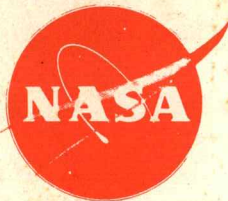


RISC-2

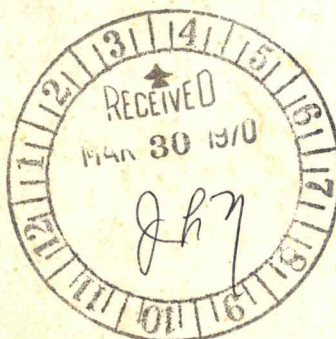
TEST NUMBER V-20060
REVISION NO. 019
EFFECTIVITY AS-508 & SUBS
RELEASE DATE MARCH 24, 1970



JOHN F. KENNEDY
SPACE CENTER

"DUNCAN"

**RELEASED
FOR AS 508**



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

VOLUME I 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, Volume IREVISION 019DATE MARCH 24, 1970NO OF PAGES 98EFFECTIVITY AS-508 & SUBS

RELEASED FOR AS 508

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

VOLUME I OF III

THIS TCP CONTAINS HAZARDOUS OPERATIONS

CONTRACTORPrepared by John Chase Reed 3/23/70
C. ReedApproved by J.D. Owens 3/24/70
D. OwensTBC Concurrence BR Melton 3/24/70NR Concurrence J.G. Baldwin 3/24/70MDC Concurrence A.V. Barnum 3/24/70IBM Concurrence Brown 3/24/70NASAApproved by John A. Johnson 3/24/70
XSC Safety OfficeApproved by Frank Brown for
LVO Chief EngineerApproved by Jack E. Bellar
LVO Test Conductor

LV CDDT & CD, VOL I
DATE: MARCH 23, 1970
REVISION 019

APOLLO/SATURN
LAUNCH OPERATIONS

5251,60
PAGE 2
TEST NO. V-20060, VOL I
VEHICLE AS-508

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INTRODUCTION
COUNTDOWN DEMONSTRATION TEST & COUNTDOWN
VOLUME I OF III
PRECOUNT PROCEDURE

THIS LAUNCH VEHICLE TEST CHECKOUT PROCEDURE IS A TIME SEQUENCE OF OPERATIONS REQUIRED TO PUT THE LAUNCH VEHICLE IN APPROXIMATELY A ONE-DAY-PRIOR-TO-LAUNCH CONFIGURATION,

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:

1. SPACECRAFT COUNTDOWN PROCEDURE K-0007
2. LUNAR MODULE COUNTDOWN PROCEDURE KL-007
3. SPACE VEHICLE COUNTDOWN PROCEDURE (INCLUDES INFORMATION TO DIRECT INTERFACE OPERATIONS AMONG LAUNCH VEHICLE, SPACECRAFT, SUPPORT AND RANGE),
V-40310 (CDDT ONLY)
V-40300 (CD ONLY)
4. APOLLO/SATURN V LAUNCH MISSION RULES -
AS-508 K-V-05,10/8

IN ADDITION, UNDER EMERG CONDITIONS SPECIFIED THEREIN, THE SAT V LV EMERG PROC, V-20056, WILL BE USED.

CDDT AND COUNTDOWN PROCEDURE EXPLANATION

THE CDDT/CD WILL BE TREATED AS ONE PROCEDURE BUT WILL BE PUBLISHED SEPARATELY AS FOLLOWS:

IN THE ISSUE RELEASED FOR CDDT, THE PAGES HAVING A STEP UNIQUE TO COUNTDOWN WILL BE CONTAINED IN APPENDIX A. SUCH PAGES WILL HAVE A COUNTERPART PAGE IN THE PROCEDURE MARKED "CDDT ONLY". THIS ISSUE OF THE PROCEDURE WILL BE PROMINENTLY MARKED ON THE FRONT COVER "ASSEMBLED FOR CDDT".

FOLLOWING CDDT, THE "CDDT ONLY" PAGES WILL BE REMOVED, THE "CD ONLY" PAGES INSERTED, ALL APPROVED PERMANENT PROCEDURE CHANGES INCORPORATED, THE PROCEDURE REV NUMBER INCREASED, THE FRONT COVER PROMINENTLY MARKED "ASSEMBLED FOR CD" AND THE PROCEDURE REPUBLISHED AND REDISTRIBUTED.

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.

PAGES WITH BLACK BARS ARE TO BE USED ONLY DURING THE COUNTDOWN DEMONSTRATION TEST.

PAGES WITH BLACK DIAMONDS ARE TO BE USED ONLY DURING THE LAUNCH COUNTDOWN.

* INDICATES INFORMATION UNIQUE TO CDDT

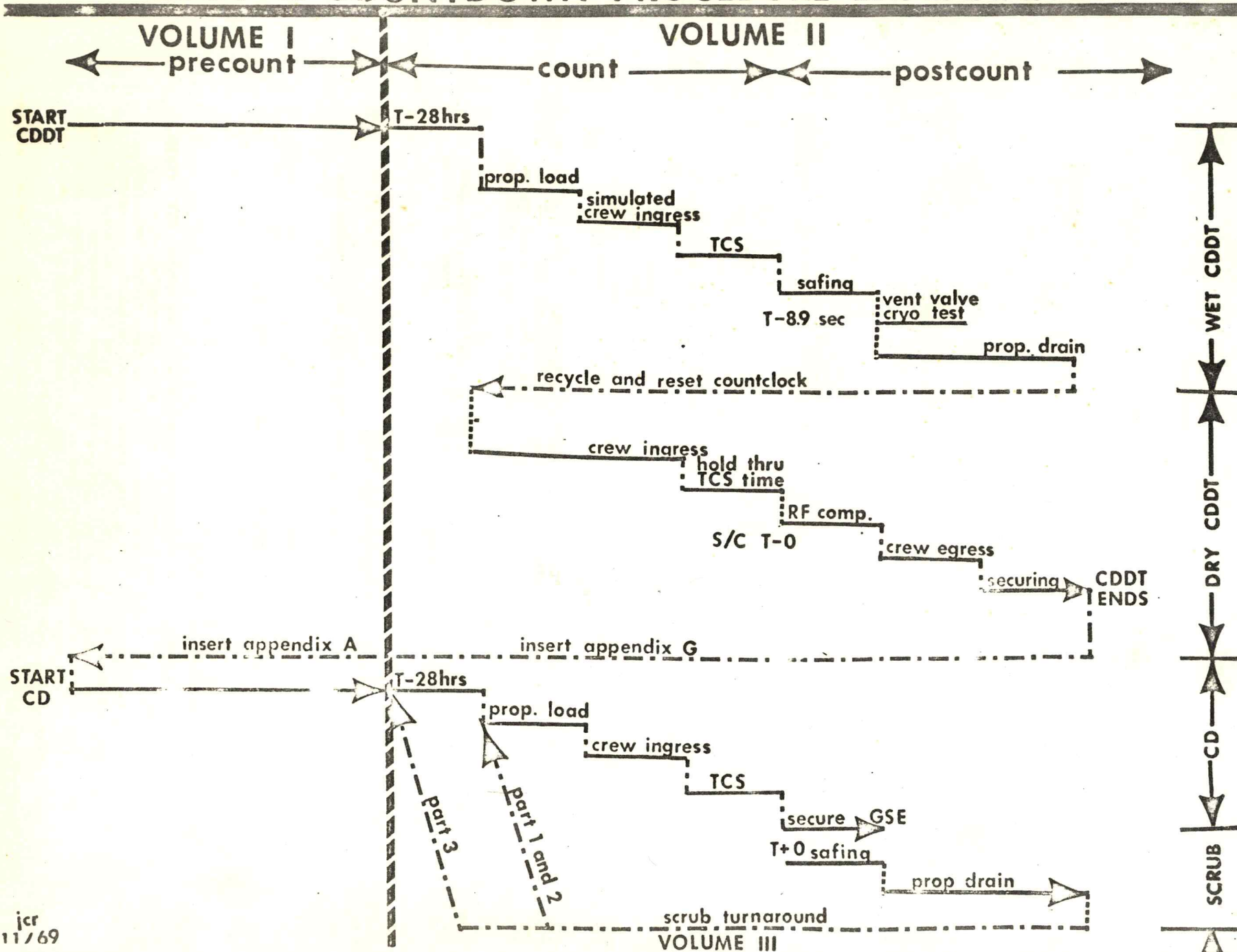
INDICATES INFORMATION UNIQUE TO LAUNCH CD

INTEGRATED TCP INTERFACE

SPECIFIC SEQUENCES IDENTIFIED IN THIS TCP WITH THE SYMBOL TCP1 (TEST AND CHECKOUT PROCEDURE INTERFACE) HAVE BEEN COORDINATED WITH OTHER ORGANIZATIONS WHOSE CORRESPONDING TCP'S ARE USED DURING THIS TEST. IT IS THE RESPONSIBILITY OF THE ORGANIZATION INITIATING A CHANGE TO A TCP1 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.

V-20060

CDDT & COUNTDOWN PROCEDURE EXPLANATION

jcr
11/69

LV CDDT & CD, VOL. I
 DATE: JANUARY 27, 1970
 REVISION 017

APOLLO, TURN
 LAUNCH OPERATIONS

5251,60
 PAGE
 TEST NO. V-20060, VOL. I
 VEHICLE AS-508

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>4</u>	
1. TEST TITLE Launch Vehicle Operations in Support of Space Vehicle Countdown Demonstration and Countdown		2. KSC TEST NUMBER V-20060 3. EFFECTIVITY AS-508 & SUBS	
4. TEST OBJECTIVES CDDT 1. To demonstrate the time phasing of the sequences necessary to prepare the launch vehicle for launch. 2. To verify that the launch vehicle and the ground support equipment are in launch status. CD 1. To demonstrate the ability to safe and drain the launch vehicle. 2. To accomplish the operations required to prepare the launch vehicle for launch. 3. To launch the space vehicle.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION <div style="display: flex; justify-content: space-between;"> <div> <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>Hazards include propellant transfer, ordnance installation and connection, equipment pressurization, hazardous environmental conditions, radiation hazard, swing arm pressurization, engine gimbaling and heavy equipment movement.</p> <p>With the Space Vehicle on the pad, all tests must have been completed.</p> <p><u>Test and Checkout Procedure Description</u></p> <p>The basic procedure is written for CDDT. Insert pages are provided in appendices to convert the CDDT procedure to a CD procedure. It is divided into three volumes.</p> <p>Volume I operating steps will cover launch vehicle operations through spacecraft cryogenic loading.</p> <p>Volume II operating steps will include launch vehicle operations from the completion of spacecraft cryogenic loading through the terminal count sequence. Appendices will include:</p> <ul style="list-style-type: none"> a) Safing Procedures b) Hold Options and Recycle Procedure c) Drain Operations d) Contingency Procedures e) Pad Access During Hazardous Operations f) Reconfiguration for Dry CDDT, Dry CDDT and LV Securing from Dry CDDT <p>Volume III operating steps will include operations necessary to prepare the launch vehicle for another window after a scrubbed launch attempt.</p> </div> <div> <p>It is classified as a test or operation.</p> </div> </div>			
6. REV. DATE REASON <div style="display: flex; justify-content: space-between;"> <div> <p>K 2/6/70 Add computer program QAEC.</p> <p>J 1/20/70 Update test requirements.</p> </div> <div> <p><i>J. D. Owens</i> 2/6/70 <i>J. D. Owens</i> 1/20/70</p> </div> </div>			
7. CONTRACTOR APPROVAL		8. ORGANIZATION	
s/J. C. Doherty		BATC 5-8553	
10. NASA-KSC APPROVAL		11. ORGANIZATION	
s/I. A. Rigell		LV-ENG	
		9. DATE 9/24/68	
		12. APPROVAL DATE 10/28/68	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>4</u>	
1. TEST TITLE Launch Vehicle Operations in Support of Space Vehicle Countdown Demonstration and Countdown		2. KSC TEST NUMBER V-20060 3. EFFECTIVITY AS-508 & SUBS	
13. LOCATION Pad 39		14. COMPUTER PROC. IDENTIFICATION BE01, BE02, BT01, CTC1, CTC2, CTC3, CTC4,	
		15. EST. TEST TIME CDDT 138 Hrs; CD 108 Hrs	
16. SUPPORT REQUIREMENTS <div style="display: flex; justify-content: space-between;"> <div> <p>SD/RD 40000 SD/RD 40001 Ground Power S-IC Stage Power S-II Stage Power S-IVB Stage Power IU Stage Power</p> </div> <div> <p>ETR Range Safety KSC Pad Safety Security Police Fire Fighting Medical Propellants DC Power PTCS (All Systems) DTS DEE-3</p> </div> <div> <p>RCA-110A Computers CM W-G ECS CCF Searchlights DEE-6</p> </div> </div>			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION <div style="display: flex; justify-content: space-between;"> <div> <p>L/M Procedure KL-0007 S/V Procedure V-40310 LMRD K-V-05.10</p> </div> <div> <p>ETR OD 40001 ETR OD 40000</p> </div> <div> <p>S/C Procedure K-0007 S/V Procedure V-40300 S/V Scrub Turnaround V-40305</p> </div> </div>			
18. ITEM CONTINUATION <p>(14) CTC5, FT03, FT04, FT05, FT06, FT08, FT10, FT20, FT23, FT25, FT31, FT33, FT35, FT37, FT42, FT43, FT45, FT47, FT49, FT55, GT16, KA01, KAF2, KAPW, ME01, MT01, NT60, NT98, QAES, QALS, QAMS, QAPU, QASP, VAED, VAFC, VALK, VALL, VAMC, VAPX, VATC, VATS, VZ33, VZEA, VZRE, VZSA, WAPO, WASL, WAST, WASV, WATL, XADS, XAPU, XASS, NT99, KAF1, KAG1, XAP8, NU10</p> <p>(3) <u>Countdown/Countdown Demonstration Comparison</u></p> <p>The wet countdown demonstration will be performed the same as the launch countdown with the following major exceptions: Hypergol cartridges, igniters, initiators, safe and arm devices and exploding bridge wire detonators will be inert; DRSCS test code plugs will be used instead of flight code plugs; the service arm and tail service mast pressure hold test will be performed; jumpers will be installed to inhibit retraction of service arms 1 & 2; astronauts will not enter the spacecraft; and TCS will be interrupted at time for ignition.</p> <p>The dry countdown demonstration will be the same as the last 3 1/2 hours of the launch countdown with the following major exceptions: LV cryogenic propellants, and the radioisotope thermal generator will not be on board; the primary damper and service arms 1 through 8 will not be retracted; and service arm 9 will be extended and reconnected as soon as the system has stabilized in the park position.</p>			

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>3</u> OF <u>4</u>	APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>4</u> OF <u>4</u>																																																																	
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ITEM CONTINUATION (5) <u>Test Description</u> (Countdown Demonstration) <u>Volume I</u> Launch vehicle operations will include the following major operations: Service arm and tail service mast pressure hold test, propellant tank purging, digital range safety command checks, ordnance installation and connection and functional test (with pulse sensors), propulsion system checks, and propellant utilization system calibration. <u>Volume II</u> Launch vehicle operations will include the following major operations: Flight battery installation and connection, launch vehicle emergency detection system checks, telemetry radio frequency checks, launch vehicle power transfer test, range safety command checks, guidance system checks, mobile service structure platform opening and move from the pad, propellant dispersion safe and arm device connection, launch vehicle closeout and access door securing and pad evacuation for launch vehicle propellant loading. Also included will be launch vehicle cryogenic propellant loading, primary damper retraction, computer programs for automated launch vehicle checks, simulated astronaut ingress and terminal count sequence up to interrupt at time for ignition. Launch vehicle safing, drain, and securing operations will be included as will reconfiguration for dry CDDT. Dry CDDT will include operations to simulate the launch vehicle launch configuration at time for closeout crew to leave the mobile service structure parksite, launch vehicle power transfer test, range safety command checks, guidance system checks, propellant dispersion receiver checks, astronaut ingress and service arm 9 disconnect and reconnect. The launch vehicle terminal count sequence will not be run. Launch vehicle securing, radio frequency compatibility test, systems securing, astronaut egress, ground support equipment and launch vehicle securing operations will conclude the CDDT. <u>Test Description</u> (Countdown) The sequence of operations will be the same as the wet countdown demonstration test except the terminal count will result in launch of the space vehicle. Operations to secure ground support equipment after launch will be included. In the event of a scrubbed launch, cryogenic propellants would be drained prior to use of Volume III. <u>Volume III</u> Launch vehicle operations for a 24 hour scrub turnaround will include: Service arm 2 and 3 tip extension and retraction, launch vehicle re-entry and closeout, propellant storage tank sampling and fill, launch vehicle tank sampling, verification of S-IC forward umbilical reconnection and preparation for propellant loading starting at T-8:59 hours in Volume I.			ITEM CONTINUATION (5) Launch vehicle operations for a 2 day scrub turnaround will include extension and retraction of S/A 2, 3, 6 & 7 tips, MSS move to and from the pad, launch vehicle re-entry and closeout, installation and removal of work platforms and equipment to enable SHe reservicing, propellant tank sampling and fill, launch vehicle tank sampling, verification of S-IC forward umbilical reconnection and preparation for propellant loading starting at T-8:59 hrs in Volume II. Launch vehicle operations for a 3 day scrub turnaround will include extension of S/A tips, MSS move to pad, launch vehicle re-entry, work platform installation disconnection of propellant dispersion detonators and confined detonating fuses, connection of pulse sensors, propellant tank sampling and fill, launch vehicle tank sampling, battery removal and systems retests in preparation for resumption of the launch vehicle countdown at T-28 hrs in Volume II. A barchart will depict the sequence of operations to be performed in the event of a post ignition scrub. <u>Test Requirements, MSFC</u> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">LV</td> <td style="width: 10%;">TM-010-002-2H;</td> <td style="width: 80%;">C.2.3.1, C.2.3.2, C.2.3.3, C.2.3.4, C.2.4.1.1, C.2.5.1, C.2.2.13.1, B.13.0.1, B.1.8.1.2, B.1.8.1.4, B.1.2.3, B.1.9.1, B.10.0.1.3, B.10.0.1.4, B.1.5.1.1, B.1.5.3, B.1.5.3.1, B.1.5.3.2, B.1.5.3.4, B.1.6.1.1, B.1.6.1.2.1, B.1.2.1, B.1.2.2.1, B.1.2.2.2, B.1.2.2.3, B.1.5.2, B.1.9.2, B.3.0.1, B.12.0.1, C.2.1.1, THRU C.2.1.9</td> </tr> <tr> <td>S-IC</td> <td>66B13618A</td> <td>4.4.4.3.1,</td> </tr> <tr> <td>S-II</td> <td>SIB 66-1465-7</td> <td>2.3.3.1, 2.4.2.5.1,</td> </tr> <tr> <td>S-IVB</td> <td>IB 76996</td> <td>None</td> </tr> <tr> <td>IU</td> <td>7916404</td> <td>0.3.4.1.1.1.1, 0.3.5.2.5.2</td> </tr> </table> (6) <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Revision</th> <th style="text-align: left;">Date</th> <th style="text-align: left;"></th> <th style="text-align: left;"></th> <th style="text-align: left;"></th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12/18/8</td> <td>Pad A, S-IC film camera system, appendicies, computer programs, MSFC requirements.</td> <td>Doherty/Rigell</td> <td>12/21/69</td> </tr> <tr> <td>B</td> <td>1/29/9</td> <td>Make TCP multiple effective</td> <td>Doherty/Rigell</td> <td>2/10/69</td> </tr> <tr> <td>C</td> <td>4/01/9</td> <td>Update computer programming</td> <td>Doherty/Bryan for Rigell</td> <td>4/02/69</td> </tr> <tr> <td>D</td> <td>4/10/9</td> <td>Include programs WATL and WASL. 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TEST OUTLINE					TEST OUTLINE				
1. TCP TITLE LV Operations in Support of Manned SV CDDT & CD	2. TCP NUMBER V-20060	3. REV. Basic	4. VEHICLE NUMBER AS-508 & SUBS	5. PAGE 1 OF 4	1. TCP TITLE LV Operations in Support of Manned SV CDDT & CD	2. TCP NUMBER V-20060	3. REV. Basic	4. VEHICLE NUMBER AS-508 & SUBS	5. PAGE 2 OF 4
<p>6. CONTENT:</p> <p>This procedure includes launch vehicle operations for both the Countdown Demonstration Test and Countdown. It is divided into three volumes.</p> <p>Volume I covers launch vehicle precount operations.</p> <p>Volume II covers launch vehicle count operations as well as safing and securing operations.</p> <p>Volume III includes operations necessary to recycle the launch vehicle for another launch window.</p> <ol style="list-style-type: none"> <u>Radio Frequency Systems</u>: All RF systems will be functionally checked out by ground stations and the RF checkout equipment. The MSS will be in place and passive repeaters will be connected to the various systems through antenna couplers. All stage command destruct systems will be checked. Antenna couplers will be removed prior to removal of the MSS after all systems have been validated and turned off. The C-band transponder, and the CCS will be turned off after validation. All RF systems will be turned on prior to launch and will again be interrogated and performance evaluated at the ground stations, the RF checkout station, and by correlation of these sources with the digital data acquisition system. <u>Telemetry Systems</u>: The telemetry systems will be turned on from the LCC measuring and RF panels and parameter checks conducted by the CIF ground station. Following these checks, the system will be used as required. <u>Measurement System</u>: The measurement system will be verified after verification of the telemetry systems. The verification will primarily be performed under programmed control of the 110A computer. <u>Guidance, Control and Stabilized Platform</u>: Functional tests of the guidance control and stabilized platform (GC&SP) system will be conducted. These tests will: (a) visually verify system configuration, (b) run automatic turn-on procedures early in the countdown and (c) verify subsystem operation. <p>The flight computer subsystem checks include a repeatable simulated flight sequence, system interface test sequence (discrete check), and L/V steering tests.</p> <p>The control computer nulls will be checked for acceptable values during warmup before the vehicle prelaunch checks are made.</p> <p>The ST-124M stabilized platform subsystem will be checked. The automatic long range theodolite true azimuth will be re-established using the reference benchmark and the theodolite system will be functionally tested before ST-124M platform tests are run.</p>					<p>6. CONTENT:</p> <p>The combined GC & SP will be brought to an operating condition to support the space vehicle power transfer test and operation on internal power will be verified to be acceptable. A few hours before T-0, the long range theodolite system will be set up to maintain the ST-124M platform azimuth alignment. The platform will be powered-up, aligned to the launch azimuth and held there until guidance release. In the final minutes of countdown, the combined GC & SP system will be utilized in the stage steering tests. These will be run on the S-IVB stage, then the S-II stage and finally the S-IC stage just before the terminal count sequence.</p> <ol style="list-style-type: none"> <u>Networks</u>: The networks countdown activities include performance of electrical support equipment (ESE) preparation in the launch umbilical tower (LUT) and pad terminal connection room (PTCR) prior to evacuation of those areas. <p>Preparations of the LUT ESE will include performing bus resistance checks from the LUT power distributors to the stage bus line before applying vehicle power. The various power and control distributors will be inspected for proper cable connections and switch positions. A check will be made to ensure that all cables are clear of movable mechanisms. Final checks will be made of recorder calibration digital events evaluator (DEE) operation and sequencer operation under launch control center (LCC) control. Associated indications at the LCC will be checked against existing conditions in the LUT. Preparations of a similar nature will be given to the PTCR ESE with emphasis on propellant and gases, electrical equipment and data transmission system.</p> <p>The LCC ESE preparations will be performed in conjunction with and following those in the LUT & PTCR. The will consist of visual inspection of power, instrumentation, and control distributors for proper cable connections and switch positions. Patch panel connections to the recorders and between the firing room and the PTCR will be visually inspected. Final recorder calibrations will be completed together with checks on the DEE printout devices.</p> <p>Power transfer tests will be conducted early in the count with final power transfer initiated late in the count. Proper transfer and correct vehicle battery loading will be verified. Late in the count, approximately T-5 minutes, the terminal countdown and ignition sequencers will be armed in preparation for the automatic terminal sequence start of T-3 minutes 7 seconds.</p> <ol style="list-style-type: none"> <u>Emergency Detection System</u>: The EDS will be functionally tested after final power up and again shortly before T-0. The ground computer will program simulated malfunctions of input parameters and verify proper voting of the EDS logic units. 				
7. PREPARED BY <i>John Chou Reed</i>	8. DATE 6/2/69	9. CHIEF ENGINEER <i>L. Rigell</i>	10. DATE 6/9/69	7. PREPARED BY	8. DATE	9. CHIEF ENGINEER	10. DATE		

TEST OUTLINE					TEST OUTLINE				
1. TCP TITLE	2. TCP NUMBER	3. REV.	4. VEHICLE NUMBER	5.	1. TCP TITLE	2. TCP NUMBER	3. REV.	4. VEHICLE NUMBER	5.
LV Operations in Support of Manned SV CDDT & CD	V-20060	Basic	AS-508 & SUBS	PAGE 3 OF 4	LV Operations in Support of Manned SC CDDT & CD	V-20060	Basic	AS-508 & SUBS	PAGE 4 OF 4
6. CONTENT:					6. CONTENT:				
<p>7. <u>Propellants</u>: The LOX & LH2 systems will be prepared for tanking during precount operations. Valves will be prepositioned and electrical controls checked. Propellant loading sensors will be checked and the propellants tanking computer system tested. During CDDT, an actual cryogenic propellant loading will be performed. Following the terminal count sequence, an S-II LH2 vent valve cryogenic test will be conducted and the propellants will be drained.</p> <p>8. <u>Propulsion</u>: The propulsion system launch countdown operations will be a direct continuation of the precount operation. The S-IC LCC propulsion panels will be continually manned and the condition of the engines monitored. During the last 10 minutes of the count, the S-IC thrust chamber fuel jacket will be topped-off with ethylene glycol. During the last minute of the count, the S-IC engine calorimeter purge will be turned on. The engine checkout valves will be sequenced to the engine position and the high LOX dome and the gas generator LOX injector purge will be initiated by the sequencer. The ignition command will be given. In the demonstration, cutoff will be indicated at T-8.9 seconds. In the countdown, the start sequence will be automatically controlled through launch.</p> <p>9. <u>Pneumatics</u>: Pneumatics system operations will consist of a visual inspection, verification checks of critical components, pressurization of pneumatic system consoles and supply lines and support of other system preparations. Pneumatics system will supply pressure to required systems upon request or at predetermined times.</p> <p>10. <u>Hydraulics</u>: Hydraulics system operations will consist of visual inspection, verification checks of critical ground and airborne components, system operation in support of other tests and final hydraulic system operation for terminal count and flight.</p> <p>The S-IVB & S-II auxiliary hydraulic pumps will be turned on to support guidance gimbal commands. Visual inspection of the hydraulic system will be made prior to removal of the last work platforms to verify there is no leakage.</p> <p>11. <u>Air Frame</u>: Upon completion of the precountdown operation, internal stage work platforms which are not required for the countdown operation will be removed and stored.</p> <p>Prior to removal of the mobile service structure (MSS), test equipment, tools and loose items will be removed from the structure platforms. The structure clamshells will be opened from around the space vehicle, ground connections disconnected and stored and the MSS transferred to its parking area by the crawler-transporter.</p>					<p>The remaining internal stage platforms will be removed and the access doors secured for flight upon completion of all vehicle checks and connection of the Safe and Arm devices. Stage compartments will be inspected for loose equipment or damage prior to the removal and storage of the platforms.</p> <p>12. <u>Environmental Control</u>: L/V interstage areas and various electronic cannisters will be provided with air from prior to test start. These areas will be supplied with gaseous nitrogen prior to cryogenic loading and continued for the duration cryogenics are on board. The Launch Vehicle compartments must be verified clear of personnel prior to performing air to GN2 changeover operations. The SIC, SII, SIVB, IU and SLA Compartments will be provided with GN2 to maintain compartment temperature within limits and to provide for purge of any minor LOX or LH2 leaks. The ECS will function through launch. ECS will provide conditioned air to S/A 9 White Room continuously through launch.</p> <p>13. <u>Water Systems</u>: The water system dry electromechanical check of critical components will be completed early in the precount. The hydro-pneumatic water tanks will be filled and pneumatically charged. All manual valves and components will be visually inspected.</p> <p>14. <u>Firing Accessories</u>: A visual inspection will be conducted during the countdown to ensure that all loose equipment has been removed from the LUT. The hammerhead crane will be secured in the launch position.</p> <p>After removal of vehicle internal work platforms and securing of all access doors the service arm extension platforms and service arm #3 will be uncoupled from the vehicle, retracted, and locked. Prior to propellant tanking, all LUT tiedowns, supports and support columns will be inspected.</p> <p>The service arms and tail service masts hydraulic and pneumatic control accumulator pressures will be verified at the pad and at the LCC control and monitor consoles.</p> <p>15. <u>Safing, Recycle to Hold and Scrub Procedures</u>: Assuming propellants are on board safing operations will be included to bring ordnance, tank and vessel pressures, and propellant flows to a safe condition quickly. A recycle procedure will be included to restore the launch vehicle to a T-22 minute configuration after a hold at any point later in the count than T-22 minutes. A drain procedure will be included to terminate the count if conditions warrant. A flow diagram will be included in the procedure to illustrate when and under what conditions the various procedures are to be utilized.</p> <p>16. <u>Recycle to Launch Procedure</u>: A recycle procedure will be included to bring all equipment to a launch condition again if the primary launch window is missed.</p>				
7. PREPARED BY		8. DATE	8. CHIEF ENGINEER	10. DATE	7. PREPARED BY		8. DATE	8. CHIEF ENGINEER	10. DATE

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DATE: MARCH 23, 1970
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APOLLO/SATURN
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LIST OF EFFECTIVE PAGES

THIS IS REVISION 019 OF THIS PROCEDURE, IT CONTAINS 98 PAGES AS
FOLLOWS:

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COVER	019
1 & 2	019
3	018
4	017
5 & 6	K
7 & 8	BASIC
9 & 10	019
11	019
A12	017
A13	018
- A14 & A15	019
- A16	017
- 17 - 20	017
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REVISION RECORD PAGE (CURRENT REVISION)

PAGES AFFECTED

REV,	REVISED	ADDED	DELETED	REASON/SUPPORTING DOCUMENT
016	ALL			<p>INCORPORATED AS-507 PCR'S B-201-51, B-217-56 & XB-153-57.</p> <p>INCORPORATED AS-508 PCR'S XB-165-1, XB-168-2, B-232-3, N-130-4, N-131-5, N-133-6, I-113-7, I-108-8, N-132-9, XB-166-10, I-107-11, B-233-12, B-234-13, D-56-14, N-129-15, N-126-16, N-128-17, XB-169-18 & B-240-19,</p> <p>AS-508 RELEASE 12/31/69, LATER DESIGNATED PRERELEASE</p>
017	ALL			<p>INCORPORATED PCR'S XB-177-20, N-147-21, B-245-22, D-62-23 & D-63-24. RELEASED FOR AS-508 CDDT 1/30/70</p>
018	COVER, 1, 3,5,6,9, 10,13,14, 15,32,41, 91,A13,A14, A15,A32,A41, & A87	NONE	NONE	<p>INCORPORATED PCR'S:</p> <p>N-157-25 CHANGES PM POWER UP TIME B-252-26 SUBTASK PROCEDURE NO. CHANGE XB-183-27 ERRATA AND BAR CHART CHANGES I-132-28 ADDS THERMAL SHROUD INSTAL- LATION</p> <p>RELEASED FOR AS-508 CDDT 3/9/70.</p>
019	COVER, 1, 2, 9, 10, 11, A14, A15, A34, A39, & A44	NONE	"CDDT ONLY" PAGES	<p>INCORPORATED PCR'S:</p> <p>XB-186-29 SUBTASK REV LEVEL UPDATE XB-189-31 PTCS PREPS START I-136-32 COMP TEST SWITCH ON XB-192-33 CONVERSION PCR</p> <p>RELEASED FOR AS-508 CD 3/24/70</p>

DATE: MARCH 23, 1970

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REVISION RECORD PAGE (PRIOR REVISIONS)

REV,	REASON/SUPPORTING DOCUMENT
BASIC	RELEASED FOR AS-504 CDDT 1/13/69,
001	PARTIAL REVISION RELEASED FOR AS-504 CDDT 1/31/69,
002	RELEASED FOR AS-504 CD 2/17/69,
003	PRERELEASE FOR AS-505 DATED 3/12/69,
004	RELEASED FOR AS-505 CDDT 4/7/69,
005	PARTIAL REVISION RELEASED FOR AS-505 CDDT 4/18/69,
006	RELEASED FOR AS-505 CD 5/2/69,
007	NOT USED
008	RELEASED FOR AS-506 CDDT 5/14/69,
009	PARTIAL REVISION RELEASED FOR AS-506 CDDT 6/18/69,
010	RELEASED FOR AS-506 CD 7/3/69,
011	PRERELEASE FOR AS-507 8/13/69,
012	RELEASED FOR AS-507 CDDT 9/12/69,
013	PARTIAL REVISION RELEASED FOR AS-507 CDDT 10/15/69,
014	NOT USED
015	RELEASED FOR AS-507 CD 10/27/69,
016	AS-508 RELEASE 12/31/69, LATER DESIGNATED PRERELEASE
017	RELEASED FOR AS-508 CDDT 1/30/70,
018	PARTIAL REVISION RELEASED FOR AS-508 CDDT 3/9/70

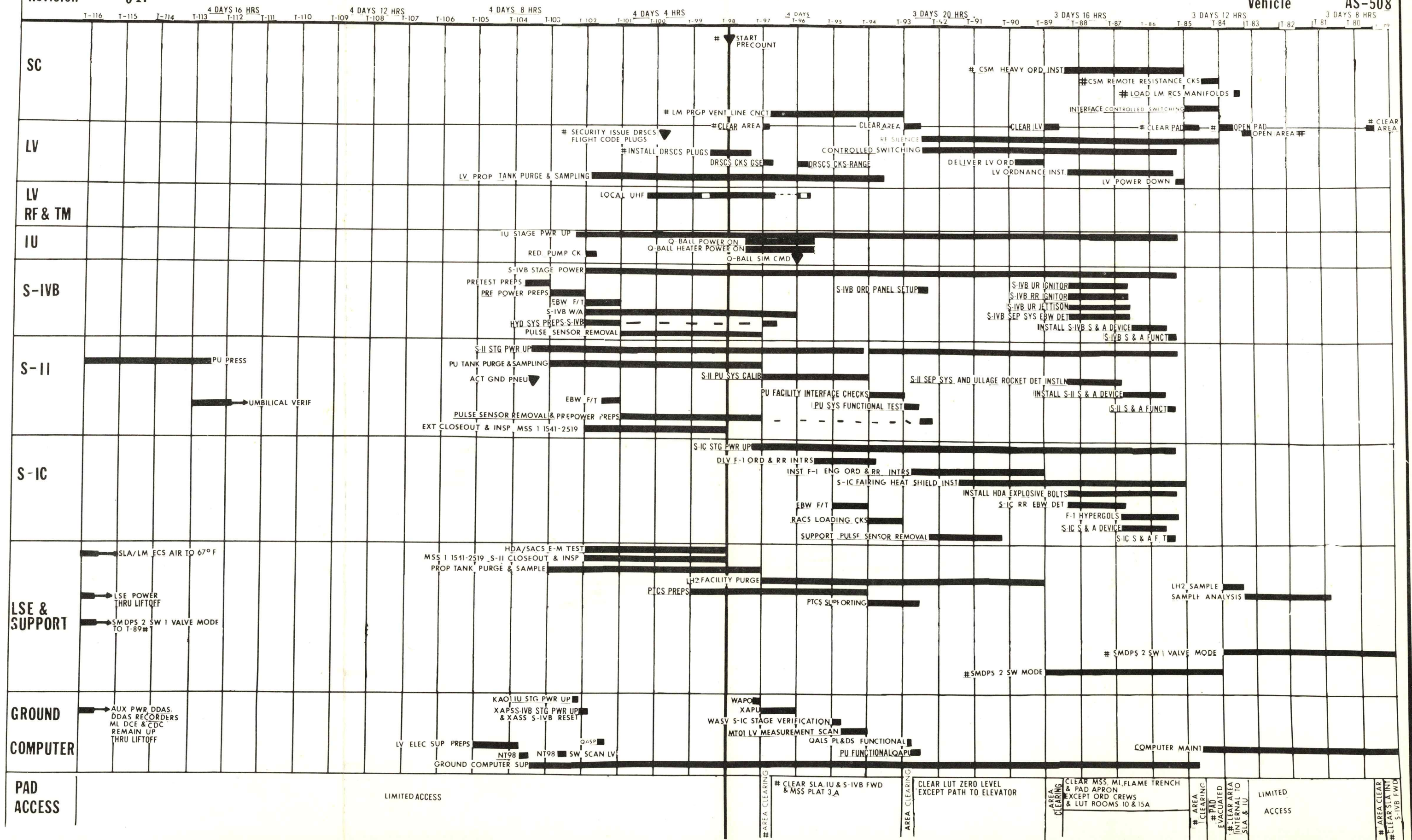
Date 1 27 70
Revision 017

PRECOUNT

V COUNTDOWN

CD ONLY

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DATE 3 6 70

REVISION 018

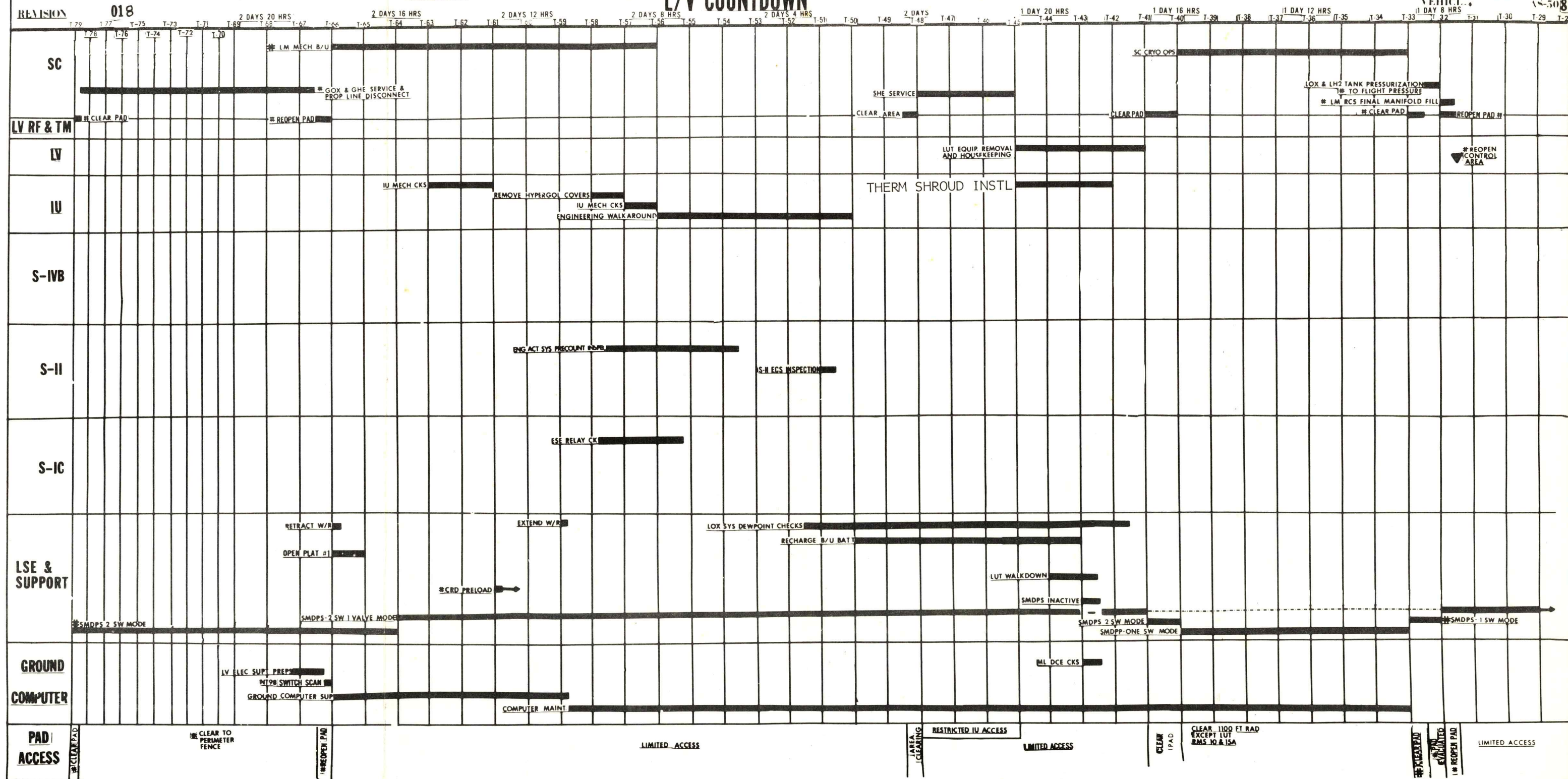
PRECOUNT

L/V COUNTDOWN

CD ONLY

* CD ONLY

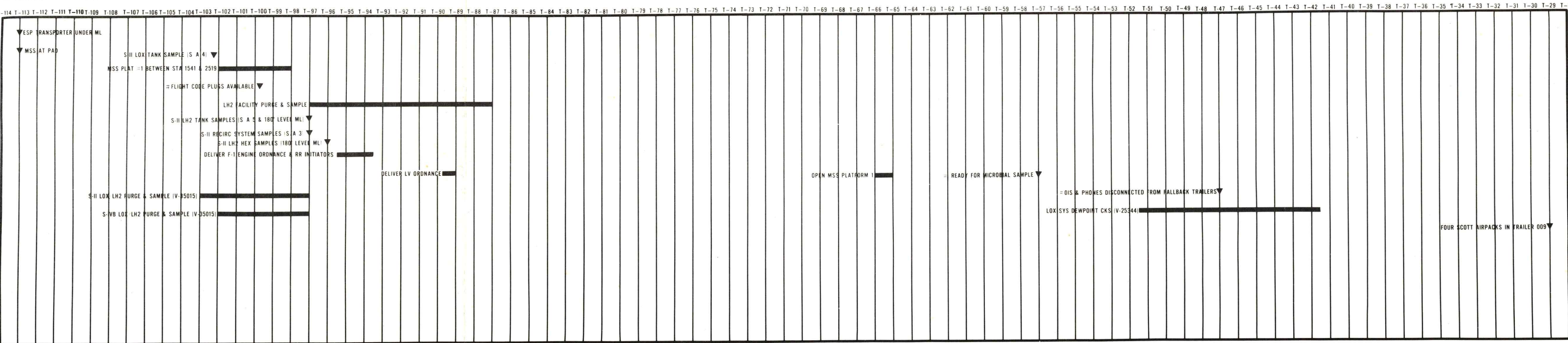
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LV CD SUPPORT REQUIREMENTS

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CD ONLY

CD ONLY

REQUIRED SUBTASK DOCUMENTATION

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,

S-IC STAGE & GSE SUBTASKS

TCP NO.	REV	TITLE	REMARKS
V-21008		ELEC CONNECTION OF S-IC PD EBM DETONATORS	
V-21009	001	ELEC CONNECTION OF S-IC PD S&A UNIT	
V-21012	007	ELEC CONNECTION OF S-IC RR EBM DETONATORS	
V-21014	001	ELEC INSTL/REMOVAL OF HV IGNITERS	
V-21018	007	FLIGHT BATTERY ACTIVATION AND CHECKOUT	
V-21035	006	PREPS OF S-IC ESE TO SUPPORT LAUNCH CD	
V-21036	003	S-IC STAGE ESE POST LAUNCH CHECK LIST	
V-21038	007	S-IC POWER ON (COMMON STARTING CONFIGURATION)	
V-21097	004	S-IC POWER OFF	
V-21194	006	LSE POWER ON & OFF REMOTE CONTROL (LCC)	
V-21204	004	INSTALLATION OF S-IC FLIGHT BATTERIES	
V-21321	005	ELEC INSTALLATION OF S-IC MDA ORD	
V-21439	BASIC	EMERGENCY BACKUP BATTERY OPERATIONAL TEST	
V-24010	007	S-IC INTERNAL WORK PLATFORM REMOVAL	
V-24011	005	S-IC BULKHEAD PROTECTION EQUIPMENT REMOVAL	
V-24025	003	S-IC GROUND HYD SUP & C/O UNIT SETUP	
V-24320	002	S-IC FORWARD UMBILICAL RECONNECTION	
V-24327	005	S-IC STAGE PNEU SYS CDDT AND LAUNCH PREPS	
V-25003	001	RP-1 STANDBY	
V-25034	003	LH2 STORAGE TANK FILL AND DRAIN	
V-25159	006	PTCS PREPS FOR PROPELLANT LOADING	
V-25160	002	DTS/DEE SYSTEM PAD SECURING	
V-25329	001	LOX STORAGE AREA TANK FILLING/PAD A	
V-25331	BASIC	LOX TANK SAMPLING/PAD A	
V-25340	004	LOX PREPS FOR VEHICLE LOADING/PAD A	
V-25342	002	LOX SYS SECURING AFTER LOX LOAD/DRAIN PAD A	
V-25344	002	TOTAL LOX SYS DEW POINT/PAD A	
V-25345	002	LOX SYS, SECURING AFTER LAUNCH/PAD A	
V-25389	006	S-IC STAGE RP-1 AUTO LEVEL ADJUST/LINE INERT	
V-26046	005	MDA UPPER LINK PRELOAD/RELAX PROC	XB-186-29
V-26222	005	STANDARD OPERATING PROC FOR THE PNEU DIST SYS	XB-186-29
V-26247	003	ENVIRONMENTAL CONTROL SYSTEM DAILY OPS/LC-39A	
V-26329	002	MDA EXPLOSIVE RELEASE SYS PWR CARTRIDGE	
V-26476	001	INSTL/REMOVAL	
V-27087	002	CONTROLLED RELEASE DEVICE PRELOAD	
V-27093	005	MGD SYSTEM OPERATING PROCEDURE	
V-27098	007	S-IC LOX AND FUEL LIQUID LEVEL AND LOADING	
V-27153	007	ELECTRONICS TESTS	
V-27175	002	VEH MEAS GSE STA TEST SUPPORT PREPS	
V-27176	002	S-IC STAGE MEASURING SCAN TEST MTOI	
V-27176	002	LCC MEAS STA OPERATION, CAL & MAINT	
V-28009	005	ML MEAS EQUIP OPERATION, CAL & MAINT	
V-28070	004	TM CHECKOUT EQUIPMENT DAILY READINESS TEST	
V-29003	004	S-IC TELEMETRY, MOBILE LAUNCHER GSE READINESS	
V-29005	005	INSTALLATION OF S-IC STAGE ORD DURING CD	
V-31031	003	F-1 ENGINE ORDNANCE INSTALLATION	
V-31045	004	IWS ELECTRICAL POWER PREPARATION	
V-31047	003	SA/TSM/LA-ELEC SUPPORT FOR CDDT & LAUNCH	
V-33030	004	S-IC UMB CABLE CONNECTION/DISCONNECTION	
V-34012	005	S-IC FLIGHT CONTROL SYSTEMS PREPARATIONS	
V-35004	003	S-IC PROPULSION SYSTEMS PREPS	
V-35005	003	LH2 SYSTEM PREP FOR VEHICLE LOADING	
V-36032	002	LH2 SYSTEM SECURING AFTER LOADING	
V-36039	004	S-II AFT SERV ARM LOCAL CONTROL OPER PROC	
V-36063	004	TSM SYS PREP & OPS FOR S/V CDDT AND CD	
V-36064	004	SMOPS LAUNCH CONFIGURATION PREPS	XB-186-29
V-36069	004	PNEUMATIC DISTRIBUTION SYSTEM LAUNCH	XB-186-29
V-36070	004	CONFIGURATION PREPARATIONS/LC-39 A & B	
V-36071	004	MDA & S/A CONTROL SW SUPPORT ROOTS	XB-186-29
V-36074	003	PLATFORMS AND TRANSPORTER LAUNCH PREPARATIONS	XB-186-29
V-36077	002	S-IC INTERTANK S/A EXTENSION/RECONNECTION	
V-36078	002	ECS PROP LOAD OPS/LC-39A & B	
V-36079	004	S-IC INTERTANK S/A SUPPORT OPS CDDT & LAUNCH	
V-36080	002	S-IC FWD S/A SUPPORT OPS CDDT & LAUNCH	XB-186-29
V-36081	002	HYD DISTRIBUTION SYS PREPS FOR COUNTDOWN TEST	
V-36082	002	S-II INTERMEDIATE S/A SUPPORT OPS CDDT & LAUNCH	
V-36083	002	S-II FWD S/A SUPPORT OPS CDDT & LAUNCH	
V-36084	002	S-IVB AFT S/A SUPPORT OPS CDDT & LAUNCH	
V-36085	003	S-IVB FWD S/A SUPPORT OPS CDDT & LAUNCH	
V-36086	002	SM S/A SUPPORT OPS CDDT & LAUNCH	
V-36087	002	CM ACCESS ARM SUPPORT OPS CDDT & LAUNCH	
V-36088	002	URRS SUPPORT OPS	
V-36112	003	LSE MECH OPS FOR SUPPORT OF MAJOR INTEGRATED TESTS	
V-36113	002	Q-BALL COVER REMOVAL SYSTEM PREPS/ML	XB-186-29
V-37038	003	INDUSTRIAL WATER SYSTEM LAUNCH PREPS	
V-38000	006	HAZARDOUS GAS DETECTION SYSTEM MAINT PROC	
V-38004	006	DRSCSPAD, STAGE & VEH SUPPORT	
V-38004	006	S-IC STAGE AND GSE TELEMETRY SUPPORT PROCEDURE	

S-II STAGE SUBTASKS

TCP NO.	REV	TITLE	REMARKS
V-21101	006	B012 FLT BATT ACTIVATION FOR SAT S-II STAGE	XB-186-29
V-21103	006	B011 S-II STAGE POWER APPLICATION	XB-186-29
V-21253	008	G060 S-II FINAL ELECTRICAL CHECKS	XB-186-29
V-21348	005	H017 - PU COMPUTER PRESSURIZATION	XB-186-29
V-21438		CDDT ONLY	
V-24116	003	J001 PROPELLANT FEED, RECIRCULATION LINES, AND	
V-24256	003	LH2 TANK VENT LINES VACUUM CHECK	
V-25151	006	G046 S7-41/A7-71 OPERATIONS SETUP AND SECURING	XB-186-29
V-27154	001	H013 PROP UTILIZATION CAL AND FUNCT TEST	
V-27183	002	G031 LCC RECORDER, FUNCTIONAL SETUP AND	XB-186-29
V-28135	001	VERIFICATION TEST	
V-28143	007	G032 MEASUREMENT STATION CHECKOUT/TEST	XB-186-29
V-28144	004	G050 PCM - TM CHECKOUT EQUIP TEST (STAGE	
V-28181	BASIC	MODULE EQUIP)	
V-29023	003	M021 S-II STAGE RF & TM CLOSEOUT FOR LAUNCH	XB-186-29
V-29024	002	R014 S-II TM OPERATIONAL READINESS CHECK	XB-186-29
V-29038	004	G125 FM/FM TM C/O EQUIP TEST (STAGE MODULE)	
V-29049		Z008 - S-II EBM DETONATOR INST	
V-29050		K008 S-II S&A DEVICE INSTL AND ELEC FUNCT C/O	
V-30029	007	S009 S-IC/S-II, S-II/S-II AND S-II/S-IVB PULSE	
V-34014	005	SENSOR REMOVAL	
V-27218	BASIC	CDDT ONLY	
V-25311	005	CDDT ONLY	
V-30029	007	M020 S-II STAGE & GSE PREPS FOR S/V CDDT & CD	
V-34014	005	E023 - PROPULSION SYSTEM LAUNCH PAD TEST OPS	
V-27218	BASIC	G137 GSE ENGR WALKDOWN OF ML INSTR	XB-186-29
V-25311	005	L009 PURGE & VACUUM SYS SECURING	XB-186-29

S-IVB STAGE SUBTASKS

TCP NO.	REV	TITLE	REMARKS
V-21085	004	PROPELLANT UTILIZATION SUBSYSTEM TEST	XB-186-29
V-21322	003	FLIGHT BATTERY ACTIVATION, 1A68316 FWD NO, 2	
V-21323	003	FLIGHT BATTERY ACTIVATION, 1A68317 AFT NO, 2	
V-21324	003	FLIGHT BATTERY ACTIVATION, 1A59741	
V-21413	002	VEHICLE BATTERY MONITORING	
V-30539	005	S-IVB SUPPORT AND PREPS FOR CDDT & CD	

INSTRUMENT UNIT SUBTASKS

TCP NO.	REV	TITLE	REMARKS
V-21222	009	AUXILIARY DAILY POWER ON PROCEDURE	
V-21223	014	IU POWER APPLICATION/REMOVAL	
V-21254	010	IU BATT ACTIVATION, MON & DISCHARGE PROC	XB-186-29
V-22006	006	GROUND COMPUTER DAILY/TEST OPERATIONS	
V-31062	008	IBM SUPPLEMENTAL TO S/V CDDT AND CD	XB-186-29

INTEGRATED PROCEDURES

TCP NO.	REV	TITLE	REMARKS
V-20056	008	SATURN V LAUNCH VEHICLE EMERGENCY PROCEDURE	XB-186-29
V-35014	011	L/V AUTO AND MAN LOX/LH2 LOAD & DRAIN OPS	XB-186-29
V-35015	009	VEHICLE LOX/LH2 TANK AND FACIL LH2 SYS PURGE	XB-186-29

CD ONLY

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 (TSM)	CTSC	112	

KSC FORM 23-81 © (6/64)

KSC FORM 23-81 D 18/84

KSC FORM 23-81 G (6/1)

OIS-RF CHANNELIZATION LC-39

AS-508 & SUBS

LV CDDT & CD, VOL 1
DATE: JANUARY 27, 1970
REVISION 017

APOLLO/SATURN
LAUNCH OPERATIONS

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VEHICLE AS-508

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	IN 241 ODOP	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	LS 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. ELFC.	LV 144 S-IC MEAS. & HGD	LV 154 IU ELECT. (STAGE)	LV 164 S-IVB GND. PNEUMATICS	LV 174 S-II FLECT. (STAGE)	LV 184 S-IC FLECT. (STAGE)	LS 214 CSM COMM. U	LS 224 CSM F/C CRYO	LS 234 LM RADAR	LS 244 LM COMM. U	IN 254 FACILITY & ENVIRON. MEAS.	SO 264 HPG MON. SYS.
SO 115 CRAWLER 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 FLECT.	LV 185 S-IC GND ELECT.	LS 215 CSM GEN	LS 225 CSM SCS	LS 235 LM SCS	LS 245 LM GEN	IN 255 FACILITY & ENVIRON. MEAS.	SO 265 HPG ELECT. CONT'S
LV 116 S-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 O2 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 LM 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. Sufferin Jr. 11/3/69
LO/PLN

LIST OF UNIQUE PAGES

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

SECTION	DIFFERENCE	DAY	HR	MIN	DIFFERENCE
BARCHARTS	CDDT/CD UNIQUE TASKS SHOWN ON APPLICABLE BARCHARTS ONLY	-4	1	0	LM PROP LINE ROUTING, CONNECTION/LEAK CHECK DURING CD ONLY
SUBTASKS	CDDT/CD ONLY SUBTASKS INCLUDED IN APPROPRIATE LIST ONLY	-4	1	0	FLIGHT CODE PLUG REMOVED DURING CD ONLY
PAD ACCESS	PAD ACCESS RESTRICTIONS DIFFER FOR CDDT AND CD	-4	0	15	FLIGHT CODE PLUGS USED DURING CD ONLY
CONDITIONS	INERT ORDNANCE USED DURING CDDT ONLY	-4	0	15	TEST CODE PLUGS USED DURING CDDT ONLY
CONDITIONS	LM2 VENT VALVE CHECKOUT EQUIPMENT INSTALLED FOR CDDT ONLY	-4	0	0	FLIGHT CODE PLUGS USED DURING CD ONLY
CONDITIONS	FLAME DEFLECTOR IN LAUNCH POSITION FOR CD ONLY	-4	0	0	TEST CODE PLUGS USED DURING CDDT ONLY
PRECOUNT TEST/COND.	FUSES REMOVED TO INHIBIT S/A 2 RETRACTION FOR CDDT ONLY	-4	0	0	FLIGHT CODE PLUG SECURED DURING CD ONLY
DAY HR MIN	DIFFERENCE	-3	23	30	Q-BALL HEATER POWER OFF DURING CD ONLY
---	---	-3	22	15	PRESSURE HOLD TEST COMPLETED DURING CDDT
-4 20 30	PU COMPUTER PRESSURIZED AND LEAK CHECKED DURING CDDT	-3	21	30	Q-BALL HEATER POWER OFF DURING CDDT ONLY
-4 20 30	PU COMPUTER PRESSURE VERIFIED UP DURING CD	-3	21	30	SECURING FROM PRESSURE HOLD TEST DONE DURING CDDT ONLY
-4 17 0	VACUUM JACKETED LINE PRESSURE CHECKS STARTED DURING CD ONLY	-3	21	0	LM PROP LINE ROUTING, CONNECTION/LEAK CHECK DURING CD ONLY
-4 16 30	STAGE ELEC INSPECTION DURING CDDT ONLY	-3	21	0	SC SMALL ORDNANCE INSTALLED DURING CDDT ONLY
-4 7 30	PU COMPUTER LEAK CHECK COMPLETED DURING CDDT ONLY	-3	21	0	PNEUMATIC SYSTEM E-M TEST RUN DURING CDDT ONLY
-4 7 30	LM2 SYSTEMS PURGED DURING CD ONLY	-3	18	30	PNEUMATIC SYSTEM E-M TEST RUN DURING CDDT ONLY
-4 7 30	PROPELLANT TANKS PURGED DURING CDDT ONLY	-3	17	0	CSM HEAVY ORDNANCE CONNECTED DURING CD ONLY
-4 7 0	PROPELLANT TANK AND FEED SYSTEM PURGING REQUIRED DURING CDDT ONLY (UNLESS SAMPLES FAIL TO MEET REQUIREMENTS DURING CD)	-3	17	0	SHDPS RECONFIGURED AT THIS TIME DURING CD ONLY
-4 6 40	INTERFACE TEST STARTED DURING CD ONLY	-3	17	0	SC SMALL ORDNANCE OPERATIONS CONTINUE DURING CDDT ONLY
-4 6 30	FACILITY AIR STANDBY PANEL ACTIVATED FOR CDDT ONLY	-3	13	0	CSM REMOTE RESISTANCE CHECKS RUN DURING CD ONLY
-4 5 45	LSE INTERFACE TEST COMPLETE DURING CD ONLY	-3	13	0	CSM PROPELLANT LINE DISCONNECTED DURING CDDT ONLY
-4 5 45	LSE MECHANICAL OPERATIONS STARTED DURING CDDT ONLY	-3	12	0	CSM REMOTE RESISTANCE CHECKS COMPLETED DURING CD ONLY
-4 5 45	HCU PREPARED DURING CDDT ONLY	-3	12	0	SHDPS RECONFIGURED DURING CD ONLY
-4 5 30	S/A'S 1, 5 & 7 PRESSURIZED DURING CDDT ONLY	-3	11	15	LM RCS MANIFOLD LOADING DURING CD ONLY
-4 5 15	HCU SUPPORTING DURING CDDT ONLY	-3	11	0	BATTERY BYPASS CABLE REMOVAL STARTED DURING CDDT
-4 5 15	LSE MECH OPERATIONS (S/A'S 1, 5 & 7) DONE DURING CDDT ONLY	-3	9	0	BATTERY BYPASS CABLE REMOVAL COMPLETED DURING CDDT
-4 5 15	TSM E-M AND PRESSURE HOLD TEST DURING CDDT ONLY	-3	8	30	LM ORDNANCE OPERATIONS COMPLETED DURING CDDT
-4 4 45	S/A'S 2, 4 & 6 PRESSURIZED DURING CDDT ONLY	-3	7	30	PROPELLANT VENT LINE QD OPENING DURING CD ONLY
-4 4 30	LSE MECHANICAL OPERATIONS (S/A 2) DONE DURING CDDT ONLY	-3	7	0	SC OPERATIONS UNIQUE TO CD
-4 4 15	LSE MECH OPERATIONS (S/A'S 4 & 6) DONE DURING CDDT ONLY	-3	7	0	SHDPS RECONFIGURED DURING CD ONLY
-4 4 0	S/A 9 PRESSURIZED DURING CDDT ONLY	-2	18	30	PAD REOPENED AND SHDPS RECONFIGURED DURING CD ONLY
-4 3 45	LSE MECHANICAL OPERATIONS (S/A 9) DONE DURING CDDT ONLY	-2	13	0	CRD'S PRELOADED DURING CD ONLY
-4 3 45	FLIGHT CODE PLUGS ISSUED DURING CD ONLY	-2	10	0	HYPERGOL COVER CURTAINS REMOVED DURING CDDT ONLY
-4 3 30	S/A 8 PRESSURIZED DURING CDDT ONLY	-2	10	0	HYPERGOL COVERS REMOVED DURING CD ONLY
-4 3 15	LSE MECHANICAL OPERATIONS (S/A 8) DONE DURING CDDT ONLY	-2	10	0	MICROBIAL SAMPLING DURING CD ONLY
-4 2 30	FLIGHT CODE PLUGS INSTALLED DURING CD ONLY	-2	9	0	HYPERGOL COVERS REMOVED DURING CD ONLY
-4 2 30	TEST CODE PLUGS INSTALLED FOR CDDT ONLY	-2	9	0	MICROBIAL SAMPLING DURING CD ONLY
-4 2 15	S/A & TSP PRESSURE HOLD TEST DONE DURING CDDT ONLY	-2	4	0	CRD PRELOAD COMPLETED DURING CD ONLY
-4 1 30	TEST CODE PLUGS INSTALLED FOR CDDT ONLY	-1	9	-	CLEARING FOR CSM LOX AND LM2 TANK PRESSURIZATION (TO FLIGHT PRESSURE) REQUIRED DURING CD ONLY
-4 1 30	SC STAY VOLTAGE CHECKS DURING CDDT ONLY	-1	8	-	SLA, CM, IU & S-IVB FORWARD AREA ARE REOPENED FOR ACCESS LATER DURING CD
-4 1 15	FLIGHT CODE PLUGS INSTALLED FOR CD ONLY	-1	6	-	LM RCS MANIFOLD LOADED DURING CD ONLY
		-1	5	0	IU WATER DELUGE SYSTEM REMOVED DURING CDDT ONLY

ABBREVIATIONS

A/C	AIRBORNE
ACC	ALTERNATING CURRENT
ACCEL	ACCELERATING
ACE	AUTOMATIC CHECKOUT EQUIPMENT
ACS	AIRBORNE COMMAND SYSTEM
ACT	ACTUATION
ALSEP	APOLLO LUNAR SURFACE EXPERIMENTAL PACKAGE
ALT	ALTERATION
AM	AMPLITUDE MODULATION
AMB	AMBIENT
AOA	ANGLE OF ATTACK
APS	AIRLIFT PROPULSION SYSTEM
AS	LM ASCENT STAGE
AS	APOLLO/RETURN
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AUX	AUXILIARY
AVP	ACCEPTANCE VERIFICATION PULSE
WATT	WATTERY
BPC	BOOST PROTECTIVE COVER
CALIPS	SWITCH TRADE NAME
CAL	CALIBRATION
CAM	PERFORM
CB	CIRCUIT BREAKER
CCF	CONVERTER COMPRESSOR FACILITY
CCMKR	SWITCH SELECTOR MALFUNCTION COMMAND BOXES
CCR	COMMAND COMMUNICATIONS RECEIVER
CCS	COMMAND COMMUNICATIONS SYSTEM
CDP	CONFINED DETONATING FUSE
CDT	COUNTDOWN DEMONSTRATION TEST
CH	CHARGE
CHE	COMPONENT HANDLING EQUIPMENT
CIF	CENTRAL INSTRUMENTATION FACILITY
CHK	CHECKS
CKT	CIRCUIT
CL	CLOSED LOOP
CM	COMMAND MODULE
CMD	COMMAND
COMN	COMMUNICATIONS
COMP	COMPUTER
CONT	CONTINUOUS
C/O	CHECKOUT, CUTOFF
COORD	COORDINATION
CRD	CONTROLLED RELEASE DEVICE
CRG	CONTROL RATE GYRO
CRH	COMMAND HEAD PULSE
CRT	CATHODE RAY TUBE
CRYVO	CRYOGENIC
CSM	COMMAND SERVICE MODULE
CT	COMPONENT TEST
CVS	CONTINUOUS VENT SYSTEM
DAC	DIGITAL TO ANALOG CONVERTER
DBM	DECIBELS ABOVE ONE MILLIWATT
DCE	DIGITAL CHECKOUT EQUIPMENT
DDAS	DIGITAL DATA ACQUISITION SYSTEM
DEE	DIGITAL EVENTS EVALUATION
DEG	DEGREE
DIN	DIGITAL INPUT
DIT	DIRECTIONAL
DISC	DISCONNECT
DIST	DISTRIBUTION
DTS	DATA TRANSMISSION SYSTEM
DRSCS	DIGITAL RANGE SAFETY COMMAND SYSTEM
DRRS	DAMPEN RETRACT RECONNECT SYSTEM
U/S	LM DESCENT STAGE
EAS	ENGINE ACTUATION SYSTEM
EBW	EXPLOSIVE BRIDGE WIRE
EC	ENVIRONMENTAL CHAMBER
ECS	ENVIRONMENTAL CONTROL SYSTEM
EDS	EMERGENCY DETECTION SYSTEM
ELEC	ELECTRICAL
EMER	EMERGENCY
EMC	ELECTRO-MAGNETIC COMPATIBILITY
EMI	ELECTROMAGNETIC INTERFERENCE
EMH	ELECTRO-MECHANICAL
ENG	ENGINE
ENGR	ENGINEER
EQUIP	EQUIPMENT
ESS	ELECTRICAL SUPPORT EQUIPMENT
ESP	ENGINE SERVICE PLATFORM
EST	EASTERN STANDARD TIME
ETR	EASTERN TEST RANGE
FACIL	FACILITY
FCA	FUEL CASE ASSEMBLY
FCC	FUEL CONTROL COMPUTER
FCT	FUEL CONTROL
FDS	FUEL DISTRIBUTION SYSTEM
F & D	FILL AND DRAIN
FH	FREQUENCY MODULATION
FLT	FLIGHT
FPI	FUEL PRESSURE INDICATOR
FREQ	FREQUENCY
FT	FOOT
F/T	FUNCTIONAL TEST
FWD	FORWARD
F/R	FIRING ROOM
F, U,	FIRING UNIT
FUNCT	FUNCTIONAL
FUSV	FORWARD UNBILICAL SERVICE UNIT
GAC	GUIDANCE AND CONTROL
GEN	GENERATOR, GENERALIZED
GG	GAS GENERATOR
GE	GASEOUS MELIUM
GHZ	GASEOUS HYDROGEN
GMT	GREENWICH MEAN TIME
GNZ	GASEOUS NITROGEN
GOS	GASEOUS OXYGEN
GRP	GROUP
GRR	GUIDANCE REFERENCE RELEASE
GRRR	GUIDANCE REFERENCE RELEASE ALERT
GSE	GROUND SUPPORT EQUIPMENT
GSCF	GODDARD SPACE FLIGHT CENTER
GUID	GUIDANCE
ME	MELIUM
HCU	HYDRAULIC CHARGING UNIT
HDA	HOLD DOWN ARMS
HSD	HAZARDOUS GAS DETECTION
N/HM	HAMMERHEAD
HI	HIGH
HP	HIGH PRESSURE
HRS, HR	HOURS
HV	HAND VALVE
HYD	HYDRAULIC
HZ	HERTZ (ONE CYCLE PER SECOND)
IBM	INTERNATIONAL BUSINESS MACHINES
IGN	IGNITION
IMU	INERTIAL MEASUREMENT UNIT
INFLT	INFLIGHT
IND	INDICATION
INJ	INJECTOR OR INJECTION
INS	INSTRUMENTATION SYSTEMS DIVISION
INSP	INSPECTION
INBTL	INSTALLATION
INSTR	INSTRUMENTATION
ITI	INTEGRATED TEST INSPECTION
IU	INSTRUMENT UNIT
IWS	INDUSTRIAL WATER SYSTEM
KHZ	KILO-HERTZ
KSC	KENNEDY SPACE CENTER
LAB	LABORATORY
LC	LAUNCH COMPLEX
LCC	LAUNCH CONTROL CENTER
LES	LAUNCH ESCAPE SYSTEM
LHD, LH	LIQUID HYDROGEN
LPL	ML ZERO LEVEL PLATFORM
LUNAR	LUNAR MODULE
LUNAR	LAUNCH MISSION RULES

LIFT OFF
LUMC LAUNCH OPERATIONS MANAGER
LOS LOSS OF SIGNAL, LINE OF SIGHT
LOX LIQUID OXYGEN
LATR LATCH RELIEF
LSE LAUNCH SUPPORT EQUIPMENT
LAUNCH UNBUILT TOWER
LV LAUNCH VEHICLE
LVL LEVEL
LVDA LAUNCH VEHICLE DATA ADAPTER
LVDC LAUNCH VEHICLE DIGITAL COMPUTER
LVO LAUNCH VEHICLE OPERATIONS

MALFUNCTION
MAINT MAINTENANCE
MAN MANUAL
MAP MESSAGE ACCEPTANCE PULSE
MAN MAX
MCC-M MISSION CONTROL CENTER - HOUSTON
MCD MODONNELLOUDOGLAS
MDO MOBILE LAUNCHER COMPUTER DIGITAL OUTPUT
MEAS MEASUREMENT MEASURING
MECH MECHANICAL
MEGA-HERTZ
MILA MERRITT ISLAND LAUNCH AREA
MIN MINUTE
ML MOBILE LAUNCHER
MON MONITOR
MSS MOBILE SERVICE STRUCTURE
MODL MODULE
MUX MULTIPLEXER

NAV NAVIGATION
NO NUMBER
NPV NON PROPULSIVE VENT
NR NORTH AMERICAN ROCKWELL

OAT OVERALL TEST
OIS OPERATIONAL INTERCOMMUNICATIONS SYSTEM
OMNI OMNI-DIRECTIONAL
OPS OPERATIONS
ORD ORDNANCE
OTV OPERATIONAL TELEVISION

PA PUBLIC ADDRESS SYSTEM
PCM PCM CODE MODULATION
PCMU PROPELLANT CALIBRATION MEASURING UNIT
PD PROPELLANT DISPERSION
PHM PROPELLANT MONITOR
PNEU PNEUMATIC
POGO LONGITUDINAL VIBRATION SUPPRESSION SYSTEM
POS POSITIVE
POS POSITION
PSN PRESSURE
PLAT PLATFORM
PRA PROPELLANT RECORDER AMPLIFIERS
PREFILT PRE-FILTER
PREPS PREPARATIONS
PREPRESS PREPRESSURIZATION
PRESS PRESSURE
PROC PROCEDURE
PROG PROGRAM
PRDP PRODUCTIONS, PROPELLANT
PSI POUNDS PER SQUARE INCH
PSIA POUNDS PER SQUARE INCH ABSOLUTE
PSV PRESSURE SUPPLY VALVE
PTRC PAD TERMINAL CONNECTION ROOM
PTCS PORTABLE TANKING COMPUTER SYSTEM
PU PROPELLANT UTILIZATION
PWR POWER

QC QUALITY CONTROL
QD QUICK DISCONNECT
QUAD QUADRANT

REMOTE AUTOMATIC CALIBRATION SYSTEM
RCA RADIO CORPORATION OF AMERICA
RCR REACTION CONTROL SYSTEM
RECIRC RECIRCULATION
RECVH RECEIVER
REF REFERENCE
REG REGULATOR
KEPRBS REPRESSURIZATION
REQ REQUIRED
REV REVISION
RF RADIO FREQUENCY
RFJ RADIO FREQUENCY INTERFERENCE
RM ROOM
RP-1 RET FINE KEROSENE
RR ROCKET
RS RANGE SAFETY
RSCR RANGE SAFETY COMMAND RECEIVER
RSG RANGE SAFETY OFFICER
RTG RADIOISOTOPE THERMOELECTRIC GENERATOR

S SATURN APOLLO
SA SERVICE ARM
SACS SERVICE ARM CONTROL SWITCHES
SAA SAFE AND ARM
SAT SATURN
SC SPACECRAFT
SCO SPACECRAFT OPERATIONS
SEC SECOND
SECT SECTION
SEL SELECT
SEP SEPARATION
SEQ SEQUENCE
SHE SUPERCRITICAL HELIUM
SIG SIGNAL
SIM SIMULATE
SIU SEQUENCE INITIATE UPDATE
SLA SC LUNAR ADAPTER
SM SERVICE MODULE
SHPS SHUTTLE MODULE DELUGE PURGE SYSTEM
SOP STANDARD OPERATING PROCEDURE
SP STABILIZED PLATFORM
SPEC SPECIFICATION
SRQ SECURE RANGE SAFETY OFFICER
SSB SINGLE SIDE BAND
STA STATION
STG STAGE
SV SPACE VEHICLE
SW SWITCH
S/S SWITCH SELECTOR
SYS SYSTEM
SYNC SYNCHRONIZE
S-1C SATURN V 1ST STAGE
S-II SATURN V 2ND STAGE
S-IVB SATURN V 3RD STAGE

T TIME
T-Q NOMINAL LIFTOFF
TB TIME BASE
TCB THE BOEING COMPANY
TC TEST CONDUCTOR
TCE TELEMETRY CHECKOUT EQUIPMENT
TCH THRUST CHAMBER
TCS TERMINAL COUNTDOWN SEQUENCER
TEMP TEMPERATURE
THEOD THEODOLITE
TH TELEMETRY
TOK THROTTLE
TSM TAIL SERVICE MASTER
TV TELEVISION
TW TOWER

UCS UNIVERSAL CAMERA SITE
UNF ULTRA-HIGH FREQUENCY
UNRL ULLAGE RACKET
UR UNIFIED S-BAND FACILITY

VAB VEHICLE ASSEMBLY BUILDING
VEN VEHICLE
VLA VARIABLE LAUNCH AZIMUTH
VT VENT

W/R WHITE ROOM (S/A 9 ENVIRONMENTAL CHAMBER)

XMR TRANSMITTER

CD ONLY

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.

DEFINITION:

LAUNCH PAD:

THE AREA WITHIN THE SECURITY FENCE SURROUNDING THE LAUNCH SITE,

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 THE TEST SUPERVISOR AND SAFETY. 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 ACCESS TO THE IMMEDIATE AREA MUST BE CONTROLLED. PERSONNEL ENTERING THE PAD AND/OR 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 ARE REQUIRED AND PAD SECURITY WILL BE IN EFFECT.

CD ONLY

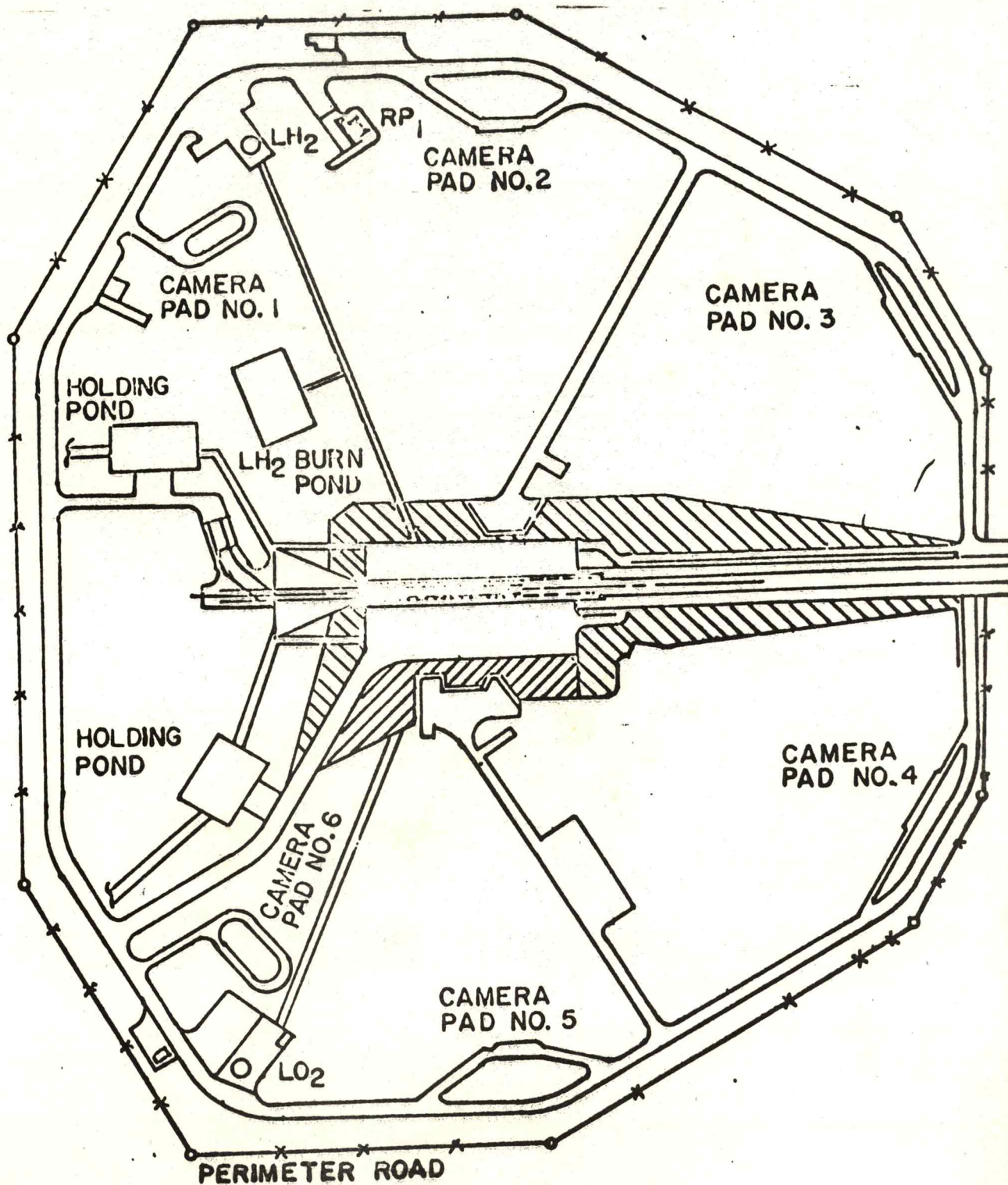
CD CONTROLLED AREA RESTRICTIONS

- 1, T-4 DAYS 45 MIN TO T-3 DAYS 21 HRS: THE SLA INTERIOR, IU & S-IVB FORWARD AREAS WILL BE CLEARED FOR LM PROPELLANT LINE ROUTING, CONNECTION AND LEAK CHECK,
- 2, T-3 DAYS 20:30 HRS TO T-3 DAYS 17 HRS: THE LUT ZERO LEVEL (EXCEPT PATH TO ELEVATOR) WILL BE CLEARED FOR F-1 ENGINE AND RR ORDNANCE INSTALLATION,
- 3, T-3 DAYS 16:30 HRS TO T-3 DAYS 13 HRS: THE MSS, PAD APRON, FLAME TRENCH AND ML (EXCEPT ROOMS 10 & 15A) WILL BE CLEARED FOR LV INITIATOR DETONATOR HOOKUP AND CSM HEAVY ORDNANCE HOOKUP,
- 4, T-3 DAYS 12:30 HRS TO T-3 DAYS 12 HRS: THE AREA INSIDE THE PAD PERIMETER FENCE WILL BE CLEARED FOR CSM REMOTE RESISTANCE CHECKS,
- 5, T-3 DAYS 12 HRS TO T-3 DAYS 11:15 HRS: THE SLA INTERIOR, IU & S-IVB FORWARD AREA WILL BE RESTRICTED TO PERSONNEL ESSENTIAL FOR LM RCS MANIFOLD LOAD,
- 6, T-3 DAYS 7:15 HRS TO T-3 DAYS 7 HRS: THE SLA INTERIOR, IU & S-IVB FORWARD AREA WILL BE CLEARED FOR PROPELLANT VENT LINE QUICK DISCONNECT OPENING,
- 7, T-3 DAYS 6:30 HRS TO T-2 DAYS 18:30 HRS: THE AREA INSIDE THE PERIMETER FENCE WILL BE CLEARED FOR LM CSM GHE GOX SERVICING AND PROPELLANT LINE DISCONNECT,
- 8, T-2 DAYS TO T-1 DAY 21 HRS: THE LM DESCENT AREA INTERNAL TO THE SLA, IU & S-IVB FORWARD AREA WILL BE CLEARED FOR LM SHE SERVICING,
- 9, T-1 DAY 16 HRS TO T-1 DAY 9 HRS: AN 1100 FOOT RADIUS AROUND THE SV WILL BE CLEARED (EXCEPT ML ROOMS 10 AND 15A) FOR CSM LOX AND LH2 TANKING,
- 10, T-1 DAY 8:30 HRS TO T-1 DAY 8 HRS: THE AREA INSIDE THE PAD PERIMETER FENCE WILL BE CLEARED FOR CSM LO2 & LH2 TANK PRESSURIZATION,
- 11, T-1 DAY 8 HRS TO T-1 DAY 7:30 HRS: THE SLA INTERIOR, IU & S-IVB FORWARD AREA WILL REMAIN CLEAR FOR LM RCS FINAL MANIFOLD LOADING,

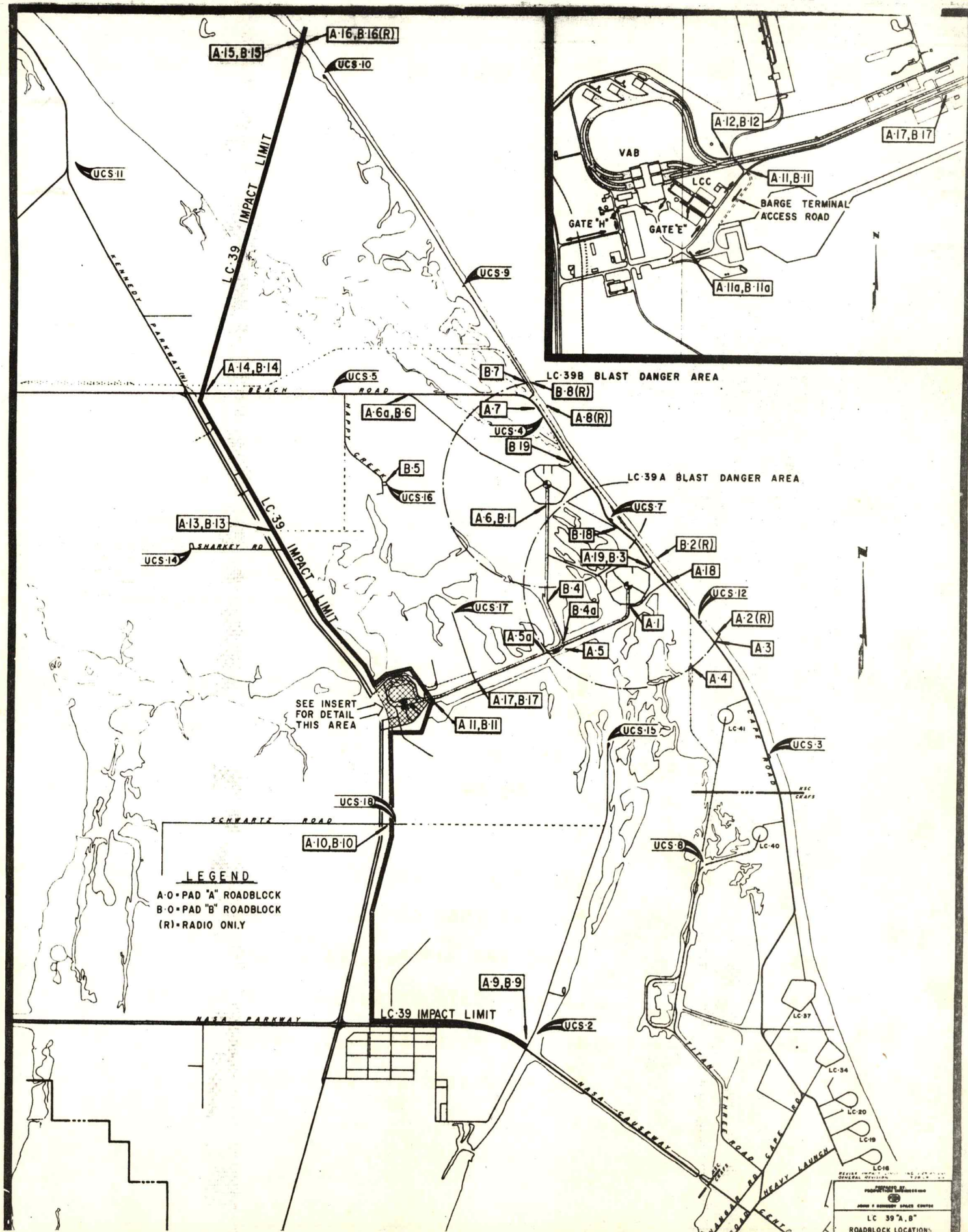
LV CDDT & CD, VOL I
DATE: JANUARY 27, 1970
REVISION 017

APOLLO/SATURN
LAUNCH OPERATIONS

5251,60 23
PAGE
TEST NO. V-20060, VOL I
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TEST NO. V-20060, VOL I
VEHICLE AS-508



TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
					PRECOUNT TEST CONDITIONS	
		1			RP-1 LOADED	
		2			S/V ECS AIR ON PER V-26247	
		3			S-1C LOX TANK BULKHEAD COVERS INSTALLED AND INTERNAL WORK PLATFORMS INSTALLED	
		4			ESP AND LUT ZERO PLATFORM RAISED	
		5			ALL S/A'S IN PLACE WITH TIPS EXTENDED	
		6			MSS AT PAD WITH PLATFORMS CLOSED	
		7			50 PSI GN2 DISTR BOX PURGE ON V-36064	
		8			DTS SUPPORTING & PROPELLANTS DC PWR ON	
		9			DEE-3 SYSTEM SUPPORTING	
		10			LSE MECH PRELIM TWR PREPS IN PROGRESS	
					S/A 1 V-36077 S/A 7 V-36083	
					S/A 2 V-36078 S/A 8 V-36084	
					S/A 3 V-36032 S/A 9 V-36085	
					S/A 4 V-36080 DRRS V-36086	
					S/A 5 V-36081 HDA V-36069	
					S/A 6 V-36082 TSM V-36039	
		11			ML ELEC PREPS IN PROGRESS PER V-31045	
		12			S-1C ESE LAUNCH PREPS IN PROG V-21035	
		13			LSE 42D100 POWER ON	
		14			ML SLUG INST COMPLETE PER V-20072	
		15			S-1VB APS HYPERGOLICS LOADED	
		16			LO AND DESTRUCT ENABLE KEYS TO CPSS	
		17			ALL EBW PULSE SENSORS INSTALLED	
		18			REQ PNEU DIST SYS ARE PRESSURIZED	

CD ONLY

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
					VOLUME I ----- PRECOUNT -----	
	121	1	CLTC	C1TC	CDDT ONLY	*
	121	2	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY TO PROCEED WITH SCHEDULED PRECOUNT OPERATIONS PER V-20060.	
	111	3	CLTC	CVTS	LV IS PROCEEDING WITH PRECOUNT OPERATIONS.	TCPI
		4	CLTC	***	NOTE SC WILL REQUEST VERIFICATION THAT THE SMDPS IS IN THE 2 SWITCH 1 VALVE MODE AND THAT THE SLA/LM ECS AIR TEMPERATURE CONTROLS ARE SET TO 67 DEG F WHEN SC BEGINS POWER ON OPERATIONS.	TCPI
- 4 DAY 20 HRS 30' 0"	171	1	C2TC	U2PM	CDDT ONLY	*
	171	2	C2TC	U2PM	VERIFY PRESSURE IN PU COMPUTER IS 10 +/- 1.0 PSIG. IF PRESSURE IS NOT WITHIN THE SPECIFIED TOLERANCE, PRESSURIZE COMPUTER PER V-30029 (M020) SECTION VI, TASK 93, REPORT WHEN COMPLETE.	#
- 4 DAY 17 HRS 0' 0"	171	1	C2TC	U2J2	START PROPELLANT FEED SYSTEM VACUUM JACKETED LINE PRESSURE CHECKS PER V-24116 (J001), REPORT WHEN COMPLETE.	#

CD ONLY

RLDE LOAD AND INITIATE SEQUENCE COMPARE
TABLES AS REQUIRED FOR THIS TEST,

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 7 HRS 40' 0"					CD ONLY	
	121	1	CUTC	CLTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION,	
	121	2	CLTC	C2TC	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 PROCEDURE V-21222, REPORT WHEN COMPLETE,	
- 4 DAY 7 HRS 30' 0"						
	121	1	CLTC	CUTC	SWITCH SCAN IS SATISFACTORY, BRING UP COMPUTER,	
	151	2	CUTC	BGCC	ENTER S GO AND PERFORM DATA LINK SWITCH OVER PER V-22006, REPORT WHEN COMPLETE,	
	121	3	CUTC	CLTC	GROUND COMPUTER IS SUPPORTING,	
	188	4	CLTC	ALL	GROUND COMPUTER IS SUPPORTING,	
		4-1			***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	
	171	5	U2PM	C2TC	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 4 DAY 7 HRS 30' 0"						
171		6	C2TC	U2J2	START ENGINE/RECIRC SYSTEMS INSPECTION AND ENGINE COVER REMOVAL PER V-34014 (E023). REPORT WHEN COMPLETE.	
161		7	C4TC	L4CE	START PRETEST PREPS PER V-30539, SECT A. REPORT WHEN COMPLETE.	
171		8	R2SC	C2TC	LCC MEASURING STATION SETUP IS COMPLETE.	
171		9	V2MS	C2TC	VAB MEASURING STATION SETUP IS COMPLETE.	
121		10	CLTC	C2TC	APPLY S-II STAGE POWER.	
171		11	C2TC	U2PM	VERIFY PREPS COMPLETE AND READY FOR STAGE POWER.	
171		12	C2TC	R2SC	VERIFY READY FOR STAGE POWER.	
171		13	C2TC	C2NP	APPLY S-II STAGE POWER PER V-21103 (B011).	
171		14	C2TC	C2IP	GROUND POWER TO ON.	
171		15	C2TC	B2TM	START PCM/DDAS CHECKS PER V-28144 (R014) MODE 1. REPORT WHEN COMPLETE.	
171		16	C2SP	C2TC	PRESS UMBILICAL VERIFICATION IS COMPLETE	
171		17	U2J2	C2TC	ENG/RECIRC UMBILICAL VERIFICATION IS COMPLETE.	
171		18	C2TC	C2GP	ACTIVATE GROUND PNEUMATICS PER V-24256 (G046) WHEN REQUIRED TO SUPPORT LH2 SYSTEMS PURGE (V-35015).	#
171		19	C2TC	C2GP	CDDT ONLY	*
121		20	C2TC	CLTC	S-II STAGE POWER IS ON.	



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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 6 HRS 25' 0"					CD ONLY	
	121	7	CLTC	C4TC CUTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION, REPORT WHEN SATISFACTORY,	
- 4 DAY 6 HRS 15' 0"	121	1	CLTC	CLVN	ML INHIBIT TO AUTO, COMPUTER TEST SWITCH ON AND VERIFY DISCRETE CYCLING	I-136-32
	121	2	CLTC	BGCC	ENTER S GO PER V-22006, REPORT WHEN COMPLETE,	
	121	3	BGCC	CLTC	GROUND COMPUTER IS SUPPORTING,	
	188	4	CLTC	ALL	GROUND COMPUTER IS SUPPORTING,	
	111	5	CLTC	CVTS	LV APPLYING STAGE POWER,	TCP
	121	6	CLTC	CUTC	APPLY IU STAGE POWER,	
	151	7	CUTC	CUNP	APPLY IU STAGE PWR, PER V-21223, REPORT WHEN COMPLETE,	
	161	8	C4TC	C4ES	VERIFY PRE-POWER PREPS COMPLETE,	
	161	9	C4TC	C4ES	APPLY S-IVB GROUND POWER PER V-30539 APPENDIX B, REPORT WHEN COMPLETE,	
- 4 DAY 6 HRS 0' 0"	181	1	C1TC	CSPP	VERIFY LSE POWER ON AND START BATTERY SWITCHOVER TEST PER V-21194, REPORT WHEN COMPLETE,	
	121	2	CUTC	CLTC	STAGE POWER ON AND COOLING IS SUPPORTING,	
	151	3	CUTC	CUCP	START REDUNDANT COOLANT PUMP CHECK WITH RUBM ON CHANNEL 152 PER V-31062, PART II, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 6 HRS 0' 0"					CD ONLY	
161	4	C4TC	S4PC		START S-IVB ENGINEERING WALK AROUND PER V-30539, SECT B,	
121	5	CLTC	C4TC		APPLY S-IVB STAGE POWER AND RUN EBW FUNCTIONAL TEST,	
161	6	C4TC	C4ES		APPLY S-IVB STAGE POWER PER V-30539, APPENDIX B, REPORT WHEN COMPLETE,	
161	7	C4TC	C4PS		START PROPULSION SYSTEM POWER ON PREPS PER V-35015,	
121	8	C4TC	CLTC		S-IVB STAGE POWER HAS BEEN APPLIED,	
161	9	C4TC	C4ES		START EBW FUNCTIONAL TEST PER V-30539 SECT C,	
161	10	C1TC	CCLH		STANDBY TO SUPPORT S-IVB LH2 TANK PURGING & SAMPLING PER V-35015,	
161	11	C1TC	CCLO		STANDBY TO SUPPORT S-IVB LOX TANK PURGING AND SAMPLING PER V-35015,	
171	12	C2TC	C2NK		START S-II SYSTEM BYPASS/BYPASS INHIBIT CHECKS PER V-30029 (M020) TASK 3, REPORT WHEN COMPLETE,	
121	13	C1TC	CLTC		LOX AND LH2 PROPELLANTS SUPPORTING FOR S-IVB TANK PURGE AND SAMPLING,	
161	14	C1TC	CHDA		START HDA/SACS ELECTRO-MECHANICAL TESTS PER V-36069,	
171	15	C2TC	B2TM		START S-II STAGE RF & TM CLOSEOUT FOR LAUNCH PER V-28143 (M021),	
161	16	C4TC	C4HY		START S-IVB HYDRAULIC SYSTEM PREPARATION AND FUNCTIONAL PER V-30539, SECT D,	
121	17	CVTS	CLTC		CSTC IS READY TO SUPPORT S-II CLOSEOUT AND INSPECTION WITH MSS PLATFORM #1,	TCPI
121	18	C2TC	CLTC		MSS PLATFORM #1 WILL BE REQUIRED BETWEEN STA 1541 & 2519 FOR THE NEXT 4 HRS TO SUPPORT S-II STAGE EXTERIOR INSPECTION/CLOSEOUT,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 6 HRS 0' 0"					CD ONLY	
	171	19	C2TC	U2IE	CLOSEOUT MSS PLATFORM #1 PER V-30029 (M020) TASK 9; REPORT WHEN COMPLETE,	
	171	20	C2TC	U2SE	START FINAL INSPECTION/CLOSEOUT OF S-II STAGE EXTERIOR PER V-30029 (M020) TASK 9; REPORT WHEN COMPLETE, (REQUIRES MSS PLATFORM #1 TO TRAVERSE FROM STA 1541 THROUGH 2519)	
	171	21	C2TC	U2QC	START REMOVAL OF ALL NON-FLIGHT HARDWARE FROM STAGE EXTERIOR PER V-30029 (M020) TASK 47;	
- 4 DAY 5 HRS 45' 0"						
	181	1	CSPP	C1TC	LSE INTERFACE TEST COMPLETE	*
	181	2	C1TC	CSAC	CDDT ONLY	*
	118	3	CSAC	CHCU	CDDT ONLY	*
- 4 DAY 5 HRS 30' 0"						
	188	1	CLTC	ALL	CDDT ONLY	*
	111	2	CLTC	CVTS	CDDT ONLY	* TCPI
	161	3	C4TC	C4PS	START PROPULSION SYSTEM PURGES PER V-35015;	
	171	4	C2TC	C2DP C2NK	START SEPARATION SYSTEM CHECKOUT PER V-30029 (M020) TASK 4 (QASP); REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 DAY 5 HRS 15' 0"						
	181	1	C1TC	CHCU	CDDT ONLY	*
	118	2	CSAC	CSAD	CDDT ONLY	*
	118	3	CSAC	CSA1	CDDT ONLY	*
	118	4	CSAC	CSA5	CDDT ONLY	*
	118	5	CSAC	CSA7	CDDT ONLY	*
	181	6	C1TC	CTS1	CDDT ONLY	*
		6-1			CDDT ONLY	
	171	7	C2TC	U2PE	START CLOSEOUT OF ML LEVEL 180 PER V-30029 (M020) TASK 64,	
- 4 DAY 5 HRS 01' 0"						
	161	1	C4ES	C4TC	EBW FUNCTIONAL TEST COMPLETE,	
	121	2	C4TC	CLTC	EBW FUNCTIONAL TEST COMPLETE	
	171	3	C2TC	U2EO	REMOVE ALL PULSE SENSORS EXCEPT PD PER V-29038 (S009),	
	161	4	C4TC	C4ES	START REMOVAL OF PULSE SENSORS AND BRACKETS PER V-30539, SECT C,	
	171	5	C4TC	C2TC	VERIFY SEPARATION AND RETRO ROCKET PULSE SENSORS ARE DISCONNECTED AND READY FOR REMOVAL,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 DAY 4 HRS 45' 0"	188	1	CLTC	ALL	CDDT ONLY	*
- 4 DAY 4 HRS 30' 0"	118	1	CSAC	CSA2	CDDT ONLY	*
- 4 DAY 4 HRS 15' 0"	121	1	CLTC	CLTC	OBTAIN CLOSED LOOP CLEARANCE FOR 450 MHZ FOR DRSCR PREPS. (PROTECTION NOT REQUIRED),	
	111	2	CLTC	CVTS	OBTAIN CLOSED LOOP CLEARANCE FOR 450 MHZ FOR DRSCR PREPS. (PROTECTION NOT REQUIRED),	TCPI
	118	3	CSAC	CSA4	CDDT ONLY	*
	118	4	CSAC	CSA6	CDDT ONLY	*
- 4 DAY 4 HRS 0' 0"	181	1	CLTC	BRFS	START DRSCR/GSE PREPS PER V-38000 SECTIONS 1 THRU 11,	
	111	2	CLTC	CVTS	CDDT ONLY	* TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 DAY 3 HRS 45' 0"						
	118	1	CSAC	CSA9	CDDT ONLY	*
	121	2	CVTS	CLTC	FLIGHT CODE PLUGS ARE AVAILABLE IN ROOM 4P8	# TCP
	121	3	CLTC	C1TC C2TC C4TC	FLIGHT CODE PLUGS ARE AVAILABLE IN ROOM 4P8	#
- 4 DAY 3 HRS 30' 0"						
	171	1	C2NK	C2TC	BYPASS/BYPASS INHIBIT CHECKS ARE COMPLETE,	
	111	2	CLTC	CVTS	CDDT ONLY	* TCP
- 4 DAY 3 HRS 15' 0"						
	181	1	C1TC	B1TM	PREPARE TM GSE PER V-38004, REPORT WHEN COMPLETE,	
	181	2	C1TC	BTMC	PREPARE TCE PER V-28009, REPORT WHEN COMPLETE,	
	118	3	CSAC	CSA8	CDDT ONLY	*
- 4 DAY 3 HRS 0' 0"						
	171	1	U2J2	C2TC	ENGINE/RECIRC SYSTEMS INSPECTION COMPLETE,	
	181	2	CITC	LPLX	START PTCS PREPS FOR S-II PU FACILITY INTERFACE CHECKS PER V-25159.	XB-189-31

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
4 DAY 2 HRS 30' 0"						
	121	1	CLTC	C1TC C2TC C4TC	INSTALL DRSCS FLIGHT CODE PLUGS IN LV	#
	181	2	C1TC	LLRS	INSTALL DRSCS FLIGHT CODE PLUG IN ML CODER PER V-38000 SECT 8, REPORT WHEN COMPLETE,	#
	181	3	C1TC	B1RF	INSTALL DRSCS FLIGHT CODE PLUGS IN STAGE DECODERS, REPORT WHEN COMPLETE,	#
		3-1			VERIFICATION BY LV-QAL	#
	171	4	C2TC	B2RF	INSTALL DRSCS FLIGHT CODE PLUGS PER V-30029 (M020) TASK 92, REPORT WHEN COMPLETE,	#
	161	5	C4TC	S4CE	INSTALL DRSCS FLIGHT CODE PLUGS PER V-30539, SECT E,	#
	181	6	C1TC	LLRS	CDDT ONLY	*
	181	7	C1TC	B1RF	CDDT ONLY	*
	161	8	C4TC	S4CE	CDDT ONLY	*
	171	9	C2TC	B2TM	CDDT ONLY	*
4 DAY 2 HRS 15' 0"						
	181	1	C1TC	V1MS	PREPARE VAB MEASURING STATION PER V-27098, REPORT WHEN COMPLETE,	
	181	2	CSAC	C1TC	CDDT ONLY	*

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> CD ONLY </div>						
- 4 DAY 2 HRS 15' 0"						
	121	3	C1TC	CLTC	CDDT ONLY	*
	118	4	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8 CSA9	CDDT ONLY	*
	181	5	C1TC	CTS1	CDDT ONLY	*
	181	6	C1TC	C1NE	VERIFY PULSE SENSORS CONNECTED, START S-1C PREPOWER CHECKS PER V-21038,	
	181	7	C1TC	C1MS	START RECORDER PREPS FOR S-1C POWER ON, REPORT WHEN COMPLETE,	
- 4 DAY 2 HRS 0' 0"						
	171	1	U2IE	G2TC	CLOSEOUT OF MSS PLATFORM #1 IS COMPLETE,	
	171	2	U2SE	G2TC	FINAL INSPECTION/CLOSEOUT OF S-II STAGE EXTERIOR IS COMPLETE,	
	171	3	U2QC	G2TC	REMOVAL OF ALL NON-FLIGHT HARDWARE FROM STAGE EXTERIOR IS COMPLETE,	
	121	4	G2TC	CLTC	S-II STAGE EXTERIOR INSPECTION/CLOSEOUT COMPLETE, MSS PLATFORM #1 IS NO LONGER REQUIRED FOR S-II SUPPORT,	
	171	5	G2TC	G2DP	VERIFY PD PULSE SENSORS CONNECTED,	
	171	5-1	C2TC	U2PM	VERIFY READY TO APPLY PM POWER.	N-157-25
	171	5-2	C2TC	C2NP	APPLY PM POWER.	N-157-25
	161	6	C4TC	R4PU	PU STRIP CHARTS TO ON	
	161	7	C4TC	C4PU	PU OVEN AND INVERTER POWER ON	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 4 DAY 2 HRS 0' 0"	161	8	C4TC	S4CE	VERIFY PD PULSE SENSORS CONNECTED	
- 4 DAY 1 HRS 35' 0"	121	1	CLTC	C1TC C2TC C4TC	VERIFY PROPELLANT DISPERSION PULSE SENSORS UNITS CONNECTED,	
	111	2	CLTC	CVTS	ADVISE SCO PERSONNEL THAT Q-BALL POWER IS COMING ON IN APPROXIMATELY FIVE MINUTES,	TCPI
- 4 DAY 1 HRS 30' 0"	121	1	CLTC	C1TC C2TC C4TC	CDDT ONLY	*
	121	2	CVTS	CLTC	CDDT ONLY	* TCPI
	121	3	CLTC	CQAA	Q-BALL HEATER POWER ON Q-BALL POWER ON THEN AUTO	TCPI
	181	4	C1TC	CHDA	VERIFY HDA SACS ELECTRO-MECHANICAL TESTS COMPLETE AND SECURE SYSTEM,	
	261	5	C2TC	BOSC	S-11 WILL BE READY FOR LH2 TANK N2 & O2 CONTENT AND DEWPOINT GHE SAMPLES (2 EACH) ON S/A 5 AND LUT 180 FT LEVEL AND RECIRCULATION SYSTEM DEWPOINT GHE SAMPLES (3 EACH) ON S/A 3 IN 30 MINUTES,	TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 1 HRS 15' 0"					CD ONLY	
	181	1	B1RF	C1TC	DRSCS FLIGHT CODE PLUG INSTALLATION COMPLETE ON STAGE	#
	181	2	LLRS	C1TC	DRSCS FLIGHT CODE PLUG INSTALLATION COMPLETED IN ML ENCODER	#
	171	3	B2RF	C2TC	FLIGHT CODE PLUGS INSTALLED	#
	161	4	S4CE	C4TC	FLIGHT CODE PLUGS INSTALLED	#
	121	5	CLTC	C1TC C2TC C4TC	VERIFY LV FLIGHT CODE PLUGS INSTALLED	#
	181	6	B1TM	C1TC	TM GSE PREPS COMPLETE,	
	181	7	BTMC	C1TC	TCE PREPS COMPLETE,	
	181	8	C1TC	C1NE	APPLY S-IC POWER PER V-21038. REPORT WHEN COMPLETE,	
	121	9	C1TC	CLTC	S-IC STAGE POWER IS ON,	
	181	10	C1TC	B1TM	START S-IC PCM DDAS CHECKS PER V-38004,	
- 4 DAY 1 HRS 0' 0"	188	1	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LM PROPELLANT LINE ROUTING, CONNECTION AND LEAK CHECK,	# TCPI
		1-1			*****WARNING***** * * THE CONTROL AREA FOR LM * * PROPELLANT LINE * * ROUTING, CONNECTION AND * * LEAK CHECK CONSISTS OF * * THE SLA INTERIOR, IU, * * S-JVB FORWARD AND A 10 * * FT RADIUS AROUND THE * * PURGE ADAPTER ON MSS * * LEVEL 3A, * * *****	# TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 4 DAY 1 HRS 0' 0"						
161		2	C4TC	C4ES	VERIFY PULSE SENSOR BRACKET REMOVAL COMPLETE	
171		3	C2TC	U2EO	VERIFY PULSE SENSOR REMOVAL COMPLETE,	
161		4	C4TC	C4PS	VERIFY TANK PURGE & SAMPLING COMPLETE AND PROPULSION SYSTEMS ARE READY FOR PU CALIBRATION CHECKS,	
161		5	C4TC	C4ES	START PU CALIBRATION CHECK PER V-21085 (XAPU),	
121		6	C4TC	CLTC	S-IVB TANK PURGE AND SAMPLING IS COMPLETE, STARTING PU CALIBRATIONS,	
181		7	CCLO	C1TC	SUPPORT OF S-II/S-IVB LOX TANK PURGING AND SAMPLING IS COMPLETE,	
181		8	CCLH	C1TC	SUPPORT OF S-II/S-IVB LH2 TANK PURGING AND SAMPLING IS COMPLETE,	
171		9	C2SP	C2TC	S-II PROPELLANT TANKS AND FEED SYSTEM PURGES AND SAMPLING COMPLETE, LOX & LH2 TANK ULLAGE PRESSURES 21.7 +/- 1.0 PSIA, READY FOR PU CALIBRATION,	
121		10	C2TC	CLTC	S-II PROPELLANT TANKS AND FEED SYSTEM PURGES AND SAMPLING COMPLETE, STARTING PU CALIBRATION,	
171		11	C2TC	U2PM	START FINAL PU CALIBRATION PER V-25151 (H013)	
		12			DELETED	XB-189-31
121		13	CLTC	C1TC	S-II AND S-IVB ARE READY TO SUPPORT LH2 FACILITY SYSTEM PURGE,	
181		14	C1TC	CCLH	START LH2 FACILITY SYSTEM PURGE PER V-35015,	
121		15	C1TC	CLTC	BENDIX SAMPLING IS REQUIRED TO SUPPORT LH2 FACILITY PURGE AND SAMPLING PER V-35015 (RD 41081 ANNEX R)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 1 HRS 0' 0"						
	261	16	CLTC	BOSC	BENDIX SAMPLING CREW IS REQUIRED TO SUPPORT LH2 FACILITY PURGE & SAMPLING PER V-35015 (RD 41081 ANNEX R)	TOPI
	181	17	C1TC	C1PE	START THRUST CHAMBER PREPARATIONS PER V-34012	
	181	18	C1TC	B1TM	VERIFY S-IC PCM DDAS PREPS COMPLETE, LV DRSCS TEST - GSE (CLOSED LOOP) -----	
	181	19	C1TC	BRFS	VERIFY ML-DRSCS/GSE PREPARED TO SUPPORT THE LV DRSCS TEST,	
	181	20	C1TC	RRSC	VERIFY READY TO SUPPORT DRSCS TEST,	
	121	21	C1TC	CLTC	DRSCS-GSE READY TO SUPPORT CLOSED LOOP TEST,	
	111	22	CLTC	CVTS	LV PROCEEDING WITH LV DRSCS GSE TEST, VERIFY CLEARANCE TO BRING UP LOCAL COMMAND CARRIER (PROTECTION REQUIRED), CPSS RELEASE DESTRUCT SYSTEM KEY TO CLVN	TOPI
	121	23	CLTC	CLVN	OBTAIN DESTRUCT SYSTEM KEY FROM CPSS,	
	188	24	CLTC	ALL	ALL PERSONNEL SUPPORTING LV DRSCS TEST GO TO CHANNEL 121 ACTIVE & MONITOR STAGE TO CHANNEL,	
	121	25	CLTC	C1DP C2DP C4DP	VERIFY ALL SWITCHES AUTO EXCEPT: PD RSCR ENABLE - OFF, SYSTEMS STATUS SWITCH OFF, S & A SWITCH SAFE,	
	121	26	CLTC	C4DP	PULSE SENSOR POWER ON,	
	121	27	CLTC	RRSC	RECORDERS - ON,	
	121	28	CLTC	CLVN	DESTRUCT SYSTEM TO ENABLE,	

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- 4 DAY 1 HRS 01 00						
		28-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS ON,	
121		29	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 TRANSFER -- EXTERNAL, THEN AUTO,	
121		30	CLTC	C1DP C2DP C4DP	VERIFY RSCR'S 1 & 2 PD BLOCKED ON,	
		30-1		CRSS	*** NOTE ALL RSCR'S PD BLOCKED ON	
121		31	CLTC	BRFS	SIG GEN SELECT -- #1 AUDIO SELECT -- POS, OFF VERIFY REMOTE MONITOR TO HYBRID	
121		32	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 GROUND POWER -- ON	
121		33	CLTC	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	
		33-1		CRSS	*** NOTE LIMITER VOLTAGES RECEIVED,	
121		34	CLTC	RRSC	RECORDERS -- FAST SPEED,	
121		35	CLTC	LLRS	ON YOUR MARK SEND CUTOFF COMMAND FOR 3 SEC,	
121		36	LLRS	ALL	3-2-1-MARK	
121		37	CLTC	RRSC	RECORDERS -- SLOW SPEED,	
121		38	CLTC	BRFS	VERIFY CUTOFF RECEIVED,	
		38-1		C1DP C2DP C4DP CRSS LLRS	*** NOTE CUTOFF RECEIVED,	

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CD ONLY						
4 DAY 1 HRS 0' 0"						
		38-2		C1CS	*** NOTE ENGINE CUTOFF NOT RECEIVED	
121	39	CLTC		C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 CHARGED AND ON INTERNAL POWER,	
		39-1		CRSS	*** NOTE ALL EBW'S CHARGED,	
121	40	CLTC		C1DP C2DP C4DP	EBW'S 1 & 2 - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED,	
		40-1		CRSS	*** NOTE ALL EBW'S NOT CHARGED,	
121	41	CLTC		BRFS	SIGNAL GENERATOR SELECT - POS #2	
121	42	CLTC		B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK	
		42-1		CRSS	*** NOTE ALL LIMITER VOLTAGES RECEIVED,	
121	43	CLTC		RRSC	RECORDERS - FAST SPEED,	
121	44	CLTC		LLRS	ON YOUR MARK SEND CUTOFF COMMAND FOR 3 SEC,	
121	45	LLRS		ALL	3-2-1-MARK	
121	46	CLTC		RRSC	RECORDERS - SLOW SPEED,	
121	47	CLTC		BRFS	VERIFY CUTOFF RECEIVED	
		47-1		CRSS C1DP C2DP C4DP	*** NOTE CUTOFF RECEIVED,	
		47-2		C1CS	*** NOTE ENGINE CUTOFF NOT RECEIVED	
121	48	CLTC		C1DP C2DP C4DP	VERIFY EBW'S 1 & 2 CHARGED AND ON INTERNAL POWER	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
- 4 DAY 30' 0"	161	1	C4TC	C4HY	VERIFY S-IVB HYDRAULIC SYSTEM PREPARATIONS AND FUNCTIONAL COMPLETE,	
	261	2	C2TC	BOSC	S-II WILL BE READY FOR A7-71 LH2 HEAT EXCHANGER GH2 & N2 CONTENT AND DEW POINT GHE SAMPLES (2 EACH) ON 180 FT LEVEL OF LUT IN 30 MINUTES.	TCPI
- 4 DAY 15' 0"	111	1	CLTC	CVTS	CDDT ONLY	* TCPI
	111	2	CLTC	CVTS	VERIFY CLEARANCE TO BRING UP THE LOCAL COMMAND CARRIER. VERIFY RANGE IS READY TO SUPPORT DRSCS CLOSED LOOP TEST WITH FLIGHT CODE PLUGS ON CHANNEL 121 (450 MHZ OPEN LOOP PROTECTION REQUIRED)	# TCPI
	121	3	CLTC	BRFS	VERIFY DRSCS FLIGHT CODE PLUG INSTALLED IN LCC DECODER PER V-38000 SECT 12 AND DRSCS GSE READY FOR RANGE TEST,	#
	121	4	CLTC	BRFS	CDDT ONLY	*
- 4 DAY 5' 0"	111	1	CLTC	CVTS	REQUEST MTPE MONITOR CH 121 FOR Q-BALL SIM COMMAND IN APPROXIMATELY 5 MINUTES, REQUEST MTPE SUPPLY Q-BALL SIM COMMAND READINGS TO VUMS ON CH. 148,	TOPI

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 01 00						
		11-3		CRSS	*** NOTE ALL RSCR'S PD BLOCKED ON	
121		12	CLTC	BTMC	TELEMETRY TAPE RECORDER - ON	
121		13	CLTC	BRFS	SIGNAL GENERATOR-SELECT #1, VERIFY REMOTE MONITOR TO HYBRID,	
121		14	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 TRANSFER EXTERNAL THEN AUTO,	
121		15	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 GROUND POWER - ON,	
		15-1		C1DP C2DP C4DP	*** NOTE RSCR'S 1 AND 2 POWER ON,	
121		16	CLTC	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK,	
		16-1		CRSS	*** NOTE ALL LIMITER VOLTAGES RECEIVED,	
121		17	CLTC	RRSC	RECORDERS - FAST SPEED,	
121		18	CLTC	SRO	ON YOUR MARK SEND CUTOFF ON CLOSED LOOP LINKS WITH CODER #1 FOR 3 SECONDS,	
121		19	SRO	ALL	3-2-1-MARK	
121		20	CLTC	RRSC	RECORDERS - SLOW SPEED,	
121		21	CLTC	CRSS	VERIFY CUTOFF RECEIVED AND ALL EBW'S CHARGED,	
		21-1		BRFS LLRS C1DP C2DP C4DP	*** NOTE CUTOFF RECEIVED	
		21-2		C1CS	*** NOTE ENGINE CUTOFF NOT RECEIVED	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 01 00		21-3		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 CHARGED AND ON INTERNAL POWER	
	121	22	CLTC	RRSC	RECORDERS - FAST SPEED,	
	121	23	CLTC	SRO	ON YOUR MARK SEND PD ON CLOSED LOOP LINKS WITH CODER #1 FOR 3 SECONDS,	
	121	24	SRO	ALL	3-2-1-MARK	
	121	25	CLTC	RRSC	RECORDERS - SLOW SPEED,	
	121	26	CLTC	CRSS	VERIFY PD RECEIVED AND EBW'S NOT FIRED	
		26-1		C1DP C2DP C4DP	*** NOTE PD RECEIVED AND EBW'S NOT FIRED	
		26-2		BRFS LLRS	*** NOTE PD RECEIVED	
	121	27	CLTC	C1DP C2DP C4DP	EBW'S 1 & 2 - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED,	
		27-1		CRSS	*** NOTE EBW'S NOT CHARGED,	
	121	28	CLTC	SRO	CONFIGURE RANGE STATION FOR CLOSED LOOP LINKS WITH CODER #2 OPERATION,	
	121	29	CLTC	BRFS	SIGNAL GENERATOR SELECT #2	
	121	30	CLTC	B1RF B2RF B4RF	VERIFY RSCR LIMITER VOLTAGES OK,	
		30-1		CRSS	*** NOTE RSCR LIMITER VOLTAGES RECEIVED,	
	121	31	CLTC	RRSC	RECORDERS - FAST SPEED,	
	121	32	CLTC	SRO	ON YOUR MARK SEND CUTOFF COMMAND ON CLOSED LOOP LINKS WITH CODER #2, FOR 3 SECONDS,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 01 00						
121		33	SRO	ALL	3-2-1-MARK	
121		34	CLTC	RRSC	RECORDERS - SLOW SPEED,	
121		35	CLTC	CRSS	VERIFY CUTOFF RECEIVED AND ALL EBW'S CHARGED,	
121		35-1	CLTC	C1DP C2DP C4DP BRFS LLRS	*** NOTE CUTOFF RECEIVED,	
		35-2		C1CS	*** NOTE ENGINE CUTOFF NOT RECEIVED	
		35-3		C1DP C2DP C4DP	*** NOTE EBW'S 1 & 2 CHARGED AND ON INTERNAL POWER,	
121		36	CLTC	RRSC	RECORDERS - FAST SPEED,	
121		37	CLTC	SRO	ON YOUR MARK SEND PD ON CLOSED LOOP LINKS WITH CODER #2, FOR 3 SECONDS,	
121		38	SRO	ALL	3-2-1-MARK	
121		39	CLTC	RRSC	RECORDERS - SLOW SPEED,	
121		40	CLTC	CRSS	VERIFY PD RECEIVED AND EBW'S NOT FIRED	
		40-1		C1DP C2DP C4DP	*** NOTE PD RECEIVED AND EBW'S NOT FIRED,	
		40-2		LLRS BRFS	*** NOTE PD RECEIVED,	
121		41	CLTC	C1DP C2DP C4DP	EBW'S 1 & 2 - EXTERNAL THEN AUTO AND VERIFY EBW'S NOT CHARGED,	
		41-1		CRSS	*** NOTE EBW'S NOT CHARGED,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 4 DAY 01 00"						
	121	42	CLTC	RRSC	RECORDERS-FAST SPEED,	
	121	43	CLTC	SRO	ON YOUR MARK SEND SAFE COMMAND FOR 3 SECONDS ON CLOSED LOOP LINKS,	
	121	44	SRO	ALL	3, 2, 1, MARK	
	121	45	CLTC	RRSC	RECORDERS-SLOW SPEED,	
	121	46	CLTC	CRSS	VERIFY S-II AND S-IVB SAFE COMMAND RECEIVED,	
		46-1		BRFS	*** NOTE S-II AND S-IVB SAFE COMMAND RECEIVED,	
		46-2		C2DP C4DP	*** NOTE RSCR'S 1 & 2 SAFE COMMAND RECEIVED	
		46-3		C1DP C2DP C4DP	*** NOTE RSCR'S 1 AND 2 REMAIN ON,	
		46-4		CRSS	*** NOTE ALL RSCR'S REMAIN ON,	
	121	47	CLTC	C1DP C2DP C4DP	RSCR'S 1 & 2 GROUND POWER - OFF AND VERIFY,	
		47-1		CRSS	*** NOTE ALL RSCR'S OFF,	
	121	48	CLTC	CLVN	DESTRUCT SYSTEM - OFF, DELIVER DESTRUCT SYSTEM KEY TO CPSS, REPORT WHEN COMPLETE,	
		48-1		C1DP C2DP C4DP	*** NOTE SAFETY BUS OFF,	
	121	49	CLTC	C1DP C2DP C4DP	SYSTEMS STATUS SWITCH - SAFE,	
	121	50	CLTC	BRFS	SIGNAL GENERATOR SELECT - STANDBY,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 23 HRS 0' 0"						
	111	11	CLTC	CVTS	REQUEST CPSS RELEASE LIFTOFF ENABLE KEY TO CLVN,	TCPI
	121	12	CLTC	CLVN	OBTAIN LIFTOFF ENABLE KEY FROM CPSS,	
	121	13	CLTC	C2TC C4TC CUTC	VEHICLE LIFTOFF ENABLE WILL BE TURNED ON VERIFY THIS SWITCH ACTION ACCEPTABLE AT THIS TIME, (S-II & S-IVB WILL NOT BE AFFECTED),	
	121	14	CLTC	CLVN	SIMULATE LIFTOFF ENABLE ON	
	181	15	C1TC	C1NE	VEHICLE LIFTOFF ENABLE IS ON	
	185	16	C1NE	C1NP	VERIFY VEHICLE LIFTOFF ENABLE ON,	
		16-1		C1NP	*** NOTE LIFTOFF INDICATION REMAINS OFF	
	185	17	C1NE	C1NK	REQUEST WASV AND PERFORM SEPARATION AND RETROCKET EBW TEST AND SWITCH SELECTOR REGISTER TEST,	
		18		C1NE	NOTE ----- PERFORM THE FOLLOWING SUBSEQUENCES ONLY IF WASV CANNOT BE REQUESTED,	
	185	18-1	C1NE	C1NK	ISSUE S-IC SWITCH SELECTOR CHANNEL 10 (ARM SEP, #1 AND RR #1 EBW FU),	
	185	18-2	C1NE	C1DP	VERIFY SEP F,U, #1 & #2 METERS INDICATE 2300 +/- 100 VDC	
	185	18-3	C1NE	C1DP	VERIFY RR F,U, #1 & #2 METERS INDICATE 2300 +/- 100 VDC,	
		18-4		C1NP	*** NOTE STAGE LOGIC ZERO - OFF,	
	185	18-5	C1NE	C1NK	ISSUE S-IC SWITCH SELECTOR CHANNEL 15, (S-IC/S-II SEP, #1),	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 23 HRS 0' 0"						
185		18-6	C1NE	C1DP	VERIFY RR#1 & SEP #1 EBW FIRED INDICATIONS ON,	
185		18-7	C1NE	C1DP	VERIFY RR #2 & SEP, #2 EBW FIRED INDICATIONS REMAIN OFF,	
185		18-8	C1NE	C1DP	VERIFY RR #1 AND SEP, #1 METERS FLUCTUATE TOWARD ZERO VOLTS,	
185		18-9	C1NE	C1DP	VERIFY RR #2 SEP, #2 METERS REMAIN CHARGED,	
185		18-10	C1NE	C1NP	SET STAGE LOGIC SWITCH TO RESET MOMENTARILY, VERIFY STAGE LOGIC ZERO INDICATION ON,	
185		18-11	C1NE	C1DP	VERIFY RR #1 & #2 AND SEP #1 & #2 METERS INDICATE ZERO VOLTS	
185		18-12	C1NE	C1DP	SET PULSE SENSOR SWITCH TO RESET MOMENTARILY, VERIFY RR AND SEP #1 EBW FIRED INDICATION OFF,	
185		18-13	C1NE	C1NK	ISSUE S-IC SWITCH SELECTOR CHANNEL 20, (ARM SEP #2 AND RR #2 EBW FU),	
185		18-14	C1NE	C1DP	VERIFY RR F,U, #1 & #2 METERS INDICATE 2300 +/- 100 VDC,	
185		18-15	C1NE	C1DP	VERIFY SEP, F,U, #1 & #2 METERS INDICATE 2300 +/- 100 VDC,	
185		18-16	C1NE	C1NK	ISSUE S-IC SWITCH SELECTOR CHANNEL 19 (S-IC/S-II SEPARATION #2),	
185		18-17	C1NE	C1DP	VERIFY RR #2 & SEP #2 EBW FIRED INDICATIONS ON,	
185		18-18	C1NE	C1DP	VERIFY RR #1 & SEP #1 EBW FIRED INDICATIONS REMAIN OFF,	
185		18-19	C1NE	C1DP	VERIFY RR #2 AND SEP, #2 METERS FLUCTUATE TOWARD ZERO VOLTS,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 23 HRS 01 00	185	18-20	C1NE	C1DP	VERIFY RR #1 AND SEP #1 METER REMAIN CHARGED,	
	185	18-21	C1NE	C1NP	SET STAGE LOGIC SWITCH TO RESET MOMENTARILY, VERIFY STAGE LOGIC ZERO INDICATION ON,	
	185	18-22	C1NE	C1DP	VERIFY RR #1 & #2 AND SEP #1 & #2 METERS INDICATE ZERO VOLTS	
	185	18-23	C1NE	C1DP	SET PULSE SENSOR SWITCH TO RESET MOMENTARILY, VERIFY RR #2 AND SEP, #2 EBW FIRED INDICATIONS OFF,	
	185	19	C1NE	C1NP	SET PLUGS IN OAT - OFF THEN AUTO, VERIFY INDICATION OFF,	
	185	20	C1NE	C1NP	SET SWITCH SELECTOR INHIBIT SWITCH TO INHIBIT,	
		20-1		C1EV	*** NOTE SWITCH SELECTOR INHIBIT - ON,	
	185	21	C1NE	C1NP	SET S-IC LIFTOFF ENABLE SWITCH TO - OFF, VERIFY INDICATION OFF,	
	185	22	C1NE	C1NP	EMERGENCY POWER TRANSFER TO OFF,	
	181	23	C1NE	C1TC	REQUEST CLVN TO SWITCH VEHICLE LIFTOFF ENABLE TO - OFF,	
	121	24	C1TC	CLTC	REQUEST VEHICLE LIFTOFF ENABLE TO OFF	
	121	25	CLTC	CLVN	LIFTOFF ENABLE OFF, DELIVER LIFTOFF ENABLE KEY TO CPSS, REPORT WHEN COMPLETE,	
	121	26	CLTC	C1TC C2TC C4TC CUTC	VEHICLE LIFTOFF ENABLE IS OFF	
	181	27	C1TC	C1NE	VEHICLE LIFTOFF ENABLE IS OFF	
	185	28	C1NE	C1NP	VERIFY VEHICLE LIFTOFF INDICATION OFF,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 23 HRS 01 00"						
	185	29	C1NE	C1NK	REQUEST WASV AND RUN SWITCH SELECTOR REGISTER TEST IF SEPARATION AND RETROROCKET EBW TEST WAS NOT RUN,	
	181	30	C1NE	C1TC	EBW FUNCTIONAL TEST COMPLETE,	
	121	31	C1TC	CLTC	S-1C EBW FUNCTIONAL TEST COMPLETE,	
- 3 DAY 22 HRS 45 00"						
	181	1	C1TC	C1IP	LOX & FUEL RACKS PWR ON, 400 HZ CAL PWR ON AND 28V RACS PWR ON,	
	151	2	CUTC	CUIP	MEASUREMENT TRANSFER AUTO, S-II BURN TEST & S-IVB COAST TEST - AUTO, (60X-607A6 - CCIS PANEL)	
	151	3	CUTC	BGCC	VERIFY/MOUNT MT01 TAPE,	
	121	4	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY FOR MT01 (LV MEASUREMENT SCAN)	
	121	5	CLTC	C4IP	PRELAUNCH CHECKOUT GROUP - ON	
	121	6	CLTC	CLIK	ISSUE S-IVB ALL RACS RUN,	
	121	7	CLTC	C2NP	RACS POWER - ON,	
	121	8	CLTC	CLIK	COMMAND RACS S-II ALL - ALL RUN,	
	188	9	CLTC	ALL	STAGE MEASUREMENTS WILL BE INTERRUPTED DURING MT01	
	121	10	CLTC	CLIK	REQUEST & EXECUTE MT01 (LV MEASUREMENT) SCAN VEHICLE OPTION)	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 3 DAY 22 HRS 45' 0"		10-1			NOTE ----- SWITCH ACTION IN NEXT STEP TO BE ACCOMPLISHED JUST PRIOR TO S-IC PORTION OF MT01 SCAN,	
	121	10-2	CLIK	C1IP	HARDWIRE SWITCH TO TELEMETER,	
- 3 DAY 22 HRS 15' 0"	118	1	CSAC	CSAD	CDDT ONLY	*
	181	2	C1TC	CTS1	CDDT ONLY	*
	118	3	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8 CSA9	CDDT ONLY	*
	181	4	CSAC	C1TC	CDDT ONLY	*
	121	5	C1TC	CLTC	CDDT ONLY	*
- 3 DAY 22 HRS 0' 0"	121	1	CLIK	CLTC	LV MT01 COMPLETE,	
	121	2	CLTC	C2NP	RACS POWER OFF,	
	121	3	CLTC	C1IP	HARDWIRE SWITCH TO GROUND,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
- 3 DAY 22 HRS 0' 0"						
	171	16	C2TC	R2SC	VERIFY READY FOR STAGE POWER,	
	171	17	C2TC	C2NP	APPLY S-II STAGE POWER PER V-21103 (B011) INCLUDING PM POWER,	
	181	18	C2TC	C1TC	REAPPLY PTCS POWER & VERIFY PTCS READY TO SUPPORT S-II PU FACILITY INTERFACE CHECKS,	
	171	19	C2TC	U2PM	START S-II PU FACILITY INTERFACE CHECKS PER V-30029 (M020) TASK 8,	
	161	20	C4TC	C4PU	PU OVEN AND INVERTER POWER OFF	
	161	21	C4TC	R4PU	PU STRIPCHARTS OFF	
- 3 DAY 21 HRS 30' 0"						
	181	1	C1TC	C1PE	START LEG STAT CHECKS,	
	121	2	CVTS	CLTC	CDDT ONLY	* TCP
	121	3	CLTC	CQAA	CDDT ONLY	* TCP
	181	4	CTS1	C1TC	CDDT ONLY	*
	118	5	CSAC	CSA1 CSA2 CSA4 CSA5 CSA6 CSA7 CSA8 CSA9 CSAD	CDDT ONLY	*
	118	6	CSAC	CHCU	CDDT ONLY	*
	181	7	CSAC	C1TC	CDDT ONLY	*
	181	8	C1TC	CPDC	CDDT ONLY	*

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
CD ONLY						
- 3 DAY 21 HRS 30' 0"	121	9	CLTC	C1TC C2TC C4TC CUTC	LUT LEVEL ZERO WILL BE CLEARED FOR ORDNANCE INSTALLATION IN 30 MIN, A PATHWAY FROM THE ELEVATORS WILL BE PROVIDED FOR ACCESS,	
	181	10	C1TC	C1PE	VERIFY ORDNANCE TRUCK HAS ARRIVED AT EAST SIDE OF PAD AND MOVE F-1 ENGINE IGNITORS AND RR PYROGEN INITIATORS TO ML ZERO LEVEL AS SOON AS ZERO LEVEL HAS BEEN CLEARED,	
- 3 DAY 21 HRS 0' 0"	188	1	CVTS	PA	LM PROPELLANT LINE ROUTING, CONNECTION AND LEAK CHECK IS COMPLETE, THE CONTROL AREA IS OPEN FOR NORMAL WORK,	# T
	171	2	U2PM	C2TC	S-11 PU FACILITY INTERFACE CHECKS ARE COMPLETE	
	171	3	C2TC	C2NP	REMOVE PM POWER	
	171	4	C2TC	U2PM	RECONNECT PU SYSTEM TO FLIGHT CONFIGURATION PER TCP V-30029 (M020), TASK 8	
	171	5	U2PM	C2TC	THE PU SYSTEM IS CONFIGURED FOR FLIGHT	
	171	6	C2TC	C2NP	APPLY PM POWER	
	181	7	L1IC	C1TC	RACS LOADING SYSTEM CHECKS ARE COMPLETE	
	181	8	C1TC	C1IP	28 VOLT RACS, 400 HERTZ GAL POWER AND LOX AND FUEL RACS OFF	
	111	9	CLTC	CVTS	CLEAR ML ZERO LEVEL FOR S-1C ORDNANCE OPERATIONS,	TOPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 3 DAY 21 HRS 0' 0"						
	188	10	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREAS FOR SPACE VEHICLE ORDNANCE OPERATIONS	TOPI
		10-1			*****WARNING***** * * THE CONTROL AREA FOR LV * * ORDNANCE OPERATIONS * * CONSISTS OF ML ZERO * * LEVEL, A CONTROLLED * * WALKWAY WILL BE KEPT * * OPEN TO THE ELEVATORS * * *****	# TCPI
		10-2			CDDT ONLY	* TCPI
	121	11	C1TC	CLTC	CDDT ONLY	*
	111	12	CLTC	CVTS	CDDT ONLY	* TCPI
	181	13	C1TC	CPDC	CDDT ONLY	*

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 20 HRS 50' 0"					CD ONLY	
	181	1	C2TC	C1TC	VERIFY S-II PTC'S PRA'S ARE ON,	
	181	2	C1TC	C2OU C2HU	VERIFY S-II PRA'S ARE ON,	
	171	3	C2TC	C2PU	START PROPELLANT SYSTEM FUNCTIONAL PER V-30029 (M020), TASK 10 (TEST PROGRAM QALS & QAPU WILL BE EXECUTED.) REPORT WHEN COMPLETE,	
- 3 DAY 20 HRS 45' 0"						
	111	1	CLTC	CVTS	REQUEST CPSS VERIFY ML LEVEL ZERO IS CLEAR FOR S-IC ORDNANCE OPERATIONS,	TOPI
	181	2	C1TC	C1PE	VERIFY ORDNANCE HAS BEEN DELIVERED TO ML ZERO LEVEL. (S-IC ENG IGNITORS AND RR PYROGEN INITIATORS)	
	121	3	CLTC	C1TC	START MECHANICAL INSTALLATION OF S-IC ENGINE HIGH VOLTAGE IGNITORS AND RETROROCKET PYROGEN INITIATORS	
	181	4	C1TC	C1PE	VERIFY LEG STAT CHECKS COMPLETE,	
	181	5	C1TC	C1PE	INSTALL RETROROCKET PYROGEN INITIATORS PER V-29003,	
	181	6	C1TC	C1PE	INSTALL S-IC ENGINE HIGH VOLTAGE IGNITORS PER V-29005,	
	181	7	C1TC	RRSC	RECORDERS - ON - SLOW SPEED,	
- 3 DAY 20 HRS 30' 0"						
	171	1	C2PU	C2TC	THE PM FUNCTIONAL TESTS ARE COMPLETE,	
	121	2	C2TC	CLTC	AUTO PROGRAM QALS & QAPU ARE COMPLETE	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 20 HRS 30' 0"	121	3	CLTC	CUTC	REQUEST BGCC TO REMOVE LINE PRINTER DATA FROM TEST PROGRAM QAPU FOR C2PU,	
	171	4	C2TC	C2NP	PLACE STAGE SELECT TO INHIBIT	
	181	5	C2TC	C1TC	REMOVE PTCS POWER	
	181	6	C1TC	LPLX	PTCS SUPPORT NO LONGER REQUIRED, SECURE SYSTEM, REPORT WHEN COMPLETE,	
	171	7	C2TC	C2NP	REMOVE PM POWER	
	121	8	CLTC	CUTC	PREPARE IU STAGE FOR RF SILENCE & CONTROLLED SWITCHING PER V-31062, APPENDIX C,	
	161	9	C4TC	C4SM	CONFIGURE ORDNANCE CONTROL PANELS PER V-30539, SECT F, REPORT WHEN COMPLETE,	
	171	10	C2TC	C2DP	CONFIGURE ORDNANCE AND PD PANEL PER V-30029 (M020) TASK 5, REPORT WHEN COMPLETE,	
	181	11	C1TC	C1NE	VERIFY CORRECT PANEL CONFIGURATION FOR ORDNANCE INSTALLATION PER V-21012 & V-21009	
	121	12	CLTC	C1TC C2TC C4TC	VERIFY ORDNANCE AND PD PANELS ARE IN CORRECT CONFIGURATION AND READY TO START ORDNANCE INSTALLATION,	
	161	13	C4TC	C4NP	INHIBIT SWITCH SELECTOR AND VERIFY,	
	161	14	C4TC	C4ES	VERIFY READY FOR CONTROLLED SWITCHING,	
	121	15	CLTC	C1TC C2TC C4TC CUTC	VERIFY READY FOR RF SILENCE & CONTROLLED SWITCHING PER TI-2-13 & INHIBIT SWITCH SELECTORS,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 20 HRS 30' 0"	111	16	CLTC	CVTS	REQUEST RF SILENCE, LV CONTROLLED SWITCHING AND LV/SC INTERFACE CONTROLLED SWITCHING IS NOW IN EFFECT	TOP1
		17			NOTE ----- THE FOLLOWING SWITCHES WILL BE CYCLED DURING ELECTRICAL CONNECTION OF THE ENGINE ORDNANCE; C1SP TCS ARM/SAFE SWITCH C1EN IGNITOR MONITOR BUS OFF/ON	
	188	18	CVTS	PA	RF SILENCE IS NOW IN EFFECT, CONTROLLED SWITCHING ON THE LV AND ACROSS THE LV/SC INTERFACE IS NOW IN EFFECT, SWITCHING REQUESTS ARE TO BE COORDINATED THROUGH TEST CONDUCTORS WITH CVTS,	TOP1
	121	19	C1TC	CLTC	REQUEST CPSS TO RELEASE TCS KEY TO C1SP	
	111	20	CLTC	CVTS	REQUEST CPSS TO RELEASE TCS KEY TO C1SP	TOP1
	121	21	CLTC	C1TC	START ELECTRICAL CONNECTION OF S-IC ENGINE HIGH VOLTAGE IGNITORS AND RR PYROGEN INITIATORS,	
	181	22	C1TC	C1NE	START ELECTRICAL CONNECTION OF SKIRT IGNITORS PER V-21014,	
	171	23	U2EO	C2TC	U2EO READY FOR S-IC/S-II PULSE SENSOR REMOVAL,	
	181	24	C2TC	C1TC	S-II READY FOR S-IC/S-II PULSE SENSOR REMOVAL,	
	181	25	C1TC	C1NE	HAVE U1FN MONITOR S-IC/S-II SEPARATION PULSE SENSOR REMOVAL PER V-21012,	

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<div> <div>▶</div> <div>▶</div> <div>▶</div> <div>▶</div> <div>▶</div> <div>▶</div> <div>▶</div> <div>CD ONLY</div> <div>◀</div> <div>◀</div> <div>◀</div> <div>◀</div> <div>◀</div> <div>◀</div> </div>						
- 3 DAY 20 HRS 0' 0"	181	1	C1TC	C1PE	VERIFY MECHANICAL INSTALLATION OF SKIRT IGNITORS COMPLETE,	
- 3 DAY 19 HRS 30' 0"	181	1	C1TC	C1PE	START FAIRING ACCESS PANEL INSTALLATION PER V-29003,	
- 3 DAY 18 HRS 30' 0"	181	1	C1TC	CPDC	CDDT ONLY	*
	121	2	C1TC	CLTC	CDDT ONLY	*
	111	3	CLTC	CVTS	CDDT ONLY	* TCPI
- 3 DAY 18 HRS 0' 0"	181	1	C1TC	C1PE	VERIFY IN WORK, OR START MECHANICAL INSTALLATION OF GAS GENERATOR IGNITERS,	
	181	2	C1TC	C1NE	VERIFY IN WORK OR START ELECTRICAL CONNECTION OF GG IGNITERS	
- 3 DAY 17 HRS 5' 0"	121	1	CLTC	C1TC C2TC C4TC	VERIFY READY FOR PROPELLANT DISPERSION AND SEPARATION ORDNANCE DELIVERY,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 3 DAY 17 HRS 45' 0"						
	121	2	CLTC	C1TC C2TC C4TC	START LEG STAT CHECKS AND HAVE ORDNANCE PERSONNEL REPORT TO SAFETY AT BASE OF EAST LOW RISE ELEVATOR IN 35 MINUTES,	
	111	3	CLTC	CVTS	REQUEST CTSC START LV PD, HYPERGOLS, HDA & SEPARATION ORDNANCE DELIVERY,	TCPI
	161	4	C4TC	C4SM	START ORDNANCE CREW RESISTANCE CHECKS PER V-30539, REPORT WHEN COMPLETE,	
- 3 DAY 17 HRS 30' 0"						
	181	1	C1TC	C1NE	VERIFY ELECTRICAL CONNECTION OF SKIRT IGNITORS COMPLETE,	
	181	2	C1TC	C1PE	VERIFY IN WORK, OR START THERMAL INSULATION CLOSE OUT OF SKIRT IGNITOR ACCESS DOOR,	
- 3 DAY 17 HRS 20' 0"						
	111	1	CLTC	CVTS	REQUEST A 50 FOOT RADIUS BE CLEARED AROUND THE ML EAST LOW RISE ELEVATORS AT THE GROUND & ML ZERO LEVEL FOR LV ORDNANCE DELIVERY,	TCPI
- 3 DAY 17 HRS 15' 0"						
	181	1	C1TC	C1PE	VERIFY MECHANICAL INSTALLATION OF GG IGNITORS COMPLETE,	
	181	2	C1TC	C1NE	VERIFY ELECTRICAL CONNECTION OF GG IGNITORS COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 17 HRS 15' 0"					▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀ ◀	
	181	3	C1TC	C1PE	VERIFY IN WORK OR START THERMAL INSULATION CLOSEOUT OF GG IGNITOR ACCESS DOORS,	
- 3 DAY 17 HRS 0' 0"	181	1	CCLH	C1TC	S-II & S-IVB SUPPORT OF LH2 FACILITY SYSTEM PURGES COMPLETED,	
	121	2	C1TC	CLTC	S-II & S-IVB SUPPORT OF LH2 FACILITY SYSTEM PURGES COMPLETED,	
	161	3	C4TC	C4PS	START PROPULSION SECURING PER V-35015,	
	188	4	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR SV ORDNANCE OPERATIONS,	# TCPI
		4-1			*****WARNING***** * * THE CONTROL AREA IS * * EXPANDED FOR LV * * INITIATOR DETONATOR * * HOOKUP AND CONSISTS OF * * THE ML, MSS, PAD APRON * * AND FLAME TRENCH, * * *****	# TPCI
	121	5	CVTS	CLTC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	# TCPI
	121	6	CLTC	C1TC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	#
	181	7	C1TC	CPDC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	#

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<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 3 DAY						
17 HRS						
01 00						
181		8	C1TC	C1PE C1NE	VERIFY S-IC ENGINE HIGH VOLTAGE IGNITORS INSTALLATION & CONNECTION COMPLETE,	
181		9	C1TC	C1PE	VERIFY INSTALLATION OF PYROGEN INITIATORS COMPLETE,	
121		10	C1TC	CLTC	S-IC ENGINE HIGH VOLTAGE IGNITORS INSTALLATION & CONNECTION AND RR INITIATOR INSTALLATION COMPLETE,	
111		11	CLTC	CVTS	S-IC ENGINE ORDNANCE CONNECTION COMPLETE,	TCPI
181		12	C1TC	C1SP	DELIVER TCS KEY TO CPSS	
171		13	C2TC	U2EO	VERIFY ALL PULSE SENSORS REMOVED EXCEPT PD,	
188		14	CVTS	PA	GDDT ONLY	* TCPI
		14-1			GDDT ONLY	* TCPI
261		15	CLTC	BOSC	VERIFY LV ORDNANCE DELIVERY COMPLETE,	TCPI
181		16	C1TC	L1LS	VERIFY HDA POWER CARTRIDGES, S-IC HYPERGOLS, S&A DEVICE AND RR EBW DETONATORS ARE AT THE PAD,	

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- 3 DAY 17 HRS 0' 0"	161	17	C4TC	S4OR	VERIFY ORDNANCE IS AT THE PAD,	
	171	18	C2TC	C2GP	SECURE GROUND PNEUMATICS, REPORT WHEN COMPLETE,	
	171	19	C4TC	C2TC	VERIFY S-II OBSERVER AVAILABLE FOR SEPARATION AND RETRO ROCKET DETONATOR INSTALLATION,	
- 3 DAY 16 HRS 30' 0"	111	1	CLTC	CVTS	REQUEST CPSS VERIFY AREA CLEAR FOR ORDNANCE INST AND SEQUENCER ARM KEY IS ON HAND,	TCPI
	121	2	CLTC	C1TC C2TC C4TC	START ORDNANCE INSTALLATION,	
	181	3	C1TC	C1PE	INSTALL RETRO-ROCKET EBW DETONATORS PER V-29003,	
	181	4	C1TC	LHDA L10E	INSTALL AND CONNECT HOLDDOWN ARMS EXPLOSIVE RELEASE POWER CARTRIDGES PER V-26329 AND V-21321,	
	181	5	C1TC	C1NE	DISCONNECT FLIGHT CABLE FROM INERT S&A DEVICES PER V-21009, MONITOR S-II FIRST PLANE SEPARATION SYSTEM DETONATOR CONNECTION,	
	171	6	C2TC	U2MO	INSTALL & CONNECT S-II SECOND PLANE SEP SYS AND ULLAGE ROCKET DETONATORS PER V-29049 (Z030) (CDDT) V-29023 (Z008) (CD)	
	171	7	C2TC	U2HO	INSTALL AND CONNECT S-II FIRST PLANE SEPARATION SYSTEM DETONATORS PER V-29049 (Z030) (CDDT) V-29023 (Z008) (CD)	

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- 3 DAY 16 HRS 30' 0"	171	8	C2TC	U2HO	START PREPS FOR S-II S&A INST PER V-29050 (K010) (CDDT) V-29024 (K008) (CD)	
	161	9	C4TC	C4SM	INSTALL S-IVB ORDNANCE DETONATORS AND CONNECT PER V-30539, SECT F,	
- 3 DAY 15 HRS 30' 0"	181	1	C1TC	C1PE	VERIFY MECHANICAL INSTALLATION OF RETRO-ROCKET EBW DETONATORS COMPLETE,	
	181	2	C1TC	C1NE	START RETRO-ROCKET EBW DETONATOR CONNECTION PER V-21012,	
	181	3	C1TC	LHDA	VERIFY MECHANICAL INSTALLATION OF HDA ORDNANCE COMPLETE,	
	181	4	C1TC	L10E	START ELECTRICAL CONNECTION OF HDA ORDNANCE PER V-21321 OR VERIFY ALREADY STARTED,	
- 3 DAY 15 HRS 0' 0"	181	1	C1PE	C1TC	REQUEST F-1 ENGINE HYPERGOLS DELIVERED TO ML ZERO LEVEL,	
- 3 DAY 14 HRS 45' 0"	181	1	C1TC	C1NE C1PE	INSTALL & CONNECT S&A PER V-21009 AND V-29003,	

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- 3 DAY 14 HRS 45' 0"		2			<p>NOTE -----</p> <p>THE FOLLOWING SWITCH WILL BE OPERATED DURING F-1 ENGINE HYPERGOL CARTRIDGE INSTALLATION. C1EN -- IGNITORS INSTALLED - ARM</p>	
	181	3	C1TC	C1PE	START HYPERGOL CARTRIDGE INSTALLATION PER V-29005,	
	171	4	U2MO	C2TC	S-11 SECOND PLANE SEPARATION SYSTEM AND ULLAGE ROCKET DETONATOR INSTALLATION AND CONNECTION HAVE BEEN COMPLETED,	
	171	5	U2HO	C2TC	S-11 FIRST PLANE SEPARATION SYSTEM DETONATOR INSTALLATION AND CONNECTION HAVE BEEN COMPLETED,	
	171	6	U2HO	C2TC	PREPS FOR S&A INSTALLATION HAVE BEEN COMPLETED,	
	171	7	C2TC	U2HO	INSTALL S&A PER V-29050 (K010) (CDDT) V-29024 (K008) (CD),	
- 3 DAY 14 HRS 30' 0"	161	1	C4TC	C4SM	VERIFY S-1VB ORDNANCE DETONATOR INSTALLATIONS AND CONNECTIONS COMPLETED,	
	161	2	C4TC	C4SM	START INSTALLATION OF S-1VB S&A PER V-30539, SECT F,	
	181	3	C1TC	C1NE	VERIFY S-1C RETRO-ROCKET EBW DETONATOR CONNECTIONS COMPLETED,	
	181	4	C1TC	C1PE	COMPLETE INSTALLATION OF S-1C FAIRING HEAT SHIELD ACCESS PANELS,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 13 HRS 30' 0"	181	1	C1TC	C1PE C1NE	VERIFY S-1C S AND A INSTALLATION AND CONNECTION COMPLETE,	
	121	2	C1TC	CLTC	S-1C S&A INSTALLATION IS COMPLETE,	
	171	3	U2HO	C2TC	S-1I S&A INSTALLATION IS COMPLETE,	
	121	4	C2TC	CLTC	S-1I S&A INSTALLATION IS COMPLETE,	
	161	5	C4TC	C4SM	VERIFY S-1VB S&A INSTALLATION COMPLETE	
	121	6	C4TC	CLTC	S-1VB S&A INSTALLATION IS COMPLETE,	
	121	7	CLTC	C1TC C2TC C4TC	VERIFY READY FOR S&A FUNCTIONALS,	
	188	8	CLTC	ALL	ALL PERSONNEL SUPPORTING LV S&A FUNCTIONALS GO TO CHANNEL 121 ACTIVE AND MONITOR STAGE TC CHANNEL	
					S&A FUNCTIONAL TEST -----	
		9			*****CAUTION***** * * UNDER NO CIRCUMSTANCES * * SHALL THE S&A DEVICES * * BE OPERATED AT MORE * * THAN FOUR COMPLETE * * CYCLES PER MINUTE, * * SOLENOID OVER-HEATING * * MAY RESULT FROM HIGHER * * FREQUENCY CYCLING, * * *****	
	121	10	CLTC	U1FN U2HO S4OR	VERIFY SHORTING PLUGS INSTALLED ON PROPELLANT DISPERSION DETONATORS AND CDP NOT CONNECTED TO S&A'S,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 13 HRS 30' 0"						
121		11	CLTC	U1FN U2HO S4OR	VERIFY S&A ROTOR MECHANICALLY IN SAFE POSITION,	
121		12	CLTC	C1DP C2DP C4DP	VERIFY S&A SAFE INDICATION ON,	
121		13	CLTC	C1DP C2DP C4DP	S&A TO ARM FOR 2 SECONDS THEN AUTO, VERIFY ARMED INDICATION ON - SAFE INDICATION OFF,	
121		14	CLTC	U1FN U2HO S4OR	VERIFY S&A ROTOR MECHANICALLY IN ARMED POSITION,	
121		15	CLTC	C1DP C2DP C4DP	S&A TO SAFE, VERIFY SAFE INDICATION ON - ARMED INDICATION OFF,	
121		16	CLTC	U1FN U2HO S4OR	VERIFY S&A ROTOR MECHANICALLY IN SAFE POSITION,	
121		17	CLTC	C1DP C2DP C4DP	S&A TO ARM FOR 2 SECONDS THEN AUTO, VERIFY ARMED INDICATION ON - SAFE INDICATION OFF,	
121		18	CLTC	U1FN U2HO S4OR	VERIFY S&A ROTOR MECHANICALLY IN ARMED POSITION,	
121		19	CLTC	C1DP C2DP C4DP	S&A TO SAFE, VERIFY SAFE INDICATION ON - ARMED INDICATION OFF,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 13 HRS 30' 0"	121	20	CLTC	U1FN U2HO S4OR	VERIFY S&A ROTOR MECHANICALLY IN SAFE POSITION,	
	121	21	CLTC	C1TC C2TC C4TC	S&A FUNCTIONALS ARE COMPLETE,	
	188	22	CLTC	ALL	ALL PERSONNEL WHO SUPPORTED S&A FUNCTIONALS RETURN TO ASSIGNED CHANNELS,	
- 3 DAY 13 HRS 15' 0"	181	1	C1TC	C1PE	VERIFY HYPERGOL CARTRIDGES ARE INSTALLED IN ENGINE,	
	181	2	C1TC	C1PE	START THERMAL INSTALLATION CLOSEOUT OF HYPERGOL ACCESS DOOR OR VERIFY IN WORK,	
	181	3	C1TC	C1PE C1NE	VERIFY S-IC ORDNANCE INSTALLATION COMPLETED,	
	181	4	C1TC	LHDA C1NE	VERIFY HOLDDOWN ARMS EXPLOSIVE RELEASE POWER CARTRIDGES INSTALLATION AND CONNECTION COMPLETED,	
	181	5	C1TC	C1PE	VERIFY INSTALLATION OF FAIRING HEAT SHIELD ACCESS PANELS COMPLETE,	
	121	6	CLTC	C1TC C2TC C4TC	VERIFY ALL ORDNANCE INSTALLATION COMPLETE,	
	111	7	CLTC	CVTS	LV CONTROLLED SWITCHING ACROSS LV/SC INTERFACE WILL BE LIFTED FOR LV POWER DOWN OPERATIONS	TCP!

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 3 DAY 13 HRS 15' 0"					CD ONLY	
188		8	CVTS	PA	CONTROLLED SWITCHING INCLUDING CONTROLLED SWITCHING ACROSS THE LV/SC INTERFACE IS LIFTED FOR LV POWER DOWN OPERATIONS, RF SILENCE IS STILL IN EFFECT,	TCPI
121		9	CLTC	C1TC C2TC C4TC CUTC	REMOVE STAGE POWER, REPORT WHEN COMPLETE,	
181		10	C1TC	C1NE	REMOVE S-IC STAGE POWER PER V-21097,	
181		11	C1TC	RRSC	DRSCS RECORDERS -- OFF	
171		12	C2TC	C2NP	REMOVE S-II STAGE AND ESE POWER PER V-21103 (B011),	
161		13	C4TC	C4ES	REMOVE S-IVB STAGE & GROUND POWER PER V-30539, APPENDIX C,	
161		14	CUTC	C4TC	VERIFY S-IVB READY FOR REMOVAL OF IU STAGE AND GROUND POWER,	
151		15	CUTC	CUNP	REMOVE IU STAGE AND GROUND POWER PER PROCEDURE V-21223, REPORT WHEN COMPLETE	
- 3 DAY 13 HRS 0' 0"						
121		1	C1TC	CLTC	S-IC STAGE POWER IS OFF	
121		2	C2TC	CLTC	S-II STAGE POWER IS OFF,	
121		3	C4TC	CLTC	S-IVB STAGE POWER IS OFF,	
121		4	CUTC	CLTC	IU STAGE POWER HAS BEEN REMOVED,	
111		5	CLTC	CVTS	LAUNCH VEHICLE POWER IS OFF,	TCPI
121		6	CLTC	CUTC	ESTABLISH CONTROL SWITCHING ACROSS THE INTERFACE PER V-31062 APPENDIX C,	

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- 3 DAY 13 HRS 0' 0"					CD ONLY	
	111	7	CLTC	CVTS	LV INTERFACE CONTROLLED SWITCHING IS IN EFFECT,	TCPI
	188	8	CVTS	PA	CONTROLLED SWITCHING ACROSS THE LV/SC INTERFACE IS NOW IN EFFECT, SWITCHING REQUESTS ARE TO BE COORDINATED THROUGH TEST CONDUCTORS WITH CVTS	TCPI
	181	9	C1TC	C1PE	VERIFY HYPERGOL CARTRIDGE ACCESS DOOR CLOSEOUT COMPLETE,	
	181	10	C1TC	V1MS	SECURE VEHICLE MEASURING GSE PER V-27098,	
	121	11	C1TC	CLTC	F-1 ENG HYPERGOL CARTRIDGE ACCESS DOOR CLOSEOUT COMPLETE,	
	111	12	CLTC	CVTS	LV ORDNANCE INSTALLATION IS COMPLETE	TCPI
	188	13	CVTS	PA	LV ORDNANCE INSTALLATION IS COMPLETE	TCPI
	188	14	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR CSM REMOTE RESISTANCE CHECKS,	# TCPI
		14-1			*****WARNING***** * * THE CONTROL AREA FOR * CSM REMOTE RESISTANCE * CHECKS CONSISTS OF THE * AREA CONFINED BY THE * COMPLEX PERIMETER FENCE * * *****	# TCPI
	188	15	CVTS	PA	CDDT ONLY	* TCPI
		15-1			CDDT ONLY	* TCPI

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 3 DAY 13 HRS 01 00"						
	181	16	C1TC	B1TM	SECURE TM GSE PER V-38004	
	181	17	C1TC	BTMC	SECURE TCE PER V-28009	
- 3 DAY 12 HRS 45 00"						
	121	1	CLTC	CUTC	SECURE LV ELECT SUPPORT EQUIPMENT PER V-81062, APPENDIX A, REPORT WHEN COMPLETE,	
- 3 DAY 12 HRS 01 00"						
	188	1	CVTS	PA	CSM ORDNANCE OPERATIONS ARE COMPLETE, RF SILENCE IS ENDED, CONTROLLED SWITCHING ACROSS THE LV/SC INTERFACE IS ENDED, THE CONTROL AREA IS OPEN FOR NORMAL WORK EXCEPT THE SLA INTERIOR, IU & S-IVB FORWARD AREA WHICH IS RESTRICTED TO ESSENTIAL PERSONNEL ONLY FOR RCS MANIFOLD LOADING,	# TOP
	121	2	CVTS	CLTC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	# TOP
	121	3	CLTC	C1TC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	#
	181	4	C1TC	CPDC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
3 DAY 11 HRS 15' 0"						
	188	1	CVTS	PA	LM RCS MANIFOLD LOADING IS COMPLETE, THE CONTROL AREA IS OPEN FOR NORMAL WORK,	# TCP
3 DAY 11 HRS 0' 0"						
	171	1	G2TC	G2NP	CDDT ONLY	*
3 DAY 9 HRS 0' 0"						
	171	1	U2AN	G2TC	CDDT ONLY	*
3 DAY 8 HRS 30' 0"						
	188	1	CVTS	PA	CDDT ONLY	# TOP
3 DAY 7 HRS 30' 0"						
	188	1	CVTS	PA	ALL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR PROPELLANT VENT LINE GD OPENING,	# TOP
		1-1			*****WARNING***** * THE CONTROL AREA FOR * * PROPELLANT VENT LINE GD * * OPENING CONSISTS OF THE * * SLA INTERIOR, IU & * * SWIV FORWARD * *****	# TOP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 3 DAY 7 HRS 01 0"	188	1	CVTS	PA	ALL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LM PROPELLANT TANK PRESSURIZATION, LM A/S AND D/S GOX TANK TO REGULATOR LOCK-UP AND CSM HELIUM SERVICING TO FLIGHT PRESSURE	# TCP
		1-1			*****WARNING***** * THE CONTROL AREA FOR LM * * PROPELLANT TANK * * PRESSURIZATION, LM A/S * * AND D/S GOX TANK TO * * REGULATOR LOCK-UP AND * * CSM HELIUM SERVICING * * TO FLIGHT PRESSURE * * CONSISTS OF THE AREA * * CONFINED BY THE COMPLEX * * PERIMETER FENCE * *****	# TOP
	121	2	CVTS	CLTC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	# TCP
	121	3	CLTC	C1TC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	#
	181	4	C1TC	CPDC	CHANGE THE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	#
	181	5	CCLH	C1TC	LH2 FACILITY SYSTEM PURGE IS COMPLETE	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ▶ ▶ ▶ ▶ ▶						
- 2 DAY 19 HRS 10' 0"						
	121	1	CLTC	CUTC	START LV ELECT SUPPORT PREPS PER V-31062, APPENDIX B,	
- 2 DAY 19 HRS 0' 0"						
	121	1	CVTS	CLTC	VERIFY READY FOR SERVICE ARM #9 HOOD RETRACT IN ONE HOUR,	TOP1
- 2 DAY 18 HRS 30' 0"						
	188	1	CVTS	PA	LM AND CSM GOX AND GHE SERVICING AND PROPELLANT LINE DISCONNECT IS COMPLETE, THE CONTROL AREA IS OPEN FOR NORMAL WORK,	# TCPI
	121	2	CLTC	C1TC C2TC C4TC CUTC	HAZARDOUS SC HYPERGOLIC VENT LINE OPERATIONS ARE COMPLETE, THE PAD IS OPEN FOR NORMAL WORK,	#
	121	3	CVTS	CLTC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	# TCPI
	121	4	CLTC	C1TC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	#
	181	5	C1TC	CPDC	CHANGE THE SMDPS FROM 2 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	#

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 DAY 18 HRS 10' 0"						
121		1	CUTC	CLTC	SUPPORT PREPS ARE COMPLETE, READY TO APPLY LSE SWITCH POWER.	
121		2	CLTC	CLTC	APPLY SWITCH POWER AND VERIFY.	
121		3	CLTC	CUTC	SWITCH POWER IS ON -- INITIALIZE DISCRETES.	
151		4	CUTC	BGCC	INITIALIZE DISCRETES PER V-22006 (PROGRAMS NT99 AND 98), REPORT WHEN SWITCH SCAN IS BEING DISPLAYED.	
- 2 DAY 18 HRS 0' 0"						
111		1	CLTC	CVTS	MSS PLATFORM #1 AVAILABLE FOR OPENING,	TOP!
121		2	CUTC	CLTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION.	
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 PROCEDURE V-21222, REPORT WHEN COMPLETE.	
121		6	CLTC	CLTC	SWITCH SCAN IS BEING DISPLAYED FOR VERIFICATION, REPORT WHEN SATISFACTORY.	
121		7	CLTC	CUTC	SWITCH SCAN IS SATISFACTORY, BRING UP COMPUTER.	
151		8	CUTC	BGCC	ENTER S GO AND PERFORM DATA LINK SWITCH OVER PER V-22006, REPORT WHEN COMPLETE.	
121		9	CUTC	CLTC	GROUND COMPUTER IS SUPPORTING.	
188		10	CLTC	ALL	GROUND COMPUTER IS SUPPORTING.	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 2 DAY 18 HRS 01 0"						
	121	11	CVTS	CLTC	DISCONNECT ENVIRONMENTAL CHAMBER FROM SC FOR BPC INSTALLATION, REPORT WHEN COMPLETE,	TOP!
	121	12	CLTC	C1TC	DISCONNECT ENVIRONMENTAL CHAMBER FOR BPC INSTALLATION, REPORT WHEN COMPLETE,	
	181	13	C1TC	CSA9	DISCONNECT ENVIRONMENTAL CHAMBER FROM SC FOR BPC INSTALLATION, REPORT WHEN COMPLETE	
- 2 DAY 17 HRS 45 0"						
	181	1	CSA9	C1TC	ENVIRONMENTAL CHAMBER HAS BEEN DISCONNECTED,	
	121	2	C1TC	CLTC	ENVIRONMENTAL CHAMBER HAS BEEN DISCONNECTED,	
	111	3	CLTC	CVTS	ENVIRONMENTAL CHAMBER HAS BEEN DISCONNECTED,	TOP!
- 2 DAY 17 HRS 01 0"						
	121	1	CVTS	CLTC	MSS PLATFORM #1 IS OPEN AND SECURE,	TOP!
- 2 DAY 15 HRS 01 0"						
	151	1	CUTC	UUVN	START MECHANICAL CHECKS PER V-31062, PART II,	
	171	2	C2TC	U2LN	CONTINUE ELEC INSP PER V-21253 (G060),	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 2 DAY 13 HRS 0' 0"	181	1	C1TC	LHDA	START CRD PRELOAD OPERATION PER V-26476,	#
- 2 DAY 11 HRS 0' 0"	121	1	CVTS	CLTC	RECONNECT ENVIRONMENTAL CHAMBER,	TCPI
	121	2	CLTC	C1TC	RECONNECT ENVIRONMENTAL CHAMBER,	
	181	3	C1TC	CSA9	RECONNECT ENVIRONMENTAL CHAMBER TO SC, REPORT WHEN COMPLETE,	
2 DAY 10 HRS 45' 0"	121	1	C1TC	CLTC	S/A 9 ENVIRONMENTAL CHAMBER RECONNECT COMPLETE,	
	121	2	CLTC	CUTC	SECURE LV ELECT SUPPORT EQUIPMENT PER V-31062, APPENDIX A, REPORT WHEN COMPLETE,	
- 2 DAY 10 HRS 0' 0"	151	1	CUTC	SUVE SUVN	DDDT ONLY	*
	151	2	CUTC	SUVE SUVN	START REMOVAL OF HYPERGOL COVERS,	#
	121	3	CUTC	CLTC	STARTING REMOVAL OF HYPERGOL COVERS,	#
		3-1	CLTC		*** NOTE LV WILL BE READY FOR MICROBIAL SAMPLING IN 1 HOUR,	#

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
<div style="text-align: center;"> ▶ ▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ </div>						
- 2 DAY 9 HRS 45' 0"						
	181	1	C1TC	C1NE	START LAUNCH CRITICAL NORMALLY OPEN RELAY VERIFICATION CHECKOUT PER V-21035, REPORT WHEN COMPLETE,	
	121	2	C1TC	CLTC	REQUEST LSCP SWITCH TO CHANNEL 185 TO SUPPORT C1NE ON RELAY VERIFICATION CHECKOUT,	
- 2 DAY 9 HRS 30' 0"						
	171	1	C2TC	U2MH U2FE	START PRECOUNT INSPECTION OF ENGINE ACTUATION SYSTEM PER V-30029 (M020) TASK 7. REPORT WHEN COMPLETE,	
- 2 DAY 9 HRS 0' 0"						
	151	1	UUVM	CUTC	HYPERGOL COVER REMOVAL IS COMPLETE.	
	121	2	CUTC	CLTC	HYPERGOL COVER REMOVAL IS COMPLETE.	#
		2-1		CLTC	*** NOTE READY FOR MICROBIAL SAMPLING	#
- 2 DAY 8 HRS 0' 0"						
		1		ALL	*** NOTE STAGE BATTERY ACTIVATION WILL BE STARTED AT THE DIRECTION OF CLTC 28,30 HOURS TOTAL TIME PRIOR TO SCHEDULED INSTALLATION PER THE FOLLOWING PROCEDURES:	
				S-1C	V-21018	
				S-1I	V-21101 (B012)	
				S-1VB	V-21322, V-21323 & V-21324	
				IU	IV-21254	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
▶ ▶ ▶ ▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀						
- 2 DAY 8 HRS 0' 0"						
	151	2	UUVN	CUTC	MECHANICAL CHECKS ARE COMPLETE	
	121	3	CLTC	CUTC	START IU ENGINEERING WALK AROUND PER V-31062, PART II, REPORT WHEN COMPLETE,	
- 2 DAY 5 HRS 30' 0"						
	171	1	C2TC	U2FE U2MH	VERIFY EAS PRECOUNT INSPECTION IS COMPLETE,	
- 2 DAY 4 HRS 30' 0"						
	171	1	C2TC	U24A	VERIFY/CONNECT FLEXHOSES TO P70 & P71 STAGE POSITIVE PRESSURE FITTINGS,	
- 2 DAY 4 HRS 0' 0"						
	181	1	C1TC	LHDA	VERIFY CRD PRELOAD OPERATIONS COMPLETE,	#
- 2 DAY 3 HRS 30' 0"						
	181	1	C1TC	CCLO	START TOTAL LOX SYSTEM DEWPOINT CHECKS PER V-25344,	
	121	2	C1TC	C2TC	VERIFY PERSONNEL AVAILABLE TO MONITOR S-II LOX TANK PRESSURE IN SUPPORT OF LOX SYSTEM DEWPOINT CHECKS,	
	171	3	C2TC	U24A	MONITOR S-II LOX TANK PRESSURE DURING BOEING LOX SYSTEM DEWPOINT CHECKS,	

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- 2 DAY 3 HRS 0' 0"					CD ONLY	
	171	1	C2TC	U2EC	START S-11 ECS INSPECTION & VERIFICATION PER V-30029 (M020) TASK 11, REPORT WHEN COMPLETE,	
- 2 DAY 2 HRS 30' 0"						
	171	1	U2EC	C2TC	S-11 ECS INSPECTION IS COMPLETE,	
- 2 DAY 2 HRS 0' 0"						
	181	1	C1TC	LEBS	SCAN EMERGENCY BACKUP BATTERY CELLS AND RECHARGE AS REQUIRED PER V-21439, REPORT WHEN COMPLETE,	
	121	2	GUTC	CLTC	IU ENGINEERING WALK AROUND IS COMPLETE,	
- 2 DAY 0 HRS 30' 0"						
	188	1	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR LM SHE SERVICE OPERATIONS,	TCP I
		1-1			*****WARNING***** * * THE CONTROL AREA FOR LM * * SHE SERVICE CONSISTS OF * * THE LM DESCENT AREA * * INTERNAL TO THE SLA, * * IU AND S-IVB FORWARD * * *****	TCP I

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
1 DAY 23 HRS 0' 0"						
	121	1	CVTS	CLTC	OIS AND PHONES ARE BEING DISCONNECTED FROM FALLBACK TRAILERS (CD ONLY),	TCPI
- 1 DAY 21 HRS 0' 0"						
	111	1	CLTC	CVTS	VERIFY PLATFORM #2 OF MSS IS BELOW STATION 2900 (FOR THEODOLITE CHECKS)	TCPI
	188	2	CVTS	PA	LM SHE INITIAL FILL IS COMPLETE, THE CONTROL AREA IS OPEN FOR NORMAL WORK,	TCPI
	151	3	CUTC	SUMM	START INITIAL INSTALLATION OF IU THERMAL ISOLATION BOTTOM SHROUNDS PER V-31062. PART II	
- 1 DAY 20 HRS 0' 0"						
	181	1	CLTC	L1LS	START FIRST LUT WALKDOWN, REPORT WHEN COMPLETE,	
		1-1			LV-QAL PARTICIPATION REQUIRED,	
- 1 DAY 19 HRS 0' 0"						
	151	1	CUTC	LGCC	VERIFY SYSTEM CONFIGURED TO START ML DCE SELF TEST,	
		1-1			*****CAUTION***** * * DO NOT PERFORM ML DCE * * TEST UNTIL VERIFICATION * * TO PROCEED HAS BEEN * * OBTAINED FROM CLTC, * * *****	
	121	2	CUTC	CLTC	READY TO START ML DCE TEST, REQUEST ALL ML GROUND POWER BE REMOVED,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 DAY 19 HRS 01 00						
111		3	CLTC	CVTS	DELUGE PURGE PANEL WILL BE POWERED DOWN FOR THE NEXT 30 MINUTES, DELUGE PURGE CAPABILITY WILL BE AVAILABLE WITHIN 30 SECONDS IF NEEDED,	TCPI
121		4	CLTC	C1TC	SECURE 42D100 POWER,	
181		5	C1TC	CSPP	SECURE 42D100 POWER PER V-21194,	
121		6	CLTC	C1TC C2TC C4TC CUTC	VERIFY ALL ML GROUND POWER IS REMOVED,	
151		7	CUTC	CCPM	POWER OFF 400 HZ POWER, REPORT WHEN COMPLETE,	
151		8	CUTC	CLVN	ML DCE TO COMPUTER MODE VERIFY MTOAD INDICATION IS OFF ML COMPUTER INHIBIT - AUTO	
121		9	CLTC	CUTC	START ML DCE CHECKOUT,	
		9-1	CLTC CLVN CSPP		NOTE ----- DURING ML DCE CHECKOUT, CLVN AND CSPP WILL RESPOND AS FOLLOWS UPON COMMAND FROM CLTC TO RESTORE DELUGE PURGE SYSTEM: 1. CLVN - ML DCE SEQUENCER POWER - OFF 2. CSPP - APPLY 42D100 POWER,	
151		10	CUTC	LGCC	START DCE SELF TEST,	
171		11	C2TC	U2MU	START S-11 PREPS FOR RELEASE SENSOR CHECKS (V-31045) PER V-30029 (M020) TASK 24, REPORT WHEN COMPLETE,	

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 DAY 18 HRS 30' 0"	151	1	LGCC	CUTC	ML DCE SELF TEST IS COMPLETE,	
	151	2	CUTC	CLVN	ML DCE TO MANUAL MODE,	
	151	3	CUTC	CLVN	APPLY 400 HZ POWER, REPORT WHEN COMPLETE,	
	121	4	CUTC	CLTC	ML DCE CHECKOUT IS COMPLETE,	
	121	5	CLTC	C1TC	APPLY 42D100 POWER,	
	181	6	C1TC	CSPP	APPLY LSE 42D100 POWER PER V-21194, COMPLETE,	
	111	7	CLTC	CVTS	DELUGE PURGE PANEL IS POWERED UP	TCP!
	181	8	L1LS	C1TC	LUT WALKDOWN COMPLETE,	
		8-1			VERIFICATION BY LV-GAL	
- 1 DAY 17 HRS 30' 0"	181	1	CCLO	C1TC	TOTAL LOX SYSTEM DEWPOINT CHECKS PER V-25344 ARE COMPLETE,	
	171	2	C1TC	C2TC	LOX SYSTEM DEWPOINT CHECKS COMPLETE, S-II LOX TANK PRESSURE MONITOR NO LONGER REQUIRED,	
- 1 DAY 17 HRS 0' 0"	171	1	C2TC	U2LN	TERMINATE V-21253 (G060) TEMPORARILY - REPORT STATUS,	
	188	2	CVTS	PA	ALL NON-ESSENTIAL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR CSM CRYO SERVICING,	TCP!

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TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
- 1 DAY 17 HRS 01 00		2-1			*****WARNING***** * * THE CONTROL AREA FOR * CSM LO2 AND LH2 TANKING * AND PRESSURIZATION IS * AN 1100 FOOT RADIUS * AROUND THE SPACE * VEHICLE, * * LV COMPUTER MAINTENANCE * PERSONNEL ARE PERMITTED * TO REMAIN IN ML ROOMS * 10 AND 15A DURING CSM * CRYO SERVICING, * *****	TCPI
121	3	CVTS	CLTC	SC0	PERSONNEL READY FOR SMDPS CHANGE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	TCPI
121	4	CLTC	C1TC	SC0	PERSONNEL READY FOR SMDPS TO BE PUT IN THE TWO SWITCH MODE, REPORT WHEN COMPLETE,	
101	5	C1TC	CPDC		CHANGE SMDPS FROM 2 SWITCH 1 VALVE MODE TO 2 SWITCH MODE, REPORT WHEN COMPLETE,	
	1				NOTE ---- THE FOLLOWING SEQUENCES ARE TO BE PERFORMED AFTER THE PAD IS CLEAR OF ALL NON-ESSENTIAL PERSONNEL,	
121	1-1	CVTS	CLTC		READY FOR SMDPS CHANGE TO 1 SWITCH MODE, REPORT WHEN COMPLETE,	TCPI
121	1-2	CLTC	C1TC		CHANGE THE SMDPS TO 1 SWITCH MODE, REPORT WHEN COMPLETE,	

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					▶ ▶ CD ONLY ◀ ◀ ◀ ◀ ◀ ◀ ◀ ◀	
181		1-3	C1TC	CPDC	CHANGE THE SMDPS TO 1 SWITCH MODE, REPORT WHEN COMPLETE.	
		1			NOTE -----	TCP1
					THE FOLLOWING SEQUENCES WILL OCCUR AT APPROXIMATELY T-1 DAY 9 HRS, BUT MAY CHANGE REAL TIME DUE TO SPACECRAFT OPERATIONS,	#
188		2	CVTS	PA	ALL PERSONNEL ARE TO CLEAR THE CONTROL AREA FOR CSM LOX AND LH2 TANK PRESSURIZATION,	# TCP1
		2-1			*****WARNING***** * * THE CONTROL AREA FOR * * CSM LO2 AND LH2 TANK * * PRESSURIZATION CONSISTS * * OF THE AREA CONFINED BY * * THE COMPLEX PERIMETER * * FENCE, * * *****	# TCP1
					NOTE -----	TCP1
					THE FOLLOWING SEQUENCES WILL OCCUR AT APPROXIMATELY T-1 DAY 8 HRS, BUT MAY CHANGE REAL TIME DUE TO SPACECRAFT OPERATIONS,	
188		1	CVTS	PA	CDDT ONLY	# TOP
188		2	CVTS	PA	CSM LO2 AND LH2 CRYO PRESSURIZATION IS COMPLETE, THE CONTROL AREA, EXCEPT FOR THE SLA INTERIOR, CM INTERIOR, IU & S-1VB FORWARD, IS OPEN FOR NORMAL WORK,	# TOP

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
121		3	CVTS	CLTC	CHANGE THE SMDRS FROM 1 SWITCH MODE TO 2 SWITCH 1 VALVE MODE, REPORT WHEN COMPLETE,	TCPI
121		4	CLTC	C1TC	REQUEST CPDC TURN PANEL POWER OFF TO DISARM THE GN2 DELUGE SYSTEM AND CLOSE GN2 INLET HANDVALVE (2 SWITCH 1 VALVE MODE), REPORT WHEN COMPLETE,	
181		5	C1TC	CPDC	TURN PANEL POWER OFF TO DISARM THE GN2 DELUGE SYSTEM AND CLOSE GN2 INLET HANDVALVE, VERIFY SMDRS IN 2 SWITCH 1 VALVE MODE,	
		5-1	LPDC CPDC		NOTE ----- BETWEEN NOW AND START OF LV PROPELLANT LOADING, CPDC SHOULD STANDBY FOR EMERGENCY ARMING OF THE SMDRS, IN THE EVENT OF EMERGENCY EVACUATION OF THE LUT, LPDC MUST OPEN THE GN2 INLET VALVE TO THE SMDPP PRIOR TO EVACUATING, CPDC WILL TURN HIS PANEL POWER ON AT THE DIRECTION OF CVTS, CLTC OR C1TC ONLY, THIS DIRECTION WILL BE GIVEN ONLY AFTER VERIFICATION THAT IU AND SC HAVE BEEN CLEARED OF PERSONNEL,	
188		6	CVTS	PA	LM RCS FINAL MANIFOLD LOADING IS COMPLETE, THE SLA INTERIOR, IU AND S-1VB FORWARD AREAS ARE OPEN FOR NORMAL WORK,	# TCPI
161		1	C4TC	S4MA	START FLIGHT BATTERY PREPS FOR TRANSFER TO PAD PER V-30539 SECT H,	

1 DAY
5 HRS
151 00

TIME	COMM. CH.	SEQUENCE	COMMAND STA.	RESPONSE STA.	DESCRIPTION	REMARKS
					CD ONLY	
- 1 DAY 5 HRS 0' 0"						
	261	1	C1TC	BOSC	VERIFY FOUR SCOTT AIR PACKS IN TBC TRAILER 009 FOR BATTERY REMOVAL CREW,	TCPI
	121	2	CVTS	CLTC	CDDT ONLY	* TCP
	121	3	CLTC	C4TC	CDDT ONLY	*
	161	4	C4TC	S4MF	CDDT ONLY	*
- 1 DAY 4 HRS 30' 0"						
	121	1	CLTC	C2TC C4TC CUTC	THIRTY MINUTES PRIOR TO PICKING UP THE COUNT AT T-1 DAY, 4 HRS, PERFORM THE FOLLOWING THREE SEQUENCES,	
	151	1-1	CUTC	CUNE PUPL	VERIFY IU BATTERY ACTIVATION COMPLETE AND TRANSFER BATTERIES TO PAD,	
	161	1-2	C4TC	S4CE S4MA	VERIFY S-IVB FLIGHT BATTERY ACTIVATION COMPLETE AND TRANSFER BATTERIES TO PAD,	
	171	1-3	C2TC	C2NP	VERIFY S-II FLIGHT BATTERY ACTIVATION COMPLETE AND TRANSFER BATTERIES TO PAD,	
- 1 DAY 4 HRS 0' 0"						
	188	1	CLTC	ALL	ALL PERSONNEL PROCEED WITH LV COUNTDOWN ON PAGE 30 OF VOLUME II,	

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END OF TEST PROCEDURE V-20060, VOL I

RELEASED PROCEDURE DISTRIBUTION

RECEIVER	SYMBOL	COPIES
NASA		
TAYLOR, C.	AP-SVO-1	7
PERRIS, J.	APS-SVO-3, HQS 3106	12
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SMITH, W. L.	DD-MDD-4	4
ROSS, M.	DF-PIO-1	5
PORTER, CAPT.	DD-KSC, HQS 4TH FLOOR	1
TAYLOR, MAJOR	ETOOT1	2
BRAY, D.	ETOSO	3
	FC-HSC, AIR EXPRESS	50
MOORE, BOB		
RANKIN, T.	I-MO-0, BLDG 4663 MSFC	35
BRIDWELL, C. R.	I-MO-0, BLDG 4202, MSFC	1
COONCE, J. M.	IN-MSD-32, LCC 2P11	10
LOVAN, J. G.	IN-TEC, CIF 392	40
DALEY, R. C.	IS-DGC-2A, LCC 1R4	2
RAFANELLI, L. R.	IS-PEM	1
HARDIN, D. W.	IS-PEM-42, LCC 1P10	1
KAPRYAN, W. J.	IS-TSM, HQS 3503	1
MOSER, R. E.	LO, O&C 2038	1
NETHERTON, C. B.	LO-PLN, O&C 2038	1
TEST SUPERVISORS	LO-PLN, O&C 2041	7
BLUM, F. W.	LO-PLN, LCC 4P12	1
SCHLER, M.	LS-ENG-7	1
GRUENE, H. DR.	LS-ENG-22, O&C 3293	2
PICKETT, A. J.	LV, O&C 2032	2
RIGELL, I. A.	LV-A, O&C 2024	1
PAUL, H. C.	LV-B, O&C 2032	2
BRYAN, F.	LV-CAP, VAB MM12	3
JAFFERIS, W.	LV-ENG-A, O&C 2032	1
LEALMAN, R. E.	LV-ENG-C, O&C 2017	1
CHAMBERS, M.	LV-GDC, O&C 2010	2
CHANDLER, W. O.	LV-GDC-1, VAB MM3	6
WHITESIDE, C. A.	LV-GDC-2, LCC 2R26	12
KELLY, D.	LV-GDC-3, VAB 2D10	3
OVERSTREET, C. F.	LV-GDC-4, LCC 2R26	6
JONES, D. R.	LV-GDC-22, LCC 2R26	3
CLAY, R. P.	LV-GDC-23, LCC 2R26	3
DAVIDSON, J. K.	LV-GDC-24, LCC 2R26	3
SUMNER, K. W.	LV-GDC-25, VAB 10E19	3
MC CREARY, M. E.	LV-GDC-26, LCC 2R26	3
WHEELER, W. P.	LV-GDC-27, LCC 2R26	4
REGISTER, B. J.	LV-GDC-28, VAB 6D24	5
HARPER, R. Z.	LV-GDC-31, VAB 3D6	1
PERKINSON, J. A.	LV-GDC-31, VAB 3D8	3
ELY, G. W.	LV-GDC-32, VAB 3D6	1
MURRAY, G.	LV-GDC-33, VAB 3D6	2
EDWARDS, M. D.	LV-GDC-33, VAB 3D9	2
HUFFMAN, B. R.	LV-INS, O&C 2121	1
CONAWAY, J. D.	LV-INS, O&C 2121	1
MC MATH, D.	LV-INS-1, LCC 2R19	4
FITZGERALD, J. J.	LV-INS-1, LCC 2R23	1
BIZZELL, J. S.	LV-INS-2, LCC 2R23	3
BLANCHARD, L. C.	LV-INS-11, LCC 2R23	1
GRUNENFELDER, A. C.	LV-INS-12, LCC 2R23	2
RILEY, E. O.	LV-INS-13, LCC 2R23	2
JOROLAN, E.	LV-INS-21, VAB 27E10	13
FANNIN, L. E.	LV-INS-22, LCC 2R23	5
SCOVILLE, D. A.	LV-REC, O&C 2014	3
HUMPHREY, J. T.	LV-REC-1, LCC 2R12	1
CORN, G. F.	LV-REC-2, LCC 2R12	17
DELA ROSA, M. J.	LV-REC-3, LCC 2R11	15
ROBINSON, G. H.	LV-REC-11, LCC 2R12	6
O'HARA, A.	LV-REC-12, LCC 2R12	6
OGLESBY, T. L.	LV-OMO, O&C 2022	1
HART, J. J.	LV-OMO-1, LCC 2R17	1
NAGEL, C.	LV-OMO-2, LCC 2R18	1
BALTAR, J.	LV-OMO-2, CIF 307	10
YOUHANS, R. E.	LV-OMO-3, LCC 2R18	5
WILLIAMS, M. C.	LV-OMO-3, LCC 2R18	1
TALONE, J.	LV-PLN-1, O&C 2006	2
COOK, M. D.	LV-PLN-12B, LCC 2R16	1
ABBOTT, R. G.	LV-PLN-13A	2
OSWALD, D. R.	LV-OAL, VAB 2288	9
MADERY, G. L.	LV-OAL, O&C 2111	3
BELL, J. M.	LV-OAL-4, O&C 2112	2
MC PHERSON, G.	LV-TMO-A, LCC 2R18	8
HICKEY, W. P.	MAS, NASA HQS, ZIP 20546	1
MSFC REPOSITORY	MAS-4, NASA HQS, ZIP 20546	1
LEE, C. M.	MS-D, HOSC	1
(MISSION DIRECTOR)	MSO 3121	2
CAHALAN, P. S.	BOX 2500, DAYTONA BEACH	1
RANGE OPERATIONS		
KING, J.	RCO-CKAFS, M/U 5050	2
BURNS, M.	PA-P18, KSC M7 657	1
SELLS, H. R.	PM-SAT-T, BLDG 4201, MSFC	1
JONES, B.	S&E-ASTN-50	4
SMITH, R.	S&E-ASTR-61	5
MC GOUGH, J. T.	S&E-CSE-L	5
BRANTELY, R. A.	SF-OPN	1
COOK, J. P.	SO-FAC-1A, LCC 1R18	4
PENLAND, D. T.	SO-TSD-402, LCC 1P9	1
BARFUS, J. N.	TS-NTS-2	3
WHITE, W. W.	TS-TSM-5, LCC 1R15	2
WILLIAMS, F. E.	USB, BLDG 1494, BUFC	3
KIMERY	PM-KM-L	8
PYLES, H. R.	PM-MO-E	1
	SO-OPN-1, LCC 1R18	1

EXTRAS AND 2

SUPPORT CONTRACTORS

COMPTON, H.	BEN-2350 (BENDIX)	5
AMES, M. H.	BEN 2110 (BENDIX)	2
HENDERSHOTT, V.	HQS 2520	2
CONRAD, M.	LC-34, TRLR 195 (CCSD)	5
LUCKETT, A. W.	LCC 1R148 (FEC)	2
SMITH, R. K.	VAB 10E7 (GE)	8
ANDERSON, B. C.	VAB 3N9 (ROCKETDYNE)	7
DABLADE, L. A.	VAB 2N7 (ROCKETDYNE)	3
JANES, J. V.	VAB 3A8 (TECH)	2
HARRIS, B. J.	TWA 2222, LCC 1P25	3
REED, B.	HQ 2549 (BENDIX)	1

STAGE CONTRACTORS

CLOYD, L.	ZK-49	2
JARED, L.	DEPT 817, ZK28 (NR LV) VAB	135
BROWN, D.	VK-23, VAB 27B9 (MDC)	130
ROSS, J. C.	VAB 2D5 (IBM)	155

BOEING

ADAMS, R. H.	VAB 6D17	15
BAGGETT, J. A.	VAB 6B15	17
BROWN, W. C.	VAB 2D9	1
CALVETTO, R. S.	VAB 6D15	15
CATER, R. B.	VAB 6B9	3
CHANDLER, J. W.	VAB 2L8	3
CROWLEY, E. J.	VAB 6B8	6
ECKHOFF, J. L.	VAB 6E20	8
ENGMAN, F. L.	VAB 6B21	3
GANTT, L.	LCC 2P23	5
GEORGE, J. A.	VAB 2E9	30
GOFF, G. B.	VAB 2L9	1
HARDCASTLE, H. S.	VAB 6B20	1
HAWK, G. A.	VAB 1E25	5
HENDERSON, H. H.	VAB 6B13	13
HOLLAND, R. E.	VAB 3E16	10
HOLMES, W. C.	VAB 2L10	2
JOYCE, M. G.	VAB 2L6	3
KESSELRING, G. W.	VAB 6D21	12
LOONEY, J. H.	VAB 6B21	6
LYONS, B. P.	VAB 2E7	1
MC CRANEY, J. L.	VAB 2E7	10
MC INNIS, F. W.	VAB 10B12	2
SCOTT, N. H.	VAB 3E9	2
NEAL, E. T.	VAB 2L1	30
SACK, A.	VAB 6D19	1
SAUBER, P. T.	VAB 3E9	1
STEPHENS, C. H.	VAB 6D21	10
TUCKER, C. W.	VAB 2E8	15
YANCEY, J. L.	LCC 2P26	20
YANCEY, J. T.	VAB 6D7	10
ZYZAK, E. E.	VAB 3L15A	1

BRIGGS, W. F.	FP-78	2
BURKET, B. B.	K6-1045 RM 126	1
CORBRIDGE, L. R.	VAB 2L3	6
DARROW, R. H.	LT-04 MICHOU	3
GERHARDT, E. D.	HTVL JD-78	1
HIGDON, J. H.	VAB 2D9	1
JONES, L. O.	MICHOU LT-54	2
KIRBY, J. H.	MOBA FP-53	2
KRULL, S. D.	TA-01 MTF	1
KUYKENDALL, M.	VAB MK3	1
LARSON, C.	O&C 2023	1
MC HENRY, J.	HTVL AZ-53	5
OWENS, J. D.	VAB 2L3	10
SCHINDLER, D. H.	HTVL AG-80	1
SMITH, J. A.	VAB 2L2	3
TAYLOR, D.	VAB 2L2	2
TBC FILE	VAB 3N1	5
WEINBERG, D. B.	O&C 2023	1
LINEBAUGH, D. H.	HOSC, DATA MANAGEMENT, HA-04	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 3/23/70