BE RESET TO T-6 HOURS 0 MINUTES 0 SECONDS ON MY MARK.	TCPI
	188	2	CVTS	ALL	5-4-3-2-1, "MARK"	TCPI
	181	3	C1TC	RRSC	DRSCS RECORDERS ON	
	151	4	CUTC	SURF	START ANTENNA COUPLER INSTALLATION AND CONFIGURE PER V-28069. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
- 5 HRS 58' 0"	121	1	C2TC	CLTC	S-II STAGE POWER IS ON	
	121	2	CLTC	C4TC	APPLY S-IVB POWER. CLEAR TO REQUEST & EXECUTE XAPS.	
	161	3	C4TC	ALL	S-IVB POWER WILL BE APPLIED PER V-30539, APPENDIX B (NON-HAZARDOUS).	
- 5 HRS 45' 0"	121	1	C4TC	CLTC	S-IVB STAGE POWER IS ON	
	161	2	C4TC	B4TM	START S-IVB RERADIATION SYSTEM POWER ON CHECKS PER V-30539, SECT V PART 12 (NON-HAZARDOUS).	
	171	3	C2TC	B2TM	START PCM/DDAS CHECKS PER V-28144 (R014) TASK 1 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	

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- 5 HRS 45' 0"	181	4	C1TC	CPDC	REMOVE GIMBAL PLATFORMS FROM AROUND ENGINES PER V-36070 (HAZARDOUS) AS REQUIRED BY C1PE. USE TAG LINE TO KEEP SECTIONS FROM FALLING.	
	181	5	C1TC	C1PE	SET UP S-IC STAGE HYDRAULICS PER V-34012 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	6	C1TC	C1PE	SET UP S-IC PNEUMATICS PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	7	C1TC	C1EN	ARM IGNITERS INSTALLED TO ON THEN AUTO. VERIFY HYPERGOLS AND IGNITERS INSTALLED INDICATIONS ON.	
- 5 HRS 30' 0"	181	1	C1TC	BRFS	VERIFY READY FOR RANGE SUPPORT OF DRSCS PREPS	
	121	2	C1TC	CLTC	READY FOR RANGE SUPPORT OF DRSCS PREPS PER RD40001.	
	111	3	CLTC	CVTS	REQUEST RANGE TO SUPPORT DRSCS PREPS ON CH 137 (RD40001)	TCP1
	181	4	C1TC	C1NE	VERIFY FLIGHT CONTROL PREPS COMPLETE	
	121	5	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK ON	
	161	6	C4TC	B4TM	VERIFY S-IVB TM RERADIATION SYSTEM CONNECTED AND RETEST COMPLETE.	
- 5 HRS 10' 0"	121	1	CVTS	CLTC	GMIL BRINGING UP S/V S-BAND & VHF CARRIERS FOR ON STATION CALIBRATION FOLLOWED BY MCC COMMAND VALIDATION AND AIR/GROUND VALIDATION TESTING, VERIFY COMMAND DECODERS ARE OFF.	TCP1

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5 HRS 0' 0"	181	1	C1TC	LP7B	CLOSE X01-162A13-4 CIRCUIT BREAKER AND VERIFY 1D110 EDS POWER ON	
		2			*****WARNING***** * * THE FOLLOWING TWO * SEQUENCES ARE * HAZARDOUS. * *****	
	181	3	C1TC	C1PC	LOW LOX DOME PURGE TO ON.	
	181	4	C1TC	C1PE	TURN ON S-IC HYDRAULIC UNIT AND MAINTAIN 1590 +/- 80 PSIG.	
	181	5	C1TC	R1TM	VERIFY S-IC TM DDAS CHECKS COMPLETE	
	111	6	CLTC	CVTS	VERIFY WEST ELEVATOR 2 LOCKED OUT AT PLATFORM 5 LEVEL AND MSS PLATFORM 2 IS BELOW STATION 2900 TO SUPPORT LONG RANGE THEODOLITE CHECKS.	TCPI
	151	7	CUTC	LUQM	INSTALL TEMPORARY IU DOOR. REPORT WHEN COMPLETE	I-244-58
4 HRS 55' 0"	181	1	C1TC	C1HP	VERIFY S-IC HYDRAULICS ON AND PRESS OK	
	181	2	C1TC	C1PC	LOW LOX DOME PURGE OFF.	
4 HRS 45' 0"	121	1	CVTS	CLTC	GMIL ON STATION, MCC COMMAND VALIDATION, AND AIR/GROUND TESTING IS COMPLETE. GMIL S-BAND & VHF CARRIERS ARE OFF.	TCPI
	121	2	CLTC	BRFS	VERIFY DRSCS/GSE PREPS COMPLETE AND LLRS READY TO CLEAR PAD.	
	121	3	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO START PAD CLEARING OPERATIONS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 45' 0"	111	4	CLTC	CVTS	LV READY TO CLEAR THE CONTROL AREA.	TCPI
	188	5	CVTS	PA	ALL PERSONNEL EXCEPT GSM CLOSEOUT CREW AND SMDPS VALVE CREW CLEAR THE CONTROL AREA.	TCPI
		5-1			*****WARNING***** * * THE PAD WILL BE CLEARED * * TO THE PERIMETER ROAD. * * NO TRAFFIC, EXCEPT FOR * * THE FLIGHT CREW AND * * CLOSEOUT CREW, WILL BE * * ALLOWED ON THE * * FOLLOWING ROADS: * * * 1. THE ROAD BETWEEN * * THE A5 ROADBLOCK * * AND THE PAD * * * 2. THE ROAD BETWEEN * * THE PAD AND CAPE * * ROAD * * * 3. THE ROAD BETWEEN * * THE PAD AND BEACH * * ROAD (FOR PAD B * * ONLY). * * *****	TCPI
	181	6	C1TC	CWCP	VERIFY IWS PREPS COMPLETE PER V-36113 (HAZARDOUS).	
- 4 HRS 16' 0"	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL THAT Q-BALL POWER IS COMING ON IN APPROXIMATELY 5 MINUTES.	TCPI

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4 HRS 11' 0"	121	1	CLTC	CUIP	Q-BALL POWER - ON Q-BALL HEATER POWER - ON	TCPI
		1-1			NOTE ----- Q-BALL POWER SWITCH WILL BE LEFT IN ON POSITION UNTIL T-47 MIN.	
	151	2	CUTC	CUCP	SWITCH TO COOLANT PUMP #2 PER V-34017 (PUMP #2 TO BE OPERATED THROUGHOUT DRY CDDT), REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
3 HRS 50' 0"	121	3	CLTC	RLDE	GIVE CDC/GMT TIME CORRELATION ON EVERY HALF HOUR UNTIL T-0 AND UPON START AND TERMINATION OF HOLDS	
	121	1	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1	
	171	2	C2TC	C2IP	GROUND POWER TO ON	
3 HRS 45' 0"	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO PROCEED WITH THE COUNT	
	151	2	CUTC	VURF	START RF GSE SETUP PER V-28069, REPORT WHEN COMPLETE (NON-HAZARDOUS). DRSCR CLOSED LOOP TEST -----	
	111	3	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 45' 0"	111	4	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING TEST CODE PLUGS.	TCPI
	111	5	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCPI
	121	6	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS.	
	121	7	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - SAFE S&A SWITCH - SAFE	
	121	8	CLTC	BTMC	TM TAPE RECORDER ON	(VARS)
		8-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR TESTS.	(VARS)
	121	9	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	(VARS)
	111	10	CLTC	CVTS	LOCAL CMD CARRIER COMING ON.	TCPI (VARS)
		11			NOTE ----- IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN	
	121	12	CLTC	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-4 HR OPTION)	
	121	13	VARS	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
3 HRS 45' 0"						
	121	14	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE.	
		14-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	15	C1PK	C1DP C2DP C4DP	SYSTEM STATUS SWITCH - OFF	
	121	16	VAR5	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID	***
	121	17	VAR5	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL AND VERIFY	***
	121	18	VAR5	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	***
		18-1		CRSS	*** NOTE LIMITER VOLTAGES RECEIVED.	
	121	19	VAR5	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***
		19-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	20	VAR5	C1DP C2DP C4DP	AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF, SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO	***
	121	21	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND	
	121	22	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	23	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS	
	121	24	SRO	ALL	3-2-1 - MARK	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 HRS 45' 0"	121	25	VAR5	C1DP C2DP C4DP	SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF	***
	121	26	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	27	VAR5	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	***
		27-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		27-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
	121	28	VAR5	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***
		28-1		CRSS	*** NOTE ALL ERW'S NOT CHARGED	
	121	29	VAR5	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	***
	121	30	C1PK	RRSC	VERIFY CUTOFF COMMANDS RECEIVED	
	121	31	C1PK	CLTC	READY FOR SRO PD COMMAND	
	121	32	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	33	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	34	SRO	ALL	3-2-1 - MARK	
	121	35	CLTC	RRSC	RECORDERS - SLOW SPEED	

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3 HRS 45' 0"	121	36	VAR5	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	***
		36-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED	
	121	37	VAR5	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	***
		37-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
	121	38	VAR5	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO AND VERIFY RSCR'S OFF.	***
		38-1		B1RF B2RF B4RF CRSS	*** NOTE RSCR LIMITER VOLTAGE INDICATIONS OFF.	
	121	39	C1PK	RRSC	VERIFY PD COMMANDS RECEIVED	
	121	40	C1PK	C1DP C2DP C4DP	STATUS SYSTEMS - SAFE	
	121	41	C1PK	CLVN	DESTRUCT SYSTEM - OFF AND RETURN DESTRUCT SYSTEM KEY TO CPSS. REPORT WHEN COMPLETE.	
	121	42	VAR5	C1DP C2DP C4DP	VERIFY SAFETY BUS - OFF.	***
	121	43	VAR5	BRFS	SIGNAL GENERATOR SELECTOR - STANDBY	***
	121	44	C1PK	CLTC	VAR5 COMPLETE	
	121	45	CLTC	BTMC	TM TAPE RECORDER OFF AND RELOAD	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
3 HRS 40' 0"	111	1	CLTC	CVTS	RANGE SAFETY COMMAND CHECKS COMPLETE. LOCAL COMMAND CARRIER IS OFF AND DESTRUCT SYSTEM KEY RETURNED TO CPSS.	TCPI
3 HRS 38' 0"	111	1	CLTC	CVTS	LV CRYO LOADING WOULD BE COMPLETE AND NORMAL REPLENISH WOULD BE ESTABLISHED AT THIS TIME.	TCPI
3 HRS 25' 0"	111	1	CLTC	CVTS	LV IS READY FOR CREW INGRESS	TCPI
		2	CLTC		*** NOTE TIME FOR SC GROUND CLOSEOUT CREW TO LEAVE MSS PARKSITE.	
2 HRS 40' 0"		1	CLTC		*** NOTE TIME FOR START OF FLIGHT CREW INGRESS	
		2			*****WARNING***** * * UPON CVTS OR LOM * * ANNOUNCEMENT THAT AN * * EMERGENCY EGRESS IS * * ORDERED, IMMEDIATELY * * START SAFING THE LV PER * * APPENDIX A IF NOT IN * * SAFED CONDITION ALREADY * * *****	

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- 2 HRS 35' 0"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	PREPARE FOR VALL. REPORT WHEN COMPLETE.	
	181	2	C1TC	C1IP	TM MODE SELECT - AUTO	(VALL
	181	3	C1TC	C1IP	TM CALIBRATOR - AUTO	(VALL
	181	4	C1TC	C1IP	TM CAL MODE - AUTO	(VALL
	181	5	C1TC	C1IP	PREFLT LEVELS - AUTO	(VALL
	181	6	C1TC	C1IP	F1 AND P1 RF TRANSMITTER - AUTO	(VALL
	181	7	C1TC	C1PC	LOW LOX DOME PURGE - AUTO	(VALL
	121	8	C1TC	CLTC	S-IC READY FOR VALL	
	171	9	C2TC	C2IP	RF COUPLER - AUTO	(VALL
	171	10	C2TC	C2IP	TM CAL MODE - AUTO	(VALL
	171	11	C2TC	C2IP	PREFLT LEVELS - AUTO	(VALL
	171	12	C2TC	C2IP	FM/FM INFLT - AUTO	(VALL
	171	13	C2TC	C2IP	PCM MODE - AUTO	(VALL
	171	14	C2TC	C2IP	F1, F2 AND P1 RF TRANSMITTER - AUTO	(VALL
	121	15	C2TC	CLTC	S-II READY FOR VALL	
	161	16	C4TC	C4IP	TM MODE SELECT - AUTO.	(VALL
	161	17	C4TC	C4IP	TM CALIBRATE - AUTO	(VALL VATC)
	161	18	C4TC	C4IP	P1 TRANSMITTER - AUTO	(VALL
	121	19	C4TC	CLTC	S-IVB READY FOR VALL	
	151	20	CUTC	CUIP	RF DUMMY LOAD - AUTO	(VALL
	151	21	CUTC	CUIP	F1 TM - AUTO	(VALL

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 35' 0"	151	22	CUTC	CUIP	TM CAL MODE TO INFLT THEN AUTO	(VALL
	151	23	CUTC	CUIP	TM CALIBRATOR - AUTO	(VALL
	151	24	CUTC	CUIP	PREFLT LEVELS - AUTO	(VALL
	151	25	CUTC	CUIP	F1 & P1 RF TRANSMITTER - AUTO	(VALL
	121	26	CUTC	CLTC	IU READY FOR VALL	
- 2 HRS 30' 0"	121	1	CLTC	C1PK	REQUEST AND EXECUTE VALL (LINKING PROGRAM) (DRY CDDT OPTION)	
		1-1		CLTC	NOTE ----	
					WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS TO DO THESE FUNCTIONS MANUALLY. PROGRAMS WILL NORMALLY BE DONE AT THE TIME SHOWN BUT MAY, AFTER COORDINATION ON CH 121, BE CALLED EARLY BY CLES OR DELAYED BY C1PK.	
	121	2	***	CLGK	POWER ON LVDC/LVDA PER V-33033, SECTION I, REPORT WHEN COMPLETE. (KAPW, FT04, FT08, FY35, FT20 & FT23) (NON-HAZARDOUS)	***
	151	3	CUTC	CUCP	PRESSURIZE ST-124M GN2 SPHERE TO 1700 PSI PER V-34017, REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
		3-1			*****CAUTION***** * * ST-124M SUPPLY SPHERE * * WILL BE PRESSURIZED TO * (CONTINUED)	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
2 HRS 30' 0"					* 1700 PSI * * *****CAUTION*****	
2 HRS 0' 0"	121	1	CVTS	CLYC	SC EDS POWER IS COMING ON AT T-1 HR 55' 0"	TCPI
	121	2	CLYC	C1YC C2YC C4YC CUTC	PREP FOR EDS TEST PER V-21096 (NON-HAZARDOUS), REPORT WHEN READY FOR EDS TEST.	(VAED
	171	3	C2YC	C2AE C2EC C2NP	PREP FOR EDS TEST. REPORT WHEN COMPLETE	
	181	4	C1YC	C1NE	VERIFY READY TO SUPPORT EDS TEST.	
1 HRS 55' 0"	121	1	CLYC	ALL	ALL LV PERSONNEL SUPPORTING EDS TEST GO TO CH 223 ACTIVE AND MONITOR CH 121.	
	111	2	CLYC	CVTS	LV READY FOR EDS TEST. REQUEST SCO PERSONNEL SWITCH TO CH 223.	TCPI
	121	3	CLYC	CEDK	GO TO CH 223 AND PERFORM EDS TEST WHEN READY	
1 HRS 52' 0"	111	1	CLYC	CVTS	REQUEST IU CCS ENABLE. REPORT WHEN COMPLETE. (SCDR, PANEL 2 - IU UP TLM SW TO ACCEPT)	TCPI (FT47)
	121	2	CVTS	CLYC	SCO PERSONNEL STANDING BY TO SUPPORT EDS TEST. CCS IS ENABLED.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 51' 0"	121	1	CLGK	CLTC	LVDC/LVDA POWER ON COMPLETE.	
	121	2	***	CEDK	REQUEST & EXECUTE VAED (EDS TEST) PER V-21096 (PROGRAMS VAED, VZ33, FT33, VZEA, VZRE, VZSA). (\$PR1 OPTION) REPORT WHEN PROGRAMS HAVE TERMINATED.	***
		3		C1FR CUEV	NOTE ----- CRSS WILL CONDUCT HOLDFIRE CHECKS WITH RSO & SRO DURING THE NEXT 30 MINUTES. THE RANGE SAFE INDICATION ON THE C1FR PANEL AND BOTH SRO/RSO PROCEED INDICATIONS ON IU EVENTS DISPLAY PANEL WILL CYCLE ON AND OFF DURING THESE CHECKS.	
- 1 HRS 27' 0"	111	1	CLTC	CVTS	Q-BALL SIM COMMANDS & CCS BLOCK WILL BE EXERCISED AT THE COMPLETION OF EDS TEST. REQUEST SCDR & MTPE MONITOR 121	TCPI
	111	2	CLTC	CVTS	VERIFY RANGE CLEARANCE FOR ALL LV RF & TM AND USB STATION READY TO SUPPORT.	TCPI (FT47)
	121	3	CLTC	CUIP	VERIFY RF SILENCE OFF.	(FT47)
	121	4	CLTC	CUIP	CCS TRANSPONDER - ON VERIFY COMMAND DECODER IS OFF	(FT47)
	111	5	CLTC	CVTS	REQUEST CCS S-BAND CARRIER ON, COMMAND DECODER IS OFF.	TCPI (FT47)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
1 HRS 21' 0"						
	121	1	CEDK	CLTC	EDS PROGRAMS HAVE TERMINATED.	(FT47)
	121	2	CEDK	CLTC	EDS TEST COMPLETE	
	111	3	CLTC	CVTS	EDS TEST COMPLETE. REQUEST HFLT REPORT ON CH 121 FOR HOUSTON PREFLIGHT COMMAND CHECKS.	TCPI
	121	4	CLTC	CUEV	REPORT TO CRSS ON CH 137 TO SUPPORT HOLDFIRE CHECKS	
	121	5	CVTS	CLTC	EDS POWER IS OFF. CSM READY FOR Q-BALL CALIBRATION.	TCPI (FT47)
	121	6	CLTC	ECOP	START REAL TIME REDUCTION PROGRAM.	(FT47)
	121	7	CVTS	CLTC	USB/CCS TRANSPONDER IN LOCK. CLEAR TO TURN ON COMMAND DECODER	(FT47) TCPI
	121	8	CLTC	CUIP	COMMAND DECODER - ON	(FT47)
	121	9	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF	(FT47)
	121	10	CLTC	CUNK	ISSUE IU SWITCH SELECTOR CHANNEL 063 (CCS OMNI, SMSIU063).	(FT47)
1 HRS 20' 0"						
	121	1	CLTC	BTMC	TM TAPE RECORDING ON	
	121	2	CLTC	CUPC	TURN ON ST-124M PER V-33011 (NON-HAZARDOUS).	
1 HRS 19' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT47 (PREFLIGHT COMMAND SYSTEM TEST) (HOUSTON) (OPTION SP1).	***
	121	2	CLGK	CLTC	FLIGHT COMPUTER READY FOR COMMANDS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 19' 0"						
	121	3	HFLT	ALL	COMMAND ON MY MARK (GENERAL LOAD 1)	
	121	4	HFLT	ALL	3 - 2 - 1, MARK SINGLE WORD DUMP, LOCATIONS 200 THROUGH 206	
	121	5	CLTC	ETOM	VERIFY AVP, CRP AND SINGLE WORD DUMP	
	121	6	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 2)	
	121	7	HFLT	ALL	3 - 2 - 1, MARK SECTOR DUMP FOR OTU	
	121	8	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP	
	121	9	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 3)	
	121	10	HFLT	ALL	3 - 2 - 1, MARK SECTOR DUMP FOR NAV UPDATE	
	121	11	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP	
	212	12	CLTC	MSTC	READY FOR CCS BLOCK - VERIFY BLOCK	TCPI
	121	13	HFLT	ALL	TERMINATE COMMAND ON MY MARK	(FT47)
	121	14	HFLT	ALL	3 - 2 - 1, MARK	(FT47)
	121	15	CLTC	ETOM	VERIFY AVP ONLY	(FT47)
	121	16	CLTC	HFLT	VERIFY HOUSTON COMMANDS COMPLETE	TCPI
	121	17	CLTC	C1PC	LOW LOX DOME PURGE ON	
	121	18	CLTC	CUFS	START FLIGHT CONTROL SYSTEM PREPS ON CH 123	(KAF2)
	123	19	CUFS	CUSP CUGA	PLACE ALL FCC, CCIS AND EDS/CRG PANEL SWITCHES TO AUTO	(KAF2)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
1 HRS 17' 0"	123	1	***	CLFK	REQUEST & EXECUTE KAF2 (FLIGHT CONTROL PREPS) WITH THE FOLLOWING OPTIONS: PRIMARY OPTION 1 (FCC & GYRO PREPS) SECONDARY OPTION 1 (COMPARATORS RESET)	***
	123	2	CUFS	CUGA CUSP	FCC AND EDS/CRG POWER SWITCHES - ON	
1 HRS 15' 0"	121	1	CLTC	CUIP	C-BAND 1 AND 2 ON C-BAND 1 AND 2 INHIBITS ON	
1 HRS 13' 0"	121	1	CUFS	CLTC	KAF2 COMPLETE	
	121	2	***	CLGK	REQUEST AND EXECUTE FT47 (PREFLIGHT CMD SYSTEM TEST) (HOUSTON) (OPTION \$P3)	***
	121	3	CLGK	CLTC	FT47 COMPLETE	
	121	4	CLTC	ECOP	TERMINATE REAL TIME REDUCTION PROGRAM.	
	111	5	CLTC	CVTS	HOUSTON PREFLIGHT COMMAND SYSTEM TEST COMPLETE. REQUEST GMIL REPORT IU CCS GO/NO-GO TO VURF ON CH 137.	TCPI
	121	6	CLTC	MTPE	VERIFY READY FOR Q-BALL SIM COMMAND	TCPI
	121	7	CLTC	CUIP	GIVE Q-BALL SIM COMMAND FOR 10 SECONDS ON YOUR MARK	TCPI
	121	8	CUIP	ALL	3 - 2 - 1, MARK	TCPI
	111	9	CLTC	CVTS	REQUEST MTPE SUPPLY Q-BALL SIM, COMMAND READING TO VUMS ON CHANNEL 148,	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
1 HRS 12' 0"	121	1	***	CLGK	REQUEST & EXECUTE FT23 (LVDC SECTOR SUM CHECK)	***
1 HRS 10' 0"	121	1	CLTC	CUIP	C-BAND 1 AND INHIBITS - OFF C-BAND 1 INHIBIT - ON	
	121	2	CLTC	VURF	VERIFY C-BAND BEACON 2 READY FOR INTERROGATION.	
	111	3	CLTC	CVTS	READY TO START C-BAND BEACON 2 CHECKS. REPORT GO/NO-GO AND RANGE READOUT TO VURF ON CH 137.	TCPI
1 HRS 6' 0"	121	1	CLTC	BTMC ETMS	VERIFY TM TAPE RECORDING ON	
	121	2	CLTC	CUIP	<u>RF DUMMY LOAD ON</u>	
					F1 TM ON F1 RF ON P1 RF ON	
1 HRS 5' 0"	111	1	CLTC	CVTS	REQUEST GMIL REMOVE CCS S-BAND CARRIER AND MEASURE UNLOCKED FREQUENCY. IU COMMAND SYSTEM IS DISABLED.	TCPI (FT47)
	121	2	CLTC	ETMS	VERIFY CIF READY TO SUPPORT TM CHECKS	
	121	3	CLTC	BTMC	VERIFY LCC TM CHECKOUT EQUIPMENT READY TO SUPPORT TEST	
	111	4	CLTC	CVTS	VERIFY CCS CARRIER ON FOR LAUNCH.	TCPI
	121	5	CLTC	CGIC	START ELECTROMAGNETIC COMPATIBILITY MONITORING	TCPI
	121	6	CLTC	RLDE	ENTER/VERIFY CDC MODE.	
	121	7	CLTC	CUPC	VERIFY ST-124M PREPS COMPLETE AND READY FOR FT06.	(FT06)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
1 HRS 5' 0"						
	121	8	CLGK	CLTC	FT23 COMPLETE	
	121	9	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED OVER CH 121,	***
	121	10	***	C1IP	TM MODE SELECT SWITCH TO ANTENNA.	***
		11	***	C1IP	F1 & P1 RF ON.	***
	121	12	***	C1IP	TM CALIBRATOR ON	***
	121	13	***	C1IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT	***
	121	14	***	C2IP	RF COUPLER TO ANTENNA	***
	121	15	***	C2IP	VERIFY GROUND POWER ON (CAL POWER)	***
	121	16	***	C2IP	F1, F2 & P1 RF ON	***
	121	17	***	C2IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT	***
	121	18	***	C4IP	TM MODE SELECT SWITCH TO ANTENNA	***
	121	19	***	C4IP	P1, ON THEN AUTO	***
	121	20	***	CUIP	RF DUMMY LOAD OFF	***
	121	21	***	CUIP	F1 TM ON	***
		22	***	CUIP	F1 AND P1 RF ON	***
	121	23	***	CUIP	TM CALIBRATOR ON	***
	121	24	***	CUIP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT	***
	121	25	C1PK	CLTC	TELEMETRY TRANSMITTER TURN-ON COMPLETE (DELAY 5 MINUTES MINIMUM FOR TM TRANSMITTER WARM UP)	

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1 HRS 5' 0"	121	26	CLTC	ETMS	START TM PARAMETERS QUICK SCAN CHECK	
1 HRS 4' 0"	121	1	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ).	***
1 HRS 2' 0"	121	1	CUPC	CLTC	FT06 COMPLETE	(GT16
	121	2	***	CUPC	REQUEST & EXECUTE GT16 (AZIMUTH LAYING PROGRAM).	***
59' 0"	121	1	CLTC	CUPS	PREPARE FOR AND START FLIGHT CONTROL SYSTEM TEST ON CH 123. MONITOR CH 121. REPORT WHEN COMPLETE.	(VAFC
	188	2	CLTC	ALL	FOLLOWING PERSONNEL SWITCH TO CHANNEL 123 FOR FLIGHT CONTROL SYSTEM NULL TEST: CIFE CLFK C1FE C4FC CUPS R2SC CUGA C1FC C4FS CUCR V2MS C4HY CUSP C2FC C2FE	(VAFC
	123	3	CUPS	C2FC	ALL CONTROL SWITCHES TO AUTO POSITION EXCEPT AUX PUMP SWITCH IN ENABLE.	(VAFC
	123	4	CUPS	V2MS	HYDRAULIC RECORDERS ON AT 2 MM/SEC.	(VAFC
	123	5	CUPS	C4NP	4D411 POWER ON.	(VAFC
	123	6	CUPS	C4HY	FLIGHT MODE SWITCH TO AUTO	(VAFC
	123	7	CUPS	R4SC	STRIP CHARTS TO FAST	(VAFC VAPX)
57'30"	188	1	CLTC	ALL	VATC WILL START EXECUTING IN 30 SECONDS. FLUCTUATING MEASUREMENTS MAY OCCUR DURING THE NEXT 2 MINUTES.	

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-57'30"		1-1		BGCC	*** NOTE LCC GENERAL MESSAGE NO, 0510 "NO S/S OUTPUT - S-IVB" MAY OCCUR DURING NEXT 2 MINUTES.	
-57' 0"	121	1	CUPC	CLTC	GT16 AND AZIMUTH LAYING COMPLETE	
	121	2	***	CLIK	REQUEST & EXECUTE VATC (TM CAL TEST). REPORT WHEN COMPLETE	***
-55' 0"	121	1	CLIK	CLTC	VATC COMPLETE	
	121	2	CLTC	ETMS	REPORT OUT OF TOLERANCE PARAMETERS TO BLTM ON CH 127 WHEN ANALYSIS IS COMPLETE	
		3			NOTE ---- FT06, FT49, VAFC & FT10 WILL BE EXECUTED CONSECUTIVELY AND NOT NECESSARILY AT THE CDC TIMES SHOWN.	
	121	4	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ)	***
-53'30"	121	1	CLTC	C1PC	VERIFY LOW LOX DOME PURGE ON	
	121	2	CUPC	CLTC	FT06 COMPLETE	
	121	3	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MONITOR PROGRAM)	***

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-52'30"	121	1	CLGK	CLTC	FT49 COMPLETE. FE50 MONITOR PROGRAM IN PROGRESS.	
	121	2	***	C1PC	LOW LOX DOME PURGE ON FOR VAFC	***
	123	3	***	CLFK	REQUEST & EXECUTE VAFC (FLIGHT CONTROL UTILITY PROGRAM). REPORT WHEN COMPLETE. PRIMARY OPTION 1 (NULL TEST) SECONDARY OPTION 1 (S-II STAGE) SECONDARY OPTION 2 (S-IVB STAGE) SECONDARY OPTION 3 (S-IC STAGE)	***
-50' 0"	111	1	CLTC	CVTS	VERIFY C-BAND BEACON 2 READOUTS COMPLETE AND READY FOR C-BAND 1.	TCPI
	121	2	CLTC	CUIP	C-BAND 2 INHIBIT ON THEN OFF C-BAND 1 INHIBIT OFF C-BAND 2 INHIBIT ON	
	111	3	CLTC	CVTS	REQUEST RANGE READOUT OF C-BAND 1. REPORT READOUTS TO VURF ON CHANNEL 137.	TCPI
	111	4	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN AND TCS ARM KEY TO C1SP	TCPI (VAPX)
	121	5	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS.	(VAPX)
	121	6	CLTC	C1SP	OBTAIN TCS ARM KEY FROM CPSS	
-47' 0"	121	1	CUFS	CLTC	VAFC COMPLETE	
	123	2	CUFS	V2MS	HYDRAULIC RECORDERS OFF	
	121	3	CLTC	CUFS	START ATTITUDE COMMAND TEST ON CH 123. REPORT WHEN COMPLETE.	(FT10)
	121	4	CLTC	CLGK	GO TO CH 123 TO SUPPORT ATTITUDE COMMAND TEST	(FT10)
	123	5	***	CLGK	REQUEST FT10 LADDER OUTPUT TEST, AUTO OPTION	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-47' 0"		5-1			NOTE ----- THE FT10 AUTO OPTION WILL DRIVE THE GUIDANCE LADDERS TO +/- 2 DEG PITCH, +/- 2 DEG YAW AND +/- 5 DEG ROLL.	
	123	6	CUFS	CUCR	VERIFY VALVE CURRENTS AND BETA RESPONSE ON ALL ENGINES.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-47' 0"					VAPX PREPS -----	
	121	7	CLTC	BRFS	VERIFY RF SELECT TO STANDBY & REMOTE MONITOR TO SIG GEN 1.	(VAPX)
	121	8	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT POWER TRANSFER AND DRSCR CLOSED LOOP TEST	(VAPX)
	111	9	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED)	TCPI (VAPX)
	111	10	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING TEST CODE PLUGS	TCPI (VARS)
	121	11	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	(VAPX)
	111	12	CLTC	CVTS	LOCAL CMD CARRIER COMING ON.	TCPI (VAPX)
	121	13	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - OFF S&A SWITCH - SAFE	(VAPX)
	121	14	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE.	(VAPX)
		14-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	15	CLTC	C1TC C2TC C4TC CUTC	PREPARE FOR VAPX AND VATS DURING FT10 ON STAGE TC CHANNEL. REPORT WHEN COMPLETE.	
	181	16	C1TC	C1NP	VERIFY INTERNAL AND EXTERNAL BUSES ARE CORRECT FOR POWER TRANSFER.	(VAPX)
	181	17	C1TC	C1NP	VERIFY SIMULATED LAUNCH ON	(VAPX)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-47' 0"						
	181	18	C1TC	C1NP	BATTERY INSTALLED ENABLE TO ON - THEN AUTO	(VAPX)
		18-1		C1NP	*** NOTE S-IC READY FOR POWER TRANSFER ON THEN OFF	
	181	19	C1TC	C1NP	VERIFY POWER TRANSFER SWITCH - AUTO.	
	181	20	C1TC	C1NE R1SC	VERIFY READY FOR POWER TRANSFER	
	121	21	C1TC	CLTC	VAPX PREPS COMPLETE	
	171	22	C2TC	C2NP R2SC	START VAPX PREPS. REPORT WHEN COMPLETE.	
	171	23		C2NP	BATTERY INSTALLED TO AUTO	
	171	24		C2NP	APPLY PM POWER	
	171	25		C2NP	VERIFY MAIN, INSTR, AND RECIRC BUS TRANSFER SWITCHES TO AUTO	
	171	26	C2TC	R2SC C2NP	VERIFY READY FOR VAPX PROGRAM REQUEST	
	161	27	C4TC	C4NP	VERIFY 4D411 POWER - ON	(VAPX)
	161	28	C4TC	C4NP C4PP	VERIFY INTERNAL AND EXTERNAL BUSES ARE CORRECT FOR POWER TRANSFER.	(VAPX)
	161	29	C4TC	C4NP	BATTERY MONITOR TO AUTO	(VAPX)
	161	30	C4TC	C4HY	VERIFY OR POSITION FLIGHT MODE SWITCH TO AUTO	(VAPX)
	161	31	C4TC	C4NP	SIM FLIGHT POWER SWITCH - ENABLE	(VAPX)
	161	32	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP TO OFF THEN AUTO	(VAPX VATS)
	161	32-1		C4IP	*** NOTE TM READY	
	161	33	C4TC	C4EP	VERIFY CHILLDOWN PUMP SWITCHES ARE OFF	

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-47' 0"						
	161	34	C4TC	C4NP C4HY R4EI R4SC	VERIFY READY FOR POWER TRANSFER TEST.	(VAPX
	161	35	C4TC	C4NP	EMERGENCY POWER TRANSFER OFF	(VAPX
	161	36	C4TC	C4NP	POWER TRANSFER SWITCH TO AUTO.	(VAPX
	121	37	C4TC	CLTC	VAPX PREPS COMPLETE	
	151	38	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER	(VAPX
	151	39	CUTC	CUNP	SIMULATION OAT SWITCH ON AND VERIFY INDICATION.	(VAPX
	151	40	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER	(VAPX
	151	41	CUTC	CUNP	POWER TRANSFER TEST TO AUTO	(VAPX
		41-1		CUTC CUNP	*** NOTE IU TO REMAIN ON INTERNAL POWER FOR 3 MINUTES	
	121	42	CUTC	CLTC	VAPX PREPS COMPLETE	

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-47' 0"					VATS PREPS -----	
	181	43	C1TC	C1SP	SEQUENCER POWER AUTO	(VATS
	181	44	C1TC	C1NP	STAGE LOGIC TO AUTO	(VATS
	181	45	C1TC	C1CS	LOX AND FUEL LEVEL SENSORS TO AUTO	(VATS
	181	46	C1TC	C1IP	TM CALIBRATOR ON	(VATS
	181	47	C1TC	C1IP	TM CAL MODE AUTO	(VATS
	181	48	C1TC	C1IP	PREFLIGHT LEVELS AUTO	(VATS
	181	49	C1TC	C1IP	28 VDC RACS POWER AND 400 HZ POWER TO AUTO.	(VATS
	181	50	C1TC	C1PP	POWER SUPPLY COMMIT TO AUTO	(VATS
	121	51	C1TC	CLTC	S-IC READY FOR VATS	
	171	52	C2TC	C2EC C2NP C2RP C2PU	START VATS PREPS. REPORT WHEN COMPLETE.	
	171	53		C2NP	STAGE SELECT TO OFF	(VATS
	171	54		C2RP	LH PREVALVES TO AUTO.	(VATS
	171	55		C2RP	LH PUMPS 1 THROUGH 5 TO AUTO	(VATS
	171	56		C2PU	VERIFY ALL WET SIMS IN AUTO	(VATS
	171	57		C2EC	MAINSTAGE OK'S TO AUTO FOR ALL ENGINES.	(VATS
	171	58		C2NP	RACS POWER TO AUTO	(VATS
	171	59	C2TC	R2SC	RECORD S-II BUS VOLTAGES AND CURRENTS PER TABLE ON PAGE 497 WHILE ON INTERNAL POWER.	
	121	60	C2TC	CLTC	S-II READY FOR VATS AND VAPX	
	121	61	C4TC	CLTC	S-IVB READY FOR VATS	

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-47' 0"	151	62	CUTC	CUCP	VERIFY PUMP PRESSURE SWITCH ACTIVATE-AUTO	(VATS
	151	63	CUTC	CUIP	Q-BALL POWER TO AUTO Q-BALL HEATER POWER TO AUTO	(VATS
		63-1		CUIP	*** NOTE Q-BALL POWER ON	
	151	64	CUTC	CUES	THRUST OK INHIBIT A & B SWITCHES TO AUTO	(VATS
	151	65	CUTC	ALL	ALL PERSONNEL INVOLVED IN POWER TRANSFER AND VATS PREPS RETURN TO CH 121.	
	121	66	CUTC	CLTC	IU READY FOR VATS	
	111	67	CLTC	CVTS	REQUEST RANGE MONITOR C-BAND AND GMIL MONITOR IU CCS DURING POWER TRANSFER TEST.	TCPI (VAPX)
-44' 0"	121	1	CVTS	CLTC	SC EDS POWER IS ON	TCPI
-43' 0"	121	1	CLTC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL/EXTERNAL SECURE STAGE FROM POWER TRANSFER ON STAGE TC CHANNELS	
		1-1		ALL	*** NOTE S-IC & S-II STAY ON INTERNAL POWER FOR 30 SEC; S-IVB FOR 45 SEC; IU FOR 3 MINUTES. REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125	
	161	2	C4TC	R4HY R4EI	STRIP CHARTS TO FAST	(VAPX)

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-42' 0"						
		1		CLTC	*** NOTE TIME FOR ARMING LES	
	123	2	***	CLGK	TERMINATE FT10. REPORT WHEN COMPLETE.	***
	121	3	CUFS	CLTC	FT10 COMPLETE	
		4			NOTE ----	
					IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN	
	121	5	CLTC	C1PK	REQUEST & EXECUTE VAPX (POWER TRANSFER TEST) (T-40 MIN OPTION)	
	121	6	VAPX	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID	***
	121	7	VAPX	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	***
	121	8	VAPX	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED.	***
	121	9	VAPX	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL AND VERIFY	***
	121	10	VAPX	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	***
	121	11	VAPX	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARK
-42' 0"		11-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
		11-2		CUGA CUCR	*** NOTE VAPX WILL TORQUE ROLL GYROS TO +9 DEG/SEC CAUSING S-IC ENGINES TO GIMBAL	
	123	12	VAPX	CUGA	S-IC ATTITUDE RATE COMMAND +9 DEG/SEC ROLL AND HOLD DURING POWER TRANSFER.	***
	161	13	VAPX	C4NP	BATTERY MONITOR ENABLE	***
		14		C4HY	*****CAUTION***** * * MONITOR HYDRAULIC * * SYSTEM TEMPERATURE, * * DO NOT EXCEED 190 DEG * * F. NOTIFY C4TC WHEN * * TEMPERATURE EXCEEDS 180 * * DEG F. * * *****	
	161	15	VAPX	C4HY	FLIGHT MODE ON THEN AUTO POWER TRANSFER TEST -----	***
	121	16	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3"	
	121	17	C1PK	ALL	VAPX WILL TRANSFER STAGES INTERNAL IN 5 SEC.	
	121	18	C1PK	ALL	5-4-3-2-1, MARK	
	121	19	VAPX	C1NP C2NP C4NP CUNP	TRANSFER TO INTERNAL POWER	***
		19-1		C1FR CUDE	*** NOTE IU READY TO LAUNCH MAY CYCLE OFF THEN ON (MAX TIME OF ONE SECOND)	

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-42' 0"		19-2		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		19-3		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	
		19-4		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		19-5		C1NP	*** NOTE SIMULATED LAUNCH POWER IS ON	
		19-6		C1FR	*** NOTE S-IC POWER TRANSFER COMPLETE ON (DEE 0082 ON)	
		19-7		C1NP	*** NOTE BUS 1D121 OFF	
		19-8		C1NP	*** NOTE BUS 1D111 OFF	
		19-9		C1NP	*** NOTE BUS 1D211 OFF	
		19-10		R1SC	*** NOTE RECORD VOLTAGE FOR STAGE BUSSES 1D11 AND 1D21, RECORD VOLTAGE AND CURRENT FOR BUSSES 1D10 & 1D20.	
		19-11		R2SC	*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL: MAIN BATT CURRENT (XM0021-207) ----- MAIN DC BUS VOLTAGE 2D11 (XM0020-207) ----- INSTR BATT CURRENT (XM0024-207) ----- INSTR DC BUS VOLTAGE 2D21 (XM0023-207) ----- RECIRC BUS CURRENT (XM0114-207) ----- RECIRC DC BUS VOLTAGE 2D51 (XM0111-207) ----- IGN DC BUS VOLTAGE 2D61 (XM0125-207) -----	

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-41'30"						
	121	1	C1PK	ALL	S-IC & S-II TRANSFERED EXTERNAL DISPLAYED	
	181	2	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
		2-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		2-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
		2-3		C1NP	*** NOTE BUS 1D121 ON	
		2-4		C1NP	*** NOTE BUS 1D211 ON	
		2-5		C1NP	*** NOTE BUS 1D111 ON	
		2-6		C1NP	*** NOTE SIMULATED LAUNCH POWER IS OFF	
	181	3	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE & 1D10, 1D20 VOLTAGE AND CURRENT WHILE ON INTERNAL.	
	181	4	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	5	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		5-1		C2NP	*** NOTE MAIN, INST & RECIR BUSES EXTERNAL ON	
		5-2		C2NP	*** NOTE POWER TRANSFER COMPLETE OFF	
	171	6	C2TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	7	C2TC	CLTC	S-II POWER TRANSFER TEST IS COMPLETE	
	171	8	C2TC	R2SC	READ OUT RECORDED BUS VOLTAGES TO CLES ON CH 125,	
-41'15"						
		1		C4NP	*** NOTE AFTER 45 SECONDS ON INTERNAL, THE FOLLOWING SUBSEQUENCES WILL OCCUR:	
	161	1-1	VAPX	C4NP	POWER TRANSFER EXTERNAL THEN AUTO.	***

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-41'15"	161	1-2	VAPX	C4NP	BATTERY MONITOR DISABLE THEN AUTO	***
	161	2	C4TC	C4NP	VERIFY POWER TRANSFER INTERNAL/EXTERNAL COMPLETE.	
-40'45"		1		C4HY	*** NOTE 30 SECONDS AFTER POWER TRANSFER EXTERNAL, THE FOLLOWING SUBSEQUENCES WILL OCCUR:	
	161	1-1	VAPX	C4HY	FLIGHT MODE - OFF THEN AUTO	***
	161	2	C4TC	R4SC	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	121	3	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE	
-39' 0"	151	1	CUTC	CUNP	VERIFY IU GROUND POWER ON AND POWER TRANSFER COMPLETE OFF.	
		1-1		CUDE	*** NOTE 0777 & 0779 OFF, 0781 ON.	
	151	2	CUTC	CUNP	POWER TRANSFER TO EXTERNAL	
	151	3	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	4	CUTC	RUBM	READOUT VOLTAGE AND CURRENT TO CLES ON CH 125	
	151	5	CUTC	ALL	ALL STATIONS RETURN TO CH 121	
	121	6	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE	
	121	7	CLTC	ALL	ALL SUPPORTING RECORDERS - SLOW SPEED.	
		7-1		RRSC	*** NOTE DRSCS MEASUREMENTS OK DURING POWER TRANSFER	
	123	8	CUFS	CUGA CUCR	VERIFY ATTITUDE RATE COMMAND UNDISTURBED DURING POWER TRANSFER.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-39' 0"	123	9	CUFS	ALL	ALL FLIGHT CONTROL PERSONNEL GO TO CHANNEL 121.	
	121	10	CUFS	CLTC	FLIGHT CONTROL AND POWER TRANSFER TEST IS COMPLETE.	
-37' 0"	121	1	C1PK	CLTC	VAPX COMPLETE	
	121	2	CLTC	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-40 MIN FRT/CDDT/CD OPTION)	
	121	3	VAR5	C1DP C2DP C4DP	AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF, SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO	***
	121	4	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND	
	121	5	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	6	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS	
	121	7	SRO	ALL	3-2-1 - MARK	
		8	VAR5	C1DP C2DP C4DP	SIMULTANEOUSLY SWITCH EBW'S 1 & 2 TO EXTERNAL THEN AUTO AS SOON AS RSCR'S 1 & 2 CUTOFF INDICATIONS GO OFF	***
	121	9	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	10	VAR5	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	***
		10-1	CRSS BRFS		*** NOTE CUTOFF RECEIVED	

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-37' 0"		10-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
121	11	11	VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	***
		11-1		CRSS	*** NOTE ALL ERW'S NOT CHARGED	
121	12	12	VARs	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	***
121	13		C1PK	RRSC	VERIFY CUTOFF COMMANDS RECEIVED.	
121	14		C1PK	CLTC	READY FOR SRO PD COMMAND	
121	15		CLTC	RRSC	RECORDERS - FAST SPEED	
121	16		CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
121	17		SRO	ALL	3-2-1 - MARK	
121	18		CLTC	RRSC	RECORDERS - SLOW SPEED	
121	19		VARs	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	***
		19-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED	
121	20		VARs	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	***
		20-1		CRSS	*** NOTE ALL ERW'S DID NOT CHARGE	
121	21		C1PK	RRSC	VERIFY PD COMMANDS RECEIVED.	
121	22		C1PK	CLTC	READY FOR RANGE TRANSMITTER ON. REPORT WHEN TURNED ON.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-37' 0"	111	23	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 CARRIER ON. REPORT WHEN TURNED ON.	TCPI
		23-1	CLTC		*** NOTE - DO NOT PROCEED UNTIL TRANSMITTER IS REPORTED ON.	
	121	24	CLTC	C1PK	RANGE TRANSMITTERS ARE ON. ENTER SPR1 TO CONTINUE.	
	121	25	VAR5	BRFS	SIG GEN SELECTOR - STANDBY	***
		25-1		B1RF B2RF B4RF CRSS	*** NOTE ALL LIMITER VOLTAGES RECEIVED.	
-33' 0"	121	1	C1PK	CLTC	VAR5 COMPLETE	
	121	2	CLTC	RLDE	GIVE A DEMAND PRINTOUT ON ALL STAGE PRINTERS. REPORT WHEN COMPLETE.	
	111	3	CLTC	CVTS	DRSCR TEST IS COMPLETE. LOCAL COMMAND CARRIER IS OFF	TCPI
	121	4	C1PK	CLTC	VALL DISPLAYING ZT96/VATS OPTION	
		5	CLTC CLGK BGCC		NOTE ----- PERFORM THE FOLLOWING SUBSEQUENCES ONLY IF THE PREDICTED TIME OF LIFTOFF FALLS OUTSIDE THE LAUNCH WINDOW.	
	121	5-1	CLGK	CLTC	HAVE RCDC RESEQUENCE THE CLOCK TO START COUNTING GRAY CODE FROM --- HRS --- MIN.	(ZT96
	111	5-2	CLTC	CVTS	HOLD COUNT CLOCK FOR GMT RESET	TCPI (ZT96
	121	5-3	CLTC	RCDC	START GMT AT --- HRS --- MIN. REPORT WHEN COMPLETE.	(ZT96

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-33' 0"	121	5-4	CLTC	C1TC C2TC C4TC CUTC	STOP ALL SWITCH ACTION UNTIL ZT96 IS COMPLETE.	(ZT96
	121	5-5	CLTC	BGCC	PERFORM \$ULRR AND \$UMRR	(ZT96
	121	5-6	BGCC	CLTC	\$ULRR AND \$UMRR COMPLETE	(ZT96
	121	5-7	CLTC	C1PK	SELECT ZT96 RUN OPTION (IF VALL EXECUTING)	
	121	5-8	***	BGCC	REQUEST & EXECUTE ZT96, OPTION D. REPORT WHEN COMPLETE.	***
	121	5-9	CLTC	BGCC	(IF VALL NOT EXECUTING) ENTER \$TPROFT10, FOLLOWED IMMEDIATELY BY \$CNCLFT10. REPORT WHEN COMPLETE.	
	111 121	5-10	CLTC	CVTS	RESUME THE COUNT	TCPI
-30' 0"	153	1	RLDE		ESTABLISH COMMUNICATION WITH HOUSTON VIA CH153 AND GIVE HOUSTON CDC/GMT TIME CORRELATION.	
		1-1			*** NOTE IF ANY HOLD IS GREATER THAN 10 MINUTES GIVE ANOTHER COMM CHECK.	
-27' 0"		1		CLFK C4PK C4NK C2PK C2NK	TERMINATE DISPLAY DESCRIPTIONS ON CONSOLE PAGE A. DO NOT RECALL WHILE VATS IS EXECUTING.	(VATS

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-27' 0"	121	2		CUPC	NOTE ----	
					THE FOLLOWING SEQUENCE WILL BE PERFORMED ONLY IF THE SANDERS DISPLAY CONSOLES ARE SUPPORTING.	
		3		CUPC	EXECUTE GE01 TO AGREE WITH PLOT AZIMUTH.	
		3-1		CUPC	*** NOTE IF CUMULATIVE HOLDS OCCUR PRIOR TO EXECUTION OF FT42 THAT WOULD CAUSE A FLIGHT AZIMUTH CHANGE IN EXCESS OF 5 DEG, CUPC ENTER \$FUNCGE01/005 AND THE AZIMUTH UPDATE.	
		4	CLTC	CRSS	VERIFY PROCEED ON & BYPASS IS OFF	
-26' 0"	121	4-1		C1FR	*** NOTE RANGE SAFE ON	
		4-2		CUEV	*** NOTE BOTH SRO/RSO PROCEED INDICATIONS ON	
		1	CLTC	C1PK	REQUEST & EXECUTE VATS PR2/PR5 OPTION (TERMINAL SEQUENCE PROGRAM)	
		1-1		ALL	NOTE ----	
					WHEN LINKING PROGRAMS ARE UTILIZED, SEQUENCES WITH THREE ASTERISKS IN THE COMMAND STA AND REMARKS COLUMNS WILL BE DONE AUTOMATICALLY BY THE LINKING PROGRAM. IF THE LINKING PROGRAM IS NOT UTILIZED, THE TEST CONDUCTOR FOR THE INDICATED COMM CH WILL, AT THE APPROPRIATE TIME, REQUEST THE OPERATORS TO DO THE FUNCTIONS MANUALLY.	
					DURING VATS, IF A TIME CRITICAL EVENT DOES NOT OCCUR WITHIN 10 SECONDS AFTER THE EXPECTED TIME, THE OPERATORS INDICATED WILL DO THE FUNCTIONS MANUALLY AND REPORT THIS ACTION.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-25' 0"	121	1	CVTS	CLTC	RANGE INTERROGATION OF C-BAND BEACON 1 IS COMPLETE, VERIFY C-BAND BEACON 2 IS COMING ON,	TCPI
	121	2	CLTC	GUIP	C-BAND BEACON 1 INHIBIT - ON C-BAND BEACON 1 & 2 INHIBIT - OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22' 0"					***** * NOTE * * ---- * * IF RECYCLE IS NECESSARY, * * THE COUNTDOWN WILL BE * * PICKED UP AT THIS POINT. * * * *****	
-20' 30"	121	1	CLTC	ALL	VAMC WILL START EXECUTING AT 19'55". FLUCTUATING MEASUREMENTS MAY OCCUR DURING NEXT 2 MINUTES	
-20' 0"	181	1	C1TC	C1PC	VERIFY/ACCOMPLISH LOW LOX DOME PURGE ON	
-19' 55"	121	1	***	CLIK	REQUEST & EXECUTE VAMC (MEAS SYSTEM RAPID CALIBRATION)	***
-19' 0"	121	1	CLIK	CLTC	VAMC COMPLETE	
		1-1		C4IP	*** NOTE TM READY	
	121	2	CLTC	C1IP	400 HZ CAL POWER AND LOX & FUEL RACS POWER OFF	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18' 0"	121	1	CLTC	ECOP	VERIFY CIF READY TO SUPPORT GUIDANCE REAL TIME PROGRAM.	
	121	2	***	CLGK	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ), REPORT WHEN COMPLETE.	***
-16' 20"	121	1	CLGK	CLTC	FT06 COMPLETE.	
		2			NOTE ----	
					IF A TEST IS TO BE PERFORMED MANUALLY, THE SEQUENCES WITH THE AUTO PROGRAM IVAR IN THE COMMAND STATION COLUMN WILL BE COMMANDED BY THE TEST CONDUCTOR ASSOCIATED WITH THE OIS COMM CH SHOWN.	
	121	3	***	CLFK	REQUEST & EXECUTE VAAR (S-IC ATTITUDE RATE COMMAND TEST)	***
	121	4	VAAR	CUSP	VERIFY CONTROL COMPUTER IN S-IC BURN MODE.	***
	121	5	VAAR	CUGA	ATTITUDE RATE COMMANDS - PLUS 1,5 DEG/SEC PITCH AND YAW, AND PLUS 7 DEG/SEC ROLL.	***
-16' 0"	181	1	C1TC	C1SP	CUTOFF RESET - ON MOMENTARILY.	
		1-1		C1FR	*** NOTE PROP DEPLETION FAILURE REMAINS ON	
	181	2	C1TC	C1EN	ARM IGNITORS INSTALLED - ON THEN AUTO, VERIFY HYPERGOL AND IGNITORS INSTALLED INDICATIONS REMAIN ON.	

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-15' 0"	121	1	CLFK	CLTC	VAAR COMPLETE	
-14' 0"	121	1	CLTC	ECOP	START GUIDANCE REDUCTION PROGRAM.	(FT42
	181	2	***	C1NP	STAGE LOGIC - RESET	***
		2-1		C1NP	*** NOTE STAGE LOGIC ZERO.	
	121	3	***	C1SP	SEQUENCER POWER ON.	***
		3-1		C1SP	*** NOTE ALL VOLTAGES NORMAL.	
		3-2		C1SP	*** NOTE SEQUENCER RESET.	
	121	4	***	CLFK	REQUEST & EXECUTE KAF3 (THRUST VECTOR READ).	***
-12'58"	121	1	CLFK	CLTC	KAF3 COMPLETE	
-12'25"	121	1	***	CLGK	REQUEST & EXECUTE FT42 (PREPARE TO LAUNCH)	***
	121	2	CLTC	CLGK	READOUT LV FIRING AZIMUTH ON CH 111 WHEN READY	
-12' 0"		1	RLDE		SELECT EST AND ENTER, THEN CDC & ENTER	
		1-1		RLDE	*** NOTE IF HOLD OCCURS, GIVE ANOTHER CDC/GMT TIME CORRELATION TO HOUSTON	
	153	2	RLDE	HFLT	T- ---- OCCURRED AT GMT ----.	
	153	3		HFLT	VERIFY RECEIPT OF TIME CHECK	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12' 0"		3-1		C2NP	*** NOTE RESET FOR FIRING COMMAND ON.	
-10' 0"	121	1	CLGK	CLTC	FT42 COMPLETE AND LVDC IN PREPARE TO LAUNCH MODE.	
	111	2	CLGK	CVTS HFLT SRO	LV FIRING AZIMUTH IS ---- DEG ---- MIN ---- SEC.	TCPI
		2-1		CLGK	*** NOTE READ OUT NEW FIRING AZIMUTH FOLLOWING ANY HOLDS	
8' 0"		1		C1FC	*** NOTE ENGINES IN NULL POSITION.	
		2		C1HP	*** NOTE HYDRAULIC PRESSURE 1590 +/- 80 PSIA	
	121	3	CLTC	ETOM	VERIFY GUIDANCE TM SATISFACTORY	
6'30"	121	1	CLTC	CUES	EDS MODE TO LAUNCH.	
		1-1		C1FR CUES	*** NOTE EDS READY.	
	121	2	CLTC	C1NP C2NP CUNP	INHIBIT SWITCH SELECTOR AND RESET COUNTERS.	
6'15"	151	1	***	CUCP	PUMP PRESSURE SWITCH ACTIVATE ON	***
		1-1		CUCP	*** NOTE PUMP PRESSURE ACTIVATE INDICATION ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6'15"	151	2	***	CUIP	Q-BALL HEATER POWER OFF	***
- 6' 0"	151	1	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - ON (SENSE CONTROL PANEL BITS 21 & 22).	
- 5'30"	121	1	CLTC	C1DP C2DP C4DP	SAFE & ARM TO ARM FOR 2 SECONDS THEN AUTO	
		1-1		CRSS	*** NOTE ALL S&A ARM INDICATORS ON.	
		1-2		C1FR	*** NOTE ORDNANCE PREP COMPLETE.	
		1-3		C2TC	*** NOTE PD SYSTEM READY.	
		1-4		C4TC	*** NOTE PD SYSTEM READY.	
	121	2	CLTC	C1NP	POWER FUNCTION SELECTOR - LAUNCH.	
		2-1		C1NP	*** NOTE LAUNCH BUS 1D161 ON AND PRELAUNCH BUS 1D151 OFF	
		2-2		C1NP	*** NOTE BATT #1 & #2 ON.	
		2-3		C1FR	*** NOTE HYPERGOLS INSTALLED - ON.	
	121	3	CLTC	C1NP	VERIFY ALL STAGES READY FOR POWER TRANSFER ON.	
		3-1		C1FR	*** NOTE IU AND SC READY FOR LAUNCH.	
- 4'45"	161	1	C4TC	ALL	ALL S-IVB PERSONNEL RETURN TO 121.	
	121	2	C4TC	CLTC	TIME FOR S-IVB CHILLDOWN COMPLETE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
4'37"	151	1	CUTC	ALL	ALL IBM PERSONNEL RETURN TO CH 121	
4'30"	121	1	CLTC	C1SP	ARM TCS.	
		1-1		C1FR	*** NOTE TCS READY.	
		1-2		C1FR	*** NOTE IGNITION SOURCE VOLTAGE OK.	
	121	2	CLTC	CUSW	LVDA/ESE TO LVDA.	
4'10"	121	1	***	CUES	THRUST OK INHIBIT A & B SWITCHES TO OFF	***
		1-1			*** NOTE LV ENGINE 1 THROUGH 5 LIGHTS COME ON IN SC	TCPI
4' 0"	121	1	CVTS	CLTC	CLEARED FOR LAUNCH.	TCPI
	188	2	CLTC	ALL	ALL LV STATIONS MONITOR CHANNEL 121	

	111 121	3	CVTS	ALL	COUNT TIME ANNOUNCEMENTS ----- -3'30" TO -0'40" EVERY 10 SECONDS -0'40" TO -0'15" EVERY 5 SECONDS -0'11" TO LO EVERY 1 SECOND *****	TCPI
					NOTE ----- ALL LV SYSTEMS WILL BE HELD AT THIS POINT UNTIL THE SPACECRAFT HAS REACHED T-0.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 0' 0"					APPENDIX F, PART 3 ----- LV SECURING FROM DRY CDDT -----	
	121	1	CVTS	CLTC	YOU ARE CLEARED TO SAFE THE LAUNCH VEHICLE.	TCPI
	111	2	CLTC	CVTS	RESET CDC TO T+0 AND START COUNT UP	TCPI
	188	3	CLTC	ALL	ALL PERSONNEL REMAIN ON CHANNEL 121 FOR LV SECURING.	
	121	4	CVTS	CLTC	SC EDS POWER IS OFF	TCPI
+ 0' 0"	121	1	CLTC	C1DP C2DP C4DP	SAFE AND ARM - SAFE	
	121	2	CLTC	C1SP	TCS TO SAFE AND SEQUENCER POWER TO OFF THEN AUTO.	
	121	3	CLTC	CUSW	LVDA/ESE TO ESF	
	121	4	CLTC	C1NP	POWER FUNCTION SELECTOR - PRELAUNCH	
	121	5	CLTC	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON.	
	121	6	CLTC	C1SP	GIVE CUTOFF RESET	
		6-1		C1SP	*** NOTE TCS ARM - OFF	
	121	7	CLTC	CUFC	VERIFY FLIGHT CONTROL SYSTEM IN SAFE CONFIGURATION FOR LADDER DRIFT	
	121	8	CLTC	C1HP	SECURE S-IC STAGE HYDRAULICS PER V-34012 (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	9	CLTC	C1PC	LOW LOX DOME PURGE OFF WHEN HYDRAULICS SECURE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 0' 0"						
	121	10	CLTC	CUSP	FLIGHT CONTROL COMPUTER POWER SWITCH - OFF	
	121	11	CLTC	CUGA	CONTROL EDS RATE GYRO POWER SWITCH - OFF	
	121	12	CLTC	CLGK	REQUEST & EXECUTE FT37 (REPEATABLE SIM FLIGHT) AND FT23 (SECTOR SUM CHECKS), REPORT WHEN COMPLETE.	
	151	13	CUTC	CUNP	SIMULATION OAT SWITCH OFF AND VERIFY INDICATION OFF	
	151	14	CUTC	CLGK	TERMINATE GE01	
	151	15	CUTC	CLGK	TERMINATE FE50.	
	151	16	CUTC	CUPC	POWER DOWN ST-124M PER V-33011 (NON-HAZARDOUS).	
	151	17	CUTC	CUCP	PUMP PRESSURE SWITCH ACTIVATE OFF THEN AUTO	
	151	18	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22).	
	151	19	CUTC	CUES	MODE SWITCH TO MONITOR POSITION, THRUST OK SWITCHES A & B TO INHIBIT	
	161	20	C4TC	C4NP	SIM FLIGHT POWER TO DISABLE	
	161	21	C4TC	C4NP	4D411 POWER OFF	
	111	22	CLTC	CVTS	LV IS READY FOR FLIGHT CREW EGRESS.	TCPI
	121	23	CLTC	CUIP	COMMAND DECODER POWER - OFF	
	121	24	CLTC	C1IP C2IP C4IP CUIP	ALL TM RF ASSEMBLIES OFF AND MARK	
	121	25	C1IP	ALL	F-1, MARK P-1, MARK	
	121	26	C2IP	ALL	F-1, MARK F-2, MARK P-1, MARK	

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+ 0' 0"						
	121	27	C4IP	ALL	P-1, MARK	
	121	28	CUIP	ALL	F-1, MARK P-1, MARK	
	121	29	CLTC	CUIP	TM CALIBRATOR POWER OFF.	
	121	30	CLTC	CUIP	C-BAND BEACON 1 & 2 - OFF	
	121	31	CLTC	CUIP	CCS TRANSPONDER - OFF	
	121	32	CLTC	CUIP	Q-BALL POWER - OFF Q-BALL HEATER POWER - OFF	TCPI
	121	33	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 - EXTERNAL THEN AUTO	
	121	34	CLTC	CLVN	DESTRUCT SYSTEM OFF AND DELIVER KEY TO CPSS, REPORT WHEN COMPLETE.	
	121	35	CLTC	C1DP C2DP C4DP	VERIFY SAFETY BUS - OFF	
	121	36	CLTC	C1DP C2DP C4DP	STATUS SYSTEMS - SAFE	
	121	37	CLTC	ETMS BTMC	TM TAPE RECORDING OFF.	
	121	38	CLTC	C1SP	RETURN TERMINAL COUNTDOWN SEQUENCER KEY TO CPSS.	
	181	39	C1TC	BRFS	SECURE DRSCS/GSE PER V-38000 (NON-HAZARDOUS).	
	151	40	CUTC	VURF	SECURE RF GSE PER V-28069 (NON-HAZARDOUS).	
	111	40-1	CLTC	CVTS	REQUEST RANGE COMMAND TRANSMITTER CARRIER OFF.	TCPI
	111	41	CLTC	CVTS	TCS & DESTRUCT SYSTEM ENABLE KEYS HAVE BEEN RETURNED TO CPSS. ALL LV RF SYSTEMS ARE OFF. COMMAND DECODER IS OFF	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 0' 0"	111	42	CLTC	CVTS	MSS ELEVATOR 2 (WEST) AND PLATFORM 2 ARE RELEASED FOR NORMAL SERVICE.	TCPI
+20' 0"	121	1	CLTC	CLGK	VERIFY FT37 & FT23 COMPLETE.	
	121	2	CLTC	CLGK	POWER OFF LVDC/DA PER V-33033, SEC IV. REPORT WHEN COMPLETE (NON-HAZARDOUS).	
	121	3	CLTC	CUTC	TERMINATE ALTERNATE FIRING ROOM SUPPORT.	
	121	4	CLTC	ECOP	TERMINATE REAL TIME GUIDANCE REDUCTION.	
+45' 0"	121	1	CVTS	CLTC	FLIGHT CREW EGRESS IS COMPLETE. LV IS CLEAR TO COMPLETE SECURING OPERATIONS. THE SPECIAL CONTROL AREA IS OPEN FOR ACCESS BY REQUIRED PERSONNEL.	TCPI
	121	2	CLTC	C1TC C2TC C4TC CUTC	FLIGHT CREW EGRESS IS COMPLETE, THE SPECIAL CONTROL AREA IS OPEN FOR ACCESS BY REQUIRED PERSONNEL. COMPLETE SECURING OPERATIONS.	
	111	3	CLTC	CVTS	REQUEST PEWE PERFORM SNIFFER CHECKS IN IU/S-IVB FWD, S-IVB AFT, S-II FWD, S-II AFT & S-IC FWD AREAS WHEN ACCESS DOORS ARE OPENED.	TCPI
		3-1			*****WARNING***** * * ACCESS TO THE LV * * INTERIOR WILL NOT BE * * PERMITTED UNTIL SAFETY * * HAS VERIFIED THE OXYGEN * * LEVEL IS AT LEAST 18 * * PERCENT, * * *****	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+45' 0"						
	181	4	C1TC	CWCP	SECURE IWS PER V-36113. (HAZARDOUS)	
	181	5	C1TC	C1PE	SECURE S-IC PNEUMATICS PER V-24327 (HAZARDOUS). REPORT WHEN COMPLETE.	
	181	6	C1TC	CPDC	INSTALL GIMBAL PLATFORMS AROUND ENGINES PER V-36070 (HAZARDOUS).	
	161	7	C4TC	S4PC	HAVE AFT ACCESS DOOR OPENED AND STANDBY FOR SNIFFER CHECKS.	
+ 1 HRS 15' 0"						
	121	1	CLTC	CUTC	REMOVE IU DOOR.	
	151	2	CUTC	LUQM	REMOVE IU TEMPORARY DOOR. REPORT WHEN COMPLETE.	
	121	3	CLTC	C2TC	OPEN FWD AND AFT DOORS.	
	171	4	C2TC	U2AM U2FM U2SE U2SY	OPEN FWD AND AFT ACCESS DOORS, U2SY PERFORM SNIFFER CHECKS WHEN DOORS ARE OPEN & REPORT TO C2TC ON CH 171	
	161	5	C4TC	S4SY	VERIFY WHEN S-IVB FWD & AFT SNIFFER CHECKS HAVE BEEN COMPLETED.	
		6			*****WARNING***** * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * *****	
	181	7	C1TC	C1PE	OPEN S-IC FWD ACCESS DOOR. S-IC SAFETY ENGINEER PERFORM SNIFFER CHECKS WHEN DOOR IS OPEN. REPORT RESULTS TO C1TC ON CH 181.	
	121	8	CLTC	C1TC C2TC C4TC CUTC	REMOVE STAGE AND GROUND POWER. REPORT WHEN COMPLETE.	

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+ 1 HRS 15' 0"	181	9	C1TC	C1NE	REMOVE S-IC STAGE POWER PER V-21097 (NON-HAZARDOUS).	
	181	10	C1TC	RRSC	RECORDERS OFF	
	121	11	C1TC	CLTC	S-IC STAGE POWER IS OFF	
	161	12	C4TC	C4ES	REMOVE STAGE AND ESE POWER PER V-30539, APP C (NON-HAZARDOUS).	
	161	13	CUTC	C4TC	VERIFY READY FOR IU STAGE POWER REMOVAL.	
	151	14	CUTC	CUPC	PLATFORM HEATER SWITCH - OFF.	
	151	15	CUTC	CUNP	VERIFY SIMULATED OAT SWITCH OFF AND INDICATION OFF	
	151	16	CUTC	CUNP	SECURE IU STAGE AND GROUND POWER PER V-21223, REPORT WHEN COMPLETE (NON-HAZARDOUS).	
	171	17	C2TC	C2NP	SECURE S-II STAGE AND ESE POWER PER V-21103 (B011) (NON-HAZARDOUS), REPORT WHEN COMPLETE.	
	121	18	C2TC	CLTC	S-II STAGE AND ESE POWER IS SECURED.	
+ 1 HRS 30' 0"	171	19	C2TC	B2TM R2SC V2MS	SECURE STATION SUPPORT	
	181	1	C1TC	C1PE	VERIFY S-IC FWD ACCESS DOOR IS OPEN AND SNIFFER CHECKS ACCOMPLISHED.	
	121	2	C1TC	CLTC	S-IC FWD ACCESS DOOR IS REMOVED AND SNIFFER CHECKS ARE COMPLETE.	
	121	3	CVTS	CLTC	CPSS HAS APPROVED ACCESS THROUGH S-IC FORWARD DOOR.	TCPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 1 HRS 30' 0"	181	4	C1TC	C1PE	COMPLETE S-IC FWD ACCESS & BULKHEAD PROTECTIVE EQUIPMENT INSTALLATION PER V-24010 (HAZARDOUS) & V-24011 (HAZARDOUS).	
+ 2 HRS 15' 0"	171	1	U2SE	C2TC	S-II FWD AND AFT ACCESS DOORS ARE OPEN & SNIFFER CHECKS HAVE BEEN ACCOMPLISHED.	
+ 2 HRS 30' 0"	121	1	CLTC	C2TC C4TC CUTC	VERIFY ACCESS DOORS REMOVED AND SNIFFER CHECKS COMPLETE (S-II FWD, S-II AFT, S-IVB AFT & IU).	
	121	2	CVTS	CLTC	CPSS HAS APPROVED LV ACCESS THROUGH S-II FWD, S-II AFT, S-IVB AFT & IU DOORS.	TCPI
	121	3	C1TC	C2TC	S-IC READY FOR S-II AFT ACCESS KIT INSTALLATION	
	171	4	C2TC	U2SI	INSTALL S-II AFT ACCESS EQUIPMENT PER V-26507 (G147) TASKS 6 & 9 (NON-HAZARDOUS). REPORT WHEN BATTERY ACCESS REQUIREMENTS ARE COMPLETE.	
	181	5	C1TC	C1PE	VERIFY ACCESS AND BULKHEAD PROTECTION EQUIPMENT IS INSTALLED FOR S&A OPS	
	181	6	C1TC	C1PE C1NE	VERIFY READY FOR S&A OPERATIONS.	
	121	7	CLTC	C1TC C2TC C4TC	VERIFY READY TO START S&A OPERATIONS.	
	121	8	CLTC	C1TC C2TC C4TC	REMOVE S&A DEVICES AND RECONFIGURE TO PRECOUNT CONDITIONS.	

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+ 2 HRS 30' 0"	181	9	C1TC	C1NE C1PE	DISCONNECT PD DETONATORS AND CDF AND CONNECT PD PULSE SENSORS PER V-21008 (HAZARDOUS) & V-29003 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	10	C2TC	U2HO	DISCONNECT PD DETONATORS/CDF AND RECONFIGURE S & A DEVICE PER V-29050 (K010) (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	11	C2TC	U2EO	REINSTALL PD PULSE SENSORS AND CONNECT CABLES PER V-30029 (M020) TASK 87 (HAZARDOUS). REPORT WHEN COMPLETE.	
	161	12	C4TC	C4SM	DISCONNECT AND REMOVE S&A DEVICE. RECONFIGURE TO PULSE SENSORS PER V-30539, SECT V, PART 6A, 6B & 6C (HAZARDOUS). REPORT WHEN COMPLETE.	
+ 3 HRS 15' 0"	121	1	CLTC	C1TC C2TC C4TC	VERIFY S&A OPERATION COMPLETE.	
	161	2	C4TC	S4OR	REMOVE INERT DETONATORS PER V-30539, SECT V, PART 6D (HAZARDOUS).	
+ 4 HRS 30' 0"	121	1	CVTS	CLTC	VERIFY READY FOR S/A 9 EC DISCONNECT FROM SC IN 30 MINUTES.	TCPI
	181	2	CLTC	C1TC	VERIFY S-IC ACCESS & BULKHEAD EQUIPMENT INSTALLED FOR S-II AFT PLATFORM INSTALLATION.	
	171	3	C2TC	U2SI	INSTALL S-II AFT ACCESS PLATFORM PER V-26507 (G147) TASK 4 (NON-HAZARDOUS).	

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+ 4 HRS 30' 0"						
	171	4	C2TC	U2AN	INSTALL STAGE LIGHTS, OIS & EMERGENCY LIGHTS PER V-30575 (2037) (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	5	C2TC	U2MS	INSTALL S-II STAGE INSTRUMENTATION PROTECTIVE COVERS AND NON-FLIGHT HARDWARE TAGS PER V-27208 (X044) TASK 6-3 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	6	C4TC	S4OR	VERIFY INERT DETONATOR REMOVAL COMPLETE.	
	161	7	C4TC	S4HY	START HYDRAULIC SYSTEM SECURING PER V-30539, SECT V, PART 8 (NON-HAZARDOUS).	
	161	8	C4TC	S4CE	SECURE BATTERY BYPASS SYSTEM PER V-30539, SECT V, PART 15 (NON-HAZARDOUS).	
+ 4 HRS 50' 0"						
	181	1	C1TC	CSPP	REQUEST & EXECUTE WASP (42D100 POWER ON) OR APPLY POWER PER V-21194 (NON-HAZARDOUS).	
+ 5 HRS 0' 0"						
	181	1	CSPP	C1TC	WASP COMPLETE (LSE POWER ON)	
	121	2	CVTS	CLTC	DISCONNECT EC FROM SC. REPORT WHEN COMPLETE.	TCPI
	121	3	CLTC	C1TC	DISCONNECT EC FROM SC. REPORT WHEN COMPLETE.	
	181	4	C1TC	CSA9	DISCONNECT EC FROM SC PER V-36085 (HAZARDOUS). REPORT WHEN COMPLETE.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 5 HRS 10' 0"	181	1	CSA9	C1TC	EC DISCONNECT IS COMPLETE.	
	181	2	C1TC	CSPP	SECURE 42D100 POWER PER V-21194 (NON-HAZARDOUS).	
	181	3	C1TC	CSPP	REINSTALL THE FUSES/SLUGS IN 9082 REMOVED TO INHIBIT S/A 1 AND S/A 2 RETRACTION. REPORT WHEN COMPLETE.	
+ 5 HRS 30' 0"	161	1	C4TC	S4HY	VERIFY HYDRAULIC SYSTEM SECURING COMPLETE.	
	161	2	C4TC	S4CE	VERIFY BATTERY BYPASS SECURING COMPLETE.	
+ 5 HRS 45' 0"	161	1	C4TC	S4CE	INSTALL AND CONNECT ULLAGE ROCKET IGNITION AND JETTISON PULSE SENSORS PER V-30539, SECT V, PARTS 13A & 13B (NON-HAZARDOUS).	
+ 6 HRS 45' 0"		1			*****WARNING***** * * THE FOLLOWING THREE * * SEQUENCES ARE HAZARDOUS * * *****	
	181	2	C1TC	C1PE	REMOVE BASE HEAT SHIELD ACCESS PANEL FOR S-IC AFT BATTERY REMOVAL AND FOR RR EBW DETONATOR REMOVAL.	
	181	3	C1TC	C1PE	START REMOVAL OF FAIRING ACCESS PANELS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 6 HRS 45' 0"	181	4	C1TC	C1NE C1PE	START REMOVAL OF S-IC INERT ENGINE ORDNANCE PER V-34012 (HAZARDOUS) & V-21014 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	5	C2TC	U2AN	REMOVE BATTERY SUBSTITUTES AND C7-92 CABLES PER V-30029 (M020) TASK 12 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	161	6	C4TC	S4CE	VERIFY ULLAGE ROCKET IGNITION AND JETTISON PULSE SENSORS INSTALLED AND CONNECTED.	
+ 7 HRS 15' 0"		1			*****WARNING***** * * THE FOLLOWING TWO * * SEQUENCES ARE * * HAZARDOUS. * * *****	
	181	2	C1TC	C1PE	START REMOVAL OF S-IC RR PYROGEN INITIATORS AND PLUG INSTALLATION.	
	181	3	C1TC	C1PE	VERIFY BASE HEAT SHIELD ACCESS PANEL REMOVED START INSTALLATION OF QUAD "A" PLATFORMS NO. 6 & 7.	
	171	4	C2TC	U2J2	START PROPELLANT FEED SYSTEM VACUUM JACKETED LINE CHECKS PER V-24116 (J001) (NON-HAZARDOUS) AS ACCESS IS AVAILABLE. REPORT WHEN COMPLETE.	
	171	5	C2TC	U2J2	START TURBOPUMP TORQUE CHECKS PER V-34014 (E023) (HAZARDOUS) AS ACCESS IS AVAILABLE. REPORT WHEN COMPLETE.	
	171	6	C2TC	U2J2	START PROPULSION SYSTEM LEAK CHECKS PER V-34014 (E023) (HAZARDOUS) AS ACCESS IS AVAILABLE. REPORT WHEN COMPLETE.	
	151	7	CUTC	SUTM	PIN ALL FLOW METERS. REPORT WHEN COMPLETE.	

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+ 7 HRS 15' 0"	151	8	CUTC	SUTM SUVE	INSTALL ANTENNA RERADIATION SYSTEM PER V-31062 PART V. (NON-HAZARDOUS)	
	151	9	CUTC	SUTM SUVM	INSTALL ACOUSTIC MICROPHONE COVER. REPORT WHEN COMPLETE (APPROX 2 MINUTES).	
	151	10	CUTC	SUVM SUVE	INSTALL SHE IU CABLE RACK COVER ASSEMBLY AND HYPERGOL CURTAINS PER V-24443. REPORT WHEN COMPLETE. (NON-HAZARDOUS)	
	171	11	C2TC	C2RP	START LOX HE INJECTION PRESSURE DROP AND ACCUMULATOR FILL TIME TEST DATA REVIEW PER V-30029 (M020) TASK 102 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
+ 7 HRS 45' 0"	181	1	C1TC	C1PE	VERIFY THRUST SECTION PLATFORMS INSTALLED FOR EBW DETONATOR REMOVAL.	
	181	2	C1TC	LASE	DISCONNECT HDA ORDNANCE AND CAP CABLES. REPORT WHEN COMPLETE.	
	181	3	C1TC	C1NE	DISCONNECT RR EBW FIRING CABLES AND CAP. REPORT WHEN COMPLETE.	
	181	4	C1TC	LHDA	REMOVE HDA INERT ORDNANCE PER V-36069 (HAZARDOUS). REPORT WHEN COMPLETE.	
		5			*****WARNING***** * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * *****	
	181	6	C1TC	C1PE	REMOVE RR EBW DETONATORS FROM CDF MANIFOLDS. REPORT WHEN COMPLETE.	

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+ 7 HRS 45' 0"	181	7	C1TC	C1PE	VERIFY REMOVAL OF FAIRING ACCESS PANELS COMPLETE.	
+ 8 HRS 15' 0"	181	1	C1TC	C1PE	VERIFY RR EBW DETONATOR REMOVAL COMPLETE.	
	181	2	C1TC	C1PE	VERIFY REMOVAL OF S-IC RR PYROGEN INITATORS COMPLETE.	
	171	3	C2TC	U2HO U2MO	REMOVE S-II FIRST AND SECOND PLANE SYSTEM INERT DETONATORS PER V-29049 (Z030) (HAZARDOUS). REPORT WHEN COMPLETE.	
	121	4	CLTC	C4TC	REINSTALL S-II/S-IVB SEPARATION AND RR PULSE SENSORS.	
	161	5	C4TC	S4CE	INSTALL PULSE SENSORS PER V-30539, SECT V, PART 13C (NON-HAZARDOUS).	
	121	6	CLTC	C2TC	CONNECT S-II/S-IVB SEPARATION/AND RR PULSE SENSORS TO FLIGHT CABLES AND TO EBW'S.	
	171	7	C2TC	U2EO	CONNECT S-II/S-IVB SEPARATION, AND RR PULSE SENSORS TO FLIGHT CABLES AND TO EBW'S PER V-30029 (M020) TASK 87 (HAZARDOUS).	
	121	8	CLTC	C2TC	REINSTALL S-IC/S-II SEPARATION PULSE SENSORS AND BRACKETS.	
	171	9	C2TC	U2EO	REINSTALL S-IC/S-II SEPARATION PULSE SENSORS AND BRACKETS PER V-30029 (M020), TASK 87 (HAZARDOUS).	
	121	10	CLTC	C1TC	CONNECT S-IC/S-II SEPARATION PULSE SENSORS TO FLIGHT CABLES AND TO EBW FIRING UNITS.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 8 HRS 15' 0"	121	11	CLTC	C2TC	REINSTALL S-II/S-II SEPARATION PULSE SENSORS AND BRACKETS & CONNECT TO FLIGHT CABLES AND EBW'S.	
	171	12	C2TC	U2E0	REINSTALL S-II/S-II SEPARATION PULSE SENSORS AND BRACKETS AND CONNECT TO FLIGHT CABLE AND EBW'S PER V-30029 (M020), TASK 87 (HAZARDOUS).	
	181	13	C1TC	C1PE	VERIFY S-IC FWD ACCESS & BULKHEAD PROTECTION EQUIPMENT INSTALLATION HAS BEEN COMPLETED.	
	151	14	CUTC	SUTM	REMOVE TAPE FROM Q-BALL AND VERIFY NO TAPE RESIDUE REMAINS ON Q-BALL SURFACE.	
		14-1			VERIFICATION BY LV-QAL -----	
+ 9 HRS 30' 0"	151	15	CUTC	SUTM	INSTALL PLUGS IN Q-BALL PORTS. REPORT WHEN COMPLETE.	
	121	1	CVTS	CLTC	VERIFY READY FOR S/A 9 FC CONNECTION IN 30 MINUTES.	TCPI
+ 9 HRS 45' 0"	171		C2TC	U2MH	SECURE EAS PER V-30029 (M020) TASK 63 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	1	C2TC	U2EC	START S-II ECS INSPECTION PER V-30029 (M020) TASK 11 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	188	2	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LM SHE VENT.	TCPI
		2-1			*****WARNING***** * * THE CONTROL AREA FOR LM * * PROPELLANT VENT LINE * * CONNECTION CONSISTS OF * (CONTINUED)	TCPI

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+ 9 HRS 45' 0"					* THE SPACE INTERNAL TO * * THE SLA, IU AND S-IVB * * FORWARD AREAS. * * * *****	
	171	3	C2TC	R2DP	REMOVE SPECIAL LH2 VENT VALVE INSTRUMENTATION FROM FIRING ROOM PER V-30029 (M020) TASK 91 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	4	C2TC	C2SP	RECONFIGURE LH2 VENT VALVE SYSTEM TO SUPPORT LAUNCH COUNTDOWN PER V-30029 (M020) TASK 81 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	5	C2TC	C2SP	START PRESSURIZATION SYSTEM 7 PSIG LEAK CHECKS PER V-30029 (M020) TASK 83 (NON-HAZARDOUS). REPORT WHEN COMPLETE.	
	171	6	C2TC	C2SP	START ACTUATION PRESSURE LINE LEAK CHECKS PER V-30029 (M020) TASK 84 (HAZARDOUS). REPORT WHEN COMPLETE.	
	171	7	C2TC	C2SP	WHEN MSS PLATFORM 1 IS AVAILABLE, REINSTALL THE ENGINE CUTOFF SENSOR CAPS AND STREAMERS. REPORT WHEN COMPLETE.	
+ 9 HRS 50' 0"	181	1	C1TC	CSPP	REQUEST & EXECUTE WASP (42D100 POWER ON) OR APPLY POWER PER V-21194 (NON-HAZARDOUS).	
+10 HRS 0' 0"	188	1	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL CLEAR THE CONTROL AREA FOR CSM HYPERGOLIC LINE CONNECTION,	TCPI
		1-1			*****WARNING***** * * * THE CONTROL AREA FOR * * CSM HYPERGOLIC LINE * (CONTINUED)	TCPI

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+10 HRS 0' 0"					* CONNECTION CONSISTS OF * * THE MSS CSM FUEL AND * * OXIDIZER OPERATIONAL * * DISCONNECT TOWERS. * * * *****	
	181	2	CSPP	C1TC	WASP COMPLETE (LSE POWER ON).	
	121	3	CVTS	CLTC	RECONNECT EC. REPORT WHEN COMPLETE.	TCPI
	121	4	CLTC	C1TC	RECONNECT EC. REPORT WHEN COMPLETE.	
	181	5	C1TC	CSA9	RECONNECT EC TO SC PER V-36085 (HAZARDOUS). REPORT WHEN COMPLETE.	
+10 HRS 15' 0"						
	121	1	C1TC	CLTC	S/A 9 EC RECONNECT COMPLETE.	
	181	2	C1TC	CSPP	SECURE 42D100 POWER PER V-21194 (NON-HAZARDOUS).	
	111	3	CLTC	CVTS	S/A 9 EC RECONNECT COMPLETE.	TCPI
	121	4	CLTC	RLDE	ENTER/VERIFY EST MODE.	
	121	5	CLTC	CUTC	SECURE LV ELECT SUPPORT EQUIPMENT PER V-31062, APPENDIX A (NON-HAZARDOUS).	
+11 HRS 15' 0"						
	188	1	CVTS	PA	LM SHE VENT IS COMPLETE. THE CONTROL AREA IS OPEN FOR NORMAL WORK.	TCPI
+12 HRS 30' 0"						
	188	1	CVTS	PA	HYPERGOLIC LINE CONNECTION IS COMPLETE. THE CONTROL AREA IS OPEN FOR NORMAL WORK.	TCPI

