R1SC-5

TEST NUMBER V-20060
REVISION NO. 027
EFFECTIVITY AS-509 & SUBS
RELEASE DATE JANUARY 21, 1971

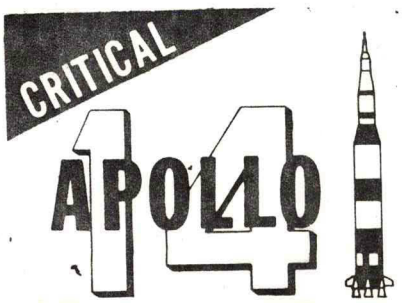
JOHN F. KENNEDY SPACE CENTER

RELEASED FOR AS 509

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

VOLUME II OF III

ASSEMBLED FOR CD



Prepared For
LAUNCH VEHICLE OPERATIONS

Prepared By
THE BOEING COMPANY
ATLANTIC TEST CENTER
SATURN V-LAUNCH OPERATIONS

THIS TCP CONTAINS HAZARDOUS OPERATIONS

TCP NO V-20060

REVISION 027

DATE JANUARY 21, 1971

NO OF PAGES 533

EFFECTIVITY AS-509 & SUBS

RELEASED FOR AS 509

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

VOLUME II OF III

THIS TCP CONTAINS HAZARDOUS OPERATIONS

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LVO Test Conductor

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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-509 K-V-05,10/9

3, IN ADDITION, UNDER EMERGENCY CONDITIONS SPECIFIED THEREIN, THE SATURN V LAUNCH VEHICLE EMERGENCY PROCEDURE, V-20056, WILL BE USED,

B, 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 TCPIS ARE USED DURING THIS TEST, IT IS THE RESPONSIBILITY OF THE ORGANIZATION INITIATING A CHANGE TO A TCPI SEQUENCE TO INSURE 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;

C, 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),

(CONTINUED)

C, SAFETY

(F) HEAVY EQUIPMENT MOVEMENTS WILL BE REQUIRED,

(G) SPACE VEHICLE CRYOGENIC LIQUIDS (LOX, LH2 & 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),

D, 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,

E, CODES IN THE REMARKS COLUMN

1, * INDICATES INFORMATION UNIQUE TO CDDT

2, # INDICATES INFORMATION UNIQUE TO LAUNCH CD

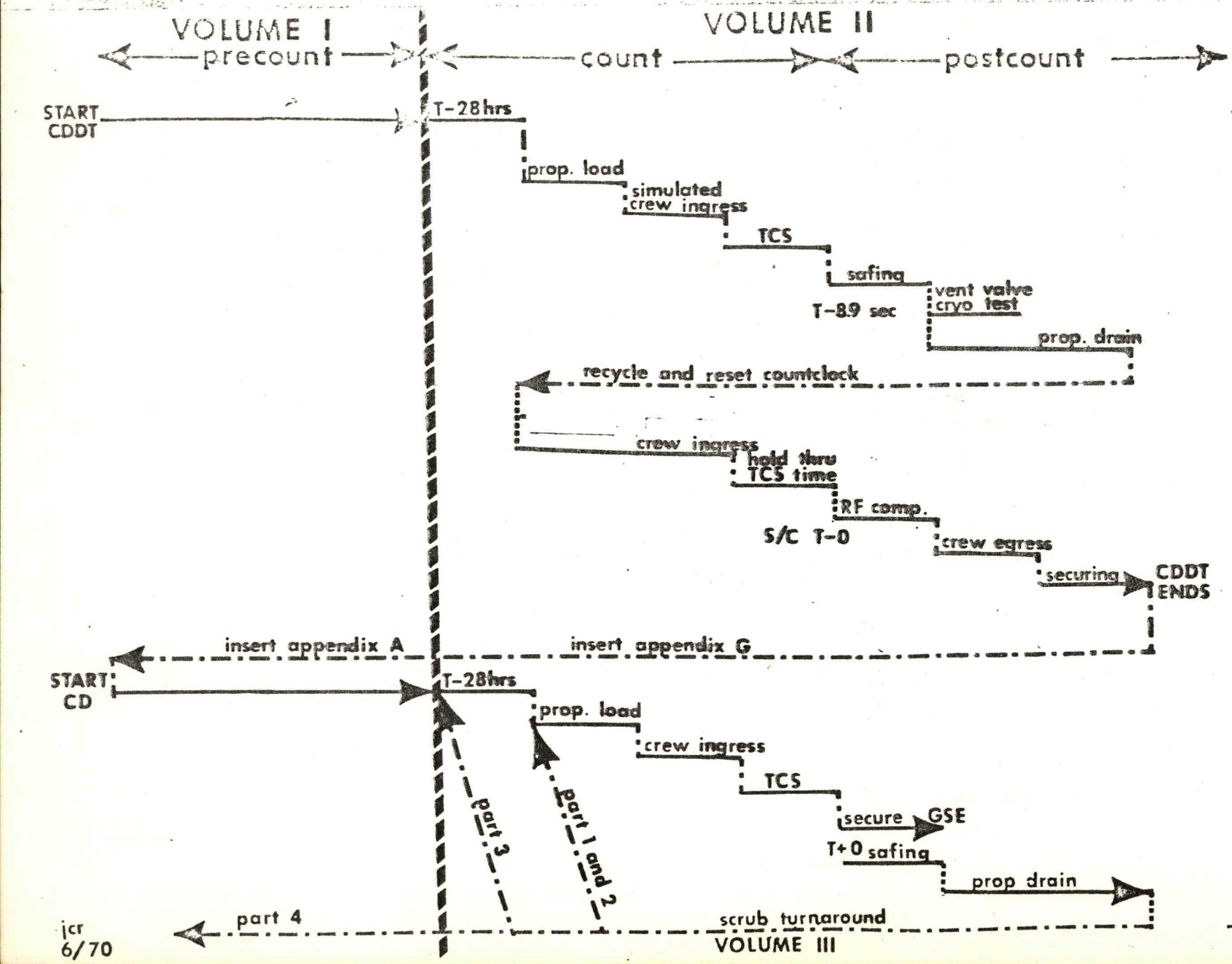
3, A INDICATES INFORMATION FOR AS-509 ONLY

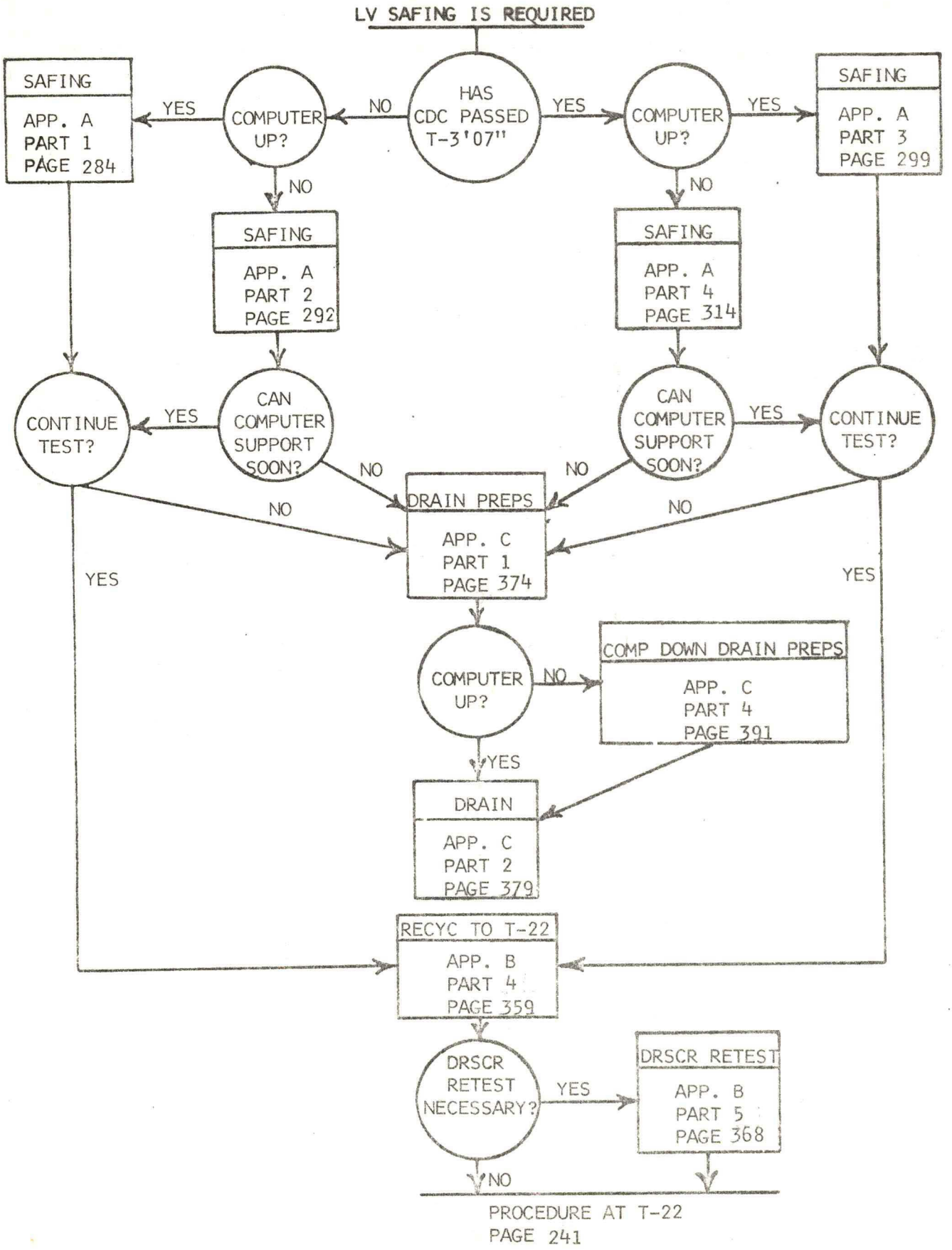
4, *** INDICATES A SEQUENCE NORMALLY PERFORMED BY A LINKING PROGRAM

5, (XXXX) INDICATES A SEQUENCE WHICH MUST BE COMPLETE BEFORE THE IVAR (WITHIN PARENTHESES) EXECUTES

6, TCPI (SEE PARAGRAPH B,1 ABOVE)

CDDT & COUNTDOWN PROCEDURE EXPLANATION




LV SAFING IS REQUIRED
HAS CDC PASSED T-3'07"
NO
YES
COMPUTER UP?
SAFING
APP. A
PART 1
PAGE 284
SAFING
APP. A
PART 2
PAGE 292
SAFING
APP. A
PART 3
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SAFING
APP. A
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PAGE 314
CONTINUE TEST?
CAN COMPUTER SUPPORT SOON?
DRAIN PREPS
APP. C
PART 1
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COMP DOWN DRAIN PREPS
APP. C
PART 4
PAGE 391
DRAIN
APP. C
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PAGE 379
RECYC TO T-22
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DRSCR RETEST NECESSARY?
DRSCR RETEST
APP. B
PART 5
PAGE 368
PROCEDURE AT T-22
PAGE 241

LIST OF EFFECTIVE PAGES	Date 1/20/71	Effectivity AS-509	Test Number V-20060, II	Revision 027	Page 6

Page No.	Rev.	Page No.	Rev.	Page No.	Rev.	Page No.	Rev.	Page No.	Rev.
COVER	027	79	024	166-1	027	249	024	355-358	OMITTED
1, 2	027	G80	024	167	026	G250	024	359	027
3 - 5	024	81, 82	024	168	025	251	027	360	024
6, 7	027	83	027	169	024	252,253	024	361	027
8, 9	024	84, 85	024	G170	025	G254	027	362	025
G10	025	G86	024	171	027	255	027	363	025
G11	024	87	027	172-175	024	G256	027	364	024
12	026	87-1		176	027	257	027	365	026
13	OMITTED	THRU	026	G177	027	258-263	024	366-373	024
G14	024	87-3		178,179	024	G264	024	G374	026
15	024	88, 89	027	180	027	265,266	024	375	027
16	OMITTED	90	024	G181	027	G267-G269	024	G376,G377	024
17	027	G91	024	182	027	G270-G272	025	378	024
18 - 25	024	92	024	183,184	024	G273-G282	024	G379	024
G26	024	92-1	026	G185	027	283	024	380-386	024
27 - 30	024	93	024	G186	024	284-286	027	387	025
30-1		94	027	187	024	287-290	024	388-399	024
THRU	027	G95	024	G188,G189	024	291	027	G400	025
30-6		96	024	190	024	292-294	024	401-408	024
G31	027	97	027	G191	024	295,296	027	409-534	027
G32 - G35	024	98 - 100	024	G192	025	297,298	024		
G36	026	G101	024	G193-G195	024	G299	024		
G37	024	102	024	G196,G197	OMITTED	G300	OMITTED		
38, 39	024	G103,G104	024	G198-G200	024	301	027		
G40	026	105	024	G201	OMITTED	302	024		
41	024	G106-G109	024	G202-G205	024	303	027		
G42	027	110	024	G206	025	304	024		
G43, G44	024	111	025	207	027	305	027		
45	024	112-124	024	208	024	306	027		
G46	024	G125	024	G209	024	307-310	024		
47	027	G126	027	G210,G211	027	G311	OMITTED		
47-1, 47-2	027	127-130	024	G212	024	312	027		
G48	024	131	027	213	025	313-315	024		
49 - 52	024	132,133	024	214-216	024	316,317	027		
G53	024	134	026	G217	024	318,319	024		
G54	027	G135	024	218-220	024	320,321	027		
55	024	136	027	G221-G223	024	322,323	024		
G56	027	137-143	024	224,225	027	324	027		
57	027	G144	024	226	024	325-327	024		
58, 59	024	145-147	024	227	024	328	025		
60	025	G148	024	G228	024	329-331	024		
61	024	149	024	G229	025	332	OMITTED		
G62	024	G150	024	G230	024	333	027		
63	027	151	024	231	024	334-337	024		
64 - 66	024	G152	024	232	027	338	027		
G67	024	153	027	233	024	339,340	024		
68	027	154-156	024	G234,G235	024	341	027		
69, 70	024	G157,G158	024	236-239	024	342-345	024		
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G73	025	160	027	241,242	024	347,348	024		
74	024	161,162	024	243	025	349	025		
G75, G76	024	163,164	027	244,245	024	350	024		
G77	027	G165	024	246	026	351	025		
G78	025	166	027	247,248	027	352-354	024		

REVISION RECORD PAGE (CURRENT VEHICLE)

REV.	PAGES AFFECTED: REVISED	ADDED	DELETED	REASON/SUPPORTING DOCUMENT
023	ALL			INCORPORATED AS-508 CDDT REAL TIME PERMANENT PCR'S B-253-78, XB-187-80, B-260-86 WHICH WERE NOT INCORPORATED IN PRIOR REVISIONS. INCORPORATED AS-508 CD REAL TIME PERMANENT PCR'S XB-199-96, B-266-97, XB-200-100 & N-169-101 WHICH WERE NOT INCORPORATED IN PRIOR REVISIONS. INCORPORATED AS-509 PCR'S XB-201-1, N-172-2, B-273-3 XB-205-4, XB-209-5, XB-207-6, B-270-7, B-272-8, B-274-9, N-181-10, T-12-11, XB-208-12, N-183-13, N-188-15, XB-216-16, N-178-17, XB-206-18, N-176-19, XB-203-20, I-141-21, I-142-22, I-143-23, I-144-24, I-145-25, N-175-26, B-264-27, N-184-28, XB-214-29, N-177-30, N-186-31, N-187-32, D-77-33, XB-215-34, T-13-35 AND XB-217-36 PRERELEASE FOR AS-509 DATED 11/4/70.
024	ALL			INCORPORATED AS-509 PCR'S XB-211-37, XB-221-38, N-201-39, XB-227-40, D-79-41, N-203-42, XB-230-43, XB-228-44, T-14-45, XB-222-46, XB-225-47, XB-229-48, B-278-49, B-285-50, B-286-51, B-287-52, B-288-53, B-289-54, B-290-55, B-291-56, B-292-57, B-293-58, B-294-59, B-295-60, B-296-61, B-297-62, I-150-63, I-151-64, I-152-65, I-153-66, I-154-67, I-155-68, I-156-69, I-157-70, I-158-71, XB-218-72, XB-226-73, N-193-74, N-194-75, N-195-76, N-196-77, N-197-78, N-198-79, N-199-80, N-200-81, N-202-82, N-204-83, D-80-84, XB-231-85, N-205-86 & I-159-87. RELEASED FOR AS-509 CDDT, 12/09/70.

REVISION RECORD PAGE (CURRENT VEHICLE)

REV.	PAGES AFFECTED: REVISED	ADDED	DELETED	REASON/SUPPORTING DOCUMENT
025	COVER,1,6,7,10, 54,57,60,73,78, 94,111,166,167, 168,170,176,177, 185,192,206,213, 229,243,328,346, 349,351,361,362, 363,365,374,387, 400,414,431,434, 436,454,464,471, 476,488,G10,G170, G177,G185,G192, G206,G270,G271, G272	G73,G78 G229,G374 G400	NONE	INCORPORATED AS-509 PCR'S XB-233-88, XB-234-89, XB-237-90, XB-238-91, XB-241-92, B-298-93, B-301-94, I-160-95, I-161-96, I-162-97, & I-163-98. PARTIAL REVISION RELEASED FOR AS-509 CDDT 1/06/71.
026	COVER,1,6,7,36, 40,47,87,134, 167,246,338,341, 365,374,G36,G40, G374	30-1 THRU 30-6 87-1 THRU 87-4 92-1, 92-2	NONE	INCORPORATED AS-509 PCR'S: N-206-99, I-166-100, B-305-101, B-306-102, I-164-103, I-165-104 & D-81-105. PARTIAL REVISION RELEASED FOR AS-509 CDDT 1/11/71.
027	COVER,1,2,6,7, 17,30-1 THRU 30-6,G31,G42 G47,G54,G56, 57,63,68,G77, 83,87,88,89, 94,97,G126, 131,136,153, 160,163,164, 166,171,176, G177,180, G181,182, G185,207, G210,G211, 224,225,232, 240,247,248, 251,G254,255, G256,257, 284,285,286, 291,295,296, 301,303,305, 306,312,316, 317,320,321, 324,333,338, 341,359,361, 375,	47-1,47-2 166-1,409 THRU 534	13,16, G196, G197, G201, G300, G311, CDDT ONLY pages, DRY CDDT (APP F)	INCORPORATED AS-509 PCR'S N-280-106, XB-247-107,I-167-108,N-211-110,XB-245-111, I-171-112,I-173-113,B-313-114,N-212-115, D-85-116,I-174-117,XB-250-118,D-87-119, N-213-120,I-176-121,D-86-122,B-312-123, B-314-124,N-216-126,N-214-127,XB-253-128, I-175-129,N-217-130,C-12-131,XB-251-132, XB-254-133,B-317-134,B-318-135,N-219-136, N-220-137 & I-181-138. XB-249-109 & D88-125 AFFECT ONLY CDDT STEPS AND WILL BE INCORPORATED IN THE NEXT COMPLETE REVISION. RELEASED FOR AS-509 CD 1/21/71.

NSC FORM 23-81 D (9/64)
FORM 23-81 D (9/64)

REVISION RECORD PAGE (PRIOR REVISIONS)

REV.	REASON
BASIC	RELEASED FOR AS-504 CDDT 1/17/69
001	PARTIAL REVISION RELEASED FOR AS-504 CDDT 2/3/69
002	RELEASED FOR AS-504 CD 2/19/69
003	PRERELEASE FOR AS-505 3/3/69
004	RELEASED FOR AS-505 CDDT 3/29/69
005	PARTIAL REVISION RELEASED FOR AS-505 CDDT 4/18/69
006	RELEASED FOR AS-505 CD 5/7/69
007	PRERELEASE FOR AS-506 4/24/69
008	RELEASED FOR AS-506 CDDT 5/26/69
009	PARTIAL REVISION RELEASED FOR AS-506 CDDT 6/17/69
010	RELEASED FOR AS-506 CD 7/3/69
011	PRERELEASE FOR AS-507 8/13/69
012	RELEASED FOR AS-507 CDDT 9/19/69
013	PARTIAL REVISION RELEASED FOR AS-507 CDDT 10/16/69
014	PARTIAL REVISION RELEASED FOR AS-507 CDDT 10/23/69
015	RELEASED FOR AS-507 CD 10/29/69
016	PRERELEASE FOR AS-508 1/19/70
017	RELEASED FOR AS-508 CDDT 2/13/70
018	PARTIAL REVISION RELEASED FOR AS-508 CDDT 3/12/70
019	RELEASED FOR AS-508 CD 3/26/70
020	PARTIAL REVISION RELEASED FOR AS-508 CD 4/2/70
021	PARTIAL REVISION RELEASED FOR AS-508 CD 4/6/70
022	CONTINGENCY CD NOT RELEASED FOR AS-508
023	PRERELEASE FOR AS-509 11/04/70

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 ASTRIONICS EQUIPMENT
5, 6 & 7	ML 0' LEVEL	TSM 1-2, 3-2, 3-4, & S-IC LOX VENT VALVE
9	ML 160' LEVEL	S-II STAGE INSULATION
10	ML 30' LEVEL	LOX VALVE COMPLEX
11	ML 60' LEVEL	ML DECK
12	ML 100' LEVEL	S-IC 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-II UMB DRAIN
16	ML 180' LEVEL	S/A 4
17	ML 180' LEVEL	S-II LH2 HEAT EXCHANGER
18	ML 200' LEVEL	LH2 VALVE COMPLEX
19	ML 200' LEVEL	LOX VALVE COMPLEX & S-IVB PNEU CONSOLE
20	ML 220' LEVEL	S/A 6, 7, IU
21	ML 240' LEVEL	S/A 6 & LH2 UMBILICAL
22	ML 240' LEVEL	S/A 5 S-IVB APS MODULE
23	ML 240' LEVEL	S-IVB HEAT EXCHANGER & VALVE PANEL
24	ML 260' LEVEL	S/A 7 AND S-IVB UMB, S-II 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, W/R, Q-BALL COVER & DAMPER
28	LOX STORAGE FACILITY	LOX TANKS, PUMP & LINES
29	LOX 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-IC ENGINES
37A	PAD SURFACE MSS S. LEG	LH2 TANKER GAUGES
38	NW CORNER PAD APRON	LH2 EXPANSION JOINTS, DISCONNECT TOWER
39	PAD SURFACE E. FLAME TRENCH	S-IC 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 PLATFORM 3 SOUTH	LM FUELING FUNCTIONS
53	MSS 300' LEVEL PLATFORM 4A	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

CD ONLY

Date JANUARY 5, 1971 | COUNT | # CD ONLY

Revision 025

LV COUNTDOWN

Page G1u
Test No. V-20060, Vol II
Vehicle AS-509

1 DAY 4 HRS T-28 | T-27 | T-26 | T-25 | 1 DAY T-24 | T-23 | T-22 | T-21 | T-20 | T-19 | T-18 | T-17 | T-16 | T-15 | T-14 | T-13 | T-12 | T-11 | T-10 | T-9 | T-8 | T-7 | T-6 | T-5 | T-4 | T-3 | T-2 | T-1 | T-0

SC
- SHE SERVICE PREPS
- SHE TOPOFF
- LM SHE HEX VENT & SC GSE DISCONNECT
- LM SHE GSE SHUTDOWN & REMOVAL
- FT-33 & EDS
- MSS ELEV 2 RESERVED FOR ALSEP
- ALSEP OPERATIONS
- 525 PLAT REMOVAL
- RECONFIGURE S/A 8 ECS "Y"
- SLA CLOSEOUT
- FPI CKS
- # FLIGHT CREW IN CABIN
- #CLOSEOUT CREW LEAVE MSS PARK SITE
- #LES ARMED
- # CLOSEOUT CREW START CLEARING

LV RF & TM
- GMIL S-BAND
- ETR C-BAND
- LOCAL UHF
- LOCAL S-BAND
- VHF TM
- ETR UHF

LV
- OFFICIAL CDC START
- # EXP IU BATT TO 260°
- CLEAR AREA
- LV POWER UP
- THRU LIFTOFF
- REOPEN AREA
- PWR TRANSFER TEST
- LH2 COMP TEST
- LOX COMP TEST
- LH2+LOX SYSTEM PREPS
- FLT CONT SYS CKS
- RF CKS
- EMI MON
- #REMOVE S/A 7 AUX W.M. LINES
- RSCR CKS
- RS CMD CKS
- LOX LH2 SYS FINAL PREPS
- SCHEDULED HOLD
- LV PROPELLANT LOAD
- RF SILENCE
- CONTROLLED SWITCHING
- CONNECT PD DETS
- FLT CONTROL SYS CKS
- PD RECVR CK
- PROPELLANT REPLENISH
- SCHEDULED HOLD #
- EMC MON
- RF & TM CKS
- IATTITUDE CMD CKS
- RS CMD CKS
- PWR TRANSFER TST
- PREPS COMP
- TCS
- PD RECVR CK

IU
- #CHE REMOVAL
- RF GSE SETUP
- UNPIN FLOWMETERS
- # IU BATT CNCT
- INSTALL IU ANTENNA HATS
- #INSTALL IU FLT BATT
- FLT CONTRN PREPS
- FCC/SC CKS
- Q-BALL PWR ON
- Q-BALL SIM CMD
- PRESS ST-124M SPHERE
- ST-124M PREPS & TURN-ON
- IU HAT REMOVAL
- THERMAL SHROUD INSTL
- CHE INST
- CHE REMOVAL
- REMOVE IU LIGHTS
- REMOVE CANOPY
- SECURE IU DOOR
- RF GSE SETUP
- PRESS ST-124M SPHERE
- THRU LIFTOFF
- ST-124M SLIP RING EXERCISE
- ST-124M THRU T-0
- ST-124M DRIFT CKS
- LUT WALKDOWN
- CCS PRN PERF TEST
- Q-BALL PWR ON
- Q-BALL SIM CMD

S-IVB
- S-IVB ENGINEERING WALK-A-ROUND
- # INSTALL S-IVB AFT FLT BATT
- S-IVB PREPOWER PREPS
- #INSTALL S-IVB FWD FLT BATT
- S-IV PROPULSION SYS PREPS
- # S-IVB BATT CONNECTION
- S-IVB STG PWR UP
- REMOVE S-IVB AFT ACCESS KIT
- SECURE S-IVB REARADIATION
- SECURE S-IVB AFT DOOR
- S-IVB AFT CARRIER MECH PREPS
- S-IVB FWD ACCESS KIT REMOVAL
- S-IVB FWD CARRIER MECH PREPS
- SEE PAGE 12 FOR MORE DETAIL OF THIS TIME PERIOD

S-II
- S-II ENG ACT SYS PREPS
- # INSTALL & CNCT S-II FLT BATT
- INITIAL UMB PREPS
- STG PWR UP
- REMOVE S-II AFT ACCESS KIT
- S-II ENG ACT SYS F/T
- SECURE S-II AFT DOOR
- REMOVE S-II FWD ACCESS KIT & BLKD PADS
- S-II FINAL ECS CHECKS
- S-II BULKHEAD EVAC
- ENG CKT TEST
- ARM 4 FINAL UMB PREPS
- ENG SEQ TEST
- SECURE S-II FWD DOOR
- ARM 5 FINAL UMB PREPS
- BOTTLE PRESS TO 3200 PSI

S-IC
- # INSTALL & CONNECT S-IC FLT BATT
- REMOVE S-IC T.S. ACCESS KIT
- S-IC PNEU CONSOLE UP
- F-1 ENG CLOSEOUT
- S-IC T.S. & F.S. WALK THRU INSPEC
- S-IC PNEU FUNCTIONAL
- SECURE S-IC PCMMU
- INSTALL S-IC T.S. HEAT SHLDS
- S-IC HYD UP
- RACS LOADING CKS
- START RP-1 TSM FILL
- RP-1 REPLENISH
- RP-1 LINE DRAIN
- REMOVE RAIN CANOPIES
- S-IC FWD ACCESS KIT REMOVAL
- SECURE S-IC FWD DOOR
- RP-1 LEVEL ADJUST
- THRU LIFTOFF

LSE & SUPPORT
- SMDPS-TWO SW ONE VALVE MODE
- IWS PREPS
- PTCS PREPS
- UMB SW F/T
- PREP & LOWER ESP
- LLP PREPS
- 20D271 PWR SUPPLY B/U BATT TEST
- AUX PWR BACKUP BATT CKS
- HDA PREPS
- MSS ELEV No2 LOCKOUT
- TSM FINAL PREPS & PRESS
- PADENSP & EQUIP REMOVE
- REDUNDANT DTS → T-0
- TO T-9
- OPEN MSS PLAT 2
- SA 1, 5 & 7 PRESSURE
- SA 2, 4 & 6 PRESSURE
- SA 8 & 9 PRESSURE
- LUT WALKDOWN
- OPEN PLAT #4
- SECURE WINCHES
- TRANSPORTER PREPS
- RETRACT S-IVB EXT PLAT 6
- RETRACT S-IC EXT PLAT 1
- ACTIVATE 6000 PSI GH2
- S/A 8 LADDER REMOVAL
- OPEN PLAT #5 & CONNECT O-BALL CABLE
- LSE PNEU SYS PREPS
- PREP LOWER LLP
- TO T-9:00
- REMOVE S/A 8 ECS "Y"
- ECS GN2 ALSEP SUPPORT
- ECS FLOW NORMAL TO SM
- OPEN PLAT #3
- SECURE WR DOOR
- SMDPS-ONE SW MODE
- SMDPS 1 SW 1 VALVE MODE
- THRU LIFTOFF
- RETRACT SA 3
- RETRACT S-II EXT PLAT 4
- ECS GN2
- ECS GN2 ON STANDBY
- LV HAZ GAS DETECTION
- MSS JACK & MOVE
- DAMPER ARM SWITCHOVER
- TSM 3-4 TILT
- MOVE MSS TO PARK SITE
- PLTFM TRNSPR TO LAUNCH POS
- RETRACT PRIMARY DAMPER
- PARK SA 9
- RETRACT SA 9
- RETRACT S-IC EXT PLAT 2
- RETRACT S-II EXT PLAT 5
- RETRACT S-IVB EXT PLAT 7
- RETRACT SM EXT PLAT 8

GROUND COMPUTER
- VALL
- KAO1 IU STG PWR UP
- QAPO
- XAPS S-IVB PWR UP & XASS S-IVB RESET
- WAPO S-IC STAGE POWER UP
- KAF2 FLT CONT PREPS
- CTC4 AUTO FLIGHT CONTROL
- KAF2
- KAPW LVDC/DA PWR ON & SELF CK
- FT 04 FT 08 FT 35 FT 20 FT 23
- FT 25 DISCRETE INPUT TEST (SC)
- BT-01 BE01 & BE02 PROP MON
- LV ELEC SUP PREPS
- CTC5 APS GAIN
- INT98 SWITCH SCAN (LV)
- C1C1 S-IVB S-II GAIN CKS
- S-IC
- VATC TM CKS
- VAMC
- VAPX
- GROUND COMPUTER SUP → THRU LIFTOFF
- KAF1 LINKING
- KAG1 LINKING
- FT 45 CMD SYS INF TEST
- FT 25 DISCRETE INPUT TEST (LV)
- FT 05 DATA VERIFY
- FT 04 LVDC/LVDA PWR OFF
- QAMS
- MT01 MEASUREMENT SCAN (LV)
- QAEC ENG CKT TEST
- VAFC S-IC ENG NULL TEST
- EDS VAED, VZ33, FT 33, VZSA, VZEA, VZRE
- QAES
- WAST
- VALK LINKING PROG
- FT47
- EDS (VAED, VZ33, FT 33, VZSA, VZEA, VZRE)
- VALL LINKING PROG
- MCC-H COMMANDS
- VATS

PAD ACCESS
- LIMITED ACCESS
- CLEAR AREA
- CLEAR NONESSENTIAL PERSONNEL FROM SLA, IU & S-IVB FWD
- LIMITED ACCESS
- CLEAR IU
- ALSEP
- LIMITED ACCESS
- CLEAR AREA
- CLEAR LUT ZERO LEVEL
- LIMITED ACCESS
- LV CLEARING
- HAZ LV ACCESS
- REOPEN LV
- LIMITED ACCESS
- PAD CLEARING
- PAD EVACUATED FOR LV CRYO LOADING
- # CREW INGRESS
- EVACUATE FOR LAUNCH
- PAD EVACUATED

IU S-IVB AREA MANLOADING

T-28 T-27 T-26 T-25 T-24 T-23 T-22 T-21 T-20 T-19 T-18 T-17 T-16 T-15 T-14 T-13 T-12 T-11 T-10 T-9

SPACE VEHICLE

SHE PREPS
POWER TRANSFER TEST
SHE TOPOFF
SHE GSE WARMUP
S/A 7 PRESSURIZATION
REMOVE 2ND STEP (MDC)
IU CLEAR
LV POWER UP
CK LM LUNAR CONTACT SWITCHES
525 Q II REMOVAL
SHE GSE SHUTDOWN & REMOVAL
GRUMMAN PAD LEADER ON LUT 260' LEVEL
INSTALL CHE (IBM)
SLA CLOSEOUT COMPLETE
REMOVE ONE STEP (MDC)
S-IVB FWD ACCESS KIT REMOVAL
402 STEP INSTALLATION (MDC)
REMOVE FDS
CLEAR VEHICLE
REMOVE CHE (IBM)
S&A CONNECTION
REMOVE FDS PLATFORM (MDC)
RE-ENTER VEHICLE
CLEAR AREA
525 Q III REMOVAL

LM GRUMMAN

SHE PREPS
(4) SHE TOPOFF
(5) ALSEP OPERATIONS
SHE HEX. VENT & S/C DISC (4)
(3) 525 Q II REMOVAL
INSTALL SHE SKINS Q II & III (3 + 4 ON 525 PLAT)
SLA CLOSEOUT COMPLETE
SHE GSE SHUTDOWN & REMOVAL (3)
402 STEP INSTALLATION
CHECK LM LUNAR CONTACT SWITCHES (3)
(1) LM MONITOR
FDS GSE REMOVAL (3)
525 Q III REMOVAL (3)

IU IBM

(2) INST CHE HOIST
(1) MONITOR IU PWR UP
1 MECH
(2) INSTALL RERADIATION CABLE
(4) ST-124M PURGE LINE & PLENUM
2 MECH
1 QA
1 LV QC
CHECK VALVE REMOVAL
(2) MONITOR POWER TRANSFER
1 ELECT
1 QA
(2) INSTALL CHE
(7) INSTALL IU BATT #
4 MECH
1 ELECT
1 QA
1 LV QC
(2) ASSIST FDS REMOVAL
ECS DUCT CLAMP INSPECTION
(2) MONITOR BATTS #
1 ELECT
1 QA
(3) MECH & QA WALKAROUND
1 MECH
1 QA
1 LV QC
(2) REMOVE CHE
INSTALL IU DOOR
(4) CONNECT IU BATT #
2 ELECT
1 QA
1 LV QC
(3) SUBLIMATOR VENT COVER REMOVAL #
1 ELECT
1 QA
1 LV QC
(3) REMOVAL OF LIGHTS, OIS & PA
(2) UNPIN FLOWMETERS
1 TLM
1 QA
(3) 3 MECH
(3) THERMAL SHROUD INST
3 MECH
(2) REMOVE CHE DOLLY #
(3) IU NETWORKS WALKAROUND
1 ELECT
1 QA
1 LV QC
(1) SHE CABLE COVER REMOVAL
1 ELECT
(2) REMOVE CHE HOIST #
(2) RERADIATION SYS SECURING
(1) INTERNAL MONITOR

S-IVB MDC

(3) REMOVE LM ACCESS STEPS
(3) PREPOWER PREPS
(3) PROP SYS CHECKS
1 MECH
1 ENGR
1 QC
FWD ACCESS KIT REMOVAL
(7) (5)
(3) SECURE RERADIATION SYS
1 ENGR
1 TECH
1 QC
(5) FWD BATT INST #
1 ENGR
2 TECH
1 QC
1 LV QC
(1) FWD MONITOR
1 MECH
(3) REMOVE ONE STEP
1 ENGR
1 MECH
1 QC
(6) S&A CONNECTION
1 ENGR
1 TECH
1 MECH
1 QC
1 LV QC
1 LV ENGR
(3) INSTALL STEPS
1 ENGR
1 MECH
1 QC
(3) REMOVE 2ND STEP
(1) REMOVE FDS PLAT
(2) ENGR WALKAROUND
1 ENGR
1 QC
(3) MOVE 2ND STEP
1 ENGR
1 MECH
1 QC
(5) BATT CONNECTION #
1 ENGR
2 TECH
1 QC
1 LV QC

| | | |

LV CDDT & CD AFTER T-9 HR HOLD

T-9 T-8 T-7 T-6 T-5 T-4 T-3 T-2 T-1 T-0

SV
- END OF HOLD
- ML TOWER CLEAR 8:20
- START LV PROP LOAD SEQ 8:15
- #CLOSEOUT CREW LEAVE PARK SITE (3:25)
- #FLIGHT CREW IN CABIN (2:40)
- # SCHEDULED 1 HR HOLD
- EDS TEST (1:51 TO 1:21)
- LV TM CK (1:05 TO 45')
- #CLOSEOUT CREW START CLEARING (55')
- #SC EDS PWR ON (44')
- #SC EDS POWER ON (2:00)
- PARK S/A 9 (43')
- #ARM LES (42')
- DRSCR TEST (4:35 TO 4:30)
- LV DRSCR TEST (40' TO 35')
- LV PROP REPLENISH STABLE (3:38)
- LV PWR TRANSFER PREPS (38')
- S-IVB DIRECTIONAL VENT CKS (3:38)
- LV PWR TRANSFER (30' TO 27')
- LV READY FOR CREW INGRESS (3:25)
- RETRACT S/A 9 (5')
- FIRING COMMAND (3'7")
- TCS

IU
- PRESS ST-124M SPHERE THRU LIFTOFF
- Q-BALL PWR ON (4:11)
- CCS PRN PERFORMANCE TEST
- Q-BALL SIM COMMAND (1:13)
- C-BAND BEACON 2 INTERROGATION (1:15)
- C-BAND BEACON INTERROGATION (50')
- C-BAND BEACON 1 & 2 ON (25')

S-IVB
- (8:15) LOX PRECONDITIONING
- LOX FILL (8:05)
- MRCV CKS
- LOX REPLENISH THRU LIFTOFF
- LH2 TANK VENT CKS (3:38)
- HE DECAY CKS (3:20)
- LH2 FILL (4:19)
- LH2 REPLENISH (3:38)
- MRCV CKS
- START TANK CHILLDOWN (14'30")
- TCH CHILLDOWN (7'58")

S-II
- (8:01) LOX PRECONDITIONING
- LOX FILL (7:36)
- LOX REPLENISH THRU LIFTOFF
- LH2 TANK PRECONDITIONING (7:26)
- LH2 REPLENISH (4:19)
- THRU 3'6"
- (8:15) HE BOTTLE PRESS TO 3200 PSI
- LH2 FILL (5:27)
- (4:11) MRCV CKS
- LH2 REPLENISH START TANK CHILLDOWN (24')
- TCH CHILLDOWN (8')

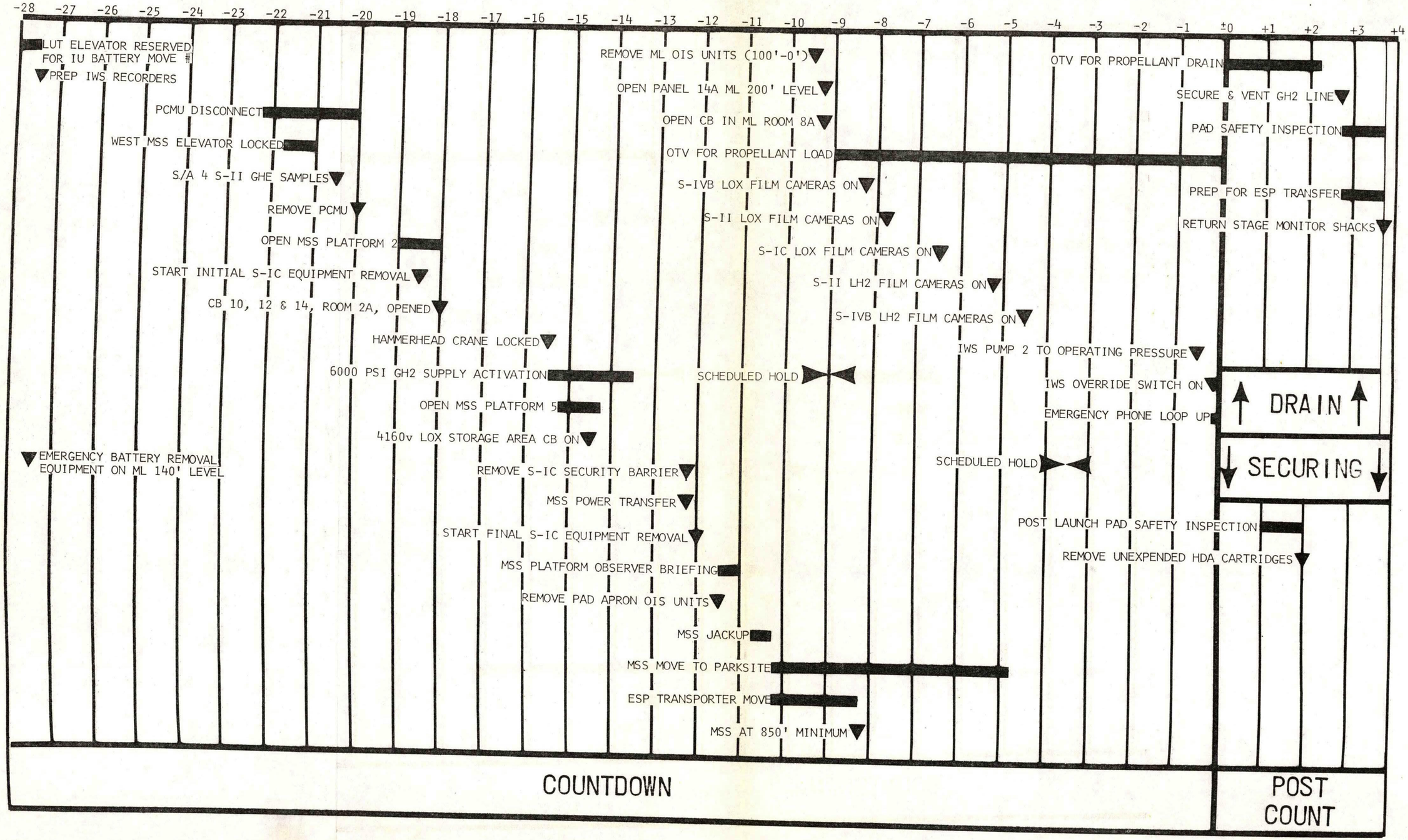
S-IC
- LOX FILL (6:54)
- (8:00) GN2 BOTTLES TO 3200 PSI
- LOX REPLENISH (5:29)
- ADJUST RP-1 LEVEL, DRAIN & LINE INERT (1:00)
- POGO SUPPRESSION SYSTEM PRECHARGE (25')

LSE
- AIR TO GN2 CHANGEOVER
- SMDPS 1 SW MODE THRU LIFTOFF#TO T+3:45*
- RETRACT PRIMARY DAMPER (3:38)
- PARK S/A 9 (43')
- RETRACT S/A 9 (5')

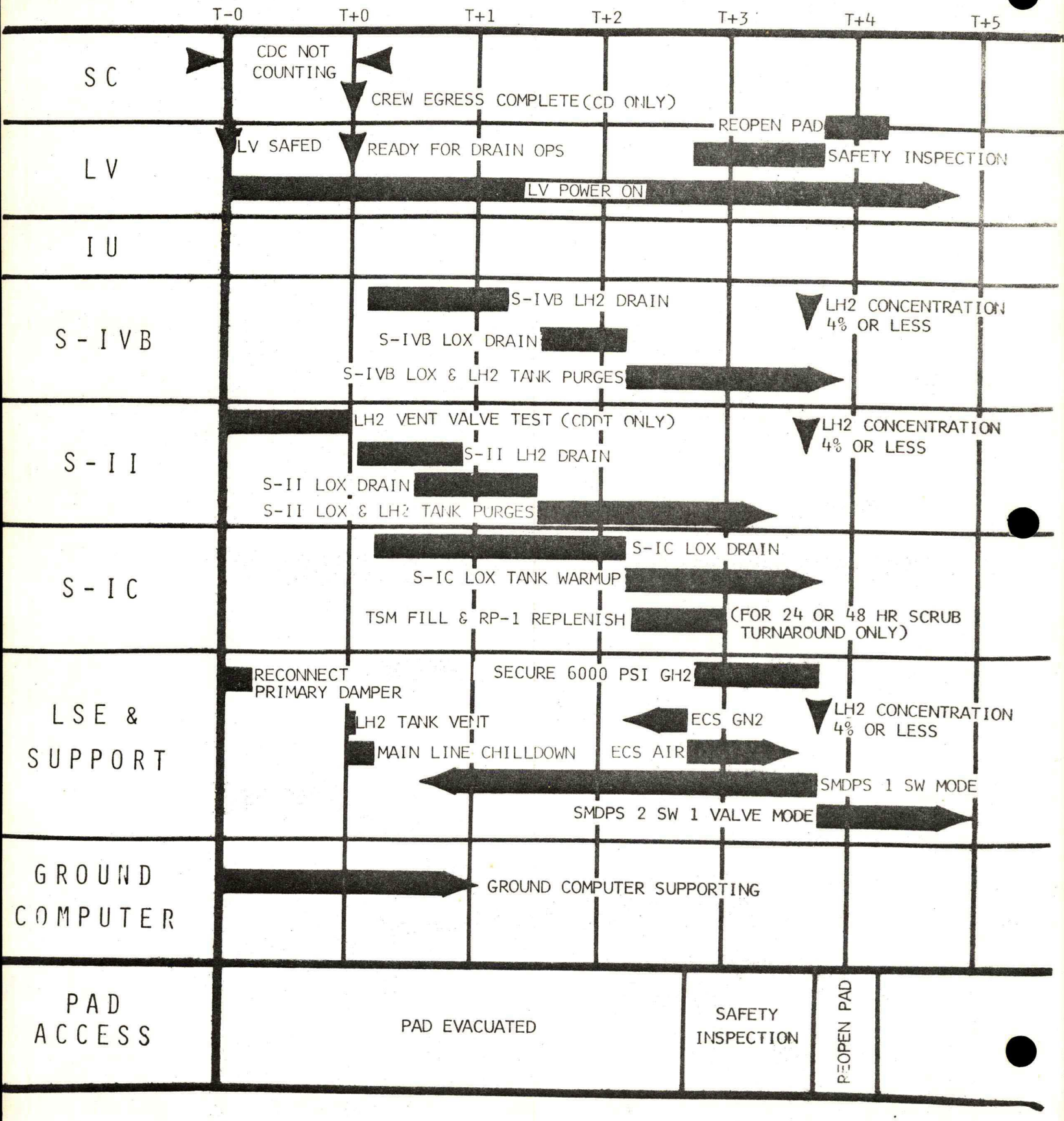
COMPUTER
- 9:00 VALK
- 8:59 FT04
- 8:55 FT35
- 8:53 FT20
- 8:51 FT23
- 8:45 FT08
- 8:39 FT43
- 8:30 FT03
- 8:20 FT37
- 8:05 FT23
- 7:55 FT10
- 8:59 KAPW
- 7:45 FT05
- 7:30 FT55
- 7:25 FT45
- 7:13 FT47
- 7:03 FT47
- 7:01 FT23
- 6:51 KAF2
- 6:46 CTC5
- 5:45 CTC3
- 5:18 FT31
- 5:15 FT06
- 5:03 CTC4
- 4:35 VARS
- 4:30 CTC1
- 3:20 FT31
- 3:17 FT06
- 3:05 CTC2
- 2:50 VAFC
- 2:45 FT20
- 2:42 FT10
- 2:30 FT06
- 2:18 XADS
- 1:55 VALL
- 1:51 VAED
- 1:19 FT47
- 1:17 WATL
- 1:16 WASL
- 1:13 FT47
- 1:12 FT23
- 1:05 FT06
- 1:02 GT16
- 57' VATC
- 55' FT06
- 52' FT49
- 50' VAFC
- 44' FT10
- 38' VARS
- 31'30" VAPX
- 26' VATS
- 19'55" VAMC
- 18' FT06
- 16'20" VAAR
- 13'58" KAF3
- 12'25" FT42
- 3'06" NT60

PAD ACCESS
- PAD CLEARING
- PAD EVACUATED FOR CRYO LOADING
- CREW INGRESS
- EVACUATED FOR LAUNCH

LV CD SUPPORT REQUIREMENTS



LV DRAIN OPERATIONS



REQUIRED SUBTASK DOCUMENTATION

PAGE G6

XB-245-111

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 TI-2-17.

XB-245-111

S-IC STAGE & GSE SUBTASKS

TCP NO.	REV	TITLE
V-21008	007	ELEC CONNECTION OF S-IC PD EBW DETS (HAZARDOUS)
V-21009	007	ELEC CONNECTION OF S-IC PD S&A UNIT (HAZARDOUS)
V-21012	007	ELEC CONNECTION OF S-IC RR EBW DETS (HAZARDOUS)
V-21013	008	ELEC CK OUT OF S-IC EBW DETS (HAZARDOUS)
V-21014	006	ELEC INSTL/REMOVAL OF HV IGNITERS (HAZARDOUS)
V-21018	009	FLIGHT BATTERY ACTIVATION AND CHECKOUT (HAZARDOUS)
V-21035	007	PREPS OF S-IC ESE TO SUPPORT LAUNCH CD
V-21036	005	S-IC STAGE ESE POST LAUNCH CHECK LIST
V-21038	008	S-IC POWER ON
V-21097	005	S-IC POWER OFF
V-21194	007	LSE POWER ON & OFF REMOTE CONTROL (LCC)
V-21204	006	INSTALLATION OF S-IC FLIGHT BATTERIES (HAZARDOUS)
V-21321	005	ELEC INSTALLATION OF S-IC HDA ORD (HAZARDOUS)
V-21439	002	EMERG BACKUP BATT OPERATIONAL TEST
V-24010	007	S-IC INTERNAL WORK PLATFORM REMOVAL (HAZARDOUS)
V-24011	005	S-IC BULKHEAD PROTECTION EQUIP REMOVAL (HAZARDOUS)
V-24025	004	S-IC GROUND HYD SUP & C/O UNIT SETUP (HAZARDOUS)
V-24320	003	S-IC FORWARD UMBILICAL RECONNECTION
V-24327	007	S-IC PNEU SYS CDDT AND LAUNCH PREPS (HAZARDOUS)
V-25003	002	RP-1 STANDBY
V-25034	004	LH2 STORAGE TANK FILL AND DRAIN (HAZARDOUS)
V-25159	008	PTCS PREPS FOR PROP LOAD OPS
V-25160	003	DTS/DEE SYSTEM PAD SECURING
V-25340	006	LOX PREPS FOR VEHICLE LOADING/PAD A (HAZARDOUS)
V-25342	003	LOX SYS SECURING AFTER LOX LOAD/DRAIN (HAZARDOUS)
V-25344	004	TOTAL LOX SYS DEWPOINT/PAD A
V-25345	003	LOX SYS SECURING AFTER LAUNCH/PAD A (HAZARDOUS)
V-25389	008	RP-1 AUTO LEVEL ADJUST/LINE INERT (HAZARDOUS)
V-26222	005	SOP FOR THE PNEU DIST SYS (HAZARDOUS)
V-26247	005	ECS DAILY OPS/LC-39A (HAZARDOUS)
V-27087	003	HGD SYSTEM OPERATING PROCEDURE (HAZARDOUS)
V-27093	006	S-IC LOX & FUEL LIQUID LEVEL & LOAD ELECTRONICS TESTS
V-27098	009	VEH MEAS GSE STA TEST SUPPORT PREPS
V-27153	009	S-IC STAGE MEASURING SCAN TEST MT01
V-27175	007	LCC MEAS STA OPS, CAL & MAINT
V-28186	003	S-IC AND GSE TM SUPPORT
V-29003	004	S-IC STAGE ORD INST AT PAD (HAZARDOUS)
V-29005	006	F-1 ENGINE ORDNANCE INSTALLATION (HAZARDOUS)
V-31031	003	IWS ELECTRICAL POWER PREPARATION
V-31045	007	SA/TSM/LA-ELEC SUPPORT FOR CDDT & LAUNCH
V-31047	004	S-IC UMB CABLE CONNECT/DISCONNECT PROC
V-33030	005	S-IC FLT CONTROL SYS PREPS
V-34012	006	S-IC PROPULSION SYS CDDT & LAUNCH PREPS (HAZARDOUS)
V-35004	005	LH2 SYSTEM PREP FOR VEHICLE LOADING
V-36032	003	S-II AFT S/A LOCAL CONTROL OPERATION (HAZARDOUS)
V-36039	005	TSM SYS PREP & OPS FOR CDDT AND CD (HAZARDOUS)
V-36063	006	SMOPS LAUNCH CONFIGURATION PREPS (HAZARDOUS)
V-36064	004	PNEU DIST SYS LAUNCH CONFIGURATION PREPS
V-36069	004	HDA & S/A CONTROL SW SUPPORT OPERATIONS (HAZARDOUS)
V-36070	005	PLATFORMS AND TRANSPORTER LAUNCH PREPS (HAZARDOUS)
V-36071	004	S-IC INTERTANK S/A EXT & CARRIER RECONNECT (HAZARDOUS)
V-36074	005	ECS PROP LOAD OPS/LC-39A & B (HAZARDOUS)
V-36077	005	S-IC INTERTANK S/A SUPPORT OPS CDDT & CD (HAZARDOUS)
V-36078	004	S-IC FWD S/A SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36079	005	MYD DISTRIBUTION SYS PREPS FOR CD
V-36080	005	S-II INTERMEDIATE S/A SUP OPS CDDT & CD (HAZARDOUS)
V-36081	004	S-II FWD S/A SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36082	004	S-IVB AFT S/A SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36083	005	S-IVB FWD S/A SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36084	004	SM S/A SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36085	005	CM ACCESS ARM SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36086	005	DRRS SUPPORT OPS CDDT & LAUNCH (HAZARDOUS)
V-36087	004	LSE MECH OPS
V-36112	004	O-BALL COVER REMOVAL SYSTEM PREPS/ML (HAZARDOUS)
V-36113	004	INDUSTRIAL WATER SYSTEM LAUNCH PREPS (HAZARDOUS)
V-37038	004	HAZARDOUS GAS DETECTION SYSTEM MAINT PROC (HAZARDOUS)
V-38000	008	DRSCS PAD STAGE AND VEHICLE SUPPORT
V-31032	003	ECS NETWORKS PRE-OPERATIONAL CHECKOUT
V-21032	006	LCC/ML ELEC CABLE VERIFICATION

S-II STAGE SUBTASKS

TCP NO.	REV	TITLE
V-21103	009	B011 S-II STAGE POWER APPLICATION
V-21111	006	B013 S-II BATTERY INSTALLATION
V-21249	006	B016 S-II BATTERY REMOVAL (CDDT ONLY)
V-21253	010	G060 S-II FINAL ELECTRICAL CHECKS
V-21438	002	B022 FINAL STAGE ELECTRICAL CHECKS (CDDT ONLY)
V-21452	BASIC	G141 S-II FINAL LUT-ELECTRICAL CHECKS
V-24116	004	J001 PROPELLANT FEED, RECIRCULATION LINES, AND LH2 TANK VENT LINES VACUUM CHECK (CD ONLY)
V-24259		DELETED
V-25311	006	L009 PURGE & VACUUM SYSTEM SECURING (HAZARDOUS)
V-26008	004	G042 REMOVAL AND STORAGE OF S-II STAGE ACCESS EQUIPMENT AND PLATFORMS
V-26276	008	G058 S-II PURGE & VACUUM SYS SETUP & OPERATION FOR PROP LOADING (HAZARDOUS)
V-26489	BASIC	G138 S-II ACCESS KIT INSTALLATION
V-27154	003	G031 LCC RECORDER, FUNCT SETUP & VERIFICATION (HAZARDOUS)
V-27183	003	G032 MEASUREMENT STATION CHECKOUT/TEST
V-27208	004	X044 S-II FINAL AIRBORNE MEASUREMENTS CLOSEOUT
V-27218	002	G137 GSE ENG WALKDOWN OF ML INSTR
V-28135	002	G050 PCM/TM CHECKOUT EQUIP TEST (STAGE MODULE EQUIP)
V-28143	007	M021 S-II STAGE RF & TM CLOSEOUT FOR LAUNCH
V-28144	007	R014 S-II TM OPERATIONAL READINESS CHECK
V-28181	001	G125 FM/FM TM C/O EQUIP TEST (STAGE MODULE)
V-29024	005	K008 S&A DEVICE INSTL & ELEC FUNCT C/O (HAZARDOUS) (CD ONLY)
V-29038	005	S009 S-IC/S-II, S-II/S-II AND S-II/S-IVB PULSE SENSOR REMOVAL
V-29050	006	K010 INERT SAFE/ARM/DEVICE INSTALL INTO THE S-II PD SYS (LIVE ORD COMP) (HAZARDOUS) (CDDT ONLY)
V-30029	009	M020 STAGE & GSE PREPS FOR S/V CDDT & CD (HAZARDOUS)
V-34014	007	E023 PROPULSION SYS TEST OPERATIONS (HAZARDOUS)

S-IVB STAGE SUBTASKS

TCP NO.	REV	TITLE
V-21413	003	VEHICLE BATTERY MONITORING (CD ONLY)
V-30039	006	S-IVB SUPPORT AND PREPS FOR CDDT & CD (HAZARDOUS)

INSTRUMENT UNIT SUBTASKS

TCP NO.	REV	TITLE
V-21222	011	AUXILIARY DAILY POWER ON PROCEDURE
V-21223	018	IU POWER APPLICATION/REMOVAL
V-21243	009	PRIMARY LAUNCH VEHICLE SUPPORT
IV-21254	012	IU BATT ACTIVATION, MON & DISCHARGE PROC (HAZARDOUS)
V-22006	008	GROUND COMPUTER DAILY/TEST OPERATIONS
V-23068	010	ST-124M SLIP RING EXERCISE
IV-24178	009	IU EQUIPMENT PRESSURIZATION (HAZARDOUS)
V-28069	015	IU RF SYSTEM SUPPORT
V-28072	005	IU STAGE MODULE TCE POWER UP SEQUENCE
V-31008	005	ML/DCE REMOTE OPERATING PROCEDURE
V-31062	011	I&M SUPPLEMENTAL TO S/V CDDT AND CD (HAZARDOUS)
V-33011	008	ST-124M SYSTEM OPERATIONS
V-33031	005	FLT COMPUTER SYS TEST CDDT & LAUNCH
V-34017	005	IU/S-IVB ECS OPERATION
IV-34046	006	IU ACCESS DOOR INSTALLATION AND REMOVAL
IV-34047	012	IU HEAVY COMPONENT INSTL & REMOVAL
IV-34038	007	IU-PNEUMATIC CONSOLE SET UP

INTEGRATED PROCEDURES

TCP NO.	REV	TITLE
V-20056	010	SATURN V LAUNCH VEH EMERG PROCEDURE (HAZARDOUS)
V-21096	002	EDS OVERALL AND COUNTDOWN TEST
V-35014	015	LV AUTO & MAN LOX/LH2 LOAD & DRAIN OPS (HAZARDOUS)
V-35015	012	VEH LOX/LH2 TANK & FACIL LH2 SYS PURGE VOL I (HAZARDOUS)
V-35015	BASIC	VEH LOX/LH2 TANK & FACIL LH2 SYS PURGE VOL II (HAZARDOUS)

LV PROCEDURES

TCP NO.	REV	TITLE
V-28070	005	S-IC TELEMETRY, MOBILE LAUNCHER GSE READINESS

AUTOMATED PROGRAMS INDEX

THE AUTOMATED PROGRAMS (IVARS) 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
BE01	008	S-IC PROPELLANT TEMPERATURE MONITOR	
BE02	006	S-IC PROPELLANT LEVEL MONITOR	
BT01	002	PROPELLANT MONITOR UPDATE TEST PROGRAM	
CTC1	047	GAIN TEST	
CTC2	034	CONTROL COMPUTER RELAY REDUNDANCY TEST	
CTC3	022	CONTROL COMPUTER COMPARATOR TEST	
CTC4	042	EDS CONTROL RATE GYRO TEST	
CTC5	035	APS GAIN TEST	
FE50	007	ACCELEROMETER MONITOR TEST	
FT03	009	LVDC/LVDA SWITCH SELECTOR INTERFACE TEST	
FT04	025	LVDC POWER ON/OFF AND/OR REDUNDANCY TEST	
FT05	013	LVDC DATA LOAD AND/OR VERIFY TEST	
FT06	008	LVDC GIMBAL ANGLE READ & PLATFORM DRIFT TEST	
FT08	006	LVDC CORE MAP LOAD AND/OR PRINT TEST	
FT10	008	LVDC LADDER OUTPUT TEST	
FT20	006	LVDC/LVDA SELF TEST	
FT23	010	LVDC SECTOR SUMCHECK TEST	
FT25	023	LVDC/LVDA DISCRETE INPUT TEST	
FT31	002	LVDC ACCELEROMETER PULSE COUNT TEST	
FT33	007	LVDC/LVDA DISCRETE OUTPUT TEST	
FT35	003	LVDC/LVDA DDAS TEST	
FT37	023	SIMULATED FLIGHT INITIALIZE TEST	
FT42	026	PREPARE TO LAUNCH TEST	
FT43	009	LVDC COMPUTER INTERFACE UNIT TEST	
FT45	009	LVDC COMMAND SYSTEM TEST	
FT47	004	PREFLIGHT COMMAND TEST	
FT49	008	ACCELEROMETER MONITOR DISPLAY CONTROL	
FT55	019	LVDC TELEMETRY TEST	
GE01	027	AZIMUTH LAYING AND PLOT MONITOR	
GT16	026	AZIMUTH LAYING PROGRAM	
KAF1	000	F/C T-24 HR LINKING PROGRAM	
KAF2	000	F/C OAT PREPS	
KAF3	000	F/C THRUST VECTOR READ	
KAG1	000	LVDC/LVDA T-20 HR LINKING PROGRAM	
KAPW	000	LVDC/LVDA POWER ON	
KA01	013	IU STAGE POWER APPLICATION	
ME01	019	RACS RAPID CONTROL ROUTINE	
MT01	013	MEASUREMENTS CALIBRATION TEST	
NT60	027	REDLINE MONITOR PROGRAM	
NT98	013	DISCRETE INITIALIZATION/REINITIALIZATION	
NT99	004	DISCRETE EXECUTIVE ACTION TABLE MODIFY	
NU10	037	REDLINE TABLE GENERATOR	
OAEC	005	S-II ENGINE CIRCUITRY TEST	
OAES	001	S-II ENGINE SEQUENCE TEST	
OAMS	001	S-II MAINSTAGE CALIPS TEST	
OAPO	004	S-II STAGE POWER ON	
VAAR	000	FINAL ATTIUDE RATE COMMANDS	
VAED	001	EDS TEST	
VAFC	001	FLIGHT CONTROL UTILITY PROGRAM	
VALJ	000	T-25 HR LINKING PROGRAM	
VALK	000	T-9 HR LINKING PROGRAM	
VALL	001	T-1151 HR LINKING PROGRAM	
VAMC	000	MEASURING SYSTEM RAPID CALIBRATION	
VAPX	004	LAUNCH VEHICLE POWER TRANSFER	
VARS	003	LAUNCH VEHICLE DRSCR TEST	
VARY	003	LAUNCH VEHICLE RECYCLE TO T-22 MINUTES	
VATC	002	LAUNCH VEHICLE TELEMETRY CALIBRATION	
VATS	004	TERMINAL SEQUENCE PROGRAM	
VZEA	001	ENGINE OUT ABORT TEST	
VZRE	001	RATE EXCESSIVE ABORT TEST	
VZSA	001	SPACE VEHICLE ABORT TEST	
VZ33	001	LVDA/LVDC DISCRETE OUTPUT TEST	
WAPO	004	S-IC DAILY POWER ON	
WASL	000	S/A PRESSURE LEVEL TEST	
WAST	000	S-IC CALIPS CHECKOUT	
WASV	001	S-IC STAGE SYSTEMS VERIFICATION TEST	
WATL	000	TSM PRESSURE LEVEL TEST	
XAIC	001	S-IVB INITIAL SWITCH SCAN	
XADS	000	S-IVB COUNTDOWN DISCRETE SCAN	
XAPS	012	S-IVB STAGE & GROUND POWER APPLICATION	
XASS	010	S-IVB SWITCH SELECTOR RESET	

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
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
L/V TEST CONDUCTOR (LVO)	CLTC	121	
S/V TEST SUPERVISOR (DLO)	CVTS	111	
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)
- CLES (LV ELEC ENGINEER)
- CLMS (LV MECH ENGINEER)
- CIAR (LV CHIEF ENGINEER)
- ELSR (LV CIF 3_07 COOR)

S-1C:
- C1TC (S-IC TEST CONDUCTOR)
- C1MS (S-IC MEAS. SYS.)
- CHGD (HAZARDOUS GAS DET.)
- C1PE (S-IC PROP & MECH)
- C1NE (S-IC ELEC NETS)
- CWCP (IND. WATER CONTROL)
- CPDC (PNEU. DIST. SYS.)
- CSAC (SA 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)
- C2FC (S-II HYDRAULICS/EAS)
- 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)
- CUIP (IU INSTR.)
- BGCC (GROUND COMP.)

DLO:
- CVTS (TEST SUPERVISOR)

SUPPORT:
- BCFM (LCC MEAS.)
- BCWC (FIREX CONTROL)

ACCF	CCF TEST CONDUCTOR
BCBX	BENDIX SUPPORT SUPERVISOR
BCFM	FACILITY MEASUREMENTS
BCRL	RCA/LTV SUPPORT SUPERVISOR
BCSC	VEHICLE SUPPORT CONTROLLER
BCWC	WATER CONTROL (CCC-CONSOLES)
BDDS	LCC DATA DISPLAY STATION
BDTS	DATA TRANSMISSION (2P12) INFORMATION SYSTEM
BEHZ	HAZARDS MONITORING, INFORMATION SYSTEMS
BELT	LIGHTNING WARNING
BGCC	GROUND COMPUTER COMPLEX FIRING ROOM
BLTM	LVD TM ENGINEER
BOSC	SUPPORT CONTROLLER, OPERATIONS (AAS CUE PANEL RN 1P9)
BOTV	OTV SYSTEM CENTER
BPHO	PHOTOGRAPHY (TECHNICOLOR)
BRFS	RF GROUND STATION LCC, RF-DRSCS GND STATION - 2P10A
BTIS	INSTALLATION SUPPORT CONTROLLER
BTMC	TM CHECKOUT EQUIPMENT, COMMON MODULE - ROOM 2P10
BTMI	CIF INTERFACE MODULE - RM 2P10
BTTM	TEST COORDINATOR - RF & TM
BUTM	IU TM CHECKOUT EQUIPMENT
B1RF	S-IC RF SYSTEMS ENGINEER
B1TM	TM CHECKOUT EQUIPMENT
B2RF	S-II RANGE SAFETY ENGINEER
B2TM	TM CHECKOUT EQUIPMENT, S-II MODULE - ROOM 2P10
B41E	S-IVB INSTRUMENTATION ENGINEER
B4RF	LCC RF STATIONS
B4TM	S-IVB TM CHECKOUT EQUIPMENT
CAJP	A. J. PICKETT
CARE	GROUND NETWORKS ENGINEER
CCAP	AUXILIARY POWER CONSOLE
CCLH	LH2 CONTROL CONSOLE
CCLO	LOX CONTROL CONSOLE
CCPM	NETWORKS POWER MONITOR
CCRP	RP-1 CONTROL CONSOLE
CCTC	TEST SUPPORT CONTROLLER (SOP)
CECS	ECS CONTROL CONSOLE
CFDK	CRT KEYBOARD - EDS OPERATOR
CGIC	INSTRUMENTATION CONTROLLER
CHCU	HYDRAULIC CHARGING UNIT CONTROL CONSOLE
CHDA	HOLDDOWN ARMS CONTROL PANEL
CHGD	HAZARDOUS GAS DETECTION SYSTEM - LCC
CHG2	ABORT MON HAZ GAS CUE PANEL CONSOLE BE-11
CIAR	I. A. RIGELL
CLCD	LVD GROUND COMPUTER SYSTEM ENGINEER
CLCE	LVD CHIEF ENGINEER
CLCP	LVD COMPUTER AUTOMATION PROGRAMMING ENGR
CLDE	LUT SYSTEMS DEE PRINTER
CLEG	LVD CHIEF LV ELECTRICAL G&C SYSTEM
CLET	LVD INTEGRATION EQUIP ELEC SYS ENGR
CLEL	LVD LAUNCH EQUIP ELEC SYST ENGR
CLEP	LVD PROPELLANTS ELEC SYST ENGR
CLES	ELECTRICAL G&C OPERATIONS ENGINEER
CLEU	ELEC NETWKS SYST ENGR IU
CLE4	LVD WATER SYST ELEC SYST ENGR
CLE1	ELEC NETWKS SYST ENGR S-IC
CLE2	ELEC NETWKS SYST ENGR S-II
CLE4	ELEC NETWKS SYST ENGR S-IVB
CLFK	CRT KEYBOARD - FLIGHT CONTROL
CLFS	LVD FLIGHT CONTROL SYSTEM ENGINEER
CLGC	LVD GUIDANCE & CONTROL SYSTEM ENGINEER
CLGK	CRT KEYBOARD - GUIDANCE
CLGS	LVD GYRO AND STABILIZER SYSTEM ENGINEER
CLMK	LVV CRT KEYBOARD - MEASURING
CLIS	LVD INSTRUMENTATION SYSTEM ENGINEER
CLMS	LVV MECHANICAL SYSTEMS ENGINEER
CLNS	LVD FLIGHT COMPUTER SYSTEMS ENGR
CLOM	LVD OPERATIONS MANAGER
CLPS	LVV PROPELLANT SYSTEMS ENGINEER
CLQD	LV QAL AVU F/R
CLQS	LV QAL CHIEF
CLSK	LSE & ECS CRT
CLTC	LAUNCH VEHICLE TEST CONDUCTOR
CLVN	VEHICLE NETWORKS PANEL
CPDC	PNEUMATIC DISTRIBUTION SYSTEM CONTROL CONSOLE
CPH1	LH2 COMPONENTS PANEL #1
CPH2	LH2 COMPONENTS PANEL #2
CPO1	LOX COMPONENTS PANEL #1
CPO2	LOX COMPONENTS PANEL #2
CPO3	LOX COMPONENTS PANEL #3
CPRK	PROPELLANTS DISPLAY COMPUTER CONSOLE
CPRP	RP-1 COMPONENTS PANEL
CPSS	SYSTEMS SAFETY
CRSS	RANGE SAFETY SUPERVISOR PANEL
CSAC	SERVICE ARMS CONTROL CONSOLE
CSAD	DRRS CONSOLE
CSAM	SERVICE ARMS MEASUREMENTS PANEL
CSA1	SERVICE ARM #1 CONTROL CONSOLE (S-IC INTER TANK)
CSA2	SERVICE ARM #2 CONTROL CONSOLE (S-IC FORWARD)
CSA3	SERVICE ARM #3 CONTROL CONSOLE (S-II AFT)
CSA4	SERVICE ARM #4 CONTROL CONSOLE (S-II INTERMEDIATE)
CSA5	SERVICE ARM #5 CONTROL CONSOLE (S-II FORWARD)
CSA6	SERVICE ARM #6 CONTROL CONSOLE (S-IVB AFT)
CSA7	SERVICE ARM #7 CONTROL CONSOLE (S-IVB FORWARD)
CSA8	SERVICE ARM #8 CONTROL CONSOLE (SERVICE MODULE)
CSA9	SERVICE ARM #9 CONTROL CONSOLE (COMMAND MODULE)
CSPP	SERVICE ARMS POWER PANEL
CTSC	TEST SUPPORT CONTROLLER
CTS1	TAIL SERVICE MAST 1-2 FIRING AND MONITOR TEST CONSOLE
CTS2	TAIL SERVICE MAST 2-3 FIRING AND MONITOR TEST CONSOLE
CTS3	TAIL SERVICE MAST 3-4 FIRING AND MONITOR TEST CONSOLE
CUCP	IU COOLING CONTROL CONSOLE
CUCR	IU FLIGHT CONTROL RECORDER PANEL
CUCS	AIRBORNE COMMAND SIMULATOR
CUDE	DIGITAL EVENTS EVALUATOR PRINTER
CUEF	EDS FLIGHT MONITOR
CUES	EDS PREPARATION
CUEV	EVENTS DISPLAY PANEL
CUFC	IU FLIGHT CONTROL PANEL
CUFE	IU FLIGHT CONTROL SYSTEMS ENGINEER
CUFS	FLIGHT CONTROL SYSTEM INTEGRATOR
CUGA	IU FLIGHT CONTROL EDS RATE GYRO/CONTROL
CUIE	INTEGRATION/AUX POWER SYSTEM ENGINEER
CUIP	IU INSTRUMENTATION PANEL
CUNE	IU GROUND NETWORKS ENGINEER
CUNK	IU CRT KEYBOARD - NETWORKS
CUNP	IU NETWORKS PANEL
CUPC	ST-124M SYSTEM ENGINEER
CUPR	IU AC & DC POWER
CUSP	FLT CONT COMP INPUT SUBSTITUTE PANEL
CUSW	SWITCH SELECTOR PANEL
CUTC	IU TEST CONDUCTOR

CALL STATIONS

CVTS	SPACE VEHICLE TEST SUPERVISOR
CWCP	INDUSTRIAL WATER CONTROL PANEL
C1CS	CUTOFF SENSORS PANEL
C1DE	DEE PRINTER
C1DP	PROPELLANT DISPERSION AND ORDNANCE (DESTRUCT) PANEL
C1EH	ENGINE HEATERS PANEL
C1EN	S-IC ENGINE PANEL
C1EV	EVENT DISPLAY DISCRETE READOUT PANEL
C1FC	S-IC ENGINE DEFLECTION PANEL
C1FE	FLIGHT CONTROL SYSTEM ENGINEER
C1FR	FIRING CONSOLE AND COMPONENT TEST PANEL
C1HP	HYDRAULICS PANEL
C1IP	MEASURING PANEL
C1LO	S-IC LOX CONSOLE
C1MS	MEASURING SYSTEM TEST OPERATIONS
C1NK	CRT KEYBOARD - NETWORKS
C1NP	NETWORKS PANEL
C1NE	GROUND ELECTRICAL ENGINEER
C1OU	LOX TANKING COMPUTER
C1PC	CONTROL AND PURGE PANEL (STAGE PNEUMATICS CONTROL)
C1PE	PROPULSION AND MECHANICAL SYSTEMS ENGINEER
C1PK	CRT KEYBOARD - PROPULSION
C1PP	DC POWER PANEL
C1PS	GROUND POWER POWER SUPPLY ENGINEER
C1PU	S-IC PREFILL PANEL
C1RP	RP-1 SYSTEM PANEL
C1RU	RP-1 TANKING COMPUTER PANEL
C1SN	S-IC STAGE NETWORKS ENGINEER
C1SP	SEQUENCER PANEL
C1TC	S-IC STAGE TEST CONDUCTOR
C2AE	ALL ENGINE PANEL
C2DP	PD AND EBW AND ORDNANCE PANELS
C2EC	ENGINE COMPONENTS PANEL
C2EV	EVENTS DISPLAY PANEL
C2FC	HYDRAULICS PANEL
C2FE	ENGINE DEFLECTION PANEL
C2GP	GROUND PNEUMATICS PANEL
C2HG	HAZARDOUS GAS DETECTION ENGINEER
C2HU	LH2 TANKING COMPUTER
C2IP	MEASURING AND RF PANEL
C2LA	S-II PROPELLANT LOADING ELECTRICAL ADVISOR
C2NK	CRT KEYBOARD - NETWORKS
C2NP	NETWORKS PANEL
C2OU	LOX TANKING COMPUTER
C2PA	S-II PRESSURIZATION ELECTRICAL ADVISOR
C2PC	DC POWER CONTROL PANEL #1
C2PK	CRT KEYBOARD - PROPULSION
C2PM	PROPELLANT MONITOR PANEL
C2PU	PROPELLANT UTILIZATION AND DEPLETION PANELS
C2PV	PURGE AND VACUUM PANEL
C2RP	RECIRCULATION PANEL
C2RR	RELAY RACKS (#1 AND #2)
C2S1	S-II ACCESS/STRUCTURES
C2SP	PRESSURIZATION PANEL
C2TC	S-II STAGE TEST CONDUCTOR
C2TV	S-II TV CONTROLLER
C4AL	APS LAUNCH & MONITOR PANEL
C4DE	DIGITAL EVENTS EVALUATOR PRINTER
C4DP	PROPELLANT DISPERSION AND ORDNANCE PANEL
C4EP	ENGINE PREPARATION PANEL
C4ES	S-IVB ELECTRONICS SYSTEM ENGINEER
C4ET	ENGINE TEST PANEL
C4EV	S-IVB EVENTS DISPLAY PANEL
C4FC	S-IVB FLIGHT CONTROL PANEL
C4FS	S-IVB FLIGHT CONTROL SYSTEM ENGINEER
C4HC	S-IVB ME CONTROL PANEL
C4HE	S-IVB GH2/GN2 CONTROL PANEL
C4HU	LH2 TANKING COMPUTER
C4HY	HYDRAULIC PANEL
C4IP	S-IVB MEASURING PANEL
C4NK	CRT KEYBOARD - NETWORKS
C4NP	S-IVB NETWORK PANEL
C4OH	O2/H2 BURNER PANEL
C4OU	LOX TANKING COMPUTER
C4PK	S-IVB PROPELLANTS KEYBOARD
C4PP	S-IVB DC POWER SUPPLY PANELS
C4PR	S-IVB PROPELLANT STATUS PANEL
C4PS	S-IVB PROPULSION SYSTEM ENGINEER
C4PU	S-IVB PROPELLANT UTILIZATION SYSTEMS PANEL
C4P2	S-IVB PROPULSION CRT DISPLAY CONSOLE, AUX LOCATION
C4QC	S-IVB QUALITY CONTROL
C4SM	S-IVB MECH/STRUCTURES SYSTEM ENGINEER
C4SP	S-IVB STAGE PRESSURE PANEL
C4TC	S-IVB STAGE TEST CONDUCTOR
EASM	CIF ANTENNA SITE
ECOM	COMPUTER FACILITY
ECOP	CIF COMPUTER
EDDS	CIF DATA DISPLAY ROOM (387)
EDTS	DATA TRANSMISSION STATION
ETMS	TELEMETRY GROUND STATION (CIF)
ETOM	GUIDANCE TM OUTPUT MONITOR (CIF)
E1CP	ABORT MONITOR - THRUST CHAMBER PRESS
E1EG	CIF S-IC ENG GIMBAL POSITION ABORT MON.
E1EN	CIF S-IC ENGINE PANEL
E1FC	CIF S-IC FLIGHT CONTROL ENGR
E1NE	CIF S-IC ELECTRICAL ENGINEER
E1NK	CIF S-IC NETWORKS CRT KEYBOARD
E1PE	CIF S-IC PROPULSION ENGINEER
E1PK	CIF S-IC PROPULSION CRT KEYBOARD
E1TC	CIF S-IC TEST CONDUCTOR
E1TM	CIF S-IC MEASURING
E2TM	CIF S-II TM ENGR MONITOR
E4FC	CIF S-IVB FLIGHT CONTROL ENGR MONITOR
GMIL	UNIFIED S BAND GROUND STATION
HFLT	HOUSTON FLIGHT DIRECTOR
KSTC	SPACECRAFT TEST CONDUCTOR
LASE	LSE ELEC ENGR, LUT BASE
LAS1	LSS POWER SUPPLY AND DIST, RACKS
LCDC	COUNT CLOCK (ML)
LDAS	DDAS (ML)
LEBS	EMERGENCY BACKUP BATTERIES (ML)
LESP	ENGINE SERVICE PLATFORM
LGCC	GROUND COMPUTER COMPLEX (ML)
LHDA	HOLDDOWN ARMS
LHGD	HAZARDOUS GAS DETECTION SYSTEM RM 158
LLDE	DIGITAL EVENT EVALUATOR (ML) DEE-6
LLRS	DIGITAL RANGE SAFETY COMMAND SYSTEM GSE
LOM	LAUNCH OPERATIONS MANAGER
LPDC	PNEUMATIC DISTRIBUTION COMPLEX
LPLX	PROPELLANT LOADING COMPUTERS
LP78	POWER SUPPLY SYSTEM RACKS, AREA 78
LPRR	INTEGRATION NETWORK (ML)
LSCP	LUT SIGNAL CONDITIONING TEST PANELS
LUQI	ML QUALITY INSPECTION
LTSM	LUT TAIL SERVICE MAST ENGINEER
LUNW	IU NETWORKS
L1EP	S-IC ENGINE AREA
L1FH	HANDLING & ORDNANCE ENGINEER, FORWARD SKIRT, S-IC
L1GH	S-IC GROUND HYDRAULICS SUPPLY & CHECKOUT
L1HC	MOTOR CONTROL CENTER S-IC GRND HYD SUPPLY & C/O
L1IC	S-IC INSTRUMENTATION ENGINEER (ML)
L1IH	HANDLING & ORDNANCE ENGINEER, INTERTANK, S-IC
L1LS	LUT SUPERVISOR
L1NE	LUT NETWORKS ENGR (S-IC STAGE)
L1OE	S-IC ORDNANCE ENGINEER
L1PS	GROUND POWER POWER SUPPLY ENGINEER
L1PU	S-IC PREFILL UNIT
L1RS	RELAY RACKS AND SEQUENCER RACK
L1SM	STAGE MONITOR/OPERATIONS COORDINATOR
L1TH	HANDLING & ORDNANCE ENGINEER, THRUST STRUCTURE, S-IC
L1TT	TM & RF THRUST STRUCTURE
L2PD	POWER DISTRIBUTION RACKS (ROOM 8B)
L2RR	S-II RELAY RACKS (1 THROUGH 5) (ROOM 7A)
L4CE	CONTROL ELECTRONIC ENGINEER
L4JR	JUNCTION RACKS
L4PR	S-IVB POWER RACS (ROOM 7B)
MGNR	GUID & NAV RIGHT SIDE UNIT 4, SC
MGNS	GUID & NAV UNIT 14, SC
MSTC	NASA S/C TEST CONDUCTOR
MTPE	TEST PROJECT ENGINEER
PEHE	ENVIRONMENTAL HEALTH ENGINEER
PEST	ENGINE SERVICE PLATFORM TRANSPORTER
PGME	PAD MP GAS ENGINEER
PLQG	LV-QAL-35 GSE & ML
PLQU	LV-QAL-34 IU
PLQ1	LV-QAL-31 S-IC
PLQ2	LV-QAL-32 S-II
PLQ4	LV-QAL-33 S-IVB
PRFI	EMC MONITOR INFORMATION SYSTEM
PUPL	IU PAD LEADER
PUSD	IBM PAD SAFETY
PVTS	TEST SUPERVISOR, PAD
P1ES	S-IC GROUND LEVEL ENGINE SERVICING
RASL	LSE FIRING ROOM NETWORKS ENGR
RCDC	COUNTCLOCK (LCC)
RDAS	DDAS GSE RACKS
RDE3	DEE-3 SYSTEM ENGINEER
RDTS	DATA TRANSMISSION SYSTEM ENGINEER
RDSC	L/V E & I RECORDERS
RESC	ECS STRIP CHARTS
RHSC	LH2 STRIP CHARTS
RLDE	DEE 6 (LCC)
RLDP	LOX NETWORKS ENGINEER
RLSC	TSM & S/A RECORDERS
RPDC	PROPELLANTS D,C, POWER - LCC
RRSC	RP-1 STRIP CHARTS
RRSC	RANGE SAFETY OFFICER STRIP CHARTS
RUBM	IU STRIP CHARTS
RXSC	LOX STRIP CHARTS
R1JR	LCC RACKS PATCH DIST,
R1NE	S-IC MEASURING STRIP CHARTS
R1SC	S-IC STRIP CHARTS
R2DP	S-II DIGITAL PRINTER
R2RL	S-II ENGINES REDLINE ENGINEER
R3SC	STRIP CHARTS
R4EI	S-IVB GROUND BUSS E & I RECORDERS
R4HY	S-IVB HYDRAULIC STRIP CHARTS
R4PS	S-IVB PROPULSION STRIP CHARTS
R4PU	S-IVB PU STRIP CHARTS
R4SC	STRIP CHART RECORDERS
SCDR	S/C COMMANDER
SRO	SUPERINTENDENT OF RANGE OPERATIONS
SUQI	STRUCT, QUALITY INSPECTOR
SURF	IU RF STRUCTURE
SUTM	IU TM STRUCTURE
SUVE	IU VEHICLE NETWORKS
SUVM	IU VEHICLE MECHANICAL
S4CE	S-IVB CONTROL ELECTRONICS ENGINEER
S4FC	S-IVB FLIGHT CONTROL ENGINEER
S4HY	S-IVB HYDRAULICS ENGINEER
S4IE	INSTRUMENTATION ENGINEER
S4MA	AFT STRUCTURAL/MECH ENGR
S4MF	FWD STRUCTURAL/MECH ENGR
S4ML	S-IVB MOBILE LAUNCHER STRUCTURAL/MECHANICAL ENGINEER
S4MM	S-IVB SERVICE STRUCTURE STRUCTURAL/MECH ENGR
S4MS	STRUCTURE MEASURING STATION
S4OR	S-IVB ORDNANCE ENGINEER
S4PC	S-IVB PAD CONTROL
S4PE	S-IVB PROPULSION ENGINEER
S4SY	S-IVB SAFETY ENGINEER
S4TM	S-IVB STRUCTURE TM ENGINEER
USAE	LSE ELEC ENGR - TOWER
USA8	SERVICE ARM #8 SYSTEM
UUCU	GROUND SUPPORT COOLING UNIT
UUPC	IU PNEUMATIC CONSOLE
UUVM	IU MECHANICAL, UMBILICAL TOWER
U1FN	FORWARD SKIRT ELECTRICAL NETWORKS
U1FT	S-IC FORWARD SKIRT TM & RF
U2AM	S-II AFT MONITOR
U2AN	AIRBORNE SYSTEMS ENGINEER
U2A1	S-II AIRBORNE NETWORKS FWD
U2A2	S-II AIRBORNE NETWORKS AFT
U2EC	ENVIRONMENTAL CONTROL ENGINEER
U2ED	S-II ELECTRICAL ORDNANCE ENGINEER
U2FE	S-II FLIGHT CONTROL
U2FM	S-II FWD MONITOR
U2HO	HANDLING AND ORDNANCE ENGINEER
U2IE	S-II INSULATION ENGINEER
U2J2	ENGINE SYSTEMS ENGINEER
U2LF	FLIGHT CONTROL LEADMAN
U2LH	S-II HYDRAULIC LEADMAN
U2LN	S-II LUT NETWORKS ENGINEER
U2LP	S-II PRESSURIZATION LEADMAN
U2MH	MECHANICAL AND HYDRAULICS ENGINEER
U2MO	S-II MECHANICAL ORDNANCE ENGINEER
U2MU	MECH/UMBILICAL ENGINEER
U2PE	PROPELLANT/PRESSURIZATION ENGINEER
U2PF	PROPELLANT FILL ENGINEER
U2PM	PROPELLANT MANAGEMENT ENGINEER
U2PV	ML PURGE & VACUUM ENGINEER
U2QC	ML QUALITY CONTROL REP
U2SE	S-II PAD LEADER
U2SI	STRUCTURES AND INSULATION ENGINEER
U2SY	SAFETY ENGINEER
U2TM	TM ENGINEER
U24A	PNEUMATIC CONSOLE, S7-45A
U245	INSULATION PURGE PNEUMATIC CONSOLE, S7-45
U4A6	S-IVB AFT MONITOR
U4A7	S-IVB FORWARD MONITOR
U4PE	PROPULSION ENGINEER
VUMS	IU MEASURING STATION
VURF	RF, MCP BAND RADAR & CCS CHECKOUT
V1MS	MEASURING GSE STATION
V2MS	MEASURING GSE STATION
V4MS	S-IVB MEASURING STATION
Z1	ABORT MON VISUAL OBSERVER (CX 20, UC4 OR UC5)
Z2	ABORT MON VISUAL OBSERVER (CX 34, UC16)
Z3	ABORT MON VISUAL OBSERVER (CX 37, UC17 OR UC9)

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-II TEST COND.	LV 181 S-IC 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-II GND & STAGE PNEUM.	LV 182 S-IC 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 OXIDIZER	LV 143 L/V FUEL	LV 153 IU FLIGHT COMP.	LV 163 S-IVB PROP. (STAGE)	LV 173 S-II PROP.	LV 183 S-IC 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. ELEC.	LV 144 S-IC MEAS. & HGD	LV 154 IU ELECT. (STAGE)	LV 164 S-IVB GND. PNEUMATICS	LV 174 S-II ELECT. (STAGE)	LV 184 S-IC ELECT. (STAGE)	LS 2.. 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 OP'S 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-II GND ELECT.	LV 185 S-IC GND ELECT.	LS 215 CSM G&N	LS 225 CSM SCS	LS 235 LM SCS	LS 245 LM G&N	IN 255 FACILITY & ENVIRON. MEAS.	SO 265 HPG ELECT. CONT'S
LV 116 S-IC MEAS. C	LV 126 S-II 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-II TM	LV 186 S-IC TM	LS 216 CSM RCS SA	LS 226 CSM SPS SA	LS 236 LM RCS SA	LS 246 LM PROP.	IN 256 CIF TELEM. GND STA.	SO 266 O_2 FAC OPNS
IN 117 OIS CONTROL ENG C	LV 127 L/V TM R	LV 137 L/V RF R U	LV 147 CNTD'N CLOCK & DEE 6	LV 157 IU RF	TS 167 SUPPORT TROUBLE SHOOTING	LV 177 LV QAL	LV 187 S-IC 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-II 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-II 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 A.J. Griffin Jr. 1/22/70
LO/PLN

NASA-KSC (JAN. 70)

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

CDDT & CD OPERATIONAL DIFFERENCES

"CDDT ONLY" AND "CD ONLY" PAGES IN THIS PROCEDURE ARE REQUIRED TO ACCOMMODATE THE FOLLOWING DIFFERENCES BETWEEN CDDT AND CD:

BARCHARTS	CDDT/CD TASKS SHOWN ON APPLICABLE BARCHARTS ONLY
PAD ACCESS	RADIATION AREA CONTROL ENDS AT T-8 HRS DURING CDDT BUT CONTINUES FOR CD.
PAD ACCESS	CONTROL AREA REOPENING TIMES DIFFERENT AFTER CDDT AND CD.
PAD ACCESS	CONDITIONS FOR RECONFIGURATION APPLICABLE TO DRY CDDT ONLY.

-1D	4W	0'	0"	BATTERIES MOVED DURING CD ONLY	
-1D	4W	0'	0"	BATTERY REMOVAL WOULD ONLY OCCUR DURING CD	
-1D	3W	30'	0"	CME HOIST DOLLY & BATTS INSTALLED DURING CD	
-1D	3W	30'	0"	JUMPER INSTALLED FOR CDDT	
-1D	3W	0'	0"	O-BALL PORT PLUGS REMOVED DURING CD	
-1D	2W	30'	0"	BATTERIES INSTALLED DURING CD ONLY	
-1D	2W	30'	0"	BATTERY BYPASS INSTALLED FOR CDDT	
-1D	2W	10'	0"	CME DOLLY REMOVED DURING CD	
-1D	2W	0'	0"	BATTERIES INSTALLED DURING CD ONLY	
-1D	2W	0'	0"	CME DOLLY REMOVED DURING CD	
-1D	1W	0'	0"	BATTERIES INSTALLED DURING CD ONLY	
-1D	1W	0'	0"	CME HOIST REMOVED DURING CD	
	-24W	40'	0"	BATTERIES CONNECTED DURING CD ONLY	
	-24W	40'	0"	OAT & SIM FLT POWER USED DURING CDDT	
	-24W	35'	0"	CME HOIST REMOVED DURING CD	
	-24W	20'	0"	BATTERIES CONNECTED DURING CD ONLY	
	-24W	0'	0"	BATTERIES CONNECTED DURING CD ONLY	
	-23W	40'	0"	BATTERIES CONNECTED DURING CD ONLY	
	-23W	0'	0"	ST-124M PURGE LINE AND PLENUM CHECK VALVE REMOVED DURING CD	
	-22W	30'	0"	ST-124M PURGE LINE AND PLENUM CHECK VALVE REMOVED DURING CD	
	-22W	0'	0"	ST-124M PURGE SUPPLY VALVE CLOSED DURING CDDT	
	-21W	40'	0"	BATTERY ACCESS PLATFORMS REQUIRED FOR CD	
	-21W	15'	0"	SIM LAUNCH ON DURING CDDT	
	-21W	15'	0"	IGN BATT BLEED ON FOR CD	
	-21W	15'	0"	SIM FLT POWER ENABLED FOR CDDT	
	-21W	15'	0"	SIM LAUNCH POWER ON DURING CDDT	
	-21W	14'	30"	SIM LAUNCH POWER OFF DURING CDDT	
	-21W	14'	30"	IGN BATT BLEED OFF FOR CD	
	-21W	12'	0"	BATTERY ACCESS PLATFORMS REMOVED DURING CD	
	-20W	15'	0"	ST-124M SYSTEM PURGED DURING CDDT	
	-19W	0'	0"	BATTERY SUBSTITUTE BOXES NOT USED DURING CD	
	-19W	0'	0"	BATTERY SUBSTITUTE BOXES USED DURING CDDT	
	-19W	0'	0"	FLIGHT CODE PLUG INSTALLED DURING CD ONLY	
	-18W	0'	0"	AUX COOLANT LINES REMOVED DURING CD	
	-18W	0'	0"	LH2 VENT VALVE CHECKOUT DURING CDDT	
	-18W	0'	0"	CRD'S TORQUED DURING CD ONLY	
	-16W	35'	0"	S/A 1 SAFE ANGLE SWITCH ACTIVATED DURING CDDT	
	-16W	30'	0"	SUBLIMATOR VENT COVERS REMOVED DURING CD	
	-16W	5'	0"	S/A 2 SAFE ANGLE SWITCH ACTIVATED DURING CDDT	
	-16W	0'	0"	S-II LH2 VENT VALVE CRYO TEST RUN DURING CDDT ONLY	
	-16W	0'	0"	DEE 6 DISCRETES MASKED DURING CDDT	
	-15W	53'	0"	DRSCR INDICATIONS DIFFERENT FOR CDDT AND CD	
	-15W	50'	0"	DRSCR INDICATIONS DIFFERENT FOR CDDT AND CD	
	-15W	45'	0"	RANGE RECONFIGURES TO DRSCS FLIGHT CODE PLUGS DURING CD ONLY.	
	-15W	45'	0"	DEE 6 DISCRETES UNMASKED DURING CDDT	
	-14W	30'	0"	LH2 VENT VALVE CRYO TEST RUN DURING CDDT ONLY	
	-14W	0'	0"	ST-124M SYSTEM PURGED DURING CDDT	
	-11W	25'	0"	LH2 VENT VALVE CRYO TEST RUN DURING CDDT ONLY	
	-10W	0'	0"	LH2 VENT VALVE CRYO TEST RUN DURING CDDT ONLY	
	-9W	HOLDING		OFF-LUT CABLE ASSEMBLIES REMOVED DURING CD	
	-9W	HOLDING		READY FOR IGNITION INDICATIONS DURING CDDT	
	-9W	HOLDING		LH2 VENT VALVE CRYO TEST RUN DURING CDDT ONLY	
	-8W	99'	0"	SC EDS POWER TURNED ON DURING CDDT	
	-8W	59'	0"	LH2 VENT VALVE INST VERIFICATION DURING CDDT	
	-8W	20'	0"	BATT HEATER SHUT OFF DURING CDDT	
	-7W	30'	0"	S-IVB APS PRESSURIZED DURING CD	
	-5W	55'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-5W	0'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-4W	40'	0"	DRSCS FLIGHT CODE PLUGS INSTALLED DURING CD	
	-4W	40'	0"	DRSCS TEST CODE PLUGS INSTALLED DURING CDDT	
	-4W	35'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-4W	0'	0"	ME INJ/ACCUMULATOR TEST DURING CD	
	-3W	49'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	46'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	45'	0"	ME INJ/ACCUMULATOR TEST DURING CD	
	-3W	40'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	40'	0"	S-II LOX ME BLOWDOWN TEST RUN DURING CDDT	
	-3W	40'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	30'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	30'	0"	PROP SYS BOTTLE DECAY TEST RUN DURING CD	
	-3W	20'	0"	SWITCHES POSITIONED TO COUNT CONFIG DURING CD	
	-3W	20'	0"	EAS MANUAL THERMAL CONTROL ESTABLISHED FOR CD	
	-3W	20'	0"	S-IVB ME SUPPLY PRESSURE DECREASED DURING CDDT	
	-3W	20'	0"	S-IC ME BOTTLE PRESSURE TEST RUN DURING CDDT	
	-3W	19'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	18'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	13'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	8'	55"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	8'	50"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	8'	7"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	8'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	5'	9"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	5'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-3W	2'	20"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	55'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	50'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	45'	0"	PROP SYS BOTTLE DECAY TEST RUN DURING CD	
	-2W	38'	7"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	35'	30"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	35'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	32'	20"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	32'	19"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	32'	18"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	32'	15"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	32'	14"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	31'	20"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	25'	50"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	25'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	20'	0"	PROP SYS BOTTLE DECAY TEST RUN DURING CDDT	
	-2W	20'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	8'	0"	SPECIAL TEST RUN DURING CDDT ONLY	A
	-2W	0'	0"	SC EDS POWER TURNED ON DURING CD	
	-1W	91'	0"	PROGRAM VZSA IN EDS TEST RUN DURING CD	
	-1W	35'	0"	PROP SYS BOTTLE DECAY TEST RUN DURING CDDT	
	-1W	27'	0"	CCS BLOCK EXERCISED DURING CD ONLY	
	-1W	21'	0"	EDS POWER OFF, CSM READY FOR O-BALL CAL AND CCS ENABLED DURING CD	
	-1W	21'	0"	IU COMMAND SYSTEM ENABLED DURING CDDT	
	-1W	19'	0"	CCS BLOCK EXERCISED DURING CD	
	-1W	19'	0"	IU SWITCH ACTION (IN PLACE OF MSTC) DURING CDDT	
	-1W	0'	0"	ME SUPPLY PRESSURE INCREASED DURING CDDT	
	-1W	0'	0"	HELIUM SUPPLY OPENED DURING CD	
		-45'	0"	DIGITAL PRINTER POWER ON DURING CDDT	
		-44'	0"	SC EDS POWER IS ON DURING CD	
		-40'	0"	DRSCS TEST CODE PLUGS INSTALLED DURING CDDT	
		-40'	0"	DRSCS FLIGHT CODE PLUGS INSTALLED DURING CD ONLY	
		-38'	0"	SIM LAUNCH ON FOR CDDT	
		-38'	0"	SIM FLT POWER SWITCH ENABLED FOR CDDT	
		-30'	0"	SIM LAUNCH POWER ON FOR CDDT	
		-29'	30"	SIM LAUNCH POWER OFF FOR CDDT	
		-7'	58"	S/A 1 ARMED FOR RETRACTION DURING CD	
		-4'	10"	SCDR IN SC DURING CD	
		-3'	40"	OPTION 2 HOLD PLANNED DURING CDDT	
		-3'	20"	OPTION 2 HOLD PLANNED DURING CDDT	
		-0'	38"	S/A 1 RETRACTED DURING CD	
-16.2'	TO	+2M	38"	DIFFERENT TCS AND PLUS TIMES FOR CD AND CDDT	

APP A3	S-II SPECIAL START TANK TEST DURING CDDT ONLY	A
APP A3	S-IVB SPECIAL START TANK TEST DURING CDDT ONLY	A
APP C1	S-II LH2 VENT VALVE TEST RUN DURING CDDT DRAIN ONLY	
APP C1	S/C EDS POWER TURNED OFF DURING CD SCRUB	
APP C2	S-II LH2 VENT VALVE TEST RUN DURING CDDT DRAIN ONLY	
APP F	APPLICABLE TO CDDT ONLY	
APP G	APPLICABLE TO CD ONLY	

NSC FORM 33-81 D (8/68)

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 AMBER — HAZARDOUS ACCESS — CONDITION 2

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 (WET 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-16 HRS TO T-10:45 HRS: MSS PLATFORM OPENINGS WILL REQUIRE LOCAL CLEARING WHICH WILL BE CONTROLLED BY S/V TEST SUPERVISOR.

3. T-15:15 HRS TO T-14:45 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-15:15 HRS TO LIFTOFF (OR T+18 HRS IF SCRUBBED FOR THIS MONTH). #

4. T-13 HRS TO T-11:30 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.

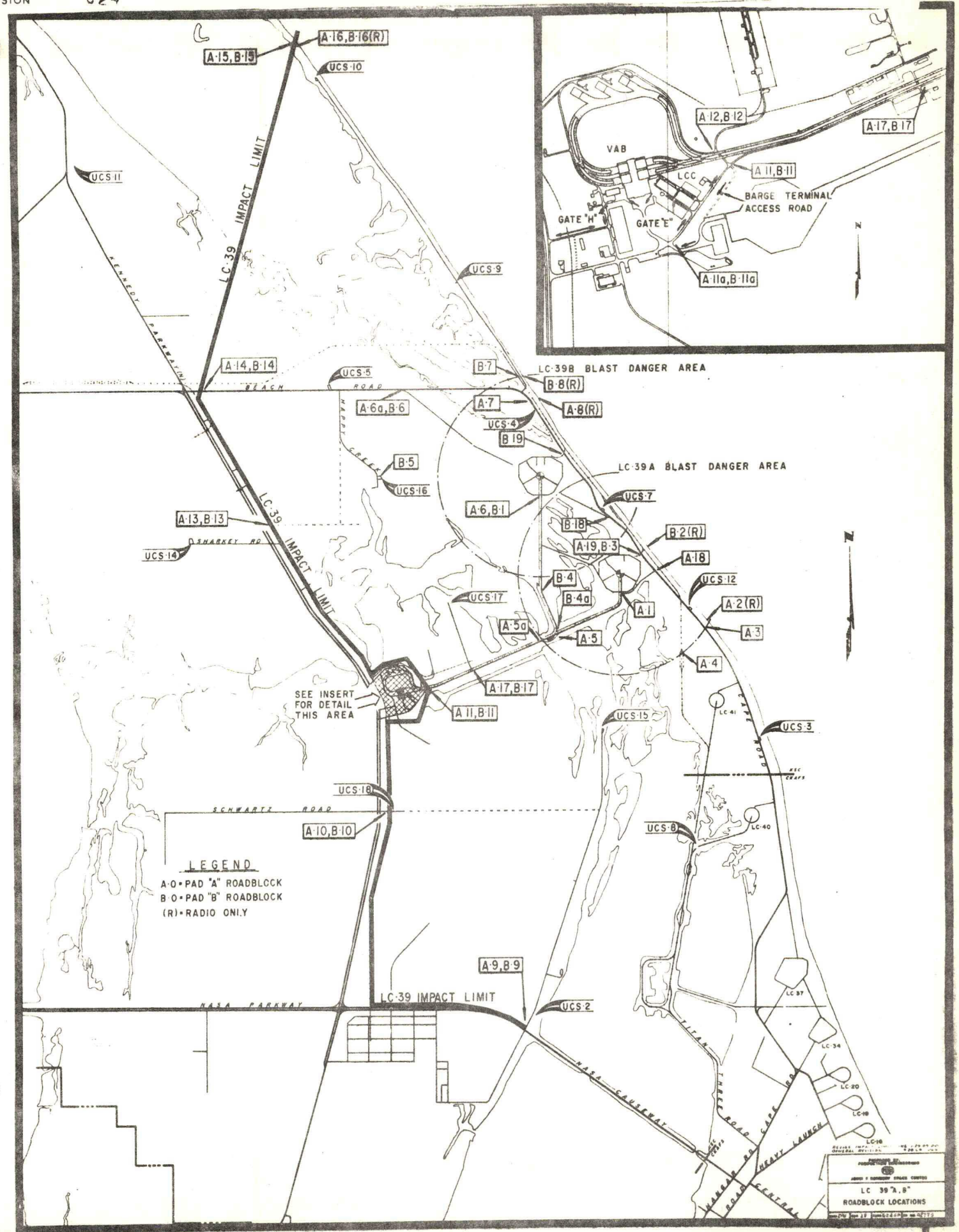
6. T-8:59 HRS TO T-8 HRS: ALL PERSONNEL WILL BE LEAVING THE BLAST DANGER AREA.

7. T-8 HRS TO T-3:25 HRS: THE BLAST DANGER AREA WILL BE EVACUATED.

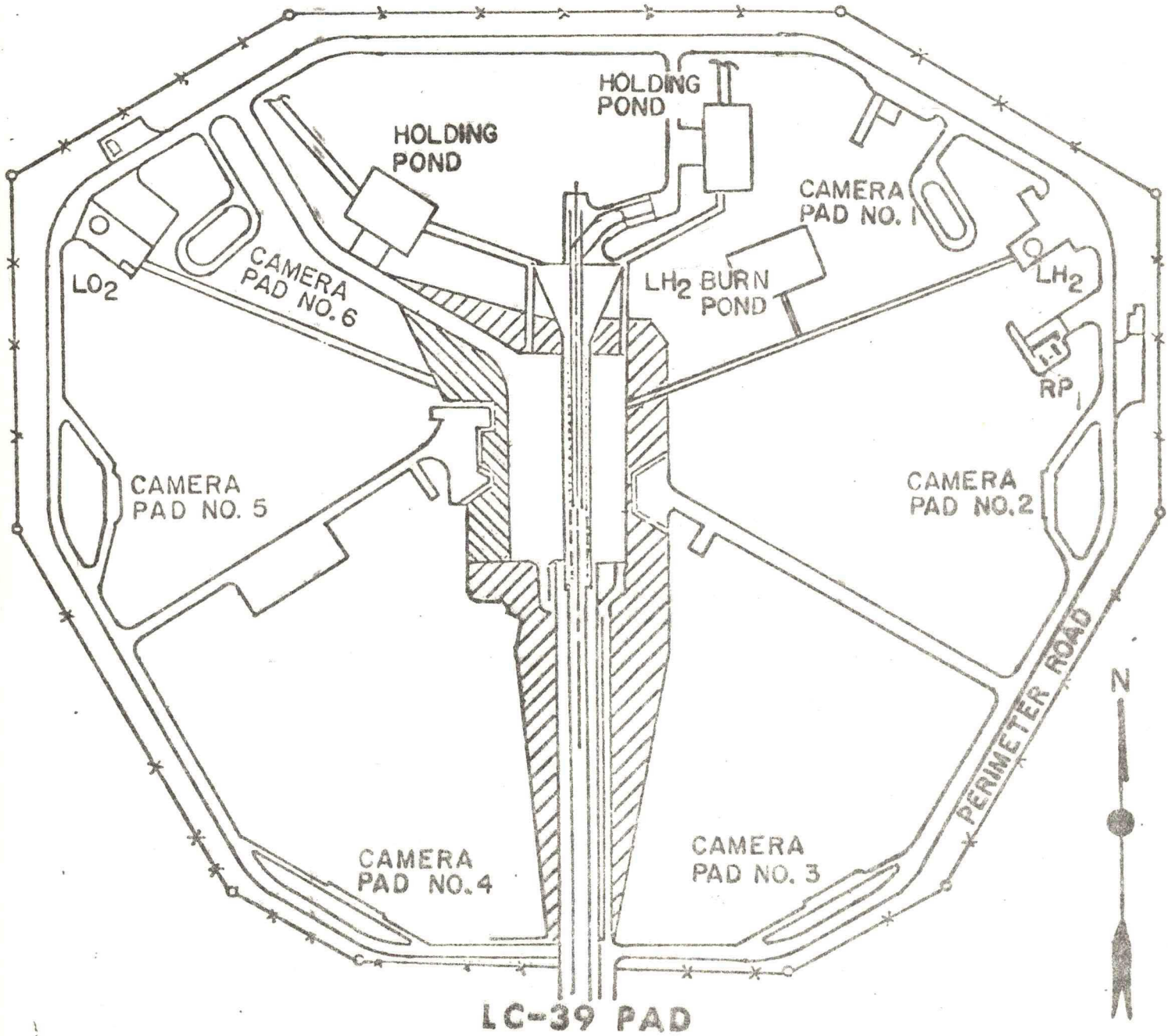
8. T-3:25 TO T-45 MIN: THE LAUNCH DANGER AREA WILL BE CLEARED OF ALL PERSONNEL NOT REQUIRED FOR FLIGHT CREW INGRESS OPERATIONS.

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. #

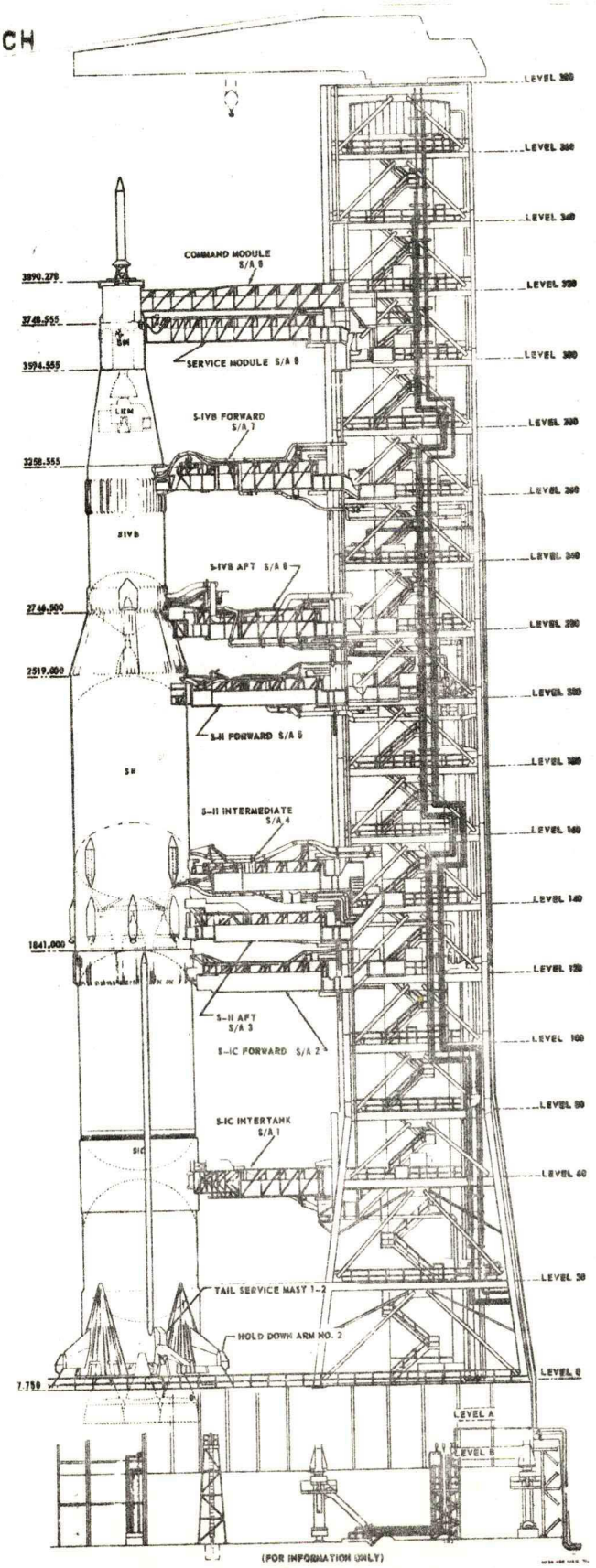
EMERGENCY AND PAD CREWS WILL BE STATIONED IN VAB HIGH BAY NO. 3 WITH REQUIRED EQUIPMENT AND VEHICLES.


A-16,B-16(R)
A-15,B-15
UCS-10
UCS-11
LC-39 IMPACT LIMIT
KENNEDY PARKWAY
UCS-9
A-14,B-14
UCS-5
BEACH ROAD
A-6a,B-6
B-7
B-8(R)
A-7
A-8(R)
UCS-4
B-19
LC-39B BLAST DANGER AREA
B-5
UCS-16
MAPP CREEK
LC-39A BLAST DANGER AREA
A-13,B-13
UCS-14
SHARKEY RD
LC-39 IMPACT LIMIT
A-6,B-1
UCS-7
B-18
B-2(R)
A-19,B-3
A-18
B-4
B-4a
UCS-12
A-2(R)
UCS-17
A-1
A-5a
A-5
A-3
A-4
A-17,B-17
A-11,B-11
SEE INSERT FOR DETAIL THIS AREA
UCS-15
LC-41
UCS-3
BANANA CREEK
KSC CRAFTS
UCS-18
SCHWARTZ ROAD
A-10,B-10
UCS-8
LC-40
LEGEND
A-O = PAD "A" ROADBLOCK
B-O = PAD "B" ROADBLOCK
(R) = RADIO ONLY
A-9,B-9
LC-39 IMPACT LIMIT
NASA PARKWAY
UCS-2
NASA CAUSEWAY
TITAN ROAD
LC-37
LC-34
LC-20
LC-19
LC-18
HEAVY LAUNCH COMPLEX ROAD
CENTRAL
VAB
LCC
A-12,B-12
A-17,B-17
A-11,B-11
BARGE TERMINAL ACCESS ROAD
GATE "H"
GATE "E"
A-11a,B-11a
N
LC 39 "A, B" ROADBLOCK LOCATIONS

LC39 PAD SKETCH



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.

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	161	1	C4TC	C4ES	PERFORM HARDLINE FUNCTIONAL TEST ON CHANNEL 165	
	165	2	C4ES	C4PP	VERIFY ALL GROUND PWR OFF	
	161	3	C4ES	C4TC	REQUEST 20D241 POWER ON	
	165	4	C4ES	C4PP	VERIFY 20D241 POWER ON	
	165	5	C4ES	L4JR	VERIFY 0 VDC AT X02-420A1 J49-U (J49-T REF)	D-87 -119
	165	6	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-420A1 J53-G AND J53-H	
	165	7	C4ES	C4NP	STAGE GND POWER TO DISABLE	
	165	8	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-420A1 J49-U (J49-T REF)	D-87 -119
	165	9	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-420A1 J53-G AND J53-H	
	165	10	C4ES	C4NP	STAGE GND PWR TO ENABLE	
	165	11	C4ES	C4NP	EMERGENCY PWR TRANSFER TO OFF	
	165	12	C4ES	L4JR	VERIFY 0 VDC AT X02-420A1 J27-F (J27-E REF)	D-87 -119
	165	13	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-420A1 J38-Y AND J38-Z	
	165	14	C4ES	C4NP	EMERGENCY PWR TRANSFER TO EXTERNAL	
	165	15	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-420A1 J27-F (J27-E REF)	D-87 -119
	165	16	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-420A1J38-Y AND J38-Z	
	165	17	C4ES	C4HC	MAIN HE SUPPLY SHUTOFF TO OPEN	
	165	18	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J49-U (J49-T REF)	D-87 -119
	165	19	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J34-D AND J34-E	
	165	20	C4ES	C4HC	MAIN HE SUPPLY SHUTOFF TO CLOSE	
	165	21	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-U (J49-T REF)	D-87 -119

TIME	COMM CIR.	SEQUENCE	COMMAND STA.	RESPONSE STA	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	165	22	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J34-D TO J34-E	
	165	23	C4ES	C4HC	MAIN HE SUPPLY SHUTOFF TO OPEN	
	165	24	C4ES	C4HC	3200 PSI HE DOME VENT TO CLOSE	
	165	25	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J49-X (J49-Y REF)	D-87 -119
	165	26	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J53-W AND J53-X	
	165	27	C4ES	C4HC	3200 PSI HE DOME VENT TO OPEN	
	165	28	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-X (J49-Y REF)	D-87 -119
	165	29	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J53-W TO J53-X	
	165	30	C4ES	C4HC	3200 PSI HE DOME VENT TO CLOSE	
	165	31	C4ES	C4HC	HE OUTPUT REG DOME VENT TO CLOSE	
	165	32	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J49-C (J49-D REF)	D-87 -119
	165	33	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J18-M TO J18-N	
	165	34	C4ES	C4HC	HE OUTPUT REG DOME VENT TO OPEN	
	165	35	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-C (J49-D REF)	D-87 -119
	165	36	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J18-M AND J18-N	
	165	37	C4ES	C4HC	HE OUTPUT REG DOME VENT TO CLOSE	
	165	38	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J49-N+ (J49-M+ REF)	D-87 -119
	165	39	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J31-E+ AND J31-F+	
	165	40	C4ES	C4HN	HEAT EXCHANGER FILL VALVE OVERRIDE TO OPEN	
	165	41	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-N+ (J49-M+ REF) AND 0 VDC AT X02-421A1 J49-J+ (J49-K+ REF)	D-87 -119

TIME	COMM. CH.	SEQUENCE	COMMAND STA	RESPONSE STA	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	165	42	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J31-E+ AND J31-F+ AND LESS THAN ONE OHM BETWEEN X02-421A1 J31-M AND J31-L	
	165	43	C4ES	C4HN	HEAT EXCHANGER FILL VALVE OVERRIDE TO CLOSE	
	165	44	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-J+ (J49-K+ REF)	D-37 -119
	165	45	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J31-M AND J31-L	
	165	46	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J49-R (J49-S REF)	D-37 -119
	165	47	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J53-M AND J53-N	
	165	48	C4ES	C4HC	HE BACKUP SUPPLY TO OPEN	
	165	49	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J49-R (J49-S REF)	D-87 -119
	165	50	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J53-M AND J53-N	
	165	51	C4ES	C4HC	HE BACKUP SUPPLY TO CLOSE	
	165	52	C4ES	L4JR	VERIFY 0 VDC AT X02-421A1 J44-F+ (J44-G+ REF)	D-87 -119
	165	53	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-421A1 J19-E+ AND J19-F+	
	165	54	C4ES	C4HC	HE OUTPUT REG DOME SUPPLY TO OPEN	
	165	55	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-421A1 J44-F+ (J44-G+ REF)	D-87 -119
	165	56	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-421A1 J19-E+ AND J19-F+	
	165	57	C4ES	C4HC	HE OUTPUT REG DOME SUPPLY TO CLOSE	
	165	58	C4ES	L4JR	VERIFY 0 VDC AT X02-422A1 J49-S (J49-R REF)	D-87 -119
	165	59	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-422A1 J38-E+ AND J38-F+	
	165	60	C4ES	C4SP	LH C/V ORIFICE BYPASS TO CLOSE AND HOLD	
	165	61	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-422A1 J49-S (J49-R REF)	D-87 -119

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	165	62	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-422A1 J38-E+ AND J38-F+	
	165	63	C4ES	C4SP	LH C/V ORIFICE BYPASS TO OFF	
	165	64	C4ES	L4JR	VERIFY 0 VDC AT X02-422A1 J38-B (J38-A REF)	D-87 -119
	165	65	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-422A1 J38-D AND J38-E	
	165	66	C4ES	C4SP	LH C/V RELIEF OVERRIDE TO CLOSE AND HOLD	
	165	67	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-422A1 J45-J (J45-K REF)	D-87 -119
	165	68	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-422A1 J38-D AND J38-E	
	165	69	C4ES	C4SP	LH C/V RELIEF OVERRIDE TO OFF	
	165	70	C4ES	L4JR	VERIFY 0 VDC AT X02-422A1 J6-N+ (J6-M+ REF)	D-87 -119
	165	71	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-422A1 J33-D AND J33-E	
	165	72	C4ES	C4ET	ENGINE COMP TEST POWER TO ON	
	165	73	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-422A1 J6-N+ (J6-M+ REF)	D-87 -119
	165	74	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-422A1 J33-D AND J33-E	
	165	75	C4ES	C4ET	ENGINE COMP TEST PWR TO OFF	
	165	76	C4ES	L4JR	VERIFY 0 VDC AT X02-424A1 J42-Z (J42-A+ REF)	D-37 -119
	165	77	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-424A1 J12-E+ AND J12-F+	
	165	78	C4ES	C4AL	LOADING CONTROL TO ENABLE	
	165	79	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-424A1 J42-Z (J42-A+ REF)	D-37 -119
	165	80	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-424A1 J12-E+ AND J12-F+	
	165	81	C4ES	C4AL	LOADING CONTROL TO OFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	165	82	C4ES	L4JR	VERIFY 0 VDC AT X02-424A1 J42-D (J42-C REF)	D-87 -119
	165	83	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-424A1 J34-E+ AND J34-F+	
	165	84	C4ES	C4AL	MOD 1 OXIDIZER ULLAGE EMER VENT VALVE TO OPEN	
	165	85	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-424A1 J42-D(J42-C REF)	D-87 -119
	165	86	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-424A1 J34-E+ AND J34-F+	
	165	87	C4ES	C4AL	MOD 1 OXIDIZER ULLAGE EMER VENT VALVE TO CLOSE	
	165	88	C4ES	L4JR	VERIFY 0 VDC AT X02-424A1 J42-F (J42-E REF)	D-87 -119
	165	89	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-424A1 J31-E+ AND J31-F+	
	165	90	C4ES	C4AL	MOD 1 FUEL ULLAGE EMER VENT VALVE TO OPEN	
	165	91	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-424A1 J42-F(J42-E REF)	
	165	92	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-424A1 J31-E+ AND J31-F+	
	165	93	C4ES	C4AL	MOD 1 FUEL ULLAGE EMER VENT VALVE TO CLOSE	
	165	94	C4ES	L4JR	VERIFY 0 VDC AT X02-424A1 J42-S (J42-R REF)	D-87 -119
	165	95	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-424A1 J33-M AND J33-N	
	165	96	C4ES	C4AL	MOD 2 FUEL ULLAGE EMER VENT VALVE TO OPEN	
	165	97	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-424A1 J42-S(J42-R REF)	D-87 -119
	165	98	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-424A1 J33-M AND J33-N	
	165	99	C4ES	C4AL	MOD 2 FUEL ULLAGE EMER VENT VALVE TO CLOSE	
	165	100	C4ES	L4JR	VERIFY 0 VDC AT X02-424A1 J42-U (J42-T REF)	D-87 -119
	165	101	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-424A1 J31-M AND J31-N	
	165	102	C4ES	C4AL	MOD 2 OXIDIZER ULLAGE EMER VENT VALVE TO OPEN	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-28:00 - 1 DAY 4 HRS 0' 0"						
	165	103	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-424A1 J42-U (J42-T REF)	D-87 -119
	165	104	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-424A1 J31-M AND J31-N	
	165	105	C4ES	C4AL	MOD 2 OXIDIZER ULLAGE EMER VENT VALVE TO CLOSE	
	165	106	C4ES	L4JR	VERIFY 0 VDC AT X02-423A1 J49-L (J49-M REF)	D-87 -119
	165	107	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-423A1 J17-M AND J17-N	
	165	108	C4ES	C4RC	LOX AND LH PREVALVES EMER CLOSE	
	165	109	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-423A1 J49-L (J49-M REF)	D-87 -119
	165	110	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-423A1 J17-M AND J17-N	
	165	111	C4ES	C4RC	LOX AND LH PREVALVES EMER CLOSE OFF	
	165	112	C4ES	L4JR	VERIFY 0 VDC AT X02-423A1 J49-J (J49-K REF)	D-87 -119
	165	113	C4ES	L4JR	VERIFY GREATER THAN 10 OHMS BETWEEN X02-423A1 J17-D AND J17-E	
	165	114	C4ES	C4RC	LOX AND LH CHILLDOWN VALVES EMER CLOSE	
	165	115	C4ES	L4JR	VERIFY 28 ± 2 VDC AT X02-423A1 J49-J (J49-K REF)	D-87 -119
	165	116	C4ES	L4JR	VERIFY LESS THAN ONE OHM BETWEEN X02-423A1 J17-D AND J17-E	
	165	117	C4ES	C4RC	LOX AND LH CHILLDOWN VALVES EMER CLOSE OFF	
	161	118	C4ES	C4TC	HARDLINE FUNCTIONAL TEST IS COMPLETE. REQUEST 20D241 POWER BE REMOVED.	
	121	119	C4TC	CLTC	S-IVB HARDWIRE FUNCTIONAL CHECKS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
					VOLUME II	
					COUNT	
T-28:00 - 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. REPORT WHEN COMPLETE.	
	261	3	C2TC	BOSC	S-II WILL NEED 4 SCOTT AIR PACKS (LVN-15) ON LUT 140 FT LEVEL IN 30 MINUTES TO SUPPORT EMERGENCY BATTERY REMOVAL CREW.	# TCP N-216 -126
	171	4	C2TC	U2SE	PICK UP 4 PROXIMITY FIRE SUITS (LVN-26) AT LC39 FIRE STATION AND DELIVER TO LUT 140 FT LEVEL IN 30 MINUTES TO SUPPORT EMERGENCY BATTERY REMOVAL CREW.	N-216 -126
T-27:45 - 1 DAY 3 HRS 45' 0"						
	181	1	C1TC	L1IC	START THRUST STRUCTURE AND HEAT SHIELD INSTRUMENTATION PROTECTIVE COVERS REMOVAL PER V-27195. REPORT WHEN COMPLETE.	
	161	2	C4TC	L4CE	START BURNER RECORDER SETUP PER V-30539, SECT J. REPORT WHEN COMPLETE.	
	161	3	C4TC	S4MF	REMOVE LM ACCESS STEPS PER V-30539, APPENDIX D. REPORT WHEN COMPLETE. (COORDINATE DIRECTLY WITH GRUMMAN PAD LEADER)	# D-87-119

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
T-27:30 1 DAY 3 HRS 30' 0"						
	171	1	C2TC	U2J2	START PROPULSION SYSTEM ENGINEERING WALKDOWN PER V-30029 (M020) TASK 44, REPORT WHEN COMPLETE.	
	171	2	C2TC	U2J2	START PROPELLANT FEED SYSTEM VACUUM JACKETED LINE PRESSURE CHECKS PER V-24116 (J001). REPORT WHEN COMPLETE.	
	151	3	CUTC	SUTM SUVE	INSTALL IU TM RERADIATION ANTENNA PER V-31062, PART III	
	151	4	CUTC	SUVM	INSTALL CHE HOIST DOLLY AND IU FLIGHT BATTERIES PER IV-34047.	#
	121	5	CLTC	C4TC	START S-IVB BATTERY INSTALLATION.	#
	161	6	C4TC	S4PC S4CE S4MA	INSTALL S-IVB AFT FLIGHT BATTERIES PER V-30539 SECT H.	#
	121	7	CLTC	BCFM	VERIFY READY TO RECORD ECS MEASUREMENTS	TCPI
	121	8	CLTC	C2TC C4TC	S-II & S-IVB STAGE SUPPORT WILL BE REQUIRED FOR UMB RELEASE SENSOR CHECKS.	
	161	9	C4TC	S4ML	STANDBY TO SUPPORT UMBILICAL RELEASE SENSOR CHECK PER V-30539, SEC I.	
	171	10	C2TC	U2MU U2PF	STANDBY TO SUPPORT UMBILICAL RELEASE SENSOR CHECKS PER V-31045	
	171	11	C2TC	U2SE U2AN	VERIFY EMERGENCY BATTERY REMOVAL TEAM AND EQUIPMENT ON STATION (LUT LEVEL 140) PER V-30029 (M020)	#
	171	12	C2TC	U2AN	INSTALL AND CONNECT S-II FLIGHT BATT PER V-21111 (B013), REPORT WHEN COMPLETE	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
T-27:30 - 1 DAY 3 HRS 30' 0"						
	171	13	C2TC	L2RR	CDDT ONLY	*
	171	14	C2TC	V2MS	START INSTRUMENT SYSTEM WALKDOWN AND PROTECTIVE COVER REMOVAL PER V-27208 (X044). REPORT WHEN COMPLETE.	
	161	15	C1TC	CWCP	PREPARE INDUSTRIAL WATER SYSTEM PER V-36113.	
	261	16	CLTC	BOSC	HAVE INDUSTRIAL WATER RECORDERS READY TO START ON REQUEST OF CWCP AND INDUSTRIAL WATER ENGINE READY TO START UPON 30 MINUTES NOTIFICATION FROM CWCP.	TCPI
	181	17	C1TC	CWCP	NOTIFY BOSC 30 MIN PRIOR TO HAVING INDUSTRIAL WATER ENGINE START.	
	171	18	C2TC	U2QC	CONTINUE CLOSEOUT INSP PER ITI LS008	
	121	19	CLTC	C1TC C2TC C4TC	START LV POWER UP PREPS.	
	181	20	C1TC	LPLX	START PTCS PREPS PER V-25159.	
	151	21	CUTC	SUTM	START UNPINNING FLOWMETERS. LV-QAL PARTICIPATION REQUIRED.	
	161	22	C4TC	S4HY S4CE	START S-IVB PRE-POWER PREPS PER V-30539, SECT J.	
	161	23	C4TC	S4CE L4CE S4HY S4ML	START S-IVB ENGINEERING WALKAROUND AFT AND ESE	
	161	24	C4TC	C4ES	START S-IVB PREPOWER PREPS PER V-30539, APPENDIX A	
	171	25	C4TC	C2TC	INSTALL S-II/S-IVB SEPARATION SIMULATION JUMPER FOR ENGINE SEQUENCE (X02-220 A2J7). REMOVE WHEN ENGINE SEQUENCE IS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
T-27:30 1 DAY 3 HRS 30' 0"						
	171	26	C2TC	L2RR	INSTALL JUMPER J7 IN X02-220A2 FOR S-IVB ENGINE SEQUENCE TEST. REMOVE JUMPER UPON C2TC REQUEST.	
T-27:00 1 DAY 3 HRS 0' 0"						
	121	1	C1TC	C1TC C2TC C4TC	START UMBILICAL RELEASE SENSOR CHECK PER V-31045 AND V-30539. REPORT WHEN COMPLETE.	
	181	2	C1TC	C3PP	START UMBILICAL RELEASE SENSOR CHECKS PER V-31045.	
	171	3	C2TC	U2MU U2PF	GO TO CH 181 AND SUPPORT UMBILICAL RELEASE SENSOR CHECKS PER V-31045. WHEN COMPLETE, START S-II INITIAL UMBILICAL PREPS PER V-30029 (M020) TASK 22. REPORT WHEN COMPLETE.	
	171	4	C2TC	R2SC	SETUP LCC MEASURING STATION PER V-27154 (G031). REPORT WHEN COMPLETE.	
	171	5	C2TC	V2MS	SETUP VAB MEASURING STATION PER V-27183 (G032). REPORT WHEN COMPLETE.	
	151	6	CUTC	SUTM	VERIFY FLOWMETER UNPINNING COMPLETE	
		6-1			VERIFICATION BY LV - QAL	
	151	7	CUTC	SUTM	REMOVE PLUGS FROM Q-BALL PORTS. REPORT WHEN COMPLETE.	#
	181	8	C1TC	B1TM	START S-IC TM GSE READINESS CHECK PER V-28186.	
	151	9	CUTC	BUTM	SETUP TCE GROUND STATION PER V-28072.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
T-27:00 - 1 DAY 3 HRS 0' 0"						
	181	10	C1TC	V1MS	START S-IC VEHICLE MEASURING STATION PREPS PER V-27098	
	171	11	C2TC	C2PV	START PURGE AND VACUUM SYSTEM PREPS PER V-26276 (G058). REPORT WHEN COMPLETE.	
	161	12	C4TC	S4ML	GO TO CH 181 AND SUPPORT UMBILICAL SENSOR CHECKS PER V-31045 AND V-30539 SECT I.	
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.	#
	181	2	C1TC	C1NE	INSTALL AND CONNECT S-IC FLIGHT BATTERIES PER V-21204, START FINAL ML ESE CLOSEOUT PER V-21035. START FLIGHT CONTROL PREPS PER V-33030.	#
	181	3	C1TC	C1NE	**CDDT ONLY**	*
	121	4	CLTC	CUTC	START LV ELECTRICAL SUPPORT PREPS PER V-31062, APPENDIX B.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
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.	
		2			**********WARNING********** * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * **********	
	181	3	C1TC	C1PE	START F-1 ENGINE CLOSEOUT PER V-34012	
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	
	151	2	CUTC	SUVM	VERIFY IU FLIGHT BATTERY INSTALLATION COMPLETE	#
	151	3	CUTC	SUVM	VERIFY CHE DOLLY HAS BEEN REMOVED	#
	151	4	CUTC	SUVE	START MONITORING FLIGHT BATTERIES PER IV-21254.	#
	171	5	C2TC	U2SI	FOLD BACK AND REMOVE SECTIONS OF A7-84 PLATFORM FOR CTC1 ENGINE GIMBALING PER V-26008 (G042) IN CONJUNCTION WITH V-30029 (M020), TASK 13.	
		6			DELETED	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-26:00 - 1 DAY 2 HRS 0' 0"						
	121	7	CLTC	CUTC	START AUXILIARY POWER BACKUP BATTERY CHECKS	
	151	8	CUTC	CCAP	START BACKUP BATTERY CHECKS ON AUXILIARY POWER SUPPLIES PER V-31062, APPENDIX J. REPORT WHEN COMPLETE.	
		9			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * * **********	
	181	10	C1TC	C1PE	START REMOVAL OF THRUST STRUCTURE INTERNAL ACCESS EQUIPMENT PER V-24010	
	181	11	L1IC	C1TC	STAGE INSTRUMENTATION COVERS REMOVED	
T-25:30 - 1 DAY 1 HRS 30' 0"						
	161	1	C4TC	C4PS	START PROPULSION PREPOWER PREPS PER V-30539, SECTION J	
	181	2	C1TC	C1NE	VERIFY F/C PREPS COMPLETE PER V-33030,	
	171	3	C2TC	B2TM	SETUP TCE GROUND STATION PER V-28181 (G125) & V-28135 (G050). REPORT WHEN COMPLETE.	
	181	4	C1TC	C1NE	VERIFY FLIGHT BATTERIES INSTALLED AND CONNECTED.	#
	181	5	C1TC	R1SC	MONITOR VOLTAGE AND CURRENT PER V-21204 FOR 1D10 AND 1D20. REPORT ANY ANOMALIES TO C1NE ON CH 181.	#
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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-25:15 1 DAY 1 HRS 15' 0"						
	131	5	C1TC	CPDC	PREP ESP FOR LOWERING PER V-36070, REPORT WHEN READY TO LOWER,	
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	APPLY 400 HERTZ POWER AND START REDUNDANT POWER SUPPLY PER V-21222, REPORT WHEN COMPLETE,	
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-25:00 1 DAY 1 HRS 0' 0"						
	151	1	CUTC	BGCC	ENTER SGO AND PERFORM DATA LINK SWITCHOVER PER V-22006, REPORT WHEN COMPLETE,	
	121	2	CUTC	CLTC	GROUND COMPUTER IS SUPPORTING	
	188	3	CLTC	ALL	GROUND COMPUTER IS SUPPORTING	
		3-1			*** NOTE ALL DISPLAY CONSOLE OPERATORS, PRIOR TO SELECTING ANY COMPUTER PROGRAM, ACCOMPLISH THE FOLLOWING; 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,	
	181	6	C1TC	RRSC	RECORDERS ON	
	121	7	CUTC	CLTC	BACKUP BATTERY CHECKS ARE COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
T-25:00 - 1 DAY 1 HRS 0' 0"						
		8			DELETED	
	161	9	C4TC	S4MA S4MF	VERIFY FLIGHT FWD & AFT BATTERY INSTALLATION COMPLETE.	#
	181	10	C1TC	CECS	VERIFY LV ECS COOLING AIR ON PER V-26247	
	121	11	C1TC	CLTC	LV ECS IS SUPPORTING	
	181	12	C1TC	LHGD	VERIFY HGD SYSTEM PREPS ARE IN PROCESS PER V-27087.	
	171	13	U2LN	C2TC	S-II BATTERY INSTALLATION & CONNECTION COMPLETE.	#
	171	14	C2TC	U2SE	VERIFY OK TO REMOVE STA 114 A7-84 ACCESS PLATFORMS.	
	171	15	C2TC	U2SI	START VERIFICATION OF STA 114 A7-84 ACCESS PLATFORMS PER V-26008 (G042), EXCEPT THOSE SECTIONS NEEDED FOR BATTERY ACCESS.	
	171	16	C2TC	U2AN U2QC	START NON-FLIGHT HARDWARE REMOVAL FROM AFT INTERSTAGE PER V-30029 (M020) TASK 47. REPORT WHEN COMPLETE.	
		17			**********WARNING********** * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * **********	
	181	18	C1TC	C1PE	CONFIGURE S-IC PNEUMATIC CONSOLES PER V-24327 PREPOWER ON	
	151	19	CUTC	SUVM	REMOVE CHE HOIST	#

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,	
	151	2	BUTM	CUTC	TCE STATION SETUP IS COMPLETE,	
	171	3	R2SC	C2TC	LCC MEASURING STATION SETUP IS COMPLETE,	
	171	4	V2MS	C2TC	VAB MEASURING STATION SETUP IS COMPLETE,	
	181	5	C1TC	B1TM	VERIFY TM GSE PREPS 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	C4HY C4ES C4PS C4FC	VERIFY S-IVB PRE-POWER PREPS COMPLETED,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 40' 0"						
	121	1	CUTC	CLTC	IU STAGE POWER ON AND COOLING IS SUPPORTING.	
	121	2	CLTC	CUTC	START ELECTRICAL CONNECTION OF LAUNCH VEHICLE FLIGHT BATTERIES	#
	151	3	CUTC	CUNE SUVE RUBM	CONNECT IU FLIGHT BATTERIES PER IV-21254 ON CH 154	#
	171	4	***	C2NP	REQUEST AND EXECUTE QAPO (S-II POWER UP) OR APPLY STAGE AND ESE POWER PER V-21103 (B011). REPORT WHEN COMPLETE.	***
		5			DELETED	N-213-120
		6			DELETED	N-213-120
		7		C2NP	**CDDT ONLY**	*
		8		C2NP	**CDDT ONLY**	*
	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. 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	C2GP	ACTIVATE S-II GROUND PNEUMATICS PER V-30029 (M020) TASK 15. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-24 HRS 40' 0"						
	171	15	C2TC	B2TM	START PCM/DDAS CHECKS PER V-28144 (R014) MODE 1. REPORT WHEN COMPLETE.	
-24 HRS 35' 0"						
	161	1	C4TC	ALL	S-IVB POWER WILL BE APPLIED PER V-30539, APP B.	
	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). 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 PLATS SECURED FOR ENG GIMBALLING.	
	171	7	C2TC	C2FC	START EAS FUNCTIONAL CHECKOUT PER V-30029 (M020) TASK 16. REPORT WHEN COMPLETE.	
-24 HRS 33' 0"						
	171	1	C2TC	CLTC	S-II ESE & STAGE POWER HAS BEEN APPLIED. QAPO HAS TERMINATED SATISFACTORILY.	
	161	2	***	C4NK	REQUEST & EXECUTE XAPS (S-IVB POWER UP) AND XASS (S-IVB SW SEL RESET). REPORT WHEN COMPLETE.	***
-24 HRS 30' 0"						
	151	1	CUTC	SURF	START ANTENNA COUPLER INSTALLATION AND CONFIGURE PER V-28069. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-24 HRS 30' 0"						
	151	2	CUTC	VURF	START GSE SETUP PER V-28069. REPORT WHEN COMPLETE.	
	171	3	U2J2	C2TC	PROPULSION SYSTEM WALKDOWN IS COMPLETE	
-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, REPORT WHEN COMPLETE.	
	161	3	C4TC	C4ES	CONNECT S-IVB FLIGHT BATTERIES PER V-30539, SECT H.	#
	161	4	C4TC	C4NK	MONITOR BATTERY VOLTAGES, CURRENTS AND TEMPERATURES AND RECORD DATA PER V-21413	#
	161	5	C4TC	C4NP	VERIFY 4D10, 4D20, 4D30 & 4D40 BATTERY INDICATIONS ON	
	161	6	C4TC	C4NP	TURN ON 4D10 BATTERY LOAD SW UNTIL 4D10 VOLTAGE INDICATES LESS THAN 30 VOLTS.	#
	161	7	C4TC	C4NP	APPLY 4D10 LOAD AS REQUIRED TO STABILIZE BATTERY VOLTAGE.	#
	161	8	C4TC	C4NP	BATTERY MONITOR TO AUTO AFTER BATTERY VOLTAGES ARE RECORDED.	
	161	9	C4TC	C4PS	START PROPULSION FINAL CHECKS PER V-30539, SECT K.	
	121	10	BTMC	CLTC	TCE PREPS COMPLETE PER V-28009	
	121	11	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 15' 0"						
	121	1	C4TC	C1TC C2TC C4TC CUTC	VERIFY STAGE AND GROUND POWER APPLIED	
	111	2	C4TC	CVTS	LV POWER IS ON,	TCPI
-24 HRS 10' 0"						
	181	1	C1TC	C1NE	VERIFY CIRCUIT BREAKER LOCKS HAVE BEEN INSTALLED PER V-21035	
	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,	
	181	4	C1TC	B1TM	START S-IC TM DDAS CHECKS PER V-28186,	
	181	5	C1TC	C1EN	PLACE IGNITORS INSTALLED TO ARM MOMENTARILY THEN AUTO AND VERIFY ALL IGNITOR AND HYPERGOL INSTALLED INDICATIONS ON	
		6			**********WARNING********** * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * **********	
	181	7	C1TC	C1PE	START PROPULSION SYSTEM FUNCTIONAL TEST PER V-34012, REPORT WHEN COMPLETE,	
	181	8	C1TC	C1PE C1NE	VERIFY READY TO LOWER ENGINE SERVICE PLATFORM,	
	181	9	C1TC	CPDC	START LOWERING ENGINE SERVICE PLATFORM PER V-36070,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-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 AUTO ABORT BUS DEENERGIZED AND WILL REMAIN OFF UNTIL COMPLETION OF CTC4.	(KAF2)
-24 HRS 0' 0"						
	181	1	C1TC	CCLO	START LOX SYSTEM PREPS FOR LOADING PER V-25340.	
	181	2	C1TC	CCLH	START LH2 SYSTEM PREPS FOR LOADING PER V-35004.	
	161	3	C4TC	S4HY S4CE S4ML	VERIFY FINAL ENGINEERING WALKAROUND AFT COMPLETE.	
	121	4	CLTC	C1NP C2NP C4NP CUNP	SWITCH SELECTOR INHIBIT - OFF	
	181	5	C1TC	C1NE	VERIFY COMPLETION OF FLIGHT BATTERY INSTALLATION	#
		6			**********WARNING********** * * THE FOLLOWING TWO * SEQUENCES ARE * HAZARDOUS. * ********** THE FOLLOWING TWO SEQUENCES ARE HAZARDOUS.	
	181	7	C1TC	C1PE C1NE	START FINAL THRUST SECTION WALK THRU, LV-QAL PARTICIPATION REQUIRED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 0' 0"						
	181	8	C1TC	C1PE	REMOVE FINAL PORTION OF S-IC THRUST STRUCTURE INTERNAL ACCESS EQUIPMENT PER V-24010,	
	181	9	C1TC	C1MS	VERIFY ML MEASURING EQUIPMENT LOX/FUEL DIGITAL/ANALOG CONVERTER IS TURNED ON AND CALIBRATED,	
	123	10	***	CLFK	REQUEST & EXECUTE KAF1 LINKING PROGRAM, OPTION 1 (KAF2 GY_RO P_REPS, CTC4 & KAF2 FCC PREPS),	***
	123	11	***	CLFK	REQUEST & EXECUTE KAF2 (FLIGHT CONTROL $PREP_S$) WITH THE FOLLOWING $OPTION_S$: PRIMARY OPTION 3 (EDS/CRG PREPS) SECONDARY OPTION 1 (COMPARATORS RESET)	***
	171	12	C2FC	C2TC	S-II EAS FUNCTIONAL CHECKOUT IS COMPLETE	
	181	13	C1TC	CPDC	REMOVE GIMBAL PLATFORMS FROM AROUND ENGINES PER V-36070 AS REQUIRED BY PROPULSION SYSTEM ENGINEER, USE TAG LINE TO KEEP SECTION FROM FALLING,	
	151	14	CUTC	CCAP LRPR	INSTALL AUXILIARY POWER CIRCUIT BREAKER LOCKING PINS PER V-31062, APPENDIX E, REPORT WHEN COMPLETE,	
	181	15	C1TC	CECS	START ECS PREPS PER V-36074, PART A	
	171	16	C2TC	U2EC	START S-II FINAL ECS CHECKS PER V-30029 (M020) TASK 17, REPORT WHEN COMPLETE	
	171	17	C2TC	U2MH	START FINAL ENGINEERING WALKDOWN OF ENGINE ACTUATION, ENGINE COMPARTMENT CONDITIONING AND THERMAL CONTROL SYSTEMS, REPORT WHEN COMPLETE,	
	171	18	C2TC	C2EC	START SPECIAL "G" SWITCH TEST	A N-208-106

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 0' 0"						
	171	19	C2EC	U2A2	PLACE THE SWITCHES ON THE ME490-0002-0001 TEST SET TO THE FOLLOWING POSITIONS: MODE SWITCH - OFF INPUT CONTROL KNOB - MIN POWER SWITCH - ON	A N-208 -106
		19-1		C2EC	***** NOTE WARMUP TEST SET FOR TEN MINUTES PRIOR TO USE	A
	171	20	C2EC	V2MS	VERIFY MEASUREMENTS K075 THROUGH K077-206 ARE BEING RECORDED	A
	171	21	C2EC	U2A2	MODE SWITCH - A	A
	171	22	C2EC	U2A2	SLOWLY INCREASE INPUT CONTROL KNOB CLOCKWISE UNTIL DISCRETE LIGHT A IS FLASHING	A
	171	23	C2EC	U2A2	VERIFY INPUT CONTROL LEVEL METER IS 13.6 +/- 1 G. RECORD ----------	A
	171	24	C2EC	V2MS	VERIFY K075-206 IS CYCLING ON & OFF	A
	171	25	C2EC	U2A2	INPUT CONTROL KNOB - MIN	A
	171	26	C2EC	U2A2	MODE SWITCH - B	A
	171	27	C2EC	U2A2	SLOWLY INCREASE INPUT CONTROL KNOB CLOCKWISE UNTIL DISCRETE LIGHT B IS FLASHING	A
	171	28	C2EC	U2A2	VERIFY INPUT CONTROL LEVEL METER IS 13.6 +/- 1 G. RECORD ----------	A
	171	29	C2EC	V2MS	VERIFY K076-206 IS CYCLING ON & OFF	A
	171	30	C2EC	U2A2	INPUT CONTROL KNOB - MIN	A
	171	31	C2EC	U2A2	MODE SWITCH - C	A
	171	32	C2EC	U2A2	SLOWLY INCREASE INPUT CONTROL KNOB CLOCKWISE UNTIL DISCRETE LIGHT C IS FLASHING	A
	171	33	C2EC	U2A2	VERIFY INPUT CONTROL LEVEL METER IS 13.6 +/- 1 G. RECORD ----------	A
	171	34	C2EC	V2MS	VERIFY K077-206 IS CYCLING ON & OFF	A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-24 HRS 0' 0"						
	171	35	C2EC	U2A2	INPUT CONTROL KNOB - MIN MODE SWITCH - OFF POWER SWITCH - OFF	A N-208 -106
	171	36	C2EC	C2TC	"G" SWITCH SPECIAL TEST COMPLETE	A
	171	37	C2TC	U2A2	START "G" SWITCH SECURING PER V-30029 (M020) TASK 53 OF SECTION I. REPORT WHEN COMPLETE.	A
-23 HRS 55' 0"						
	121	1	CUFS	CLTC	KAF2 COMPLETE. STARTING CTC4.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-23 HRS 55' 0"						
	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.	***
		3			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * * **********	
	181	4	C1TC	C1PE	START S-IC PNEUMATIC SYSTEM FUNCTIONAL TEST PER V-24327.	
-23 HRS 50' 0"						
	121	1	C4TC	CLTC	APS ENGINE VALVE POWER OFF AND WILL REMAIN OFF UNTIL T-9'58", SAFETY LOCK IS INSTALLED.	
	181	2	C1TC	B1TM	VERIFY S-IC TM DDAS CHECKS COMPLETED PER V-28186	
	181	3	C1TC	C1NE	VERIFY TCS FUNCTIONAL TEST IS COMPLETE	
-23 HRS 40' 0"						
	151	1	CUTC	CUNE	VERIFY IU BATTERY CONNECTIONS ARE COMPLETE	#
-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)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 30' 0"						
	123	3	CUFS	CUSP	FLIGHT CONTROL COMPUTER SYSTEM POWER SWITCH - ON,	
-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, SEC$_T$ I. (F_T04, F_T35, FT20, FT23 AND FT08)	***
-23 HRS 16' 0"						
	181	1	C1TC	CSPP	VERIFY RELEASE SENSOR CHECKS ARE COMPLETE PER V-31045,	
	181	2	C1TC	CSPP	START 43D100 & 43D200 BUS CHECKS PER V-21194	
	181	3	C1TC	CPDC	VERIFY ENGINE SERVICE PLATFORM IS REMOVED AND CONNECT WINCH CABLES TO LLP PER V-36070,	
	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	BQCC	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

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	CUSW	ISSUE IU OCTAL 031 (SC CONTROL OF SATURN ENABLE)	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"						
	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	CUSW	ISSUE IU OCTAL 051 (SC CONTROL OF SATURN DISABLE)	TCPI
	212	24	MSTC	CUSP	VERIFY SC CONTROL INDICATION OFF	TCPI
	212	25	MSTC	CUSP	S-IVB COAST MODE SWITCH TO OFF	TCPI
	212	26	MSTC	SCDR	LV GUID SW - IU	TCPI
	212	27	MSTC	CUSP CUCR CUSW C4FC	TEST COMPLETE, RETURN TO ASSIGNED CHANNELS	TCPI
-23 HRS 5' 0"						
	121	1	CUFS	CLTC	SC CONTROL OF SATURN ATTITUDE COMMAND CHECKS COMPLETE	TCPI
	121	2	CLTC	CLGK	SCO PERSONNEL SWITCHING TO CH 223 TO PERFORM FT25	
	111	3	CLTC	CVTS	ADVISE SCO PERSONNEL G-BALL POWER IS COMING ON IN 5 MINUTES.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-25 HRS 51' 0"						
	111	4	CLTC	CVTS	REQUEST SCO PERSONNEL ON CH 223 TO PERFORM FT25,	TCPI
	121	5	CLGK	CLTC	LVDC/LVDA POWER ON COMPLETE	
	121	6	***	CLGK	REQUEST AND EXECUTE FT25 (SC DISCRETE INPUT TEST) ON CH 223	***
		6-1		CLGK	*** NOTE VERIFY DIN 4, 6, 9, 20 & 22 OFF AND INT 2 OFF,	
	223	7	CLGK	SCDR	PANEL 2, LV S-II/S-IVB SWITCH TO LV STAGE,	TCPI
		7-1		CLGK	*** NOTE VERIFY INT 2 & DIN 22 ON	
	223	8	CLGK	SCDR	PANEL 2, LV S-II/S-IVB SWITCH TO OFF,	TCPI
		8-1		CLGK	*** NOTE VERIFY INT 2 & DIN 22 OFF	
	223	9	CLGK	SCDR	PANEL 2, LV GUID SWITCH TO CMC,	TCPI
		9-1		CLGK	*** NOTE VERIFY DIN 9 ON	
	223	10	CLGK	MGNS	TURN ON SATURN INJECTION SEQUENCE START	TCPI
		10-1		CLGK	*** NOTE DIN 20 ON	
	223	11	CLGK	MGNS	TURN OFF SATURN INJECTION SEQUENCE START	TCPI
		11-1		CLGK	*** NOTE VERIFY DIN 20 OFF	
	223	12	CLGK	SCDR	PANEL 2, LV TRANSLUNAR SWITCH TO SAFE,	TCPI
		12-1		CLGK	*** NOTE VERIFY DIN 6 ON	
	223	13	CLGK	SCDR	PANEL 2, LV TRANSLUNAR SWITCH TO INJECT,	TCPI
		13-1		CLGK	*** NOTE VERIFY DIN 6 OFF	
	223	14	CLGK	SCDR	PANEL 2, LV GUID SWITCH TO IU,	TCPI
		14-1		CLGK	*** NOTE VERIFY DIN 9 OFF	
	223	15	CLGK	SCDR	SUPPORT NO LONGER REQUIRED,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-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
		3-1			**********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.	
	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	CGIC	VERIFY CIF READY TO SUPPORT LV COUNTDOWN	TCPI
	121	8	CLTC	B4TM BUTM	VERIFY TM RERADIATION SYSTEM INSTALLED	
	121	9	CLTC	CUIP	VERIFY RF SILENCE OFF	
	121	10	CLTC	CUIP	Q-BALL POWER ON THEN - AUTO Q-BALL HEATER POWER - ON	TCPI
	171	11	C2TC	C2NP	START ONE POINT CAL PER V-30029 (M020) TASK 18. REPORT WHEN COMPLETE.	
	121	12	***	CPRK	REQUEST AND EXECUTE BT01 (PROPELLANT MONITOR UPDATE) AND BE01 AND BE02 (PROPELLANT MONITOR PROGRAMS).	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 0' 0"						
		12-1		CPRK	*** NOTE VERIFY BE01 & BE02 OPERATION IS NORMAL AFTER BT01 TERMINATION, THEN TERMINATE BE01 & BE02,	
		12-2		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 OR V-25389),	
	121	13	CLTC	ALL	FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO SUPPORT APS GAIN TEST CTC5: CLFK CUCR CUGA C4FC E4FC CLGK CUFE CUSP C4FS	(CTC5)
	123	14	CUFS	C4FC C4HY	VERIFY PREPS COMPLETE AND S-IVB HYDRAULICS OFF	(CTC5)
	123	15	CUFS	CLGK	VERIFY READY TO SUPPORT CTC5 & CTC1	(CTC5)
	151	15-1	CUFS	BGCC	MASK THE FOLLOWING DISCRETES: $FUNC SE 935-38 MMSK (MDI'S 0888 THRU 0911)	I-167-108
	171	16	U3EC	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-23 HRS 0' 0"						
	171	18	C2GP	C2TC	S-II GROUND PNEUMATICS ACTIVATED	
		19			**********WARNING********** * * THE FOLLOWING SEQ IS * HAZARDOUS, * **********	
	181	20	C1TC	C1PE	PREPARE S-IC HYDRAULIC UNIT PER V-34012, REPORT WHEN COMPLETE,	
	181	21	C1TC	BRFS	TURN ON ML AND LCC GSE POWER	
	181	22	C1TC	RDTS	VERIFY BACKUP FIRING ROOM DTS IS SUPPORTING	
	171	23	C2TC	U2PF	START PROPELLANT FILL AND HAZARDOUS GAS DETECTION SYSTEMS INSPECTIONS PER V-30029 (M020) TASK 21,	
-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, (A0, A1, BURN, COAST, P, Y, R, ACTIVE AND APS POWER OFF), REPORT WHEN COMPLETE,	***
		3-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE	
		3-2		CUNP	*** NOTE GROUP 1 RESET WILL BE ISSUED PERIODICALLY DURING THIS PROGRAM	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CSM ONLY	
-22 HRS 45' 0"						
	161	1	C4TC	S4MF	INSTALL LM ACCESS STEPS PER V-30539 APPENDIX D, REPORT WHEN COMPLETE.	# D-87-119
-22 HRS 30' 0"						
	151	1	CUTC	SUVM	VERIFY ST-124M PURGE LINE AND PLENUM CHECK VALVE REMOVED.	#
	171	2	L2PD	C2TC	CIRCUIT BREAKERS LOCK INSTALLATION IS COMPLETE.	
	121	3	CLTC	VURF	ENABLE LOCAL CCS CARRIER AND VERIFY.	
	121	4	CLTC	CUIP	C-BAND BEACON #1 & #2 - ON C-BAND BEACON #1 & #2 INHIBIT - ON C-BAND BEACON #1 & #2 INHIBIT - OFF C-BAND BEACON #1 INHIBIT - ON CCS TRANSPONDER POWER - ON	
	121	5	CLTC	VURF	VERIFY CCS IN LOCK, START CCS CHECKS PER V-28069.	
	111	6	CLTC	CVTS	LV COMMAND DECODER COMING ON	TCPI
	121	7	CLTC	CUIP	COMMAND DECODER POWER - ON.	
	161	8	C4TC	S4CE	VERIFY FINAL ENGINEERING WALKAROUND FORWARD COMPLETE	
	161	9	C4TC	C4ES	VERIFY S-IVB FLIGHT BATTERIES CONNECTED	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 25' 0"	111	1	CLTC	CVTS	REQUEST RANGE INTERROGATE C-BAND BEACON #2, REPORT RANGE READOUTS TO VURF ON CHANNEL 137.	TCPI
	121	2	CLTC	C4TC	VERIFY S-IVB ENGINE SEQUENCE TEST COMPLETE OR WILL NOT BE RUN PRIOR TO COMPLETION OF CTC1.	(CTC1)
	121	3	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 CUCR S4HY E4FC CUGA CLFK U2MH C2FC C2FE U2LH V2MS U2FE U2LF R2SC C4FC C4HY C4NP C4FS	
		3-1		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.	
		3-2		CUNP	*** NOTE GROUP 2 RESET WILL BE ISSUED PERIODICALLY DURING THIS PROGRAM.	
	123	4	CUFS	S4HY	VERIFY ENGINE AREA CLEAR FOR HYDRAULIC OPERATION	(CTC1)
	171	5	C2TC	C2IP	VERIFY GROUND POWER TO ON	(CTC1)
	123	6	CUFS	C4NP	4D411 POWER ON OR VERIFY ON	(CTC1)
	123	7	CUFS	C4HY	AUXILIARY PUMP POWER SWITCH TO AUTO	(CTC1)
-22 HRS 20' 0"	123	1	CUFS	CUGA	PLACE EDS/CONTROL RATE GYRO SYSTEM POWER SWITCH TO ON	(CTC1)
	151	1-1	CUFS	BGCC	UNMASK THE FOLLOWING DISCRETES: $FUNC SE 935-38 MREL (MDI'S 0888-THRU 0911)	I-167-108
	121	2	CUFS	CLTC	CTC5 COMPLETE. STARTING CTC1.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 20' 0"						
		2-1		C4HY	**********CAUTION********** * * MONITOR HYDRAULIC * * SYSTEM TEMPERATURE, DO * * NOT EXCEED 190 DEG F, * * NOTIFY CUFS WHEN * * TEMPERATURE EXCEEDS 180 * * DEG F, * * **********	
		2-2			**********WARNING********** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IVB ENGINE GIMBAL * * ENVELOPE * * **********	
	123	3	***	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,	***
		3-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON SANDERS CONSOLE,	
-22 HRS 15' 0"						
	151	1	CVTC	SUVE	START IU ELECTRICAL WALKAROUND, LV-GAL PARTICIPATION REQUIRED,	
	121	2	CLTC	GMIL	VERIFY GROUND STATION IN LOCK FROM CCS PCM SOURCE,	TCP1
	181	3	C1TC	CHDA	START HDA PRELAUNCH PREPS PER V-36069	
	181	4	C1TC	CPDC	VERIFY REQUIRED LLP GIMBAL PLATFORM SECTIONS REMOVED AND WINCH CABLES CONNECTED TO LLP,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 15' 0"						
	181	5	C1TC	C1PE	VERIFY FUNCTIONAL TEST OF S-IC PNEUMATIC SYSTEMS COMPLETE	
	181	6	C1TC	C1PE	VERIFY S-IC AIRBORNE GN2 AND HELIUM BOTTLES CHARGED TO 1500 PSIG,	
	171	7	U2SI	C2TC	STA 114 A7-84 REMOVAL IS COMPLETE LESS LADDER AND FOUR SECTIONS,	
	123	8	CUFS	U2LH	VERIFY S-II ENGINE AREAS CLEAR FOR AUTOMATIC APPLICATION OF HYDRAULIC PRESSURE AND ENGINE GIMBALING	(CTC1)
	123	9	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	10	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)
		1-1			**********WARNING********** * * RESUME PREVIOUS HAZARD * * LEVEL-END OF WARNING * * FOR S-IVB ENGINE GIMBAL * * ENVELOPE * * **********	
	123	2	***	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,	***
		2-1		CLFK	*** NOTE ADVISE ALL PERSONNEL OF MAJOR PROGRAM EVENTS BEING DISPLAYED ON THE SANDERS CONSOLE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 10' 0"						
	121	3	C1TC	CLTC	REQUEST BOSC PROVIDE SUPPORT FOR PCMU DISCONNECT	
	261	4	CLTC	BOSC	REQUEST SUPPORT FOR PCMU DISCONNECT.	TCPI
					TM SWITCH POSITIONING	
	121	5	CLTC	C1TC C2TC C4TC CUTC	POSITION TM CAL CONTROLS FOR VATC/VALJ AND REPORT WHEN READY	
	181	6	C1TC	C1IP	TM MODE SELECT - ANTENNA	(VATC)
	181	7	C1TC	C1IP	TM CALIBRATOR - AUTO	(VATC)
	181	8	C1TC	C1IP	TM CAL MODE - AUTO	(VATC)
	181	9	C1TC	C1IP	PREFLT LEVELS - AUTO	(VATC)
	181	10	C1TC	C1IP	F1 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	181	11	C1TC	C1IP	LOX AND FUEL RACS POWER - AUTO	
	181	11-1	C1TC	C1IP	28 VDC RACS POWER - AUTO	(VAMC)
	181	11-2	C1TC	C1IP	400 HZ CAL POWER - AUTO	(VAMC)
	121	12	C1TC	CLTC	S-IC READY FOR VALJ/VATC	
	171	13	C2TC	C2IP	GROUND POWER - ON	(VATC)
	171	14	C2TC	C2IP	RF COUPLER - AUTO	(VATC)
	171	15	C2TC	C2IP	TM CAL MODE - AUTO	(VATC)
	171	16	C2TC	C2IP	PREFLT LEVELS - AUTO	(VATC)
	171	17	C2TC	C2IP	FM/FM INFLT - AUTO	(VATC)
	171	18	C2TC	C2IP	PCM MODE - AUTO	(VATC)
	171	19	C2TC	C2IP	F1, F2 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	171	19-1	C2TC	C2NP	RACS POWER - AUTO	(VAMC)
	171	19-2	C2TC	C2IP	FREQ MEAS CAL - AUTO	(VAMC)
	121	20	C2TC	CLTC	S-II READY FOR VALJ/VATC	
	161	21	C4TC	C4IP	TM MODE SELECT - AUTO	(VALJ)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 10' 0"						
	161	22	C4TC	C4IP	TM CALIBRATE - AUTO	(VATC)
	161	23	C4TC	C4IP	P1 TRANSMITTER - AUTO	(VALJ)
	161	24	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP - AUTO	(VALJ/ VAMC)
	121	25	C4TC	CLTC	S-IVB READY FOR VALJ/VATC	
	151	26	CUTC	CUIP	RF DUMMY LOAD - AUTO	
	151	27	CUTC	CUIP	F1 TM - AUTO	(VATC)
	151	28	CUTC	CUIP	TM CAL MODE TO INFLT THEN AUTO	(VATC)
	151	29	CUTC	CUIP	TM CALIBRATOR - AUTO	(VATC)
	151	30	CUTC	CUIP	PREFLT LEVELS - AUTO	(VATC)
	151	31	CUTC	CUIP	F1 AND P1 RF TRANSMITTER - AUTO	(VALJ)
	121	32	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 UN-LOCKED 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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-22 HRS 0' 0"						
	181	1	C1TC	BRFS	START DRSCS CHECKS PER V-38000, SECT 13	
	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	*
	151	5	CUTC	CUCP	PRESSURIZE ST-124M GN2 SPHERE TO 1700 PER V-34017.	
		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)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-22 HRS 0' 0"						
	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)
	171	13	U2SI	C2TC	PROPELLANT FILL AND HAZARDOUS GAS DETECTION SYSTEMS WALK AROUND INSPECTIONS ARE COMPLETE,	
-21 HRS 55' 0"						
	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,	***
		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	
		7			DELETED	N-217-130
-21 HRS 50' 0"						
	181	1	C1TC	CSPP	VERIFY 43D100 & 43D200 BUS CHECKS COMPLETE PER V-21194	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 50' 0"						
	181	2	C1TC	CSPP	APPLY 43D100 AND 43D200 FIRING SYSTEM POWER AND START BATTERY SWITCHOVER TEST PER V-21194, REPORT WHEN COMPLETE,	
		3			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	
	181	4	C1TC	C1PE	DISCONNECT & SECURE FUSU (OR PCMU) PER V-24327,	
-21 HRS 45' 0"						
	123	1	CUFS	CUSP	VERIFY/ACCOMPLISH NO MODE LIGHTS ILLUMINATED	
	123	2	CUFS	C1PC	LOW LOX DOME PURGE OFF,	
	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-21115,	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	TCPI
	121	8	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT TEST	
	121	9	CLTC	CGIC	REQUEST ELECTROMAGNETIC COMPATIBILITY MONITORING	TCPI
					(ALLOW FIVE MINUTES TO OPERATING STEPS)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 45' 0"						
		10			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	
	181	11	C1TC	C1PE	START FINAL INSTALLATION OF BASE HEAT SHIELD ACCESS PANELS PER V-29003	
					OPERATING STEPS	
	121	12	***	C1IP C2IP C4IP CUIP	VERIFY RF SILENCE OFF	***
	121	13	C4TC	C2NP C4NP CUNP	SWITCH SELECTOR INHIBIT OFF	
	121	14	C4TC	ETMS BTMC	TM TAPE RECORDING - ON,	
	121	15	***	C2IP	VERIFY GROUND POWER ON (CAL POWER)	***
	121	16	***	C1IP	VERIFY TM MODE SELECT SWITCH - ANTENNA,	***
	121	17	***	C2IP	RF COUPLER TO ANTENNA	***
	121	18	***	C4IP	TM MODE SELECT SWITCH TO COAX,	***
	121	19	***	CUIP	RF DUMMY LOAD - ON,	***
	121	20	***	CUIP	F1 TM - ON,	***
	121	21	***	CUIP	TM CAL MODE TO INFLIGHT THEN AUTO,	***
	121	22	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED OVER CHANNEL 121,	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 45' 0"						
	121	23	***	C1IP	F1 & P1 RF - ON,	***
	121	24	***	C2IP	F1, F2, & P1 RF - ON,	***
	121	25	***	C4IP	P1 - ON THEN AUTO	***
	121	26	***	CUIP	F1 AND P1 RF - ON	***
	121	27	***	C1IP CUIP	TM CALIBRATOR POWER - ON,	***
	121	28	***	C1IP C2IP CUIP	TM CAL MODE - PREFLIGHT & PREFLIGHT LEVELS - 50%	***
	121	29	C1PK	CLTC	TM SYSTEM PREPS FOR PARAMETER CHECK COMPLETE	
	121	30	CLTC	ETMS	START TM PARAMETERS CHECK (DELAY 5 MINUTES MINIMUM FOR TM TRANSMITTER WARM UP)	TCPI
-21 HRS 40' 0"						
	111	1	CLTC	CVTS	VERIFY WEST MSS ELEVATOR 2 LOCKED OUT ABOVE MSS A3 LEVEL TO SUPPORT LONG RANGE THEODOLITE CHECKS AND REQUEST GMIL TO STANDBY ON CH 121 FOR CCS GAIN CHANGE	TCPI
	121	2	CLTC	CUPC	TURN ON ST-124M SYSTEM PER V-33011,	
	121	3	CLTC	GMIL	VERIFY READY FOR CCS LOW GAIN	TCPI
	121	4	CLTC	CUSW	ISSUE IU OCTAL 052 (CCS LOW GAIN)	
	171	5	U2MH	C2TC	HYDRAULIC PERSONNEL HAVE COMPLETED REMOVAL OF NON-FLIGHT EQUIPMENT,	
	171	6	C2TC	U2SE	VERIFY OK TO REMOVE STA 30 AND HEAT SHIELD A7-84 ACCESS PLATFORMS,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
-21 HRS 40' 0"						
	171	7	C2TC	U2SI	START COMPLETE REMOVAL OF STATION 30/A7-84 PLATFORMS (S-II AFT ACCESS PLATFORMS) PER V-26008 (G042) EXCEPT THOSE SECTIONS NEEDED FOR ACCESS TO FLIGHT BATTERIES.	#
	171	8	C2TC	U2SI	CDDT ONLY	*
	171	9	C2TC	U2SI	START REMOVAL OF A7-84 HEAT SHIELD COVER PER V-26008 (G042).	
	121	10	CLTC	ALL	VATC WILL START EXECUTING IN 30 SECONDS. FLUCTUATING MEASUREMENTS MAY OCCUR DURING NEXT 3 MINUTES.	
		10-1		BGCC	*** NOTE LCC GENERAL MESSAGE NO. 0510 "NO S/S OUTPUT - S-IVB" MAY OCCUR DURING NEXT 3 MINUTES.	
	121	11	***	CLIK	REQUEST & EXECUTE VATC (TM PREFLIGHT CALIBRATION). REPORT WHEN COMPLETE.	***
-21 HRS 37' 0"						
	121	1	CLIK	CLTC	VATC 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 37' 0"						
	121	8	CLTC	RDAS	BACKUP FIRING ROOM TAPE RECORDER OFF,	
-21 HRS 35' 0"						
	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL THAT Q-BALL SIM COMMAND WILL BE SENT IN 5 MINUTES,	TCPI
	111	2	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	CUSW	ISSUE IU OCTAL 072 (CCS HIGH GAIN)	
	161	4	CLTC	S4MA	START FINAL CLOSEOUT OF FLAME IMPINGEMENT CURTAIN,	
-21 HRS 20' 0"						
						XB-254-133
	121	1	xxxx	C1IP	LOX AND FUEL RACS POWER - ON	xxxx
	121	2	xxxx	C1IP	28 VDC RACS POWER ON	xxxx
	121	3	xxxx	CLIK	REQUEST & EXECUTE VAMC (MEAS SYS RAPID CAL) ALL STAGES, REPORT WHEN COMPLETE.	xxxx
	121	4	CLTC	C1PK	AS SOON AS VAMC IS CALLED, INITIATE $PS5810 TO HALT VALJ AFTER VAMC IS COMPLETE. ISSUE $PA WHEN COMMAND IS GIVEN TO CALL VAPX.	
	121	5	xxxx	C2NP	RACS POWER - ON	xxxx
	121	6	xxxx	C2IP	FREQ MEAS CAL ON	xxxx

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 20' 0"						
		4-1		ALL	*** NOTE STAGE MEASUREMENTS WILL BE INTERRUPTED DURING VAMC	
		4-2		C1IP	*** NOTE 28 VDC RACS AND 400 HZ POWER - ON	
	181	5	C1TC	CSPP	VERIFY FIRING SYSTEM BATTERY SWITCHOVER TEST COMPLETE AND REMOVE 43D100 AND 43D200 POWER	
-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	***
	121	3	***	C2IP	FREQ MEAS CAL OFF	***
	121	4	***	C2NP	RACS POWER OFF	***
	181	5	C1TC	BRFS	VERIFY DRSCS/GSE READY TO SUPPORT LV POWER TRANSFER TEST	
-21 HRS 15' 0"						
	111	1	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	2	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
		2-1			*** NOTE BOTH C-BAND BEACONS ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"						
	121	3	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS,	
					POWER TRANSFER TEST	
	111	4	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL UHF COMMAND CARRIER (PROTECTION REQUIRED)	TCPI
	121	5	CLTC	BRFS	DRSCS RF CARRIER ON AND VERIFY,	
	121	6	CUPC	CLTC	ST-124M POWER ON COMPLETE,	
	121	7	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR ENABLE - OFF SYSTEM STATUS SWITCH - OFF S&A SWITCH - SAFE	
	121	8	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE,	
		8-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON	
	121	9	CLTC	RRSC	VERIFY DRSCS RECORDERS ON	
		10		C2NP	ACTIVATE BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE, (CD ONLY)	
	121	11	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 INTERNAL AND VERIFY	(VAPX)
		11-1		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 OFF,	
		11-2		B1RF B2RF B4RF CRSS	*** NOTE ALL RSCR LIMITER VOLTAGES RECEIVED	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"						
	188	12	CLTC	ALL	ALL PERSONNEL SUPPORTING POWER TRANSFER TEST MONITOR CHANNEL 121 AND SWITCH TO INDIVIDUAL "STAGE TC" ACTIVE CHANNELS TO PREPARE FOR POWER TRANSFER.	
		13			**********WARNING********** * * THE FOLLOWING SEQ'S ARE * * HAZARDOUS FOR THE S-IC * * ENGINE GIMBAL ENVELOPE. * * **********	
	121	14	CLTC	ALL	THE FOLLOWING STATIONS SWITCH TO CHANNEL 123 TO SUPPORT FLIGHT CONTROL SYSTEM PREPS FOR POWER TRANSFER: CUFS CUCR C1FE L1EP CUSP C1PC CUGA	(VAPX)
	121	15	CLTC	CUFS	PREPARE FLIGHT CONTROL FOR POWER TRANSFER	
	123	16	CUFS	C1PC	LOW LOX DOME PURGE ON	
	123	17	CUFS	L1EP	VERIFY S-IC ENGINE SECTION CLEAR FOR ENGINE GIMBALING	
	121	18	CUFS	CLTC	FLIGHT CONTROL READY FOR POWER TRANSFER.	
	181	19	C1TC	C1NP	VERIFY INTERNAL AND EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	181	20	C1TC	C1NP	POWER TRANSFER TO AUTO	
	181	21	C1TC	C1IP	VERIFY ON OR TURN ON TM CAL SWITCH.	
	181	22	C1TC	C1NP	CDDT ONLY	*
	181	23	C1TC	C1NP	BATTERY INSTALLED ENABLE SWITCH TO ON THEN AUTO	
		23-1		C1NP	*** NOTE S-IC READY FOR POWER TRANSFER ON THEN OFF	
	181	24	C1TC	C1NE R1SC	VERIFY READY FOR POWER TRANSFER.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-21 HRS 15' 0"						
	121	25	C1TC	CLTC	S-IC READY FOR POWER TRANSFER PROGRAM REQUEST	
	171	26	C2TC	C2NP	BATTERY INSTALLED TO AUTO.	
	171	27	C2TC	C2NP	IGN BATT BLEED TO ON	#
	171	28	C2TC	C2NP	VERIFY MAIN, INSTR & RECIRC POWER TRANSFER SWITCHES IN AUTO.	
	171	29	C2TC	C2NP	APPLY PM POWER	
	171	30	C2TC	C2NP R2SC	VERIFY READY FOR POWER TRANSFER.	
	121	31	C2TC	CLTC	S-II READY FOR POWER TRANSFER PROGRAM REQUEST.	
	161	32	C4TC	C4NP	EMERGENCY POWER TRANSFER SWITCH OFF.	(VAPX)
	161	33	C4TC	C4NP	BATTERY MONITOR TO AUTO	(VAPX)
	161	34	C4TC	C4NP	VERIFY 4D411 POWER ON.	(VAPX)
	161	35	C4TC	C4NP	CDDT ONLY	(VAPX) *
	161	36	C4TC	S4HY	VERIFY S-IVB ENGINE SECTION AREA CLEAR. FOR HYDRAULICS.	(VAPX)
	161	37	C4TC	C4HY	VERIFY FLIGHT MODE IS IN AUTO OR POSITION TO AUTO.	(VAPX)
	161	38	C4TC	R4EI R4SC	RECORDERS FAST.	(VAPX)
	161	39	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP TO AUTO	(VAPX)
	161	40	C4TC	C4EP	VERIFY CHILLDOWN PUMP SWITCHES ARE OFF	(VAPX)
	161	41	C4TC	C4EP	CLOSE LOX AND LH2 CHILLDOWN VALVES.	(VAPX)
	161	42	C4TC	C4PU	PU POWER ON THEN AUTO.	(VAPX)
	161	43	C4TC	C4NP C4PP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	(VAP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"						
	161	44	C4TC	C4NP C4NK R4EI C4HY R4SC	VERIFY READY FOR POWER TRANSFER.	(VAPX)
	161	45	C4TC	C4NP	POWER TRANSFER SWITCH TO AUTO	(VAPX)
	121	46	C4TC	CLTC	S-IVB READY FOR POWER TRANSFER PROGRAM REQUEST.	
	151	47	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	151	47-1	CUTC	CUNP	CDDT ONLY	*(VAPX)
	151	48	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER.	
		48-1		CUTC CUNP	*** NOTE IU TO REMAIN ON INTERNAL POWER FOR 3 MINUTES	
	151	49	CUTC	CUNP	POWER TRANSFER TEST TO AUTO	
	121	50	CUTC	CLTC	IU READY FOR POWER TRANSFER PROGRAM REQUEST	
	121	51	CLTC	C1NK C2NK C4NK CUNK	MONITOR CONSOLE 12 DURING VAPX	
	121	52	CLTC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL/EXTERNAL SECURE STAGES FROM POWER TRANSFER ON STAGE TC CHANNELS.	
		52-1		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.	
		52-2		CUCR CUGA	*** NOTE VAPX WILL TORQUE THE ROLL GYROS TO +9 DEG/SEC CAUSING THE S-IC ENGINES TO GIMBAL	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 15' 0"						
		53			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	54	C4TC	C1PK	REQUEST & EXECUTE VAPX (SPR5 OPTION)	
	161	55	VAPX	C4NP	BATTERY MONITOR ENABLE	
		56		C4HY	**********CAUTION********** * * MONITOR HYDRAULIC * * SYSTEM TEMPERATURE, DO * * NOT EXCEED 190 DEG F, * * NOTIFY C4TC WHEN * * TEMPERATURE EXCEEDS 180 * * DEG F, * * ****************************	
		57			**********WARNING********** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IVB ENGINE GIMBAL * * ENVELOPE, * * ****************************	
	161	58	VAPX	C4HY	FLIGHT MODE ON THEN AUTO,	
	121	59	C4TC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3",	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-21 HRS 15' 0"						
	121	60	C1PK	ALL	VAPX WILL TRANSFER STAGES INTERNAL IN 5 SEC. 5-4-3-2-1 MARK	
	121	61	VAPX	C1NP C2NP C4NP CUNP	TRANSFER TO INTERNAL POWER	
		61-1		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		61-2		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	
		61-3		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		61-4		C1NP	CDDT ONLY	*
	181	62	C1TC	C1FR	VERIFY POWER TRANSFER COMPLETE (ALL STAGES) - ON	
		62-1		R1SC	*** NOTE VOLTAGE FOR STAGE BUSSES 1D11 & 1D21 AND VOLTAGE AND CURRENT FOR BUSSES 1D10 & 1D20.	
		62-2		C1NP	*** NOTE +1D111, +1D211, +1D121 BUS INDICATIONS OFF	
		62-3		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) ----------	

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-21 HRS 15' 0"					RECIRC DC BUS VOLTAGE 2D51 (XM0111-207) ---------- IGN DC BUS VOLTAGE 2D61 (XM0125-207) ----------	
-21 HRS 14'30"						
	181	1	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
		1-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		1-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
		1-3		C1NP	*** NOTE BUS 1D121 ON	
		1-4		C1NP	*** NOTE BUS 1D211 ON	
		1-5		C1NP	*** NOTE BUS 1D111 ON	
		1-6		C1NP	CDDT ONLY	
	181	2	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE AND 1D10 & 1D20 VOLTAGE AND CURRENT DURING INTERNAL THEN REPORT TO CLES ON CH 125.	
	181	3	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	4	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		4-1		C2NP	*** NOTE MAIN BUS EXTERNAL ON	
		4-2		C2NP	*** NOTE INST. BUS EXTERNAL ON	
		4-3		C2NP	*** NOTE RECIRC. BUS EXTERNAL ON	
		4-4		C2NP	*** NOTE POWER TRANSFER COMPLETE OFF	
	171	5	C2NP	C2TC	S-II POWER TRANSFER TEST IS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-21 HRS 14'30"						
	171	6	C2TC	C2NP	REMOVE PM POWER	
	171	7	C2TC	C2NP	IGN BATT BLEED TO OFF	#
	171	8	C2TC	C2NP	VERIFY STAGE ON EXTERNAL POWER	
	121	9	C2TC	CLTC	S-II POWER TRANSFER IS COMPLETE	
	171	10	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 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 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. * **********	
	161	5	C4TC	C4NP	EMERGENCY POWER TRANSFER TO EXTERNAL	
	161	5-1	C4TC	C4NP	SIM FLT POWER TO DISABLE OR VERIFY DISABLED	D-86-122
	161	6	C4TC	C4NP	4D411 POWER OFF	
	161	7	C4TC	R4SC	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-21 HRS 14' 15"						
	161	8	C4TC	C4EP	OPEN LOX AND LH2 CHILLDOWN VALVES	
	161	9	C4TC	C4PU	PU POWER OFF THEN AUTO,	
	161	10	C4TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	11	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE	
-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	2-1	CUTC	CUNP	CDDT ONLY	*
	151	3	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	4	CUTC	RUBM	READOUT VOLTAGE AND CURRENTS 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 RECORDERS - SLOW SPEED,	
	121	8	C1PK	CLTC	VAPX IS COMPLETE,	
	121	9	CLTC	C1DP C2DP C4DP	VERIFY EBW'S EXTERNAL AND NOT CHARGED	
		9-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED,	
		9-2		RRSC	*** NOTE PROPER DRSCS INDICATIONS DURING POWER TRANSFER (DRSCS RECORDER)	
	121	10	CLTC	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 12' 0"						
	121	11	CLTC	C1DP C2DP C4DP	VERIFY RSCR POWER OFF	
	121	12	CLTC	CLVN	DESTRUCT SYSTEM - OFF, DELIVER DESTRUCT SYSTEM KEY TO CPSS, REPORT WHEN COMPLETE,	
	121	13	CLTC	C1DP C2DP C4DP	VERIFY SAFETY BUS OFF	
	121	14	CLTC	C1DP C2DP C4DP	STATUS SYSTEM SWITCH - SAFE	
	121	15	CLTC	BRFS	DRSCS RF CARRIER - OFF	
	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, VERIFY C-BAND AND CCS HAD NO CHANGES,	TCPI
	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),	
	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
	111	23	CLTC	CVTS	LOCAL COMMAND CARRIER IS OFF,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶	▶	▶	▶	▶	▶ CO ONLY ◀	◀
-21 HRS 12' 0"						
	171	24	C2TC	C2NP	VERIFY BATTERY PERFORMANCE IS SATISFACTORY AND OK TO REMOVE BATTERY ACCESS PLATFORMS.	#
	171	25	C2TC	U2SI U2SE	POWER TRANSFER TEST IS COMPLETE, BATTERY ACCESS PLATFORMS MAY BE REMOVED.	#
	181	26	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	27	C1TC	C1NE C1PE	START FORWARD SKIRT WALK THROUGH WHEN BULKHEAD COVERS AND PLATFORMS ARE CLEARED. LV-QAL PARTICIPATION REQUIRED.	
	151	28	CUTC	SUVE	VERIFY IU ELECTRICAL WALKAROUND COMPLETE AND SATISFACTORY	
		28-1			VERIFICATION BY LV-QAL ----------	
	121	29	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS OFF IN THE SEQUENCE LISTED AND MARKED OVER CHANNEL 121	***
	121	30	***	C1IP	F1, P1 RF - OFF	***
	121	31	***	C2IP	F1, F2, P1 RF - OFF	***
	121	32	***	C4IP	P1 OFF THEN AUTO.	***
	121	33	***	CUIP	F1 & P1 RF - OFF	***
	121	34	***	CUIP	F1 TM OFF	***
	121	35	CLTC	ETMS BTMC	TM TAPE RECORDING OFF	
	121	36	CLTC	ETMS	REPORT OUT OF TOLERANCE PARAMETERS TO BLTM ON CHANNEL 127 WHEN ANALYSIS IS COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 12' 0"						
	121	37	***	C1IP	TM CALIBRATOR OFF THEN AUTO,	***
	121	38	***	CUIP	TM CALIBRATE OFF,	***
	121	39	CLTC	CUIP	C-BAND BEACON #1 - OFF C-BAND BEACON #2 - OFF	
	188	40	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): CLGK CUSP C1FE L1EP CUFE CUCR C1FC C1PC CUGA CLFR C1HP CUNP	(CTC1)
	123	41	CUFS	CLGK	VERIFY READY TO SUPPORT CTC1 & VAFC	(CTC1)
	123	42	CUFS	CUSP	VERIFY ALL CCIS PANEL SWITCHES IN AUTO	(CTC1)
	123	43	CUFS	CUGA	VERIFY ALL EDS/CONTROL RATE GYRO PANEL SWITCHES IN AUTO POSITION EXCEPT SYSTEM POWER	(CTC1)
		43-1		CUNP	*** NOTE GROUP 2 RESET WILL BE ISSUED PERIODICALLY THROUGHOUT THIS PROGRAM	
	123	44	CUFS	C1HP	VERIFY S-IC HYDRAULICS SUPPORTING	(CTC1)
	123	45	CUFS	L1EP	VERIFY S-IC ENGINE AREA CLEAR FOR GIMBALING	(CTC1)
	123	46	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 10' 0"						
	123	2	***	CLFK	REQUEST & EXECUTE KAF3 (THRUST VECTOR READ), REPORT WHEN COMPLETE,	***
-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,	***
		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	SUQI SUVM	START IU MECHANICAL WALKAROUND PER V-31062, PART III,	
	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	C9TC	S4MA	START AFT INTERSTAGE FINAL WALKAROUND	
	181	6	C1TC	CHCU	PREP HCU PER V-36079, REPORT WHEN COMPLETE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-21 HRS 0' 0"						
	261	7	C2TC	BOSC	S-II WILL BE READY FOR PURGE SYSTEM 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.	
	111	3	CLTC	CVTS	LOCAL CCS CARRIER IS ON, CCS TRANSPONDER AND COMMAND DECODER ARE ON, IU COMMAND SYSTEM IS DISABLED	TCPI
	121	4	CLTC	CUSW	ISSUE IU OCTAL 007 (CCS OMNI)	N-217-130
-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.	
	121	3	CLTC	SURF	REMOVE C-BAND ANTENNA COUPLERS PER V-28069	
	181	4	C1TC	LPLX	VERIFY PTCS PREPS COMPLETED PER V-25159	
-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.	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 35' 0"						
	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, REPORT WHEN READY TO SUPPORT EDS TEST,	(VAED)
	171	5	C2TC	C2AE C2EC C2NP	PREP FOR EDS TEST, REPORT WHEN COMPLETE,	
-20 HRS 30' 0"						
	188	1	CVTS	PA	LM SHE TANK TOPOFF IS COMPLETED, THE CONTROL AREA IS OPEN FOR NORMAL WORK,	TCPI
	123	2	CUFS	ALL	ALL STATIONS CONCERNED WITH S-IC ALL ENGINES NULL TEST RETURN TO CHANNEL 121,	
	121	3	CUFS	CLTC	VAFC & KAF1 ARE COMPLETE,	(VAED)
	121	4	CLTC	CUSP	VERIFY NO MODE LIGHTS ILLUMINATED,	
	121	5	CLTC	CUFC	CONTROL COMPUTER SYSTEM POWER - OFF	
	121	6	CLTC	CUGA	CONTROL/EDS RATE GYRO SYSTEM POWER - OFF	
	121	7	CLTC	CUFS	PLACE ALL CCIS AND EDS/CRG PANEL SWITCHES - OFF	
	121	8	CLTC	C1HP	TURN OFF S-IC HYDRAULIC UNIT	
		9			**********WARNING********** * * RESUME PREVIOUS HAZARD * LEVEL - END OF WARNING * FOR S-IC ENGINE GIMBAL * ENVELOPE. * **********	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 30' 0"						
	121	10	CLTC	C1PC	AFTER S-IC HYDRAULIC UNIT IS OFF, TURN LOW LOX DOME PURGE OFF,	
	111	11	CLTC	CVTS	LV READY FOR EDS TEST, REQUEST SCO PERSONNEL SWITCH TO CHANNEL 223,	TCPI
	121	12	CVTS	CLTC	SCO PERSONNEL STANDING BY TO SUPPORT EDS TEST	TCPI
	121	13	CLTC	ALL	ALL LV PERSONNEL SUPPORTING EDS TEST GO TO CH 223 ACTIVE AND MONITOR CH 121	
	121	14	***	CEDK	PERFORM EDS TEST PER V-21096 (PROGRAM VZ33, FT33, VAED, VZEA, VZRE, VZ_SA), (SPR_1 OPTION), REPORT WHEN COMPLETE,	***
	161	15	C4TC	S4MA	VERIFY FLAME IMPINGEMENT CURTAIN CLOSEOUT COMPLETE,	
	161	16	C4TC	S4MA S4PC	START REMOVAL OF AFT ACCESS KIT PER V-30539, SECT M,	
	181	17	C1TC	CTS1	START FINAL TSM PREPS PER V-36039	
		18			NOTE ---- CTS1 REQUIRES USE OF OTV CAMERAS 5, 6 & 7 UNTIL T+0	
	171	19	C2TC	C2PV	SAMPLE PURGE SYSTEMS PER V-26276 (G058), REPORT WHEN COMPLETE,	
-20 HRS 20' 0"						
	121	1	CLTC	CUTC	VERIFY TM RADIATION SYSTEM IN FLIGHT CONFIGURATION	
	121	2	CLTC	CUIP	RF DUMMY LOAD OFF	
	121	3	CLTC	BTMC	TM TAPE RECORDING - ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 20' 0"						
	121	4	CLTC	CUIP	P1 - RF ON	
-20 HRS 15' 0"						
	151	1	CUTC	CUCP	CDDT ONLY	*
	151	2	CUTC	CUCP	SECURE ST-124M AIR BEARING SYSTEM PER V-34017.	#
	151	3	CUTC	CUCP	SETUP HIGH PRESSURE REGULATOR PER IV-36038. REPORT WHEN COMPLETE.	
	161	4	C4TC	S4CE	DISCONNECT S-IVB RERADIATION SYSTEM PER V-30539, SECT L.	
	121	5	C4TC	CLTC	VERIFY OPEN LOOP CLEARANCE ON 258.5 MHZ FOR VEHICLE ANTENNA CHECKS.	
-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	CUSW	ISSUE IU OCTAL 026 (CMD SYS ENABLE)	(FT45)
	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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-20 HRS 0' 0"						
	121	11	CLTC	CUIP	P1 RF - OFF	
	121	12	C1TC	CLTC	REQUEST ETMS TO MONITOR CH 127 FOR S-IVB TM VEHICLE ANTENNA SIGNAL RECEPTION TEST.	
	181	13	C1PE	C1TC	PCMU IS CLEAR FOR MOVE TO FALLBACK AREA	
	121	14	C1TC	CLTC	REQUEST BOSC SUPPORT REMOVAL OF PCMU.	
	261	15	CLTC	BOSC	REMOVE PCMU FROM ZERO LEVEL.	TCPI
	181	16	C1TC	C1NE	START HARDLINE CHECKS PER V-21035. REPORT WHEN COMPLETE.	A
	181	17	C1TC	CSPP	START HARDWIRE FUNCTIONAL CHECKS PER V-31045. REPORT WHEN COMPLETED.	A
-19 HRS 59' 0"	121	18	CLTC	RLDE	LOAD CDDT WET OR CD SEQ COMPARE TABLE & START & STOP SEQ COMPARE ROUTINE PER CARE INSTRUCTIONS	C-12-131
	121	1	C2TC	CLTC	STARTING S-II HARDWIRE FUNCTIONAL TEST.	A
	171	2	C2TC	C2NP	PERFORM HARDWIRE FUNCTIONAL VERIFICATION.	A
	171	3	C2NP	U2AM	VERIFY ENGINE AREA IS CLEAR FOR APPLICATION OF HYDRAULIC PRESSURE.	A
		4		C2NP	VERIFY STAGE POWER IS ON.	
	171	5	C2NP	C2FC	AUX PUMP - ENABLE.	A
	171	6	C2NP	C2FC	AUX PUMP 1 TO ON.	A
	171	7	C2NP	C2FC	AUX PUMP DISABLE.	A
	171	8	C2NP	C2FC	VERIFY AUX PUMP 1 PWR ON LIGHT - OFF.	A
	171	9	C2NP	C2FC	AUX PUMP 1 TO OFF THEN AUTO.	A
	171	10	C2NP	C2FC	AUX PUMP - ENABLE.	A
	171	11	C2NP	C2DP	STATUS SYSTEM SAFE SW - OFF.	A
	171	12	C2NP	L2RR	VERIFY ZERO VOLTS ON X02-220A1J31-E(J1-P REF) (USE 50 VDC SCALE OR HIGHER).	A N-217-130
	171	13	C2NP	C2DP	STATUS SYSTEM SAFE.	A
	171	14	C2NP	L2RR	VERIFY 28 VDC ON X02-220A1J31-E (J1-P REF)	N-217-130
	171	15	C2NP	L2RR	REMOVE METER AND SEAL X02-220A1.	A

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA	DESCRIPTION	REMARKS
-19 HRS 59' 0"						
	171	16	C2NP	C2NP	BATTERY INSTALLED TO ENABLE.	A
	171	17	C2NP	C2NP	VERIFY BATTERY MAIN, INSTRUMENTATION & RECIRC CONNECTED LIGHTS - ON.	A
	171	18	C2NP	C2NP	EMERGENCY TO EXTERNAL.	A
	171	19	C2NP	C2NP	VERIFY BATTERY CONNECTED (MAIN, INST & RECIRC) LIGHTS OFF.	A
	171	20	C2NP	C2NP	EMERGENCY EXTERNAL TO OFF.	A
	171	21	C2NP	C2NP	BATTERY INSTALLED TO AUTO.	A
	171	22	C2NP	C2PV	VERIFY PURGE & VACUUM SYS ACTIVATED.	A
	171	23	C2NP	C2PV	AUX HELIUM SUPPLY VALVE - OPEN	A
	171	24	C2NP	C2PV	VERIFY AUX HELIUM SUPPLY VALVE IS OPEN.	A
	171	25	C2NP	C2PV	HELIUM SUPPLY VALVE CLOSE.	A
	171	26	C2NP	C2PV	VERIFY HE SUPPLY VALVE IS CLOSED.	A
	171	27	C2NP	C2PV	HELIUM SUPPLY VALVE OPEN.	A
	171	28	C2NP	C2PV	VERIFY HE SUPPLY VALVE IS OPEN.	A
	171	29	C2NP	C2PV	AUX HE SUPPLY VALVE CLOSE.	A
	171	30	C2NP	C2PV	VERIFY AUX HE SUPPLY VALVE IS CLOSED.	A
	171	31	C2NP	U245	CLEAR VACUUM PUMP AREA. VACUUM PUMPS WILL BE ACTIVATED.	A
	171	32	C2NP	C2PV	COMMON BULKHEAD VACUUM ON AND VERIFY VACUUM ON LIGHT IS ON.	A
	171	33	C2NP	C2PV	J-RING VACUUM ON AND VERIFY VACUUM ON LIGHT IS ON.	A
	171	34	C2NP	C2PV	COMMON BULKHEAD VACUUM/PURGE TO PURGE AND VERIFY VACUUM ON LIGHT OFF.	A
	171	35	C2NP	C2PV	J-RING VACUUM/PURGE TO PURGE AND VERIFY VACUUM ON LIGHT OFF.	A
	171	36	C2NP	C2SP	VERIFY LOX & LH2 ACTUATION PRESS ON.	A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 59' 0"						
	171	37	C2NP	U2A1 U2A2	LOX & LH2 VENT VALVES WILL BE CYCLED. NOTIFY PERSONNEL IN THE AREA.	A
	171	38	C2NP	C2SP	LOX VENT VALVE EMERGENCY CLOSE.	A
	171	39	C2NP	C2SP	LOX VENT VALVE 1 & 2 TO OPEN.	A
	171	40	C2NP	C2SP	VERIFY LOX VENT VALVE 1 & 2 REMAIN CLOSED.	A
	171	41	C2NP	C2SP	LOX VENT VALVES 1 & 2 TO AUTO.	A
	171	42	C2NP	C2SP	LOX VENT VALVE EMERGENCY OPEN.	A
	171	43	C2NP	C2SP	VERIFY LOX VENT VALVE 1 & 2 OPENED.	A
	171	44	C2NP	C2SP	LOX VENT VALVE EMERGENCY TO OFF.	A
	171	45	C2NP	C2SP	VERIFY LOX VENT VALVE 1 & 2 CLOSED.	A
	171	46	C2NP	C2SP	LH2 VENT VALVE EMERGENCY CLOSE.	A
	171	47	C2NP	C2SP	LH2 VENT VALVE 1 & 2 TO OPEN.	A
	171	48	C2NP	C2SP	VERIFY LH2 VENT VALVES ARE CLOSED.	A
	171	49	C2NP	C2SP	LH2 VENT VALVE 1 & 2 TO AUTO.	A
	171	50	C2NP	C2SP	LH2 VENT VALVE EMERGENCY OPEN.	A
	171	51	C2NP	C2SP	VERIFY LH2 VENT VALVES 1 & 2 ARE OPEN.	A
	171	52	C2NP	C2SP	LH2 VENT VALVE EMERGENCY TO OFF.	A
	171	53	C2NP	C2GP	VERIFY READY TO PERFORM REG DOME VENT INHIBIT CHECK.	A
	171	54	C2NP	C2GP	POSITION FOLLOWING SWITCHES: TANK PRESS REGULATOR VENT - CLOSE HE ROUGHING REGULATOR VENT - CLOSE GN2 REG VENT - CLOSE	A
	171	55	C2NP	BGCC	ISSUE MDO 1078 ON.	A
	171	56	C2NP	C2GP	VERIFY TANK PRESSURE REGULATOR VENT OPEN LIGHT DID NOT CHANGE (OFF).	A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 19 HRS 59' 0"						
	171	57	C2NP	BGCC	ISSUE MDO 1078 OFF.	A
	171	58	C2NP	C2NK	VERIFY MDO 1078 IS OFF.	A
	171	59	C2NP	C2TC	HARDWIRE FUNCTIONAL VERIFICATION COMPLETE.	A
	121	60	C2TC	CLTC	HARDWIRE FUNCTIONAL VERIFICATION COMPLETE.	A
-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	
	121	7	CLTC	VURF	POWER DOWN RF GSE PER V-28069	
-19 HRS 45' 0"						
	161	1	C4TC	S4CE	VERIFY S-IVB RERADIATION SYSTEM DISCONNECTED	
	161	2	C4TC	S4MF	VERIFY THERMAL SHIELD INSTALLATION COMPLETE	
	121	3	CLTC	C1TC C2TC C4TC CUTC	START PREPS FOR FT25 (LV DISCRETE INPUT TEST). REPORT WHEN READY TO SUPPORT.	(FT25)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 45' 0"						
	171	4	C2TC	C2AE	ALL ENGINE EMERGENCY CUTOFF TO AUTO	(FT25)
	171	4-1	C2TC	C2NP	STAGE SELECT TO OFF	(FT25) N-214-127
	171	5	C2TC	C2AE	ENGINE SS CUTOFF TO OFF THEN AUTO,	(FT25)
	171	6	C2TC	C2EC	MAINSTAGE OK SWITCHES TO AUTO	(FT25)
	171	7	C2TC	C2EC	ENGINE CUTOFF TO AUTO	(FT25)
	171	8	C2TC	C2NP	PM POWER TO AUTO	(FT25)
	171	9	C2TC	C2NP	SIM LAUNCH TO AUTO	(FT25)
	171	10	C2TC	C2PU	ALL SWITCHES TO AUTO	(FT25)
	161	11	C4TC	C4ET	ENGINE CONTROL POWER TO AUTO	(FT25)
	161	12	C4TC	C4ET	MAINSTAGE OK SIM TO AUTO	(FT25)
	161	13	C4TC	C4ET	ENGINE COMPONENT TEST POWER ON	(FT25)
	161	14	C4TC	C40H	VOTING CIRCUIT ENABLE TO AUTO	(FT25)
	161	15	C4TC	C40H	VOTER CIRCUIT TEMP #1 SIM TO AUTO	(FT25)
	161	16	C4TC	C40H	VOTER CIRCUIT TEMP #2 SIM TO AUTO	(FT25)
	161	17	C4TC	C40H	VOTER CIRCUIT TEMP #3 SIM TO AUTO	(FT25)
	161	18	C4TC	C4SP	MODE SELECT TO BURNER THEN AUTO,	(FT25)
	151	19	CUTC	CUES	MODE SWITCH TO TEST AND VERIFY 1D199 BUS ON	(FT25)
	151	20	CUTC	BGCC	LOAD FT25 DECK IN CARD READER, REPORT WHEN COMPLETE,	(FT25)
	151	21	CUTC	BGCC	VERIFY/MOUNT LVDC FLIGHT PROGRAM ON IODC 1-3, REPORT WHEN COMPLETE,	(FT05)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 42' 0"						
	121	1	CLTC	C1NP C4NP CUNP	SWITCH SELECTOR INHIBIT OFF	(FT25) N-214-127
	121	2	CLTC	C2AE	ENGINE SS CUTOFF TO OFF THEN AUTO,	(FT25)
-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 SP3 AND SP1 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,	
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 30' 0"						
	161	8	C4TC	C40H	LOX SHUT DOWN VALVE (SW-SEL) TO CLOSE THEN AUTO	
	161	9	C4TC	C40H	LH PROPELLANT VALVE (SW-SEL) TO CLOSE THEN AUTO	
	161	10	C4TC	C4SP	MODE SELECT TO AMBIENT,	
	161	11	C4TC	C40H	VERIFY BURNER SYSTEM RELAY RESET ON AND REPRESS SYSTEM LAUNCH MODE IND ON	
	161	12	C4TC	C40H	VOTING CIRCUIT ENABLE OFF	
	161	13	C4TC	C4ET	ENGINE CONTROL POWER OFF	
	161	14	C4TC	C4ET	MAINSTAGE OK SIM OFF	
	161	15	C4TC	C4ET	ENGINE COMPONENT TEST POWER OFF	
	151	16	CUTC	CUES	EDS MODE SWITCH TO MONITOR	
	181	17	C1TC	C1NP	SWITCH SELECTOR INHIBIT - ON	
	181	18	CWCP	C1TC	INDUSTRIAL WATER SYSTEM INITIAL PREPS ARE COMPLETE PER V-36113	
-19 HRS 25' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT05 (DATA VERIFY)	***
-19 HRS 0' 0"						
	171	1	U2PF	C2TC	PROPELLANT FILL SYSTEM WALK AROUND INSPECTION IS 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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-19 HRS 0' 0"						
	171	4	U2QC	C2TC	REMOVAL OF ALL NON-FLIGHT HARDWARE PER V-30029 (M020) TASK 47 AND THE INSPECTION PER ITI LS-008 FOR THE AFT INTERSTAGE COMPARTMENT IS COMPLETE.	#
	171	5	U2QC	C2TC	**CDDT ONLY**	*
	171	6	C2TC	U2SI	SECURE AFT DOOR	
	161	7	C4TC	C4PS	VERIFY PROPULSION FINAL PREPS PARTS 1 THROUGH 4 ARE COMPLETE AND READY FOR MSS PLAT 2 OPENING	
	161	8	C4TC	S4MM	VERIFY MSS PLAT 2 READY FOR OPENING	
	121	9	C4TC	CLTC	MSS PLAT 2 READY FOR OPENING	
	111	10	CLTC	CVTS	YOU ARE CLEARED TO OPEN MSS PLAT 2	TCPI
	181	11	C1TC	BRFS	VERIFY DRSCS FLIGHT CODE PLUG INSTALLED IN LCC DECODER PER V-38000 SECT 14.	#
	181	12	C1TC	VIME	START RACS LOADING SYSTEM CHECKS PER V-27093. REPORT WHEN COMPLETE.	
	121	13	C1TC	CLTC	REQUEST CLIK TO SWITCH TO CH 116 TO SUPPORT L1IC WITH RACS LOADING SYSTEM CHECKS.	
	181	14	C1TC	CSAC	START PRELAUNCH PREPS	
	118	15	CSAC	CSA1	START PRELAUNCH PREPS PER V-36077.	
	118	16	CSAC	CSA2	START PRELAUNCH PREPS PER V-36078.	
	118	17	CSAC	CSA4	START PRELAUNCH PREPS PER V-36080.	
	118	18	CSAC	CSA5	START PRELAUNCH PREPS PER V-36081.	
	118	19	CSAC	CSA6	START PRELAUNCH PREPS PER V-36082.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-19 HRS 0' 0"						
	118	20	CSAC	CSA7	START PRELAUNCH PREPS PER V-36083,	
	118	21	CSAC	CSA8	START PRELAUNCH PREPS PER V-36084,	
	118	22	CSAC	CSA9	START PRELAUNCH PREPS PER V-36085,	
	181	23	CLTC	CSPP	START RACK/CONSOLE VERIFICATION PER V-31045,	
	121	24	CLTC	SURF	VERIFY IU ANTENNA COUPLERS HAVE BEEN REMOVED,	
	171	25	C2TC	C2AE	START PREPS FOR QAMS (MAINSTAGE OK PRESSURE SWITCH CHECKOUT) PER V-34014 (E023, SEC 2A)	
-18 HRS 45' 0"						
	121	1	CLGK	CLTC	FT05 COMPLETE,	
	121	2	***	CLGK	POWER OFF LVDC/DA PER V-33033, SECT IV REPORT WHEN COMPLETE,	***
	121	3	CLGK	CLTC	KAG1 IS TERMINATED	
		4		C2AE C2NK	NOTE VERIFICATION OF S-II INTERSTAGE DOOR CLOSE OUT WILL BE REQUIRED BEFORE QAMS CAN BE EXECUTED, VALJ WILL CALL QAMS AT T-18 HR 30'0",	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 45' 0"						
	121	5	CLTC	CUTC	VERIFY READY TO START HARDWIRE FUNCTIONAL CHECKS.	A
	121	6	CLTC	CUES	EDS MODE SWITCH TO LAUNCH.	A
	121	7	CLTC	RLDE	VERIFY DEE 4319 (EDS READY) ON.	A
	121	8	CLTC	CUES	EDS MODE SWITCH TO MONITOR.	A
	121	9	CLTC	RLDE	VERIFY DEE 4319 OFF.	A
	111	10	CLTC	CVTS	REQUEST S/C READY SWITCH ON THEN OFF FROM CSAT PANEL. REPORT WHEN COMPLETE.	TCPI A
	121	11	CLTC	RLDE	VERIFY DEE 2149 ON THEN OFF.	A
	121	12	CLTC	CRSS	PLACE BYPASS SWITCH ON THEN OFF. REPORT WHEN COMPLETE.	A
	121	13	CLTC	RLDE	VERIFY DEE 0163 ON THEN OFF.	A
	111	14	CLTC	CVTS	IU HARDWIRE VERIFICATION COMPLETE.	TCPI A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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,	
	171	3	C2TC	U2SI	START REMOVAL OF A7-38 ACCESS KIT AND A7-91 PROTECTIVE PADS PER V-26008 (G042) 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,	
	171	4	C2TC	U2AN U2QC	START NON-FLIGHT HARDWARE REMOVAL FROM FORWARD INTERSTAGE PER V-30029 (M020) TASK, 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, 2A) 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 BOSC PROVIDE SUPPORT FOR INITIAL REMOVAL OF S-IC STORAGE CABINETS AND FIN & FAIRING PLATFORMS,	
	261	9	CLTC	BOSC	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
	151	10	CUTC	PUPL	START LUT EQUIPMENT REMOVAL, LV-QAL PARTICIPATION REQUIRED,	
	171	11	C2PV	C2TC	PURGE SYSTEMS SAMPLING IS COMPLETE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-18 HRS 15' 0"		1 & 2			DELETED	
	151	3	CUTC	CUIP	MEASUREMENT TRANSFER - AUTO S-II BURN TEST AND S-IVB COAST TEST-AUTO (60X-607A6-CCIS PANEL)	(MT01)
	121	3-1	CLTC	ALL	DISPLAY OPERATORS DO NOT CALL DISPLAY DESCRIPTIONS (FORMAT SELECT) UNTIL MT01 IS COMPLETE.	I-181-138
	151	3-2	CUTC	BGCC	REMOVE DISPLAY DESCRIPTION TAPE FROM IODC 2-6	I-181-138
	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
-18 HRS 2' 0"						
	181	1	C1TC	V1MS	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.	
	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).	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-18 HRS 0' 0"						
	151	1	CUTC	SUVM	REMOVE S/A 7 AUX COOLANT LINES PER V-31062. REPORT WHEN COMPLETE.	#
	121	2	***	CLIK	REQUEST & EXECUTE MT01 (MEAS SCAN VEHICLE OPTION)	***
		3		CLIK	NOTE ---- SWITCH ACTION IN NEXT STEP TO BE ACCOMPLISHED JUST PRIOR TO S-IC PORTION OF MT01 SCAN	(MT01)
	121	3-1	CLIK	C1IP	HARDWIRE MEASUREMENT TRANSFER TO TELEMETER.	
	171	4	C2TC	R2DP	**CDDT ONLY**	*
	181	5	C1TC	CHDA	VERIFY THAT CRD READINGS ARE WITHIN TOLERANCE	#
	181	6	C1TC	BRFS	START DRSCS FINAL CHECKS PER V-38000, SECT 14	
	181	7	CPDC	C1TC	REQUEST BOSC HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED	
	121	8	C1TC	CLTC	REQUEST BOSC HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED.	
	261	9	CLTC	BOSC	HAVE CIRCUIT BREAKERS CB 10, 12 & 14 IN PANEL L-22 ROOM 2A OPENED.	TCPI
	181	10	C1TC	CTS1	VERIFY PRESSURIZATION COMPLETE AND REMOVE TSM SERVICE PLATFORMS	
	171	11	C2TC	C2PV	START COMMON BULKHEAD EVACUATION PER V-26276 (G058). REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 45' 0"						
	121	1	C1TC	CLTC	PROCEEDING WITH HDA SAFETY PIN REMOVAL	
	188	2	CLTC	ALL	HOLDDOWN ARM SAFETY PINS WILL BE REMOVED AT THIS TIME, PERSONNEL USE CAUTION IN THE HOLDDOWN ARM AREA	
	181	3	C1TC	CHBA	REMOVE SAFETY PINS PER V-36069	
	181	4	C1TC	C1PE	VERIFY READY FOR REMOVAL OF LUT LEVEL ZERO PLATFORM SECTIONS	
	181	5	C1TC	CPDC	PREPARE LLP FOR LOWERING,	
	151	6	CVTC	SUVM	INSTALL CHE ASSEMBLY	
-17 HRS 30' 0"						
	171	1	U2MU U2PF	C2TC	TASK 22 INITIAL UMBILICAL PREPS ARE COMPLETE,	
	151	2	CVTC	SUVM	VERIFY CHE ASSEMBLY IS INSTALLED	
	121	3	CVTC	CLTC	CHE INSTALLATION IS COMPLETE	
	121	4	CVTS	CLTC	LM SHE TOPOFF LINES HAVE BEEN DISCONNECTED, YOU ARE CLEARED TO REMOVE FDS FROM THE IU/S-IVB	TCPI
	121	5	CLTC	C4TC CUTC	COORDINATE DIRECTLY WITH LM PERSONNEL AND REMOVE FDS FROM THE IU/S-IVB	
	161	6	C4TC	S4MF	REMOVE FIRST LM ACCESS STEP PER V-30539, APPENDIX D, REPORT WHEN COMPLETE,	
	121	7	C2TC	C1TC	INSTALL JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS ENABLE)	
	181	8	C1TC	C1NE	VERIFY/INSTALL JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS ENABLE)	(QAEC)
	171	9	C2TC	C2AE	ALL SWITCHES TO AUTO EXCEPT COMPONENT TEST POWER TO OFF.	(QAEC)
	171	10	C2TC	C2EC C2RP	ALL SWITCHES TO AUTO	(QAEC)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 30' 0"						
	171	11	C2TC	L2RR	INSTALL/VERIFY INSTALLED JUMPER J4 IN X02-220A2 (ENG COMP TEST POWER ENABLE)	(QAEC)
	171	12	C2TC	C2AE	VERIFY START VENT CONTROL PRESS ON LIGHT ON	(QAEC)
	171	13	C2TC	C2NP	STAGE SELECT TO OFF	(QAEC)
	171	14	C2TC	C2EC C2PK	VERIFY READY TO SUPPORT QAEC	
-17 HRS 15' 0"						
	121	1	CLIK	CLTC	MT01 COMPLETE,	
	151	1-1	CUTC	BGCC	REMOVE MT01 TAPE FROM IODC 2-9 AND LOAD DISPLAY DESCRIPTION TAPE ON IODC 2-6. REPORT WHEN COMPLETE.	I-181-138
	121	1-2	CLTC	ALL	MT01 IS COMPLETE. DISPLAY DESCRIPTIONS (FORMAT SELECT) CAN NOW BE CALLED.	I-181-138
	121	2	CLTC	C1IP	HARDWIRE MEASUREMENT TO GROUND,	
	121	3	***	C1IP	28 VOLT RACS, LOX & FUEL RACS AND 400 HZ POWER - OFF,	***
	121	4	***	C2NP	RACS POWER OFF	***
	171	5	C2TC	C2NP	RACS POWER OFF	
	181	6	C1TC	C1IP	FUEL AND LOX RACS POWER SWITCH TO OFF AND VERIFY	
	151	7	CUTC	CUIP	MEAS TRANSFER - OFF S-II BURN TEST & S-IVB COAST TEST-OFF (60X-607A6-CISS PANEL)	
	121	8	***	C4IP	PRELAUNCH CHECKOUT GROUP OFF THEN AUTO	***
	111	9	CLTC	CVTS	S/A 7 WILL BE PRESSURIZED IN 15 MINUTES, LOCAL CLEARING WILL BE CONTROLLED BY S/A PERSONNEL,	TCPI
	181	10	C1TC	C1PE CHDA CTS1	VERIFY READY FOR LOWERING LUT ZERO LEVEL PLATFORM	
		11			**********WARNING********** * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS FOR THE * * S-IC ENGINE GIMBAL * * ENVELOPE. *	

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

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, 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, 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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-17 HRS 0' 0"						
	181	11	C1TC	C1NE	VERIFY PD PULSE SENSOR UNITS CONNECTED	
	161	12	C4TC	S4MA	INSTALL AFT INTERSTAGE ACCESS DOOR PER V-30539, SECT M,	
	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,	TOPI
	118	17	CSAC	CSAD	START DRRS PREPS PER V-36086,	
	118	18	CSAC	CSA1	PRESSURIZE S/A 1 PER V-36077,	
	118	19	CSAC	CSA5	PRESSURIZE S/A 5 PER V-36081,	
	118	20	CSAC	CSA7	PRESSURIZE S/A 7 PER V-36083,	
-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. * ********	
		5	C4TC	S4CE	VERIFY PD PULSE SENSOR UNITS CONNECTED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 35' 0"					CDDT ONLY	
	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	CDDT 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.	#
	151	3	CUTC	SUVM	REMOVE CHE ASSEMBLY. REPORT WHEN COMPLETE.	
	151	4	CUTC	SUVE	REMOVE SHE IU CABLE RACK COVER ASSEMBLY. REPORT WHEN COMPLETE.	
	121	5	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK ON	
	121	6	CLTC	C1TC C2TC C4TC	INSTALL PD RSCR ENABLE JUMPERS FOR DRSCS TESTS AND REPORT COMPLETION	
	181	7	C1TC	L1RS	INSTALL PD RSCR ENABLE JUMPER J5 ON PANEL X02-121A2.	
		7-1			VERIFICATION BY LV-QAL _____.	
	171	8	C2TC	L2RR	INSTALL PD RSCR ENABLE JUMPER J2 ON PANEL X02-220A2	
		8-1			VERIFICATION BY LV-QAL _____.	
	161	9	C4TC	L4JR	INSTALL PD RSCR ENABLE JUMPER E2 ON PANEL X02-423A2	
		9-1			VERIFICATION BY LV-QAL _____.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 30' 0"						
	121	10	CLTC	C1TC C2TC C4TC	VERIFY PD PULSE SENSOR UNITS CONNECTED	
	161	11	C4TC	S4MA	VERIFY AFT ACCESS DOOR INSTALLED AND READY FOR FINAL S/A 6 CARRIER PREPARATION,	
	171	12	C2TC	C2IP	START S-II GSE LUT WALKDOWN PER V-27218 (G137). REPORT WHEN COMPLETE,	
	118	13	CSAC	CSA2	PRESSURIZE S/A 2 PER V-36078	
	118	14	CSAC	CSA4	PRESSURIZE S/A 4 PER V-36080	
	118	15	CSAC	CSA6	PRESSURIZE S/A 6 PER V-36082	
	151	16	C1TC	CUTC	THE Q-BALL COVER WILL BE INSTALLED IN APPROXIMATELY 1 HOUR, IU PERSONNEL WILL BE REQUIRED ON STATION TO MONITOR THE OPERATION,	
	171	17	C2PV	C2TC	COMMON BULKHEAD EVACUATION COMPLETED, ALL PURGE CIRCUITS ACTIVATED,	
		18	***	C2EC	QAEC (ENGINE CIRCUITRY CHECKOUT) COMPLETE,	***
	171	19	C2EC	C2TC	QAEC (ENGINE CIRCUITRY CHECKOUT) COMPLETE,	
	121	20	C2TC	CLTC	QAEC COMPLETE,	
	121	21	C1PK	CLTC	VALU HAS TERMINATED,	
	171	22	C2TC	V2MS	QAEC IS COMPLETE, PREP FOR DRSCR TESTS, REPORT WHEN READY,	
-16 HRS 15' 0"						
	111	1	CLTC	CVTS	S/A'S 8 & 9 WILL BE PRESSURIZED IN 15 MINUTES, LOCAL CLEARING WILL BE CONTROLLED BY S/A PERSONNEL,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-16 HRS 15' 0"						
	111	2	CLTC	CVTS	ADVISE CPSS THAT PD ENABLE JUMPERS ARE INSTALLED.	TCPI
	161	3	C4TC	S4MF	REMOVE FDS PLATFORM AND MOVE SECOND LM ACCESS STEP IN FRONT OF LM TSI PER V-30539, SECT 0.	
	151	4	CUTC	SUVM	INSTALL FINAL THERMAL ISOLATION SHROUD PER V-31062, PART III. REPORT WHEN COMPLETE.	
-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	CDDT ONLY	*
-16 HRS 0' 0"						
	181	1	C1TC	CSAC	CLEAR TO PRESSURIZE S/A'S 8 & 9. REPORT WHEN COMPLETE.	
	118	2	CSAC	CSA1 CSA4 CSA6	START PRECLOSEOUT CHECKLIST	
	181	3	C1TC	L1LS	START SECOND LUT WALKDOWN. VERIFY NO EQUIPMENT REMAINS ON PAD APRON. REPORT WHEN COMPLETE.	
		3-1			VERIFICATION BY LV-QAL	
	118	4	CSAC	CSA8	PRESSURIZE S/A 8 PER V-36084.	
	118	5	CSAC	CSA9	PRESSURIZE S/A 9 PER V-36085.	
	171	6	C2TC	U2MU U2PF	START S/A 4 FINAL UMBILICAL PREPS PER V-30029 (M020) TASK 25. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-16 HRS 0' 0"						
	171	7	C2TC	C2SP	CDDT ONLY	*
	181	8	C1TC	CCLH	START LH2 COMPONENT TEST PER V-35004	
	161	9	C4TC	S40R	VERIFY SHORTING PLUGS INSTALLED ON PD DETONATORS AND CDF NOT CONNECTED TO S&A'S.	
	121	10	CLTC	BRFS	VERIFY DRSCS/GSE READY TO SUPPORT DRSCR OPEN LOOP TEST	
	111	11	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	12	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 - ON AND VERIFY.	TCPI
	121	13	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	
					DRSCR OPEN LOOP TEST (TEST CODE PLUGS)	
	121	14	CLTC	RLDE	CDDT ONLY	*
	188	15	CLTC	ALL	ALL PERSONNEL SUPPORTING LV RSCR TEST MONITOR CHANNEL 121 & TC CHANNELS	
	121	16	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	17	CLTC	C4DP	PULSE SENSOR POWER ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-16 HRS 0' 0"						
	121	18	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE,	
		18-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON	
	121	19	CLTC	RRSC	VERIFY DRSCS RECORDERS ON	
	121	20	CLTC	BTMC	TM TAPE RECORDER - ON TO SUPPORT DRSCR TEST,	
	111	21	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR TEST,	TCPI
	121	22	CLTC	C1DP C2DP C4DP	STATUS SYSTEM SAFE SWITCH - OFF,	
		23		C2NP	CYCLE MAIN/INSTR BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE (CD ONLY)	
	121	24	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL & VERIFY,	
		24-1		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 OFF,	
		24-2		B1RF B2RF B4RF CRSS	*** NOTE ALL RSCR LIMITER VOLTAGES RECEIVED,	
-15 HRS 59' 0"						
	121	1	CLTC	RRSC	RECORDERS - FAST SPEED,	
	121	2	CLTC	SRO	ON YOUR MARK SEND TEST CUTOFF COMMAND CONTINUOUSLY	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-15 HRS 53' 0"						
	121	3	SRO	ALL	3-2-1-MARK	
	121	4	CLTC	BRFS	SET AUDIO SELECT SWITCH TO THE FOLLOWING POSITIONS ON YOUR MARK. S-IC - RSCR #1 S-IC - RSCR #2 S-II - RSCR #1 S-II - RSCR #2 S-IVB - RSCR #1 S-IVB - RSCR #2	
	121	5	CLTC	SRO	REMOVE CUTOFF COMMAND	
	121	6	CLTC	BRFS	AUDIO SELECT SWITCH - OFF	
	121	7	CLTC	RRSC	RECORDERS - SLOW SPEED.	
	121	8	CLTC	CRSS	VERIFY DRSCR GND RF LINK CHECK WAS ILLUMINATED FOR EACH SWITCH POSITION.	
		8-1		BRFS	*** NOTE DRSCR GND RF LINK CHECK WAS ILLUMINATED FOR EACH SWITCH POSITION.	
	121	9	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		9-1		CRSS BRFS	CDDT ONLY	*
	121	10	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		10-1		CRSS	CDDT ONLY	*
	121	11	CLTC	C1DP C2DP C4DP	CDDT ONLY	*

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-15 HRS 53' 0"						
		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.	
	121	4	SRO	ALL	3-2-1-MARK	
	121	5	CLTC	BRFS	SET AUDIO SELECT SWITCH TO THE FOLLOWING POSITIONS ON YOUR MARK. S-IC - RSCR #1 S-IC - RSCR #2 S-II - RSCR #1 S-II - RSCR #2 S-IVB - RSCR #1 S-IVB - RSCR #2	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-15 HRS 50' 0"						
	121	6	CLTC	SRO	REMOVE CUTOFF COMMAND	
	121	7	CLTC	BRFS	AUDIO SELECT SWITCH - OFF	
	121	8	CLTC	RRSC	RECORDERS - SLOW	
	121	9	CLTC	CRSS	VERIFY DRSCR GND RF LINK CHECK ILLUMINATED FOR EACH SWITCH POSITION.	
	121	9-1		BRFS	*** NOTE DRSCR GND RF LINK CHECK ILLUMINATED FOR EACH SWITCH POSITION.	
	121	10	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		10-1		CRSS BRFS	CDDT ONLY	*
	121	11	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		11-1		CRSS	CDDT ONLY	*
	121	12	CLTC	C1DP C2DP C4DP	CDDT ONLY	*
		12-1		CRSS	CDDT 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	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-15 HRS 50' 0"						
		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).	
	111	5	CLTC	CVTS	DRSCR OPEN LOOP TEST COMPLETE. REQUEST RANGE SAFETY COMMAND TRANSMITTERS - OFF, DESTRUCT SYSTEM KEY RETURNED TO CPSS.	TCPI
		6		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	7	CLTC	CVTS	REQUEST SRO TO RECONFIGURE TO FLIGHT CODE PLUGS	# TCPI
	121	8	CLTC	RLDE	CDDT ONLY	*

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 45' 0"						
	121	9	BOSC	CLTC	REQUEST S-II & S-IVB PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE LEAK CHECKS,	TCPI
	121	10	CLTC	C2TC C4TC	HAVE YOUR PERSONNEL REPORT TO PGHE ON CH 264 FOR GH2 CROSS COUNTRY LINE LEAK CHECKS,	
	181	11	C1TC	CPDC	VERIFY LLP LOWERED & SECURED AND PREP TRANSPORTER FOR MOVE TO SOUTH END OF PAD PER V-36070,	
	181	12	C1TC	CPDC	START SECURING LUT WINCHES PER V-36070	
-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	
	121	5	CLTC	C2TC C4TC	VERIFY READY TO ACTIVATE 6000 PSI GH2 SUPPLY	
	261	6	CLTC	BOSC	ACTIVATE 6000 PSI GH2 SUPPLY,	TCPI
	111	7	CLTC	CVTS	REQUEST SCO PERSONNEL ON CH, 223 FOR ABORT LIGHT VERIFICATION, REQUEST EDS POWER ON,	TCPI
	161	8	C4TC	S4MF	REMOVE SECOND LM ACCESS STEP PER V-30539 APPENDIX D (COORDINATE DIRECTLY WITH LM PAD LEADER), REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 35' 0"						
	181	9	CSAC	C1TC	S/A'S 8 & 9 PRESSURIZED	
-15 HRS 30' 0"						
	188	1	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR ALSEP FCA INSTALLATION, RADIATION AREA CONTROL IS IN EFFECT	TCPI
		1-1			**********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
	121	2	CVTS	CLTC	INCREASE SM ECS FLOW RATE TO 45 LB/MIN.	TCPI
	121	3	CLTC	C1TC	INCREASE SM ECS FLOW RATE TO 45 LB/MIN.	
	181	4	C1TC	CECS	INCREASE SM ECS FLOW RATE TO 45 LB/MIN.	
	161	5	C4TC	S4MA	START FINAL S/A 6 CARRIER PREPARATION PER V-30539, SECT N.	
	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,	

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	C4TC	CVTS	VERIFY THE RANGE READY FOR RANGE SAFETY COMMAND CLOSED LOOP CHECKS,	TCPI
	111	16	C4TC	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 DRSCR CLOSED LOOP TEST ----------	TCPI
	111	17	C4TC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCPI
	121	18	C4TC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	
	188	19	C4TC	ALL	ALL PERSONNEL SUPPORTING LV RS CMD CHECKS SWITCH TO CHANNEL 121 AND MONITOR STAGE TC CHANNEL,	
	121	20	C4TC	BTMC	TM TAPE RECORDING ON TO SUPPORT DRSCS CLOSED LOOP TEST,	
		20-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR CHECK,	
	121	21	C4TC	C1DP C2DP C4DP	VERIFY THE FOLLOWING SWITCH POSITIONS; PD RSCR ENABLE - OFF SYSTEMS STATUS SWITCH - OFF S&A STATUS SWITCH - SAFE	
	121	22	C4TC	RRSC	VERIFY DRSCS RECORDERS ON	
	121	23	C4TC	C4ET	ENGINE CONTROL POWER - ON,	

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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 30' 0"						
	121	31	CLTC	C1BP C2DP C4DP	EBW'S 1 & 2 GROUND POWER - OFF	
	181	32	C1TC	CCRP	START FINAL RP-1 SYSTEM PREPS PER V-25389	
	181	33	C1TC	CECS	CONFIGURE ECS TO SUPPORT ALSEP, REPORT WHEN COMPLETE, (CONFIGURE REDUNDANT BLOWER FOR SUPPORT),	
	121	34	C1TC	CLTC	REQUEST ACCF (CCF GN2) REPORT TO CECS ON CH 142 FOR ECS SUPPORT,	
	261	35	CLTC	BOSC	REQUEST ACCF REPORT TO CECS ON CH 142 FOR ECS SUPPORT,	TCPI
		35-1		CLTC	*** NOTE CCF GN2 BACKUP SUPPORT FOR ALSEP FCA PRIMARY COOLING WILL BE SIMULATED DURING CDDT,	
	171	36	C2IP	C2TC	S-II GSE LUT WALKDOWN IS COMPLETE,	
-15 HRS 25' 0"						
	181	1	C1TC	C1NE	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 G-BALL COVER RETRACT CABLE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 20' 0"						
	111	2	C4TC	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	C4TC	C1DP C2DP C4DP	SAFE & ARM TO ARM FOR 2 SECONDS THEN AUTO	
		4-1		C1FR	*** NOTE ORDNANCE PREPS COMPLETE ON	
		4-2		CRSS	*** NOTE ALL S&A'S ARMED	
	121	5	C4TC	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	
	121	6	C4TC	C1DP C2DP C4DP	PD RSCR ENABLE - ON	
		6-1		C1DP C2DP C4DP CRSS	*** NOTE PD BLOCKED INDICATIONS OFF	
	121	7	C4TC	C2AE	ALL ENGINE EMERGENCY CUTOFF TO CUTOFF,	
	121	8	C4TC	C2AE	VERIFY ENGINE CUTOFF SAFE ON,	
	121	9	C4TC	RRSC	RECORDERS - FAST SPEED,	
	121	10	C4TC	SRO	ON YOUR MARK SIMULTANEOUSLY SEND CUTOFF AND PD ON CLOSED LOOP LINKS FOR 7 SECONDS,	
	121	11	SRO	ALL	3-2-1-MARK	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 20' 0"						
	121	12	CLTC	RRSC	RECORDERS - SLOW SPEED,	
	121	13	CLTC	CUEF	VERIFY ABORT REQUEST A & B ON,	
	121	14	CLTC	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,	TCPI
		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	
	121	18	CLTC	C2AE	VERIFY ENGINE CUTOFF SAFE OFF	
	121	19	CLTC	C1CS	VERIFY ENGINE CUTOFF,	
		19-1		C4ET	*** NOTE NON PROGRAM CUTOFF ON,	
		19-2		C4ET	*** NOTE ENGINE CUTOFF ON,	
	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 20' 0"						
	121	23	CLTC	C1BP C2DP C4DP	VERIFY EBW'S FIRED - OFF	
		23-1		CRSS	*** NOTE EBW'S FIRED - OFF	
	121	24	CLTC	C1BP C2DP C4DP	EBW'S #2 THEN #1 TRANSFER - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED,	
		24-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	25	CLTC	C4ET	VERIFY ENGINE CONTROL POWER ON,	
	121	26	CLTC	CUEF	VERIFY ABORT REQUEST A & B OFF	
	223	27	CLTC	SCDR	VERIFY ABORT LIGHT OUT,	TCPI
	121	28	CLTC	C2AE	VERIFY ENGINE CUTOFF SAFE ON,	
	121	29	CLTC	C1CS C4ET	VERIFY ENGINE CUTOFF INDICATIONS OFF,	
	121	30	CLTC	C2AE	ALL ENGINE EMERGENCY CUTOFF TO AUTO AND VERIFY ENGINE CUTOFF SAFE OFF,	
	121	31	CLTC	C4ET	ENGINE CONTROL POWER - OFF,	
-15 HRS 15' 0"						
	121	1	CLTC	C1DP C2DP C4DP	PD RSCR ENABLE - OFF	
		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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 15' 0"						
	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	
	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 15' 0"						
		15-1		CRSS $B_R F_S$	*** 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,	
	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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 15' 0"						
		24-1		CRSS	*** NOTE S-IC EBWIS NOT CHARGED	
	121	25	C4TC	BRFS	SIG GEN-SELECT #1,	
		25-1		CRSS BRFS	*** NOTE S-IC LIMITER VOLTAGES RECEIVED,	
	121	26	C4TC	C2DP C4DP	RSCR'S 1 & 2 TRANSFER - EXTERNAL THEN INTERNAL	
	121	27	C4TC	B2RF B4RF	VERIFY S-II AND S-IVB LIMITER VOLTAGES OK	
		27-1		CRSS	*** NOTE S-II & S-IVB LIMITER VOLTAGES RECEIVED,	
	121	28	C4TC	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,	
	181	30	C2TC	C1TC	YOU ARE CLEAR TO ATTACH S/A 4 UMBILICAL WITHDRAWAL LANYARDS	
		30-1		C2TC	**********WARNING********** * * VERIFY ALL S-II WORK IN * * THE S/A 4 UMBILICAL * * AREAS IS COMPLETE * * EXCEPT SAFING PIN * * REMOVAL & A7-64 PURGE - * * BAG CLOSEOUT, * * **********	
	181	31	C1TC	CSAC	VERIFY PRECLOSEOUT CHECKLIST COMPLETED AND RETRACT S/A 1 EXTENSION PLATFORM AND CLOSE SAFETY GATE, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 15' 0"						
	118	32	CSAC	CSA1	START FINAL TOWER PREPS PER V-36077,	
	181	33	C1TC	CSAC	YOU ARE CLEARED TO COMPLETE S/A 4 FINAL UMBILICAL PREPS PER V-36080,	
	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	
-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,	TOPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 7' 0"						
	111	6	C4TC	CVTS	LOCAL COMMAND CARRIER IS OFF & DESTRUCT SYSTEMS KEY RETURNED TO CPSS,	TCPI
	121	7	C4TC	C1BP 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	C4TC	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 _____,	
	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	C4TC	C4DP	PULSE SENSOR POWER OFF,	
	111	6	C4TC	CVTS	ADVISE CPSS THAT PD ENABLE JUMPERS HAVE BEEN REMOVED,	TCPI
	121	7	C4TC	CRSS	VERIFY RF OPEN-LOOP AND CLOSED-LOOP DRSCS CHECKS COMPLETED,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-15 HRS 0' 0"						
	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), REPORT WHEN COMPLETE,	
	181	11	C1TC	CPDC	START PNEUMATIC DISTRIBUTION PREPS FOR LAUNCH PER V-36064	
	181	12	C1TC	CECS	VERIFY ECS CONFIGURED TO SUPPORT GN2 STANDBY (HAND VALVES CLOSED)	
	121	13	C1TC	CLTC	ECS IS CONFIGURED FOR GN2 STANDBY (HAND VALVES CLOSED)	
	111	14	CLTC	CVTS	ECS IS CONFIGURED FOR GN2 STANDBY (HAND VALVES CLOSED)	TCPI
		14-1			**********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
	171	15	C2TC	U2E0	REMOVE S-II PD EBW PULSE SENSORS PER V-30029 (M020) TASK 23, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14 HRS 45' 0"						
	188	1	CVTS	PA	ALSEP FCA INSTALLATION COMPLETE, THE CONTROL AREA IS OPEN FOR NORMAL WORK, RADIATION AREA CONTROL IS STILL IN EFFECT,	TCPI
	151	2	CUTC	SUVM SUVE	START REMOVAL OF IU LIGHTS & OIS AND SECURE LIGHT SYSTEM GN2 PURGE PER IV-26178, 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"						
	121	1	CVTS	CLTC	INCREASE IU ECS FLOW TO MAXIMUM	TCPI
	121	2	CLTC	C4TC CUTC	IU ECS AIR FLOW WILL BE INCREASED TO 200 LB/MIN AT THIS TIME,	
	121	3	CLTC	C1TC	PROCEED WITH IU AIR FLOW INCREASE,	
	181	4	C1TC	CECS	INCREASE IU AIR FLOW TO 200 LB/MIN, REPORT WHEN COMPLETE,	
	111	5	CLTC	CVTS	VERIFY READY FOR S/A & EXTENSION PLATFORM RETRACTION,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14 HRS 30' 0"						
	121	6	CLTC	C1TC	READY FOR S/A 8 EXTENSION PLATFORM RETRACTION.	
	181	7	C1TC	CSAC	VERIFY PRECLOSEOUT CHECKLIST COMPLETE, RETRACT S/A 8 EXTENSION PLATFORM AND CLOSE SAFETY GATE. REPORT WHEN COMPLETE.	
	118	8	CSAC	CSA8	START FINAL TOWER PREPS PER V-36084.	
	181	9	C1TC	CCLO	START PROPELLANT COMPONENT TEST PER V-25340.	
	171	10	U2SI	C2TC	REMOVAL OF THE FORWARD ACCESS KIT COMPLETE, EXCEPT AT ACCESS DOOR OF CONTAINER 223.	
	171	11	C2SP	C2TC	CDDT ONLY	*
	181	12	C1TC	CSAC	VERIFY Q-BALL COVER RETRACT CABLE CONNECTED.	
	151	13	CUTC	PUPL	VERIFY LUT EQUIPMENT REMOVAL IS COMPLETE	
		13-1			VERIFICATION BY LV-QAL ----------	
-14 HRS 15' 0"						
	181	1	CSAC	C1TC	S/A 1 & 6 CLOSEOUT COMPLETE.	
	161	2	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 SERVICE 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-14 HRS 0' 0"						
	118	5	CSAC	CSA4	START FINAL TOWER PREPS PER V-36080.	
	118	6	CSAC	CSA3	START FINAL TOWER PREPS PER V-36032, CLOSE SAFETY GATE AND RETRACT ARM.	
	151	7	CUTC	CUCP	CDDT ONLY	*
	171	8	C2TC	U2AM U2FM	START DISASSEMBLY AND REMOVAL OF MONITOR HUTS	
	177	9	CLTC	CLQS	START/VERIFY START OF LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL ICL-5 FOR MSS MOVE.	
	181	10	C1TC	CCRP	START RP-1 PANEL PREPS PER V-25389.	
	121	10-1	C4TC	CLTC	KSC SYSTEMS SAFETY SUPPORT WILL BE REQUIRED IN 30 MINUTES ON LUT LEVEL 240 FOR GH2 SNIFFER CHECKS.	
	111	10-2	CLTC	CVTS	KSC SYSTEMS SAFETY SUPPORT WILL BE REQUIRED IN 30 MINUTES ON LUT LEVEL 240 FOR GH2 SNIFFER CHECKS.	TCPI
	121	11	C2TC	CLTC	KSC SYSTEMS SAFETY SUPPORT WILL BE REQUIRED IN 30 MINUTES ON THE LUT 180 FT LEVEL TO PERFORM GH_2 SNIFFER CHECKS OF S7-41 "D" UNIT,	
	111	12	C2TC	CVTS	KSC SYSTEMS SAFETY SUPPORT WILL BE REQUIRED IN 30 MINUTES ON THE LUT 180 FT LEVEL TO PERFORM GH_2 SNIFFER CHECKS OF S7-41 "D" UNIT,	TCPI
	171	13	C2AE	C2TC	ENGINE SEQUENCE TEST (QAES) COMPLETE,	
	171	13-1	C2TC	C2NP	STAGE SELECT TO INHIBIT.	N-214-127
	121	14	C2TC	CLTC	QAES COMPLETE	
	121	15	C2TC	C1TC	JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS) IS NO LONGER REQUIRED,	
	171	16	C2TC	L2RR	REMOVE JUMPER J4 IN X02-220A2 (ENG COMP TEST POWER),	
	181	17	C1TC	C1NE	REMOVE JUMPER J4 IN X02-121A2 (S-II ENG START BYPASS),	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14 HRS 0' 0"						
	171	18	U2EO	C2TC	PD EBW PULSE SENSOR REMOVAL COMPLETE.	
	171	19	C2TC	C2AE C2EC C2RP	START ENGINE/RECIRC PANEL STATUS CHECKS PER V-30029 (M020) TASK 19, REPORT WHEN COMPLETE.	
-13 HRS 55' 0"						
	171	1	C2AE	C2TC	ENGINE/RECIRC PANEL STATUS CHECKS COMPLETED.	
-13 HRS 45' 0"						
	121	1	CVTS	CLTC	LM 525 PLATFORM REMOVAL IS COMPLETE, CLEAR TO START S-IVB FWD KIT REMOVAL.	TCPI
	161	2	C4TC	S4MF	VERIFY WITH LM PAD LEADER THAT 525 PLATFORM REMOVAL IS COMPLETE.	
	151	3	CUTC	SUVE	VERIFY IU LIGHTS AND OIS REMOVAL COMPLETE.	
	161	4	C4TC	S4MF	VERIFY FINAL WALKAROUND OF FWD SKIRT AREA IS COMPLETE	
	151	5	CUTC	UUVM SUVE	VERIFY IU READY FOR ACCESS KIT REMOVAL	
	121	6	C4TC	CLTC	VERIFY IU AND S/C CLEAR FOR PARTIAL REMOVAL OF S-IVB FWD ACCESS KIT.	
	161	7	C4TC	S4MF	START FORWARD ACCESS KIT REMOVAL PER V-30539, SECT P.	
	121	8	CVTS	CLTC	CLEAR TO CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7. (COMPLETION REQUIRED FOR MSS PLAT 3 OPENING)	TCPI
	121	9	CLTC	C1TC	CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7, REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T-13 HRS 45' 0"						
	181	10	C1TC	CSAC	CLOSE AND LOCK EMERGENCY ACCESS GATE ON S/A 7, REPORT WHEN COMPLETE,	
	118	11	CSAC	CSA7	REMOVE PENETRABLE BARRIER AND CLOSE AND LOCK EMERGENCY EGRESS GATES, REPORT WHEN COMPLETE,	
T-13 HRS 30' 0"						
	121	1	BUSC	CLTC	6000 PSI GH2 SUPPLY ACTIVATED,	TCPI
	121	2	CLTC	C2TC C4TC	6000 PSI GH2 SUPPLY ACTIVATED,	
	171	3	C2TC	C2GP	START GH2 PREPS PER V-30029 (M020) TASK 27, REPORT WHEN COMPLETE,	
	161	4	C4TC	C4PS	START GH2 PREPS PER V-30539, SECT K,	
	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,	
	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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 LUT ZERO LEVEL, A * * CONTROLLED WALKWAY WILL * * BE OPEN TO THE * * ELEVATORS, * * * **********	TCPI
-13 HRS 9' 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	
-12 HRS 28' 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, REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12 HRS 20' 0"						
	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, READY FOR MSS PLAT 3 OPENING,	
	121	10	BOSC	CLTC	VERIFY THE EMERGENCY ACCESS GATE ON S/A 7 IS CLOSED AND LOCKED FOR MSS PLATFORM 3 OPENING,	TCPI
-12 HRS 15' 0"						
	121	1	MSTC	CLTC	VERIFY READY FOR FPI CALS, SEND V2MS & V4MS TO CH 212,	TCPI
	121	2	CLTC	V2MS V4MS	REPORT S-II AND S-IVB FUEL TANK PRESSURE READINGS TO MSTC ON CHANNEL 212, S-II D252-219 & D253-219 S-IVB D177-410 & D178-410	TCPI
	121	3	C1TC	CLTC	REQUEST SUPPORT TO REMOVE STAGE MONITOR SHACK AND S-IC STAGE SECURITY BARRIER,	
	261	4	CLTC	BOSC	REMOVE THE S-IC STAGE MONITOR SHACK, AND THE S-IC STAGE SECURITY BARRIER,	TCPI
	121	5	CVTS	CLTC	MSS PLATFORM OBSERVERS ARE TO REPORT TO PVTS AT THE BASE OF THE MSS LOW RISE ELEVATOR FOR BRIEFING IN 45 MINUTES,	TCPI
		5-1		CLTC	*** NOTE THE POSITION OF PLATFORM 1 WILL DETERMINE WHICH STAGE (S-IC OR S-II) PROVIDES OBSERVERS,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12 HRS 15' 0"						
	121	6	C4TC	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 1800.	TCPI
	171	2	C2TC	U2SE	VERIFY STD 720 IS LOCATED AND SECURED ON MSS PLATFORM #1.	N-211-110
-2 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, 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) (CDDT) V-29024 (K008) (CD). REPORT WHEN COMPLETE.	
	161	5	C4TC	C4SM	START CONTROL PANEL SETUPS AND INERT S&A REMOVAL PER V-30539, SECT Q.	
	181	6	C1TC	CCLO	VERIFY COMPONENT TEST IS COMPLETE AND START LOX SYSTEM FINAL PREPS FOR LOADING PER V-25340.	
	181	7	C1TC	CCLH	VERIFY PROPELLANT COMPONENT TESTS COMPLETED PER V-35004.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-12 HRS 0' 0"						
	181	8	C1TC	CCLH	START LH2 FINAL SYSTEMS PREPS FOR LOADING PER V-35004.	
	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
	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	CUTC C1TC	REMOVE ACCESS DOOR RAIN CANOPIES AND STORE.	
	151	21	CUTC	SUVM	REMOVE ACCESS DOOR RAIN CANOPY AND STORE. REPORT WHEN COMPLETE.	
	181	22	C1TC	C1PE	REMOVE ACCESS DOOR RAIN CANOPIES AND STORE.	
	181	23	CCRP	C1TC	RP-1 LINE DRAIN COMPLETED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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 * * SPACE VEHICLE INTERIOR * * EXCEPT FOR THE CSM AND * * S-IC BOATTAIL, * * **********	TCPI
	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	C4TC	C1DP C2DP C4DP	VERIFY STATUS SYSTEMS SWITCH SAFE AND S&A SWITCH SAFE,	
	121	2	C4TC	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 30' 0"						
	181	5	C1TC	C1NE	VERIFY S-IC ORDNANCE AND PD PANELS CONFIGURED FOR CONTROLLED SWITCHING AND PD EBW CONNECTION PER V-21008,	
	121	6	C4TC	CUTC	PREPARE IU STAGE FOR RF SILENCE AND CONTROLLED SWITCHING PER V-31062, APPENDIX C,	
	121	7	C4TC	C1TC C2TC C4TC CUTC	VERIFY ORDNANCE AND PD PANELS IN CORRECT CONFIGURATION FOR S&A CONNECTION AND LV READY FOR RF SILENCE & CONTROLLED SWITCHING PER TI 2-13	
	111	8	C4TC	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	9-1	CLTC	CUDE	VERIFY DEE 755 (RF SILENCE) ON.	
	111	10	C4TC	CVTS	REQUEST CPSS VERIFY READY FOR PD DETONATOR & CDF CONNECTION	TCPI
	121	11	C4TC	C1TC C2TC C4TC	CONNECT PD DETONATORS AND CDF	
	161	12	C4TC	C4SM	START S&A CONNECTIONS PER V-30539, SECT Q,	
	181	13	C1TC	C1NE	CONNECT S-IC PD DETONATORS PER V-21008, REPORT WHEN COMPLETE,	
		14			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-11 HRS 30' 0"						
	181	15	C1TC	C1PE	CONNECT PDS CDF ASSEMBLIES PER V-29003.	
	171	16	C2TC	U2EO	CONDUCT PD STRAY VOLTAGE CHECKS PER V-29050 (K010) (CDDT) V-29024 (K008) (CD) REPORT WHEN COMPLETE.	
	171	17	C2TC	U2HO	CONNECT PD DETONATORS AND CDF PER V-29050 (K010) (CDDT) V-29024 (K008) (CD)	
	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	
	121	21	CVTS	CLTC	MSS OIS TRANSFER FROM PAD TO CRAWLER TRANSPORTER IS COMPLETE.	TCPI
-11 HRS 25' 0"						
	261	1	C2TC	BOSC	CDDT ONLY	* TCPI
-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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 0' 0"						
		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
		5			NOTE ---- FOR THE NEXT 15 MINUTES CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERA 27 AND AA3 OR AA4.	XB-247 -107
	121	6	CVTS	CLTC	CLEAR TO DISCONNECT AUX DAMPER	TCPI
	121	7	CLTC	C1TC	DISCONNECT AUX DAMPER	
	181	8	C1TC	CSAC	DISCONNECT AUX DAMPER, REPORT WHEN COMPLETE,	
	118	9	CSAC	CSAD	DISCONNECT AUX DAMPER PER V-36086, REPORT WHEN COMPLETE,	
	171	10	U2HO	C2TC	PD DETONATORS & CDF CONNECTED	
	171	11	C2TC	U2HO	START CLOSEOUT OF PD CONTAINER PER V-30029 (M020) TASK 29, REPORT WHEN COMPLETE,	
	121	12	C1TC	CLTC	TSM PERSONNEL ON STATION FOR MSS MOVE, REQUEST BOSC PROVIDE SUPPORT FOR ESP TRANSPORTER MOVE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-11 HRS 0' 0"						
	261	13	C4TC	BOSC	TSM PERSONNEL ARE ON STATION FOR MSS MOVE, VERIFY READY TO SUPPORT ESP TRANSPORTER MOVE,	TCPI
-10 HRS 50' 0"						
	121	1	C1TC	CLTC	AUX DAMPER DISCONNECT COMPLETE AND S/A 9 HANGERS HAVE BEEN REMOVED,	
	121	2	C4TC	C1TC C2TC C4TC CUTC	VERIFY YOU ARE READY FOR MSS JACKING,	
	121	3	C4QS	CLTC	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL ICL-5 IS COMPLETE,	
	111	4	C4TC	CVTS	LV-QAL INSPECTION OF MSS PLATFORMS 1 & 2 PER LV-QAL ICL-5 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 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-26008 (G042),	
	121	4	C4TC	C1TC C2TC C4TC	VERIFY PD DETONATOR AND CDF CONNECTIONS COMPLETED,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		5			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	
-10 HRS 45' 0"	181	6	C1TC	C1PE C1NE	START FINAL REMOVAL OF S-IC FWD SKIRT PROTECTION, AUXILIARY LIGHTING AND INTERNAL WORK PLATFORM SEGMENTS PER V-29003 & V-21035,	
	121	7	C1TC	C1TC C2TC C4TC CUTC	VERIFY LV READY TO REMOVE RF SILENCE & CONTROLLED SWITCHING,	
	111	8	C1TC	CVTS	RF SILENCE AND CONTROLLED SWITCHING ARE NO LONGER REQUIRED, LV ORDNANCE CONNECTION IS COMPLETE,	TCPI
	188	9	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	10	C1TC	CLTC	FACILITY AIR STANDBY PANEL WILL BE ACTIVATED & FACILITY AIR SYSTEM WILL BE CHARGED WITH GN2,	
		11			**********WARNING********** * * * THE FACILITY AIR SYSTEM * * WILL BE CHARGED WITH * * GN2, PERSONNEL SHOULD * * AVOID USE OF AIR TOOLS * * INSIDE ENCLOSED AREAS, * * * **********	
	181	12	C1TC	CPDC	ACTIVATE FACILITY AIR STANDBY PANEL PER V-26222, REPORT WHEN COMPLETE,	
	121	13	CVTS	CLTC	PLATFORM 3 IS OPEN AND SECURE,	TCPI
	151	14	C4TC	CUTC	VERIFY IU CLEAR FOR FINAL REMOVAL OF S-IVB FORWARD ACCESS KIT,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 45' 0"						
	161	15	C4TC	S4MF	START FINAL REMOVAL OF S-IVB FWD, ACCESS KIT PER V-80539, SECT R,	
-10 HRS 35' 0"						
	121	1	CVTS	CLTC	GMIL BRINGING UP CCS S-BAND CARRIER FOR GMIL TESTING	TCPI
-10 HRS 30' 0"						
	181	1	C1TC	C1RE	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,	
		3			**********WARNING********** * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * **********	
	181	4	C1TC	C1PE	START INSTALLING AND SECURING S-IC FWD ACCESS DOOR PER V-24010,	
	121	5	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	6	CLTC	C2TC C4TC CUTC	S-IC THRUST OK SIGNALS WILL BE CYCLED ON AND OFF DURING THE NEXT 15 MINUTES,	
	111	7	CLTC	CVTS	ADVISE SCO PERSONNEL THAT S-IC THRUST OK SIGNALS WILL BE CYCLED ON AND OFF DURING THE NEXT 15 MINUTES,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 30' 0"		8			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * * **********	
	181	9	C1TC	C1PE	PREPARE FOR THRUST OK PRESSURE SWITCH TEST (WAST) PER V-24327, REPORT WHEN COMPLETE.	
	181	10	C1TC	C1PK	CALL UP WAST PROGRAM UPON C1PE REQUEST AND NOTIFY C1TC PRIOR TO EXECUTION.	
	161	11	C4TC	S4MF	VERIFY FWD ACCESS KIT REMOVAL COMPLETED AND READY TO INSTALL IU DOOR.	
	161	12	CUTC	C4TC	VERIFY S-IVB FWD AREA CLEAR FOR IU ACCESS DOOR INSTALLATION.	
	151	13	CUTC	SUVE	VERIFY READY TO INSTALL IU ACCESS DOOR.	
	151	14	CUTC	UUVM	INSTALL AND SECURE IU ACCESS DOOR PER IV-34046.	
	181	15	C1TC	CWCP	START INDUSTRIAL WATER SYSTEM FINAL PREPS PER V-36113.	
	171	16	U2SI	C2TC	FINAL REMOVAL OF A7-38 IS COMPLETE.	
	171	17	C2TC	U2SE	VERIFY S-II FORWARD COMPARTMENT READY FOR CLOSEOUT.	
	171	18	U2QC	C2TC	VERIFY REMOVAL OF ALL NON-FLIGHT HARDWARE PER V-30029 (M020) TASK 47 AND THE INSPECTION PER ITI LS-008 FOR THE FORWARD INTERSTAGE COMPARTMENT IS COMPLETE.	
	171	19	C2TC	U2SI	SECURE S-II FORWARD ACCESS DOOR, REPORT WHEN COMPLETE.	
	161	20	C4TC	S4ML	START FINAL LUT WALKAROUND.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 20' 0"						
	181	1	C1S1	C1TC	TSM PROTECTIVE TOWER CLEAR FOR MSS MOVE,	
	121	2	C1TC	CLTC	TSM 3-4 TOWER CLEAR FOR MSS MOVE,	
	121	3	CLTC	C1TC C2TC C4TC CUTC	VERIFY YOU ARE READY FOR MSS MOVE,	
	111	4	CLTC	CVTS	LV CLEAR FOR MSS MOVE,	TCPI
	151	5	CUTC	LGCC	START LUT EVACUATION PROCEDURE PER V-22006, REPORT WHEN COMPLETE (VERIFY 28V #1 SWITCH ON 1504A1A6 DIST IS LEFT ON),	
-10 HRS 15' 0"						
	121	1	CVTS	CLTC	MSS IN MOTION,	TCPI
	181	2	C1PK	C1TC	WAST IS COMPLETE	
	121	3	C1TC	CLTC	WAST IS COMPLETE	
	181	4	C1TC	C1PE	VERIFY FWD SKIRT ACCESS DOOR SECURED	
		5			**********WARNING********** * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * ********** (WARNING box)	
	181	6	C1TC	C1PE	SECURE FROM TOK PRESSURE SWITCH TEST PER V-24327, REPORT WHEN COMPLETE,	
	151	7	CUTC	PUPL	START LUT WALKDOWN, LV-GAL PARTICIPATION REQUIRED,	
	171	8	U2SI	C2TC	FWD ACCESS DOOR IS SECURED,	
	171	9	C2TC	C2SP	START ULLAGE PRESSURE SWITCH (CALIPS) VERIFICATION PER V-30029 (M020) TASK 86, AFTER FWD AND AFT ACCESS DOORS ARE SECURED, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 15' 0"						
	171	10	C2TC	U2MU	START ARM 5 FINAL UMBILICAL PREPS PER V-30029 (M020) TASK 33, REPORT WHEN COMPLETE,	
	181	11	C2TC	C1TC	YOU ARE CLEAR TO ATTACH S/A 5 UMBILICAL WITHDRAWAL LANYARDS	
		11-1		C2TC	**********WARNING********** * * VERIFY ALL S-II WORK IN * * THE S/A 5 UMBILICAL * * AREA IS COMPLETE EXCEPT * * SAFING PIN REMOVAL * * ********** NOTE ---- FOR THE NEXT 15 MINUTES CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERAS 27 & AA3 OR AA4,	
	181	12	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	13	CSAC	CSA5	COORDINATE WITH STAGE PERSONNEL ON ARM TO START FINAL CLOSEOUT PER V-36091,	
	181	14	CPDC	C1TC	FACILITY AIR STANDBY PANEL ACTIVATION COMPLETE,	
-10 HRS 10' 0"						
	121	2	CVTS	CLTC	READY FOR PRIMARY DAMPER CONNECTION	TCPI
	121	3	CLTC	C1TC	CONNECT PRIMARY DAMPER	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10 HRS 10' 0"						
	181	4	C1TC	CSAC	CONNECT PRIMARY DAMPER, REPORT WHEN COMPLETE	
	118	5	CSAC	CSAD	CONNECT PRIMARY DAMPER PER V-36086, 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, 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,	
	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	TCPI
	181	3	C1TC	CPDC	DEACTIVATE FACILITY AIR STANDBY PANEL PER V-26222, REPORT WHEN COMPLETE,	
		4			**********WARNING********** * * THE FACILITY AIR SYSTEM * * HAS BEEN PURGED OF GN2 * * AND IS BACK IN ITS * * NORMAL CONFIGURATION, * * **********	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-10 HRS 0' 0"						
	121	1	CLTC	LCDC L1PS	POWER DOWN 28V POWER SUPPLY (X02-1256A2) IN THE LUT COUNTCLOCK, INSTALL AUTO START PLUG AND REAPPLY POWER, REPORT WHEN COMPLETE.	
	171	2	C2TC	C2PV	**CDDT 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,	
		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,	
	161	7	C4TC	S4MF	START FINAL S/A 7 CARRIER PREPARATION PER V-30539, SECT S.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 30' 0"						
	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,	
	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,	
	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,	
	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 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,	
	171	15	C2TC	C2NP	VERIFY CALIPS POWER IS OFF,	
	121	16	CGIC	CLTC	OIS UNITS WILL BE REMOVED FROM 100 FT TO 0 FT LEVELS OF ML (COUNTDOWN ONLY),	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 30' 0"						
	181	17	C1TC	C1PE	VERIFY PROPULSION PREPS COMPLETE EXCEPT PREFILL TOPPING PER V-34012,	
	181	18	C1TC	CSAC	VERIFY Q-BALL COVER RETRACT SYSTEM PREPS COMPLETED PER V-36112,	
- 9 HRS 20' 0"						
	261	1	CLTC	BOSC	OPEN PANEL 14A ON 200 FT ML LEVEL FOR BOEING TO OPEN CIRCUIT BREAKERS 2 & 4,	TCPI
- 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 SUPPORT LAS1 IN ML ROOM 8A TO OPEN CIRCUIT BREAKERS PER V-31045,	
	261	3	CLTC	BOSC	SUPPORT LAS1 IN ML ROOM 8A TO OPEN CIRCUIT BREAKERS PER V-31045,	TCPI
	181	4	C1TC	CSPP	TURN OFF EMERGENCY LIGHTING AND HDA FACILITY AC CIRCUIT BREAKERS PER V-31045,	
	151	5	CUTC	PUPL	VERIFY LUT WALKDOWN COMPLETE	
		5-1			VERIFICATION BY LV-QAL	
	181	6	C1TC	V1MS	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	

RULE NO.	MEAS 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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 9 HRS 15' 0"						
	171	7	C2TC	V2MS	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
					RULE NO. / MEAS 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	8	C4TC	C4N2		
				C4ET	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
					RULE NO. / MEAS 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	
	151	9	CUTC	CUEF	REPORT STATUS OF THE FOLLOWING HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS:	
					RULE NO. / MEAS 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9 HRS 10' 0"						
- 9 HRS 5' 0"						
	121	1	CLTC	SRO	ALL HIGHLY DESIRABLE LMR RANGE SAFETY MEASUREMENTS ARE GO. VERIFY EASTERN TEST RANGE ASSUMES MONITORING RESPONSIBILITY AT THIS TIME.	
	171	2	C2TC	U2LN	VERIFY ELECTRICAL WALK AROUND COMPLETE PER V-21253 (G060)	
HOLDING - 9 HRS 0' 0"					---- STARTING SCHEDULED HOLD ----	
	262	1	CLTC	BTIS	VERIFY REGULAR CAMERAS OPERATIONAL AND HAVE BPHO SWITCH TO CH 181 TO SUPPORT PROPELLANT LOADING.	TCPI
	121	2	CLTC	CGIC	VERIFY TV CAMERAS ORIENTED FOR VEHICLE LOADING OPERATIONS.	TCPI
	181	3	C1TC	CSPP	VERIFY LUT WALKDOWN COMPLETE	
	181	4	C1TC	C1NE	VERIFY REMOVAL OF OFF-LUT CABLE ASSYS 5086W1, 5087W1 AND 5086CB1W1 PER V-21035.	#
	181	5	C1TC	C1NE	VERIFY S-IC LUT ESE LAUNCH PREPS COMPLETE PER V-21035 AND PERSONNEL CLEARING PAD.	
	181	6	C1TC	C1MS	VERIFY READY TO SUPPORT PROPELLANT LOADING.	
	181	7	C1TC	CHDA	VERIFY HDA FINAL PREPS ARE COMPLETE AND HDA PERSONNEL CLEAR OF PAD.	
	181	8	C1TC	CSAC	VERIFY PAD MANUAL PREPS COMPLETE AND PERSONNEL CLEARING PAD	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"						
	181	9	C1TC	BRFS	VERIFY LUT GSE OPERATION SATISFACTORY AND PERSONNEL CLEAR OF PAD,	
	161	10	C4TC	C4PS	START FINAL PROPULSION PANEL VERIFICATION PER V-30539, SECT T,	
		11			NOTE ---- ALL LV OPERATORS ARE REQUIRED TO CHECK THEIR PROCEDURES DURING THE HOLD TO VERIFY THAT PCR'S FROM T-8 HRS 59' THROUGH LV SAFING (LISTED BELOW) HAVE BEEN INCORPORATED,	
	PCR ---		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 0' 0"					---- 4 HRS BEFORE COUNT RESUMES ----	
	171	1	C2TC	C2GP	START FINAL GROUND PNEU SYS INSPECTION AND WALK AROUND PER V-30029 (M020) TASK 31, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
HOLDING - 9 HRS 0' 0"					--- 2 HRS BEFORE COUNT RESUMES ---	
	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. REPORT WHEN COMPLETE.	
	181	6	C1TC	CSPP	APPLY 43D100 AND 43D200 FIRING SYSTEM POWER PER V-21194. START BATTERY SWITCHOVER TEST. REPORT WHEN COMPLETE.	
	181	7	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	8	C1TC	CSAC	**CDDT ONLY**	*
	181	9	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	
	181	10	C1TC	C1FR	**CDDT ONLY**	*
	181	11	C1TC	CSPP	START FINAL PREPARATIONS PER V-31045	
	171	12	C2TC	C2SP C2GP	START FINAL PANEL STATUS CHECKS PER V-30029 (M020) TASK 32. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"						
	171	13	C2TC	C2PV	START FINAL PANEL STATUS CHECKS PER V-26276 (G058). REPORT WHEN COMPLETE.	
	121	14	CLTC	C1TC C2TC C4TC CUTC	VERIFY PCR VERIFICATION COMPLETE	
HOLDING - 9 HRS 0' 0"					---130 HOURS PRIOR TO RESUMING COUNT---	
	171	1	C2GP	C2TC	FINAL GROUND PNEU SYS INSPECTION AND WALK AROUND COMPLETE.	
	171	2	C2SP	C2TC	FINAL PRESS PANEL STATUS CHECKS ARE COMPLETE.	
	171	3	C2GP	C2TC	FINAL GROUND PNEU PANEL STATUS CHECKS ARE COMPLETE.	
	171	4	C2PV	C2TC	FINAL PURGE AND VACUUM PANEL STATUS CHECKS ARE COMPLETE.	
HOLDING - 9 HRS 0' 0"					---115 HOURS PRIOR TO RESUMING COUNT---	
	171	1	U2PE U2PV	C2TC	CLOSEOUT OF LUT LEVEL 180 PER V-30029 (M020) TASK 64 COMPLETE.	
HOLDING - 9 HRS 0' 0"					--- ONE HOUR PRIOR TO RESUMING COUNT ---	
	188	1	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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
HOLDING - 9 HRS 0' 0"						
	121	2	CLTC	C1TC	REMOVE SAFETY CABLES AND START FINAL CLOSEOUT OF TAIL SERVICE MASTS	
	181	3	C1TC	CTS1	START TSM FINAL LAUNCHER PREPS PER V-36039.	
	181	4	C1TC	CECS	VERIFY RESC READY TO RECORD ECS MEASUREMENTS	
		5			**********WARNING********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * * **********	
	181	6	C1TC	C1PE	APPLY HYDRAULICS TO THE F-1 ENGINES AND START PREFILL OPERATIONS PER V-34012	
	171	7	C2TC	C2PV	**CDDT ONLY**	*
HOLDING - 9 HRS 0' 0"						
					---45 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	CLTC	C1TC C2TC C4TC CUTC	VERIFY ALL 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 0' 0"						
					---40 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	CUTC	CLTC	REQUEST CLEARANCE TO PRESSURIZE ST-124M SUPPLY SPHERE TO FLIGHT PRESSURE (3000 PSI)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS 0' 0"						
	151	2	CUTC	CUCP	PRESSURIZE ST-124M SUPPLY SPHERE TO 3000 PSI PER V-31062. REPORT WHEN SYSTEM STABILIZED.	
		2-1			* * * * * * * * * CAUTION * * * * * * * * * * IU STAGE ST-124M SUPPLY SPHERE WILL BE PRESSURIZED TO 3000 PSI	
HOLDING - 9HRS 0' 0"					--- 30 MINUTES PRIOR TO RESUMING COUNT ---	
	111	1	CLTC	CVTS	REQUEST CPSS VERIFY CLEARANCE TO SWITCH ECS TO GN2.	TCPI
	121	2	CLTC	VURF	START RF/GSE SETUP PER V-28069. REPORT WHEN COMPLETE.	
	121	3	CLTC	C1TC	CONFIGURE ECS FOR STANDBY GN2	
		4			* * * * * * * * * WARNING * * * * * * * * * AN INERT ATMOSPHERE HAZARD EXISTS IN THE ECS ROOM AND ALL S/V COMPARTMENTS, EXCEPT THE CM WHILE THE CM WHILE THE ECS PURGE GN2 HAND VALVE IS OPEN.	
	181	5	C1TC	CECS	START ECS PREPS FOR LOADING PER V-36074 PART B.	
	151	5-1	CUTC	BGCC	LCC THERMAL OVERRIDE SWITCH ON (SENSE CONTROL PANEL BIT 21) NOTE IF A THERMAL CONDITION OCCURS PRIOR TO T-6 MIN, THE COMPUTER MUST BE POWERED DOWN IN 10 MINUTES UNLESS THE THERMAL CONDITION CAN BE CLEARED.	I-173 -113
	151	6	CUTC	BGCC	MASK THE FOLLOWING DISCRETES. REPORT WHEN COMPLETE. $FUNC SE 935-06 MMSK (MDI'S 0120-0143) $FUNC SE 937-02 MMSK (MDI'S 1536-1559) $FUNC SE 937-05 MMSK (MDI'S 1608-1631) $FUNC SE 937-01 MMSK (MDI'S 1512-1535) $FUNC SE 937-20 MMSK (MDI'S 1968-1991) $FUNC SE 937-45 MMSK (MDI'S 2568-2591)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING 9 HRS 0' 0"						
		6-1		ALL	*** NOTE THE ABOVE MASKED MDI/LDO'S WILL BE UPDATED EVERY 2 SECONDS UNTIL T-2140 HRS	
	181	7	C1TC	CHGD	VERIFY HGD PREPS PER V-27087 COMPLETE, PERSONNEL CLEAR OF PAD AND HGD SYSTEM	
	121	8	CLTC	C1TC C2TC C4TC CUTC	VERIFY FINAL PURGE BOX VALIDATION,	
	121	9	CVTS	CLTC	VERIFY FINAL PURGE BOX VALIDATION	TCPI
HOLDING 9 HRS					---20 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	CLTC	C1TC	SWITCH ECS TO GN2 PER V-36074 PART C	
	181	2	C1TC	CECS	SWITCH ECS TO GN2 PER V-36074 PART C	
		3			**********WARNING********** * * THE FACILITY AIR SYSTEM * * WILL BE CHARGED WITH * * GN2, PERSONNEL SHOULD * * AVOID USE OF AIR TOOLS * * INSIDE ENCLOSED AREAS, * * ***********	
	181	4	C1TC	CPDC	ACTIVATE FACILITY AIR STANDBY PANEL PER V-26222,	
	171	5	C2TC	U2SE	LV ECS IS SWITCHING TO GN2, VERIFY S-II RED CREW IS READY TO SUPPORT PER V-30029 (M020) PARAGRAPH C.6,	
	261	6	C2TC	BOSC	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:	TCPI

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING - 9 HRS						
					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	
					4 BACKUP MINI BOTTLES BREATHING AIR (LVR-2 & LVR-7)	
HOLDING - 9 HRS						
					---10 MINUTES PRIOR TO RESUMING COUNT---	
	121	1	C½TC	CLCP	REQUEST & EXECUTE NU10, REPORT WHEN COMPLETE,	
	181	2	C½TC	CTS1	VERIFY TSM FINAL PREPS ARE COMPLETE AND TSM PERSONNEL CLEAR OF PAD	
	181	3	C½TC	CWCP	VERIFY INDUSTRIAL WATER SYSTEM LAUNCH PREPS COMPLETED,	
	181	4	C½TC	C1PE	VERIFY S-IC MECHANICAL PREPS COMPLETED AND PERSONNEL CLEARING PAD	
	181	5	C½TC	CCLH	VERIFY LH2 SYSTEMS FINAL PREPS FOR LOADING COMPLETE AND PERSONNEL CLEARING PAD,	
	181	6	C½TC	CCRP	VERIFY RP-1 PREPS COMPLETE,	
	121	7	C½TC	CLTC	ADVISE CVTS THAT SMDPS WILL BE PLACED IN A 1 SWITCH 1 VALVE MODE AT THIS TIME	
	111	8	C½TC	CVTS	THE SMDPS WILL BE PLACED IN A 1 SWITCH 1 VALVE MODE AT THIS TIME	TCPI
	181	9	C½TC	CPDC	TURN PANEL POWER ON, VERIFY SMDPS IS IN 1 SWITCH 1 VALVE MODE	
	181	10	C½TC	CSPP	PLACE LSE POWER OVERRIDE SWITCH TO ON AND VERIFY	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
HOLDING ▸ 9 HRS					--- 10 MINUTES PRIOR TO RESUMING COUNT ---	CONT'D
	181	11	C1TC	CSPP	PLACE 42D100 LOCKUP ENABLE SWITCH TO ON AND VERIFY	
	181	12	C1TC	CSPP	VERIFY LUT ELECTRICAL PREPS COMPLETE PER V-31045 AND PERSONNEL ARE CLEARING PAD	
	121	13	C1TC	CLTC	S-IC ELECTRICAL LAUNCH PREPS COMPLETE	
	181	14	C1TC	RPDC	VERIFY DTS/DEE PAD CLEARING COMPLETED PER V-25160	
HOLDING ▸ 9 HRS 0' 0"					--- JUST PRIOR TO RESUMING COUNT ---	
	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
					CDDT ONLY	
- 8 HRS 59' 0"						
	188	1	CVTS	PA	ALL PERSONNEL NOT POSSESSING T-9 HOUR HAZARDOUS BADGES ARE TO CLEAR THE BLAST DANGER AREA.	TCPI
	121	2	CVTS	CLTC	CDDT ONLY	* TCPI
	121	3	CVTS	CLTC	CHANGE SMDPS FROM 1 SWITCH 1 VALVE MODE TO 1 SWITCH MODE, REPORT WHEN COMPLETE	TCPI
	121	4	CLTC	C1TC	CHANGE SMDPS FROM 1 SWITCH 1 VALVE MODE TO 1 SWITCH MODE, REPORT WHEN COMPLETE	
	181	5	C1TC	CPDC	CHANGE SMDPS FROM 1 SWITCH 1 VALVE MODE TO 1 SWITCH MODE, REPORT WHEN COMPLETE	
	121	6	C1TC	CLTC	SMDPS IS IN ONE SWITCH MODE	
	111	7	CLTC	CVTS	SMDPS IS IN ONE SWITCH MODE	TCPI
	121	8	CLTC	C1PK	REQUEST AND EXECUTE VALK LINKING PROGRAM.	
		8-1			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 OPERATIONS 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	9	***	CLGK	POWER ON LVDC/DA PER V-33033, SECT I, REPORT WHEN COMPLETE (KAPW, FT04, FT08, FT35, FT20 AND FT23)	***
	171	10	C2TC	C2NP	PM POWER ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 8 HRS 59' 0"						
	171	11	C2TC	C2PM	VERIFY HAZARDOUS GAS DETECTION SYSTEM READY FOR PROPELLANT LOADING AND START FINAL STATUS CHECKS PER V-30029 (M020) TASK 35. REPORT WHEN COMPLETE.	
	171	12	C2TC	R2DP	**CDDT ONLY**	*
	161	13	C4TC	C4NP	VERIFY SW SEL INHIBIT OFF	
	161	14	C4TC	R4PU	PU STRIP CHARTS ON	
	161	15	C4TC	C4PU	PU POWER ON THEN AUTO.	
	161	16	C4TC	C4PU	PROPELLANT LOADING MEASURING ENABLE ON	
	161	17	C4TC	C4PS	START FINAL PREPS FOR LOADING PER V-30539, SECT T. REPORT WHEN COMPLETE.	
	151	18	CUTC	CUPC	START ST-124M SLIP RING EXERCISE PER V-23068.	
	181	19	C1TC	RDTS	TURN ON THE ALT FR PTCS TANKING COMPUTER 28 VDC SWITCHES ON PANEL 5341 AND 5333.	
	181	20	C1TC	RDTS	TURN ON ALL ALT FR TANKING COMPUTER AUTO AND MANUAL POWER SWITCHES	
	181	21	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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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	
- 8 HRS 45' 0"						
	171	1	C2TC	C2AE	START ENGINE HELIUM BOTTLE PRESSURIZATION TO 3000 PSI PER V-30029 (M020), TASK 38	
- 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 35' 0"						
	171	1	C2AE	C2TC	ENGINE HELIUM BOTTLE PRESSURIZATION COMPLETE	
	161	2	C4TC	C4NP	4D411 POWER ON	
	161	3	C4TC	C4HY	MANUALLY CYCLE AUX HYD PUMP ON AND OFF TO MAINTAIN SYSTEM OIL TEMP 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,	
		3-1			**********CAUTION********** * * * DO NOT ALLOW HYDRAULIC * * SYSTEM FLUID TEMPS TO * * DECREASE BELOW -25 * * DEG F, * * * **********	
	151	4	CUPC	CUTC	ST-124M SLIP RING EXERCISE COMPLETE	
	151	5	CUTC	CUPC	TURN ON ST-124M SYSTEM AND START DRIFT CHECKS PER V-33011,	
	171	6	C2RP	C2TC	RECIRC BOTTLE PRESSURIZATION IS COMPLETE	
		7			DELETED	N-219-136
- 8 HRS 32' 0"						
	121	1	CLGK	CLTC	FT43 COMPLETE	
	121	2	CLTC	C1NP C2NP	SWITCH SELECTOR INHIBIT TO OFF TO SUPPORT FT-03,	(FT03)
	121	3	CLTC	CUSW	LVDA/ESE SWITCH TO LVDA POSITION	(FT03)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 31' 0"						
	181	1	C1TC	CCLO	VERIFY LOX SYSTEM FINAL PREPS FOR LOADING PER V-25340 ARE COMPLETE.	
	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	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 C4HY	VERIFY READY FOR PROPELLANT LOADING.	
	161	8	C4TC	S4PC	VERIFY ALL S-IVB PERSONNEL HAVE CLEARED THE PAD	
- 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	

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 30' 0"						
					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, ANY ANOMALIES NOTED REPORT TO CLTC,	
	171	3	C2TC	C2TV	VERIFY S-II OTV CAMERAS READY FOR PROPELLANT LOADING	
	121	4	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO START PROPELLANT LOADING	
	121	5	CLTC	CGIC	VERIFY READY TO SUPPORT PROPELLANT LOADING AND HAVE BCFM SWITCH TO CH 133 FOR LOX COMMUNICATIONS CHECKS	TCPI
	188	6	CLTC	ALL	ALL PERSONNEL REQUIRED FOR LV LOX PROPELLANT LOADING REPORT FOR COMMUNICATIONS CHECKS ON CH 133,	
- 5 HRS 27' 0"						
	171	1	C2TC	C2AE	BEGIN START TANK PURGE PER V-30029 (M020), TASK 88	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 8 HRS 25' 0"						
	171	1	C2TC	C2SP	VERIFY LOW LEVEL PURGE VALVE OPEN AND OPEN LIGHT ON	
		2			SEQUENCES 2 THROUGH 7 DELETED	N-219-136

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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)
	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,	
		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	
- 8 HRS 22' 0"	171	7	C2TC	C2RP	START ACCUMULATOR FILL SYSTEM PURGE PER V-30029 (M020) TASK 30. (IF FT43, FT03 NOT COMPLETE, DELAY THIS STEP)	N-219-136
	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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 8 HRS 20' 0"						
		1-1		ALL	*** NOTE 10 MINUTES AFTER LOX FILL COMMAND, S-IVB SLOW FILL WILL START AUTOMATICALLY	
	121	2	***	CLGK	REQUEST & EXECUTE FT37 (PREPARE TO LAUNCH TEST - REPEATABLE SIM FLIGHT OPTION)	***
	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, 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 0 TO 65 DEG F ENVELOPE PER V-30029 (M020) TASK 36. COORDINATE ALL SWITCH ACTIONS WITH C2TC AND CUFS PRIOR TO EXECUTION.	
	181	12	C1TC	CPRK	RECALL BE02 AT A 10 SECOND SCAN RATE AND ALL STAGES OPTION.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 8 HRS 18' 0"						
	171	1	C2TC	C2AE	START TURBOPUMP PURGE PER V-30029 (M020) TASK 41.	
		2			DELETED	N-219-136
- 8 HRS 15' 0"						
	121	1	CLTC	C1TC	YOU HAVE CLEARANCE TO START CROSS COUNTRY LINE CHILLDOWN.	
		1-1			NOTE ---- FROM NOW THRU T +0 THE FOLLOWING STATIONS REQUIRE ACCESS TO THE NOTED TV CAMERAS CSA4 - CAMERAS 15, 16, 36 CSA5 - CAMERAS 15, 20, 21, 36 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	TCPI
- 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. CYCLE VALVES AS NECESSARY TO MAINTAIN THE PURGE AND VACUUM CIRCUITS OPERATION	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
8 HRS 10' 0"						
	171	2	C2RP	C2TC	ACCUMULATOR FILL SYSTEM PURGE COMPLETED,	N-219-136
	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.	

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	
- 6 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. REPORT WHEN COMPLETE.	
	111	2	CLTC	CVTS	ALERT MSTC THAT THE PRN MODULATION OF CSM S-BAND UP-LINK WILL BE DISABLED FOR CCS CHECKS IN 5 MINUTES FOR APPROX. 20 MINUTES.	TCPI
- 7 HRS 55' 0"	151	3	CUTC	BGCC	VERIFY/MOUNT VLA DATA LOAD TAPE ON IODC 1-3. REPORT WHEN COMPLETE.	FT05
	121	1	CLGK	CLTC	FT23 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST FULL RANGE OPTION),	***
	111	3	CLTC	CVTS	VERIFY CLEARANCE FOR IU CCS RF SYSTEM,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 55' 0"						
	111	4	CLTC	CVTS	REQUEST GMIL VERIFY CCS CARRIER IS OFF,	TCPI
	121	5	CLTC	VURF	ENABLE LOCAL CCS CARRIER & VERIFY,	
	121	6	CLTC	CUIP	CCS TRANSPONDER POWER-ON,	
	121	7	CLTC	VURF	VERIFY CCS IN LOCK,	
	121	8	CLTC	CUNP	VERIFY SWITCH SELECTOR INHIBIT OFF	
	121	9	CLTC	CUSW	ISSUE IU OCTAL 007 (OMNI XMT)	
	121	10	CLTC	CUIP	COMMAND DECODER POWER-ON,	
	111	11	CLTC	CVTS	LOCAL CCS CARRIER IS ON, CCS TRANSPONDER AND COMMAND DECODER ARE ON, (IU COMMAND SYSTEM IS DISABLED)	TCPI
	121	12	CLTC	VURF	START CCS RF CHECKS PER V-28069,	
	111	13	CLTC	CVTS	REQUEST GMIL DISABLE CSM S-BAND UP-LINK PRN MODULATION, AND VERIFY. (FOR APPROX 20 MIN)	TCPI
- 7 HRS 54' 0"						
	171	1	C2PM	C2TC	S-II LOX TANK CHILLDOWN IN PROGRESS	
	171	2	C2TC	C2AE C2EC C2RP	START THRUST CHAMBER JACKET PURGE PER V-30029 (M020) TASK 42 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)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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,	
	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,	
- 7 HRS 35' 0"						
	121	1	CLGK	CLTC	FT05 COMPLETE (GIVE DATE OF VLA DATA LOADED),	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 7 HRS 35' 0"						
	121	2	CLTC	ETMS BTMC	TM RECORDERS ON	(FT55)
	121	3	CLTC	ECOP	START REAL TIME REDUCTION PROGRAM	(FT55)
	121	4	CLTC	VURF	VERIFY READY FOR CSM UP-LINK PRN MODULATION.	
	111	5	CLTC	CVTS	REQUEST GMIL BRING UP PRN MODULATION ON CSM S-BAND UP-LINK.	TCPI
- 7 HRS 30' 0"						
	121	1	CLTC	RLDE	GIVE CDC/GMT TIME CORRELATION ON EVERY HALF HOUR UNTIL T-0 AND UPON ENTERING AND TERMINATION OF HOLDS.	
	121	2	***	CLGK	REQUEST & EXECUTE FT55 (LVDA TM TEST)	***
	121	3	CLTC	VURF	VERIFY READY TO SUPPORT FT45.	(FT45)
	121	4	CLTC	CUSW	ISSUE IU OCTAL 026 (CMD SYS ENABLE)	(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	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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)	***
- 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
		8			2 SEQUENCES DELETED	N-219-136
	171	10	C2TC	C2RP	LH2 PREVALVES TO CLOSE, HOLD, PLACE RECIRC RESET TO RESET, THEN INHIBIT. RELEASE AND PLACE LH2 PREVALVES TO INHIBIT.	N-219-136
	171	10-1		C2RP	*** NOTE ACCUMULATOR BLEED VALVE OPEN - ON	
		11			DELETED	N-219-136

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 13' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT47, (PREFLIGHT COMMAND SYS TEST) (HOUSTON), (OPTION SP1)	***
	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,	
	121	7	CLTC	CUSW	ISSUE IU OCTAL 026 (COMMAND SYS ENABLE)	
	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T- 7 HRS 5' 0"						
	181	1	C1TC	C1PC	OPERATE ENGINE THERMAL CONDITIONING PURGE AS REQUIRED TO MAINTAIN ENGINE TEMPERATURE	
T- 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,	
	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
T- 7 HRS 1' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT23 (LVDC SECTOR SUM CHECKS),	***
	181	2	C1TC	ALL	PERSONNEL SUPPORTING LOX LOADING GO TO CH 133 ACTIVE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7 HRS 01' 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 AND VERIFY RELAYS RESET IND OFF AND MRCV OPEN CMD ON IND ON,	
	161	5	C4PS	C4PU	MRCV CMD NO, 2 OPEN,	
	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,	
		8-1		C4PU	*** NOTE MRCV OPEN CMD ON IND OFF,	
	161	9	C4PS	C4PU	MRCV CMD NO, 2 CLOSE,	
		9-1		C4PU	*** NOTE RELAYS RESET IND ON,	
	161	10	C4PS	R4PS	VERIFY MRCV CLOSES,	
	161	11	C4PS	C4PU	MRCV CMD NO, 1 OPEN THEN NO, 2 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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6 HRS 55' 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)
- 6 HRS 54' 0"						
	181	1	C1TC	C1PC	LOW LOX DOME PURGE SWITCH TO AUTO	(KAF2)
	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,	
	111	4	CLTC	CVTS	STARTING S-IC LOX LOADING,	TCPI
		4-1			NOTE ---- FOR THE NEXT 1 HR AND 25 MIN, CSA1 REQUIRES ACCESS TO TV CAMERAS 7, 11 & 12,	
- 6 HRS 51' 0"						
	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)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6 HRS 51' 0"						
	123	4	CUFS	CUSP	FLIGHT CONTROL COMPUTER SYSTEM POWER - ON	
- 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 E4FC CUFE C4FC CUSP C4FS C4NP	(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 THRU 0911)	(CTC5) I-167-108
- 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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 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 55' 0"						
	121	1	CLTC	C1TC C2TC	CDDT ONLY	*A
	181	2	C1TC	CCLO	CDDT ONLY	*A
	171	3	C2TC	C2PM	CDDT ONLY	*A
- 5 HRS 45' 0"						
	121	1	CUFS	CLTC	CTC5 COMPLETE. STARTING CTC3.	
	121	2	***	C1PC	LOW LOX DOME PURGE ON FOR CTC3	***
	123	3	***	CLFK	REQUEST AND EXECUTE CTC3, OPTIONS A, CD, EF (LVDC, INPUTS; BURN AND COAST MODE; P,Y, AXES). REPORT WHEN COMPLETE.	***
	151	4	CUFS	BGCC	UNMASK THE FOLLOWING DISCRETES: $FUNC SE 935-38 MREL (MDI'S 0888 THRU 0911)	I-167-108

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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,	
	161	2	C1TC	C1LO	CYCLE LOX VENTS CLOSED THEN AUTO AS REQUIRED TO MAINTAIN ULLAGE PRESSURE AND VENT VALVE OPERATION	
	161	3	C1TC	C1RP	PRESSURIZE HE BOTTLES TO 3200 PSI PER V-26327, REPORT WHEN COMPLETE,	
	161	4	C4TC	C4PS	VERIFY READY FOR LH2 LOAD,	
	171	5	C2TC	C2EV	VERIFY READY FOR LH2 LOADING ON	
- 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	C4TC	C1TC	START S-II LH2 LOADING	
	111	4	C4TC	CVTS	STARTING S-II LH2 LOADING,	TOPI
		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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T- 5 HRS 18' 0"						
	121	1	CUFS	CLTC	CTCS COMPLETE	
	121	2	***	C1PC	LOW LOX DOME PURGE OFF	***
	121	3	***	CLGK	REQUEST & EXECUTE FT31 (ACCELEROMETER PULSE COUNT)	***
T- 5 HRS 15' 0"						
	121	1	C1GK	CLTC	FT31 COMPLETE	
	121	2	***	CUPC	REQUEST & EXECUTE FT06 (DRIFT CHECKS OPTION)	***
T- 5 HRS 8' 0"						
	121	1	C1TC	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	(CTC
	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)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 5 HRS 8' 0"						
	151	7	CUFS	CUES	VERIFY EDS AUTO ABORT BUS DE-ENERGIZED AND WILL REMAIN OFF UNTIL COMPLETION OF CTC4	(CTC4)
	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	RECIRC RESET TO RESET THEN INHIBIT	
	171	3	C2TC	C2RP	VERIFY LH2 PREVALVES OPEN - ON AND RECIRC, RESET - ON,	
		3-1		C2RP	*** NOTE RECORD LH PREVALVE CRYO OPENING TIME IN APPENDIX OF V-30029 (M020) MAXIMUM ALLOWABLE IS 1 SEC,	
	171	4	C2TC	U2SE	S-II LH2 FILL HAS STARTED, RELEASE STAGE ENTRY ONLY RED CREW MEMBERS AND LIFE SUPPORT,	
	261	5	C2TC	BOSC	S-II LH2 FILL HAS STARTED, BENDIX LIFE SUPPORT FOR S-II STAGE ENTRY IS NO LONGER REQUIRED, (LVR-2 & LVR-7),	TCPI
		6			DELETED	N-219-136
		7			DELETED	N-129-136
- 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,	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 5 HRS 0' 0"						
		1			DELETED	N-219-136
	121	2	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1.	(VARS)
	181	3	C1TC	CCLO	CDDT ONLY	*A
	121	4	C1TC	CLTC	CDDT ONLY	*A
- 4 HRS 40' 0"						
					DRSCR CLOSED LOOP TEST	
	111	1	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED)	TCPI
	111	2	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING FLIGHT CODE PLUGS	TCPI #
	111	3	CLTC	CVTS	CDDT ONLY	TCPI *
	111	4	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TCPI
	121	5	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	
	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	(VARS)
	121	7	CLTC	BTMC	TM TAPE RECORDER ON	(VARS)
		7-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR TESTS.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 40' 0"						
	121	8	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	(VARS)
	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).	
	171	11	C2TC	C2RP	LH2 PUMP DISCHARGE AND RETURN LINE VALVES TO OPEN.	N-219-136
	171	12	C2TC	C2RP	START LH2 RECIRC PUMP TEST PER V-30029 (M020) TASK 61. REPORT WHEN COMPLETE.	N-219-136
- 4 HRS 36' 0"						
	121	1	***	C1PC	LOW LOX DOME PURGE ON	*** (CTC1)
- 4 HRS 35' 0"						
	121	1	CUFS	CLTC	CTC4 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	***	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-3 HR OPTION).	***
	121	4	VARS	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	
	121	5	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE.	
		5-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	

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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 35' 0"						
	121	17	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	18	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	
		18-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		18-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
	121	19	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	
		19-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	20	VARS	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	
	121	21	C1PK	CLTC	READY FOR SRO PD COMMAND	
	121	22	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	23	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	24	SRO	ALL	3-2-1 - MARK	
	121	25	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	26	VARS	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	
		26-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED	
	121	27	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 4 HRS 35' 0"						
		27-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
	121	28	VARS	C1DP C2DP C4DP	RSCR'S TRANSFER - EXTERNAL THEN AUTO AND VERIFY RSCR:S OFF.	
		28-1		B1RF B2RF B4RF CRSS	*** NOTE RSCR LIMITER VOLTAGE INDICATIONS OFF.	
	121	29	C1PK	C1DP C2DP C4DP	STATUS SYSTEMS - SAFE	
	121	30	C1PK	CLVN	DESTRUCT SYSTEM - OFF AND RETURN DESTRUCT SYSTEM KEY TO CPSS, REPORT WHEN COMPLETE.	
	121	31	VARS	C1DP C2DP C4DP	VERIFY SAFETY BUS - OFF.	
	121	32	VARS	BRFS	SIGNAL GENERATOR SELECTOR TO STANDBY AND HYBRID TO SELECT MONITOR NO. 1	
	121	33	C1PK	CLTC	VARS COMPLETE.	
	171	34	C2PM	C2TC	CDDT ONLY	*A
	121	35	C2TC	CLTC	CDDT ONLY	*A
	171	36	C2RP	C2TC	LH2 RECIRC PUMP TEST COMPLETE	N-219-136
- 4 HRS 30' 0"						
	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, 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)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 HRS 30' 0"						
		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	*A
- 4 HRS 22' 0"	121	6	C1TC	CLTC	CDDT ONLY	*A
	161	1	C1TC	C4TC	READY FOR LH2 LOADING, ALL SUPPORT PERSONNEL GO TO CH 143.	
- 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 TWO HOURS. 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 OVERRIDE CLOSE ASSIST.	
- 4 HRS 16' 0"						
	111	1	CLTC	CVTS	ADVISE SCO PERSONNEL THAT Q-BALL POWER IS COMING ON IN APPROXIMATELY 5 MINUTES	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 HRS 11' 0"						
	121	1	C1TC	CUIP	Q-BALL POWER ON Q-BALL HEATER POWER - ON	TCP1
		1-1		CUIP	*** NOTE Q-BALL POWER SWITCH WILL BE LEFT IN ON POSITION UNTIL T-38 MIN	
	121	2	C2TC	C1TC	STARTING MRCV TEST	
	171	3	C2TC	C2PU	START MRCV TEST, REPORT WHEN COMPLETE.	
	171	4	C2TC	C2NP	SWITCH SELECTOR INHIBIT OFF	
	171	5	C2TC	C2AE	VERIFY ENGINE 201 THRU 205 HELIUM BOTTLE PRESSURE IS 1400 PSIA OR GREATER	
	171	6	C2TC	V2MS	VERIFY READY TO SUPPORT MRCV TIMING (MEASUREMENTS K6-201, K125-201 AND G006-201 THRU 205)	
	171	7	C2TC	R2SC	G006-201 THRU 205 RECORDERS TO FAST	
	171	8	C2TC	C2AE	ALL HELIUM SOL SW TO ON	
	171	9	C2TC	C2AE	ALL HELIUM CONT SOL ON LIGHT - ON	
	171	10	C2TC	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	C2TC	R2SC	VERIFY G006-201 THRU 205 INCREASED 1.3 TO 1.8 VDC,	
	171	12	C2TC	C2PK	VERIFY ENGINE REG OUT PRESS D012-201 THRU 205 IS 415 +/- 25 PSIA,	
	171	13	C2TC	C2PU	MRCV COMMAND NO. 1 SW - HIGH EMR.	
	171	14	C2TC	C2PU	RESET LIGHT - OFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CSM/LV	
4 HRS 11' 0"						
	171	15	C2TC	C2PU	CHECKOUT RESET LIGHT - OFF,	
	171	16	C2TC	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	17	C2TC	R2SC	VERIFY G006-201 THRU 205 DECREASED 1,3 TO 1,8 VDC,	
	171	18	C2TC	C2PU	MRCV COMMAND NO, 2 SW - LOW EMR,	
	171	19	C2TC	C2PU	CHECKOUT RESET LIGHT - ON	
	171	20	C2TC	C2EV	ENG 201 THRU 205 MRCV SOL CMD ON LIGHT - ON	
	171	21	C2TC	R2SC	VERIFY G006-201 THRU 205 INCREASED 1,3 TO 1,8 VDC,	
	171	22	C2TC	C2PU	MRCV COMMAND NO. 1 SW - LOW EMR.	
	171	23	C2TC	C2PU	RESET LIGHT - ON	
	171	24	C2TC	C2AE	ALL HELIUM SOL TO OFF	
	171	25	C2TC	C2AE	ALL HELIUM CONT SOL ON LIGHT - OFF	
	171	26	C2TC	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	CL7C	MRCV TEST IS COMPLETE	
4 HRS 0' 0"						
	171	1	C2TC	C2RP	START LOX HE INJ/ACCUMULATOR TEST PER V-30029 (M020) TASK 45, REPORT WHEN COMPLETE,	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 3 HRS 49' 0"						
	121	1	CLTC	C1TC C2TC	CDDT ONLY	*A
	143	2	C1TC	CCLH	CDDT ONLY	*A
	171	3	C2TC	C2PM	CDDT ONLY	*A
- 3 HRS 45' 0"						
	161	1	C4TC	C4PS	WHEN LH2 LOADING REACHES 100% START CHILLDOWN PUMP CHECKS PER V-35014.	
	123	2	CUFS	C4HY	AUXILIARY PUMP POWER SWITCH TO OFF	
	171	3	C2RP	C2TC	LOX HE INJ/ACCUMULATOR TEST COMPLETED	#
- 3 HRS 40' 0"						
	121	1	CLTC	C1TC C2TC	CDDT ONLY	*A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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.	
	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.	
	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 OVERIDE 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 3 HRS 38' 0"						
	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	
	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	
	171	24	C2TC	C2RP	CDDT ONLY	*A
		24-1		C2RP	CDDT ONLY	*A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
3 HRS 35' 0"					CO ONLY	
	181	1	C1TC	CECS	CDDT ONLY	*A
		1-1		CECS	CDDT ONLY	*A
		2			DELETED	
- 3 HRS 30' 0"						
	171	1	C2TC	C2AE C2RP	START PROPULSION SYSTEM BOTTLE DECAY TEST PER V-30029 (M020) TASK 34	#
- 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	CVFS	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	2-1	C2FC	C2TC	REQUEST PERMISSION TO ESTABLISH EAS MANUAL TEMPERATURE CONTROL MODE.	
		3		C2FC	VERIFY ACCUMULATORS UNLOCKED	
	171	4	C2FC	R2SC V2MS	HYDRAULIC RECORDERS ON.	
		5		C2FC	S-II AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 - ON, ALLOW SYSTEM PRESSURES TO STABILIZE.	
		6		C2FC	OPEN MAIN PUMP BYPASS VALVE AND ALLOW MAIN PUMP FLUID TEMPS TO STABILIZE WITH RESERVOIR FLUID TEMPS.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 3 HRS 20' 0"						
		6-1		C2FC	MAIN PUMP BYPASS VALVE - CLOSE	
		7		C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROLS - ON	
		8		C2FC	S-II AUXILIARY HYDRAULIC PUMPS ENGINES 1, 2, 3 & 4 - OFF. NOTE NORMAL SHUTDOWN	
		9		C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON AND ALL ACCUMULATORS LOCK COMMAND LIGHT OFF	
	171	10	C2FC	V2MS	HYDRAULIC RECORDERS OFF	#
	171	11	C2FC	C2TC	EAS MANUAL THERMAL CONTROL MODE HAS BEEN ESTABLISHED	#
		11-1		C2FC	*** NOTE MANUALLY CYCLE INDIVIDUAL AUX HYDRAULIC PUMPS ON AND OFF TO MAINTAIN SYSTEM OIL TEMPERATURES WITHIN LIMITS PER V-30029 (M020) TASK 36. COORDINATE ALL SWITCH ACTIONS WITH C2TC AND CUFS PRIOR TO EXECUTION.	#
	123	12	CUFS	ALL	ALL S-IC, S-II & S-IVB PERSONNEL CONCERNED WITH FLIGHT CONTROL CHECKS RETURN TO CHANNEL 121	
	121	13	CUFS	CLTC	CTC1 COMPLETE	
	121	14	***	C1PC	LOW LOX DOME PURGE OFF	***
	121	15	***	CLGK	REQUEST & EXECUTE FT31 (ACCELEROMETER PULSE COUNT)	***
	161	16	C4PS	C4ET	ENGINE CONTROL POWER ON	
		16-1			**********CAUTION********** * * C4ET ENGINE CONTROL * * POWER OFF UPON ANY * * CHANGE OF STATE OF THE * * ENGINE * * **********	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 3 HRS 20' 0"						
	161	17	C4PS	C4ET	VERIFY IGNITION DETECTED ON	
	161	18	C4PS	C4ET	SWITCH SELECTOR CUTOFF NO. 1 ON THEN OFF	
	161	19	C4PS	C4ET	SW SELECTOR CUTOFF NO. 2 AUTO THEN OFF	
	161	20	C4PS	C4ET	LIQUID LEVEL SENSOR CUTOFF TO ARM	
	161	21	C4PS	C4ET	MONITOR FOR ANY ENGINE CUTOFF	
	161	22	C4PS	C4SP	MODE SELECT TO BURNER THEN AUTO	
	161	23	C4PS	C40H	VOTING CIRCUIT ENABLE ON	
	161	24	C4PS	C40H	VERIFY REPRESS SYS LAUNCH MODE IND OFF	
	161	25	C4PS	C40H	MONITOR FOR A BURNER MALFUNCTION.	
	181	26	CSAC	C1TC	PRIMARY DAMPER IS RETRACTED & LATCHED	
	121	27	C1TC	CLTC	PRIMARY DAMPER IS RETRACTED & LATCHED	
	111	28	CLTC	CVTS	PRIMARY DAMPER IS RETRACTED & LATCHED	TCPI
	161	29	C4TC	C4PS	CONDUCT HELIUM DECAY CHECKS ON CH 161.	
	161	30	C4PS	R4PS C4P2	VERIFY HELIUM HAS STABILIZED AND READY FOR DECAY CHECKS.	
	161	31	C4PS	C4SP	CLOSE COLD HELIUM SUPPLY VALVE	
	161	32	C4PS	C4SP	OPEN COLD HELIUM LINE VENT FOR 15 MINUTES THEN CLOSE	
	161	33	C4PS	C4HC	**CDDT ONLY**	*
	161	34	C4PS	C40H	VOTING CKT TEMP SIM #1 TO LOW AND #2 TO HIGH. VERIFY NO MALFUNCTION.	
	161	35	C4PS	C40H	VOTING CKT TEMP SIM #2 TO AUTO AND #3 TO HIGH. VERIFY NO MALFUNCTION.	
	161	36	C4PS	C40H	VOTING CKT TEMP SIM #1 TO HIGH AND #3 TO LOW. VERIFY NO MALFUNCTION.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 3 HRS 20' 0"						
	161	37	C4PS	C40H	VOTING CKT TEMP SIM #1 TO AUTO.	
	181	38	C1TC	C1PE	CDDT ONLY	*
- 3 HRS 19' 0"						
	171	1	C2TC	C2RP C2AE C2FC C2SP C2GP R2RL V2MS	CDDT ONLY	*A
		1-1			CDDT ONLY	*A
- 3 HRS 18' 0"						
	171	1	C2TC	C2AE	CDDT ONLY	*A
	171	2	C2TC	C2FC	CDDT ONLY	*A
	171	3	C2TC	C2FC	CDDT ONLY	*A
	171	4	C2TC	C2FC	CDDT ONLY	*A
- 3 HRS 17' 0"						
	121	1	CLGK	CLTC	FT31 COMPLETE	
	121	2	***	CUPC	REQUEST & EXECUTE FT06 (DRIFT CKS OPTION)	***

PAGES G196 AND G197 INTENTIONALLY OMITTED

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 3 HRS 5' 9"						
	121	2	C2TC	CLTC	CDDT ONLY	*A
- 3 HRS 5' 0"						
	121	1	CUPC	CLTC	FT06 COMPLETE	
	123	2	CUFS	CLGK	VERIFY READY TO SUPPORT CONTROL COMPUTER REDUNDANCY TEST (CTC2).	(C2TC)
	121	3	***	C1PC	LOW LOX DOME PURGE ON FOR CTC2.	***
	123	4	***	CLFK	REQUEST & EXECUTE CTC2 NORM OPTION, REPORT WHEN COMPLETE. (LVDC, CRG S/C INPUTS; BURN & COAST MODE; P, Y, R)	***
		5		C2RP	CDDT ONLY	*A
	171	6	C2TC	C2FC	CDDT ONLY	*A
	171	7	C2TC	C2FC	CDDT ONLY	*A
		7-1		C2FC	CDDT ONLY	*A
- 3 HRS 2'20"						
	171	1	C2RP	R2RL	CDDT ONLY	*A
	171	2	C2RP	R2SC	CDDT ONLY	*A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 3 HRS 2' 20"						
		2-1		C2RP	CDDT ONLY	*A
		3	C2RP	C2TC	CDDT ONLY	*A
	171	4	C2TC	C2SP	CDDT ONLY	*A
		5		C2SP	CDDT ONLY	*A
		6		C2SP	CDDT ONLY	*A
		7		C2SP	CDDT ONLY	*A
- 3 HRS 0' 0"						
	161	1	C4PS	C40H	VOTING CKT TEMP SIM #3 TO AUTO AND #2 TO LOW	
- 2 HRS 55' 0"						
	121	1	C2TC	CLTC	CDDT ONLY	*A
- 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.	***
	171	4	C2TC	C2RP	CDDT ONLY	*A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 2 HRS 50' 0"						
		4-1		C2RP	**CDDT ONLY**	*A
- 2 HRS 45' 0"						
	121	1	CUFS	CLTC	VAFC COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF TEST)	***
	171	3	C2AE	C2TC	PROPULSION SYSTEM BOTTLE DECAY TEST IS COMPLETE.	#
- 2 HRS 42' 0"						
	121	1	CLGK	CLTC	FT20 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST - FULL RANGE OPTION)	***
- 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	

PAGE G201 INTENTIONALLY OMITTED.

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 2 HRS 32'15"						
		1		C2RP	CDDT ONLY	*A
- 2 HRS 32'14"						
		1		C2RP	CDDT ONLY	*A
		2		C2RP	CDDT ONLY	*A
		3		C2RP		*A
		4			CDDT ONLY	*A
- 2 HRS 31'20"						
		1		C2EC	CDDT ONLY	*A
- 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 935-06 MREL $ 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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 30' 0"						
	171	4	C2TC	C2NP	STAGE SELECT TO INHIBIT	
- 2 HRS 27' 0"						
		1			NOTE C2TV REQUIRES VIDEO TAPE TV SCAN OF S-II SIDEWALL INSULATION UTILIZING CAMERAS 9, 16, 34 & 35	
- 2 HRS 25'50"						
		1		C2RP	CDDT ONLY	*A
		1-1		C2RP	CDDT ONLY	*A
		1-2		C2RP	CDDT ONLY	*A
- 2 HRS 25' 0"						
	161	1	C4PS	C4ET	CUTOFF SENSOR POWER OFF	
	161	2	C4PS	C4ET	VERIFY NONPROGRAMMED CUTOFF ON	
	161	3	C4PS	C4ET	VERIFY WET INDICATION 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.	
	161	7	C4PS	C4ET	ENGINE READY BYPASS ON THEN OFF AND VERIFY ENGINE CUTOFF LOCKIN OFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 2 HRS 25' 0"						
	161	8	C4PS	C4ET	ENGINE CONTROL POWER OFF.	
	161	9	C4PS	C40H	VOTING CKT TEM SIM #1 TO AUTO	
	161	10	C4PS	C40H	VOTING CIRCUIT ENABLE OFF.	
	161	11	C4PS	C4SP	MODE SELECT TO AMBIENT	
	161	12	C4PS	C40H	VERIFY REPRESS SYS LAUNCH MODE IND ON.	
	171	13	C2RP	C2GP	CDDT ONLY	*A
		14		C2RP	CDDT ONLY	*A
	171	15	C2RP	C2TC	CDDT ONLY	*A
	171	16	C2TC	C2SP	CDDT ONLY	*A
		17		C2SP	CDDT ONLY	*A
		18		C2SP	CDDT ONLY	*A
		19		C2SP	CDDT ONLY	*A
- 2 HRS 20' 0"						
	181	1	C1TC	CCLO	CDDT ONLY	*A
	133	2	CCLO	C20U	CDDT ONLY	*A
	133	3	CCLO	CP02	CDDT ONLY	*A
	133	4	CCLO	CP02	CDDT ONLY	*A
	133	5	CCLO	C20U	CDDT ONLY	*A
	133	6	CCLO	PLDR	CDDT ONLY	*A

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 20' 0"						
		7		CCLO	CDDT ONLY	*A
	181	8	CCLO	C1TC	CDDT ONLY	*A
	121	9	C1TC	CLTC C2TC	CDDT ONLY	*A
	121	10	C2TC	CLTC	CDDT ONLY	*A
	171	11	C2TC	C2AE C2RP	CDDT ONLY	*
- 2 HRS 18' 0"						
	121	1	CUPC	CLTC	FT06 COMPLETE	
	121	2	***	C4NK	REQUEST AND EXECUTE XADS (S-IVB COUNTDOWN DISCRETE SCAN). REPORT WHEN COMPLETE.	***
- 2 HRS 14' 0"						
	181	1	CCLH	C1TC	CDDT ONLY	*A
	121	2	C1TC	CLTC	CDDT ONLY	*A
	171	3	C2PM	C2TC	CDDT ONLY	*A
- 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	
T- 2 HRS 8' 0"						
	181	1	CCLH	C1TC	CDDT ONLY	*A
	121	2	C1TC	CLTC	CDDT ONLY	*A
T- 2 HRS 5' 0"						
	111	1	CLTC	CVTS	VERIFY RANGE CLEARANCE FOR ALL LV RF AND TM AND USB STATION READY TO SUPPORT.	TCPI
		1-1		C1IP C2IP C4IP CUIP	*** NOTE IF RF CLEARANCE NOT AVAILABLE, SET APPROPRIATE TRANSMITTER SWITCH TO OFF.	
T- 2 HRS 0' 0"						
	121	1	CVTS	CLTC	SC EDS POWER IS COMING ON AT T-1 HR 55' 0"	# TCPI
	121	2	CLTC	C1TC C2TC C4TC CUTC	POSITION TM CAL CONTROL FOR VALL AND START PREPS FOR EDS TEST PER V-21096. REPORT WHEN READY TO SUPPORT EDS TEST.	
	171	3	C2TC	C2AE C2EC C2NP	PREP FOR EDS TEST. REPORT WHEN COMPLETE.	
	181	4	C1TC	C1NE	VERIFY READY TO SUPPORT EDS TEST.	
	181	5	C1TC	C1IP	TM MODE SELECT - ANTENNA	(VATC)
	181	6	C1TC	C1IP	TM CALIBRATOR - AUTO	(VATC)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 01' 0"						
	181	7	C1TC	C1IP	TM CAL MODE - AUTO	(VATC)
	181	8	C1TC	C1IP	PREFLT LEVELS - AUTO	(VATC)
	181	9	C1TC	C1IP	F1 AND P1 RF TRANSMITTER - AUTO	
	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	(VATC)
	171	13	C2TC	C2IP	RF COUPLER - AUTO	(VATC)
	171	14	C2TC	C2IP	TM CAL MODE - AUTO	(VATC)
	171	15	C2TC	C2IP	PREFLT LEVELS - AUTO	(VATC)
	171	16	C2TC	C2IP	FM/FM INFLT - AUTO	(VATC)
	171	17	C2TC	C2IP	PCM MODE - AUTO	(VATC)
	171	18	C2TC	C2IP	F1, F2 AND P1 RF TRANSMITTER - AUTO	(VATC)
	121	19	C2TC	CLTC	S-II READY FOR VALL	XB-247 -107
	161	20	C4TC	C4IP	TM MODE SELECT - AUTO	(VALL)
	161	21	C4TC	C4IP	TM CALIBRATE - AUTO	(VALL/ VATC)
	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	(VATC)
	151	25	CUTC	CUIP	F1 TM - AUTO	(VATC)
	151	26	CUTC	CUIP	TM CAL MODE TO INFLT THEN AUTO	(VATC)
	151	27	CUTC	CUIP	TM CALIBRATOR - AUTO	(VATC)
	151	28	CUTC	CUIP	PREFLT LEVELS - AUTO	(VATC)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 0' 0"						
	151	29	CUTC	CUIP	F1 & P1 RF TRANSMITTER - AUTO	
	121	30	CUTC	CLTC	IU READY FOR VALL	
- 1 HRS 55' 0"						
	121	1	CLTC	C1PK	REQUEST AND EXECUTE VALL (LINKING PROGRAM)	(VAED)
		1-1			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.	
	121	2	CLTC	ALL	ALL LV PERSONNEL SUPPORTING EDS TEST GO TO CH 223 ACTIVE AND MONITOR CH 121	
	111	3	CLTC	CVTS	LV READY FOR EDS TEST, REQUEST SCO PERSONNEL SWITCH TO CH, 223,	TCPI
	121	4	CVTS	CLTC	SCO PERSONNEL STANDING BY TO SUPPORT EDS TEST.	TCPI
	121	5	CLTC	CEDK	GO TO CH 223 AND PERFORM EDS TEST WHEN READY,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 1 HRS 51' 0"						
	121	1	***	CEDK	REQUEST & EXECUTE VAED (EDS TEST) PER V-21096 (PROGRAMS VAED, VZ33, FT33, VZSA, VZEA, VZRE). (SPR1 OPTION). REPORT WHEN PROGRAMS HAVE TERMINATED.	# ***
	121	2	***	CEDK	CDDT ONLY	* ***
		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 35' 0"						
	171	1	C2AE	C2TC	CDDT ONLY	*
- 1 HRS 30' 0"						
	171	1	C2TC	R2SC	START LH2 INLET TEMPERATURE CORRECTION PER V-30029 (M020) TASK 71. REPORT WHEN COMPLETE.	
- 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 #

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 27' 0"						
	111	2	CLTC	CVTS	**CDDT ONLY**	TCPI *
	111	2-1	CLTC	CVTS	REQUEST GMIL REPORT ON CH 121 TO SUPPORT FT47	TCPI XB-251-132
	121	3	CLTC	CUIP	VERIFY RF SILENCE OFF.	(FT47)
	121	4	CLTC	CUIP	CCS TRANSPONDER ON, VERIFY COMMAND DECODER IS OFF.	(FT47)
	118	5	CSAC	CHCU	START SECOND PUMP SYSTEM AND VERIFY BOTH PUMP SYSTEMS 1 & 2 RUNNING.	(WATL/ WASL)
		6			**********CAUTION********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS. * * * **********	
✓	121	7	CLTC	C1PC	LOW LOX DOME PURGE ON	
✓	121	8	CLTC	CUSP	SELECT S-IC BURN MODE ON THEN OFF	
- 1 HRS 21' 0"	121	0	CEDK	CLTC	EDS PROGRAM COMPLETE. CCS ENABLED.	(FT47) XB-251-132
	121	1	CEDK	CLTC	EDS TEST COMPLETE.	
	111	2	CLTC	CVTS	EDS TEST COMPLETE. REQUEST HFLT REPORT ON CH. 121 FOR HOUSTON PREFLIGHT COMMANDS.	TCPI
✓	121	3	CLTC	CUEV	REPORT TO CRSS ON CH 137 TO SUPPORT HOLD FIRE CHECKS	
✓	121	4	CVTS	CLTC	EDS POWER IS OFF. CSM READY FOR G-BALL CAL.	# TCPI XB-251-132
	181	5	C1TC	CSAC	VERIFY S/A'S READY FOR WASL.	(WASL)
	181	6	C1TC	CTS1	VERIFY TSM'S READY FOR WATL.	(WATL)
	121	7	C1TC	CLTC	S/A'S AND TSM'S READY FOR WATL & WASL.	(WATL/ WASL)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 21' 0"						
	121	8	CLTC	GMIL	REQUEST CCS CARRIER ON AND VERIFY IN LOCK	TCPI (FT47) XB-251-132
		9			DELETED	XB-251-132
	121	10	CLTC	CUIP	COMMAND DECODER ON,	(FT47)
	121	11	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF,	(FT47)
	121	12	CLTC	CUSW	ISSUE IU OCTAL 007 (CCS OMNI),	(FT47)
	121	13	CLTC	CUSW	CDDT ONLY	* (FT47)
		13-1		CUES	CDDT ONLY	*
	111	14	CLTC	CVTS	CDDT ONLY	* TCP
	121	15	CLTC	ECOP	START REAL TIME REDUCTION PROGRAM,	(FT47)
	121	16	CLTC	BTMC	TM TAPE RECORDING ON,	(FT47)
- 1 HRS 19' 0"						
	121	1	***	CLGK	REQUEST & EXECUTE FT47 (PREFLIGHT COMMAND SYSTEM TEST) (HOUSTON) (OPTION $P1),	***
	121	2	CLGK	CLTC	FLIGHT COMPUTER READY FOR COMMANDS,	
	121	3	***	CLSK	REQUEST AND EXECUTE WATL,	***
	121	4	HFLT	ALL	COMMAND ON MY MARK (GENERAL LOAD 1),	
	121	5	HFLT	ALL	3 - 2 - 1, MARK,	
					SINGLE WORD DUMP, LOCATIONS 200 THROUGH 206	
	121	6	CLTC	ETOM	VERIFY AVP, CRP AND SINGLE WORD DUMP,	
	121	7	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 2),	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 1 HRS 19' 0"						
	121	8	HFLT	ALL	3 - 2 - 1, MARK.	
					SECTOR DUMP FOR OTU.	
	121	9	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP.	
	121	10	HFLT	ALL	COMMAND - ON MY MARK (GENERAL LOAD 3).	
	121	11	HFLT	ALL	3 - 2 - 1, MARK.	
					SECTOR DUMP FOR NAV UPDATE.	
	121	12	CLTC	ETOM	VERIFY AVP, CRP AND SECTOR DUMP.	
	212	13	CLTC	MSTC	READY FOR CCS BLOCK - VERIFY BLOCK.	# TCP (FT47)
	121	14	CLTC	CUNP	CDDT ONLY	* (FT47)
		14-1		CUES	CDDT ONLY	*
		14-2		CUNP	CDDT ONLY	*
	111	15	CLTC	CVTS	CDDT ONLY	* TCP
	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.	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 15' 0"						
	121	1	CLTC	CUIP	C-BAND NO, 1 AND NO, 2 ON, C-BAND NO, 1 AND NO, 2 INHIBITS ON, C-BAND NO, 1 AND NO, 2 INHIBITS OFF, C-BAND NO, 1 INHIBIT 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	BTMC	TM TAPE RECORDING OFF,	
	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 CH 148,	TCPI
- 1 HRS 12' 0"						
	121	1	***	CLGK	REQUEST AND EXECUTE FT23 (LVDC SECTOR SUM CHECK),	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 1 HRS 10' 0"						
	121	1	CLTC	VURF	VERIFY C-BAND BEACON #2 READY FOR INTERROGATION,	
	111	2	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 5' 0"						
	121	1	CLTC	CUPC	VERIFY ST-124M PREPS COMPLETE, READY FOR FT-06,	(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	
	121	4	***	CUPC	REQUEST AND EXECUTE FT06 (GIMBAL ANGLE READ),	***
	121	5	CLTC	ETMS	VERIFY CIF READY TO SUPPORT TM CHECKS,	
	121	6	CLTC	C1IP C2IP CUIP	VERIFY PREFLIGHT/INFLIGHT CAL MODE AND PREFLIGHT LEVELS TO AUTO FOR VATC	
	121	7	CLTC	C4IP	VERIFY TM CALIBRATE TO AUTO FOR VATC	
	121	8	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT TEST,	
	121	9	CLTC	ETMS BTMI	VERIFY CIF DATA TRANSMISSION LINK - ON,	
	111	10	CLTC	CVTS	VERIFY CCS CARRIER ON FOR LAUNCH,	TCPI
	121	11	CLTC	CGIC	START ELECTROMAGNETIC COMPATIBILITY MONITORING,	TCPI
	121	12	CLTC	RLDE	ENTER/VERIFY CDC MODE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T- 1 HRS 5' 0"						
	121	13	CLTC	C1TC	REQUEST CSA9 SWITCH TO CHANNEL 111 ACTIVE AND REPORT TO CVTS FOR S/A 9 OPERATIONS,	
		13-1			NOTE ---- FROM NOW UNTIL LIFTOFF, CSA9 WILL RESPOND ONLY TO CVTS ON CH, 111,	
	181	14	C1TC	CSAC	REQUEST CSA9 SWITCH TO CHANNEL 111 ACTIVE AND REPORT TO CVTS TO OPERATE S/A 9 AS DIRECTED,	
	111	15	CLTC	CVTS	CSA9 WILL REPORT ON CHANNEL 111, CONFIRM WHEN COMMUNICATIONS HAVE BEEN SATISFACTORILY ESTABLISHED,	TCPI
T- 1 HRS 4' 0"						
	121	1	CLTC	BTMC ETMS	TM TAPE RECORDING ON	
T- 1 HRS 3' 0"						
	121	1	CUPC	CLTC	FT06 COMPLETE TELEMETRY TURN ON ----------	(GT16)
	121	2	***	C1IP C2IP C4IP CUIP	ALL TM TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED OVER CH 121,	***
	121	3	***	C1IP	TM MODE SELECT SWITCH TO ANTENNA,	***
		4	***	C1IP	F1 & P1 RF ON	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
← 1 HRS 31' 0"						
	121	5	***	C1IP	TM CALIBRATOR ON	***
	121	6	***	C1IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT,	***
	121	7	***	C2IP	RF COUPLER TO ANTENNA	***
	121	8	***	C2IP	VERIFY GROUND POWER ON (CAL POWER),	***
	121	9	***	C2IP	F1, F2 & P1 RF ON	***
	121	10	***	C2IP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT,	***
	121	11	***	C4IP	TM MODE SELECT SWITCH TO ANTENNA,	***
		12	***	C4IP	P1, ON THEN AUTO,	***
	121	13	***	CUIP	RF DUMMY LOAD OFF,	***
	121	14	***	CUIP	F1 TM ON	***
		15	***	CUIP	F1 AND P1 RF ON	***
	121	16	***	CUIP	TM CALIBRATE ON	***
	121	17	***	CUIP	TM CAL MODE TO PREFLIGHT AND PREFLIGHT LEVELS TO 50 PERCENT,	***
	121	18	C1PK	CLTC	TELEMETRY TRANSMITTER TURN-ON COMPLETE (DELAY 5 MINUTES MINIMUM FOR TM TRANSMITTER WARM UP)	
	121	19	CLTC	ETMS	START TM PARAMETERS QUICK SCAN CHECK	
← 1 HRS 21' 0"						
	121	1	***	CUPC	REQUEST AND EXECUTE GT16 (AZIMUTH LAYING PROGRAM),	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CDDT ONLY	
- 1 HRS 0' 0"						
	181	1	C1TC	CCRP	START RP-1 LEVEL ADJUST AND LINE INERTING PER V-25389.	
	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	
		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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
• 1 HRS 0' 0"						
		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,	
	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 TO AUTO	(VAPX/ VATS)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 HRS 0' 0"						
	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)
	161	39	C4PS	C4TC	FINAL PROPULSION CHECKS ARE COMPLETE.	
-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 E4FC	(VAFC)
	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)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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	***	CL1K	REQUEST & EXECUTE VATC (LV TM CAL CKS)	***
-55' 0"						
	121	1	CL1K	CLTC	VATC COMPLETE	
		2			NOTE ---- FT06, FT49 & VAFC WILL BE EXECUTED CONSECUTIVELY AND NOT NECESSARILY AT THE CDC TIMES SHOWN,	
	121	3	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ)	***
	121	4	CLTC	ETMS	REPORT OUT OF TOLERANCE PARAMETERS TO BLTM ON CH 127 WHEN ANALYSIS IS COMPLETE	
-52' 0"						
	121	1	CUPC	CLTC	FT06 COMPLETE	
	121	2	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MONITOR PROG)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-51'25"						
	181	1	C1TC	C1PC	VERIFY THERMAL CONDITIONING PURGE ON AND MAINTAIN FOR THE REMAINDER OF THE COUNT.	
-50' 0"						
	121	1	CLGK	CLTC	FT49 COMPLETE, FE50 MONITOR PROGRAM IN PROGRESS	
	111	2	CLTC	CVTS	VERIFY C-BAND BEACON #2 READOUTS COMPLETE AND READY FOR C-BAND BEACON #1.	TCPI
	121	3	CLTC	CUIP	C-BAND #2 INHIBIT ON THEN OFF. C-BAND #1 INHIBIT OFF. C-BAND #2 INHIBIT ON.	
	111	4	CLTC	CVTS	REQUEST RANGE READOUT OF C-BAND BEACON #1. REPORT READOUTS TO VURF ON CHANNEL 137.	TCPI
	121	5	***	C1PC	LOW LOX DOME PURGE ON FOR VAFC.	***
	123	6	***	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.	***
-45' 0"						
	171	1	C2TC	R2DP	CDDT ONLY	*
	121	2	CUFS	CLTC	VAFC COMPLETE	
	123	3	CUFS	V2MS	HYDRAULIC RECORDERS OFF	
	121	4	CLTC	CUFS	START ATTITUDE COMMAND TEST ON CH 123, REPORT WHEN COMPLETE.	(FT10)
	121	5	CLTC	CLGK	GO TO CH 123 TO SUPPORT ATTITUDE COMMAND TEST	(FT10)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-44' 0"						
	121	1	CVTS	CLTC	SC EDS POWER IS ON	# TCP
	121	2	***	C1PC	VERIFY LOW LOX DOME PURGE ON FOR FT10,	***
	123	3	***	CLGK	REQUEST FT10 LADDER OUTPUT TEST, AUTO OPTION.	***
		3-1			*** NOTE THE FT10 AUTO OPTION WILL DRIVE THE GUIDANCE LADDERS TO +/- 2 DEG PITCH, +/- 2 DEG YAW AND +/- 5 DEG ROLL	
	123	4	CUFS	CUCR	VERIFY VALVE CURRENTS AND BETA RESPONSE ON ALL ENGINES	
	123	5	***	CLGK	TERMINATE FT10. REPORT WHEN COMPLETE,	***
	111	6	CLTC	CVTS	REQUEST CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN AND TCS ARM KEY TO C1SP	TCPI (VARS)
	121	7	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS	(VARS)
	121	8	CLTC	C1SP	OBTAIN TCS ARM KEY FROM CPSS	
	181	9	C1TC	CWCP	START FINAL IWS PREPS PER V-36113	
-43' 0"						
		1			NOTE ---- FOR THE NEXT 40 MINUTES, CSA9 REQUIRES EXCLUSIVE CONTROL OF CAMERA 26 & 27	
	111	2	CVTS	CSA9	ON YOUR MARK, RETRACT S/A 9 TO 12 DEGREE PARK POSITION PER V-36085 REPORT WHEN COMPLETE.	TCPI
-42' 0"						
		1		CLTC	*** NOTE TIME FOR ARMING LES	
	121	2	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-40' 0"						
	121	1	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT DRSCR CLOSED LOOP TEST	(VARS)
	111	2	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED)	TCPI (VARS)
	111	3	CLTC	CVTS	CDDT ONLY	*TCPI (VARS)
	111	4	CLTC	CVTS	REQUEST SRO SWITCH TO CHANNEL 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING FLIGHT CODE PLUGS DRSCR CLOSED LOOP TEST ----------	#TCPI (VARS)
✓	121	5	CLTC	BTMC	TM TAPE RECORDER ON FOR DRSCS TEST	(VARS)
		5-1		BTMC	*** NOTE RELOAD AT COMPLETION OF DRSCR TESTS.	(VARS)
✓	121	6	CLTC	RRSC	VERIFY DRSCS RECORDERS ON	(VARS)
	111	7	CLTC	CVTS	LOCAL CMD CARRIER COMING ON.	TCPI (VARS)
		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 - SAFE S&A SWITCH - SAFE	(VARS)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-38' 0"						
	121	1	CUFS	CLTC	FT10 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	***	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-40 MIN OPTION)	***
	121	4	CLTC	C1TC C2TC C4TC CUTC	PREPARE FOR VAPX AND VATS ON STAGE TC CHANNEL, REPORT WHEN COMPLETE,	
	121	5	VARS	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	
		6			DELETED	XB-253 -128
	121	7	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE,	
		7-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON,	
	121	8	C1PK	C1DP C2DP C4DP	SYSTEM STATUS SWITCH - OFF	
	121	9	VARS	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-38' 0"						
	121	10	VARS	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL AND VERIFY	(VAPX)
	121	11	VARS	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	
		11-1		CRSS	*** NOTE LIMITER VOLTAGES RECEIVED,	
	121	12	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	
		12-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	13	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	14	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND	
		14-1		CLTC	**** NOTE DO NOT PROCEED UNTIL S/A 9 RETRACTION HAS STARTED (OTV).	XB-253 -128
	121	15	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	16	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS FOR 3 SECONDS	
	121	17	SRO	ALL	3, 2, 1, - MARK	
	121	18	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	19	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	20	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL & CHARGED WHILE RSCR'S 1 & 2 CUTOFF INDICATIONS WERE ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-38' 0"						
		20-1		CRSS BRFS	*** NOTE CUTOFF RECEIVED	
		20-2		CRSS	*** NOTE ALL EBW'S WERE CHARGED WHILE CUTOFF WAS ON	
	121	21	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL & NOT CHARGED	
		21-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	22	VARS	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED	
	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	
	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	C1PK	CLTC	READY FOR RANGE TRANSMITTER ON, REPORT WHEN TURNED ON,	
	111	31	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 CARRIER ON, REPORT WHEN TURNED ON,	TOPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-38' 0"						
		31-1		CLTC C1PK	*** NOTE - DO NOT PROCEED UNTIL TRANSMITTER IS REPORTED ON	
	121	32	CLTC	C1PK	RANGE TRANSMITTERS ON, ENTER SPR1 TO CONTINUE,	
	121	33	VARS	BRFS	SIG GEN SELECTOR - STANDBY	
		33-1		B1RF B2RF B4RF CRSS	*** NOTE ALL LIMITER VOLTAGES RECEIVED,	
					VAPX PREPS ----------	
	181	1	C1TC	C1NP	VERIFY INTERNAL AND EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER,	(VAPX)
		1-1		C1NP	CDDT ONLY	*
	181	2	C1TC	C1NP	BATTERY INSTALLED ENABLE TO ON - THEN AUTO	(VAPX)
		2-1		C1NP	*** NOTE S-IC READY FOR POWER TRANSFER ON THEN OFF	
	181	3	C1TC	C1NP	VERIFY POWER TRANSFER SWITCH - AUTO,	(VAPX)
	181	4	C1TC	C1NE R1SC	VERIFY READY FOR POWER TRANSFER	(VAPX)
	121	5	C1TC	CLTC	VAPX PREPS COMPLETE,	
	171	6	C2TC	C2NP C2RP C2PM C2PC C2PK R2SC	START VAPX PREPS, REPORT WHEN COMPLETE,	(VAPX)
	171	7		C2NP	BATTERY INSTALLED ON AUTO	(VAPX)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶	▶	▶	▶	▶	▶ CD ONLY ◀	◀
-38' 0"						
	171	8		C2NP	VERIFY MAIN, INSTR, AND RECIRC BUS TRANSFER SWITCHES TO AUTO	(VAPX)
		8-1		C2RP	*** NOTE OK TO OPERATE PUMPS ON	
		8-2		C2NP	*** NOTE LH RECIRC PUMPS ENABLED ON	
	171	9		C2RP	LH PUMP 1-5 TO START THEN AUTO (AT 2 SECOND INTERVALS),	(VAPX)
	171	9-1		C2PC	*** NOTE RECIRC BUS CURRENT INCREASES WITH EACH PUMP START COMMAND	
	171	9-2		C2PK	*** NOTE K412-207 THRU K416-207 ON (RECIRC PMP START CMD)	
	171	10		C2RP	LH PREVALVES TO CLOSE THEN AUTO	(VAPX)
	171	10-1		C2PK	*** NOTE K396-207 THRU K400-207 ON (LH PRE-VALVE CLOSE COMMAND)	
	171	10-2		C2NP	*** NOTE VERIFY 2D511 BUS IS APPROXIMATELY 54 VDC AND 2D511 CURRENT IS LESS THAN 105 AMPS,	
	171	11	C2TC	R2SC C2NP	VERIFY READY FOR VAPX PROGRAM REQUEST	(VAPX)
	121	12	C2TC	CLTC	VAPX PREPS COMPLETE,	
	161	13	C4TC	C4NP C4PP	VERIFY INTERNAL AND EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER,	(VAPX)
	161	14	C4TC	C4NP	BATTERY MONITOR TO AUTO	(VAPX)
	161	15	C4TC	C4NP	CDDT ONLY	* (VAPX)
	161	16	C4TC	C4NP	EMERGENCY POWER TRANSFER OFF	(VAPX)
	161	17	C4TC	C4NP	POWER TRANSFER SWITCH TO AUTO	(VAPX)
	161	18	C4TC	C4EV	VERIFY DRSCR'S 1 & 2 INTERNAL,	(VAPX)
	161	19	C4TC	C4IP	PRE-LAUNCH CHECKOUT GROUP TO AUTO,	(VAPX/ VATS)
		19-1		C4IP	*** NOTE TM READY	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
	161	20	C4TC	C4HY	VERIFY OR POSITION FLT MODE SW IN AUTO.	(VAPX/ VATS)
	161	21	C4TC	C4EP	VERIFY LOX AND LH2 READY TO START INDICATION ON	(VAPX)
	161	22	C4TC	C4NK C4NP C4HY C4PS R4EI R4SC	VERIFY READY FOR POWER TRANSFER TEST.	(VAPX)
	121	23	C4TC	CLTC	VAPX PREPS COMPLETE.	
	151	24	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER	(VAPX)
	151	24-1	CUTC	CUNP	CDDT ONLY	*(VAPX)
	151	25	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER	(VAPX)
	151	26	CUTC	CUNP	POWER TRANSFER TEST TO AUTO	
		26-1		CUTC CUNP	*** NOTE IU TO REMAIN ON INTERNAL POWER FOR 3 MINUTES	
	121	27	CUTC	CLTC	VAPX PREPS COMPLETE.	
					VATS PREPS	
	181	28	C1TC	C1SP	SEQUENCER POWER AUTO	(VATS)
	181	29	C1TC	C1NP	STAGE LOGIC TO AUTO	(VATS)
	181	30	C1TC	C1CS	LOX AND FUEL LEVEL SENSORS TO AUTO	(VATS)
	181	31	C1TC	C1IP	28 VDC RACS POWER AND 400 HZ POWER TO AUTO.	(VATS)
	181	32	C1TC	CSPP C1PP	POWER SUPPLY COMMIT TO AUTO	(VATS)
	121	33	C1TC	CLTC	S-IC READY FOR VATS.	
	171	34	C2TC	C2AE C2EC C2IP C2NP C2RP C2PU C2FC C2SP	START VATS PREPS. REPORT WHEN COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-38' 0"						
	171	35		C2NP	STAGE SELECT TO OFF	(VATS)
	171	36		C2NP	CDDT ONLY *	(VATS)
	171	37		C2RP	LH PUMPS 1 THROUGH 5 TO AUTO.	(VATS)
	171	38		C2RP	LH PREVALVES TO AUTO.	(VATS)
	171	39		C2AE	HE BOTTLE SUPPLY VALVE TO AUTO.	(VATS)
	171	40		C2AE	HE BOTTLE SUPPLY LINE VENT TO AUTO.	(VATS)
	171	41		C2AE	START TANK SUPPLY VALVE TO AUTO.	(VATS)
	171	42		C2AE	START TANK SUPPLY LINE VENT TO AUTO.	(VATS)
	171	43		C2AE	START TANK ALL VENT TO AUTO.	(VATS)
	171	44		C2AE	TCH PURGE TO AUTO.	(VATS)
	171	45		C2AE	TCH CHILLDOWN TO AUTO.	(VATS)
	171	46		C2PU	VERIFY ALL WET SIMS TO AUTO	(VATS)
	171	47		C2EC	MAINSTAGE OK'S TO AUTO FOR ALL ENGINES.	(VATS)
	171	48		C2SP	LOX DISCONNECT PRESS SW TO AUTO.	(VATS)
	171	49		C2SP	LOX SUPPLY VALVE SW TO AUTO.	(VATS)
	171	50		C2NP	RACS POWER TO AUTO	(VATS)
	171	51		C2FC	ALL CONTROL SWITCHES TO AUTO EXCEPT AUX PUMPS TO ENABLE.	(VATS)
	171	52		C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	(VATS)
	121	53	C2TC	CLTC	S-II READY FOR VATS.	
	161	54	C4TC	C4PP	POWER SUPPLY COMMIT TO AUTO	(VATS)
	161	54-1	C4TC	C4PP	PLUG SUPERVISION POWER TO AUTO	(VATS)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-38' 0"						
	161	54-2	C4TC	C4SP	LOX & LH2 VENT SWITCHES TO AUTO	(VATS)
	151	55	CUTC	CUCP	VERIFY PUMP PRESSURE SWITCH ACTIVATE - AUTO	(VATS)
	151	56	CUTC	CUIP	Q-BALL POWER TO AUTO Q-BALL HEATER POWER TO AUTO	(VATS)
		56-1		CUIP	*** NOTE Q-BALL POWER ON	
	151	57	CUTC	CUES	THRUST OK INHIBIT A & B SWITCHES TO AUTO	(VATS)
	151	58	CUTC	ALL	ALL PERSONNEL INVOLVED IN POWER TRANSFER AND VATS PREPS RETURN TO CH 121	
	121	59	CUTC	CLTC	IU READY FOR VATS,	
	121	60	CLTC	RLDE	GIVE A DEMAND PRINTOUT ON ALL STAGE PRINTERS, REPORT WHEN COMPLETE,	
-35' 0"						
	181	1	C0RP	C1TC	RP-1 LEVEL ADJUST AND LINE INERTING ARE COMPLETED PER V-25389	
-33'30"						
		1		C2RP	VERIFY LOX HE INJ RECVR PRESS METER AT APPROXIMATELY 3000 PSIA,	
		2		C2RP	LOX HE INJ 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	
	161	4	C4TC	R4EI R4HY R4SC	STRIP CHARTS TO FAST	(VAPX)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-33' 0"						
	121	1	C1PK	CLTC	VARS COMPLETE	
	111	2	C4TC	CVTS	DRSCR TEST IS COMPLETE, LOCAL COMMAND CARRIER IS OFF,	TCPI
	121	3	C4TC	BTMC	TM TAPE RECORDER OFF AND RELOAD	
		3-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (COUNTDOWN ONLY)	
-32' 0"						
	111	1	C4TC	CVTS	REQUEST RANGE MONITOR C-BAND AND GMIL MONITOR IU CCS DURING POWER TRANSFER TEST	TCPI
		2			DELETED	C-12-131
		3		C1NK C2NK C4NK CUNK	MONITOR CONSOLE 12 DURING VAPX	
	121	4	C4TC	C1TC C2TC C4TC CUTC	AFTER TRANSFER TO INTERNAL/EXTERNAL SECURE STAGES FROM POWER TRANSFER ON STAGE TC CHANNELS,	(VAPX)
		4-1		ALL	*** NOTE S-IC & S-II STAGES ON INTERNAL POWER FOR 30 SECONDS; S-IVB FOR 45 SECONDS; IU FOR 3 MINUTES, REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125,	
	181	5	CWCP	C1TC	FINAL IWS PREPS ARE COMPLETE,	
-31'30"					POWER TRANSFER TEST PROGRAM REQUEST NOTE IF A TEST IS TO BE PERFORMED MANUALLY, THE	
		1				

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-31'30"					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	2	CLTC	C1PK	REQUEST & EXECUTE VAPX (POWER TRANSFER) (CDDT/CD OPTION).	
		2-1		CUCR CUGA	*** NOTE VAPX WILL TORQUE ROLL GYROS TO +9 DEG/SEC CAUSING THE S-IC ENGINES TO GIMBAL	
	123	3	VAPX	CUGA	S-IC ATTITUDE RATE COMMAND +9 DEG/SEC ROLL AND HOLD DURING POWER TRANSFER.	
	161	4	VAPX	C4NP	BATTERY MONITOR ENABLE	
	161	5	VAPX	C4HY	FLIGHT MODE ON THEN AUTO	
	161	6	VAPX	C4EP	DELAY (FOR HYD SYS STABILIZATION) THEN LH2 CHILLDOWN PUMP ON THEN AUTO	
	161	7	VAPX	C4EP	DELAY 8 SECONDS (FROM LH2 CHILLDOWN PUMP ON) THEN LOX CHILLDOWN PUMP ON THEN AUTO.	
	161	8	VAPX	C4EP	DELAY 5 SECONDS (FROM LOX CHILLDOWN PUMP ON) THEN LOX AND LH2 PREVALVES CLOSED THEN AUTO.	
-30' 0"					POWER TRANSFER TEST ----------	
	121	1	CLTC	ALL	ALL RECORDERS SUPPORTING POWER TRANSFER GO TO FAST AT COUNT "3".	
	121	2	C1PK	ALL	VAPX WILL TRANSFER STAGES INTERNAL IN 5 SEC.	
	121	3	C1PK	ALL	5-4-3-2-1, MARK	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
-30' 0"						
	121	4	VAPX	C1NP C2NP C4NP CUNP	TRANSFER TO INTERNAL POWER,	
		4-1		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		4-2		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	
		4-3		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
		4-4		C1NP	CDDT ONLY	*
	181	5	C1TC	C1FR	VERIFY POWER TRANSFER COMPLETE (ALL STAGES) - 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 BUSSES 1D11 AND 1D21, RECORD VOLTAGE AND CURRENT FOR BUSSES 1D10 & 1D20.	
	153	6	RLDE		ESTABLISH COMMUNICATION WITH HOUSTON VIA CH 153 AND GIVE HOUSTON CDC/GMT TIME CORRELATION.	
		6-1			*** NOTE IF ANY HOLD IS GREATER THAN 10 MIN, GIVE ANOTHER CDC/GMT TIME CORRELATION TO HOUSTON	
	181	7	C1TC	CECS	START S-IC FWD COMPARTMENT TEMPERATURE INCREASE PER V-36074.	
	181	8	C1TC	CPRK	REDUCE BE01 SCAN RATE TO 1 MINUTE INTERVALS	
		9		R2SC	*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL: MAIN BATT CURRENT (XM0021-207) _____ MAIN DC BUS VOLTAGE 2D11 (XM0020-207) _____	

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
-30' 0"						
					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)	
		9-1		C2NP	*** NOTE MAIN, INST & RECIRC BUSES EXTERNAL ON	
		9-2		C2NP	*** NOTE POWER TRANSFER COMPLETE OFF	
-29'30"						
	181	1	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
		1-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		1-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
	181	2	C1TC	C1NP	BATTERY INSTALLED ENABLE SWITCH TO AUTO	
		2-1		C1NP	*** NOTE BUS 1D121 ON	
		2-2		C1NP	*** NOTE BUS 1D211 ON	
		2-3		C1NP	*** NOTE BUS 1D111 ON	
		2-4		C1NP	CDDT ONLY	
	181	3	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE & 1D10, 1D20 VOLTAGE AND CURRENT DURING INTERNAL, THEN REPORT TO CLES ON CH 125.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-29'30"						
	181	4	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	5	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
	171	6	C2TC	C2RP	RECIRC RESET TO RESET, THEN INHIBIT	
		6-1		C2PC	*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS	
	171	7	C2TC	C2RP	LOX HE INJECTION TO AUTO	
		7-1		C2RP	*** NOTE LOX HE INJ OFF - OFF LH2 PREVALVES OPEN ON, LH2 PUMP INLET PRESSURE DECAY,	
	121	8	C2TC	CLTC	S-II POWER TRANSFER TEST IS COMPLETE	
	171	9	C2TC	R2SC	READOUT RECORDED BUS VOLTAGES TO CLES ON CH 125;	
-29'15"						
		1		C4NP	*** NOTE AFTER 45 SECONDS ON INTERNAL THE FOLLOWING 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,	
		3		C4EP C4HY	*** NOTE 30 SECONDS AFTER POWER TRANSFER EXTERNAL THE FOLLOWING WILL OCCUR:	
	161	3-1	VAPX	C4EP	LOX & LH2 PREVALVES OPEN THEN AUTO	
	161	3-2	VAPX	C4EP	LOX & LH2 CHILLDOWN PUMPS OFF THEN AUTO	
	161	3-3	VAPX	C4HY	FLIGHT MODE OFF THEN AUTO (VERIFY CHILLDOWN PUMPS OFF BEFORE TURNING OFF HYD PUMP)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-29'15"						
	161	4	C4TC	R4SC	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	161	5	C4TC	C4DE	TRANSMIT THE FOLLOWING DEE TIMES TO C4PS: S/S CH 83 READ COMMAND ON 2647 AND 2648 OFF 1710 AND 1711 ON	
	121	6	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE	
-27' 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	
	121	5	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE,	
	121	6	CLTC	ALL	RECORDERS SUPPORTING POWER TRANSFER TO SLOW	
	123	7	CUFS	CUCR CUGA	VERIFY ATTITUDE RATE COMMAND UNDISTURBED DURING POWER TRANSFER	
	123	8	CUFS	ALL	ALL FLIGHT CONTROL PERSONNEL RETURN TO CH 121	
		9		RRSC	*** NOTE DRSCS MEASUREMENTS OK DURING PWR TRANSFER	
	181	10	***	C1CS	POSITION LOX LEVEL SIMULATE WET SWITCHES TO SIMULATE	***
	121	11	C1PK	CLTC	VAPX & VALL COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-27' 0"						
		12		CLFK C4PK C4NK C2PK C2NK	TERMINATE DISPLAY DESCRIPTIONS ON CONSOLE PAGE A, DO NOT RECALL WHILE VATS IS EXECUTING,	(VATS)
	161	13	C4TC	C4AL	REMOVE SWITCH LOCKS FROM APS VALVE POWER SWITCH AND POSITION SWITCH TO AUTO	(VATS)
	121	14	C4TC	CLTC	S-IVB READY FOR VATS,	
	121	15	CLTC	CRSS	VERIFY PROCEED ON & BYPASS IS OFF	
		15-1		C1FR	*** NOTE RANGE SAFE -- ON	
		15-2		CUEV	*** NOTE BOTH SRO/RSO PROCEED INDICATIONS ON	
		16		CUPC	NOTE ---- THE FOLLOWING SEQUENCE WILL BE PERFORMED ONLY IF THE SANDERS DISPLAY CONSOLES ARE SUPPORTING,	
		17		CUPC	EXECUTE GE01 TO AGREE WITH PLOT AZIMUTH,	
		17-1		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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		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 ON THE INDICATED COMM CH.	
-26' 0"						
	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 C339-115, 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-26' 0"						
	181	10	C1PE	C1TC	POGO SUPPRESSION SYSTEM PRECHARGE COMPLETE,	
	181	10-1	C1TC	C1CS	POSITION LOX LEVEL SIMULATE SWITCHES TO OFF THEN AUTO	B-317 -134
	161	11	xxxx	C4PP	PLUG SUPERVISION POWER OFF THEN AUTO	xxxx
-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	CUIP	C-BAND BEACON #1 INHIBIT - ON C-BAND BEACON #1 & #2 INHIBIT - OFF	
-24' 0"						
	171	1	C2TC	C2AE	MONITOR ENGINE CHILLDOWN BY THE CLOCK AT T-22 MINUTES	

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. IN THE EVENT OF A HOLD BETWEEN T-22' AND T-3'7" TURN TO APPENDIX B FOR DESCRIPTION OF OPTIONS AVAILABLE AND SEQUENCES TO BE PERFORMED. **********	
-21'58"						
	171	1	***	C2AE	START TANK ALL VENT TO ALL VENT	***
		2	***	C2AE	START TANK SUPPLY VALVE TO PRESSURIZE	***
		2-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - ON	
	171	3	C2AE	C2TC	START TANK CHILLDOWN IN PROGRESS	
	121	4	C2TC	CLTC	S-II START TANK CHILLDOWN IS IN PROGRESS	
-20'30"						
	121	1	CLTC	ALL	VAMC WILL START EXECUTING AT 19' 55", FLUCTUATING MEASUREMENTS MAY OCCUR DURING NEXT 2 MINUTES.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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	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,	
-18'50"						
		1	***	C4HY	FLIGHT MODE = ON THEN AUTO	***
	161	2	C4TC	R4HY	REPORT WHEN HYDRAULIC SYSTEM IS STABILIZED	
-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,	***
	261	3	CLTC	BOSC	BRING INDUSTRIAL WATER SYSTEM SECOND PUMP TO OPERATIONAL PRESSURE OF 165 PLUS OR MINUS 10 PSIG, REPORT WHEN COMPLETE,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-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)	
-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.	
	121	3	CUFS	C1PK	ENTER $PT WHEN VAAR DISPLAYS DISA TABLE ERROR MESSAGE	A
-15' 0"						
	121	1	CLFK	CLTC	VAAR COMPLETE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14'30"						
		1		C4ET	CT HELIUM CONT SOL ON AND OFF AT C4PS COMMAND,	
		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	C1TC	ECOP	START GUIDANCE REAL TIME REDUCTION PROGRAM	(FT42)
	181	4	***	C1NP	STAGE LOGIC RESET	***
		4-1		C1NP	*** NOTE STAGE LOGIC ZERO	
	121	5	***	C1SP	SEQUENCER POWER ON	***
		5-1		C1SP	*** NOTE ALL VOLTAGES NORMAL	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-14' 0"						
		5-2		C1SP	*** NOTE SEQUENCER RESET	
	171	6	***	C2RP	VERIFY OK TO OPERATE RECIRC PUMPS ON	***
-13'58"						
	121	1	***	C1FK	REQUEST & EXECUTE KAF3 (THRUST VECTOR READ)	***
-12'58"						
	121	1	C1FK	C1TC	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	***

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)	***
					NOTE ---- IF THE FOLLOWING MESSAGE "GMT NOT LOADED DUE TO DISAGREEMENT BETWEEN READINGS" IS DISPLAYED, PERFORM THE FOLLOWING SUB-SEQUENCES IMMEDIATELY:	
	121	1-1		CLGK	ENTER $PB (FT42 RESTART)	
	121	1-2	CLGK	CLTC	REQUEST C1PK RESTART VATS WHEN ATOLL ERROR 86 OCCURS.	
	121	1-3	CLTC	C1PK	ENTER $PA (VATS RESTART)	
	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	CLTC	C1PU	START S-IC FUEL JACKET TOPPING PER V-34012	
	261	2	CLTC	BOSC	PLACE INDUSTRIAL WATER SAFETY OVERRIDE SWITCH TO OVERRIDE	TCP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
-10'45"						
	181	1	C1TC	R1SC	STANDBY TO REPORT ANY CHANGES IN POGO MEASUREMENTS (C335-115, C327-115, C339-115 & C331-115)	
	181	2	C1TC	C1LO	VERIFY S-IC LOX BUBBLING TO DUCTS 1 & 3,	
	181	2-1	C1TC	C1CS	POSITION LOX LEVEL SIMULATE SWITCHES TO SIMULATE WET.	B-317 -134
		3			********CAUTION******** * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	
	181	4	C1TC	C1RP	VERIFY LOX BUBBLING HAS BEEN ON A MINIMUM OF ONE MINUTE, THEN OPEN POGO SUPPLY VALVES 1 & 2 FOR ONE MINUTE THEN CLOSE POGO SUPPLY VALVES 1 & 2,	
-10' 0"						
	121	1	CLGK	CLTC	FT42 COMPLETE AND LVDC IN PREPARE TO LAUNCH MODE	
	111	2	CLGK	CVTS HFLT SRD	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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 9'55"						
		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	
-9'30"						
	181	1	C1RP	C1TC	POGO SUPPLY VALVES 1 & 2 ARE CLOSED	B-317-134
	181	2	C1TC	C1CS	POSITION LOX LEVEL SIMULATE SWITCHES TO OFF THEN AUTO	B-317-134
- 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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 7'58"						
	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, * * * ******************************	
		7-2			**********NOTICE********** * * * IF A HOLD IS CALLED * * BETWEEN T-7' 58" AND * * T-3' 7" ALL CHILLDOWNS * * SHALL CONTINUE UNLESS * * HOLD OPTION 2 OR 3 IS * * ANNOUNCED * * * ******************************	
	121	8	C2TC	C1TC	S-II TCH CHILLDOWN IN PROGRESS	
		8-1		C2AE	*** NOTE ADVISE C2TC HOLD TIME REMAINING BEFORE SAFING IS REQUIRED	
		9		C1FC	*** NOTE ENGINES IN NULL POSITION	
		10		C1HP	*** NOTE HYDRAULIC PRESSURE 1590 +/- 80 PSIA	
	118	11	C3AC	CHCU	START CIRCUIT BYPASS TO BYPASS AND VERIFY	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 7'58"						
	118	12	CSAC	CSA1	LOWER LOX LINE PURGE VALVE SWITCH TO OPEN & VERIFY	
	118	13	CSAC	CSA1	UPPER LOX LINE PURGE VALVE SWITCH TO OPEN & VERIFY	
	118	14	CSAC	CSA1	CDDT ONLY	*
	118	15	CSAC	CSA1	CARRIER CONNECT & RETRACT ARMING SWITCH TO ARM	#
	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.	
- 6'30"						
	121	1	CLTC	CUES	EDS MODE TO LAUNCH.	
		1-1		C1FR CUES	*** NOTE EDS READY.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 6'30"						
	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	
	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	MLC THERMAL OVERRIDE SWITCH ON (SENSE CONTROL PANEL BIT 22)	I-173 -113
	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	SAFE & ARM TO ARM FOR 2 SECONDS THEN AUTO,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T- 5'30"						
		4-1		CRSS	*** NOTE ALL S&A ARM INDICATORS ON,	
		4-2		C1FR	*** NOTE ORDNANCE PREP COMPLETE,	
		4-3		C2TC	*** NOTE PD SYSTEM READY,	
		4-4		C4TC	*** NOTE PD SYSTEM READY,	
		4-5		C1NP	*** NOTE READY FOR LAUNCH POWER	
	121	5	C4TC	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,	
T- 5'25"						
	121	1	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY AND VERIFY	***
T- 5' 7"						
		1	***	C2SP	LOX DISCONNECT PRESSURE - ON	***
		2	***	C2SP	LOX SUPPLY VALVE - OPEN	***
		2-1		C2SP	*** NOTE LH2 LOW PRESS VENT MODE - ON,	
T- 5' 0"						
		1			NOTE ---- FOR THE NEXT 5 MIN CSA1 REQUIRES EXCLUSIVE CONTROL OF CAMERA 11.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 5' 0"						
		2	***	C4EP	CLOSE START TANK SUPPLY VALVE,	***
		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 IS COMPLETE	
	161	4	C4TC	C4NP	SWITCH SELECTOR - INHIBIT	
	161	5	C4TC	ALL	ALL S-IVB PERSONNEL RETURN TO CH 121,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4'37"						
		1	***	C2AE	START TANK ALL VENT TO OFF	***
		2	***	C2AE	HELIUM BOTTLE SUPPLY VALVE TO OFF	***
		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.	I-171-112
- 4'10"						
	121	1	***	CUES	THRUST OK INHIBIT A & B SWITCHES TO OFF	***
		1-1			*** NOTE LV ENGINE 1 THROUGH 5 LIGHTS ON IN SC	# TCP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 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.	B-314 -124

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
T- 3'40"						
	111	1	CLTC	CVTS	CDDT ONLY	* TCP
	121	2	C1FR	CLTC	PREPARATIONS COMPLETE ON.	
		3			DELETED	I-176-121
		3-1			DELETED	I-176-121
T- 3'20"						
	111	1	CVTS	ALL	CDDT ONLY	* TCP
		2			**********CAUTION********** * * * ALL LV STATIONS MONITOR * * CHANNEL 121 DURING * * TERMINAL SEQUENCE. * * * **********CAUTION**********	
		3	***	C2SP	LOX SUPPLY VALVE - CLOSE	***
		4	***	C2AE	START BOTTLE SUPPLY VALVE TO OFF	***
		4-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
		5	***	C2AE	START TANK SUPPLY LINE VENT TO VENT	***
		5-1		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - ON	
T- 3'10"						
	121	1		C1FR	INITIATE FIRING COMMAND AND VERIFY (DO NOT RELEASE UNTIL TCS STARTS, AN OPTION 2 OR 3 HOLD IS ANNOUNCED OR SAFING PROCEDURE INITIATED)	
		1-1		C1FR	*** NOTE FIRING COMMAND ENABLED (C) DEE 0128.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 6"						
	121	1	***	CLCP	REQUEST & EXECUTE NT60 (REDLINE MONITOR PROGRAM)	***
		1-1	CLVN		COMPUTER TEST SWITCH OFF AND VERIFY	I-176-121
		1-2		ALL	*** NOTE DISREGARD COMPUTER TEST DISCRETE LIGHT CHANGES	I-176-121
	121	2	C1FR		VERIFY FIRING COMMAND IS ON (H) DEE 3171	
		2-1		C1FR	*** NOTE TCS READY OFF (C) DEE 0099	
		2-2		C1SP	*** NOTE TCS RESET OFF (C) DEE 3175	
		2-3		C1SP	*** NOTE TCS OUTPUT ON AND PULSE OK ON (C) DEE 0055 (H) DEE 3176 (MASKED & OMITTED)	
		2-4		CSAC	*** NOTE T-186 TCS STARTED - ON	
		3			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			S-II LOX REPLENISH TERMINATE	
		4-1		C2OU	*** NOTE FLIGHT MASS ON	
		4-2		C2PM CCLD	*** NOTE S-II REPLENISH COMPLETED ON	
		4-3		C2PM CPO2	*** NOTE S-II LOX DEBRIS VALVE CLOSED (DEE 1122)	
		4-4		C2OU	*** NOTE REPLENISH VALVE ENABLED OFF	
		4-5		CPO2	*** NOTE S-II REPLENISH CLOSED,	
		4-6		CPO2 C2PM	*** NOTE S-II LOX FILL & DRAIN CLOSED (DEE 1124)	
		4-7		CPO2 C2PM	*** NOTE S-II UMB, VENT VALVE OPEN	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 6"						
		4-8		C2PM	*** NOTE LOX UMB, PURGE VALVE OPEN (DEE 1125)	
		4-9		C2EV	*** NOTE LOX PROP READY FOR LAUNCH ON	
		4-10		CCLO	*** NOTE S-II UMB, PURGE - ON,	
		5			S-IVB LOX REPLENISH TERMINATION	
		5-1		C4OU	*** NOTE FLIGHT MASS ON,	
		5-2		CCLO C4PR	*** NOTE S-IVB REPLENISH COMPLETED (H)	
		5-3		C4OU	*** NOTE REPLENISH VALVE ENABLED OFF,	
		5-4		CPO2 C4PR	*** NOTE S-IVB REPLENISH CLOSED (H)	
		5-5		CPO2 C4PR	*** NOTE S-IVB LOX FILL & DRAIN CLOSED (H)	
		5-6		CPO2 C4PR	*** NOTE S-IVB UMB, VENT OPEN,	
		5-7		CCLO	*** NOTE S-IVB UMB, PURGE ON,	
		5-8		R4PS	*** NOTE DEMAND ON D-14	
		6			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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 6"						
		6-5		CPH1	*** NOTE S-II UMB LINE PURGE VALVE (A9147) OPEN,	
		6-6		C2PM	*** NOTE LH2 UMB PURGE VALVE OPEN, (DEE 1131)	
		6-7		CCLH	*** NOTE S-II UMB, LINE DRAIN ON	
		7			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			S-IC LOX REPLENISH TERMINATE	
		8-1		C1OU	*** NOTE FLIGHT MASS ON	
		8-2		C1OU	*** NOTE REPLENISH VALVE ENABLE OFF	
		8-3		CPO2	*** NOTE S-IC REPLENISH CLOSED	
		8-4		CPO2	*** NOTE S-IC FILL & DRAIN (B239) CLOSED	
		8-5		CPO2	*** NOTE S-IC UMB, VENT (A213) OPEN	
		8-6		CPO1	*** NOTE REPLENISH LINE FLOW REMAINS AT 800 GPM,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3' 6"						
		8-7		CCLO C1LO	*** NOTE S-IC LOX REPLENISH COMPLETE	
		8-8		CCLO	*** NOTE S-IC UMB PURGE ON	
- 2'47"						
		1			S-IVB LOX TANK PREPRESS SEQUENCE	
		1-1		C4SP	*** NOTE LOX TANK PRESSURIZING (H)	
		1-2		C4SP	*** NOTE S-IVB LOX VENT CLOSES 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			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,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1'42"						
		1			S-IC HYDRAULICS COMMIT AND CHECK *1D161	
		1-1		C1HP	*** NOTE HYDRAULIC UNIT COMMITTED ON (DDAs) DEE 3245	
- 1'37"						
		1			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			S-IC TIME FOR LOX PREPRESS	
		1-1		C1LO	*** NOTE S-IC FLIGHT VENTS CLOSED (C) DEE 0014, 0017,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1'12"						
		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	
		2		CPH1	*** NOTE S-II/S-IVB SERVICE ARM PURGE VALVE (A2983) OPEN	
- 1' 0"						
		1			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		C2TC	*** NOTE S-II READY FOR LAUNCH - ON (DEE 1555)	
		1-6		CSAC	*** NOTE T-60 S/A 1 INHIBITS - ON	
- 0'50"						
		1			POWER TRANSFER INTERNAL	
	121	2	C1FR		VERIFY POWER TRANSFER COMPLETE (C) DEE 0172,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 0'50"						
		2-1		C1NP C2NP C4NP CUNP	*** NOTE POWER TRANSFER COMPLETE (S-II DEE 3363) (S-IVB DEE 1843 ON)	
		2-2		CUDE	*** NOTE DEE 0779 AND 0777 ON, 0781 OFF,	
		2-3		CUCP	*** NOTE PUMP PRESSURE SWITCH ACTIVATE INDICATION OFF (DEE 0655 OFF)	
- 0'48"						
		1		C1LO	*** NOTE S-IC LOX PREPRESS IS OK (C) DEE 0015,	
		2		C1RP	*** 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			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			S-IVB TIME FOR DIRECTIONAL VENT TO FLIGHT POSITION	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 0'40"						
		2-1		C4SP	*** NOTE S-IVB DIRECTIONAL VENT TO FLIGHT POSITION (C) DEE 1714 ON	
		2-2		C4TC	*** NOTE S-IVB READY FOR LAUNCH (C) DEE 1966 ON	
- 0'30"						
		1			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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 0'30"						
		1-9		C2RP	*** NOTE PNEUM RECVR SUPPLY VALVE OPEN-OFF, (DEE 1067)	
		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	
- 0'22"						
		1			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	
'20"						
		1			CLOSE S-IC LOX INTERCONNECT VALVES	
		1-1		C1LO C1FR	*** NOTE LOX INTERCONNECT VALVES CLOSED, (C) DEE 2027, 2029, 2031,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 0'17"						
		1			GUIDANCE REF RELEASE PD RSCR ENABLE	
	121	2	CUEV		VERIFY GUIDANCE RELEASE (DEE 0869 ON),	
		2-1		C1FR	*** NOTE IU READY FOR LAUNCH - ON,	
		2-2		C1FR	*** NOTE PREPS COMPLETE - ON (C) DEE 0159,	
	153	3	RLDE		GRR OCCURRED AT ____ SEC ____ MS	
	153	4	HELT		VERIFY RECEIPT OF GRR TIME	
		4-1		C1DP C2DP C4DP	*** NOTE RSCR'S 1 & 2 PD BLOCKED OFF, (DEE 10_{12}, 10_{13}) (C) DEE 0038, 0039, DEE 1673, 1674	
		4-2		C4ET	*** NOTE NON PROGRAMMED CUTOFF NOT ON DEE 1948 NOT ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 0' 16.2 "						
		1			S-IC FORWARD SERVICE ARM RETRACT ----------	
		1-1		CSA2	*** NOTE ALL SUPPLY & RETURN VALVES OPEN (DDAS) DEE 3882 ON	#
		1-2		CSAC	*** NOTE T-16.2 S/A 2 RETRACT COMMAND - ON	
		1-3		C1NP	*** NOTE UPPER PLUGS CONNECTED OFF	#
- 0'11"						
		1-4		CSAC CSA2	*** NOTE S-IC FWD AT SAFE ANGLE (DDAS) DEE 3874 ON	#
		1-5		CSAC C1FR	*** NOTE LAUNCH SUPPORT READY FOR IGNITION. (DDAS) DEE 4006 ON	#
		1-6		CSAC CSA1	*** NOTE S-IC INTERTANK AT SAFE ANGLE (DDAS) DEE 3851 ON	#
	121	2	C1FR		READY FOR IGNITION IS ON (C) DEE 0160	#
- 0' 8.9 "						
		1			S-IC TIME FOR IGNITION ----------	#
	121	2	C1FR		.IGNITION SEQUENCE IS STARTED.	#
		2-1		C1NP	*** NOTE POWER TRANSFER MOTOR BUS - OFF (C) DEE 0011	#
		2-2		C1FR	*** NOTE TIME FOR IGNITION ON (C) DEE 0165	
		2-3		C4SP	*** NOTE S-IVB COLD HELIUM SUPPLY CLOSES	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
0' 8.9 "						
		2-4		C4SP	*** NOTE S-IVB COLD HELIUM SUPPLY VENT OPENS	#
		2-5		C2AE	*** NOTE TCH 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 TCH 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	#
0' 8.8 "						
		1			START S-IC IGNITER NO. 1	#
0' 8.7 "						
		1			START S-IC IGNITER NO. 2	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
0' 6.7"		1			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' 6.55"		1			START S-IC ENG 105	#
		1-1		C1FR	*** NOTE ENG 105 START ON (C) DEE 0222	#
0' 6.34"		1			START S-IC ENG 101	#
		1-1		C1FR	*** NOTE ENG 101 START ON (C) DEE 0230	#
0' 6.27"		1			START S-IC ENG 103	#
		1-1		C1FR	*** NOTE ENG 103 START ON (C) DEE 0228	#
0' 6.14"		1			START S-IC ENG 102	#
		1-1		C1FR	*** NOTE ENG 102 START ON (C) DEE 0226	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
0' 5.97"						
		1			START S-IC ENG 104	#
		1-1		C1FR	*** NOTE ENG 104 START ON (C) DEE 0224	#
0' 5"						
		1			S-IC ENG START SOLENOIDS OFF; GROUND CAMERA CONTROL ARM	#
		1-1		C1FR	*** NOTE ENG 1-5 START - OFF.	#
		2		BPHO	*** NOTE GROUND CAMERA CONTROL ON.	#
0' 4.70"						
		1			S-IC LOX SECONDARY PREPRESS ON	#
		1-1		C1LO	*** NOTE LOX SECONDARY PREPRESS VALVE OPEN ON (C) DEE 0267	#
0' 2.75"						
		1			S-IC FUEL AUX PREPRESS ON	#
		1-1		C1RP	*** NOTE S-IC FUEL AUX PREPRESS ON, (C) DEE 0108, 0109	#
0' 1.60"						
	121	1	C1FR		ALL ENGINES RUNNING (C) DEE 0120	#
0' 0.05"						
		1			TIME FOR THRUST CHECKS	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					[redacted]	
- 0' 0"						
		1			S-IC TIME FOR COMMIT AND S-II ELEC DEADFACE COMPLETION	#
		1-1		C1FR	*** NOTE TIME FOR COMMIT (C) DEE 0117	#
	121	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.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
- 0' 0"						
		2-11		C2EV	*** NOTE COMMIT BUS 2D131 OFF.	#
		2-12		C2EV	*** NOTE IND. BUS 2D119 OFF.	#
		2-13		C2EV	*** NOTE S-IC COMMIT.	#
		2-14		CSAC	*** NOTE COMMIT - ON	#
+ 0' 0"						
		1		C2EV	*** NOTE FWD & AFT UMBILICAL PLUG CONN OFF.	#
	121	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).	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
+ 0' 0"						
		2-9		CWCP	MANUALLY OPERATE LUT DECK FLUSH VALVE TO OPEN POSITION AS LIFTOFF ANNOUNCED OVER OIS, PLUS OPERATOR COUNT OF 2 SECONDS.	#
+ 0' 2"						
		1		C2PM CPH1	*** NOTE S-II LH2 DEBRIS VALVE CLOSED.	#
		1-1		CWCP	*** NOTE FLAME DEFLECTOR QUENCH ON (20,000 GPM).	#
		1-2		CWCP	*** NOTE LUT DECK FLUSH AND QUENCH ON (50,000 GPM).	#
+ 0' 5"						
	181	1	C1TC	CSPP	PLACE LSE POWER OVERRIDE SWITCH TO OFF AND VERIFY.	#
+ 0' 8"						
		1		CHCU	SECURE PUMPS #1 & #2. SET SYSTEM POWER SWITCH TO OFF.	#
		2		CUCP	GSCU'S OFF	#
+ 0'32"						
		1		CWCP	*** NOTE FLAME DEFLECTOR QUENCH OFF	#
		1-1		CWCP	*** NOTE LUT DECK FLUSH ON (20,000 GPM)	#
+ 0'55"						
	121	1	CLTC	C1TC C2TC C4TC CUTC	TAKE YOUR PERSONNEL TO STAGE TC CHANNELS FOR IMMEDIATE SECURING OPERATIONS. REPORT WHEN COMPLETE.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
+ 0'55"						
	181	2	C1TC	CPDC	SECURE PNEUMATIC SYSTEM PANEL POWER	#
+ 1' 0"						
	151	1	CUTC	BGCC	THERMAL OVERRIDE SWITCHES - OFF (SENSE CONTROL PANEL BITS 21 & 22)	#
	181	2	C1TC	C1PE C1NE	START S-IC PANEL SECURING PER V-21036 (POST LAUNCH CHECKLIST)	#
	181	3	C1TC	CSAC	SECURE SYSTEMS POWER ON CH 118.	#
	118	4	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8 CSA9 CSAD CHDA	SYSTEM POWER SWITCHES - OFF	#
	181	5	C1TC	CTS1	SAFE TSM'S PER V-36039.	#
	161	6	C4TC	C4SP	CLOSE COLD HELIUM SUPPLY	#
	161	7	C4TC	C4SP	CLOSE LOX PREPRESS VALVE	#
	161	8	C4TC	C4SP	CLOSE CONTROL & REPRESS SUPPLY	#
	161	9	C4TC	C4EP	CLOSE THRUST CHAMBER CHILLDOWN SUPPLY	#
	161	10	C4TC	C4HN	CLOSE COLD HELIUM CROSSOVER VALVE	#
	161	11	C4TC	C4AL	CLOSE 3000 PSI SUPPLY	#
	171	12	C2TC	C2AE	TCH CHILLDOWN TO OFF	#
	171	13	C2TC	C2SP	LOW LEVEL PURGE VALVE TO CLOSE	#
	171	14	C2TC	C2SP	SHROUD PURGE VALVE TO CLOSE	#
	171	15	C2TC	C2GP	GH SUPPLY VALVE TO CLOSE	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 1' 0"						
		15-1		C2TC	*** NOTE FOR COMPUTER DOWN CONDITION, REQUEST CLVN TO ISSUE THE FOLLOWING MDO'S: MUX 22, ADDRESS 4, DATA BIT 7 UP 1111 OFF (LOW LEVEL PURGE VALVE CLOSE) MUX 22, ADDRESS 2, DATA BIT 16 UP 1072 OFF (SHROUD PURGE VALVE CLOSE)	#
	171	16	C2TC	C2AE	START TANK SUPPLY VALVE TO OFF	#
	171	17	C2TC	C2GP	START TANK LINE VENT OPEN FOR APPROX 10 SECONDS, THEN TO CLOSE.	#
	171	18	C2TC	C2AE	HE BOTTLES SUPPLY VALVE TO OFF	#
	171	19	C2TC	C2AE	START TANK VENT CONT PRESS TO OFF	#
	171	20	C2TC	C2RP	PNEUM RECEIVER SUPPLY VALVE TO OFF	#
	171	21	C2TC	C2RP	RECEIVER ACT DISC TO OFF	#
	171	22	C2TC	C2SP	LOX AND LH ACT PRESS SW'S TO OFF	#
	171	23	C2TC	C2SP	LOX AND LH VENT VALVE SW'S TO CLOSE	#
	171	24	C2TC	C2SP	LOX DISCONNECT PRESS SW TO CLOSE	#
	171	25	C2TC	C2GP	HE PRESS SEL SW TO 1000 PSIG.	#
	171	26	C2TC	C2PV	MONITOR STATUS OF GSE UNTIL PAD ACCESS TIME	#
	171	27	C2TC	C2NP	STAGE POWER SWITCH TO OFF.	#
	171	28	C2TC	C2NP	SECURE ALL GROUND ESE POWER SUPPLIES EXCEPT 2D100 PER V-21103 (B011). 2D100 POWER TO STAY ON UNTIL GROUND PNEUMATICS IS SECURED.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
+ 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.	#
+ 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.	#
	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.	#
						#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
					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
	151	4	CUTC	CUNP	SECURE IU GROUND POWER PER V-21223. REPORT WHEN COMPLETE. (LEAVE SWITCH POWER ON)	#
	151	5		CUTC	TERMINATE ALTERNATE FIRING ROOM SUPPORT	#
	181	6	C1TC	BRFS	SECURE DRSCS GSE PER V-38000 (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.	#
	181	8	C1TC	CCLO	SECURE LOX SYSTEM PER V-25345.	#
	181	9	C1TC	CCLH	SECURE LH2 SYSTEM PER V-35015, VOL II	#
	161	10	C4TC	C4HN	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II ON CH 143	#
	171	11	C2TC	C2PM	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II ON CH 143	#
	181	12	C1TC	CCRP	SECURE RP-1 SYSTEM PER V-25003.	#
	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	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
+ 6' 0"						
	121	16	CLTC	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	#
	151	18	CUTC	BGCC	DC POWER OFF THE ML 110A	#
	151	19	CUTC	CCPM	231500 OUTPUT POWER OFF (DO NOT TRANSFER TO FACILITY POWER)	#
	151	20	CUTC	ALL	POST LAUNCH OPERATIONS WILL BE PERFORMED PER V-31062, PART VII	#
+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.	# TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO ONLY	
+ 1 HRS 0' 0"						
	121	3	BOSC	CLTC	VERIFY S-II & S-IVB PERSONNEL ARE READY TO SUPPORT GH2 CROSS COUNTRY LINE SECURING WITH GHE.	TCPI
+ 2 HRS 0' 0"						
	111	1	CLTC	CVTS	VERIFY SAFETY INSPECTION COMPLETE AND SPECIAL CONTROL AREA OPEN FOR LIMITED ACCESS	# TCPI
	188	2	CVTS	ALL	SPECIAL CONTROL AREA OPEN FOR LIMITED ACCESS	# TCPI
	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.	# TCPI
	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.	#
	161	8	C4TC	C4PS	START GH2 SYSTEM PURGE PER V-30539, SECT U.	#
		9			**********WARNING********** * * THE FOLLOWING THREE * SEQUENCES ARE * HAZARDOUS. * ********** *	#

APOLLO/SATURN LAUNCH OPERATIONS

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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
+ 2 HRS 0' 0"						
	181	28	C1TC	CHDA	SECURE HDS/SACS PER V-36069.	#
	118	29	CSAC	CHCU	SECURE HCU PER V-36079	#
	171	30	C2TC	U2SE U2MU U2SI U2PE U2PV U2LN	INSPECT S-II LUT EQUIPMENT FOR POST LAUNCH STATUS. REPORT RESULTS TO C2TC ON CHANNEL 171.	#
	171	31	C2TC	U2LN	START CIRCUIT BREAKER LOCK REMOVAL PER V-30029 (M020) TASK 48. REPORT WHEN COMPLETE.	#
	171	32	C2TC	C2GP	START POST LAUNCH GROUND PNEU SECURING PER V-30029 (M020) TASK 49. REPORT WHEN COMPLETE.	#
	171	33	C2TC	U2PV	START POST LAUNCH SECURING PER V-30029 (M020) TASK 50. REPORT WHEN COMPLETE.	#
	181	34	C1TC	CECS	SECURE PAD ECS PER V-36074	#
	181	35	C1TC	CPDC	SECURE PNEU DIST SYSTEM PER V-36064 AND SMDPS PER V-36063.	#
		36			**********WARNING********** * * THE FACILITY AIR SYSTEM * * HAS BEEN PURGED OF GN2 * * AND IS BACK IN ITS * * NORMAL CONFIGURATION. * * ******************************	#
	181	37	C1TC	CSAC	SECURE Q-BALL COVER PNEUMATIC RETRACT SYSTEM PER V-36112.	#
	121	38	CLTC	LCDC L1PS	POWER DOWN LUT COUNT CLOCK 28V POWER SUPPLY & REMOVE AUTOSTART PLUG. REPORT WHEN COMPLETE.	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 0' 0"						
	171	39	C2TC	C2NP	POWER DOWN ESE PER V-21103 (B011) WHEN C2GP REPORTS GROUND PNEUMATICS ARE SECURED.	#
	171	40	C2TC	U2LN	OPEN CIRCUIT BREAKERS PER V-21103 (B011) REPORT WHEN COMPLETE.	#
	121	41	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	42	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	#
	161	4	C4TC	C4PS C4ES	CONTINUE POST LAUNCH SECURING PER V-30539, SECT U. REPORT WHEN COMPLETE.	#

APPENDIX A
SAFING PROCEDURES

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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		C2AE	START TANK SUPPLY VALVE TO OFF THEN AUTO	
		3		C2AE	START TANK ALL VENT TO ALL VENT	
		3-1		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.	
		4		C2SP	LOX SUPPLY VALVE TO CLOSE THEN AUTO	
	121	5	CLTC	C1NP	POWER CONTROL FUNCTION SELECTOR TO PRELAUNCH	
	121	6	CLTC	C1SP	CUTOFF RESET	
	121	6-1		BGCC	*** NOTE COMPUTER IN GO MODE.	
	121	7	CLTC	C4AL	APS ENGINE VALVE POWER OFF.	
	121	8	CLTC	C1SP	TCS-SAFE AND SEQUENCER POWER OFF THEN AUTO	
	121	8-1	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	B-318 -135
	121	9	CLTC	C1DP C2DP C4DP	SAFE & ARM DEVICE - SAFE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	10	CLTC	CUSW	LVDA/ESE SWITCH TO ESE.	
	121	11	CLTC	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON.	
	121	12	CLTC	CUFC	VERIFY FLIGHT CONTROL SYSTEM IN A SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	13	CLTC	CLIK CLGK C1PK CLCP	TERMINATE PROGRAM BEING EXECUTED.	
		13-1		CLGK	*** NOTE TERMINATE FE50	
		13-2		CLGK	*** NOTE TERMINATE GE01 IF FT42 HAS BEEN PREVIOUSLY EXECUTED	
		13-3		C1PK	*** NOTE TERMINATE VATS IF EXECUTING	
		13-4		CLCP	*** NOTE TERMINATE NT60 IF EXECUTING	
	121	14	CLTC	CHCU	START CKT BYPASS SWITCHES OFF	
		15	RLDE		*** NOTE ENTER EST MODE.	
		16			DELETED	I-176-121
	121	17	CLTC	C1TC C2TC C4TC CUTC	SAFE YOUR STAGES & GSE, ESTABLISH HOLD CONDITION. REPORT WHEN COMPLETE.	
	121	18	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
	121	19	CLTC	ECOP	TERMINATE REAL TIME GUIDANCE REDUCTION	
	111	20	CLTC	CVTS	LV IS SAFED, HOLD CONDITION ESTABLISHED	TCPI
	121	21	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR DRAIN PROCEDURE)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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.	
		8			DELETED	B-312 -123
	181	9	C1TC	CTS1	VERIFY AND/OR OPERATE PSV #3 SWITCH TO DOWN	
	181	9-1	C1TC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	B-318 -135
	181	9-2	C1TC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
	121	10	C1TC	CLTC	S-IC SAFED. HOLD CONDITION ESTABLISHED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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.	
		17-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		17-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON.	
		17-18		C2GP	*** NOTE AMB HE TCH PURGE ON.	
		17-19		C2GP	*** NOTE RECEIVER LINE VENT OPEN.	
	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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					PART 1 PRIOR TO T-3:07 MIN	
					(COMPUTER SUPPORTING)	
					S-IVB SAFING	
	161	1	C4TC	C4EP	THRUST CHAMBER CHILLDOWN VALVE CLOSE THEN AUTO.	
	161	2	C4TC	C4EP	START TANK SUPPLY VALVE CLOSE THEN AUTO.	
	161	3	C4TC	C4EP	ON C4PS COMMAND OPEN START TANK VENT.	
	161	4	C4TC	C4ET	VENT ENGINE CONTROL BOTTLE AS REQUIRED TO MAINTAIN PRESSURE BELOW 3200 PSIA MAX BY CYCLING C.T. HELIUM CONTROL.	
	161	5	C4TC	C4NP	SWITCH SELECTOR INHIBIT - OFF	
	161	6	C4TC	C4EP	LOX & LH2 PREVALVES - OPEN THEN AUTO	
	161	7	C4TC	C4EP	LOX & LH2 CHILLDOWN PUMPS - OFF THEN AUTO	
	161	8	C4TC	C4HY	FLIGHT MODE OFF THEN AUTO.	
	161	9	C4TC	C4HN	HEAT EXCHANGER CKT 1 VENT CLOSE THEN AUTO.	
	161	10	C4TC	C4EP	THRUST CHAMBER PURGE SUPPLY CLOSE THEN AUTO.	
	161	11	C4TC	C4SP	LOX VENT SWITCH TO OPEN	
	161	12	C4TC	C4SP	LH2 VENT SWITCH TO OPEN	
	161	13	C4TC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
	121	14	C4TC	CLTC	S-IVB SAFED, HOLD CONDITION ESTABLISHED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					PART 1 PRIOR TO T-3:07 MIN	
					(COMPUTER SUPPORTING)	
					I.U. SAFING	
	151	1	CUTC	CUES	EDS MODE SWITCH TO MONITOR THRUST OK SWITCH A & B TO INHIBIT THEN AUTO	
	151	2	CUTC	BGCC	MLC THERMAL OVERRIDE SWITCH OFF (SENSE CONTROL PANEL BIT 22)	I-173 -113
	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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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-00:03:07)	
	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	
	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:	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		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)	
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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)	
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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	CLTC	C1LO	LOX BUBBLING TO AUTO	
	121	15 15-1	CLTC	C2AE C2AE	START TANK ALL VENT TO ALL VENT *** 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.	
		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	21-1	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	B-318 -135
	121	21-2	CLTC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
	121	21-3	CLTC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	
		22		CLTC	*** NOTE CUSW MUST BE COMPLETE PRIOR TO NEXT STEP	
	121	23	CLTC	C4NP	SWITCH SELECTOR INHIBIT TO ON	
	121	24	CLTC	CCRP	EVALUATE FUEL LOAD FOR POSSIBLE REPLENISH AND/OR FUEL LEVEL ADJUST IN SUPPORT OF A RECYCLE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		24-1			NOTE PROPELLANT PROGRAMS BT01, BE01 & BE02 MAY HAVE TO BE REINITIATED.	
	121	25	CLTC	CCLO	MAINTAIN ALL STAGE LOX REPLENISH AT 100% PER V-35014	
	121	26	CLTC	CCLH	MAINTAIN S-II AND S-IVB LH2 REPLENISH AT 100% PER V-35014	
	121	27	CLTC	CUSP	VERIFY FLIGHT CONTROL IS IN A SAFE CONFIGURATION FOR LADDER DRIFT	
	121	28	CLTC	CLGK	OFF AUTO ON SWITCH TO OFF	
	121	29	CLTC	CUDE	VERIFY 728 (HALT) AND 730 (MEMORY RELEASE) ARE ON.	
		30			DELETED	B-312 -123
	121	31	CLTC	ECOP	STOP GUIDANCE REDUCTION PROGRAM	
	121	32	CLTC	BGCC	MLC THERMAL OVERRIDE SWITCH OFF (SENSE CONTROL PANEL BIT 22)	I-173 -113
		33	RLDE		*** NOTE ENTER EST MODE	
	121	34	CLTC	CUES	EDS MODE SW TO MONITOR	
	121	35	CLTC	C1TC C2TC C4TC CUTC	VERIFY STAGES SAFED AND HOLD CONDITION ESTABLISHED & AWAITING COMP SUPPORT.	
	121	36	CLTC	CUTC	REINITIALIZE GROUND COMPUTER PER V-31062, APP F, REPORT WHEN COMPLETE.	
	111	37	CLTC	CVTS	LAUNCH VEHICLE SAFE, HOLD CONDITION ESTABLISHED AND AWAITING COMPUTER SUPPORT.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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 SCRUB).	
	121	3	CLTC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51	
		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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
					APPENDIX A LV GAPING 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		C1NE	REPORT CAUSE OF CUTOFF WHEN DETERMINED	
		2-1		C1FR	*** NOTE (IF CUTOFF IS AFTER IGN) CUTOFF COMPLETE ON	
		2-2		C1EN	*** NOTE ALL MAIN VALVES CLOSED	
		2-3		C1EN	*** NOTE ALL CHECKOUT VALVES IN GROUND POSITION	
		3		C2AE	TCH CHILLDOWN TO OFF.	
	121	4	CLTC	C2AE C4PS	CDDT ONLY	*A
					PAGE G300 INTENTIONALLY OMITTED	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		10		C2AE	START TANK ALL VENT TO ALL VENT	
		10-1		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.	
	121	11	CLTC	C4AL	APS ENGINE VALVE POWER - OFF.	
		11-1		C1NP C2NP C4NP CUNP	*** NOTE STAGE POWER ON EXTERNAL.	
		11-2		CUDE	*** NOTE 0777 (PWR XFER COMPLETE) & 0779 (IU STAGE POWER) OFF, 0781 (IU GND POWER) ON	
	121	12	CLTC	CLVN	ML BLOCK INHIBIT ON	
		12-1		BGCC	*** NOTE COMPUTER IN GO MODE	
	121	13	CLTC	C1SP	TC5 - SAFE AND SEQUENCER POWER - OFF THEN AUTO	
		13-1		C1FR	*** NOTE CUTOFF ON	
	121	14	CLTC	C1DP C2DP C4DP	SAFE AND ARM - SAFE	
		14-1		C1FR	*** NOTE FIRING COMMAND OFF	
	121	15	CLTC	CUSW	LVDA/ESE TO ESE	
	121	16	CLTC	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON.	
	121	17	CLTC	CUSP	VERIFY FLIGHT CONTROL SYSTEM IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	17-1	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	B-318 -135
	121	18	CLTC	CSA1	IF S/A 1 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF	
	121	19	CLTC	CSA2	IF S/A 2 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF AND SAFE ALL YOUR CHARGING SYSTEMS	
		20			**********CAUTION********** * * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS, * * * **********	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	21	CLTC	C1LO	LOX FLIGHT VENTS TO OPEN	
	121	22	CLTC	C1NP	POWER FUNCTION SELECTOR - PRELAUNCH	
		23		CLTC	**********CAUTION********** * * * IF CUTOFF BETWEEN T-20 * * SEC AND T-8.9 SEC (IGN * * COMMAND), ACCOMPLISH * * THE FOLLOWING SUBSTEPS: * * * ********** ********** ********** ********** ********** ********** ********** ********** ********** ********** ********** **********	
	121	23-1	CLTC	C1LO	VERIFY LOX INTERCONNECT VALVES 1, 3 & 4 OPEN & 2 CLOSED.	
	121	23-2	CLTC	C1LO	VERIFY LOX BUBBLING DUCTS 1 & 3 ON. CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	
		24		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	24-1	CLTC	C1LO	VERIFY MANUAL ACTION IS BEING TAKEN TO ESTABLISH S-IC THERMAL PUMPING.	
		24-2		C1LO	NOTE LOX BUBBLING SWITCH TO DUCTS 1 & 3.	
		24-3		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 SWITCHES TO CLOSE.	
		24-4		C1LO	LOCK UP COMMAND DISABLE TO ON.	
	121	24-5	C1LO	C1EN	PREVALVE EMERGENCY SWITCH TO OPEN. VERIFY ALL LOX PREVALVES OPEN.	
		24-6		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 TO OPEN. NOTE OPEN INDICATION.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		24-7		C1LO	NOTE BUBBLING DUCTS 1 & 3 ON, CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	
	121	25	CLTC	C1PC	VERIFY LOX DOME PURGE ON	
		25-1			DELETED	B-312 -123
		25-2			DELETED	B-312 -123
	121	26	CLTC	C1PE	VERIFY ALL LOX DUCT CONDITIONS SATISFACTORY & READY TO RESET CUTOFF.	
	121	27	CLTC	C1SP	CUTOFF - RESET.	
	121	28	CLTC	C1FR	VERIFY CUTOFF - OFF	
		28-1		C1LO	*** NOTE LOX PREVALVES OPEN.	
		28-2		C1LO	*** NOTE INTERCONNECT VALVES 1, 3 & 4 OPEN AND 2 CLOSED.	
		28-3		C1LO	*** NOTE BUBBLING DUCTS 1 & 3 ON.	
		29			**********CAUTION********** * * RESUME PREVIOUS HAZARD * LEVEL - END OF CAUTION * **********	
	121	30	CLTC	CLVN	ML COMPUTER INHIBIT TO AUTO.	
	121	31	CLTC	CWCP	FLAME DEFLECTOR COOLING OFF.	
		32		C4SP	*** NOTE DIRECTIONAL VENT IN GROUND POSITION AND LH2 VENT OPEN.	
		33		C4SP	AT C4PS COMMAND, LOX TANK VENT OPEN	
		33-1		C1PK	*** NOTE TERMINATE VATS IF EXECUTING	
		33-2		CLCP	*** NOTE TERMINATE NT60 IF EXECUTING	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	34	CLTC	C1TC C2TC C4TC CUTC	SAFE YOUR STAGES AND GSE, ESTABLISH A HOLD CONDITION, REPORT WHEN COMPLETE,	
	121	35	CLTC	ECOP	TERMINATE GUIDANCE REDUCTION PROGRAM,	
	121	36	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
	111	37	CLTC	CVTS	LV IS SAFED, HOLD CONDITION ESTABLISHED	TCPI
		38	RLDE		*** NOTE ENTER EST MODE.	
		39			NOTE ---- IF S/A 2 IS RETRACTED, THERE WILL BE NO INDICATION IN THE HGD SYSTEM FOR S-IC FWD/S-II AFT	
	121	40	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR LV DRAIN)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					PART 3 T-3:06 MIN TO T+0	
					COMPUTER SUPPORTING	
					S-IC SAFING	
		1			DELETED	XB-253 -128
	181	2	C1TC	CSA1	VERIFY S/A 1 CONNECTED OR EXTEND & RECONNECT PER V-36071	
	181	3	C1TC	C1RP	ADJUST FUEL TANK PRESSURE TO 18-20 PSIA	
	181	4	C1TC	C1LO	WHEN 10 MINUTE BUBBLING PERIOD IS COMPLETE (IF REQUIRED) PLACE LOX BUBBLING SWITCH TO AUTO.	
	181	5	C1TC	C1EN	VERIFY LOX & FUEL PREVALVES OPEN.	
	181	6	C1TC	C1PC	CONTINUE THERMAL CONDITIONING PURGE.	
		6-1		C1EN	*** NOTE ALL ENG VALVES CLOSED	
		6-2		C1EH	*** NOTE HEATER POWER ON.	
		6-3		C1PC	*** NOTE LOX DOME & GG INJECTION PURGE VENT VALVES CLOSED.	
		6-4		C1PC	*** NOTE PURGE FILL AND DRAIN VALVE OPEN	
		6-5		C1PC	*** NOTE CONTROL PRESS FILL & DRAIN VALVE OPEN.	
		6-6		C1PC	*** NOTE GN2 BOTTLE GROUND VENT CLOSED.	
		6-7		C1PC	*** NOTE GN2 BOTTLE LOW & HIGH FILL VALVES OPEN.	
		6-8		C1HP	*** NOTE HYDRAULIC UNIT COMMITTED OFF.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		6-9		C1HP	*** NOTE HYDRAULIC PRESSURE OK	
		6-10		C1RP	*** NOTE HE GND ISOLATION VALVE OPEN,	
		6-11		C1RP	*** NOTE HE BOTTLE HIGH FILL VALVES OPEN,	
		6-12		C1RP	*** NOTE HE BOTTLE GROUND VENT CLOSED,	
		6-13		C1RP	*** NOTE ALL PREPRESS VALVES CLOSED,	
		6-14		C1LO	*** NOTE ALL PREPRESS VALVES CLOSED,	
	181	7	C1TC	CHCU	START CKT BYPASS SWITCHES - OFF	
	181	8	C1TC	C1NP	VERIFY UPPER PLUGS CONNECTED LIGHT ON	
	181	9	C1TC	C1NP	IF UPPER UMBILICAL SUPERVISION LIGHT IS OFF, HEATER POWER - OFF	
	181	10	C1TC	CCLO	REVERT LOX SYSTEM	
	181	10-1	C1TC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	B-318 -135
	181	10-2	C1TC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	B-318 -135
		11		C1TC	CDDT ONLY	*A
	181	11-1	C1TC	CCLH	REVERT LH2 SYSTEM	
	181	12	C1TC	CSA2	IF S/A 2 IS RETRACTED, VALVES RESET SWITCH TO RESET THEN OFF AND VERIFY	
	181	13	C1TC	C1LO	VERIFY THERMAL PUMPING HAS BEEN ESTABLISHED,	
		14			DELETED	XB-253 -128
	181	15	C1TC	CSA1	VERIFY S/A 1 RECONNECTED AND READY TO REINITIATE LOX REPLENISH	
	181	16	C1TC	CTS1	OPERATE PSV #3 SWITCH TO DOWN AND VERIFY	
	181	17	C1TC	C1IP	IF S/A 2 IS RETRACTED, ACCOMPLISH FOLLOWING SUBSEQUENCES	
	181	17-1	C1TC	C1IP	P-1 & F-1 TRANSMITTERS OFF THEN AUTO ON YOUR MARK	
	181	17-2	C1TC		P-1 OFF, MARK (THEN AUTO) F-1 OFF, MARK (THEN AUTO)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	18	C1TC	CLTC	S-IC SAFED AND HOLD CONDITION ESTABLISHED.	

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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		9-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN	
		9-6		C2GP	*** NOTE GN SUPPLY ON	
		9-7		C2GP	*** NOTE GH PRESSURE ON	
		9-8		C2GP	*** NOTE 3000 PSIG HE PRESS ON	
		9-9		C2GP	*** NOTE 3000 PSIG EMERGENCY HE PRESS ON	
		9-10		C2GP	*** NOTE SECONDARY HE PRESS ON	
		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	C2SP	C2TC	PRESSURIZATION SYSTEM SAFED AND HOLD CONDITION ESTABLISHED.	
	171	11	C2GP	C2TC	GROUND PNEUMATICS SAFED AND HOLD CONDITION ESTABLISHED.	
	171	12	C2PM	C2TC	PROPELLANT MONITOR SAFED AND HOLD CONDITION ESTABLISHED.	
	171	13	C2AE	C2TC	ENGINE PURGES ARE COMPLETE AND HOLD CONDITION ESTABLISHED.	
	171	14	C2PV	C2TC	PURGE SYSTEM SAFED AND HOLD CONDITION ESTABLISHED.	
	121	15	C2TC	CLTC	S-II SAFED HOLD CONDITION ESTABLISHED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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	THRUST CHAMBER CHILLDOWN VALVE CLOSE THEN AUTO.	
	161	3	C4TC	C4EP	AT C4PS COMMAND OPEN START TANK VENT/EMERGENCY DUMP	
	161	4	C4TC	C4ET	VENT ENGINE CONTROL BOTTLE AS REQUIRED TO MAINTAIN PRESSURE BELOW 3200 PSIA BY CYCLING CT HELIUM CONTROL	
	161	5	C4TC	C4EP	LOX AND LH2 PREVALVES OPEN THEN AUTO	
	161	6	C4TC	C4EP	LOX CHILLDOWN PUMP OFF THEN AUTO	
	161	7	C4TC	C4EP	LH2 CHILLDOWN PUMP OFF THEN AUTO	
	161	8	C4TC	C4HY	FLIGHT MODE OFF, THEN AUTO	
	161	9	C4TC	C4SP	LH2 VENT SWITCH TO OPEN	
	161	10	C4TC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
	121	11	C4TC	CLTC	S-IVB SAFED AND HOLD CONDITION ESTABLISHED.	

PAGE G311 INTENTIONALLY OMITTED.

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					PART 3 T-3:06 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 FF50 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	MLC THERMAL OVERRIDE SWITCH OFF (SENSE CONTROL PANEL BIT 22)	I-173 -113
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	151	11-1	CUTC	CLGK	REQUEST & EXECUTE FT37 (REPEATABLE SIM FLIGHT) AND FT23 (SECTOR SUM CHECKS) (APPROX 18 MINUTES). REPORT WHEN COMPLETE	
	121	11-2	CUTC	CLTC	FT37 & FT23 COMPLETE.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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. * * * ******************************	
	188	2	CLTC	ALL	CUTOFF OBSERVED, THE COMPUTER IS NOT SUPPORTING, ALL PERSONNEL MONITOR CHANNEL 121	
		3		C1NE	REPORT CAUSE OF CUTOFF WHEN DETERMINED	
		4		C2AE	TCH CHILLDOWN TO OFF.	
		5		C1NP C2NP C4NP CUNP	*** NOTE STAGE POWER EXTERNAL (HARDLINE INDICATIONS)	
		5-1		CUDE	*** NOTE 0777 (PWR XFER COMPLETE) AND 0779 (IU STAGE POWER) OFF, 0781 (IU GND POWER) ON	
	121	6	CLTC	CLVN	ML/DCE TO MANUAL MODE	
	121	7	CLTC	C1SP	TCS TO SAFE AND SEQ POWER OFF THEN AUTO	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	8	CLTC	C1DP C2DP C4DP	SAFE & ARM TO SAFE	
	121	9	CLTC	CUSW	LVDA/ESE TO ESE	
	121	10	CLTC	C2NP C4NP	SWITCH SELECTOR INHIBIT TO OFF	
	121	11	CLTC	C4AL	APS ENGINE VALVE POWER TO OFF	
	121	12	CLTC	C1NP	POWER CONTROL FUNCTION SELECTOR PRELAUNCH	
		12-1		C1NP	*** NOTE LAUNCH BUS 1D161 OFF.	
		12-2		C1NP	*** NOTE PRELAUNCH BUS 1D151 ON.	
	121	13	CLTC	C4NP	EMERGENCY POWER TRANSFER SWITCH - EXTERNAL	
		14			**********CAUTION********** * * * THE FOLLOWING SEQUENCES * * ARE HAZARDOUS, * * * ******************************	
	121	15	CLTC	C1LO	LOX FLIGHT VENTS TO OPEN	
		16		CLTC	**********CAUTION********** * * * IF CUTOFF BETWEEN T-20 * * SEC & T-8,9 SEC (IGN * * COMMAND) ACCOMPLISH THE * * FOLLOWING SUBSTEPS. * * * ******************************	
	121	16-1	CLTC	C1LO	VERIFY LOX INTERCONNECT VALVES 1, 3, & 4 OPEN & 2 CLOSED.	
	121	16-2	CLTC	C1LO	VERIFY SWITCH LOX BUBBLING DUCTS 1 & 3 ON. CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		17			**********CAUTION********** * * * IF CUTOFF AFTER T-8.9 * * SEC (IGN COMMAND) & * * CUTOFF RESET CANNOT BE * * GIVEN WITHIN 3 MINUTES * * FROM INTERCONNECT * * CLOSURE (T-20 SEC) * * ACCOMPLISH THE * * FOLLOWING SUBSTEPS. * * * ****************************	
	121	17-1	CLTC	C1LO	VERIFY MANUAL ACTION IS BEING TAKEN TO ESTABLISH S-IC THERMAL PUMPING.	
		17-2		C1LO	*** NOTE LOX BUBBLING SWITCH TO DUCTS 1 & 3.	
		17-3		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 SWITCHES TO CLOSE.	
		17-4		C1LO	LOCK UP COMMAND DISABLE TO ON.	
	121	17-5	C1LO	C1EN	PREVALVE EMERGENCY SWITCH TO OPEN.	
		17-6		C1LO	LOX INTERCONNECT VALVES 1, 3 & 4 TO OPEN. NOTE CLOSED INDICATIONS EXTINGUISHED.	
		17-7		C1LO	CONTINUE 2 DUCT BUBBLING FOR 10 MINUTES TO ESTABLISH THERMAL PUMPING.	
	121	17-8	CLTC	C1PC	VERIFY LOW LOX DOME PURGE ON	B-312 -123
		17-9			DELETED	B-312 -123
		17-10			DELETED	B-312 -123
	121	18	CLTC	C1PE	VERIFY LOX DUCT CONDITIONS SATISFACTORY FOR CUTOFF RESET	
	121	19	CLTC	C1SP	RESET CUTOFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		19-1		C1FR	*** NOTE CUTOFF = OFF	
		19-2		C1PC	*** NOTE HIGH LOX DOME PURGE OFF	
		19-3		C1LO	*** NOTE INTERCONNECT VALVES 1, 3 & 4 CLOSED LIGHTS EXTINGUISHED.	
	121	20	CLTC	CUES	MODE SWITCH TO MONITOR. DEPRESS LIFTOFF RESET	
	121	20-1	CLTC	CSA1	POSITION AND/OR VERIFY CARRIER CONNECT AND RETRACT ARMING SWITCH TO OFF.	B-318 -135
	121	21	CLTC	CSA1	EXTEND AND RECONNECT S-IC INTERTANK ARM PER V-36071, IF ARM HAS BEEN RETRACTED	
	121	22	CLTC	C1RP	ADJUST S-IC FUEL TANK PRESSURE TO 18-20 PSIA.	
		23			**********WARNING********** * * * RESUME PREVIOUS HAZARD * * LEVEL - END OF CAUTION * * * **********	
	121	24	CLTC	CWCP	FLAME DEFLECTOR COOLING OFF	
	121	25	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:	
		25-1			*** NOTE ALL PANEL OPERATORS PLACE SWITCHES TO POSITION INDICATED IN PARENTHESES AFTER EACH GROUP IS ISSUED	
	121	25-2		CLVN	GRP 1 - MUX 21, 22, ADDRESS 12, DATA BIT 5 DN, 1805 ON (CUSP - S-II BURN TEST MODE - ON)	
		25-3		CUSP	*** NOTE FLIGHT CONTROL IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	25-4		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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	25-5		CLVN	GRP 3 - MUX 22, ADDRESS 9, DATA BIT 22 DN, 1246 ON (C2FC - ENG 1 ACCUM CONTROL ON THEN AUTO)	
	121	25-6		CLVN	GRP 4 - MUX 22, ADDRESS 10, DATA BITS 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	25-7		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	25-8		CLVN	GRP 6 - MUX 22, ADDRESS 3, DATA BIT 23 UP, 1103 OFF (C2SP - LOX DISC PRESS TO CLOSE THEN AUTO)	
	121	25-9		CLVN	GRP 7 - MUX 21, 22, ADDRESS 2, DATA BIT 12 UP, 1572 OFF (C4EP - TCH CHILLDOWN CLOSED THEN AUTO)	
	121	25-10		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	25-11		CLVN	GRP 9 - MUX NONE, ADDRESS 14, DATA BIT 14 UP, 0350 OFF (CTS1 - TSM 3-4 PSV #3 CLOSE)	
	121	25-12		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)	
	121	26	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	27	CLTC	C2AE	START TANKS ALL VENT TO ALL VENT	
		27-1		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.	
		28		C2AE	USE ALL HE SOLENOID SW TO KEEP HE BOTTLE PRESSURES BELOW 3000 PSIA	
		29		C4EP	ON C4PS COMMAND OPEN START TANK VENT/EMERGENCY DUMP	
		30		C4ET	USE HE CONTROL SOLENOID TO MAINTAIN ENGINE CONTROL BOTTLE PRESSURE BELOW 3200 PSIA MAX	
		31		C4SP	*** NOTE LH2 TANK VENT OPEN	
		32		C4SP	AT C4PS COMMAND, LOX VENT OPEN	
	121	33	CLTC	CCLO	REVERT LOX SYSTEM	
	121	34	CLTC	CCLH	REVERT LH2 SYSTEM IF REPLENISH COMPLETE	
	121	35	CLTC	CCRP	EVALUATE FUEL LOAD FOR POSSIBLE REPLENISH AND/OR FUEL LEVEL ADJUST IN SUPPORT OF A RECYCLE.	
		35-1			NOTE PROPELLANT PROGRAMS BT01, BE01 & BE02 MAY HAVE TO BE REINITIATED.	
	121	36	CLTC	CHCU	START CKT BYPASS SWITCHES - OFF	
	121	37	CLTC	CSA2	IF S/A 2 IS RETRACTED, AUTO EXTEND ARMING SWITCH OFF AND SAFE ALL YOUR CHARGING SYSTEMS	
		38		CLTC	*** NOTE CUSW MUST BE COMPLETE PRIOR TO NEXT STEP	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	39	CLTC	C4NP	INHIBIT SWITCH SELECTOR	
	121	40	CLTC	RLDE	GIVE DEMAND PRINTOUT TO ALL STAGE PRINTERS, REPORT WHEN COMPLETE.	
	121	41	CLTC	BGCC	MLC THERMAL OVERRIDE SWITCH OFF (SENSE CONTROL PANEL BIT 22)	I-173 -113
	121	42	CLTC	CUSP	VERIFY FLIGHT CONTROL IN SAFE CONFIGURATION FOR LADDER DRIFT.	
	121	43	CLTC	CLGK	ON AUTO OFF SWITCH TO OFF	
		43-1		CUDE	*** NOTE 728 (HALT) AND 730 (MEMORY RELEASE) ARE ON	
	121	44	CLTC	ECOP	TERMINATE REAL TIME GUIDANCE REDUCTION PROGRAM.	
		45	RLDE		*** NOTE ENTER EST MODE	
	121	46	CLTC	C1TC C2TC C4TC CUTC	VERIFY STAGE SAFED AND HOLD CONDITION ESTABLISHED.	
	121	47	CLTC	CUTC	REINITIALIZE GROUND COMPUTER PER V-31062 APPENDIX F, REPORT WHEN COMPLETE.	
	111	48	CLTC	CVTS	LAUNCH VEHICLE SAFED, HOLD CONDITION ESTABLISHED AND AWAITING COMPUTER SUPPORT.	

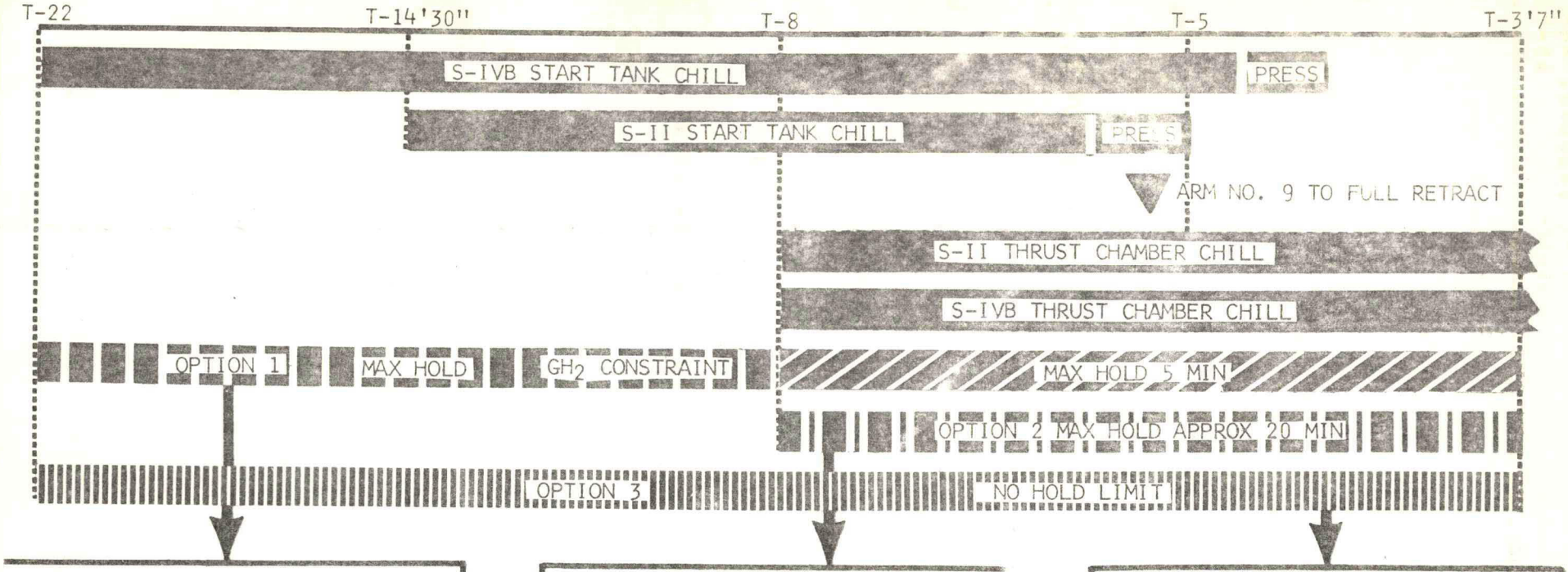
TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					HOLDING FOR COMPUTER SUPPORT	
	121	1	CUTC	CLTC	COMPUTER SUPPORTING	
	121	2	CLTC	CSPP C1PP C4PP	POWER SUPPLY COMMIT OFF THEN AUTO	
	121	3	CLTC	C4PP	PLUG SUPERVISION POWER ON THEN AUTO.	
	181	4	C1TC	C1IP B1TM	IF S/A 2 IS RETRACTED, 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	5-1	CLTC	CSA1	POSITION AND/OR VERIFY LOWER LOX LINE PURGE VALVE SWITCH TO CLOSED.	B-318 -135
	121	5-2	CLTC	CSA1	POSITION AND/OR VERIFY UPPER LOX LINE PURGE VALVE SWITCH TO CLOSED.	B-318 -135
	121	6	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)	
	121	7	CLTC	C2AE	START ENGINE PURGES PER V-30029 (M020) TASK 51	
	171	7-1		C2SP	*** NOTE LOX & LH VENT VALVES OPEN	
	171	7-2		C2SP	*** NOTE LOX & LH SUPPLY VALVES CLOSED	
	171	7-3		C2SP	*** NOTE LOX & LH SUPPLY LINE VENTS CLOSED	
	171	7-4		C2SP	*** NOTE LOX & LH ACT PRESSURE ON	
	171	7-5		C2SP	*** NOTE LOW LEVEL PURGE VALVE OPEN	
		7-6		C2GP	*** NOTE GN SUPPLY ON	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		7-7		C2GP	*** NOTE GH PRESSURE ON	
	171	7-8		C2GP	*** NOTE 3000 PSIG HE PRESS ON	
	171	7-9		C2GP	*** NOTE 3000 PSIG EMERG HE PRESS ON	
	171	7-10		C2GP	*** NOTE SECONDARY HE PRESS ON	
	171	7-11		C2SP	*** NOTE SHROUD PURGE VALVE OPEN	
		7-12		C2GP	*** NOTE HE F & D LINE INERT ON	
		7-13		C2GP	*** NOTE HE ACT PNEU PRESS ON	
		7-14		C2GP	*** NOTE HE TURBO START GH VENT ON	
		7-15		C2GP	*** NOTE LOX & LH HE TANK PRESS ON	
		7-16		C2GP	*** NOTE HE TURBO PUMP PURGE ON	
		7-17		C2GP	*** NOTE ENG TCH CHILLDOWN ON	
		7-18		C2GP	*** NOTE AMB HE TCH PURGE ON	
	171	8	C2AE	C2TC	ENGINE PURGES ARE COMPLETE	
	121	9	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY FOR RECYCLE OR SCRUB	
	111	10	CLTC	CVTS	COMPUTER SUPPORT REESTABLISHED. LAUNCH VEHICLE READY TO START RECYCLE OR DRAIN OPERATIONS.	TCPI
		11			NOTE ---- IF S/A 2 IS RETRACTED, THERE WILL BE NO INDICATION IN THE HGD SYSTEM FOR S-IC FWD/S-II AFT.	
	121	12	CLTC	ALL	ALL PERSONNEL TURN TO: (APPENDIX B4 FOR RECYCLE TO T-22 MIN) (APPENDIX C FOR DRAIN PROCEDURE)	

APPENDIX B

LV HOLD AND RECYCLE PROCEDURES

HOLD OPTIONS



CLOCK HOLDS AT T TIME

1. COMPUTER WILL SELECT OPT 1 PRIOR TO T-8'. AFTER T-8', OPT 1 DECISION MUST BE ANNOUNCED ON CH 121 PRIOR TO CLOCK STOP.
2. AFTER CLOCK IS STOPPED, TWO GMT VALUES ARE DISPLAYED.
   (A) GMT AFTER WHICH OPT 2 IS NOT AVAILABLE WITHOUT WARMUP.
   (B) GMT AFTER WHICH PICKUP NOT ALLOWED.
   THESE GMT TIMES WILL TAKE INTO ACCOUNT PREVIOUS HOLDS.
3. AFTER CVTS IS TOLD TO PICKUP, ABOUT 30 SECONDS WILL ELAPSE PRIOR TO CLOCK START IF HOLD AFTER T-4'.

CLOCK RESET TO T-8'

1. GO INTO OPT 2 FROM OPT 1 OR DIRECTLY. COMPUTER WILL SELECT OPT 2 FOR ANY HOLD AFTER ABOUT T-8', UNLESS MANUALLY OVERRIDDEN
2. ABOUT 10 MINUTES IS REQUIRED TO TURNAROUND TO SAME T TIME FOR HOLDS AFTER T-8'.
3. START TANKS WILL BE PRESSURIZED. HOLD TIME LIMITED BY S-IVB START TANK WARMUP.
4. AFTER PICKUP AT T-8', OPT 2 HOLD REPEAT NOT POSSIBLE AFTER DISPLAYED T TIME UNLESS WARMUP TIME IS MET DURING REPEAT HOLD. OPT 1 HOLD LIMITED TO DISPLAYED TIME.

CLOCK RESET TO T-22'

1. GO INTO OPT 3 FROM OPT 1 OR 2
2. ABOUT 15 MINUTES BEFORE READY TO RESUME COUNT AT T-22'.
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 FT42 INITIATED; T-12'25")

   (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 START TANK WARMUP LIMITS.

   (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) CONTINUE ALL CHILLDOWNS,

(B) TOTAL ACCUMULATED OPTION 1 HOLDS LIMITED TO 5 MINUTES,

(C) COUNT CAN BE RESUMED MOMENTARILY,

(D) CAN SUBSEQUENTLY SELECT OPTION 2 OR 3 (SUBJECT TO LMR LIMITS) BY KEYBOARD ENTRY,

(E) 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,

(F) 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,

(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 START TANK WARMUP LIMITS

(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,

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					HOLD OPTION 1	
					T-22' TO T-3'7"	
OPT 1 -22' 0" TO - 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 CHILLDOWNS IN PROGRESS.	
		2-1		CLM4	***** NOTE COORDINATE WITH BOSC ON CH 261 FOR GH2 BATTERY PRESSURE.	TCPI
					--- IF HOLD BETWEEN T-4'37" & T-3'20" ---	
		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 BELOW 3100 PSIA.	
		6		C2AE	USE START TANK EMERGENCY VENT SWITCH TO KEEP START TANK PRESSURES IN START BOX (BELOW 1280 PSIA) COORDINATE WITH R2SC #1.	
		6-1			NOTE NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 1 -22' 0" TO - 3' 7"						
					--- 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 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.	

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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS

PAGE 332 INTENTIONALLY OMITTED.

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					HOLD OPTION 2	
					T-12'25" TO T-3'7"	
OPT 2 -12'25" TO - 3' 7"						
	121	1	C1PK	CLTC	OPTION 2 SELECTED	
	121	2	CLTC	ALL	THE COUNT IS HOLDING AT 8--- MINUTES -2-- 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 -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).	XB-253 -128
		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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 -12'25" TO - 3' 7"					---IF AFTER -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.	
		11-1		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 13 MIN, WARMUP UNTIL GMT. -----	
		11-2		C1PK	*** NOTE PRIOR TO THIS TIME UNUSED DELTA CHILL TIME IS MINS SECS. --- ---	
		12	***	C2FC	THERMAL CONTROL ON THEN AUTO.	***
					---IF AFTER T-3'55"--- ---	
		13	***	C2FC	ALL ACCUMULATOR CONTROL TO UNLOCK THEN AUTO.	***
		14	***	C2FC	MAIN PUMP BYPASS VALVE OPEN THEN AUTO	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 -12'25" TO - 5' 7"						
					--- IF AFTER -7'58" ---	
		15	***	C2FC	AUX PUMPS 1 THRU 4 OFF THEN AUTO	***
		15-1		C2FC	*** NOTE THERMAL CONTROL WILL MAINTAIN FLUID TEMPERATURES BETWEEN 80 DEG F AND 120 DEG F. ADVISE C2TC OF CYCLIC ACTION.	
		15-2			NOTE S-II PREPS COMPLETE LIGHT WILL CYCLE OFF DURING HOLD OPTION 2 OPERATIONS.	
					--- IF AFTER T-6'15" ---	
	151	16	***	CU1P	Q-BALL HEATER POWER ON THEN AUTO	***
					--- IF AFTER T-5'7" ---	
		17	***	C2SP	LOX SUPPLY VALVE - CLOSE	***
					--- IF AFTER T-4'10" ---	
	121	18	***	CUES	TOK SWITCH A & B TO INHIBIT THEN AUTO	*** TCPI
					--- IF AFTER T-4'45" ---	
	161	19	***	C4EP	LOX & LH2 PREVALVES - OPEN THEN AUTO	***
					--- IF AFTER T-4'50" ---	
	161	20	***	C4EP	LOX CHILLDOWN PUMP - OFF THEN AUTO	***
					--- IF AFTER T-4'58" ---	
	161	21	***	C4EP	LH CHILLDOWN PUMP - OFF THEN AUTO	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 -12'25" TO - 3' 7"					--- IF AFTER T-12'25" --- ----------	
		22		ALL	*** NOTE IF CDC BETWEEN T-12'25" & T-7'58", CDC MAY BE RESUMED MOMENTARILY.	
		22-1		CLTC C2AE C4PS C1PK	*** NOTE IF AFTER T-7'58", START TANK PRESSURIZATION CAN BE BYPASSED WITH KEYBOARD ENTRY.	
		23		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:	***
		23-1	***	C4HN	CLOSE HEX CIRCUIT #1 VENT.	***
		23-2	***	C4EP	CLOSE START TANK VENT, AFTER 30 SECONDS, CLOSE START TANK SUPPLY VALVE AND OPEN START TANK SUPPLY VENT.	***
	161	23-3	C4PS	C4TC	START TANK PRESSURIZATION COMPLETE.	
		23-4	***	C2AE	START TANK ALL VENT TO OFF, AFTER 1'17", START TANK SUPPLY VALVE TO OFF AND START TANK SUPPLY LINE VENT TO VENT.	***
		23-5	***	C2AE	HE BOTTLE SUPPLY VALVE TO OFF.	***
		23-6		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - OFF	
		23-7	***	C2AE	HE BOTTLE SUPPLY LINE VENT TO VENT.	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 -12'25" TO - 3' 7"					--- IF AFTER T-12'25" --- ----------	CONT'D ------
		23-8		C2AE	*** NOTE HE BOTTLE SUPPLY LINE VENT OPEN - ON	
		23-9		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
		23-10		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - ON	
	171	23-11	C2AE	C2TC	START TANK PRESSURIZATION COMPLETE.	
		23-12		C2AE	USE HE BOTTLE EMERGENCY VENT SWITCHES TO KEEP HE BOTTLE PRESSURES BELOW 3100 PSIA	
		23-13		C2AE	USE START TANK EMERGENCY VENT SWITCHES TO KEEP START TANK PRESSURE IN START BOX (BELOW 1280 PSIA). COORDINATE WITH R2SC #1.	
		23-14		C2AE	NOTE ---- NO MORE THAN TWO START TANKS MAY BE VENTED SIMULTANEOUSLY	
		23-15		C4ET	VENT ENGINE CONTROL BOTTLE ON C4PS COMMAND TO MAINTAIN PRESSURE BELOW 3200 PSIA	
		23-16		C4EP	USE START TANK EMERGENCY VENT SWITCH TO KEEP START TANK PRESSURE IN START BOX, COORDINATE WITH R4PS.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					--- IF AFTER T-7:58" ---	
OPT 2 -12'25" TO -31' 7"	121	24	***	CLGK	TERMINATE GE01 (AZIMUTH LAYING) AND VERIFY;	***
	121	25	***	CUPC	VERIFY PLATFORM STOPPED	***
		26		CLTC	IF VATS NOT EXECUTING, IMMIDIATELY PERFORM FOLLOWING TIME CRITICAL STEP,	
	121	26-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	*** XB-247-
	121	27	C1PK	CLTC	VATS IN SEMI AWAITING CDC RESET	107
		27-1			DELETED	I-176-12
	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,	TOPI
		29		C1PK	RESTART VATS AFTER CDC RESET	
	121	30	***	CLGK	REQUEST AND EXECUTE FT42 (PREPARE TO LAUNCH), REPORT WHEN LVDC IN PREPARE TO LAUNCH MODE,	***
					NOTE IF MESSAGE, "GMT NOT LOADED DUE TO DISAGREEMENT BETWEEN READINGS", IS DISPLAYED, PERFORM THE FOLLOWING SUBSEQUENCES IMMEDIATELY:	
	121	30-1		CLGK	ENTER $PB (FT42 RESTART)	
	121	30-2	CLGK	CLTC	REQUEST C1PK RESTART VATS WHEN ATOLL ERROR 86 OCCURS.	
	121	30-3	CLTC	C1PK	ENTER $PA (VATS RESTART)	
		31		C1PK	*** NOTE TO RESTORE S-II TCH CHILL TO 13 MIN, WARMUP UNTIL _____ GMT,	
		31-1		C1PK	*** NOTE PRIOR TO THIS TIME, UNUSED DELTA CHILL TIME IS _____MINS -- SECS AND WITHOUT WARMUP, OPTION 2 WILL NOT BE AVAILABLE AFTER _____ CDC TIME.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
TO - 3' 7"						
	121	32	C1PK	CLTC	OPTION 2 SECURING COMPLETE.	
	121	32-1		C1TC C2TC C4TC CUTC	*** NOTE IF SECURING NOT COMPLETE, REPORT TO CLTC.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 2 -12'25" TO - 7'58"					--- IF HOLD BETWEEN -12'25" & -7'58" --- --- --- JUST BEFORE COUNT RESUMES --- ---	
	121	1	CLTC	ALL	RETURN TO PAGE --- SEQUENCE -----,	
	121 111	2	CLTC	CVTS	LV READY FOR CDC PICKUP ON YOUR MARK	TCPI
	111 121	3	CVTS	ALL	THE COUNT WILL RESUME AT T- ' " ON MY MARK 5 - 4 - 3 - 2 - 1 - MARK	TCPI
TO - 7'58" TO - 3' 7"					--- IF HOLD IS AFTER T-7'58" --- --- --- JUST BEFORE COUNT RESUMES --- ---	
	121	1	C1PK	CLTC	VATS AT T-8 MIN AWAITING CDC PICKUP,	
	121	2	CLTC	ALL	RETURN TO T-7'58" PAGE 248 SEQUENCE 1 --- ---	
	111 121	3	CLTC	CVTS	LV READY TO PICKUP AT T-8 ON YOUR MARK,	TCPI
	111 121	4	CVTS	ALL	THE COUNT WILL RESUME AT T-8 MIN ON MY MARK, 5 - 4 - 3 - 2 - 1 - MARK	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					HOLD OPTION 3 T-22' TO T-3'7"	
OPT 3 -22' 0" TO - 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 NO. 3	
	121	8	CLTC	CHCU	PLACE START CIRCUIT BYPASS TO NORMAL (PERFORM OR VERIFY)	
		8-1			DELETED	I-176-121
	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 342 T-14'30" TO T-12'25" --- PAGE 343 T-12'25" TO T-7'58" --- PAGE 345 T- 7'58" TO T-3' 7" --- PAGE 347 IF ENTERING HOLD OPTION 3 AFTER/FROM HOLD OPTION 2 T- 7'58" TO T-3' 7" --- PAGE 350	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -21'58" TO -14'30"					---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-18'50" ---	
	161	4	***	C4HY	FLIGHT MODE OFF THEN AUTO	***
					--- IF AFTER T-21'58" ---	
	121	5	***	C5PP 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 352	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -14'30" TO -12'25"					---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, THEN AUTO	***
		2-1		C2AE	*** NOTE TCH PURGE ON - OFF	
					--- IF AFTER T-14'30" --- ----------	
	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 CHILLDOWN TERMINATED	
	171	8	***	C2AE	START TANK ALL VENT TO VENT	***
	171	9	***	C2AE	START TANK SUPPLY VALVE TO OFF	***
		9-1		C2AE	*** NOTE START TANK SUPPLY VALVE OPEN - OFF	
	171	10	C2AE	C2TC	START TANK CHILLDOWN HAS BEEN TERMINATED	
	161	11	***	C4HY	FLIGHT MODE OFF THEN AUTO	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -14'30" TO -12'25"					---IF HOLD BETWEEN -14'30" & -12'25"---	CONT'D
	121	12	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	13	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
	171	14	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
	171	15	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCK, THEN AUTO (PERFORM OR VERIFY)	***
	171	16	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	17	***	C2FC	AUX PUMPS 1, 2, 3 & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
					COMPLETE FINAL SECURING STEPS ON PAGE 352	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -12'25" TO - 7'58"					---IF HOLD BETWEEN -12'25" & -7'58"---	
	161	1	***	C4EP	TCH PURGE SUPPLY TO OFF, THEN AUTO	***
	171	2	***	C2AE	TCH PURGE TO OFF, THEN AUTO	***
		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	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -12'25" TO - 7'58"					---IF HOLD BETWEEN -12'25" & -7'58"--- ----------	CONT'D ------
	171	16	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCKED, 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)	***
	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	28-1	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	29	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST). REPORT WHEN COMPLETE.	***
	121	30	*****	C1PC	VERIFY LOW LOX DOME PURGE ON FOR FT10	*****
	123	30-1	CUFS	CUGA	ATTITUDE ROLL RATE COMMAND - PLUS 7 DEG/SEC THEN ZERO RAMP.	A
	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 352	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 - 7'58" TO - 3' 7"					--- IF HOLD BETWEEN -7'58" & -3'7" --- ----------	
	171	1	***	C2AE	TCH CHILLDOWN TO OFF THEN AUTO	***
		1-1		C2AE	*** NOTE TCH CHILLDOWN ON OFF	
	161	2	***	C4EP	CLOSE THRUST CHAMBER CHILLDOWN VALVE	***
		2-1		C4EP	*** NOTE THRUST CHAMBER 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/THRUST CHAMBER 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	C2AF	C2TC	START TANK AND TCH CHILLDOWN TERMINATED.	
					--- IF AFTER T-6'15" --- ----------	
	151	10	***	CUIP	Q-BALL HEATER POWER ON THEN AUTO	***
					--- IF BETWEEN T-5'7" & T-3'20" --- ----------	
	171	11	***	C2SP	LOX SUPPLY VALVE - CLOSE	***
					--- IF AFTER T-4'10" --- ----------	
	121	12	***	CUES	THRUST OK SWITCH A & B TO INHIBIT THEN AUTO	*** TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 - 7'58" TO - 3' 7"					--- IF HOLD BETWEEN -7'58" & -3'7" ---	CONT'D
					--- IF AFTER T-4'45" ---	
	161	13	***	C4EP	LOX & LH2 PREVALVES - OPEN, THEN AUTO	***
					--- IF AFTER T-4'50" ---	
	161	14	***	C4EP	LOX CHILLDOWN PUMP - OFF, THEN AUTO	***
					--- IF AFTER T-4'58" ---	
	161	15	***	C4EP	LH CHILLDOWN PUMP - OFF, THEN AUTO	***
					--- IF AFTER T-7'58" ---	
	161	16	***	C4HY	FLIGHT MODE OFF THEN AUTO	***
	121	17	***	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	18	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
	171	19	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
	171	20	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCKED, THEN AUTO (PERFORM OR VERIFY)	***
	171	21	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***
	171	22	***	C2FC	AUX PUMPS OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	23	***	CLGK	TERMINATE GE01 AND VERIFY	***
	121	24	***	CLGK	TERMINATE FE50 AND VERIFY	***
	121	25	***	CUPC	VERIFY PLATFORM STOPPED	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 - 7'58" TO - 3' 7"						
					--- IF HOLD BETWEEN -7'58" & -3'7" ---	CONT'D
					--- IF AFTER T-7'58" ---	CONT'D
		26		CLTC	IF VATS NOT EXECUTING, IMMEDIATELY PERFORM FOLLOWING TIME CRITICAL STEP	
	121	26-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	***
	121	27	***	C4AL	APS ENGINE VALVE POWER OFF THEN AUTO (PERFORM OR VERIFY)	***
	121	28	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	29	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON	***
	121	30	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK), REPORT WHEN COMPLETE.	***
	121	31	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO OFF	***
	121	32	xxxx	CUSP	VERIFY FCC IN S-IC BURN MODE	xxxx
	121	32-1	xxxx	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	33	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST), REPORT WHEN COMPLETE.	***
	123	33-1	CUFS	CUGA	ATTITUDE ROLL RATE COMMAND - PLUS 7 DEG/SEC THEN ZERO RAMP	A
	121	34	xxxx	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE) READ). REPORT WHEN COMPLETE.	xxxx
	121	35	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MONITOR PROGRAM), REPORT WHEN COMPLETE.	***
					COMPLETE FINAL SECURING STEPS ON PAGE 352	

CONT'D

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 - 7'58" TO - 3' 7"						
					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, THEN AUTO	***
		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	9-1	*****	C4HY	FLIGHT MODE OFF THEN AUTO	*****
	121	10	*****	CSPP C1PP C4PP	COMMIT POWER SUPPLY OFF, THEN AUTO (PERFORM OR VERIFY)	*****
	171	11	***	C2FC	MAIN PUMP BYPASS VALVE CLOSE, THEN AUTO (PERFORM OR VERIFY)	***
	171	12	***	C2FC	INDIVIDUAL ACCUM CONTROL ON, THEN AUTO	***
	171	13	***	C2FC	ALL ACCUMULATORS CONTROL UNLOCK, THEN AUTO (PERFORM OR VERIFY)	***
	171	14	***	C2FC	HYD THERMAL CONTROL OFF, THEN AUTO (PERFORM OR VERIFY)	***

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 - 7'58" TO - 3' 7"						
					IF ENTERING OPTION 3 AFTER/FROM OPTION 2	CONT'D
					--- IF HOLD BETWEEN T-7'58" & T-3'7" ---	CONT'D
	171	15	***	C2FC	AUX PUMPS 1, 2, 3, & 4 OFF, THEN AUTO (PERFORM OR VERIFY)	***
	121	16	***	CLGK	TERMINATE GE01 AND VERIFY	***
	121	17	***	CLGK	TERMINATE FE50 AND VERIFY	***
	121	18	***	CUPC	VERIFY PLATFORM HAS STOPPED	***
		19		CLTC	IF VATS NOT EXECUTING, IMMEDIATELY PERFORM FOLLOWING TIME CRITICAL STEP	
	121	19-1	***	CEDK	ISSUE MDO 980 ON/OFF (GUID INTERRUPT 3)	***
	121	20	***	C4AL	APS ENGINE VALVE POWER OFF THEN AUTO (PERFORM OR VERIFY)	***
	121	21	***	C1PC	VERIFY LOW LOX DOME PURGE ON	***
	121	22	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO ON	***
	121	23	***	CLGK	REQUEST & EXECUTE FT20 (LVDC SELF CHECK). REPORT WHEN COMPLETE.	***
	121	24	***	CUSP	CONTROL COMPUTER S-IVB COAST TEST MODE SWITCH TO OFF	***
	121	25	*****	CUSP	VERIFY FCC IN S-IC BURN MODE	*****
	121	25-1	*****	C1PC	VERIFY LOW LOX DOME PURGE ON	*****
	121	26	***	CLGK	REQUEST & EXECUTE FT10 (LADDER OUTPUT TEST). REPORT WHEN COMPLETE.	***
	121	27	*****	C1PC	VERIFY LOW LOX DOME PURGE ON FOR FT10	*****
	123	27-1	CUFS	CUGA	ATTITUDE ROLL RATE COMMAND - PLUS 7 DEG/SEC THEN ZERO RAMP.	
	121	28	***	CUPC	REQUEST & EXECUTE FT06 (GIMBAL ANGLE READ). REPORT WHEN COMPLETE.	***
	121	29	***	CLGK	REQUEST & EXECUTE FT49/FE50. REPORT WHEN COMPLETE.	***
					COMPLETE FINAL SECURING STEPS ON PAGE 352	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -22' 0" TO - 3' 7"					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 BELOW 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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
OPT 3 -22' 0" TO - 3' 7"					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 241 ---	
	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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS

PAGES 355 THROUGH 358 INTENTIONALLY OMITTED

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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.	
		3			DELETED	B-312 -123
	181	4	C1TC	CSAC	PREP FOR WATL AND WASL. REPORT WHEN COMPLETE.	
	181	5	C1TC	C1SP	SEQUENCER POWER AUTO.	
	181	6	C1TC	C1NP	STAGE LOGIC AUTO.	
	181	7	C1TC	C1CS	LOX AND FUEL LEVEL SENSORS TO AUTO.	
	181	8	C1TC	C1IP	TM CALIBRATOR - AUTO	
	181	9	C1TC	C1IP	TM CAL MODE AUTO.	
	181	10	C1TC	C1IP	PREFLIGHT LEVELS AUTO.	
	181	11	C1TC	C1IP	28 VDC RACS POWER AND 400 HZ POWER TO AUTO.	
	181	12	C1TC	CSPP C1PP	POWER SUPPLY COMMIT TO AUTO.	
	121	13	CLTC	C2TC	FOLLOWING STATIONS SWITCH TO CHANNEL 171 FOR S-II RE-CYCLE. C2EC C2GP C2SP C2FC C2PV V2MS C2AE C2RP C2PU R2SC C2PM	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	171	14	C2TC	C2RP	LOX HE INJECTION TO START, THEN AUTO.	
	171	15	C2TC	C2AE	START TANK ALL VENT TO AUTO.	
	171	16	C2TC	C2AE	HE BOTTLE SUPPLY LINE VENT TO AUTO.	
	171	17	C2TC	C2AE	TCH CHILLDOWN TO AUTO.	
	171	18	C2TC	C2PU	VERIFY ALL WET SIMS IN AUTO.	
	171	19	C2TC	C2SP	LOX DISCONNECT PRESS SW TO AUTO.	
	171	20	C2TC	C2SP	LOX SUPPLY VALVE SW TO AUTO.	
	171	21	C2TC	C2NP	RACS POWER TO AUTO.	
	171	22	C2TC	C2FC	ALL CONTROL SWITCHES TO AUTO EXCEPT AUX PUMP SWITCH TO ENABLE.	
	171	23	C2TC	C2FC	VERIFY INDIVIDUAL ACCUMULATOR LOCKUP LIGHTS ON, AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF.	
	171	24	C2FC	V2MS	HYDRAULIC RECORDERS ON AT 2 MM/SEC.	
	121	25	C2TC	CLTC	S-II READY FOR VARY.	
	161	26	C4TC	C4NP	EMERGENCY POWER TRANSFER SWITCH OFF	(VATS)
	161	27	C4TC	C4PP	PLUG SUPERVISION POWER - AUTO.	(VATS)
	161	28	C4TC	C4EP	START TANK VENT CLOSE THEN AUTO.	(VATS)
	161	29	C4TC	C4EP	CLOSE START TANK EMERGENCY DUMP.	
	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	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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-36113	
	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	
	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).	
		45-1		C1PK	***** NOTE WHEN SWITCH SCAN ERROR OCCURS DUE TO LOW LOX DOME PURGE SWITCH, TAKE CONTINUE OPTION.	A B-312 -123
	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.	

TIME	COMM CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	47	xxxx	CTS1	VERIFY OR OPERATE PSV #3 SWITCH TO DOWN.	xxxx
	121	48	xxxx	C1FR	VERIFY RANGE SAFE ON.	xxxx
		49			DELETED	
	121	50	xxxx	C1DP C2DP C4DP	VERIFY S&A SAFE & PD BLOCKED.	xxxx
	121	51	xxxx	C1DP C2DP C4DP	VERIFY EBW'S EXTERNAL & DISCHARGED.	xxxx
		52		CLTC	NOTE ---- SUBSEQUENCES TO BE PERFORMED ONLY IF S/A 2 HAS RETRACTED	
	121	52-1	xxxx	BGCC	ISSUE MDO 0016 ON (S-IC FWD LEVEL & PSI OK) AND VERIFY	xxxx
	121	52-2	xxxx	C1IP	ALL TRANSMITTERS ON IN SEQUENCE LISTED AND MARKED ON CH 121.	xxxx
	121	52-3	xxxx	C1IP	F1, ON P1, ON	
	121	53A	xxxx	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	xxxx
		53B	xxxx	C1NP	VERIFY STAGE LOGIC ZERO	xxxx
	121	53C	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	
		53-1		CLTC	xxxx 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.	
	121	54	xxxx	C1PC	LOW LOX DOME PURGE ON.	xxxx
	121	55	xxxx	CUNP	ISSUE IU STAGE LOGIC RESET (EDS GRP 1 & 2)	xxxx

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	56	***	CUSP	SELECT S-IC BURN MODE SWITCH ON THEN AUTO.	***
	121	57	CLTC	CUFS	START ATTITUDE COMMAND TEST ON CH 123, REPORT WHEN COMPLETE.	
	123	58	***	CLGK	REQUEST FT10 LADDER OUTPUT TEST, AUTO OPTION.	***
		58-1			NOTE ---- THE FT10 AUTO OPTION WILL DRIVE THE GUIDANCE LADDER TO +/- 2 DEG PITCH, +/- 2 DEG YAW AND +/- 5 DEG ROLL.	
	123	59	CUFS	CUCR	VERIFY VALVE CURRENTS AND BETA RESPONSE ON ALL ENGINES	
	123	60	***	CLGK	TERMINATE FT10	***
	123	60-1	CUFS	CUGA	ATTITUDE ROLL RATE COMMAND - PLUS 7 DEG/SEC THEN ZERO RAMP.	
	123	61	CUFS	ALL	ATTITUDE COMMAND TEST COMPLETE. RETURN TO CH 121.	
	121	62	CUFS	CLTC	ATTITUDE COMMAND TEST COMPLETE.	
		63	***	C2AE	HELIUM BOTTLE LINE VENT OFF.	***
		63-1		C2AE	*** NOTE HELIUM BOTTLE SUPPLY LINE VENT OPEN - OFF	
		64	***	C2AE	ALL HELIUM CONTROL SOLENOIDS TO OFF.	***
		64-1		C2AE	*** NOTE ALL HE SOL - OFF	
		65	***	C2AE	HELIUM BOTTLE VENT 1-5 TO OFF.	***
		66	***	C2EC	HELIUM CONTROL SOLENOID 201 THRU 205 OFF	***
		66-1		C2EC	*** NOTE HE CONTROL SOLENOID 201 THRU 205 - OFF	
		67	***	C2AE	HE BOTTLE SUPPLY VALVE TO PRESSURIZE	***
		67-1		C2AE	*** NOTE HE BOTTLE SUPPLY VALVE OPEN - ON	
	171	68	C2TC	C2FC	START EAS RECYCLE OPERATIONS	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	171	69	***	C2FC	MAIN PUMP BYPASS VALVE - CLOSE, THEN AUTO	***
	171	70	***	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL OFF, THEN AUTO,	***
	171	71	***	C2FC	VERIFY ACCUMULATORS UNLOCKED,	***
	171	72	***	C2FC	AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 TO ON. ALLOW SYSTEM PRESSURES TO STABILIZE	***
	171	73	***	C2FC	OPEN MAIN PUMP BYPASS VALVE AND ALLOW MAIN PUMP FLUID TEMPS TO STABILIZE WITH RESERVOIR FLUID TEMPS.	***
	171	74	***	C2AE	START TANK SUPPLY LINE VENT TO OFF.	***
		74-1		C2AE	*** NOTE START TANK SUPPLY LINE VENT OPEN - OFF	
	171	75	***	C2FC	MAIN PUMP BYPASS VALVE - CLOSE, THEN AUTO	***
	171	76	***	C2FC	ENGINES 1, 2, 3 & 4 ACCUMULATOR CONTROL - ON, THEN AUTO.	***
	171	77	***	C2FC	AUXILIARY HYDRAULIC PUMPS, ENGINES 1, 2, 3 & 4 TO OFF THEN AUTO. VERIFY NORMAL SHUTDOWN.	***
	171	78	C2FC	V2MS	HYDRAULIC RECORDERS OFF	
		78-1		C2FC	*** NOTE INDIVIDUAL ACCUMULATOR LOCK LIGHTS ON AND ALL ACCUMULATOR LOCK COMMAND LIGHT OFF	
		78-2		C2FC	*** NOTE OPEN MAIN PUMP BYPASS VALVE DURING AUXILIARY PUMP OPERATIONS	
	171	79	C2AE	C2TC	ENG HE BOTTLE PRESSURIZATION TO 3000 PSI COMPLETE,	
	171	80	C2TC	R2SC C2AE C2EC C2FC C2GP C2PV C2PM C2PU C2RP C2SP	VERIFY READY TO PICK UP THE COUNT AT T-22 MINUTES	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	81	C2TC	CLTC	S-II RECYCLE COMPLETE.	
		82		C2NP R2SC	CYCLE MAIN/INSTR BATT BLEED SWITCHES TO MAINTAIN BATT VOLTAGES IN TOLERANCE (CD ONLY)	
	121	83	***	CUIP	Q-BALL POWER ON THEN AUTO, Q-BALL HEATER POWER ON THEN AUTO.	***
	121	84	***	CUCP	PUMP PRESSURE SWITCH ACTIVATE - OFF THEN AUTO.	***
	121	85	***	CLGK	REQUEST & EXECUTE FT49/FE50 (ACCEL MON PROG)	***
	121	86	***	CLIK	REQUEST & EXECUTE VATC (TM PREFLIGHT CAL). REPORT WHEN COMPLETE.	***
	161	87	***	C4EP	CLOSE START TANK SUPPLY VENT THEN AUTO	***
	161	88	***	C4HN	VERIFY 6000 PSI GH2 OPEN.	***
	121	89	CLTC	RLDE	GIVE A DEMAND PRINTOUT ON ALL STAGE PRINTERS. REPORT WHEN COMPLETE.	
	121	90	***	C4NK	REQUEST & EXECUTE XADS. REPORT WHEN COMPLETE.	***
	121	91	C1PK	CLTC	VARY DISPLAYING VARS RUN OPTION.	
		91-1		CLTC	*** NOTE IF DRSCR RETEST IS REQUIRED, TURN TO APPENDIX B, PART 5, PAGE 368. --	
	121	92	C1PK	CLTC	VARY READY FOR CDC RESET TO T-22 MINUTES	(VATS)
	111	93	CLTC	CVTS	SET COUNT CLOCK AT T-22 MINUTES.	TCPI (VATS)
	121	94 A	***	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.	***
		94A-1		CUPC	(IF HOLD WAS AFTER T-12'25") REQUEST & EXECUTE GE01 (AZIMUTH LAYING AND PLOT MONITOR)	
	261	94B	CLM4	BOSC	REQUEST PRESENT GH2 BATTERY PRESSURE.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	95	***	C1PK	REQUEST & EXECUTE VATS (TERMINAL SEQUENCE LINKING PROGRAM, PR2/PR4).	***
		95-1			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 BUT MAY, AFTER COORDINATION ON CH 121, BE DELAYED BY C1PK. ********** 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 ON THE INDICATED COMM CH. **********	
	121	96	***	C4PP	PLUG SUPERVISION POWER OFF THEN AUTO	***
	121	97	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO RESUME COUNT	
	121	98	C1PK	CLTC	VATS AT T-22 MINUTES AWAITING CDC PICKUP	
	121	99	CLTC	RLDE	ENTER/VERIFY CDC MODE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	100	CLTC	ALL	RETURN TO ASSIGNED CHANNELS TO RESUME THE COUNT AT T-22'0" PAGE 241, THE COUNT CLOCK WILL BE RESTARTED ON A MARK FROM CVTS.	
	111	101	CLTC	CVTS	LAUNCH VEHICLE READY TO RESUME COUNT, REQUEST A TIME COUNT AND MARK START OF COUNTDOWN CLOCK.	TCPI
		101-1		CVTS	*** NOTE USE A 5 COUNT FOR COUNT CLOCK START ON THE "ALL CALL" SYSTEM.	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					APPENDIX B ----------	
					PART 5 - DRSCR RETEST ----------	
		1			NOTE ---- THIS RETEST TO BE ACCOMPLISHED AS PART OF RECYCLE TO T-22 MINUTES IF REQUIRED.	
		2			NOTE ---- S-IC CLOSED LOOP TEST NOT POSSIBLE IF S/A 2 HAS DISCONNECTED. PERFORM S-II & S-IVB RETEST MANUALLY.	
	121	3	CLTC	BTMC	VERIFY LCC/TM CHECKOUT EQUIPMENT READY TO SUPPORT DRSCR CLOSED LOOP TEST.	
	111	4	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED) AND REQUEST SRO SWITCH TO CH 121 TO SUPPORT DRSCR CLOSED LOOP TEST USING TEST CODE PLUGS. DO NOT BRING DOWN RANGE CARRIER UNTIL REQUESTED.	TCPI
		5		C2NP	CYCLE MAIN/INSTR BATTERY BLEED SWITCHES TO MAINTAIN BATTERY VOLTAGES IN TOLERANCE (CD ONLY).	
	121	6	CLTC	BRFS	VERIFY RF SELECT TO STANDBY AND REMOTE MONITOR TO SIG GEN 1	
	111	7	CLTC	CVTS	LOCAL COMMAND CARRIER COMING ON.	TCPI
	121	8	CLTC	RRSC	VERIFY DRSCS RECORDERS ON.	
	121	9	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES IN AUTO POSITION EXCEPT: PD RSCR'S ENABLE - OFF SYSTEM STATUS SW - SAFE S&A SWITCH - SAFE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	10	CLTC	C1PK	IF S/A 2 IS CONNECTED, COMMAND VARY TO RUN VARS	
	121	11	***	C1PK	REQUEST & EXECUTE VARS (DRSCR TEST) (T-40 MIN OPT).	***
		11-1			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	12	VARS	C1DP C2DP C4DP	VERIFY S&A SAFE AND RSCR'S 1 & 2 PD BLOCKED - ON	
	121	13	C1PK	CLVN	DESTRUCT SYSTEM TO ENABLE.	
		13-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON.	
	121	14	C1PK	C1DP C2DP C4DP	SYSTEM STATUS SWITCH - OFF	
	121	15	VARS	BRFS	SIG GEN ON AND VERIFY REMOTE MONITOR TO HYBRID.	
	121	16	VARS	C1DP C2DP C4DP	RSCR'S 1 & 2 - INTERNAL & VERIFY.	
		16-1		CRSS	*** NOTE ALL RSCR'S ON INTERNAL POWER	
	121	17	VARS	B1RF B2RF B4RF CRSS	VERIFY RSCR LIMITER VOLTAGES OK.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	121	18	VARS	C1DP C2DP C4DP	VERIFY EBW'S #1 & #2 EXTERNAL AND NOT CHARGED.	
		18-1		CRSS	*** NOTE ALL EBWS NOT CHARGED.	
	121	19	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	20	C1PK	CLTC	READY FOR SRO CUTOFF COMMAND, REQUEST RANGE CARRIER TO OFF AND VERIFY	
	111	21	CLTC	CVTS	REQUEST RANGE CARRIER OFF AND VERIFY	TCPI
	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	
	121	25	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	26	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	27	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 WERE INTERNAL AND 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	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 EXTERNAL AND NOT CHARGED.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		28-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED	
	121	29	VARS	C1DP C2DP C4DP	VERIFY S&A DEVICE SAFE AND RSCR'S 1 & 2 PD BLOCKED.	
	121	30	C1PK	CLTC	READY FOR SRO PD COMMAND.	
	121	31	CLTC	RRSC	RECORDERS - FAST SPEED	
	121	32	CLTC	SRO	ON YOUR MARK SEND PD COMMAND ON CLOSED LOOP LINKS FOR 1 SECOND	
	121	33	SRO	ALL	3-2-1 MARK	
	121	34	CLTC	RRSC	RECORDERS - SLOW SPEED	
	121	35	VARS	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD RECEIVED	
		35-1		CRSS BRFS	*** NOTE PD INDICATIONS RECEIVED.	
	121	36	VARS	C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 DID NOT CHARGE	
		36-1		CRSS	*** NOTE ALL EBW'S DID NOT CHARGE	
	121	37	C1PK	CLTC	READY FOR RANGE TRANSMITTER ON - VERIFY	
	111	38	CLTC	CVTS	REQUEST RANGE SAFETY COMMAND TRANSMITTER #1 CARRIER ON. REPORT WHEN TURNED ON.	TCPI
		38-1		CLTC	*** NOTE DO NOT PROCEED UNTIL TRANSMITTERS ARE ON	
	121	39	VARS	BRFS	SIG GEN SELECTOR - STANDBY	
	121	39-1	VARS	B1RF B2RF B4RF CRSS	VERIFY RSCR LIMITER VOLTAGES OK.	
	121	40	C1PK	CLTC	VARS COMPLETE	
	121	41	CLTC	BTMC	TM TAPE RECORDER OFF AND RELOAD	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		41-1		BTMC	*** NOTE DELIVER TAPE TO SECURITY OFFICER (CD ONLY)	
	111	42	CLTC	CVTS	DRSCS TEST COMPLETE, LOCAL COMMAND CARRIER IS OFF	TCPI
	121	43	CLTC	ALL	ALL PERSONNEL TURN TO APP B4, PAGE 365 , SEQ 92 .	

APPENDIX C

LV DRAIN OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
					APPENDIX C	
					LV DRAIN OPERATIONS	
					PART 1	
					LV PREPS FOR DRAIN	
	121	1	CLTC	C1DP C2DP C4DP	SYSTEMS STATUS SWITCH TO SAFE	
		1-1		C1DP C2DP C4DP	*** NOTE RSCR EXTERNAL AND OFF	
	121	2	CLTC	CLVN	DESTRUCT SYSTEM OFF	
	121	3	CLTC	CUPC	POWER DOWN ST-124M PER V-33011	
	151	3-1	CUTC	CUNP	CDDT ONLY	*
	121	4	CLTC	CUSP	FLIGHT CONTROL COMPUTER POWER SWITCH - OFF.	
	121	5	CLTC	CUGA	CONTROL EDS RATE GYRO POWER SWITCH - OFF	
	121	6	CLTC	CLGK	REQUEST & EXECUTE FT04 PER V-33033, SECTION IV (POWER OFF LVDC/LVDA)	
	121	7	CLTC	CUPC	TERMINATE GE01 IF EXECUTING	
	121	7-1	CLTC	CUES	THRUST OK SWITCH A&B TO INHIBIT	
	121	8	CLTC	CWCP	RECONFIGURE THE IWS TO AN EGRESS CONFIGURATION PER V-36113,	
	121	9	CLTC	CSPP	REMOVE LSE 43D100 & 43D200 FIRING POWER PER V-21194 & REMOVE LSE POWER OVERIDE REPORT WHEN COMPLETE,	
	121	10	CLTC	C1TC C2TC C4TC CUTC	VERIFY SYSTEMS SAFED & READY FOR CREW EGRESS;	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	111	11	CLTC	CVTS	LV READY FOR CREW EGRESS,	TCPI
	188	12	CLTC	ALL	ALL LV SYSTEMS WILL BE HELD AT THIS POINT UNTIL FLIGHT CREW EGRESS IS COMPLETE,	
	111	13	CVTS	CSA9	RECONNECT SERVICE ARM 9 PER V-36085 (IF NOT ALREADY CONNECTED)	TCPI
	111	14	CSA9	CVTS	S/A 9 RECONNECTED,	TCPI
	111	15	CVTS	CSA9	RETURN TO CHANNEL 118,	TCPI
	118	16	CSA9	CSAC	S/A 9 HAS BEEN RECONNECTED, CSA9 IS NOW ACTIVE ON CHANNEL 118,	
	181	17	CSAC	C1TC	S/A 9 IS RECONNECTED,	
	118	18	CSAC	CHCU	PLACE ONE PUMP IN STANDBY AND VERIFY OTHER PUMP IS RUNNING,	
	181	19	C1TC	CSPP	PLACE 42D100 LOCKUP ENABLE SWITCH TO OFF AND VERIFY	
		20			NOTE IF FLIGHT CREW IS ABOARD, IT WILL BE APPROXIMATELY ONE HOUR BEFORE ALL PERSONNEL WILL BE CLEAR OF THE CONTROL AREA FOR DRAIN OPERATIONS,	
	121	1	CVTS	CLTC	CREW EGRESS IS COMPLETE, ALL PERSONNEL ARE CLEAR OF THE CONTROL AREA, LV DRAIN OPERATIONS MAY START,	TCPI
		2			NOTE FOR THE NEXT 15 MIN, CSAD REQUIRES EXCLUSIVE CONTROL OF TV CAMERAS 27 AND AA3 OR AA4	XB-247-107
	121	3	CLTC	C1TC	RECONNECT PRIMARY DAMPER	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
	181	4	C1TC	CSAC	RECONNECT PRIMARY DAMPER	
	118	5	CSAC	CSAD	RECONNECT PRIMARY DAMPER PER V-36086,	
	181	6	C1TC	CTS1	DISARM UMBILICAL SWITCH AND CLOSE UMBILICAL RELEASE SIMULATE VALVE	
		7		CLTC	NOTE ---- IF COMPUTER IS NOT SUPPORTING, ALL PERSONNEL TURN TO APPENDIX C, PART 4, PAGE 391 . -----	
	121	8	CLTC	C2TC	TURN TO PART 3 AND START S-II PREPARATIONS FOR PROPELLANT DRAIN ON CHANNEL 171, REPORT WHEN READY FOR LH2 DRAIN	#
	121	9	CLTC	C1TC	CDDT ONLY	*
	121	10	CLTC	C2TC	CDDT ONLY	*
	171	11	C2TC	C2SP	CDDT ONLY	*
	121	12	CLTC	C4TC	START S-IVB PROPELLANT DRAIN PREPS PER V-30539 SECT V,	
	121	13	CLTC	C1IP C2IP C4IP CUIP	ALL TM RF ASSY'S - OFF AND MARK,	
	121	14		C1IP	F1 & P1 TRANSMITTERS OFF	
	121	15		C2IP	F1, F2, & P1 TRANSMITTERS OFF	
	121	16		CUIP	F1 & P1 RF OFF	
	121	17		C4IP	P1 OFF THEN AUTO,	
	121	18	CLTC	CUIP	F1 TM ASSY OFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
	121	19	CLTC	C1IP	28 VOLT RACS AND 400 HERTZ POWER - OFF.	
	121	20	CLTC	ETMS BTMC	TM TAPE RECORDING OFF.	
	121	21	CLTC	C1IP CUIP	TM CALIBRATOR - OFF.	
	121	22	CLTC	CUNP	SWITCH SELECTOR INHIBIT OFF.	
	121	23	CLTC	CUIP	C-BAND BEACON #1 - OFF C-BAND BEACON #2 - OFF CCS TRANSPONDER - OFF COMMAND/DECODER - OFF O-BAND INHIBIT #1 & #2 - OFF	
	121	24	CLTC	CUIP	Q-BALL POWER - OFF Q-BALL HEATER POWER - OFF.	TCPI
	121	25	CLTC	CUCP	HIGH PRESSURE REGULATOR SWITCH TO LOW.	
	121	26	CVTS	CLTC	SC EDS POWER IS OFF	# TCP
	111	27	CLTC	CVTS	COMMAND DECODER IS OFF.	TCPI
	111	28	CLTC	CVTS	ALL LV RF SYSTEMS ARE OFF.	TCPI
	121	29	CLTC	CUNP	SWITCH SELECTOR INHIBIT ON.	
	121	30	CLTC	BRFS	SECURE GSE FLIGHT CODE PLUG	#
	181	31	C1TC	BRFS	SECURE DRSCS GSE PER V-38000 SCRUB/ RECYCLE PROCEDURE	
	121	32	C1TC	CLTC	PRIMARY DAMPER AND S/A 1 ARE CONNECTED.	
	111	33	CLTC	CVTS	PRIMARY DAMPER IS CONNECTED.	TCPI
		34			**********CAUTION********** * * * THE FOLLOWING SEQ IS * * HAZARDOUS, * * * **********	
	181	35	C1TC	C1PE	CONTINUE THERMAL CONDITIONING PURGE AND ENGINE HEATER OPERATIONS UNTIL RESIDUAL LOX HAS BOILED OFF.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CO 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. 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. REPORT WHEN COMPLETE.	
	181	3	C1TC	CCLO	START AUTO SIMULTANEOUS LOX DRAIN OPERATIONS PER V-35014 ADDENDUM B-1. REPORT WHEN COMPLETE.	

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	
+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,	
+ 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	
	181	3	C1TC	CCLH	START LH2 SYSTEM PURGE PER V-35015, VOL II	
	171	4	C2TC	C2NP	REMOVE PM POWER	
	171	5	C2TC	C2SP C2RP	START POST TANKING PURGE PER V-35015, VOL II, NOTIFY C2TC WHEN TANK PURGE HAS BEEN IN PROGRESS FOR 30 MINUTES,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T 1 HRS 30' 0"						
	171	6	C2TC	C2PM	SUPPORT LH2 SYSTEM SECURING PER V-35015, VOL II 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,	
	171	9	C2TC	U2SE	S-II PROPELLANT DRAIN IS COMPLETE, RELEASE S-II RED CREW FROM STANDBY,	
T 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 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	
	171	8	C2TC	C2FC	START EAS POST DRAIN PROCEDURE PER V-30029 (M020) TASK 55,	
		8-1		CCLO 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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
T- 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 (IF RECYCLING TO T-9 HRS)	
		4			NOTE ---- FOLLOWING SUBSEQUENCES ARE TO BE PERFORMED ONLY IF MSS IS RETURNING TO PAD,	
	121	4-1	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	4-2	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	4-3	C2TC	C2PV	MSS PLATFORM OBSERVERS WITH HEADSETS REPORT TO PVTS AT PAD MAIN GATE (TRAILER 179) FOR BRIEFING IN 45 MINUTES,	
T- 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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 HRS 40' 0"						
	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 IS CONTINUING)	
	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 & S-IVB TANK PURGES WILL CONTINUE,	
	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,	
	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	
	181	8	C1TC	CECS	SWITCH ECS FROM GN2 TO AIR PER V-36074 PART D, VERIFY HANDVALVE SECURING CREW AT ROADBLOCK TO FOLLOW SAFETY INSPECTION TEAM TO ECS ROOM,	
	181	9	C1TC	CHGD	SECURE HGD SYS PER V-37038	
	181	10	C1TC	C1PE	VENT S-IC GN2 BOTTLES TO 1500 PSI PER V-24327,	
	181	11	C1TC	C1NP	HEATER POWER SWITCH TO OFF	
	121	12	C2TC	CLTC	S-II INSULATION PERSONNEL ARE AT ROADBLOCK TO ACCOMPANY SAFETY INSPECTION TEAMS TO PAD APRON AND 140 FT LEVEL,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ 2 HRS 40' 0"						
	121	13	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	14	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

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
+ 2 HRS 40' 0"					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	15	CLTC	CVTS	REQUEST CPSS TO CLEAR BENDIX PERSONNEL TO FACILITY HIGH PRESSURE GH2 AREA TO SECURE AND VENT 6000 PSI GH2 TRANSFER LINE	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
* 2 HRS 40' 0"						
	121	16	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,	
	261	17	CLTC	BOSC	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,	TCPI
	121	18	BOSC	CLTC	VERIFY S-IVB & S-II PERSONNEL ARE READY TO SUPPORT GH2 CROSS COUNTRY LINE SECURING WITH GHE,	TCPI
	151	19		CUTC	TERMINATE ALTERNATE FIRING ROOM SUPPORT	
	181	20	C1TC	CCLH	VERIFY WHEN SYSTEM INERTING TO LESS THAN 4% GH2 IS SATISFACTORY BY COORDINATING WITH SECURING CREW ON LUT WITH SAFETY INSPECTION TEAM	
* 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 TWO * * SEQUENCES ARE 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
+ 2 HRS 45' 0"						
	181	6	C1TC	C1PE	SECURE APPLICABLE PORTIONS OF S-IC PNEUMATICS SYS PER V-24327, REPORT WHEN COMPLETE.	
	121	7	C1TC	CLTC	ECS SWITCH OVER FROM GN2 TO AIR IS COMPLETE, ECS GN2 IS IN STANDBY CONFIGURATION.	
+ 3 HRS 0' 0"						
	171	1	C2TC	C2PV	SECURE PURGE AND VACUUM SYSTEM PER V-25311 (L009).	
		1-1			NOTE ---- IF REQUIRED, OPERATION WILL CONTINUE PER APPLICABLE SECTIONS OF V-26276 (G058).	
+ 3 HRS 30' 0"						
	121	1	CLTC	C1TC	SEND TSM PERSONNEL TO ZERO LEVEL FOR TSM 3-4 TILT BACK (IF MSS IS TO BE RETURNED TO PAD).	
	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 (IF MSS IS TO BE RETURNED TO PAD).	
+ 3 HRS 40' 0"						
	181	1	CCLH	C1TC	SYSTEM INERTING HAS BEEN VERIFIED SATISFACTORILY ON THE LUT	
	181	2	CECS	C1TC	ECS GN2 HANDVALVES HAVE BEEN CLOSED * * * * * * * * * WARNING * * * * * * * * * * * END ECS INERT ATMOSPHERE HAZARD * * - RESUME PREVIOUS HAZARD LEVEL *	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▸ 3 HRS 40' 0"						
	121	3	C1TC	CLTC	ECS GN2 HANDVALVES ARE CLOSED AND LH2 SYSTEM INERTING ON THE LUT ACCEPTABLE FOR AREA OPENING	
	111	4	CLTC	CVTS	ECS GN2 HANDVALVES ARE 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,	
	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	BUSC	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					PART 3 S-II PREPARATIONS FOR PROPELLANT DRAIN	
	171	1	C2TC	C2SP	GN PURGE VALVE TO AUTO,	
	171	2	C2TC	C2SP	LH SUPPLY VALVE TO AUTO,	
	171	3	C2TC	C2GP	GH SUPPLY VALVE TO CLOSE,	
	171	4	C2TC	C2GP	START TANK LINE VENT TO OPEN FOR APPROX 10 SECONDS THEN CLOSE,	
	171	5	C2TC	C2GP	GH REG VENTS TO OPEN,	
	171	6	C2TC	C2GP	HE PRESS SEL SW TO 1000 PSIG,	
	171	7	C2TC	C2AE	VERIFY ENGINE PURGES COMPLETE,	
	171	8	C2TC	C2AE	USE ALL HE SOLENOID SWITCH TO VENT ENG HE BOTTLES BELOW 25 PSIA,	
		8-1		C2PU R2SC	*** NOTE MESAUREMENTS G006-201 THROUGH 205 WILL BE ACTIVE,	
	171	9	C2TC	C2RP	PNEU SUPPLY VALVE TO OFF,	
	171	10	C2TC	C2RP	LOX HE INJECTION TO START, THEN AUTO, WHEN RECEIVER PRESS APPROX, 1465 PSIA, HE INJECTION TO STOP, THEN AUTO,	
		10-1		C2SP	*** NOTE LOX HE INJECTION RECEIVER BEING VENTED INTO LOX TANK,	
	171	11	C2TC	C2RP	USE RECIRC ACT SYSTEM VENT SWITCH TO VENT RECIRC RECEIVER TO APPROX, 1465 PSIA,	
	171	12	C2TC	C2AE	START TANK SUPPLY LINE VENT TO OFF,	
	171	13	C2TC	C2AE	VERIFY HE BOTTLE PRESSURES BELOW 25 PSIA,	
	171	14	C2TC	C2AE	VERIFY START TANK PRESSURES BELOW 25 PSIA,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	171	15	C2TC	C2AE	ALL ENG EMERGENCY CUTOFF TO AUTO,	
	171	16	C2TC	C2RP	VERIFY LOX HE INJECTION RECEIVER PRESSURE APPROX, 1465 PSIA,	
	171	17	C2TC	C2RP	VERIFY RECIRC RECVR PRESS APPROX, 1465 PSIA,	
	171	18	C2TC	C2RP	PNEUM, SUPPLY VALVE TO PRESSURIZE,	
	171	19	C2TC	C2GP C2PV C2PM C2SP	VERIFY READY FOR PROPELLANT DRAIN,	
	171	20	C2TC	C2PV	MAINTAIN COMMON BULKHEAD VACUUM FOR PROPELLANT DRAIN,	
	121	21	C2TC	CLTC	S-II READY FOR PROPELLANT DRAIN,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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.	
		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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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 054 (C-BAND INHIBIT #1 & #2 OFF)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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 SCRUB/RECYCLE PROCEDURE,	
	121	9	CLTC	CUNP	SWITCH SELECTOR INHIBIT ON	
	121	10	CLTC	CUPC	POWER DOWN ST-124M PER V-33011	
	121	11	CLTC	CUSP	FLIGHT CONTROL COMPUTER 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 FOR PROPELLANT DRAIN	
	121	20	CLTC	C1TC C2TC C4TC	VERIFY READY TO START PROPELLANT DRAIN,	
	121	21	CLTC	C1TC	START PROPELLANT DRAIN, PER APPENDIX C, PART 2, PAGE 379 ,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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 MDOIS 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,	
	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)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	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,	

APPENDIX D

CONTINGENCY PROCEDURES

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					APPENDIX D	
					CONTINGENCY PROCEDURES	
					PART 1: T-32' MANUAL POWER TRANSFER	
					PREPS FOR POWER TRANSFER TEST	
	121	1	CLTC	BTMC	TM TAPE RECORDING - ON	
	188	2	CLTC	ALL	ALL PERSONNEL SUPPORTING POWER TRANSFER TEST SWITCH TO INDIVIDUAL STAGE TC ACTIVE CHANNELS TO PREPARE FOR POWER TRANSFER.	
	123	3	CUFS	CUGA	ATTITUDE RATE COMMANDS (PLUS 10 DEG/SEC ROLL). HOLD UNTIL POWER TRANSFER IS COMPLETE.	
	121	4	CUFS	CLTC	FLIGHT CONTROL READY FOR POWER TRANSFER.	
	181	5	C1TC	C1NP	VERIFY INTERNAL AND EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	181	6	C1TC	C1NP	BATTERY INSTALLED ENABLE TO ON	
		6-1		C1NP	*** NOTE S-IC READY FOR POWER TRANSFER.	
	181	7	C1TC	C1NE R1SC	VERIFY READY FOR POWER TRANSFER.	
	181	8	C1TC	C1NP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	9	C1TC	CLTC	S-IC READY FOR POWER TRANSFER.	
		9-1		C2RP	*** NOTE OK TO OPERATE PUMPS LIGHT ON.	
	171	10	C2TC	C2RP	LH2 RECIRC PUMPS TO START, THEN INHIBIT (AT 2 SECOND INTERVALS).	
		10-1		C2PC	*** NOTE RECIRC BUS CURRENT INCREASES WITH EACH RECIRC PUMP START	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	171	11	C2TC	C2RP	LH2 PREVALVES TO CLOSE, THEN INHIBIT	
		11-1		C2RP	*** NOTE LH2 PREVALVES CLOSED - ON	
	171	12	C2TC	C2NP	BATTERY INSTALLED TO ENABLE	
		12-1		C2NP	*** NOTE MAIN, INST AND RECIRC BATTERY CONNECTED - ON	
	171	13	C2TC	C2NP	VERIFY SIM FLT BATT ENABLED (CDDT ONLY)	
	171	14	C2TC	C2NP R2SC	VERIFY READY FOR POWER TRANSFER,	
	171	15	C2TC	C2NP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	16	C2TC	CLTC	S-II READY FOR POWER TRANSFER,	
	161	17	C4TC	R4HY	HYD STRIP CHARTS TO FAST	
	161	18	C4TC	C4HY	FLIGHT MODE ON THEN AUTO, (VERIFY WHEN SYSTEM IS STABILIZED),	
	161	19	C4TC	C4EP	VERIFY LOX AND LH2 READY TO START INDICATION ON.	
	161	20	C4TC	C4EP	LH2 CHILLDOWN PUMP - ON (WAIT 10 SECONDS BEFORE NEXT STEP),	
	161	21	C4TC	C4EP	LOX CHILLDOWN PUMP - ON (WAIT 5 SECONDS BEFORE NEXT STEP),	
	161	22	C4TC	C4EP	CLOSE LOX AND LH2 PREVALVES,	
	161	23	C4TC	C4NP	EMERGENCY POWER TRANSFER - OFF,	
	161	24	C4TC	C4NP	STAGE BATTERY MONITOR TO ENABLE	
	161	25	C4TC	C4NP	SIM FLIGHT POWER SWITCH ENABLE (CDDT ONLY)	
	161	26	C4TC	C4IP	PRELAUNCH CHECKOUT GROUP OFF THEN AUTO	
	161	27	C4TC	C4NP C4PP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER,	
	161	28	C4TC	C4NP R4EI R4SC	VERIFY READY FOR POWER TRANSFER,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	161	29	C4TC	C4NP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	30	C4TC	CLTC	S-IVB READY FOR POWER TRANSFER.	
	151	31	CUTC	CUNP	VERIFY INTERNAL & EXTERNAL BUSSES ARE CORRECT FOR POWER TRANSFER.	
	151	31-1	CUTC	CUNP	CDDT ONLY	*(VAPX)
	151	32	CUTC	CUNP RUBM	VERIFY READY FOR POWER TRANSFER.	
	151	33	CUTC	CUNP	IU TO REMAIN ON INTERNAL FOR 3 MINUTES	
	151	34	CUTC	CUNP	ON MARK FROM CLTC TRANSFER TO INTERNAL.	
	121	35	CUTC	CLTC	IU READY FOR POWER TRANSFER.	
					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 & S-IVB STAGES STAY INTERNAL FOR 30 SECONDS MINIMUM. IU STAY ON INTERNAL POWER FOR 3 MINUTES MINIMUM. REPORT BATTERY VOLTAGES AND CURRENTS TO CLES ON CH 125.	
	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		CUDE	*** NOTE 0777 & 0779 ON, 0781 OFF	
		4-2		C1NP	*** NOTE POWER TRANSFER EXTERNAL OFF	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		4-3		C1NP	*** NOTE POWER TRANSFER INTERNAL ON	
	181	5	C1TC	C1FR	VERIFY POWER TRANSFER COMPLETE (ALL STAGES) - ON	
	181	6	C1TC	C1NP	VERIFY S-IC POWER TRANSFER COMPLETE ON	
		6-1		C1NP	*** NOTE BUS +1D121 OFF	
		6-2		C1NP	*** NOTE BUS +1D111 OFF	
		6-3		C1NP	*** NOTE BUS +1D211 OFF	
		6-4		R1SC	*** NOTE RECORD VOLTAGE FOR STAGE BUSSES 1D11 AND 1D21, RECORD VOLTAGE AND CURRENT FOR BUSSES 1D10 & 1D20.	
	181	7	C1TC	C1NP	POWER TRANSFER SWITCH EXTERNAL THEN AUTO.	
		7-1		C1NP	*** NOTE S-IC POWER TRANSFER COMPLETE OFF	
		7-2		C1NP	*** NOTE POWER TRANSFER INTERNAL OFF	
	181	8	C1TC	C1NP	VERIFY POWER TRANSFER EXTERNAL ON	
	181	9	C1TC	C1NP	BATTERY INSTALLED ENABLE SWITCH TO AUTO	
		9-1		C1NP	*** NOTE BUS +1D121 ON	
		9-2		C1NP	*** NOTE BUS +1D211 ON	
		9-3		C1NP	*** NOTE BUS +1D111 ON	
	181	10	C1TC	R1SC	READOUT 1D11 & 1D21 VOLTAGE & 1D10, 1D20 VOLTAGE AND CURRENT DURING INTERNAL, THEN TO CLES ON CH 125.	
	181	11	C1TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	12	C1TC	CLTC	S-IC POWER TRANSFER TEST IS COMPLETE	
		12-1		C2NP	*** NOTE POWER TRANSFER COMPLETE ON	
		12-2		R2SC	*** NOTE RECORD THE FOLLOWING WHILE ON INTERNAL:	
					MAIN BATT CURRENT (XM0021-207)	

(CONTINUED)

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					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	13	C2TC	C2NP	TRANSFER MAIN, INSTR, & RECIRC TO EXTERNAL AFTER 30 SECONDS MINIMUM ON INTERNAL.	
		13-1		C2NP	*** NOTE MAIN, INST & RECIRC BUSSES EXTERNAL ON	
		13-2		C2NP	*** NOTE POWER TRANSFER COMPLETE OFF	
	171	14	C2TC	C2RP	RECIRC, RESET TO RESET, THEN INHIBIT	
		14-1		C2PC	*** NOTE RECIRC BUS CURRENT DECREASES TO LESS THAN 5 AMPS	
	171	15	C2TC	C2RP	LOX HE INJECTION TO AUTO	
		15-1		C2RP	*** NOTE LOX HE INJ OFF - OFF LH2 PREVALVES OPEN ON, PUMP INLET PRESSURE DECAY.	
	171	16	C2TC	C2NP	BATTERY INSTALLED ENABLE TO AUTO	
	171	17	C2TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	18	C2TC	CLTC	S-II POWER TRANSFER TEST IS COMPLETE	
	171	19	C2TC	R2SC	READOUT RECORDED BUS VOLTAGES TO CLES ON CH 125.	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	161	20	C4TC	C4NP	VERIFY POWER TRANSFER COMPLETE	
	161	21	C4TC	C4NP	VERIFY STAGE ON INTERNAL POWER	
	161	22	C4TC	R4SC	VERIFY BUS VOLTAGE AND CURRENT WITHIN LIMITS	
	161	23	C4TC	C4NP	POWER TRANSFER SWITCH - EXTERNAL THEN AUTO	
	161	24	C4TC	C4NP	VERIFY STAGE ON EXTERNAL POWER	
	161	25	C4TC	C4NP	VERIFY POWER TRANSFER COMPLETE OFF	
	161	26	C4TC	R4PS	VERIFY CHILLDOWN PUMP DATA SATISFACTORY AND READY TO TURN PUMPS OFF	
	161	27	C4TC	C4EP	OPEN LOX & LH2 PREVALVES.	
	161	28	C4TC	C4EP	LOX CHILLDOWN PUMP - OFF THEN AUTO	
	161	29	C4TC	C4EP	LH2 CHILLDOWN PUMP - OFF THEN AUTO	
	161	30	C4TC	C4HY	FLIGHT MODE - OFF THEN AUTO	
	161	31	C4TC	R4HY	RECORDERS - SLOW AFTER PRESSURE DECAYS	
	161	32	C4TC	C4NP	STAGE BATTERY MONITOR TO AUTO	
	161	33	C4TC	R4SC	TRANSMIT POWER TRANSFER DATA TO CLES ON CH 125	
	161	34	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	35	C4TC	ALL	ALL STATIONS RETURN TO CH 121	
	121	36	C4TC	CLTC	S-IVB POWER TRANSFER TEST COMPLETE	
	151	37	CUTC	CUNP	VERIFY POWER TRANSFER COMPLETE & IU STAGE POWER ON	
	151	38	CUTC	RUBM	VERIFY BUS VOLTAGE AND CURRENT WITHIN LIMITS. READOUT VOLTAGES AND CURRENTS TO CLES ON CH 125	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
		38-1		CUTC	*** NOTE DELAY NEXT STEP FOR 3 MINUTES	
	151	39	CUTC	CUNP	POWER TRANSFER TO EXTERNAL ON YOUR MARK	
	151	40	CUNP	ALL	3-2-1, MARK	
	151	41	CUTC	CUNP	VERIFY IU GROUND POWER ON AND POWER TRANSFER COMPLETE OFF.	
		41-1		CUDE	*** NOTE 0777 & 0779 OFF, 0781 ON	
	151	42	CUTC	CUNE	VERIFY POWER TRANSFER SATISFACTORY	
	151	43	CUTC	ALL	ALL STATIONS RETURN TO CH 121	
	121	44	CUTC	CLTC	IU POWER TRANSFER TEST IS COMPLETE	
	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	

APPENDIX E

PAD ACCESS DURING HAZARDOUS OPERATIONS

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					APPENDIX E ---------- PAD ACCESS DURING HAZARDOUS OPERATIONS ----------	
	121	1	CLTC	C1DP C2DP C4DP	VERIFY S&A SAFE AND SYSTEM STATUS SAFE 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.	
	171	7	C2TC	C2FC	PREPARE ENGINE ACTUATION SYSTEMS FOR CONTROLLED SWITCHING PER V-30029 (M020) TASK 62 IF AUTO THERMAL CONTROL MODE IS IN EFFECT. REPORT WHEN READY FOR CONTROLLED SWITCHING.	
	121	8	CLTC	C1TC C2TC C4TC CUTC	DO NOT INITIATE ANY STAGE TEST PROGRAMS UNTIL FURTHER NOTICE	
	121	9	CLTC	C1TC C2TC C4TC CUTC	VERIFY ALL PNEUMATIC SYSTEMS ARE STABLE & READY FOR CONTROLLED SWITCHING	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	188	10	CLTC	ALL	CONTROLLED SWITCHING IS IN EFFECT	
	121	11	CLTC	C1NE C2EV C4ES CUNE CSPP	REPORT TO CLES ON CH 125 TO ASSESS DEE-6 ACTIVITY.	
	121	12	CLTC	RLDE	MONITOR DEE-6 ACTIVITIES ON MASTER DEE PRINTER, REPORT ANY DEE-6 DISCRETE ACTION TO CLES ON CHANNEL 125.	
	121	13	CLTC	CVTS	LV IS IN A SAFE CONFIGURATION FOR CREW ENTRY TO PAD AREA	TCPI
		14			**********WARNING********** * * THE FOLLOWING * * OPERATIONS WILL BE * * PERFORMED PRIOR TO * * CLEARING PERSONNEL ON * * TO ML TOWER BUT ONLY IF * * PERSONNEL REQUIRE * * ACCESS TO ML TOWER. * * ******************************	
	181	14-1	C1TC	CWCP	P-1 BOOSTER PUMP ON AND LUT RISER SUPPLY VALVE OPEN.	
	121	15	CLTC	C1TC C2TC C4TC CUTC	CREW ENTERING PAD WILL ESTABLISH COMMUNICATIONS WITH CLTC AND MAINTAIN COMMUNICATIONS WHILE ON THE PAD	
		16			**********CAUTION********** * * THE FOLLOWING * * OPERATIONS WILL BE * * PERFORMED ONLY IF * * PERSONNEL HAVE BEEN ON * * AND ARE NOW CLEAR OF ML * * TOWER. * * ******************************	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
	181	16-1	C1TC	CWCP	P-1 BOOSTER PUMP OFF AND LUT RISER SUPPLY VALVE CLOSE.	
		17		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	18	C2TC	C2FC	RE-ESTABLISH COUNT CONFIGURATION PER V-30029 (M020) TASK 62. REPORT WHEN COMPLETE.	

XB-250-118

APPENDIX F

REPORTING GUIDELINES FOR INDICATION ANOMALIES AFTER TCS START,

THE ATTACHED PAGES REPRESENT THE RATIONALE THE CONSOLE OPERATOR EXPECTS TO USE AS A GUIDELINE AFTER TCS START, THE ITEMS REPRESENT THE "*** NOTE" INDICATIONS SPECIFIED IN THE CDDT/CD PROCEDURE AFTER TCS START,

THE REPORTING OF ANY ANOMALY SHOULD INCLUDE A STATEMENT OF SIGNIFICANCE AND A RECOMMENDATION, IF AVAILABLE,

PART 1:	LUT SYSTEMS & S-IC STAGE	410
PART 2:	S-II STAGE	469
PART 3:	S-IVB STAGE	507
PART 4:	INSTRUMENT UNIT	529

APPENDIX F1

PART 1

LUT SYSTEMS TERMINAL COUNT

CDDT/CD CALLOUTS
AS-509

JANUARY 15, 1971

B-313-II-114

PAGE:	257
TIME:	T-3:6"
SEQUENCE:	2-1
NOTE:	TCS READY OFF (C) DEE 3171
PROCEDURE STATION:	C1FR
INDICATION ON:	FIRING PANEL
RESPONSIBLE STATION:	C1FR
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, INFORM CLTC ON CHANNEL 121 THAT TCS DID NOT START.
REMARKS/RATIONALE:	INFORMATION ONLY, LIGHT INDICATION IS NOT AN LMR BUT THE FACT THAT THE TCS DID NOT START IS LMR 2-908.

PAGE:	257
TIME:	T=3:6"
SEQUENCE:	2=2; 2-3
NOTES:	SEQUENCE 2=2 - TCS RESET OFF (C) DEE 3175 SEQUENCE 2=3 - TCS OUTPUT ON AND PULSE OK-ON
PROCEDURE STATION:	C1SP
INDICATION ON:	SEQUENCER PANEL
RESPONSIBLE STATION:	C1FR/C1SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, VERIFY WITH C1FR WHETHER TCS STARTED, IF NOT, C1FR WILL INFORM CLTC ON CHANNEL 121 THAT TCS DID NOT START.
REMARKS/RATIONALE:	INFORMATION ONLY, NO ACTION REQUIRED IF TCS STARTED BUT VERIFY OTHER SUBSEQUENT INDICATIONS ARE CORRECT.

PAGE:	257
TIME:	T-3:6"
SEQUENCE:	2-4
NOTE:	T-186 TCS STARTED- ON
PROCEDURE STATION:	CSAC
INDICATION ON:	S/A STATUS PANEL
RESPONSIBLE STATION:	C1SP/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY, C1FR WILL INFORM CLTC IF TCS DID NOT START.

PAGE:	257
TIME:	T=3:6"
SEQUENCE:	4=1
NOTE:	FLIGHT MASS ON
PROCEDURE STATION:	C20U
INDICATION ON:	S=II LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C20U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, NO ACTION REQUIRED AS PANEL VERIFIES LMR FLIGHT MASS IS PROPER ON DIGITAL READOUT.
REMARKS/RATIONALE:	INFORMATION ONLY.
PAGE:	257
TIME:	T=3:6"
SEQUENCE:	4=4
NOTE:	REPLENISH VALVE ENABLED OFF
PROCEDURE STATION:	C20U
INDICATION ON:	S=II LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C20U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, OR S=II REPLENISH VALVE NOT CLOSED, C20U INITATE MANUAL "OVERRIDE CLOSE", NOTIFY CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED TO ENSURE VALVE CLOSES.

PAGE:	257
TIME:	T=3'6"
SEQUENCE:	4=2
NOTE:	S=II REPLENISH COMPLETED = ON
PROCEDURE STATION:	CCLO (C2PM)
INDICATION ON:	LOX CONTROL PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NOTIFY RLDR, INDICATES RECEIPT OF T=186 SECONDS SIGNAL FROM TCS, IF NOT RECEIVED, ACTIONS RESULTING FROM THIS SIGNAL WILL BE VERIFIED AND CORRECTED IF REQUIRED IN SUBSEQUENT STEPS,
REMARKS/RATIONALE:	INFORMATION ONLY,

PAGE:	257
TIME:	T-3'6"
SEQUENCE:	4-3
NOTE:	S-II LOX DEBRIS VALVE CLOSED (DEE 1122)
PROCEDURE STATION:	CPO2 (C2PM)
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CPO2/C2PM
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF NOT RECEIVED, CPO2 INITIATE MANUAL CLOSE COMMAND AND NOTIFY CLTC AND C2PM OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.
PAGE:	257
TIME:	T-3'6"
SEQUENCE:	4-5
NOTE:	S-II REPLENISH CLOSED
PROCEDURE STATION:	CPO2
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, NO ACTION REQUIRED. ANY REQUIRED ACTION WILL BE TAKEN BY C2OU.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	257
TIME:	T-3:6"
SEQUENCE:	4-6
NOTE:	S-II LOX FILL & DRAIN CLOSED (DEE 1124)
PROCEDURE STATION:	CPO2 (C2PM)
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	C2PM (S-II STAGE RESPONSIBILITY)
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT RECEIVED, C2PM VERIFY, (CPO2) INITIATE MANUAL CLOSE ACTION AND NOTIFY CLTC AND C2PM OF ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.
PAGE:	257
TIME:	T-3:6"
SEQUENCE:	4-7
NOTE:	S-II UMBILICAL VENT VALVE OPEN
PROCEDURE STATION:	CPO2 (C2PM)
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS INCORRECT, CPO2 ISSUE MANUAL "UMBILICAL VENT VALVE OPEN" COMMAND. REPORT TO CLTC, CSAC AND C2PM THE ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.

PAGE:	258
TIME:	T-3'6"
SEQUENCE:	4-10
NOTE:	S-II UMBILICAL PURGE - ON
PROCEDURE STATION:	CCLO
INDICATION ON:	LOX CONTROL PANEL
RESPONSIBLE STATION:	CCLO/C2PM
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT CORRECT, NOTIFY CLTC AND CHECK WITH C2PM, IF VERIFIED PURGE NOT ON, CCLO COMMAND CP02 TO ISSUE MANUAL "PURGE ENABLE ON,"
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO COMPLETE SEQUENCE,
PAGE:	258
TIME:	T-3'6"
SEQUENCE:	5-2
NOTE:	S-IVB REPLENISH COMPLETED (H)
PROCEDURE STATION:	CCLO (C4PR)
INDICATION ON:	LOX CONTROL PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NOTIFY RLDR, INDICATES RECEIPT OF T-186 SECONDS SIGNAL FROM TCS, IF NOT RECEIVED, ACTIONS RESULTING FROM THIS SIGNAL WILL BE VERIFIED AND APPROPRIATE ACTION TAKEN IN SUBSEQUENT STEPS.
REMARKS/RATIONALE:	INFORMATION ONLY,

PAGE:	258
TIME:	T-3'6"
SEQUENCE:	6-1
NOTE:	S-II REPLENISH COMPLETED - ON
PROCEDURE STATION:	CCLH (C2PM)
INDICATION ON:	LH2 CONTROL PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION REQUIRED AT THIS TIME.
REMARKS/RATIONALE:	INFORMATION ONLY, FUNCTIONS RESULTING FROM THIS SIGNAL WILL BE VERIFIED AND CORRECTED, IF REQUIRED, IN SUBSEQUENT STEPS.

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	5-1
NOTE:	FLIGHT MASS ON
PROCEDURE STATION:	C40U
INDICATION ON:	S-IVB LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C40U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE, LMR REQUIRES MONITOR OF DIGITAL MASS READOUTS BY C40U THAT RESULT IN THIS INDICATION.
REMARKS/RATIONALE:	INFORMATION ONLY.
PAGE:	258
TIME:	T-3:6"
SEQUENCE:	5-3
NOTE:	REPLENISH VALVE ENABLED OFF
PROCEDURE STATION:	C40U
INDICATION ON:	S-IVB LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C40U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, OR S-IVB REPLENISH VALVE NOT CLOSED, INITIATE MANUAL "OVERRIDE CLOSE", NOTIFY CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED TO ENSURE THE VALVE CLOSES.

PAGE:	258
TIME:	T-3'6"
SEQUENCE:	5-4
NOTE:	S-IVB REPLENISH CLOSED (H)
PROCEDURE STATION:	CP02 (C4PR)
INDICATION ON:	LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO/CP02
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, NO ACTION REQUIRED. ANY REQUIRED ACTION WILL BE TAKEN BY C40U.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	258
TIME:	T-3'6"
SEQUENCE:	5-5
NOTE:	S-IVB LOX FILL & DRAIN CLOSED (H)
PROCEDURE STATION:	CPO2 (C4PR)
INDICATION ON:	LOX COMPONENTS PANEL
RESPONSIBLE STATION:	C4PR (S-IVB STAGE RESPONSIBILITY)
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, C4PR VERIFY, CPO2 INITIATE MANUAL "CLOSE COMMAND" AND NOTIFY CLTC AND C4PR OF ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED TO CLOSE VALVE.
PAGE:	258
TIME:	T-3'6"
SEQUENCE:	5-6
NOTE:	S-IVB UMBILICAL VENT OPEN
PROCEDURE STATION:	CPO2 (C4PR)
INDICATION ON:	LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO/CPO2
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, CPO2 INITIATE MANUAL OPEN COMMAND. REPORT TO CLTC, C4PS AND CSAC THE ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED TO OPEN VALVE.

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	6-2
NOTE:	S-II REPLENISH VALVE (A3310) CLOSED.
PROCEDURE STATION:	CPH1 (C2PM)
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH/CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT RECEIVED, VERIFY WITH C2HU. IF VALVE IS NOT CLOSED, REQUEST C2HU TO INITIATE "OVERRIDE CLOSED" ACTION ON S-II LH2 REPLENISH VALVE.
REMARKS/RATIONALE:	ACTION REQUIRED TO ENSURE VALVE CLOSES.
PAGE:	258
TIME:	T-3:6"
SEQUENCE:	6-3
NOTE:	LH2 S-II FILL & DRAIN VALVE (C128) CLOSED. (DEE 1129)
PROCEDURE STATION:	CPH1 (C2PM)
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	C2PM (S-II STAGE RESPONSIBILITY)
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT RECEIVED, VERIFY WITH C2PM THAT VALVE IS CLOSED OR OPEN. IF "CLOSED", INITIATE MANUAL CLOSE COMMAND. IF "OPEN", MANUALLY SWITCH S-II UMBILICAL LINE DRAIN VALVE TO REMAIN CLOSED, THEN MANUALLY CLOSE S-II FILL & DRAIN VALVE. IF S-II F & D CLOSES, REMOVE MANUAL CLOSED FROM S-II UMBILICAL LINE DRAIN. IF S-II F & D DOES NOT CLOSE, ADVISE C2PM AND CLTC OF IMPENDING AUTO CUT-OFF.

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	6-4
NOTE:	S-II UMBILICAL LINE DRAIN VALVE OPEN
PROCEDURE STATION:	CPH1 (C2PM)
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH/CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, CPH1 WILL INITIATE MANUAL S-II UMBILICAL LINE DRAIN VALVE OPEN COMMAND, INFORM CLTC AND C2PM OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	5-7
NOTE:	S-IVB UMBILICAL PURGE ON
PROCEDURE STATION:	CCLO
INDICATION ON:	LOX CONTROL PANEL
RESPONSIBLE STATION:	C4PR (S-IVB STAGE RESPONSIBILITY)
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, NOTIFY CLTC OF PROBLEM AND TO CHECK WITH C4PR IF PURGE IS ON. THIS FUNCTION IS NOT MANDATORY.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	6-5
NOTE:	S-II UMBILICAL LINE PURGE VALVE (A9147) OPEN
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH/CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT RECEIVED, CPH1 WILL INITIATE MANUAL "PURGE VALVE OPEN" COMMAND, NOTIFY CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.
PAGE:	259
TIME:	T-3'6"
SEQUENCE:	7-2
NOTE:	S-IVB REPLENISH VALVE CLOSED
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH/CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, VERIFY WITH C4HU, IF VALVE NOT CLOSED, REQUEST C4HU TO INITIATE OVERRIDE CLOSED ACTION ON REPLENISH VALVE.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	7-3
NOTE:	S-IVB FILL & DRAIN VALVE (D104) CLOSED (H)
PROCEDURE STATION:	CPH1 (C4PR)
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, VERIFY WITH C4PR THAT F & D VALVE IS CLOSED OR OPEN. IF CLOSED, INITIATE MANUAL F & D CLOSE COMMAND. IF OPEN, MANUALLY SWITCH S-IVB UMBILICAL LINE DRAIN VALVE TO REMAIN CLOSED THEN MANUALLY CLOSE S-IVB FILL & DRAIN VALVE. IF S-IVB F & D CLOSES, REMOVE MANUAL CLOSED FROM S-IVB UMBILICAL LINE DRAIN. IF S-II F & D DOES NOT CLOSE, ADVISE C4PR AND CLTC OF IMPENDING AUTO CUT-OFF.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO CLOSE VALVE.

PAGE:	259
TIME:	T=3'6"
SEQUENCE:	7=4
NOTE:	S=IVB UMBILICAL LINE DRAIN VALVE OPEN
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION NOT RECEIVED, CPH1 WILL INITIATE MANUAL S=IVB UMBILICAL LINE DRAIN VALVE OPEN COMMAND, OR MANUALLY OPEN S=IVB AUXILIARY UMBILICAL LINE DRAIN VALVE.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO OPEN VALVE.
PAGE:	259
TIME:	T=3'6"
SEQUENCE:	7=5
NOTE:	S=IVB UMBILICAL LINE PURGE VALVE OPEN
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, CPH1 WILL INITIATE MANUAL "PURGE VALVE OPEN" COMMAND. NOTIFY CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO OPEN VALVE.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	6-7
NOTE:	S-II UMBILICAL LINE DRAIN ON
PROCEDURE STATION:	CCLH
INDICATION ON:	LH2 CONTROL PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY. THIS INDICATION IS THE RESULT OR SUMMATION OF SEVERAL PREVIOUS SIGNALS. IF INDICATION IS NOT CORRECT, IT IS THE RESULT OF OTHER INCORRECT INDICATIONS AND PREVIOUS ACTION WOULD HAVE BEEN TAKEN.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	7-1
NOTE:	S-IVB REPLENISH COMPLETED ON
PROCEDURE STATION:	CCLH (C4PR)
INDICATION ON:	LH2 CONTROL PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION REQUIRED AT THIS TIME.
REMARKS/RATIONALE:	INFORMATION ONLY. FUNCTIONS RESULTING FROM THIS SIGNAL WILL BE VERIFIED AND CORRECTED IF REQUIRED IN SUBSEQUENT STEPS.
PAGE:	259
TIME:	T-3'6"
SEQUENCE:	7-6
NOTE:	S-IVB UMBILICAL LINE DRAIN ON
PROCEDURE STATION:	CCLH
INDICATION ON:	LH2 CONTROL PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY. THIS INDICATION IS THE RESULT OR SUMMATION OF SEVERAL PREVIOUS SIGNALS. IF INDICATION IS NOT CORRECT, IT IS THE RESULT OF OTHER INCORRECT INDICATIONS AND PREVIOUS ACTION WOULD HAVE BEEN TAKEN.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	8-1
NOTE:	FLIGHT MASS ON
PROCEDURE STATION:	C10U
INDICATION ON:	S-IC LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C10U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, NO ACTION REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY. SAME PANEL VERIFIES THAT THE LMR FLIGHT MASS IS CORRECT ON THE DIGITAL READOUT AND FLIGHT MASS ON INDICATION RESULTS FROM CORRECT DIGITAL READOUT.
PAGE:	259
TIME:	T-3'6"
SEQUENCE:	8-2
NOTE:	REPLENISH VALVE ENABLE OFF
PROCEDURE STATION:	C10U
INDICATION ON:	S-IC LOX TANKING COMPUTER PANEL
RESPONSIBLE STATION:	C10U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, OR S-IC REPLENISH VALVE NOT CLOSED, INITIATE MANUAL "OVERRIDE CLOSE," NOTIFY CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	ACTION TAKEN TO ENSURE VALVE ACTION.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	8-3
NOTE:	S-IC REPLENISH CLOSED
PROCEDURE STATION:	CP02
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCL0/CP02/C10U
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, EVALUATE OTHER INDICATIONS TO DETERMINE ACTION TO BE TAKEN BY C10U
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	8-4
NOTE:	S-IC FILL & DRAIN (B239) CLOSED
PROCEDURE STATION:	CPO2
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	C1LO (S-IC STAGE RESPONSIBILITY)
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, C1LO WILL VERIFY, CPO2 WILL INITIATE MANUAL CLOSE COMMAND AND NOTIFY CLTC AND C1LO OF ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	IF VALVE DOES NOT CLOSE, CUTOFF WILL RESULT AT T-30 SEC, DO NOT GIVE MANUAL CUTOFF.
PAGE:	259
TIME:	T-3'6"
SEQUENCE:	8-5
NOTE:	S-IC UMBILICAL VENT (A213) OPEN
PROCEDURE STATION:	CPO2
INDICATION ON:	#2 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO/CPO2/CSAC
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, CCLO WILL COMMAND CPO2 TO ISSUE A MANUAL "UMBILICAL VENT VALVE OPEN", REPORT TO CLTC AND CSAC THE ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED TO OPEN VALVE.

PAGE:	259
TIME:	T-3:6"
SEQUENCE:	8-6
NOTE:	REPLENISH LINE FLOW RAMINS AT 800 GPM
PROCEDURE STATION:	CP01
INDICATION ON:	#1 LOX COMPONENTS PANEL
RESPONSIBLE STATION:	CCLO/CP01
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, MANUALLY ADJUST PUMP SPEED TO 800 GPM.
REMARKS/RATIONALE:	ACTION REQUIRED TO KEEP PUMP AT 800 GPM.

PAGE:	260
TIME:	T-3'6"
SEQUENCE:	8-7
NOTE:	S-IC LOX REPLENISH COMPLETE
PROCEDURE STATION:	CCLO/C1LO
INDICATION ON:	S-IC LOX SYSTEM PANEL/LOX CONTROL PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED AT THIS TIME.
REMARKS/RATIONALE:	INFORMATION ONLY, FUNCTIONS RESULTING FROM THIS SIGNAL WILL BE VERIFIED AND CORRECTED, IF REQUIRED, IN SUBSEQUENT SEQUENCES.
PAGE:	260
TIME:	T-3'6"
SEQUENCE:	8-8
NOTE:	S-IC UMBILICAL PURGE ON
PROCEDURE STATION:	CCLO
INDICATION ON:	LOX CONTROL PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, VERIFY WITH CLTC AND CSA1 THAT PURGE IS ON, IF NOT, CCLO COMMAND CPO2 TO INITIATE MANUAL S-IC LOX UMBILICAL PURGE ENABLE ON. NOTIFY CLTC OF ACTION TAKEN AND VALVE RESPONSE.
REMARKS/RATIONALE:	ACTION REQUIRED TO ESTABLISH PURGE

PAGE:	261
TIME:	T-1'42"
SEQUENCE:	1-1
NOTE:	HYDRAULIC UNIT COMMITTED ON (DDAS) DEE-3245
PROCEDURE STATION:	C1HP
INDICATION ON:	S-IC HYDRAULIC PANEL
RESPONSIBLE STATION:	C1NE/C1HP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS INCORRECT, VERIFY OTHER INDICATIONS OF PROPER HYDRAULIC UNIT OPERATION ARE CORRECT, IF CORRECT, NO ACTION REQUIRED.
REMARKS/RATIONAL:	INFORMATION ONLY, COMMIT LOGIC BYPASSES UNIT CIRCUIT BREAKERS.

PAGE:	261
TIME:	T-1:12"
SEQUENCE:	1-1
NOTE:	S-IC FLIGHT VENTS CLOSED (C) DEE 0014, 0017
PROCEDURE STATION:	C1LO
INDICATION ON:	S-IC LOX SYSTEM PANEL
RESPONSIBLE STATION:	C1LO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT AND TANK PRESSURE IS NOT RISING, NOTIFY CLTC THAT IT APPEARS THAT THE LOX VENT VALVES DID NOT CLOSE AND LACK OF TANK PRESSURE WILL CAUSE A CUTOFF AT T-30 SECONDS. IF INDICATION IS NOT CORRECT AND PRESSURE IS RISING, TAKE NO ACTION.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	261
TIME:	T-1:37"
SEQUENCE:	1-1/1-2
NOTE:	PREPRESS VALVE OPEN (C) DEE 0278 S-IC FUEL TANK IS PRESSURIZING
PROCEDURE STATION:	C1RP
INDICATION ON:	S-IC FUEL SYSTEM PANEL
RESPONSIBLE STATION:	C1RP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT AND TANK PRESSURE IS NOT RISING (CAN NOTE PREPRESS LOW PRESS OK - DEE 0392), NOTIFY CLTC THAT IT APPEARS PREPRESS VALVE HAS FAILED TO OPEN AND LACK OF TANK PRESSURE WILL CAUSE A CUTOFF AT T-30 SECONDS, IF INDICATION IS NOT CORRECT AND TANK PRESSURE IS RISING, TAKE NO ACTION.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	261
TIME:	T-1:37"
SEQUENCE:	1-9
NOTE:	S-II/S-IVB VENT LINE PURGE (A2984) OPEN
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, CPH1 WILL INITIATE MANUAL OPEN COMMAND, NOTIFY CLTC OF ACTION TAKEN, NO FURTHER ACTION REQUIRED.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO OPEN VALVE.

PAGE:	262
TIME:	T-1:12
SEQUENCE:	2
NOTE:	S-II/S-IVB SERVICE ARM PURGE VALVE OPEN
PROCEDURE STATION:	CPH1
INDICATION ON:	LH2 COMPONENTS PANEL
RESPONSIBLE STATION:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT, CPH1 WILL INITIATE MANUAL OPEN COMMAND. NOTIFY CLTC OF ACTION TAKEN. NO FURTHER ACTION REQUIRED.
REMARKS/RATIONALE:	ACTION REQUIRED IN ATTEMPT TO OPEN VALVE.

PAGE:	262
TIME:	T-1'12"
SEQUENCE:	1-2
NOTE:	LOX BUBBLING STOPPED (C) DEE 0007
PROCEDURE STATION:	C1LO
INDICATION ON:	S-IC LOX SYSTEM PANEL
RESPONSIBLE STATION:	C1LO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	TAKE NO ACTION, ENGINES CAN BE STARTED WITH BUBBLING ON WITHOUT A PROBLEM,
REMARKS/RATIONALE:	INFORMATION ONLY,
PAGE:	262
TIME:	T-1'12"
SEQUENCES:	1-3/1-4
NOTE:	PREPRESS VALVE OPEN (C) DEE 0022 AND S-IC LOX TANK IS PRESSURIZING
PROCEDURE STATION:	C1LO
INDICATION ON:	S-IC LOX SYSTEM PANEL
RESPONSIBLE STATION:	C1LO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT CORRECT AND LOX TANK PRESSURE IS NOT RISING (LINE PRESS SWITCH DEE 3124), NOTIFY CLTC THAT IT APPEARS THAT THE LOX PREPRESS VALVE DID NOT OPEN AND LACK OF TANK PRESSURE WILL CAUSE A CUTOFF AT T-30 SECONDS. IF INDICATION IS NOT CORRECT, BUT TANK PRESSURE IS RISING, TAKE NO ACTION,
REMARKS/RATIONALE:	INFORMATION ONLY,

PAGE:	262
TIME:	T-1'0"
SEQUENCE:	1-1
NOTE:	FLAME DEFLECTOR COOLING VALVE OPENS
PROCEDURE STATION:	CWCP
INDICATION ON:	WATER CONTROL SYSTEM PANEL
RESPONSIBLE STATION:	CWCP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, AND OTHER INDICATIONS THAT V-3 VALVE DID NOT OPEN, CWCP WILL IMMEDIATELY ENSURE MANUAL V-3 VALVE OPEN COMMAND, INFORM CLTC OF ACTION TAKEN.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	262
TIME:	T-1'0"
SEQUENCE:	1-6
NOTE:	T-60 S/A #1 INHIBITS- ON
PROCEDURE STATION:	CSAC
INDICATION ON:	S/A STATUS PANEL
RESPONSIBLE STATION:	C1SP/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY. THE ARM SHOULD RETRACT AT THE PROPER TIME UNLESS OTHER MALFUNCTIONS OCCUR IN THE RETRACT CIRCUITRY.

PAGE:	262
TIME:	T-50"
SEQUENCE:	2
NOTE:	POWER TRANSFER COMPLETE (C) DEE 0172
PROCEDURE STATION:	C1FR
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	C1NE/C1FR
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, INFORM CLTC THAT POWER TRANSFER IS NOT COMPLETE, AUTO CUTOFF WILL BE ISSUED AT T-30 SECONDS IF ALL STAGES ARE NOT INTERNAL.

REMARKS/RATIONALE:

PAGE:	263
TIME:	T-50"
SEQUENCE:	2-1
NOTE:	POWER TRANSFER COMPLETE
PROCEDURE:	C1NP (C2NP, C4NP, CUNP)
INDICATION ON#	S-IC NETWORKS PANEL
RESPONSIBLE STATION:	C1NE/C1NP
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, VERIFY WITH C1FR IF FIRING PANEL RECEIVED P/T COMPLETE, IF FIRING PANEL DID NOT RECEIVE P/T COMPLETE, C1FR WILL REPORT TO CLTC, IF FIRING PANEL HAS PROPER INDICATIONS, C/P WILL CONTINUE WITH NO FURTHER ACTION REQUIRED,

REMARKS/RATIONALE:

PAGE:	263
TIME:	T-48"
SEQUENCE:	1
NOTE:	S-IC LOX PREPRESS IS OK (C) DEE 0015
PROCEDURE STATION:	C1LO
INDICATION ON:	S-IC LOX SYSTEM PANEL
RESPONSIBLE STATION:	C1LO
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, INFORM CLTC OF INDICATION AND IF PROPER TANKS PRESSURE IS NOT REACHED BY T-30 SECONDS, AN AUTO CUTOFF WILL BE ISSUED.

REMARKS/RATIONALE:

PAGE: 263

TIME: T-48"

SEQUENCE: 2

NOTE: FUEL PREPRESS AND FLIGHT PRESS OK

PROCEDURE STATION: C1RP

INDICATION ON: S-IC FUEL SYSTEM PANEL

RESPONSIBLE STATION: C1RP

LMR ITEM: YES

CUTOFF INTERLOCKED: YES

ACTION: IF INDICATION IS NOT RECEIVED, INFORM CLTC OF INDICATION AND IF PROPER TANK PRESSURE IS NOT REACHED BY T-30 SECONDS, AN AUTO CUTOFF WILL BE ISSUED.

REMARKS/RATIONALE:

PAGE:	263
TIME:	T=40"
SEQUENCE:	1=1
NOTE:	FLAME DEFLECTOR COOLING WATER ON
PROCEDURE STATION:	CWCP
INDICATION ON:	WATER CONTROL SYSTEM PANEL
RESPONSIBLE STATION:	CWCP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF NO FLOW INDICATIONS ARE RECEIVED, OPERATE THE FLAME DEFLECTOR QUENCH VALVE SWITCH TO OPEN POSITION AT T-14 SECONDS BY THE CLOCK,
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	263
TIME:	T-40"
SEQUENCE:	1-2
NOTE:	S-IC PROPELLANTS PRESSURIZED
PROCEDURE STATION:	C1FR
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	C1PE/C1NE
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, INFORM CLTC OF INDICATION AND IF PROPELLANT TANKS ARE NOT AT PROPER PRESSURE AN AUTO CUTOFF WILL BE ISSUED AT T-30 SECONDS.

REMARKS/RATIONALE:

PAGE:	264
TIME:	T=30"
SEQUENCE:	1=1 (CDDT ONLY)
NOTE:	ALL SUPPLY AND RETURN VALVES CLOSED INDICATION REMAIN ON
PROCEDURE STATION:	CSA1
INDICATION ON:	S=IC INTERTANK S/A PANEL
RESPONSIBLE STATION:	CSA1/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF THE INDICATION IS LOST, CSA1 MUST DETERMINE FROM OTHER INDICATIONS THAT THE PRIMARY & SECONDARY RETRACT SUPPLY AND RETURN VALVES ARE NOT OPEN, IF THE ARM IS ATTEMPTING TO RETRACT WITH CARRIER CONNECTED REQUEST IMMEDIATE CUTOFF AND CUTOFF RESET, AND THEN GIVE VALVE RESET, IF CARRIER AND ARM RETRACT ALLOW NORMAL CUTOFF AT T=8,9, NOTIFY CLTC.
REMARKS/RATIONALE:	INFORMATION ONLY, THE PRIMARY & SECONDARY RETRACT PILOT VALVES HAVE BEEN DEACTIVATED BY THE REMOVAL OF FUSES AND THE CARRIER HAS NOT BEEN ARMED,

PAGE:	G264
TIME:	T=30"
SEQUENCE:	1=2 (CD ONLY)
NOTE:	ALL SUPPLY & RETURN VALVES OPEN = ON
PROCEDURE STATION:	CSA1
INDICATION ON:	S=IC INTERTANK S/A PANEL
RESPONSIBLE STATION:	CSA1/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF THE INDICATION IS NOT RECEIVED AND BY OBSERVATION OF THE OTHER PANEL INDICATIONS THAT THESE VALVES DID NOT OPEN AFTER THE CARRIER HAS RETRACTED, INFORM THE CLTC OF THE PROBLEM AND THAT AN AUTO CUTOFF WILL OCCUR AT T-8.9"
REMARKS/RATIONALE:	THESE VALVES SHOULD OPEN WHEN THE CARRIER HAS BEEN RETRACTED. AUTO CUTOFF WILL OCCUR AT T-8.9" BECAUSE THE ARM SAFE ANGLE SWITCH WILL NOT BE ACTUATED, THE "LSE READY FOR IGNITION" CIRCUIT IS INTERLOCKED BY THIS SWITCH.

PAGE:	264
TIME:	T-30"
SEQUENCE:	1-3
NOTE:	S-IC ENGINE (1-5) CHECKOUT VALVES TO STAGE POSITION (C) DEE 0112
PROCEDURE STATION:	C1EN
INDICATION ON:	S-IC ENGINE PANEL
RESPONSIBLE STATION:	C1EN/C1NE
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION NOT RECEIVED, INFORM CLTC OF PROBLEM AND IF INDICATION IS NOT RECEIVED AN AUTO CUTOFF WILL BE ISSUED AT T-16.2 SECONDS.
REMARKS/RATIONALE:	

PAGE	265
TIME:	T-30"
SEQUENCE:	1-15
NOTE:	T-30 S/A #1 RETRACT & LSE INHIBITS - ON
PROCEDURE STATION:	CSAC
INDICATION ON:	S/A STATUS PANEL
RESPONSIBLE STATIONS:	CSAC/C1NE
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	CDDT - NO ACTION REQUIRED, CD - IF THE INDICATION IS NOT RECEIVED AND BY OBSERVATION OF OTHER INDICATIONS ON THE STATUS PANEL THAT THE ARM #1 RETRACT SEQUENCE HAS NOT STARTED, INFORM CLTC OF THE PROBLEM AND THAT AN AUTO CUTOFF WILL OCCUR AT T-8.9",
REMARKS/RATIONALE:	THIS INDICATION IS FOR INFORMATION ONLY, HOWEVER ARM #1 RETRACT SEQUENCE CAN BE NOTED BY CSAC AND CSA1 PANEL INDICATIONS, THE "LSE READY FOR IGNITION" CIRCUIT IS INTERLOCKED BY THE S/A 1 SAFE ANGLE SWITCH,

PAGE	265
TIME:	T-20"
SEQUENCE:	1-1
NOTE:	LOX INTERCONNECT VALVES CLOSED
PROCEDURE STATION:	C1LO/C1FR
INDICATION ON:	S-IC LOX SYSTEM PANEL/S-IC FIRING PANEL
RESPONSIBLE STATION:	C1LO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED AND OTHER INDICATIONS ARE CORRECT, NO ACTION IS REQUIRED. ENGINE IGNITION WILL OCCUR WITH INTERCONNECT VALVES OPEN, NO CALL TO CLTC IS REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE	265
TIME:	T-22"
SEQUENCE:	2-1
NOTE:	IU READY FOR LAUNCH - OFF
INDICATION ON:	S-IC FIRING PANEL
PROCEDURE STATION:	C1FR
RESPONSIBLE STATION:	IBM
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, AN IU PROBLEM IS INDICATED.
REMARKS/RATIONALE:	DO NOT REPORT.

PAGE:	265
TIME:	T-22"
SEQUENCE:	2-2
NOTE:	PREPS COMPLETE - OFF (C) DEE 0159
PROCEDURE STATION:	C1FR
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	C1NE/IBM
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	POSSIBLE IU PROBLEM,
REMARKS/RATIONALE:	DO NOT REPORT,

PAGE	265
TIME:	T-22"
SEQUENCE:	2-3
NOTE:	HEATER POWER LIGHT OFF
PROCEDURE STATION:	C1NP
INDICATION ON:	S-IC NETWORKS PANEL
RESPONSIBLE STATION:	C1NE/C1NP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED, C/D MAY CONTINUE AND NO REPORT TO CLTC IS REQUIRED,
REMARKS/RATIONALE:	INFORMATION ONLY,

PAGE:	266
TIME:	T-17"
SEQUENCE:	2-1 AND 2-2
NOTE:	IU READY FOR LAUNCH - ON AND PREPS COMPLETE - ON
PROCEDURE STATION:	C1FR
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	IBM
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATIONS ARE NOT RECEIVED AT THIS TIME, NO ACTION IS POSSIBLE BY S-IC.
REMARKS/RATIONALE:	IF PROBLEM EXISTS A CUTOFF WILL BE ISSUED AT T-16.2 SECS.

PAGE:	266
TIME:	T-17"
SEQUENCE:	4-1
NOTE:	RSCR'S 1 AND 2 PD BLOCKED OFF
PROCEDURE STATION:	C1DP (C2DP, C4DP)
INDICATION ON:	S-IC PROPELLANT DISPERSION PANEL
RESPONSIBLE STATION:	C1NE/C1DP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY, NO ACTION IS REQUIRED BECAUSE PD WILL BE ENABLED AT LIFTOFF.

PAGE:	267
TIME:	T-16,2"
SEQUENCE:	1-1 (CDDT)
NOTE:	ALL SUPPLY AND RETURN VALVES CLOSED REMAINS ON
PROCEDURE STATION:	CSA2
INDICATION ON	S-IC FORWARD S/A PANEL
RESPONSIBLE STATION:	CSA2/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	IF THIS INDICATION IS LOST, NO ACTION IS POSSIBLE AT THIS TIME.
REMARKS/RATIONALE:	INFORMATION ONLY. THE PRIMARY AND SECONDARY RETRACT PILOT VALVES HAVE BEEN DEACTIVATED BY THE REMOVAL OF FUSES. CSA2 AND CSAC CAN OBSERVE OTHER PANEL INDICATIONS TO DETERMINE PROBLEM.

PAGE:	G267
TIME:	T-16,2"
SEQUENCE:	1-3
NOTE:	UPPER PLUGS CONNECTED OFF
PROCEDURE STATION:	C1NP
INDICATION ON:	S-IC NETWORKS PANEL
RESPONSIBLE STATION:	C1NE/C1NP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION IS REQUIRED.
REMARKS/RATIONALE:	INFORMATION ONLY, IF INDICATION IS NOT RECEIVED AND OTHER INDICATIONS OF S/A #2 RETRACT ARE CORRECT, THE CD TO LAUNCH WILL CONTINUE. IF S/A #2 DID NOT RETRACT, THE PLUGS CONNECTED ON INDICATION WILL REMAIN AND AN AUTO CUTOFF WILL BE ISSUED AT T-8,9 SECONDS DUE TO LACK OF LSE READY FOR IGNITION SIGNAL.

PAGE:	267
TIME:	T-14"
SEQUENCE:	2-1/2-2 (CDDT)
NOTE:	PREPARATION COMPLETE OFF/RANGE SAFE OFF
PROCEDURE STATION:	C1FR
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	C1NE/C1FR
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATIONS ARE NOT RECEIVED, NO ACTION BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	PREPS COMPLETE ON AND RANGE SAFE ON ARE INTERLOCED FOR LAUNCH. IN CDDT IF INDICATIONS ARE NOT RECEIVED AND READY FOR IGNITION IS ALSO ON, THEN THE HOLD FIRE SIGNAL DID NOT FUNCTION. IN THIS CASE, C1FR WILL GIVE A MANUAL CUTOFF AT T-12" PER PROCEDURE.

PAGE:	G267
TIME:	T-11"
SEQUENCE:	1-5 (CD)
NOTE:	LAUNCH SUPPORT READY FOR IGNITION
PROCEDURE STATION:	C1FR/CSAC
INDICATION ON:	S-IC FIRING PANEL
RESPONSIBLE STATION:	CSAC/C1NE
LMR ITEM:	YES
CUTOFF INTERLOCKED:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION CAN BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	AN AUTO CUTOFF WILL BE ISSUED AT-8.9 SEC.

PAGE	267
TIME:	T-16,2"
SEQUENCE:	1-2 (CDDT)
NOTE:	T-16,2" S/A #2 RETRACT COMMAND - ON
PROCEDURE STATION:	CSAC
INDICATION ON:	S/A STATUS PANEL
RESPONSIBLE STATION:	C1SP/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION CAN BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	INFORMATION ONLY, CSAC AND CSA2 CAN OBSERVE OTHER INDICATIONS ON THEIR PANEL TO VERIFY PROBLEM.

PAGE	G267
TIME:	T-16,2"
SEQUENCE:	1-1 (CD)
NOTE:	ALL SUPPLY AND RETURN VALVES OPEN - ON
PROCEDURE STATION:	CSA2
INDICATION ON:	S-IC FORWARD S/A PANEL
RESPONSIBLE STATION:	CSA2/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF INDICATION IS NOT RECEIVED AND ARM DOES NOT RETRACT, NO ACTION CAN BE TAKEN AT THIS TIME. NOTIFY CLTC OF PROBLEM,
REMARKS/RATIONALE:	INFORMATION ONLY, AN AUTO CUTOFF WILL OCCUR AT T-8,9" IF THE ARM DOES NOT RETRACT AND ACTUATE THE ARM SAFE ANGLE SWITCH, THIS SWITCH IS INTERLOCKED IN THE "LSE READY FOR IGNITION" CURCUIT,

PAGE:	G267
TIME:	T-16,2"
SEQUENCE:	1-2 (CD)
NOTE:	T-16,2 S/A #2 RETRACT COMMAND - ON
PROCEDURE STATION:	CSAC
INDICATION ON:	S/A STATUS PANEL
RESPONSIBLE STATION:	C1SP/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	IF INDICATION IS NOT RECEIVED AND ARM DOES NOT RETRACT, NO ACTION CAN BE TAKEN AT THIS TIME, NOTIFY CLTC OF PROBLEM,
REMARKS/RATIONALE:	INFORMATION ONLY, AN AUTO CUTOFF WILL OCCUR AT T-8,9" IF THE ARM DOES NOT RETRACT AND ACTUATE THE ARM SAFE ANGLE SWITCH, THIS SWITCH IS INTERLOCKED IN THE "LSE READY FOR IGNITION" CIRCUIT,

PAGE:	G267
TIME:	T=11"
SEQUENCE:	1=4 (CD)
NOTE:	S=IC FORWARD AT SAFE ANGLE
PROCEDURE STATION:	CSAC/CSA2
INDICATION ON:	S/A STATUS PANEL/S-IC FORWARD S/A PANEL
RESPONSIBLE STATION:	CSA2/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCK:	YES
ACTION:	IF THE INDICATION IS NOT RECEIVED, NO ACTION CAN BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	IF THE ARM SAFE ANGLE SWITCHES ARE ACTUATED AND THE "LSE READY FOR IGNITION" INDICATION IS ON, THEN COUNT WILL CONTINUE, IF THE "LSE READY FOR IGNITION" INDICATION IS NOT ON, AN AUTO CUTOFF WILL OCCUR AT T-8.9".
PAGE:	G267
TIME:	T=11"
SEQUENCE:	1=5 (CD)
NOTE:	LAUNCH SUPPORT READY FOR IGNITION
PROCEDURE STATION:	CSAC (C1FR)
INDICATION ON:	S/A STATUS PANEL
LMR ITEM:	NO
CUTOFF INTERLOCK:	YES
ACTION:	IF INDICATION IS NOT RECEIVED, NO ACTION CAN BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	AN AUTO CUTOFF WILL OCCUR AT T-8.9"

PAGE:	G267
TIME:	T-11"
SEQUENCE:	1-6
NOTE:	S-IC INTERTANK AT SAFE ANGLE
PROCEDURE STATION:	CSAC/CSA1
INDICATION ON:	S-IC INTERTANK S/A PANEL/S-IC STATUS PANEL
RESPONSIBLE STATION:	CSA1/CSPP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	YES
ACTION:	IF THE INDICATION IS NOT RECEIVED, NO ACTION CAN BE TAKEN AT THIS TIME.
REMARKS/RATIONALE:	IF THE ARM SAFE ANGLE SWITCHES ARE ACTUATED AND THE "LSE READY FOR IGNITION" INDICATION IS ON, THEN COUNT WILL CONTINUE, IF THE "LSE READY FOR IGNITION IS NOT ON, AN AUTO CUTOFF WILL OCCUR AT T-8.9".

APPENDIX F

PART 2

S-II TERMINAL COUNT

CDDT/CD CALLOUTS

AS-509

JANUARY 15, 1971

N-212-11-115

PAGE: 266

TIME: -0'17"

SEQUENCE: 4-1

NOTE: RSCR'S 1 & 2 PD BLOCKED OFF, (DEE 1012, 1013) (C)
DEE 0038, 0039, DEE 1673, 1674

PROCEDURE STA: C1DP/C2DP/C4DP

IDENTIFICATION ON: S-II EVENTS DISPLAY PANEL
S-II PROPELLANT DISPERSION PANEL

RESPONSIBLE STA: C2DP

LMR ITEM: NONE

CUTOFF INTERLOCKED: NO INTERLOCKS

ACTION: NOTIFY TEST CONDUCTOR

REMARKS/RATIONALE:

PAGE:	265
TIME:	-0:30"
SEQUENCE:	1-12
NOTE:	C2PV *** NOTE COMMON BULKHEAD VAC OFF
PROCEDURE STA:	C2PV
IDENTIFICATION ON:	PURGE & VACUUM PANEL
RESPONSIBLE STA:	C2PV
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE	THE PUMP IS TURNED OFF AT LAUNCH TO PREVENT OPERATING DAMAGE TO THE PUMP AND TO PREVENT HAZARDOUS CONDITIONS FROM THE 440V CIRCUIT AND POSSIBLE GAS LEAKAGE.

PAGE:	257
TIME:	-3'6"
SEQUENCE:	4-2
NOTE:	C2PM CCLO -- NOTE S-II REPLENISH COMPLETED ON
PROCEDURE STA:	C2PM & CCLO
IDENTIFICATION ON:	C2PM - S-II PROPELLANT MONITOR PANEL CCLO - LOX CONTROL PANEL
RESPONSIBLE STA:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE:	THIS IS INDICATION ONLY. TCS WILL CONTINUE NORMALLY WITHOUT THIS INDICATION.

PAGE: 257

TIME: -3'6"

SEQUENCE: 4-3

NOTE: C2PM
CPO2 -- NOTE S-II LOX DEBRIS VALVE CLOSED (DEE 1122)

PROCEDURE STA: C2PM & CPO2

IDENTIFICATION ON: C2PM -- S-II PROPELLANT MONITOR PANEL
CPO2 -- LOX COMPONENTS PANEL
C2EV -- S-II EVENTS PANEL

RESPONSIBLE STA: C2PM

LMR ITEM: INDIRECTLY ASSOCIATED WITH LMR ITEM 2-327, PAGE 2-16 (SEE REMARKS)

CUTOFF INTERLOCKED: YES - LOX DEBRIS VALVE MUST GO CLOSE TO SATISFY LOGIC CHAIN FOR LOX UMB, PURGE ON. THIS IS IN CHAIN FOR S-II READY FOR LAUNCH, WILL RECEIVE CUTOFF AT T-30 SEC,

ACTION: NOTIFY CPO2 & CLTC THAT C2PM DOES NOT HAVE INDICATION AND REQUEST STATUS OF CPO2 INDICATION, IF CPO2 DOES NOT HAVE INDICATION REQUEST CPO2 COMMAND VALVE TO CLOSE, NOTIFY CLTC OF ACTION AND RESULTS,

REMARKS/RATIONALE: IF VALVE DOES NOT CLOSE, THE LOX UMBILICAL PURGE VALVE WILL NOT OPEN. IF PURGE IS NOT ACTIVATED, LOX FILL LINE WILL NOT BE DRAINED AND LMR ITEM 2-237 WILL BE VIOLATED,

PAGE: 257

TIME: -3:6"

SEQUENCE: 4-6

NOTE: CP02
C2PM -- NOTE S-II LOX FILL & DRAIN CLOSED (DEE 1124)

PROCEDURE STA: CP02 & C2PM

IDENTIFICATION ON: C2PM -- S-II PROPELLANT MONITOR PANEL
CP02 -- LOX COMPONENTS PANEL
C2EV -- S-II EVENTS PANEL

RESPONSIBLE STA: C2PM

LMR ITEM: INDIRECTLY ASSOCIATED WITH LMR ITEM 2-327, PAGE 2-16 (SEE REMARKS)

CUTOFF INTERLOCKED: YES - LOX F/D VALVE MUST CLOSE TO RECEIVE LOX UMB, PURGE VALVE OPEN, LOX UMB, PURGE VALVE MUST BE OPEN TO SATISFY S-II READY FOR LAUNCH CHAIN, WILL RECEIVE AUTO CUTOFF AT T-30 SECONDS.

ACTION: NOTIFY CP02 AND CLTC AND C2EV THAT C2PM DOES NOT HAVE CLOSED INDICATION AND REQUEST STATUS OF CP02 & C2EV INDICATION, IF CP02 DOES NOT HAVE INDICATION REQUEST CP02 COMMAND VALVE TO CLOSE, NOTIFY CLTC OF ACTION AND RESULTS.

REMARKS/RATIONALE: IF LOX F/D VALVE DOES NOT CLOSE, THE LOX UMB, PURGE VALVE WILL NOT OPEN, IF PURGE IS NOT ACTIVATED, LOX FILL LINE WILL NOT BE DRAINED AND LMR ITEM 2-327 WOULD BE VIOLATED, S-II WILL RECEIVE AUTO CUTOFF AT T-30 SECONDS, SINCE LOGIC CHAIN CANNOT BE SATISFIED WITHOUT LOX UMB, PURGE VALVE OPEN.

PAGE: 258

TIME: -3'6"

SEQUENCE: 4-8

NOTE: C2PM -- NOTE LOX UMB, PURGE VALVE OPEN (DEE 1125)

PROCEDURE STA: C2PM

IDENTIFICATION ON: C2PM -- S-II PROPELLANT MONITOR PANEL
CP02 -- LOX COMPONENTS PANEL

RESPONSIBLE STA: C2PM

LMR ITEM: 2-327 PAGE 2-16, LOX DRAIN LINE TEMP VXC50-327 AND LOX DRAIN PRESSURE XC72-327 (ALT).

CUTOFF INTERLOCKED: YES - S-II LOX UMB PURGE MUST BE OPEN TO SATISFY S-II READY FOR LAUNCH, WILL RECEIVE AUTO CUTOFF AT T-30 SEC IF VALVE NOT OPEN.

ACTION: NOTIFY CP02 AND CLTC THAT S-II UMB, PURGE VALVE NOT OPEN, IF ALL OTHER INDICATIONS ARE NORMAL, CP02 ISSUE LOX UMB, PURGE ENABLE, NOTIFY CLTC OF ACTION TAKEN AND RESULTS.

REMARKS/RATIONALE: IF THE PURGE VALVE CANNOT BE OPENED, AUTO CUTOFF WILL BE RECEIVED AT T-30 SEC, DUE TO S-II NOT READY FOR LAUNCH, ALSO WITHOUT LOX UMB, PURGE, THE LOX FILL LINE CANNOT BE DRAINED AND LMR ITEM 2-327 WILL BE VIOLATED.

PAGE:	257
TIME:	-3'6"
SEQUENCE:	4-7
NOTE:	CP02 C2PM -- NOTE S-II UMB, VENT VALVE OPEN
PROCEDURE STA:	CP02 & C2PM
IDENTIFICATION ON:	C2PM -- S-II PROPELLANT MONITOR PANEL CP02 -- LOX COMPONENTS PANEL
RESPONSIBLE STA:	CP02
LMR ITEM:	NO
CUTOFF INTERLOCKED:	YES - S-II UMB, VENT VALVE MUST BE OPEN TO ACTIVATE S-II LOX UMB, PURGE, LOX UMB PURGE IS IN LOGIC CHAIN FOR S-II READY FOR LAUNCH, CUTOFF AT T-30 SEC,
ACTION:	CP02 COMMAND VALVE OPEN, IF VALVE DOES NOT COME OPEN NOTIFY CLTC OF PROBLEM THAT S-II WILL NOT RECEIVE S-II LOX UMB, PURGE AND CUTOFF WILL OCCUR,
REMARKS/RATIONALE:	VALVE MUST BE OPEN TO OBTAIN S-II UMB, PURGE OPEN, LOX UMB, PURGE VALVE OPEN MUST BE OBTAINED TO SATISFY S-II READY FOR LAUNCH CHAIN.

PAGE:	258
TIME:	-3'6"
SEQUENCE:	4-9
NOTE:	LOX PROP READY FOR LAUNCH ON
PROCEDURE STA:	C2EV
IDENTIFICATION ON:	S-II PROPELLANT MONITOR
RESPONSIBLE:	C2PM
LMR ITEM:	2-326 2-327, PAGE 2-16
CUTOFF INTERLOCKED:	YES, CUTOFF AT T-30
ACTION:	NOTIFY C2TC
REMARKS/RATIONALE:	COMMAND FROM PROPELLANT LOADING TO PURGE LOX FILL LINE WAS NOT RECEIVED, CUTOFF WILL BE AUTOMATIC EVEN IF THE PURGE WAS INITIATED FROM C2PM BEFORE T-2'32".

PAGE:	258
TIME:	-3'6"
SEQUENCE:	6-1
NOTE:	C2PM CCLH -- NOTE S-II REPLENISH COMPLETED ON
PROCEDURE STA:	C2PM & C2LH
INDENTIFICATION ON:	C2PM = S-II PROPELLANT MONITOR PANEL CCLH = LH2 CONTROL PANEL
RESPONSIBLE STA:	CCLH
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE:	THIS IS INDICATION ONLY. TCS WILL CONTINUE NORMALLY WITHOUT THIS INDICATION.

PAGE:	258
TIME:	-3'6"
SEQUENCE:	6-2
NOTE:	C2PM CPH1 -- NOTE S-II REPLENISH VALVE (A3310) CLOSED.
PROCEDURE STA:	C2PM & CPH1
IDENTIFICATION ON:	C2PM = PROPELLANT MONITOR PANEL CPH1 = LH2 COMPONENTS
RESPONSIBLE STA:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE:	INFORMATION ONLY

PAGE:	258
TIME:	-3'6"
SEQUENCE:	6-3
NOTE	C2PM CPH1 -- NOTE LH2 S-II FILL & DRAIN VALVE (C_{128}) CLOSED (DEE 1129)
PROCEDURE STA:	C2PM & CPH1
IDENTIFICATION ON:	C2PM -- S-II PROPELLANT MONITOR PANEL CPH1 -- LH2 COMPONENTS PANEL C2EV -- S-II EVENTS PANEL
RESPONSIBLE STA:	C2PM
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NOTIFY CPH1 AND CLTC THAT LH2 F/D CLOSED INDICATION NOT ON, REQUEST CPH1 TO MANUALLY CLOSE VALVE IF CPH1, C2EV INDICATION OFF. NOTIFY CLTC OF ACTION TAKEN AND RESULTS.
REMARKS/RATIONALE:	THE S-II LH2 F/D VALVE CLOSED INDICATION IS NOT NEEDED TO OBTAIN LH2 PRESS SYSTEMS READY FOR LAUNCH, ONLY S-II LH2 F/D VALVE NOT OPEN RELAY. IF S-II LH2 F/D VALVE CLOSED INDICATION NOT RECEIVED, A REAL TIME ASSESSMENT OF TANK PRESSURE AND MASS CHANGES WOULD BE MADE AND A RECOMMENDATION FOR CUTOFF AND RE-CYCLE.

PAGE:	258
TIME:	-3'6"
SEQUENCE:	6-4
NOTE:	C2PM CPH1 -- NOTE S-II UMB, LINE DRAIN VALVE (A3316) OPEN
PROCEDURE STA:	C2PM & CPH1
IDENTIFICATION ON:	C2PM -- S-II PROPELLANT MONITOR PANEL CPH1 -- LH2 COMPONENTS PANEL
RESPONSIBLE STA:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	CPH1 SHOULD OPEN VALVE MANUALLY TO ENABLE S-II UMB, PURGE COMMAND
REMARKS/RATIONALE:	INFORMATION ONLY.

PAGE:	259
TIME:	-3:6"
SEQUENCE:	6-6
NOTE:	C2PM -- NOTE LH2 UMB PURGE VALVE OPEN, (DEE 1131)
PROCEDURE STA:	C2PM
IDENTIFICATION ON:	C2PM - PROPELLANT MONITOR PANEL CPH1 - LH2 COMPONENTS PANEL
RESPONSIBLE STA:	C2PM
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NOTIFY CPH1 AND CLTC THAT LH2 UMB, PURGE VALVE NOT OPEN AND REQUEST CPH1 ENABLE PURGE MANUALLY, NOTIFY CLTC OF ACTION TAKEN AND RESULTS.
REMARKS/RATIONALE:	IF VALVE DOES NOT OPEN, A HAZARD WOULD EXIST AT LIFT OFF DUE TO A LH2 SPILLAGE FROM LH2 FILL LINE.

PAGE:	262
TIME:	-1'0"
SEQUENCE:	1-3
NOTE:	LH2 PROP, READY FOR LAUNCH ON (DEE 1130)
PROCEDURE STA:	C2EV
IDENTIFICATION ON:	S-II PROPELLANT MONITOR
RESPONSIBLE STA:	C2PM
LMR ITEM:	----------
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE:	COMMAND FROM PROPELLANT LOADING TO START S-II LH FILL LINE PURGE. THE LOSS OF THIS FUNCTION WILL NOT PREVENT LAUNCH: HOWEVER, LH FILL DISCONNECT, LH DEBRIS VALVE, AND LH FILL LINE WILL BE DAMAGED AND CONTAMINATED.

PAGE:	262
TIME	-1'0"
SEQUENCE:	1-5
NOTE:	S-II READY FOR LAUNCH - ON (DEE 1555)
PROCEDURE STA:	C2TC
IDENTIFICATION ON:	S-II EVENTS DISPLAY PANEL
RESPONSIBLE STA:	C2EV
LMR ITEM:	----------
CUTOFF INTERLOCKED:	YES AT T-30"
ACTION:	NONE - CUTOFF AUTOMATIC - VERIFY WITH C2EV/C2DE
REMAKRS/RATIONALE:	MALFUNCTION MAY HAVE OCCURRED IN ANY OF "AND" GATE INPUTS, PD SYS RDY, ENG, C/O BUS 2D15, LH DEPL, SENS, DRY, LOX DEPL, SENS, DRY, ENG, CUTOFF SAFE, ENG, RDY, LOX TANK PRESSURIZED, AND LH TK, PRESSURIZED,

PAGE:	262
TIME:	-0'50"
SEQUENCE:	2-1
NOTE:	POWER TRANSFER COMPLETE (S-II DEE 3363) (S-IVB DEE 1843 ON)
PROCEDURE STA:	C2EV
IDENTIFICATION ON:	S-II EVENTS DISPLAY PANEL S-II NETWORKS PANEL
RESPONSIBLE STA:	C2NP
LMR ITEM:	2-434 PG 2-31 2-435 PG 2-31 2-439 PG 2-32 2-440 PG 2-32
CUTOFF INTERLOCKED:	YES AT T-30"
ACTION:	NOTIFY TEST CONDUCTOR
REMARKS/RATIONALE	LOSS OF THIS FUNCTION CAN BE DUE TO ANY OF THE FOLLOWING: RECIRC, VOLT, OK, IGN, VOLT, OK, INSTR, VOLTS OK, MAIN BUS OK, ALL BUSSES ON INTERNAL, MAIN-INSTR-RECIRC BUS SUPERVISION, PROBLEM MAY BE IN THE STAGE OR IN THE ESE,

PAGE:	264
TIME:	-0'30"
SEQUENCE:	1-8
NOTE:	C2RP *** NOTE PNEUM RECVR DISC ACT PRESS OFF-ON (DEE 1066)
PROCEDURE STA:	C2RP
IDENTIFICATION ON:	S-II RECIRCULATION PANEL
RESPONSIBLE STA:	C2RP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE: LIGHT FOR INDICATION ONLY
REMARKS/RATIONALE:	BY NOT GETTING THIS INDICATION THE POSSIBILITY EXISTS THAT THERE IS 750 PSIG ACTUATION PRESSURE ACROSS SWING ARM TO SUPPLY OPENING ACTUATION PRESSURE TO QUICK DISCONNECT A7755, THIS PRESSURE WILL HAVE NO EFFECT ON THE QUICK DISCONNECT DURING UMBILICAL RELEASE.

PAGE:	265
TIME:	-0'30"
SEQUENCE:	1-9
NOTE:	C2RP *** NOTE PNEUM RECVR SUPPLY VALVE OPEN-OFF (DEE 1067)
PROCEDURE STA:	C2RP
IDENTIFICATION ON:	S-II RECIRCULATION PANEL
RESPONSIBLE STA:	C2RP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE: LIGHT FOR INDICATION ONLY
REMARKS/RATIONALE:	BY NOT GETTING THIS INDICATION THE POSSIBILITY EXISTS THAT THERE IS 3000 PSIG RECIRC ACTUATION PRESSURE ACROSS SWING ARM OR SOMEWHAT LOWER PRESSURE IF THE RECEIVER LINE VENT INDICATION IS "ON" ON THE C2GP PANEL. THIS QUICK DISCONNECT IS DESIGNED TO SEPARATE WITH OPERATING PRESSURE.

PAGE:	265
TIME:	-0'30"
SEQUENCE:	1-11
NOTE:	C2AE *** NOTE START TANK VENT CONTROL PRESS ON - OFF (DEE 1191)
PROCEDURE STA:	C2AE
IDENTIFICATION ON:	S-II ALL ENGINE PANEL
RESPONSIBLE STA:	C2AE
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE: LIGHT FOR INDICATION ONLY
REMARKS/RATIONALE:	BY NOT GETTING THIS INDICATION THE POSSIBILITY EXISTS THAT THERE IS 400 PSIG START TANK VENT CONTROL PRESSURE ACROSS SWING ARM, THIS QUICK DISCONNECT IS DESIGNED TO SEPARATE WITH OPERATING PRESSURE.

PAGE:	265
TIME:	-0:30"
SEQUENCE:	1-13
NOTE:	R2SC - VERIFY C050-327 & D072-327 WITHIN LIMITS
PROCEDURE STA:	R2SC
IDENTIFICATION ON:	R2SC RECORDERS B06AL & B06AR
RESPONSIBLE STA:	REPORTING DONE BY R2SC-4
LMR ITEM:	2-327
CUTOFF INTERLOCKED:	N/A
ACTION:	NONE
REMARKS/RATIONALE:	REDLINE OBSERVER INSTRUCTIONS COVERS MEASUREMENTS C050-327 & D072-327 FROM INITIATION OF AUTO SEQUENCE WITH T-33 SEC LIMITS SPECIFIED.

PAGE:	G268
TIME:	-8,9" (CD ONLY)
SEQUENCE:	2-5
NOTE:	C2AE *** NOTE TCH CHILLDOWN - OFF (DEE 1193)
PROCEDURE STA:	C2AE
IDENTIFICATION ON:	S-II ALL ENGINE PANEL
RESPONSIBLE STA:	C2AE
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE: LIGHT FOR INDICATION ONLY
REMARKS/RATIONALE:	BY NOT GETTING THIS INDICATION THE POSSIBILITY EXISTS THAT THERE IS APPROXIMATELY 900 PSIG THRUST CHAMBER CHILLDOWN HE PRESSURE ACROSS SWING ARM, THIS QUICK DISCONNECT IS DESIGNED TO SEPARATE WITH OPERATING PRESSURE.

PAGE:	268
TIME:	-0'8,9"
SEQUENCE:	6
NOTE:	C2PM -- NOTE LOX UMB, PURGE VALVE CLOSED.
PROCEDURE STA:	C2PM
IDENTIFICATION ON:	C2PM -- S-II PROPELLANT MONITOR PANEL CP02 -- LOX COMPOENETS PANEL
RESPONSIBLE STA:	C2PM
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NONE
REMARKS/RATIONALE:	THIS IS INFORMATION ONLY ITEM AND NO ACTION WOULD BE TAKEN REAL TIME, AFTER COMPLETION OF TEST, FAILURE OF VALVE WOULD BE INVESTIGATED.

PAGE: 261

TIME: -1'37"

SEQUENCE: 1-4

NOTE: C2SP *** NOTE LH2 DISCONNECT PRESS ON (DEE 1570)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: NO ACTION OR CALLOUT WOULD BE MADE, THE INDICATIONS WOULD BE USED IN CONJUNCTION WITH OTHER INDICATION TO EVALUATE TOTAL SYSTEM STATUS.

REMARKS/RATIONALE: PRESSURIZATION OF THE TANK ULLAGE COULD BE ACCOMPLISHED WITHOUT THE DISCONNECT BEING OPEN. THE INDICATION IS A RESULT OF THE TCS PULSE & WOULD BE REPORTED AFTER-THE-FACT FOR TROUBLESHOOTING PURPOSES.

PAGE:	265
TIME:	-0'30"
SEQUENCE:	1-14
NOTE:	C2SP *** NOTE LOW LEVEL PURGE VALVE CLOSED, (DEE 1108)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NO ACTION WOULD BE TAKEN, THE CONDITION WOULD BE FOR THE PANEL OPERATOR TO ASSESS TOTAL SYSTEM PERFORMANCE,
REMARKS/RATIONALE:	FAILURE OF THE LOW LEVEL PURGE VALVE TO CLOSE WOULD SIMPLY TRAP PRESSURE IN THE S/A LINE, THIS WOULD VENT OFF WHEN THE CARRIER PLATE IS WITHDRAWN & WOULD NOT AFFECT THE LAUNCH,

PAGE:	265
TIME:	-0'30"
SEQUENCE:	1-10
NOTE:	C2GP *** NOTE PNEUM, RECVR LINE VENT OPEN, (DEE 1068)
PROCEDURE STA:	C2GP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NO ACTION WOULD BE TAKEN, THE CONDITION WOULD BE FOR THE PANEL OPERATOR TO ASSESS TOTAL SYSTEM PERFORMANCE.
REMARKS/RATIONALE:	FAILURE TO THE VENT WOULD SIMPLY TRAP PRESSURE IN THE S/A, THIS COULD BE VENTED AFTER THE VEHICLE HAS BEEN LAUNCHED AND THE COMPUTER OPERATING.

PAGE:	264
TIME:	-0'30"
SEQUENCE:	1-5
NOTE:	C2SP *** NOTE LOX & LH2 SUPPLY LINE VENTS OPEN, (DEE 1017, 1404)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NO ACTION WOULD BE TAKEN NOR WOULD A CALLOUT BE PUT ON CH 121, THE LACK OF THE CLOSED INDICATION WOULD BE NOTED BY THE PANEL OPERATOR FOR AFTER-THE-FACT TROUBLESHOOTING.
REMARKS/RATIONALE:	FAILURE OF THE VENTS WOULD MERELY TRAP PRESSURE IN THE S/A LINE, THIS WOULD NOT INTERFERE WITH CARRIER PLATE WITHDRAWAL AND WOULD BE VENTED WHEN THE CARRIERS COME OFF, THE SYSTEM WOULD BE CHECKED LATER, OTHER INDICATIONS WOULD BE CHECKED TO DETERMINE THE FULL SITUATION, IN THIS TIME FRAME IT WOULD BE BETTER TO GET THE VEHICLE OFF AND THINK ABOUT THE GSE LATER.

PAGE: 264

TIME: -0'30"

SEQUENCE: 1-4

NOTE: C2SP *** NOTE LOX & LH2 SUPPLY VALVES CLOSED, (DEE 1095, 1111)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: NO ACTION WOULD BE TAKEN, THE CONDITION WOULD BE NOTED FOR REFERENCE TO OTHER INDICATIONS FOR A FULL STATUS.

REMARKS/RATIONALE: AT THE TIME FRAME IN QUESTION FAILURE OF THE SUPPLY VALVE WOULD CAUSE A LOUD VENT AT THE S7-41 WITH A RESULTANT PRESSURE IN THE S/A LINE. THIS WOULD NOT CAUSE A PROBLEM WITH THE CARRIER PLATE RETRACTION NOR WITH THE FLIGHT. AT ONE MINUTE AFTER LIFTOFF THE SUPPLY VALVE SWITCHES ARE CLOSED AND THE ENTIRE SYSTEM COULD BE DEPRESSURIZED AT THAT TIME. IN THE TIME FRAME THIS WOULD OCCUR IT WOULD BE BETTER TO GET THE VEHICLE AWAY.

PAGE: 260

TIME: -2'0"

SEQUENCE: 1

NOTE: C2SP *** NOTE LOX ULLAGE PRESS SW, #1 AND/OR #2 ON (DEE 1098, 1099)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: IF NEITHER P/S PICKED UP, C2SP WOULD IMMEDIATELY NOTE THE TANK ULLAGE PRESSURE ON HIS PANEL METER, IF THE PRESSURE CONTINUED TO INCREASE, IT WOULD INDICATE THE SWITCHES HAD FAILED, C2SP WOULD NOTIFY CLTC ON CH 121 OF THE SITUATION & THAT THE LOX VENT VALVES MAY CRACK, HOWEVER, THE LMR REDLINE, ITEM 2-359, IS 36.0-43.0 PSIA & WILL PROBABLY NOT BE EXCEEDED,

REMARKS/RATIONALE: THE REDLINE WOULD NOT BE EXCEEDED AS THE VENTS CAN RELIEVE FULL FLOW OF THE PRESSURIZATION SYSTEM, AT T-30 THE PRESSURIZATION SUPPLY VALVE IS CLOSED & THE ACTUATION PRESSURE VENTED AT WHICH TIME THE VENT VALVE WOULD CLOSE & TANK ULLAGE PRESSURE WOULD BE WITHIN REDLINE,

PAGE: 262

TIME: -1'0"

SEQUENCE: 1-2

NOTE: C2SP *** NOTE LH2 ULLAGE PRESS SW #1 AND/OR #2 ON (DEE 1114, 1115)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: IF NEITHER P/S PICKED UP, C2SP WOULD IMMEDIATELY NOTE THE TANK ULLAGE PRESSURE ON HIS PANEL METER. IF PRESSURE WAS STILL INCREASING, IT WOULD INDICATE THE SWITCHES HAD FAILED AND A REDLINE, LMR ITEM 2-360, WOULD BE EXCEEDED AND THE REDLINE OBSERVER WOULD HAVE THE RESPONSIBILITY FOR ACTION. C2SP WOULD NOTIFY CLTC ON CH 121 OF THE INDICATIONS AFTER-THE-FACT.

REMARKS/RATIONALE: SINCE THIS PARTICULAR FUNCTION IS NOT COVERED BY LMR OR INTERLOCKED A CUTOFF WOULD NOT BE CALLED FOR IT ALONE, HOWEVER, COUPLED WITH OTHER INDICATIONS, OR LACK OF, A REDLINE WOULD NOT BE MET & CUTOFF WOULD RESULT FROM THE LMR ITEM.

PAGE: 261

TIME: -1'37"

SEQUENCE: 1-3

NOTE: C2SP *** NOTE LH2 PRESS SUPPLY VALVE OPEN (DEE 1110)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: NO ACTION TAKEN AT -1'37" BUT WOULD BE REPORTED AFTER-THE-FACT FOR INVESTIGATION, STATUS WOULD BE EVALUATED IN CONJUNCTION WITH STATUS OF OTHER FUNCTIONS TO DETERMINE THE PRESENCE OF A POTENTIAL PROBLEM, THE SUPPLY VALVE CLOSED LIGHT WOULD BE CHECKED FOR STATUS AS WELL AS AN IMMEDIATE INCREASE IN TANK PRESSURE ON THE C2SP METER,

REMARKS/RATIONALE: THIS PARTICULAR FUNCTION IS NEITHER A REDLINE NOR CUTOFF INTERLOCK BUT IS ONE STEP REQUIRED TO OBTAIN LOX TANK PRESSURIZED, AS SUCH, NOT RECEIVING THE LIGHT INDICATION WOULD NOT BE REASON FOR REPORTING ON CH 121 BUT THE TANK PRESSURE ITSELF WOULD BE REPORTED BY THE REDLINE OBSERVER PER LMR ITEM 2-360, TIME WOULD NOT PERMIT CHECKING OF DEE AT THE TIME BUT WOULD BE CHECKED AFTER-THE-FACT FOR TROUBLESHOOTING,

PAGE:	257
TIME:	-3'6"
SEQUENCE:	3-1
NOTE:	C2SP *** NOTE LOX SUPPLY VALVE OPEN (DEE 1094)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LME ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NO ACTION TAKEN AT 3'6" BUT WOULD BE REPORTED AFTER-THE-FACT FOR INVESTIGATION, STATUS WOULD BE EVALUATED IN CONJUNCTION WITH STATUS OF OTHER FUNCTIONS TO DETERMINE THE PRESENCE OF A POTENTIAL PROBLEM, THE SUPPLY VALVE CLOSED LIGHT WOULD BE CHECKED FOR STATUS AS WELL AS AN IMMEDIATE INCREASE IN TANK PRESSURE ON THE C2SP METER,
REMARKS/RATIONALE:	THIS PARTICULAR FUNCTION IS NEITHER A REDLINE NOR CUTOFF INTERLOCK BUT IS ONE STEP REQUIRED TO OBTAIN LOX TANK PRESSURIZED, AS SUCH, NOT RECEIVING THE LIGHT INDICATION WOULD NOT BE REASON FOR REPORTING ON CH 121 BUT THE TANK PRESSURE ITSELF WOULD BE REPORTED BY THE REDLINE OBSERVER PER LMR ITEM 2-359, TIME WOULD NOT PERMIT CHECKING OF DEE AT THE TIME BUT WOULD BE CHECKED AFTER-THE-FACT FOR TROUBLESHOOTING,

PAGE: 257

TIME: -3'6"

SEQUENCE: 3-2

NOTE: C2SP *** NOTE LOX TANK VENTS CLOSED ON (DEE 2540, 2542)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: IF THE LOX VENT VALVES DO NOT CLOSE BY T-2'59", C2SP WILL PUT THE LOX ACTUATION PRESSURE SW TO OFF AFTER C2PM VERIFIES THE LOX FILL & DRAIN VALVE IS CLOSED, C2SP WILL THEN NOTIFY CLTC ON CH 121 OF THE ACTION TAKEN, THE TANK PRESSURE IS AN LMR ITEM, 2-359, & THE REDLINE OBSERVER WOULD HAVE THE RESPONSIBILITY FOR FURTHER ACTION.

REASON/RATIONALE: SINCE THIS PARTICULAR FUNCTION IS NOT COVERED BY LMR OR INTERLOCK A CUTOFF WOULD NOT BE CALLED FOR IT ALONE, HOWEVER, COUPLED WITH OTHER INDICATIONS, OR LACK OF, A REDLINE WOULD NOT BE MET & CUTOFF WOULD RESULT FROM THE LMR ITEM.

PAGE:	261
TIME:	-1'37"
SEQUENCE:	1-5
NOTE:	C2SP *** NOTE LH2 VENTS CLOSED ON (DEE 2548, 2550)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LME ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	IF THE LH2 VENT VALVES DO NOT CLOSE BY T-1'30", C2SP WOULD NOTIFY CLTC ON CH 121 OF AN IMPENDING PROBLEM WITH TANK PRESSURIZATION, THE TANK PRESSURE IS AN LMR ITEM, 2-360, & THE REDLINE OBSERVER WOULD HAVE THE RESPONSIBILITY FOR FURTHER ACTION.
REASON/RATIONALE:	SINCE THIS PARTICULAR FUNCTION IS NOT COVERED BY LMR OR INTERLOCK A CUTOFF WOULD NOT BE CALLED FOR IT ALONE, HOWEVER, COUPLED WITH OTHER INDICATIONS, OR LACK OF, A REDLINE WOULD NOT BE MET & CUTOFF WOULD RESULT FROM THE LMR ITEM. IN THE EVENT THE REDLINE IS NOT MET, A RECYCLE TO T-22 MINUTES WOULD BE ACCOMPLISHED. DURING THE TCS, AFTER RECYCLE, C2SP WOULD PUT THE LH2 ACTUATION PRESSURE SWITCH TO OFF AFTER C2PM VERIFIES THE LH2 FILL & DRAIN VALVE IS CLOSED AT APPROXIMATELY T-2'56".

N-220-137

PAGE: 260

TIME: -2:0"

SEQUENCE: 1-1

NOTE: C2SP *** NOTE LOX PRESS SYS READY FOR LAUNCH, (DEE 1102)

PROCEDURE STA: C2SP

IDENTIFICATION ON: S-II STAGE PRESSURIZATION PANEL

RESPONSIBLE STA: C2SP

LMR ITEM: NO

CUTOFF INTERLOCKED: YES

ACTION: A CALLOUT WOULD NOT BE MADE ON THIS ONE ITEM ALONE, OTHER ITEMS WOULD BE CHECKED TO OBTAIN A FULL SYSTEM STATUS FOR AFTER-THE-FACT REPORTING, THIS ITEM IS IN THE S-II READY FOR LAUNCH COMPLETE LADDER AND IF A PROBLEM ACTUALLY EXISTED AN AUTOMATIC CUTOFF WOULD BE RECEIVED AT T-30 SECONDS,

REMARKS/RATIONALE: THE LIGHT INDICATION IS AN ITEM INDICATIVE OF THE SYSTEM PERFORMANCE AND THUS IMPORTANT TO THE PANEL OPERATOR AND EXPEDITES ANY LATER DISCUSSIONS IF A PROBLEM DOES OCCUR, A CUTOFF WOULD NOT BE CALLED FOR ON THE BASIS OF THIS ITEM ONLY AS THE AFOREMENTIONED INTERLOCK DOES EXIST, A REPORT ON CH 121 WOULD NOT BE REQUIRED FOR THE SAME REASON,

PAGE:	262
TIME:	-1'0"
SEQUENCE:	1-4
NOTE:	C2SP *** NOTE LH2 PRESS SYS READY FOR LAUNCH, (DEE 1117)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	YES
ACTION:	A CALLOUT WOULD NOT BE MADE ON THIS ONE ITEM ALONE, OTHER ITEMS WOULD BE CHECKED TO OBTAIN A FULL SYSTEM STATUS FOR AFTER-THE-FACT REPORTING, THIS ITEM IS IN THE S-II READY FOR LAUNCH COMPLETE LADDER AND IF A PROBLEM ACTUALLY EXISTED AN AUTOMATIC CUTOFF WOULD BE RECEIVED AT T-30 SECONDS,
REMARKS/RATIONALE:	THE LIGHT INDICATION IS AN ITEM INDICATIVE OF THE SYSTEM PERFORMANCE AND THUS IMPORTANT TO THE PANEL OPERATOR AND EXPEDITES ANY LATER DISCUSSIONS IF A PROBLEM DOES OCCUR, A CUTOFF WOULD NOT BE CALLED FOR ON THE BASIS OF THIS ITEM ONLY AS THE AFOREMENTIONED INTERLOCK DOES EXIST, A REPORT ON CH 121 WOULD NOT BE REQUIRED FOR THE SAME REASON,

PAGE:	264
TIME:	-0'30"
SEQUENCE:	1-6
NOTE:	C2SP *** NOTE LOX & LH2 DISC PRESS OFF (DEE 1569, 1570)
PROCEDURE STA:	C2SP
IDENTIFICATION ON	S-II STAGE PRESSURIZATION
RESPONSIBLE STA:	C2SP
LMR ITEM:	NO
CUTOFF INTERLOCKED:	NO
ACTION:	NO ACTION WOULD BE TAKEN, THE CONDITION WOULD BE FOR THE PANEL OPERATOR TO ASSESS TOTAL SYSTEM PERFORMANCE.
REMARKS/RATIONALE:	FAILURE OF THE DISCONNECT PRESSURE TO VENT WOULD MEAN 750 PSIG OPERATION PRESSURE WOULD BE TRAPPED IN THE S/A LINE. THIS CONDITION WOULD NOT AFFECT THE CARRIER PLATE PULL-OFF.

PAGE:	264
TIME:	-0'30"
SEQUENCE:	1-7
NOTE:	C2SP *** NOTE LOX AND LH2 ACT PRESS VENTING (DEE 1105, 1551)
PROCEDURE STA:	C2SP
IDENTIFICATION ON:	S-II STAGE PRESSURIZATION PANEL
RESPONSIBLE STA:	C2SP
LMR ITEM:	YES
CUTOFF INTERLOCKED:	NO
ACTION:	IF THIS INDICATION DID NOT OCCUR, NO CALLOUT WOULD BE MADE NOR ACTION TAKEN UNLESS IT WAS TO BE UTILIZED FOR LMR ITEM 2-363A OR B PER PRIOR AGREEMENT, THE LIGHT INDICATION WOULD BE STATUSED WITH OTHER INDICATIONS TO ASSESS SYSTEM PERFORMANCE UNLESS STATED ABOVE.
REMARKS/RATIONALE:	THE INDICATION BY ITSELF UNDER NORMAL CONDITIONS IS UTILIZED BY THE PANEL OPERATOR TO DETERMINE ON-THE-SPOT PERFORMANCE. IF THE PRIMARY MEASUREMENT FAILS THE LIGHT INDICATION IS ALTERNATE FOR THE LMR ITEM & WOULD BE REPORTED PER LMR RULES.

APPENDIX F

PART 3

S-IVB TERMINAL COUNT

CDDT/CD CALLOUTS

AS-509

JANUARY 15, 1971

D-85-11-116

PAGE:	258
TIME:	T-316"
SEQUENCE:	5-2
NOTE:	S-IVB REPLENISH COMPLETED
PROCEDURE STATION:	CCLO, C4PR
INDICATION ON:	S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	-----
CUTOFF INTERLOCK	-----
ACTION:	NONE BY C4PR
REMARKS/RATIONALE:	INFORMATION ITEM ONLY FOR C4PR

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	5-4
NOTE:	S-IVB REPLENISH CLOSED
PROCEDURE STATION:	CP02, C4PR
INDICATION ON:	S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL
RESPONSIBLE STATION:	CP02
LMR ITEM:	-----
CUTOFF INTERLOCK:	-----
ACTION:	NONE BY C4PR
REMARKS/RATIONALE:	INFORMATION ITEM ONLY FOR C4PR

PAGE: 258

TIME: T-3:6"

SEQUENCE: 5-5

NOTE: S-IVB LOX FILL & DRAIN CLOSED

PROCEDURE STATION: CP02, C4PR

INDICATION ON: S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL

RESPONSIBLE STATION: CP02, C4PR

LMR ITEM: NO

CUTOFF INTERLOCK: NO

ACTION:

1, CONDITION: CLOSED OFF, OPEN OFF
ACTION: CP02 - NONE
C4PR - ISSUE BOOST CLOSE

2, CONDITION: CLOSED OFF, OPEN ON
ACTION: CP02 - INTERRUPT OPEN CMD
C4PR - ISSUE BOOST CLOSE

REMARKS/RATIONALE: VALVE IS ASSUMED CLOSED IF "OPEN COMMAND" AND "OPEN IND" ARE NOT PRESENT AND LAUNCH COUNTDOWN WILL PROCEED.

PAGE:	258
TIME:	3'=6"
SEQUENCE:	5=6
NOTE:	S-IVB UMBILICAL VENT OPEN
PROCEDURE STATION:	CP02, C4PR
INDICATION ON:	S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL
RESPONSIBLE STATION:	CP02
LMR ITEM:	=====
CUTOFF INTERLOCK:	=====
ACTION:	NONE BY C4PR
REMARKS/RATIONALE:	INFORMATION ITEM ONLY FOR C4PR

PAGE:	258
TIME:	T-3:6"
SEQUENCE:	5-7
NOTE:	S-IVB UMBILICAL PURGE ON
PROCEDURE STATION:	CCLO
INDICATION ON:	BOEING PANEL AND C4HN PANEL
RESPONSIBLE STATION:	CCLO
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	1. CCLO SHOULD ATTEMPT MANUAL ACTION AFTER UMBILICAL VENT IS OPENED. 2. IF CCLO MANUAL ACTION FAILS, HE SHOULD REQUEST C4HN TO OPEN VALVE.
REMARKS/RATIONALE:	PURGE IS NOT CRITICAL OR MANDATORY.

PAGE:	258
TIME:	T-3'6"
SEQUENCE:	5-8
NOTE:	DEMAND ON D14
PROCEDURE STATION:	R4PS
INDICATION ON:	STRIP CHART
RESPONSIBLE STATION:	R4PS
LMR ITEM:	PAGE 2-42, ITEM 2-519
CUTOFF INTERLOCK:	NO
ACTION:	NONE
REMARKS/RATIONALE:	1, INFORMATION ITEM ONLY FOR R4PS
	2, LMR ITEM TERMINATES AT START OF TCS

PAGE:	259
TIME:	T-3:6"
SEQUENCE:	7-1
NOTE:	S-IVB REPLENISH COMPLETED ON
PROCEDURE STATION:	CCLH, C4PR
INDICATION ON:	S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL
RESPONSIBLE STATION:	CCLH
LMR ITEM:	-----
CUTOFF INTERLOCK:	-----
ACTION:	NONE BY C4PR
REMARKS/RATIONALE:	INFORMATION ITEM ONLY FOR C4PR

PAGE: 259

TIME: T-3:6"

SEQUENCE: 7-3

NOTE: S-IVB FILL & DRAIN VALVE CLOSED

PROCEDURE STATION: CPH1, C4PR

INDICATION ON: S-IVB PROPELLANT MONITOR PANEL AND BOEING PANEL

RESPONSIBLE STATION: CPH1, C4PR

LMR ITEM: NO

CUTOFF INTERLOCK: NO

ACTION:

1, CONDITION: CLOSED OFF, OPEN OFF
ACTION: CPH1 - NONE
C4PR - ISSUE BOOST CLOSE

2, CONDITION: CLOSED OFF, OPEN ON
ACTION: CPH1 - INTERRUPT OPEN CMD
C4PR - ISSUE BOOST CLOSE

REMARKS/RATIONALE: VALVE IS ASSUMED CLOSED IF "OPEN COMMAND" AND "OPEN IND" ARE NOT PRESENT AND LAUNCH COUNTDOWN WILL PROCEED.

PAGE:	259
TIME:	T-3'6"
SEQUENCE:	7-5
NOTE:	S-IVB UMBILICAL LINE PURGE VALVE (A-11773) OPEN
PROCEDURE STATION:	CPH1
INDICATON ON:	CPH1, AND S-IVB HELIUM CONTROL PANEL (C4HC)
RESPONSIBLE STATION:	CPH1
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	1, CPH1 SHOULD ATTEMPT MANUAL ACTION AFTER THE UMBILICAL VENT IS OPEN. 2, IF CPH1 MANUAL ACTION FAILS, HE SHOULD REQUEST C4HC TO OPEN VALVE. (REQUEST MUST BE MADE PRIOR TO T-2'32")
REMARKS/RATIONALE:	PURGE IS NOT CRITICAL OR MANDATORY

PAGE:	260
TIME:	T-2'47"
SEQUENCE:	1-1
NOTE:	LOX TANK PRESSURIZING
PROCEDURE STATION:	C4SP
INDICATION ON:	N/A, ENTIRE PREPRESS SEQUENCE IS MONITORED BY C4SP
RESPONSIBLE STATION:	R4PS
LMR ITEM:	PAGE 2-47, ITEM 2-551
CUTOFF INTERLOCK:	YES
ACTION:	ACTION WOULD BE DEPENDENT ON NATURE OF MALFUNCTION
REMARKS/RATIONALE:	THIS IS AN INFORMATION ITEM FOR C4SP TO INFORM HIM OF A PENDING CRITICAL OPERATION.

PAGE:	260
TIME:	T-2:47"
SEQUENCE:	1-2
NOTE:	S-IVB LOX VENT CLOSES IMMEDIATELY
PROCEDURE STATION:	C4SP
INDICATION ON:	S-IVB STAGE PRESSURE PANEL
RESPONSIBLE STATION:	C4SP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	BOOST CLOSE VENT IF CLOSE IND DOES NOT ILLUMINATE
REMARKS/RATIONALE:	VALVE MUST BE CLOSED TO INITIATE PRESSURIZATION

PAGE	260
TIME:	T-2:47"
SEQUENCE:	1-3
NOTE:	S-IVB LOX PRESSURIZATION COMMAND ON
PROCEDURE STATION:	C4EV
INDICATION ON:	S-IVB EVENTS DISPLAY PANEL
RESPONSIBLE STATION:	C4PS, C4SP
LMR ITEM:	-----
CUTOFF INTERLOCK:	-----
ACTION:	NO ACTION REQUIRED UNLESS REQUESTED BY C4PS

REMARKS/RATIONALE: PRESSURIZATION WILL BE DETERMINED BY FUNCTIONS OCCURING ON STAGE PRESSURE PANEL,

PAGE:	260
TIME:	T-2:47"
SEQUENCE:	1-4
NOTE:	COLD HE REG OPERATION (D-105)
PROCEDURE STATION:	C4P2, R4PS
INDICATION ON:	ANALOG READING ON CRT IN F/R #1 AND STRIP CHART
RESPONSIBLE STATION:	R4PS
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	NONE

REMARKS/RATIONALE: INFORMATION ITEM ONLY TO AID IN VERIFYING SYSTEM OPERATION

PAGE:	261
TIME:	T-1'37"
SEQUENCE:	1-6
NOTE:	S-IVB LH2 PREPRESS SUPPLY OPENS
PROCEDURE STATION:	C4SP
INDICATION ON:	S-IVB STAGE PRESSURE PANEL
RESPONSIBLE STATION:	C4SP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	MANUALLY OPEN VALVE IF ALL OTHER PANEL INDICATIONS ARE NORMAL

REMARKS/RATIONALE: C4SP HAS HARDWIRE CONTROL

PAGE:	264
TIME:	T-40"
SEQUENCE:	2-1
NOTE:	S-IVB DIRECTIONAL VENT TO FLIGHT POSITION
PRECEDURE STATION:	C4SP
INDICATION ON:	S-IVB STAGE PRESSURE PANEL
RESPONSIBLE STATION:	C4SP
LMR ITEM:	NO
CUTOFF INTERLOCK:	YES
ACTION:	NONE AVAILABLE

REMARKS/RATIONALE: INFORMATION ITEM FOR C4SP, DIRECTIONAL VENT MUST BE IN FLIGHT POSITION TO SATISFY READY FOR LAUNCH CHAIN.

PAGE:	263
TIME:	T-50"
SEQUENCE:	2-1
NOTES:	NOTE POWER TRANSFER COMPLETE (S-IVB DEE 1843 ON)
PROCEDURE STATION:	C4NP
INDICATION ON:	S-IVB NETWORKS PANEL
RESPONSIBLE STATION:	C4ES/C4NP
FUNCTION LMR ITEM:	NO
FUNCTION CUTOFF INTERLOCKED:	YES - AT T-30 SEC,
ACTION:	IF POWER TRANSFER COMPLETE LIGHT DOES NOT ILLUMINATE A QUICK ANALYSIS OF THE ACTUAL CONDITION OF THE INTERNAL BUSSES WOULD BE MADE BY C4NP, C4PP, C4DE, IF BUS CURRENTS, DEE INDICATIONS AND OTHER PANEL LIGHTS INDICATE NO PROBLEM EXISTS NO REPORT OR CORRECTIVE ACTION WOULD BE TAKEN, IF A PROBLEM DID EXIST IN POWER TRANSFER COMPLETE THE CIFR INDICATION WOULD NOT ILLUMINATE AND HIS RESPONSE (IF ANY) WOULD BE PRIME,
REMARKS/RATIONALE:	IF POWER TRANSFER COMPLETE SIGNAL DOES NOT GET TO INTEGRATION AN AUTOMATIC CUTOFF WILL OCCUR AT T-30 SECONDS, R4SC/C4BE WILL CALL A CUTOFF IF BUSSES ARE NOT ON INTERNAL,
RESPONSE TIME:	19 SEC,

PAGE:	261
TIME:	T-1:37"
SEQUENCE:	1-8
NOTE:	S-IVB LH2 VENT CLOSES IMMEDIATELY
PROCEDURE STATION:	C4SP
INDICATION ON:	S-IVB STAGE PRESSURE PANEL
RESPONSIBLE STATION:	C4SP
LMR ITEM:	NO
CUTOFF INTERLOCK:	NO
ACTION:	BOOST CLOSE VENT IF CLOSE IND. DOES NOT ILLUMINATE

REMARKS/RATIONALE: VALVE MUST BE CLOSED TO INITIATE PRESSURIZATION

PAGE:	261
TIME:	T-1'37"
SEQUENCE:	1-7
NOTE:	S-IVB FUEL TANK PRESSURIZATION COMMAND ON
PROCEDURE STATION:	C4EV
INDICATION ON:	EVENTS DISPLAY PANEL
RESPONSIBLE STATION:	C4PS, C4SP
LMR ITEM:	-----
CUTOFF INTERLOCK:	-----
ACTION:	NO ACTION REQUIRED UNLESS REQUESTED BY C4PS

REMARKS/RATIONALE: PRESSURIZATION WILL BE DETERMINED BY FUNCTIONS OCCURRING ON STAGE PRESSURE PANEL.

PAGE:	264
TIME:	T=40"
SEQUENCE:	2=2
NOTES:	NOTE S=IVB READY FOR LAUNCH (C) DEE 1966 ON
PROCEDURE STATION:	C4TC
INDICATION ON:	S=IVB TEST CONDUCTOR PANEL
RESPONSIBLE STATION:	C4TC
FUNCTION LMR ITEM:	NO
FUNCTION CUTOFF INTERLOCKED:	YES, AT T=30 SEC,
ACTION:	IF LIGHT DOES NOT ILLUMINATE LOOK AT THE OVERHEAD STATUS BOARD, IF THE STATUS BOARD IS NORMAL NO ACTION WILL BE TAKEN, IF STATUS BOARD IS NOT LIT THEN CUTOFF MAY OCCUR, C4TC WILL NOTIFY CLTC THAT S=IVB DID NOT HAVE READY FOR LAUNCH IF CUTOFF OCCURS,
REMARKS/RATIONALE:	AUTOMATIC CUTOFF WILL OCCUR AT T=T SEC, IF FUNCTION IS NOT PRESENT, C4EV/C4DE WILL BE WATCHING THE EVENTS PANEL AND DEE=6 TO DETERMINE CAUSE OF FAILURE BUT WILL NOT REPORT UNTIL AFTER SAFING,
RESPONSE TIME:	10 SECONDS,

PAGE:	266
TIME:	T=0:17"
SEQUENCE:	4=1
NOTES:	C1DP C2DP C4DP NOTE DSCR:S 1 & 2 PD BLOCKED OFF, (DEE 1012, 1013)(C) DEE 0038, 0039, DEE 1673, 1674
PROCEDURE STATION:	C4DP
INDICATION ON:	S=IVB PROPELLANT DISPERSION PANEL
RESPONSIBLE STATION:	C4DP
FUNCTION LMR ITEM:	NO
FUNCTION CUTOFF INTERLOCKED:	NO
ACTION:	IF LIGHT(S) DID NOT ILLUMINATE OTHER INDICATIONS WOULD BE CHECKED (C4EV INDICATIONS AND DEE 1673, 1674), NO VERBAL RESPONSE WOULD BE MADE UNLESS REQUESTED BY CRSO OR CLTC,
REMARKS/RATIONALE:	NO AUTOMATIC CUTOFF IS INITIATED DUE TO ABSENCE OF THIS FUNCTION, IF FUNCTION DOES NOT OCCUR DUE TO ESE MALFUNCTION PD BLOCKED WILL BE REMOVED AT UNBILICAL EJECT,
RESPONSE TIME:	15 SEC,

PAGE:	266
TIME:	T-17"
SEQUENCE:	4-2
NOTE:	NON-PROGRAMMED CUTOFF NOT ON
PROCEDURE STATION:	C4ET
INDICATION ON:	S-IVB ENGINE TEST PANEL
RESPONSIBLE STATION:	C4ET
LMR ITEM:	NO
CUTOFF INTERLOCK:	YES
ACTION:	NONE

REMARKS/RATIONALE: INFORMATION ITEM ONLY

APPENDIX F

PART 4

IU TERMINAL COUNT

CDDT/CD CALLOUTS

AS-509

JANUARY 15, 1971

I-174-II-117

IBM RESPONSIBLE THREE ASTERISK NOTE SEQUENCES
IN V-20060 VOLUME II (CDDT/CD) AFTER T-3'07"

PAGE	TIME	SEQUENCE	RESPONSE STATION	DESCRIPTION
260	-2'32"	1-1	BGCC	*** NOTE COMPUTER TO IDLE MODE (DEE 3072)
260	-2'32"	1-2	BGCC	*** NOTE IF COMPUTER IDLE MODE CANNOT BE VERIFIED, HAVE CLVN PLACE ML/DCE IN MANUAL MODE.

RESPONSIBLE STATION: BGCC

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: BGCC TO CLVN: PLACE ML/DCE IN MANUAL MODE AND VERIFY (SEQUENCE 1-2)

CODE (IU DEE PRINTER OPERATOR):

CHECK THE STATUS OF DEE 3072 (ML COMPUTER INHIBIT), TAKE NO FURTHER ACTION UNLESS REQUESTED.

RATIONALE: PLACING THE ML/DCE IN THE MANUAL MODE BYPASSES THE INHIBIT ESE CIRCUITRY, 110A CIRCUITRY, AND OPS SYSTEM.

PLACING THE ML/DCE IN THE MANUAL MODE WILL NOT CAUSE THE 110A TO GO TO THE IDLE MODE, HOWEVER, THIS IS A NORMAL CONDITION.

IF ANY LDI CHANGES THAT WOULD RESULT IN MDO ACTION TAKES PLACE, ML/DCE FEEDBACK ERROR MESSAGES WILL OCCUR. THESE ERROR MESSAGES ARE NORMAL IN THIS CONFIGURATION AND WILL NOT BE REPORTED. THE ML/DCE FEEDBACK ERROR MESSAGE WILL BE DISPLAYED ON CONSOLES 1, 2, AND 9 AND WILL ALSO BE PRINTED ON THE LCC LINE PRINTER, PROVIDED THE 110A AND DDP-224 SYSTEMS ARE SUPPORTING.

IF A CUTOFF IS GIVEN AFTER THE ML/DCE IS PLACED IN THE MANUAL MODE WE RECOMMEND USING THE T-3'06" TO T+0 COMPUTER DOWN SAFING PROCEDURE.

IBM RESPONSIBLE THREE ASTERISK NOTE SEQUENCES
IN V-20060 VOLUME II (CDDT/CD) AFTER T-3'07"

PAGE	TIME	SEQUENCE	RESPONSE STATION	DESCRIPTION
263	-0'50"	2-1	CUNP	*** NOTE POWER TRANSFER COMPLETE
		2-2	CUDE	*** NOTE DEE 0779 AND 0777 ON, 0781 OFF

RESPONSIBLE STATION: CUNP (IF COMPUTER IS SUPPORTING)

CUDE (IF COMPUTER IS DOWN)

LMR ITEM: NO

CUTOFF INTERLOCKED: YES T-30 SECONDS

ACTION: CUNP (IU NETWORKS PNL OPERATOR):

MONITOR FOR PROPER INDICATIONS, NO ACTION WILL BE TAKEN.

CUDE (IU DEE PRINTER OPERATOR):

VERIFY 0777 (POWER TRANSFER COMPLETE) AND 0779 (IU STAGE POWER) ON, AND 0781 (IU GROUND POWER) OFF, NO ACTION WILL BE TAKEN.

RATIONALE: CIRCUITRY IS INTERLOCKED AND AN AUTOMATIC CUTOFF WILL OCCUR AT T-30 SECONDS IF A MALFUNCTION OCCURS, C1FR VERIFIES POWER TRANSFER COMPLETE (ALL STAGES) AT T-50 SECONDS.

IBM RESPONSIBLE THREE ASTERISK NOTE SEQUENCES
IN V-20060 VOLUME II (CDDT/CD) AFTER T-3'07"

PAGE	TIME	SEQUENCE	RESPONSE STATION	DESCRIPTION
263	-0'50"	2-3	CUCP	*** NOTE PUMP PRESSURE SWITCH ACTIVATE INDICATION OFF (DEE 0655 OFF),
263	-0'47"	1	CUCP	*** NOTE PUMP PRESSURE SWITCH ACTIVATE INDICATION ON (DEE 0655 ON),

RESPONSIBLE STATION: CUCP (IF COMPUTER IS SUPPORTING)

CUDE (IF COMPUTER IS DOWN)

LMR ITEM: NO

CUTOFF INTERLOCKED: NO

ACTION: CUCP (IU COOLING/GN2 PANEL OPERATOR):

IF PUMP PRESSURE SWITCH ACTIVATE INDICATION DOES NOT FUNCTION AS OUTLINED ABOVE, MONITOR COOLANT PUMP #1 FOR PROPER OPERATION. IF COOLANT PUMP SWITCHOVER OCCURS (PUMP #2 ON AND PUMP #1 OFF), NOTIFY CLTC OF SWITCHOVER AND RECOMMEND PROCEEDING WITH COUNT.

CUDE (IU DEE PRINTER OPERATOR):

IF COMPUTER IS DOWN, VERIFY 0655 OFF AT T-50 SECONDS AND ON AT T-47 SECONDS. NO ACTION IS REQUIRED, HOWEVER, IF 0655 DOES NOT GO OFF AT T-50 SECONDS, VERIFY DEE 0660 (COOLANT PUMP #1) AND DEE 0653 (COOLANT PUMP #2) DID NOT CHANGE STATUS (NO PRINTOUTS). IF PRINTOUT OCCURS, ADVISE CUCP OF DISCRETE CHANGE.

RATIONALE: THE ESE CIRCUITRY IS DESIGNED TO PREVENT IU COOLANT PUMP #1 FROM SWITCHING TO PUMP #2 DURING POWER TRANSFER DUE TO A POSSIBLE BUS VOLTAGE CHANGE. IF THIS ESE CIRCUITRY MALFUNCTIONS, PUMP SWITCHOVER WILL AUTOMATICALLY OCCUR IF THE COOLANT MANIFOLD INLET PRESSURE (XD17-601) DROPS BELOW 33 PSIA (PRESSURE SWITCH SETTING).

IBM RESPONSIBLE THREE ASTERISK NOTE SEQUENCES
IN V-20060 VOLUME II (CDDT/CD) AFTER T-3'07"

PAGE	TIME	SEQUENCE	RESPONSE STATION	DESCRIPTION
265	-0'22"	2	CUEV	VERIFY GUIDANCE ALERT (DEE 0870 ON)
		2-1	CIFR	*** NOTE IU READY FOR LAUNCH - OFF

RESPONSIBLE STATION: CUEV (IF COMPUTER IS SUPPORTING)

CUDE (IF COMPUTER IS DOWN)

LMR ITEM: NO

CUTOFF INTERLOCKED: *

ACTION: CUEV (IU EVENTS DISPLAY PANEL OPERATOR): NOTIFY CLTC, CLGK (FLIGHT COMPUTER SYSTEM ENGINEER) WILL RECOMMEND PROCEEDING.

CUDE (IU DEE PRINTER OPERATOR):

IF COMPUTER IS DOWN, NOTIFY CLTC, CLGK (FLIGHT COMPUTER SYSTEM ENGINEER) WILL RECOMMEND PROCEEDING.

RATIONALE: THE GUIDANCE ALERT INDICATION IS USED TO INTERRUPT THE IU READY CHAIN AND TO PUT THE LVDC IN A SHORTER PROGRAM LOOP (ELIMINATE SELF CHECKS, PLOT UPDATES, ETC.) AND PREPARES IT FOR FLIGHT. THIS FUNCTION IS NOT MANDATORY AS LONG AS GUIDANCE RELEASE IS RECEIVED AT T-17 SECONDS AND ALL OTHER LVDC FUNCTIONS APPEAR NORMAL.

CIFR SHOULD NOT TAKE ANY ACTION (REF: SEQUENCE 2-1).

* FUNCTION IS NOT INTERLOCKED IF BOTH GUIDANCE ALERT (T-22 SECS) AND GUIDANCE RELEASE (T-17 SECS) DO NOT OCCUR. IF EITHER ONE OR BOTH FUNCTIONS OCCUR IT IS INTERLOCKED AND WILL RESULT IN A CUTOFF AT T-16.2 SECONDS.

IBM RESPONSIBLE THREE ASTERISK NOTE SEQUENCES
IN V-20060 VOLUME II (CDDT/CD) AFTER T-3'07"

PAGE	TIME	SEQUENCE	RESPONSE STATION	DESCRIPTION
266	-0'17"	2	CUEV	VERIFY GUIDANCE RELEASE (DEE 0869 ON)
		2-1	C1FR	*** NOTE IU READY FOR LAUNCH - ON

RESPONSIBLE STATION: CUEV (IF COMPUTER IS SUPPORTING)

CUDE (IF COMPUTER IS DOWN)

LMR ITEM: NO

CUTOFF INTERLOCKED: *

ACTION: CUEV (IU EVENTS DISPLAY PANEL OPERATOR):

NO ACTION REQUIRED,

CUDE (IU DEE PRINTER OPERATOR):

NO ACTION REQUIRED,

RATIONALE: IF GUIDANCE RELEASE IS NOT RECEIVED AND GUIDANCE ALERT CAME ON AT T-22 SECONDS, CUTOFF WILL OCCUR AT T-16,2 SECONDS, C1FR SHOULD NOT TAKE ANY ACTION (REF: SEQUENCE 2-1).

* IF GUIDANCE ALERT OCCURRED AT T-22 SECONDS IT IS INTERLOCKED AND WILL RESULT IN A CUTOFF AT T-16,2 SECONDS. IF NEITHER GUIDANCE ALERT OR GUIDANCE RELEASE OCCURRED, IT IS INTERLOCKED VIA THE FLIGHT PROGRAM (S-IC INBOARD ENGINE CUTOFF) AND WILL RESULT IN A CUTOFF AT APPROXIMATELY 1,2 SECONDS.

END OF TEST PROCEDURE V-20060

RELEASED PROCEDURE DISTRIBUTION

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COONCE, J. M.	IN=TEC, CIF 392	40
LOVAN, J. G.	IS=DOC-2A, LCC 1R4	2
DALEY, R. C.	IS=PEM	1
RAFANELLI, L. R.	IS=PEM=42, LCC 1P10	1
HARDIN, D. W.	IS=TSM, HQS 3503	1
MOSER, R. E.	LA=PLN, O&C 2038	1
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TEST SUPERVISORS	LCC 4P12	7
BLUM, F. W.	LS=ENG=A	1
SCHILER, M.	LS=ENG=22, O&C 3293	1
GRUENE, DR. H.	LV, O&C 2032	2
RIGELL, I. A.	LV=B, O&C 2032	2
PAUL, H. C.	LV=CAP, VAB MM12	3
LEALMAN, R. E.	LV=GDC, O&C 2010	2
CHAMBERS, M.	LV=GDC=1, VAB MM3	6
CHANDLER, W. O.	LV=GDC=2, LCC 2R26	12
WHITESIDE, C. A.	LV=GDC=3, VAB 2D10	3
KELLY, D.	LV=GDC=4, LCC 2R26	5
OVERSTREET, C. F.	LV=GDC=22, LCC 2R26	6
JONES, D. R.	LV=GDC=23, LCC 2R26	3
CLAY, R. P.	LV=GDC=24, LCC 2R26	4
DAVIS, L. R.	LV=GDC=25, VAB 10E19	3
SUMNER, K. W.	LV=GDC=26, LCC 2R26	3
MC CREARY, M. E.	LV=GDC=27, LCC 2R26	5
WHEELER, W. P.	LV=GDC=28, VAB 6D24	5
REGISTER, B. J.	LV=GDC=31, VAB 3D6	3
HARPER, R. Z.	LV=GDC=31, VAB 3D8	1
PERKINSON, J. A.	LV=GDC=32, VAB 3D6	3
ELY, G. W.	LV=GDC=33, VAB 3D6	5
MURRAY, G.	LV=GDC=33, VAB 3D5	2
EDWARDS, M. D.	LV=INS, O&C 2121	1
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CONAWAY, J. D.	LV=INS=A, LCC 2R19	4
MC MATH, D.	LV=INS=1, LCC 2R23	1
FITZGERALD, J. J.	LV=INS=2, LCC 2R23	1
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BLANCHARD, L. C.	LV=INS=12, LCC 2R23	2
WATT, J. D.	LV=INS=12	2
GRUNENFELDER, A. C.	LV=INS=13, LCC 2R23	2
RALEY, E. O.	LV=INS=21, VAB 27E10	13
JORDAN, A. E.	LV=INS=22, LCC 2R23	5
FANNIN, L. F.	LV=MEC, O&C 2014	3
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HUMPHREY, J. T.	LV=MEC=2, LCC 2R12	17
CORN, G. F.	LV=MEC=3, LCC 2R11	15
DELA ROSA, H. J.	LV=MEC=11, LCC 2R12	6
ROBINSON, G. H.	LV=MEC=12, LCC 2R12	6
O'HARA, A.	LV=OMO, O&C 2022	1
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WILLIAMS, M. C.	LV=PLN=1, O&C 2006	1
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ABBOTT, R. G.	LV=QAL=5, VAB 228B	9
OSWALD, D. R.	LV=QAL, O&C 2111	3
MADERY, G. L.	LV=QAL=4, O&C 2112	2
BELL, J. H.	LV=TMO=A, LCC 2R18	8
MC PHERSON, G.	MAS, NASA HQS, ZIP 20546	1
HICKEY, W. P.	MAS=4, NASA HQS, ZIP 20546	1
MSFC REPOSITORY	MS=D, HOSC	1
LEE, C. M. (MISSION DIRECTOR)	MSO 1321	2
CAHALAN, P. S.	BOX 2500, DAYTONE BEACH OPS	1
RANGE OPERATIONS	RCC-CKAFS, M/U 5050	2
KING, J.	PA=P18, KSC M7 657	1
WILLIAMS, F. E.	PM=KM=L	8
KIMERY	PM=MO=E	1
KEYES, P.	PM-SAT-A MSFC	1
SELLS, W. R.	SAE-ASTN-SO	4
JONES, R.	SAE-ASTR-SI	5
SMITH, R.	SAE-CSE=L	5
MC GOUGH, J. T.	SF=OPN	1
MOSES, C. S.	SO=OPN	1
PYLES, H. R.	SO=OPN=1, LCC 1P12A	1
BRANTLEY, R. A.	SO=OPN=2, LCC 1R18A	1
COOK, J. P.	SO=TSD=402, LCC 1P9	1
PENLAND, D. T.	TS=NTS=2	3
BARFUS, J. N.	TS=TSM=5, LCC 1R15	2
DICKINSON, W.	LCC 2R11B	1
DOWLING, J. E.	(GUSB)KSC M5 1494	2

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SUPPORT CONTRACTORS

AMES, M. H.	BEN 2100 (BENDIX)	3
ANDERSON, B. C.	VAB 3N9 (ROCKETDYNE)	7
COMPTON, H.	BEN=2350 (BENDIX)	5
CONRAD, H.	LCC 2P23 (CCSD)	5
DABLADO, L. A.	VAB 2N7 (ROCKETDYNE)	3
HARRIS, B. J.	TMA 2222, LCC 1P25	3
JANES, L. B.	VAB 3A8 (TECH)	2
LUCKETT, A. W.	LCC 1R14B (FEC)	2
MCHENRY, J.	MSFC-4708-T1 (GE)	5
O'DELL, H.	LC-34 (CCSD)	2
REED, B.	BEN 2500 (BENDIX)	1
SMITH, R. K.	VAB 10E11 (GE)	8

STAGE CONTRACTORS

CLOYD, L.	ZK=49 (NR)	2
JARED, L.	DEPT 817, ZK2R (NR LV) VAB	135
BROWN, D.	VK=23, VAB 27R9 (MDC)	130
ROSS, J. C.	VAB 2D5 (IBM)	125

BOEING

YANCEY, J. L.	LCC 2P26	10
ADAMS, R. H.	VAB 6D17	10
BAGGETT, J. A.	VAB 6B15	16
BROWN, W. C.	VAB 2D9	1
CALVETTO, R. S.	VAB 6D15	7
CATER, R. B.	VAB 2E7	3
CHANDLER, J. W.	VAB 2L8	3
DREYER, W. F.	VAB 2E7	2
ECKHOFF, J. L.	VAB 2E7	4
FRIEND, C.	VAB 2D9	1
GEORGE, J. A.	VAB 2E9	20
HARDCASTLE, H. S.	VAB 6R20	1
HAWK, G. A.	VAB 1E25	6
HENDERSON, H. H.	VAB 6B13	14
HOLLAND, R. E.	VAB 2P15	6
HOLMES, W. C.	VAB 2L2	2
LOONEY, J. H.	VAB 6B21	6
LUNDY, J. H.	VAB 6D16	1
LYONS, B. P.	VAB 2E6	18
MC CRANEY, J. L.	VAB 6R23	6
MC INNIS, F. W.	VAB 7B13	2
NEAL, E. T.	VAB 2L10	20
O'NEIL, J.	VAB 2L9	3
SACK, A.	VAB 6D18	10
SAUBER, P. T.	VAB 3E9	1
SCOTT, N. W.	VAB 3E9	2
STEPHENS, C. W.	VAB 6D21	7
TAYLOR, D.	VAB 3L15	2
[illegible]	VAB 2E12	6
[illegible]		
YANCEY, J. T.	VAB 6D7	9
ZYZAK, E. E.	VAB 2L1	1
BURKET, B. R.	KS=1045 RM 124	1
CORBRIDGE, L. R.	VAB 2L3	6
DARROW, R. H.	LT=04 MICHOUD	3
FOSTER, E. T.	TA=01 MTF	1
GERHARDT, E. D.	MTVL JD=78	1
JONES, L. G.	MICHOUD LT=54	2
KIRBY, J. H.	MDRA FP=53	2
KUYKENDALL, M.	VAB 3L15C	1
LARSON, C.	O&C 2023	1
CHAMBLEE, B.	HOSC, MA=04	1
OWENS, J. D.	VAB 2L3	10
SCHINDLER, D. H.	MTVL AG=80	1
TRC FILE	VAB 3N1	5
WEINBERG, D. B.	O&C 2023	1

NOTE

TO ARRANGE CORRECTIONS, CHANGES, ADDITIONS OR DELETIONS, PLEASE SUBMIT AN AVO TO LV=OMO-1, LCC 2R17.

DELIVER ALL EXTRAS TO LCC 2R17.

DELIVER ORIGINALS TO VAB 2L3 (J. C. REED)

LIST REVISED 1/19/71

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