

ALSEP Configuration D Two-Man Deployment Task Sequence

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The Apollo Lunar Surface Experiments Package (ALSEP) Configuration D two-man deployment sequence, based on current Apollo 16 flight configurations and design is incorporated in this ATM.

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## ALSEP Configuration D Two-Man Deployment Task Sequence

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The following assumptions and conditions are applicable to this deployment sequence:

- 1) The sequence is for ALSEP Flight 5, Configuration D.
- 2) The sequence is for the two-man deployment planned for ALSEP.
- The Lunar Module (LM) is oriented on the lunar surface with the Scientific Equipment Bay (SEQ) facing southeast.
- 4) The ASE deployment complies with the following NASA Ground Rules:
  - a) 300 min. ft. from LM to first geophone.
  - b) Offset of Mortar Package should not be less than 45° from Line of LM.
  - c) Central Station can not be within 105° of line of Mortor flight (Back of Mortar Box).
  - d) Offset of geophone no more than 45° from line of LM. Can not fire in direction of LM.
- 5. The commander and the LM Pilot maintain constant voice contact while deploying ALSEP.
- 6. The voice link between the command/LM pilot and Mission Control Center (MCC), during ALSEP deployment, is through the LM directly to MCC.
- 7. The Commander and the LM Pilot are pressurized to 3.75 psi in Extravehicular Mobility Units (EMU) during ALSEP deployment.
- 8. The times in hours, minutes, and seconds are based on part-task tests conducted with Crew Engineering mock-ups.

This ATM includes both a condensed timeline and detailed timeline deployment sequence. The condensed timeline is essentially a major task flow analysis along a time base, showing the major points of interaction between the two crewmen. The detailed timeline lists, in sequence of performance, each of the steps required to carry out the main tasks identified in the condensed timeline. It is in the detailed timeline that the crew/equipment interfaces are revealed.



ALSEP Configuration D Two-Man Deployment Task Sequence

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Both timelines present the CDR's and the LMP's tasks side-by-side so that no confusion will exist as to which crewman is doing what, or how the two cooperate in the operations on the lunar surface.

Task			Task		and the state of t
No.	CDR	Time	· No.	LMP	/ Time
C1.0	Open SEQ Bay Doors	00:00:00	P1.0	LRV Load	00:00:06
C2.0	Offload ALSEP Pkgs.	00:01:00	· · · · · · · · · · · · · · · · · · ·	•	•
C3.0	Fuel RTG	00:10:45			
C4.0	Configure ALSEP for Traverse	00:15:55			•
C5.0	Close SEQ Bay Doors	00:16:45		•	
C6.0	ALSEP Traverse	00:17:45	P2.0	ALSEP Traverse (LRV Drive)	00:17:45
C7.0	Site Survey	00:28:00	P3.0	Site Survey	00:28:00
C8.0	Position ALSEP at Site	00:36:00			
	•		· P4.0	Remove HFE Pull Pins	00:37:30
•			P5.0	Rotate Pkg #2	00:38:10
	•		P6.0	Remove HFE Subpallet	00:38:50
			P7.0	Remove Subpallet	00:39:50
C9.0	Deploy RTG Power Cable and	4			
	Connect to Central Station	00:40:50		•	
C10.0	Remove and Deploy PSE	•			
•	Stool Stool	00:44:25		•	
			P8.0	Release Astromate Connector	
				and Connect to Central Station	00:45:00
C11.0	Disconnect Carry Bar from				
	Pkg. #1	00:46:15			
	•		P9.0	Offload HFE Probe Pkg.	00:47:40
C12.0	Emplace Pkg #1	00:47:45			
C13.0	PSE Deploy	00:50:05			
			P10.0	Separate Probe Pkgs.	00:51:00
			P11.0	Locate First Bore Hole	00:52:05
			P12.0	Locate Second Bore Hole	00:53:05
			P13.0	ALSD Set-Up	00:55:00
C14.0	Remove Thumper/Geophone				
	Assembly	00:56:05			•
C15.0	Remove Mortar Pkg. Assembly	00:58:30			
C16.0	LSM Offload	01:00:25		•	
C17.0	Release C/S Sunshield	01:03:40		•	
	4		P14.0	Drill First Bore Hole	01:05:00
C18.0	Deploy C/S Sunshield	01:10:25			
C19.0	Assembly Antenna	01:13:20			
C20 0	Ominut Automn	01.10.10	P15.0	Transfer Equipment	01:17:00
C20.0	Orient Antenna	01:18:10	P16.0	Drill Second Bore Hole	01:20:00
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Task No.	CDR	Time		Task No.	LMD	Time
C21:0	Deploy LSM	01:23:50				
C22.0	Activate Central Station	01:30: 05				
				P17.0	Emplace First Probe	01:32:00
				P18.0	Emplace Second Probe	01:40:00
C23.0	Deploy Geophones	01:41:00			•	
	• • •			P19.0	Align HFE Electronics Pkg.	01:47:00
C24.0	Conduct Thumper Activity	01:52:45			LMP ALSEP	
C25.0	Photograph ALSEP	02:09:20		• -	Activity Complete	
C26.0	Recover CORE	02:20:00				
C27.0	Deploy Mortar Pkg. Assembly	02:26:00				
	ALSEP					
	Deployment					
	Complete	02:38:20	- u			

Task No.	Commander Activity	AL' D Ti (Cumulative)	LM Pilot Activity	Task No.
C1.0	Open SEQ Bay Doors.	00:00:00	LRV Load	P1.0
		:02		
		:04		
		:06		
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Task No.	Commander Activity	A P/D e (Cumulative)	LM Pilot Activity	Task No.
C2.0 C2.1	Offload ALSEP Pkgs. Retrieve Pkg #1 deployment lanyard.	00:01:00 :02 :04		
C2.2	. Walk 10' from LM with lanyard.	:06 :08 :10		
	Walk 10 11 0111 EN With Tallyard.	:12 :14 :16		
C2.3	Pull lanyard white lower Section to extend boom assy. and remove Pkg #1	:18 :20 :22		
	from SEQ bay.	:24 :26 :28		
		:30 :32 :34		
		:36 :38 :40		
		:42 :44 :46		
C2.4	. Hold lanyard white lower Section taut, ratchet Pkg #1 to lunar Surface.	:48 :50 :52 :54		
·		:56 :58 00:02:00		Page
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Task No.		Commander Activity	AJ P/ D (Cumulative)	LM Pilot Activity	Task No.
			00:02:00 :02 :04 :06 :08 :10 :12 :14		
C2.5		. Discard Pkg #1 deployment lanyard.	:18 :20 :22		
C2.6		. Walk to Pkg #1	:24 :26 :28		
C2.7		. Disconnect quick release latch from carry handle and discard.	:30 :32 :34 :36 :38 :40 :42		
C2.8		. Pull velcroed pull ring from carry handle, pull lanyard, separate Pkg #l from boom, discard lanyard/boom attachment assy.	:44 :46 :48 :50 :52 :54 :56 :58		Page 8
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Task No.	Commander Activity	A P/ D e (Cumulative)	LM Pilot Activity	Task No.
C2.9	. Lift Pkg #1, carry to a point 5 from astronaut protection door, and lower to lunar surface.	00:03:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36		
C2.11	. Retrieve Pkg #2 deployment lanyard.  . Walk 10' from LM with lanyard.	:38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 00:04:00		Page 9

Task No.	Commander Activity	AL 7/ D 1 (Cumulative)	LM Pilot Activity		Task No.
		00:04:00			
C2.12	. Pull lanyard white lower Section to	:02			
	extend boom assy. and remove Pkg #2	:04			
	from SEQ bay.	:06 :08			
		:10			
		:12			
		:14			
		:16		2	
		:18			
		:20	·		
	·	:22			
••		:24			
		:26			
		:28			
		:30			
C2.13	. Hold lanyard white lower Section taut,	:32 :34			
	ratchet Pkg #2 to lunar surface.	:36			
	•	:38			
		:40			
		:42			
		:44	•		
		:46			
		:48			
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Task No.	Commander Activity	ALSEP/ D  (Cuative)	LM Pilot Activity	Task No.
	- <u></u>	00:05:00 :02		
C2.14	. Discard Pkg #2 deployment lanyard.	:04 :06		
C2.15	. Walk to Pkg #2.	:08 :10		
C2.16	. Disconnect quick release latch from	:12 :14 :16		
02.10	carry handle and discard.	:18 :20		
		:22 :24	·	
C2.17	. Pull velcroed pull ring from carry	:26 :28 :30		
	handle, pull lanyard, separate Pkg #2 from boom, discard lanyard/boom	:32 :34		
	assy.	:36 :38		
		:40 :42 :44		
	inger in the second of the sec	:46 :48		
		:50 :52		
		:54 :56 :58	, , , , , , , , , , , , , , , , , , ,	
		00:06:00	,	Page
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Task No.	Commander Activity	A P/ D e (Cumulative)	LM Pilot Activity	Task No.
C2.18	. Retrieve Pkg #1 deployment lanyard.	00:06:00 :02 :04		
C2.19	. Pull Pkg #1 lanyard striped section to restow boom assy.	:06 :08		
C2.20	. Walk to SEQ bay with Pkg #1 lanyard	:22 :24 :26 :28 :30		-
A	and stow in compartment I.	:32 :34 :36 :38 :40		
C2. 21	. Retrieve Pkg #2 deployment lanyard.	:42 :44 :46 :48 :50 :52		
C2.22	. Pull Pkg #2 lanyard striped section to restow boom assy.			Page
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Task No.	Commander Activity	P EP/ D ne (Cumulative)	LM Pilot Activity		Tasl No.
		00:07:00			
		:02			
1		:04			
		:06			
		:08			
		:10			
C2.23	. Walk to SEQ bay with Pkg #2 lanyard	:12 :14			
02.20	and stow in compartment II.	:16			
	did book in compartment ii.	:18			÷
		:20			
	• •	:22			
·		:24			
		:26			
<b>30.0</b> 4		:28			
C2.24	. Lift Pkg #2, carry to a point next to	:30			
	astronaut protection door, and lower	:32	, which is a second of the sec		
	to lunar surface.	:34			
		:36	*		
		:38 :40			
		:42			
		:44			
1		:46	1		
		:48			
		:50			
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Task No.	Commander Activity	ALSEP/ D (Cultive)	LM Pilot Activity	Task No.
C2.25	. Remove subpallet pull pin and discard.	:02		
C2.26	. Remove two (2) tool restraining pull pins and discard.	:04 :06 :08 :10 :12		
		:16 :18 :20 :22 :24 :26		
C2.27	. Remove tool bracket assy. and discard	:28		
C2.28	. Remove two (2) Universal Handling Tools (UHT).	:38 :40 :42 :44		
		:46 :48 :50 :52		
		:54 :56 :58 00:09:00		P
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Task No.	Commander Activity	ALSEP/ D (Cu. ative)	LM Pilot Activity		Task No.
C2.29	. Engage first UHT in Pkg. #2 temporar stowage socket.	:02 :04			
C2.30	. Walk to Pkg #1.	:06 :08 :10 :12			
C2.31	<ul> <li>Engage second UHT in Pkg. #1 tem- porary stowage socket.</li> </ul>	:14 :16 :18			
C2.32	. Return to Pkg #2.	:20 :22 :24 :26		`	
C2.33	. Remove first antenna mast/carry bar section.	:28 :30 :32 :34	•		
		:36 :38 :40 :42			
C2.34	. Remove second antenna mast/carry bar section.	:44 :46 :48 :50 :52			
		:54 :56 :58 00:10:00			Page
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fask Yo.	Commander Activity	ALSEP D Tir (Cumularive)	LM Pilot Activity	Task No.
. 35	. Mate two antenna mast/carry bar sections.	:00 :02 :04 :06 :08		
. 36	. Walk to Pkg. #1.	:10		
. 37	. Install carry bar in fitting on Pkg. #1.	:12 :14 :16 :18		
		:20 :22 :24		
		:26 :28 :30 :32		
3.38	. Walk to Fuel Cask.	:34 :36 :38		
3.0 3.1	Fuel RTG Retrieve cask lanyard.	:40 :42 :44		
		:46 :48 :50 :52		
3.2	. Walk 11 feet from cask.	:54 :56 :58		
		00:11:00		Page 16
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Task No.	Commander Activity	ALSEP/ D Tir (Cumu ve)	LM Pilot Activity	Task No.
. 3	. Pull cask lanyard to rotate levers and remove spline.	00:11:00 :02 :04 :06 :08 :10 :12		
; <b>. 4</b>	<ul> <li>Continue pulling cask lanyard until cask is rotated to correct fuel transfer attitude.</li> </ul>	:16 :18 :20 :22 :24		
3.5	. Discard cask lanyard.	:32 :34 :36 :38 :40 :42 :44		
3.6	. Walk to Pkg #2.	:48 :50 :52 :54 :56 :58		ָּט
		00:12:00		Page 17

Task No.	Commander Activity	ALSEP/ D Ti (Cum.ve)	LM Pilot Activity	Task No.
3.7	. Remove Dome Removal Tool (DRT).	00:12:00 :02 :04 :06		
3.8	. Walk to Fuel cask.	:08 :10 :12 :14 :16		·
3.9	Mate DRT with Dome Locking Mechanism, pull outward, press inward and rotate Dome Locking Mechanism clockwise.	:18 :20 :22 :24 :26 :28 :30 :32 :34		
. 10	. Remove Dome, read Tempilabel, report, and discard DRT/Dome.	:38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58		Page
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Task No.	Commander Activity	ALSEP/ D Til (Cumul-rive)	LM Pilot Activity		Task No.
		00:13:00 :02 :04			
		:06	<		
.11	Wolle to Dive #2	:08		I	
• 11	. Walk to Pkg #2.	:10			
		:12 :14		l	
		:16		I	
		:18	·	1	
1.12	. Remove Fuel Transfer Tool (FTT).	:20		1	
		:22		l	1
		:24 :26		- 1	
		:28			Į
3.13	. Use stowed UHT to rotate Pkg #2 to the	:30		I	l
-	fueling position.	:32			1
		:34		l	
		:36		1	
		:38		1	1
3.14	. Remove RTG dust cover.	:40 :42		1	I
		:44		l	ı
		:46		1	
		:48			
3.15	Walls to Eugl on the	:50		ł	
3.13	. Walk to Fuel cask.	:52		- 1	
		:54 :56		- 1	
		:58		[	
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¦ask 10.	Commander Activity	ALSF D Ti (Cumulative)	LM Pilot Activity	Task No.
.16	. Insert FTT fingers into Fuel Capsule Head.	00:14:00 :02 :04 :06		
3.17	. Engage FTT fingers in Fuel Capsule Head by rotating knob clockwise.	:08 :10 :12 :14 :16		
3.18	. Withdraw Fuel Capsule from Fuel cash	:18 :20 :22 :24		
2.10		:26 :28 :30 :32 :34		
3.19	. Walk to Pkg #2.	:36 :38 :40 :42		
3.20	. Lower Fuel Capsule into RTG.	:44 :46 :48 :50 :52 :54 :56		
		:58 00:15:00		Page 20
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Гаsk No.	Commander Activity	ALS D Tin (Cumulative)	LM Pilot Activity	Task No.
. 21	<ul> <li>Report -RTG Fueled</li> <li>Disengage FTT from Fuel Capsule by counter-rotation of knob, read Tempilabel and report.</li> </ul>	:14		
		:18 :20 :22 :24 :26 :28 :30 :32		
3.23	. Discard FTT.	:36 :38 :40 :42 :44 :46 :48		
4.0	Configure ALSEP for Traverse  . Use UHT to rotate Pkg #2 to the carry position.	:52 :54		Page 21

Task No.	Commander Activity	ALSEP/ D T (Cun tive)	LM Pilot Activity	Task No.
1.2	. Relocate Pkg #2 near Pkg #1.	00:16:00 :02 :04 :06 :08 :10 :12		
į. 3	. Install carry bar in fitting on Pkg #2.	:14 :16 :18 :20 :22 :24 :26		
		:28 :30 :32 :34 :36 :38 :40 :42		
;. <b>0</b>	Close SEQ Bay Doors	:44 :46 :48 :50 :52 :54 :56		
		:58 :00:17:00		Page 22

Task No.	Commander Activity	ALS D Ti (Cumulative)	LM Pilot Activity	Task No.
5.0 5.1	ALSEP Traverse  . Use carry bar to lift ALSEP Pkgs.	00:17:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 00:18:00	ALSEP Traverse (LRV Drive)	P2. 0 Page 23

Task No.	Commander Activity	AJ 7/ D (Cumulative)	LM Pilot Activity	Task No.
6.2	. Start traverse toward deployment site.  00: 18:00 TRAVERSE TIME 00: 28:00	:06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54	00: 18: 00 TRAVERSE TIME 00: 28: 00	
		:56 :58 00:28:00		Page 24

Task No.	Commander Activity	AL D T (Cumulative)	LM Pilot Activity	Task No.
7.0	00: 28: 00 Site Survey 00: 36: 00	00:28:00 :02 :04 :06 :08	00 : 28 : 00 Site Survey 00 : 36 : 00	P3.0
		:10 :12 :14 :16 :18		
<i>,</i> '		:20 :22 :24 :26 :28		
		:30 :32 :34 :36 :38 :40		
		:42 :44 :46 :48 :50		
		:52 :54 :56 :58 00:36:00		Pag
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Task No.	Commander Activity	ALSEP/ D (Cummative)	LM Pilot Activity	Task No.
8.0 8.1	Position ALSEP at Site . Lower ALSEP Pkgs. to lunar surface.	:02 :04		
8.2	. Disengage carry bar from Pkg. #2.	:06 :08 :10 :12 :14		
		:16 :18 :20 :22 :24		
38.3	<ul> <li>Lift Pkg #1, walk 10 feet east of Pkg #2     on E-W axis and lower Pkg #1 to lunar     surface.</li> </ul>	:26 :28 :30 :32		
		:34 :36 :38 :40 :42		
		:44 :46 :48 :50 :52		
		:54 :56 :58 00:37:00		Page
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Task No.	Commander Activity	AI / D (Cumulative)	LM Pilot Activity	Task No.
8. 4 28. 5 8. 6	Disengage UHT from Pkg #1 temporary stowage socket.  Tether UHT to EMU.  Return to Pkg #2.	00:37:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 00:38:00	Remove HFE Pull Pins  Release first velcroed Astromate pull ring on left side of Pkg #2.  Use pull ring to remove Astromate pull pin and first HFE subpallet pull pin and discard.  Release second velcroed HFE Subpallet pull ring on right side of pkg. #2.	P4.0 P4.1 P4.2
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Task No.	Commander Activity	AL D (Cumulative)	LM Pilot Activity	Task No.
	· -	00:38:00 :02 :04	. Use pull ring to remove the second HFE subpallet pull pin and discard.	P4.4
		:06 :08 :10 :12 :14	Rotate Pkg #2  • Use stowed UHT to rotate Pkg #2 to the deployed position on E-W axis.	P5.0 P5.1
		:16 :18 :20 :22 :24 :26		
		:28 :30 :32 :34 :36	. Disengage UHT from Pkg #2 temporary stowage socket.	P5.2
		:38 :40 :42 :44 :46	. Tether UHT to EMU.	P5.3
		:48 :50 :52 :54 :56	Remove HFE Subpallet Release velcroed HFE subpallet carry handle and lock in position.	P6.0 P6.1
		:58 00:39:00	·	Page 28
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Task No.	Commander Activity	ALSEP/ D T (Cur. tive)	LM Pilot Activity	Task No.
		00:39:00 :02 :04	· Unstow UHT.	P6.2
		:06 :08 :10 :12 :14 :16 :18	. Use UHT to release two strut boyd bolts on HFE Subpallet.	P6.3
		:20 :22 :24 :26	. Stow UHT.	P6.4
		:28 :30 :32 :34 :36	. Grasp the HFE Subpallet carry handle and lift the HFE Subpallet from Pkg #2.	
		:38 :40 :42 :44 :46	<ul> <li>Using HFE Subpallet carry handle, lower HFE Subpallet to lunar surface so that it rests on its legs.</li> <li>Remove Subpallet</li> </ul>	P6.6
		:48 :50 :52	· Unstow UHT.	P7.1
		:54 :56 :58 00:40:00	. Use UHT to release two Boyd bolts on Too carrier Subpallet.	1 P7.2
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Task No.	Commander Activity	ALS D T (Cumulative)	LM Pilot Activity	Task No.
		00:40:00 :02 :04 :06 :08 :10 :12 :14 :16	. Engage UHT in Subpallet carry socket.	P7. 3
		:20 :22 :24 :26 :28 :30 :32	. Use UHT to remove Subpallet from Pkg #2.	P7.4
9.0 9.1	Deploy RTG Power Cable and Connect to C/S  Read tempilabel on RTG cable reel and report.	:34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56	. Walk 10 feet east with Subpallet and lower to lunar surface.	
		00:41 :00		Page 30

Task No.	Commander Activity	ALCTO/ D T (Cumurative)	LM Pilot Activity	Task No.
).2 ).3	. Unstow UHT. . Use UHT to release three Boyd bolts on	00:41:00 :02 :04 :06 :08 :10	. Disengage UHT from Subpallet.	P7.6
	RTG cable reel.	:12 :14 :16 :18 :20 :22	. Use UHT handle to hook MPA pallet handle.	P7.7
		:24 :26 :28 :30 :32	. Use UHT to rotate Subpallet to a upright (standing on back support) position.	P7.8
9.4	. Engage UHT in RTG cable reel carry socket.	:36 :38 :40 :42 :44	<ul> <li>Disengage UHT handle from MPA pallet handle.</li> <li>Stow UHT.</li> </ul>	P7.9
7.5	. Use UHT to remove the RTG cable reel from Pkg #2 and walk to Pkg #1 deploying power cable.	:48 :50	. Grasp the MPA pallet pull ring and use to remove MPA pallet pull pin and discard pull ring/pull pin assembly.	107 11
		00:42:00		Page 31
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Task No.	Commander Activity	AL / D T (Cumulative)	LM Pilot Activity	Task No.
39.6 39.7 39.8	<ul> <li>Release velcroed shorting switch pull ring and pull to verify switch is in shorted position.</li> <li>Remove shorting plug pull pin and discard.</li> <li>Remove shorting switch plug bracket and discard.</li> </ul>	00:42:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38	. Grasp MPA pallet handle and pull to remove MPA pallet from Subpallet.	P7.1
C9.9	. Grasp shorting plug assembly.	:40 :42 :44 :46		
<b>39.10</b>	. Disengage UHT from RTG cable reel and discard cable reel.	:48 :50 :52 :54 :56 :58	. Lower MPA pallet by handle to lunar surface and position MPA pallet in vertical (upright) position.	P7.1
aantannen erakkinka kalabankainsa erakkanan kalabankainsa erakkanan kalabankan kalabankan kalabankain kalabank		00:43:00		Page 32

Task No.	Commander Activity	AI P/ D (Cumulative)	LM Pilot Activity	Task No.
9.11	. Stow UHT.	00:43:00		
9.12	. Read ammeter to verify that the reading is greater than zero and report.	:02 :04 :06 :08 :10 :12 :14 :16	. Rotate Subpallet back to horizontal position.	P7.1
39.13	. Remove Central Station connector dust cover and discard.	:20 :22 :24 :26 :28	. Return to Pkg #2	<b>P7.1</b> !
9.14	. Remove shorting switch assembly dust	:30 :32 :34	. Unstow UHT.	P <b>7.1</b> (
	cover and discard.	:36 :38 :40	. Use UHT to release two Boyd bolts on Aiming Mechanism Housing.	P7. ľ
9.15	. Mate power cable to Central Station.	:42 :44 :46 :48 :50 :52		
		:54 :56 :58 00:44:00	. Use UHT to hook carry handle and to remove Aiming Mechanism Housing from Pkg #2.	P7.1
				e 33

Task No.	Commander Activity	P/ D ne (Cumulative)	LM Pilot Activity	Tasi No.
		00:44:00 :02 :04 :06		
		:08 :10 :12		
C9.16	. Walk to Subpallet.	:14 :16 :18	. Walk 10 feet east with Aiming Mechanism Housing.	P7.1
C10.0	Remove and Deploy PSE Stool	:20 :22 :24		
C10.1	. Unstow UHT	:26 :28	<ul> <li>Use UHT to lower Aiming Mechanism Housing to lunar surface.</li> </ul>	P7.2
010.2	. Use UHT to release Boyd bolt on PSE stool.	:30 :32 :34 :36	Digonary MATE	
C10.3	. Engage UHT in PSE stool carry socket.	:38	. Disengage UHT from carry socket.	P7.2
		:44 :46 :48	. Stow UHT.	P7.2
C10.4	. Use UHT to remove PSE stool from Subpallet.	:50 :52 :54 :56	. Walk to HFE Subpallet.	P7.2
		:58 00:45:00		ካ ው ር
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Task	Commander	Ti	LM Pilot	Task
No.	Activity	(Cumulative)	Activity	No.
A STATE OF THE PARTY OF THE PAR		<u> </u>		
		00:45:00	Release Astromate Connector and Connect	P8.0
210.5	. Walk 10 feet southeast of Pkg #1 with	:02	Central Station	
,10.3	PSE stool.	:04	Grasp the HFE Subpallet carry handle	P8.1
	152 50001.	:06	and lift the HFE Subpallet from the lunar surface.	
		:08	iuliar surface.	ł
210.6	. Pack lunar surface and gouge hole in	:10		}
J Q	center for PSE stool.	:12		
		:14		
		:16		ł
		:18		
		:20	. Grasp Astromate handle, rotate Astro-	D0 0
		:22	mate connector clockwise and remove	P8.2
		:24		
		:26	Astromate connector from its stowage assembly.	
		:28	assembly.	
		:30		
		:32		
		:34		
		:36		
		:38		
C10.7	. Lower PSE stool to lunar surface	:40		
	centered over gouged hole.	:42		
		:44		
		:46		
		:48		
C10.8	. Disengage UHT from PSE stool carry	:50	. Verify HFE cable reel deployment and	P8.3
	socket.	:52	ensure that sifficient HFE cable is	P6.5
		:54	deployed for connection to Central	
		:56	Station.	
		:58		
		00:46:00		Page
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Task No.	Commander Activity	ALSEP/ D (Culative)	LM Pilot Activity	Task No.
C10.9	. Stow UHT	00:46:00		
C11.0 C11.1	Disconnect Carry Bar from Pkg #1  Disengage carry bar from Pkg #1	:02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22	<ul> <li>Lower HFE Subpallet to lunar surface.</li> <li>Walk to Central Station with HFE Astromate connector deploying cable.</li> </ul>	P8.4
C11.2	<ul> <li>Walk to Subpallet with antenna mast/carry bar.</li> <li>Stow antenna mast/carry bar on Sub-</li> </ul>	:24 :26 :28 :30 :32 :34 :36 :38	. Remove C/S connector dust cover and discard.	P8.6
	pallet taper fitting.	:40 :42 :44 :46 :48 :50 :52 :54 :56 :58	<ul> <li>Remove HFE Astromate connector dust cover and discard.</li> <li>Ensure the locking lever is fully counter-clockwise and mate Astromate connector to Central Station.</li> </ul>	P8.7
				101

Task No.	Commander Activity	ALSEP/ D e (Cudlative)	LM Pilot Activity	Task No.
C11.4	. Return to Pkg #1.	00:47:00 :02 :04		
		:06 :08 :10 :12 :14	. Press down on Astromate Handle and rotate locking lever clockwise 45° to lock position.	P8.9
	-	:16 :18 :20 :22 :24 :26		
		:28 :30 :32 :34 :36	. Return to HFE Subpallet.	P8.1
C12.0 C12.1	Emplace Pkg #1  Untether UHT from EMU and engage in Pkg #1 temporary stowage socket.	:38 :40 :42 :44 :46 :48 :50 :52 :54 :56	Offload HFE Probe Pkg.  Grasp HFE Subpallet carry handle and lift the HFE Subpallet from lunar surface.	P9.( P9.1
		00:48:00		+ # # # # # # # # # # # # # # # # # # #

Task No.	Commander Activity	A'SEP/ D he (Cumulative)	LM Pilot Activity	Tasl No.
C12.2	. Release velcroed pull ring in center of Pkg #1, pull up and attach velcroed pull ring on top of cover.	00:48:00 :02 :04 :06 :08 :10 :12	. Walk with HFE Subpallet approx. 30 feet south from Central Station.	P9.2
C12.3	. Release velcroed pull ring on right side	:16 :18 :20 :22 :24		
C12.4	of Pkg. #1.  . Use stowed UHT as a handle to rotate	:26 :28 :30 :32 :34 :36	<ul> <li>Collapse HFE Subpallet strut support assembly against the back of the Sub- pallet.</li> </ul>	P9.3
	Pkg #1 to the deployed position and rough align on E-W axis.	:38 :40 :42 :44 :46 :48		
		:50 :52 :54 :56 :58 00:49:00	. Lower HFE Subpallet to lunar surface so that it rests on its legs.	P9.4 Page
				(e 38

Task No.	Commander Activity	EP/ D ne (Cumulative)	LM Pilot Activity	Tas No
		00: <del>4</del> 9:00 :02	. Unstow UHT.	P9.!
C12.5	. Disengage UHT from Pkg #1 temporary stowage socket.	:04 :06 :08 :10 :12 :14	Hook UHT handle in HFE Subpallet carry handle and use UHT to rotate the HFE Subpallet to lunar surface so that the HFE Probe Pkg and Electronics Pkg	P9.(
C12.6	<ul> <li>Hook UHT handle in the dust cover pull ring and pull to release cover.</li> </ul>	:16 :18 :20 :22	are positioned upward.	
		:26 :28 :30 :32	. Disengage UHT from HFE Subpallet carry handle.	P9.'
		:36 :38 :40 :42 :44	. Use UHT to release four Boyd bolts on HFE Probe Pkg.	P9.1
C12.7	Disengage UHT handle from dust cover pull ring and discard dust cover.	:44 :46 :48 :50 :52 :54		
C12.8	. Tether UHT to EMU.	:56 :58		
		00:50:00		

Task No.	Commander Activity	/ EP/ D he (Cumulative)	LM Pilot Activity	Tas No.
C13.0 C13.1	PSE Deploy . Unstow UHT.	00:50:00 :02 :04 :06		
C13.2	. Use UHT to release four Boyd bolts on PSE.	:08 :10 :12 :14 :16 :18 :20	. Use UHT handle to hook HFE Probe Pkg handle.	P9.'
		:22 :24 :26 :28 :30 :32	. With UHT handle remove the HFE Probe Pkg. from HFE Subpallet.	<b>P9.</b> ∶
		:36 :38 :40 :42 :44	. Grasp HFE Probe Pkg handle.	<b>P9.</b> ∶
C13.3	. Engage UHT in PSE carry socket.	:46 :48 :50 :52 :54	. Disengage UHT handle from HFE Probe Pkg. handle.	P9.
		:56 :58 00:51:00	. Stow UHT.	P9.∶
•				#5· **

Task No.	Commander Activity	P/ D ne (Cumulative)	LM Pilot Activity	Task No.
C13.4	. Use UHT to remove PSE from sun- shield and to carry PSE to stool.	00:51:00 :02 :04	Separate Probe Pkgs  Remove first velcroed closure strap and discard.	P10. P10.
C13.5	. Remove girdle pull pin.	:06 :08 :10 :12 :14 :16 :18 :20 :22 :24	. Support HFE Probe Pkg., remove second velcroed closure strap and discard.	P10.
C13.6	. Emplace PSE on stool and rough align.	:28 :30 :32 :34 :36 :38 :40 :42 :44	. Use HFE Probe Pkg. handles to sepa- rate two halves of Probe Pkg.	P10.
		:48 :50 :52 :54 :56 :58 00:52:00	. Lean marked half of HFE Probe Pkg. against the HFE Subpallet.	P10.

Task No.	Commander Activity	A P/ D e (Cumulative)	LM Pilot Activity	Task No.
C13.7	. Remove PSE girdle and discard.	00:52:00 :02 :04 :06 :08 :10	Locate First Bore Hole Grasp HFE Probe Pkg. carry strap.	P11.0 P11.1
	· · ·	:14 :16 :18 :20 :22	<ul> <li>Walk 16 feet east of the HFE Electronics Pkg. to the first bore hole site, deploy- ing probe cable.</li> </ul>	P11.2
C13.8	. Disengage UHT from PSE.	:24 :26 :28 :30 :32		
C13.9	. Use UHT to deploy thermal shroud.	:36 :38 :40 :42 :44	. Lower HFE Probe Pkg. to lunar surface, open face downward.	P11.3
		:46 :48 :50 :52 :54 :56	. Return to HFE Subpallet.	P11.4
		:58 00:53:00		Page 42
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Task No.	Commander Activity	ALCEP/ D (Cumulative)	LM Pilot Activity	Task No.
		00:53:00 :02 :04 :06 :08 :10 :12 :14 :16	Locate Second Bore Hole  Grasp HFE Probe Pkg. handle and retrieve marked half of HFE Probe Pkg from HFE Subpallet.  Grasp pull ring and rotate emplacement tool holding device from its stowed	P12.0 P12.1
		:20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42	position, and velcro the holding device to the bottom of the Probe Pkg.	
		:44 :46 :48 :50 :52	. Grasp HFE Probe Pkg. carry strap.	P12.
		:54 :56 :58 00:54:00	. Walk 16 feet southwest of the HFE Electronics Pkg. to the second bore hole site, deploying probe cable.	P12.
		;		( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

Task No.	Commander Activity	EP/ D ne (Cumulative)	LM Pilot Activity		Tas No
C13.10	. Observing bubble level, use UHT to level PSE.	00:54:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 00:55:00	. Lower HFE Probe Pkg. to open face downward.  . Walk to LRV	lunar surface,	P12.

Task No.	Commander Activity	A' P/ D (Cumulative)	LM Pilot Activity	Task No.
		00:55:00	ALSD Set - Up	P13.
j		:02		1 13.
		:04 :06		1
		:08		1
		:10		1
		:12		1
		:14		
		:16		1
		:18 :20		
	·····	:22		
		:24		
		:26		
		:28		
		:30		
		:32		1
C13.11	. Observe sun compass and report	:34		Ì
	alignment.	:36		
		:38 :40		1
		:42		
		:44		
		:46		
C13.12	. Stow UHT.	:48		ł
	. blow ohi.	:50		
C12 12		:52	·	
C13.13	. Return to Pkg #1.	:54 :56		]
		:58		
		00:56:00		7
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Task No.	Commander Activity	AICTP/ D e (Cumulative)	LM Pilot Activity	Task No.
C14.0 C14.1	Remove Thumper/Geophone Assembly Unstow UHT	00:56:00 :02 :04 :06		
C14.2	. Use UHT to release Boyd bolt on Thumper/Geophone Assembly restraining arm.	:08 :10 :12 :14 :16		
C14.3	. Stow UHT	:18 :20		
C14.4	· Use restraining arm to remove Thumpe Geophone Assemblyfrom sunshield.	:26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52		
C14.5	<ul> <li>Grasp Thumper/Geophone Assembly, remove from restraining arm/plate assembly and discard restraining arm/ plate assembly.</li> </ul>	:54 :56 :58 00:57:00		Page 46

Task No.	Commander Activity	A D/ D (Cumulative)	LM Pilot Activity	Task No.
C14.6	. Unfold Thumper/Geophone Assembly and position sleeves to lock sections.	00:57:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38		
C14.7	. Deploy enough T/G cable (approx. 8 feet) to expose the first two cable loops.	:40 :42 :44 :46 :48 :50 :52 :54 :56 :58 00:58:00		Page 47

Task No.	Commander Activity	AI CP/ D (Cumulative)	LM Pilot Activity	Task No.
C14.8	<ul> <li>Walk to Subpallet.</li> <li>Lean Thumper/Geophone Assembly against the Subpallet.</li> </ul>	00:58:00 :02 :04 :06 :08 :10 :12 :14		
C14.10 C15.0 C15.1	. Return to Central Station  Remove Mortar Package Assembly . Unstow UHT.	:18 :20 :22 :24 :26 :28 :30		
C15.2	<ul> <li>Engage UHT in Mortar Package Assembly carry socket.</li> <li>Use UHT to remove Mortar Package Assembly from sunshield.</li> </ul>	:34 :36 :38 :40 :42 :44		
	sembly from sunsniera.	:46 :48 :50 :52 :54 :56 :58 00:59:00		Page 48

Task No.	Commander Activity	EP/ D ne (Cumulative)	LM Pilot Activity	Tas No.
C15.4	. Remove carry socket rotation pull pin and discard.	00:59:00 :02 :04 :06 :08		
C15.5	. Ensure carry socket fully rotates and locks.	:10 :12 :14 :16 :18 :20		
C15.6	. Deploy two Mortar Package Assembly support legs and ensure legs are locked and foot pads are properly rotated.	:22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42		
		:44 :46 :48 :50 :52 :54 :56 :58 01:00:00		rage 17

Task No.	Commander Activity	AJ P/ D (Cumulative)	LM Pilot Activity	Task No.
C16.0 C16.1 C16.2	<ul> <li>Emplace Mortar Package Assembly on lunar sunface near direction of traverse.</li> <li>LSM Offload <ul> <li>Unstow UHT.</li> </ul> </li> <li>Use UHT to release two Boyd bolts on LSM.</li> </ul> <li>Stow UHT.</li> <li>Pull handle of upper support bracket fully upward and then forward.</li>	01:00:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:01:00		rage v

Task No.	Commander Activity	Cumulative)	LM Pilot Activity	Tas No
C16.5	. Continue to lift upper support bracket/ brace assembly clear of LSM and discard.	01:01:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:02:00		0

Task No.	Commander Activity	AJCEP/ D (Cumulative)	LM Pilot Activity	Tasl No.
C16.6	. Grasp lift-off handle, pull fully upward and remove LSM from sunshield.	01:02:00 :02 :04 :06 :08 :10		
		:14 :16 :18 :20 :22 :24 :26 :28		
		:30 :32 :34 :36 :38 :40 :42		
C16.7	<ul> <li>Walk to southwest corner of Central Station.</li> <li>Grasp carry handle and rotate LSM to</li> </ul>	:44 :46 :48 :50 :52 :54		
	the vertical position.	:56 :58 01:03:00		- aBc ~ r

Task No.	Commander Activity	ALSEP/ D T (Cum_tive)	LM Pilot Activity	 Task No.
C16.9	. Grasp handle of lower part of upper support bracket, pull free of LSM, and discard.	01:03:00 :02 :04 :06		
	and discard.	:08 :10 :12 :14 :16		·
C16.10	. Lower LSM to lunar surface.	:18 :20 :22 :24		
C16. 11	. Return to central station.	:26 :28 :30 :32 :34		·
C17. 0 C17. 1	Release Sunshield Unstow UHT.	:36 :38 :40 :42		
C17. 2	. Engage UHT in Package #1 temporary stowage socket.	:44 :46 :48 :50		
C17.3	. Observing bubble level and sun compass, use UHT to level and align Central Station.	:52 :54 :56 :58 01:04:00		гаде
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Task No.	Commander Activity	ALST / D Ti (Cumulative)	LM Pilot Activity	Task No.
		01:04:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
		:24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44		
C17.4	. Disengage UHT from Package No. 1.	:48 :50 :52 :54 :56 :58 01:05:00		C C

Task No.	Commander Activity	ALSEP/ D T (Cumuative)	LM Pilot Activity		Task No.
C17. 5	. Use UHT to release five Boyd bolts on South Side of Central Station.	01:05:00 :02 :04 :06 :08 :10	Drill First Bore Hole		P14. 0
		:12 :14 :16 :18 :20 :22			
		:24 :26 :28 :30 :32			
		:36 :38 :40 :42 :44		·	
C17.6	. Use UHT to release four Boyd bolts on West side of Central Station.	:46 :48 :50 :52 :54 :56			
		:58 01:06:00			rage ၁၁

Task No.	Commander Activity	AL D T (Cumulative)	LM Pilot Activity	Task No.
		01:06:00 :02 :04 :06 :08 :10 :12 :14 :16 :18		
C17.7	. Engage UHT in rear thermal curtain/PDN cover socket.	:22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42		
C17.8	. Pull lanyard to release two pull pins and attach rear thermal curtain/PDM cover socket to the Velcro patch on PDM cover.	:46 :48 :50 :52		rage 50

Task No.	Commander Activity	AL D T (Cumulative)	LM Pilot Activity	Task No.
C17.9	. Allow slack in cable in order to release cover and discard cover.	01:07:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
C17.10	. Use UHT to lower rear curtain to lunar surface.	:24 :26 :28 :30 :32 :34 :36		
C17. 11	. Engage UHT in antenna cable restraint UHT socket.	:38 :40 :42 :44 :46 :48		
C17.12	. Pull lanyard to release cable restraint and to deploy cable.	:50 :52 :54 :56 :58 01:08:00		Page 57

fask No.	Commander Activity	ALSEP/ D T (Cumcive)	LM Pilot Activity	Task No.
C17.13	. Use UHT to release three Boyd bolts on North side of Central Station.	01:08:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		,
C17.14	. Use UHT to release four Boyd bolts on East side of Central Station.	:24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52		
		:54 :56 :58 01:09:00		Tage Ju

C17.15 . Walk to north side of Central Station.  C17.16 . Check for release of sunshield from primary structure.  C17.17 . Use UHT to release two Boyd bolts on antenna.  C17.18 . Use UHT to release two Boyd bolts on antenna.  C17.19 . Use UHT to release two Boyd bolts on antenna.  C17.19 . Use UHT to release two Boyd bolts on antenna.  C17.19 . Use UHT to release two Boyd bolts on antenna.  C17.19 . Use UHT to release two Boyd bolts on antenna.	Гаsk No.	Commander Activity	ALS D Til (Cumulative)	LM Pilot Activity		Task No.
C17. 15			01:09:00			
C17. 15 . Walk to north side of Central Station.  C17. 16 . Check for release of sunshield from primary structure.  C17. 17 . Use UHT to release two Boyd bolts on antenna.  C17. 18 . 106 . 112 . 114 . 116 . 118 . 120 . 120 . 122 . 122 . 124 . 126 . 128 . 130 . 132 . 130 . 132 . 132 . 132 . 134 . 136 . 138			- B			
C17. 15  . Walk to north side of Central Station.  C17. 16  . Check for release of sunshield from primary structure.  C17. 17  . Use UHT to release two Boyd bolts on antenna.  . 10  . 12  . 14  . 16  . 18  . 20  . 22  . 24  . 26  . 28  . 30  . 30  . 32  . 32  . 33  . 34  . 36  . 38			1			
10   12   14   16   16   17   18   18   18   18   18   19   19   19						
C17. 15  . Walk to north side of Central Station.  C17. 16  . Check for release of sunshield from primary structure.  C17. 17  . Use UHT to release two Boyd bolts on antenna.  C17. 17  . Use UHT to release two Boyd bolts on antenna.  C17. 17	×					
C17. 15  . Walk to north side of Central Station.  :14 :16 :18 :20 :22 :22 :22 :24 primary structure.  :28 :30 :32 :32 :31 :32 :33 :33 :33 :33 :33 :33 :33 :33 :33						
C17. 15  . Walk to north side of Central Station.  :16 :20 :22 :22 :24 primary structure.  :26 :28 :30 :32 :32 C17. 17  . Use UHT to release two Boyd bolts on antenna.  :36 :38						
C17. 15  . Walk to north side of Central Station.  :18 :20 :22 :22 :24 primary structure.  :26 :28 :30 :32 :32 :31  C17. 17  . Use UHT to release two Boyd bolts on antenna.  :18 :20 :22 :23 :24 :26 :28 :30 :32 :32 :32 :33 :32 :33 :33 :33 :33 :33						
C17.16   Check for release of sunshield from primary structure.   :20	C17.15	Walk to north side of Central Station				
C17. 16 . Check for release of sunshield from primary structure. :24		wark to north side of Central Station.	•			
C17. 16  Check for release of sunshield from primary structure.  126 128 130 132 132 134 136 138			3			
C17. 17  Use UHT to release two Boyd bolts on antenna.	C17.16	. Check for release of sunshield from	•			
C17. 17 Use UHT to release two Boyd bolts on antenna. :28 :30 :32 :34 :36 :38			1			
C17. 17 Use UHT to release two Boyd bolts on antenna. :32 :34 :36 :38						
C17. 17 Use UHT to release two Boyd bolts on antenna. :34 :36 :38			:30			
antenna. :36 :38			:32			
antenna. :36 :38	C17. 17	. Use UHT to release two Boyd bolts on				
		antenna.				
$1 \dots A \wedge 1$			B Comment of the comm			
			:40			
:42						
:44						
:46			3			
:48						
:50 :52				·		
C17. 18 Use UHT to release two northmost, :54	C17.18	. Use UHT to release two northmost	1			
interior sunshield Boyd bolts.		interior sunshield Boyd holts.				
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01:10:00						Pa
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Task No.	Commander Activity	ALSF D Tir (Cumularive)	LM Pilot Activity	Task No.
		01:10:00		
		:02		
		:04		
		:06		
		:08		,
•		:10		
C17.19	Hea HITT to make an all and	:12		•
C17.19	. Use UHT to release center Boyd bolt.	:14		
		:16		
		:18 :20		
C18. 0	Deploy Sunshield	:22		
C18. 1	. Use UHT to control Sunshield deployment.	:24		
	and the state of Danbingsa deproyment.	:26		
		:28		
		:30		
		:32		
		:34		
		:36		
		:38		
		:40		
<b>61</b> 0 0		:42		
C18. 2	. Remove UHT from center guide cup.	:44		
		:46		
		:48		
		:50		
		:52		
C18.3	. Stow UHT.	:54		
010.3	. blow OHI.	:56		
		:58		F,
		01:11 :00		28.0
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			· · · · · · · · · · · · · · · · · · ·	
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ľask No.	Commander Activity	ALSF D Tin (Cumulative)	LM Pilot Activity		Task No.
C18. 4	. Complete sunshield deployment, using manual assist.	01:11:00 :02 :04 :06		-	
		:08 :10 :12 :14 :16 :18			
		:20 :22 :24 :26 :28			
C18. 5	. Check for proper deployment of side curtains, remove three sunshield curtain covers and discard.	:30 :32 :34 :36 :38 :40 :42			
C18. 6	. Unstow UHT.	:44 :46 :48 :50 :52 :54 :56			
		01:12:00			Page 61

Fask No.	Commander Activity	ALSFD/ D Ti: (Cumularive)	LM Pilot Activity	Task No.
C18.7	. Use UHT to attach rear and front of right side curtain to Central Station.	01:12:00 :02 :04 :06		
		:08 :10 :12 :14 :16		
C18. 8	. Use UHT to attach front of left side curtain to Central Station.	:18 :20 :22 :24 :26 :28 :30		
C18. 9	. Use UHT to attach rear thermal curtain to side curtains.	:32 :34 :36 :38 :40 :42 :44		
C18.10	. Observing sun compass and bubble level, check alignment and level.	:46 :48 :50 :52 :54 :56 :58 01:13:00		, 10°
				(

ſask No.	Commander Activity	ALSF D Tir (Cumulative)	LM Pilot Activity	Task No.
C18. 11	. Stow UHT.	01:13:00 :02 :04 :06 :08 :10		
C18. 12	. Walk to subpallet.	:12		
C19. 0 C19. 1	Assemble Antenna Retrieve antenna mast from subpallet.	:16 :18 :20 :22 :24 :26		
C19. 2	. Return to Central Station	:28 :30 :32		
C19. 3	. Install antenna mast on Central Station.	:34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54		
		:58 01:14:00		rage os
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Γask No.	Commander Activity	ALSTO D T( (Cumurative)	LM Pilot Activity	Task No.
		01:14:00 :02 :04 :06 :08 :10 :12		
		:16 :18 :20 :22 :24 :26 :28 :30		
		:32 :34 :36 :38 :40 :42 :44		
C19. 4	. Walk to Aiming Mechanism Housing.	:48 :50 :52 :54 :56 :58 01:15:00		- 45
				<b>* * *</b>

fask No.	Commander Activity	ALSEP/ D Ti (Cumu_ve)	LM Pilot Activity		Task No.
J19. 5	. Unstow UHT.	01:15:00			
710 /		:02			
<b>319.</b> 6	. Use UHT to hook carry handle and to	:04			
	lift aiming mechanism housing from	:06			]
	lunar surface.	:08			
		:10			
·		:12			
		:14			
		:16			
		:18			
		:20			
C19.7	. Return to Central Station.	:22 :24			1
02/11	rectain to Central Station.	:26			
		:28			l
C19.8	. Stow UHT.	:30			
		:32			
C19.9	. Release pull ring and remove cover from				
	aiming mechanism housing and discard.	:36			
	o and disculd.	:38			l
		:40			İ
		:42			
	·	:44			1
		:46			
		:48			1
		:50	· ·		
		:52			· ·
		:54		•	ĺ
C19.10	. Install aiming mechanism on antenna	:56			ĺ
	mast.	:58			۲-
		01:16:00			Page
					65
			}		l

Task No.	Commander Activity	AL / D T (Cumulative)	LM Pilot Activity		Task No.
C19. 11	. Remove aiming mechanism housing and packaging and discard.	01:16:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20			
		:22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42			
		:44 :46 :48 :50 :52 :54 :56 :58 01:17:00			Page 66
			·	,	3

Fask No.	Commander Activity	AI 7/ D T (Cumulative)	LM Pilot Activity	Task No.
C19. 12	Rotate antenna tie-down brackets, retrieve antenna and install on aiming mechanism.	01:17:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34	Transfer Equipment	P15. 0
		:36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:18:00		0

Task No.	Commander Activity	ALS D Ti (Cumulative)	LM Pilot Activity	Task No.
C20. 0 C20. 1	Orient Antenna  Observing bubble level, adjust leveling knobs.	01:18:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:19:00		Page 68
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Fask Commander No. Activity  ALSEP/ D T Cum—ative)  LM Pilot (Cum—ative)  Activity	Task No.
01:19:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :550 :552 :54 :56 :58 01:20:00	+ age 07

Task No.	Commander Activity	ALSTD/ D T (Cumulative)	LM Pilot Activity		Task No.
		01:20:00 :02 :04	Drill Second Bore Hole		P16. 0
C20. 2	. Observing sun compass, adjust alignment knob.	:06 :08 :10 :12			
		:14 :16 :18 :20			
		:22 :24 :26			
		:28 :30 :32 :34			
		:36 :38 :40		·	
		:42 :44 :46 :48			
		:50 :52 :54			
		:56 :58 01:21:00			1 G (
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Гаsk No.	Commander Activity	AL / D (Cumulative)	LM Pilot Activity	Task No.
C20. 3	. Enter azimuth offset.	01:21:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
		:26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:22:00		+ 9 GC U - +

Гаsk No.	Commander Activity	ALSTO D T (Cumulative)	LM Pilot Activity	-	Task No.
C20. 4	. Enter elevation offset.	01:22:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26			
		:28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58			Lage 10
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ſask No.	Commander Activity	ALSEP/ D T (Cumultive)	LM Pilot Activity	Task No.
<b>320.</b> 5	. Recheck level.	01:23:00 :02 :04 :06 :08 :10 :12 :14 :16 :18		
C20.6	. Walk to LSM (Southwest corner of Central Station).	:22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42		
C21. 0 C21. 1	Deploy LSM  Grasp carry handle and lift LSM from lunar surface.	:46 :48 :50 :52 :54 :56 :58 01:24:00		F age 10

Task No.	Commander Activity	ALCED/ D T (Cumulative)	LM Pilot Activity	Task No.
C21. 2	. Carry LSM 50 feet Southwest of Central Station.	01:24:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24		
		:26 :28 :30 :32 :34 :36 :38 :40 :42		
		:46 :48 :50 :52 :54 :56 :58 01:25:00		Page 74

C21. 3 Deploy three lunar support legs. 01:25:00		
:04		
:06		
		1
:08 :10		
:12		1
1		
:16		
C21. 4 . Rotate LSM so color-coded lunar support :20		
C21. 4 . Rotate LSM so color-coded lunar support :20 leg is oriented eastward and lower LSM :22		
to lunar surface.		
:26		
:28		
C21. 5 . Unstow UHT. :30		
:32		
:34		
C21.6 Use UHT to remove and discard foam :36		1
packaging.		
:40		
:42		
:44		
:46 :48		
:50		
:52	•	
:54		
:56		
:58		٠,
01:26:00		rage
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Гаsk No.	Commander Activity	ALSEP/ D Tii (Cumu ve)	LM Pilot Activity	Task No.
C21.7	Deploy three sensor arms by rotating and locking each upper sensor arm section and lowering each sensor arm into the deployed position.	01:26:00 :02 :04 :06 :08 :10 :12 :14 :16 :18		
		:20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42		
		:44 :46 :48 :50 :52 :54 :56 :58 01:27 :00		Page 76

Task No.	Commander Activity	AL D Time (Cumulative)	LM Pilot Activity	Task No.
C21. 8	<ul> <li>Use PRA removal lanyard to remove PRA covers and discard PRA covers.</li> <li>Observing bubble level, use UHT to level LSM.</li> </ul>	01:27:00 :02 :04 :06 :08 :10 :12 :14 :16		
	Tevel Libra.	:20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40		
		:42 :44 :46 :48 :50 :52 :54 :56 :58		Fage 77
regeneration of the control of the c				13

ſask No.	Commander Activity	AI / D (Cumulative)	LM Pilot Activity	Task No.
		01:28:00 :02 :04 :06 :08 :10 :12 :14		
321.10	. Observing the shadowgraph, align LSM.	:18 :20 :22 :24 :26 :28 :30 :32 :34		
C21. 11	Check bubble level and shadowgraph for level and alignment, and report alignment to within 1° of azimuth orientation.	:36 :38 :40 :42 :44 :46 :48		
C21.12	Grasp sunshade and release from storage.	:50 :52 :54 :56 :58 01:29 :00		Page 78

Гаsk No.	Commander Activity	ALSED/ D T (Cumulative)	LM Pilot Activity		Task No.
C21. 13	. Deploy sunshade and attach to Velcro.	01:29:00			
		:02			
		:04			
		:06			
C21. 14	. Stow UHT.	:08			
002.11	. Stow GIII.	:10			
		:12 :14			
C21. 15	. Return to Central Station.	:16			
N		:18			
		:20			
		:22			
		:24			
		:26		i	
		:28			
		:30 :32		:	
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Task No.	Commander Activity	ALST / D T: (Cumulative)	LM Pilot Activity	Task No.
C22. 0	Activate Central Station	01:30:00 :02		
C22. 1	. Unstow UHT.	:04 :06 :08 :10		
C22. 2	. Use UHT to actuate shorting switch assembly push button and verify that ammeter indicates a load condition (reading zero amps).	:12 :14 :16 :18 :20 :22 :24 :26		
C22. 3	. Use UHT to turn on astronaut switches No. 1 and No. 5. (Sw#1 CW - Sw#5CCW)	:28 :30 :32 :34 :36 :38 :40 :42 :44		
C22. 4	. Stow UHT.	:48 :50 :52		
C22. 5	. Request Transmitter turn-on.	:54 :56 :58 01:31:00		: :: G .

Task No.	Commander Activity	AI P/ D (Cumulative)	LM Pilot Activity	Task No.
C22. 6	Verify downlink (Receive confirmation of receipt of RF Signal and useful data).    Verify downlink (Receive confirmation of receipt of RF Signal and useful data).	01:31:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:32:00		C
NABOUNDUURUKAN AND AND AND AND AND AND AND AND AND A				

ſask Vo.	Commander Activity	ALS D Tin (Cumulative)	LM Pilot Activity	Task No.
		01:32:00	Emplace First Probe . Unstow UHT.	P17. 0 P17. 1
·		:04 :06 :08 :10	. Use UHT handle to hook carry handle of marked half of HFE Probe Pkg.	P17. 2
		:14 :16 :18 :20	. Use UHT to lift the HFE Probe Pkg from lunar surface.	P17.3
		:22 :24 :26 :28 :30	. Grasp HFE Probe Pkg. carry strap.	P17.4
		:32 :34 :36 :38 :40	. Disengage UHT handle from HFE Probe Pkg. carry handle.	P17. 5
		:42 :44 :46 :48	. Stow UHT.	P17.6
		:50 :52 :54 :56	. Remove remainder of probe cable from HFE Probe Pkg.	P17.7
		:58 01:33:00		Page 82
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fask No.	Commander Activity	ALS D T: (Cumulative)	LM Pilot Activity	Task No.
		01:33:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22	. Use pull ring to rotate sleeve containing probe forward and to remove probe assembly from sleeve.	P17.8
		:26 :28 :30 :32 :34 :36	. Lower HFE Probe Pkg. to lunar surface.	P17. 9
		:38 :40 :42 :44 :46 :48	. Grasp probe assembly.	P17. 10
		:50 :52 :54 :56 :58 01:34:00	. Remove sail cloth retaining first probe end piece and discard sail cloth.	P17.11

Task No.	Commander Activity	ALSF D Tin (Cumulative)	LM Pilot Activity	Task No.
		01:34:00 :02 :04 :06	. Remove sail cloth retaining second probe end piece and discard sail cloth.	P17.12
		:08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28	. Position lower sunshield over spring on upper probe section.	P17. 13
		:30 :32 :34 :36 :38	. Unfold probe assembly	P17. 14
		:40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:35:00	. Insert probe into bore hole.	P17. 15

?ask No.	Commander Activity	ALSED/ D Ti (Cumulative)	LM Pilot Activity	Task No.
-		01:35:00 :02	. Unstow UHT.	P17. 16
		:04 :06 :08	. Use UHT handle to hook HFE Probe Pkg. carry handle.	P17.17
		:10 :12 :14 :16 :18 :20 :22	. Use UHT to lift the HFE Probe Pkg. from lunar surface.	P17. 18
		:24 :26 :28 :30	. Grasp HFE Probe Pkg. carry strap.	P17. 19
		:32 :34 :36 :38 :40 :42	. Disengage UHT handle from HFE Probe Pkg. carry handle and stow UHT.	P17. 20
		:44 :46 :48 :50	. Remove emplacement tool from holding device by pulling "crow's foot."	P17. 21
		:54 :56 :58	. Discard HFE Probe Pkg.	P17. 22
		01:36:00		Page 85
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Fask No.	Commander Activity	ALSF D Ti (Cumulative)	LM Pilot Activity	Task No.
		01:36:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22	. Extend emplacement tool to maximum length and verify full extension.	P17. 23
		:26 :28 :30 :32 :34 :36 :38 :40 :42 :44	. Place emplacement tool "crow's foot" between lower and upper sunshield.	P17. 24
		:48 :50 :52 :54 :56 :58 01:37:00	. Use emplacement tool to complete emplacement of probe in drill hole.	P17. 25

Гаsk No.	Commander Activity	ALST D Til (Cumulative)	LM Pilot Activity	Task No.
		01:37:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:38:00	Observe emplacement tool marking and report.  Remove emplacement tool from drill hole	P17. 26

Task	Commander	AL D D (Cumulative)	LM Pilot	Task
No.	Activity		Activity	No.
		01:38:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:39:00	<ul> <li>Use emplacement tool "crow's foot" to retrieve probe cable near upper sunshiel</li> <li>Place emplacement tool "crow's foot" around cable on far side of upper sunshiel</li> <li>Use emplacement tool to slide upper sunshield along probe cable and toward probassembly.</li> <li>Use emplacement tool to ensure upper sunshield is fully deployed over drill hole.</li> </ul>	P17. 29

Task No.	Commander Activity	ALS D Ti	LM Pilot Activity	Task No.
		01:39:00 :02 :04 :06	. Remove emplacement tool "crow's foot" from probe cable.	P17.32
		:08 :10 :12 :14 :16	. Lower probe cable to lunar surface.	P17. 33
		:18 :20 :22 :24 :26	<ul> <li>Walk to first bore hole site with emplacement tool.</li> </ul>	P17. 34
		:28 :30 :32 :34 :36		
		:38 :40 :42 :44 :46		
		:48 :50 :52 :54 :56	. Lower emplacement tool to lunar surface.	P17. 35
		:58 01:40:00		Page 89
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Task No.	Commander Activity	ALS / D T (Cumulative)	LM Pilot Activity	Task No.
		01:40:00 :02	Emplace Second Probe Unstow UHT.	P18. 0
		:04 :06 :08 :10	. Use UHT handle to hook HFE Probe Pkg. carry handle.	P18. 2
		:12 :14 :16 :18	. Use UHT to lift the HFE Probe Pkg. from lunar surface.	P18. 3
		:20 :22 :24 :26	. Grasp HFE Probe Pkg. carry strap.	P18. 4
		:28 :30 :32 :34 :36	. Disengage UHT handle from HFE Probe Pkg. carry handle.	P18. 5
		:38 :40 :42 :44	C4	P18. 6
		:46 :48 :50 :52 :54		
		:56 :58 01:41:00		(

ľask Io.	Commander Activity	ALSE D Tir (Cumulative)	LM Pilot Activity	Task No.
C23. 0 C23. 1	Deploy Geophones  Retrieve hammer from HTC and return to MPA pallet	01:41:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28	. Use pull ring to rotate sleeve containing probe forward and to remove probe assembly from sleeve.	P18.8
		:30	. Discard HFE Probe Pkg.	P18. 9
		:34 :36 :38 :40 :42	. Grasp probe assembly.	P18. 10
		:44 :46 :48 :50 :52	. Remove sail cloth retaining first probe end piece and discard sail cloth.	P18. 11
		:54 :56 :58 <b>01:42:</b> 00	. Remove sail cloth retaining second probe end piece and discard sail cloth.	P18. 12
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lask No.	Commander Activity	ALSED/ D T (Cumuative)	LM Pilot Activity	Task No.
		01:42:00 :02 :04 :06 :08 :10 :12 :14	. Position lower sunshield over spring on upper probe section.	P18. 13
		:18 :20 :22 :24 :26 :28 :30 :32	. Unfold probe assembly.	P18. 14
		:34 :36 :38 :40 :42 :44 :46 :48	. Insert probe into bore hole.	P18. 15
		:52 :54 :56 :58 01:43:00	. Unstow UHT.	P18. 16
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Task No.	Commander Activity	ALSFR/ D Ti (Cumurative)	LM Pilot Activity	Task No.
		01:43:00 :02 :04 :06	. Use UHT handle to hook emplacement tool strap.	P18. 17
		:08 :10 :12 :14 :16 :18	<ul> <li>Use UHT to lift emplacement tool from lunar surface.</li> </ul>	P18. 18
		:20 :22 :24 :26 :28	. Grasp emplacement tool.	P18. 19
C23. 2	Retrieve the first cable stake from MPA Pallet	:30 :32 :34 :36 :38	. Disengage UHT handle from emplacement tool strap and stow UHT.	P18. 20
		:40 :42 :44 :46 :48	. Place emplacement tool "crow's foot" between lower and upper sunshield.	P18. 21
		:50 :52 :54 :56 :58 01:44:00		Page
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Fask No.	Commander Activity	AL D D (Cumulative)	LM Pilot Activity	Task No.
C23.3	. Insert the stake through the cable loops near central station and embed into lunar surface using hammer.	01:44:00 :02 :04 :06 :08	. Use emplacement tool to complete emplacement of probe in drill hole.	P18. 22
		:10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30		
C23.4	. Return to MPA Pallet.	:32 :34 :36		
C23.5	. Retrieve second stake from MPA Pallet and attach to suit/UHT attachment.	:38 :40 :42 :44 :46 :48	Observe emplacement tool marking and and report.  Remove emplacement tool from drill	P18. 23
		:52 :54 :56 :58 01:45:00	hole.	P18. 24

Fask No.	Commander Activity	AL: D Ti. (Cumulative)	LM Pilot Activity	Task No.	
C23.6	. Retrieve thumper/Geophone from subpallet.	01:45:00 :02 :04 :06			
C23.7	. Return to thumper/Geophone cable stake/marker flag.	:12			
C23.8	. Select line for geophone deployment.	:14 :16 :18			
C23.9	. Walk 13 feet west SW (along sunline) deploying geophone cable.	:20 :22 :24 :26 :28	. Use emplacement tool "crow's foot" to retrieve probe cable near upper sunshield	P18. 25	5
C23.10	. Emplace first geophone.	:30 :32 :34 :36 :38	. Place emplacement tool "crow's foot" around cable on far side of upper sunshield.	P18. 26	•
C23.11	. Walk 150 ft West SW deploying geophone cable and explosing the second cable loop.	:38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:46:00	<ul> <li>Use emplacement tool to slide upper sunshield along probe cable and toward probe assembly.</li> <li>Use emplacement tool to ensure upper sunshield is fully deployed over drill hole.</li> </ul>	P18. 27	

Γask No.	Commander Activity	ALCOP/ D 1 (Cumulative)	LM Pilot Activity	Task No.
		01:46:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:47:00	<ul> <li>Remove emplacement tool "crow's foot" from probe cable.</li> <li>Lower probe cable to lunar surface.</li> <li>Discard emplacement tool.</li> <li>Walk to HFE Electronics Pkg.</li> </ul>	P18. 29 P18. 31 P18. 32

ſask Vo.	Commander Activity	AJ / D (Cumulative)	LM Pilot Activity	Task No.
		01:47 <sub>:00</sub> :02 :04	Align HFE Electronics Pkg.  . Unstow UHT.  . With UHT handle retrieve dust cover	P19. 0 P19. 1 P19. 2
		:06 :08 :10 :12 :14	pull ring and pull to remove dust cover.	
		:16 :18 :20 :22 :24	. Disengage UHT handle from dust cover	P19. 3
		:26 :28 :30 :32 :34 :36 :38 :40	and discard dust cover.	F17. 3
		:44 :46 :48 :50 :52 :54	. Use UHT to release four Boyd bolts on HFE Electronics Package.	P19. 4
		:58 01:48:00		Page 97

ask fo.	Commander Activity	ALSD/ D T (Cumulative)	LM Pilot Activity	Task No.
		01:48:00 :02 :04 :06 :08 :10 :12 :14 :16 :18		
223.12	. Check geophone deployment line for straightness with respect to sunline and marker flag.	:22 :24 :26 :28 :30	. Engage UHT in HFE Electronics Pkg. carry socket.	P19. 5
723.13	. Emplace second geophone.	:32 :34 :36 :38 :40 :42	. Use UHT to remove HFE Electronics Pkg. from HFE Subpallet.	P19.6
		:42 :44 :46 :48 :50 :52	. Use UHT to lower HFE Electronics Pkg. to lunar surface so that its open side faces away from the equator.	P19.7
723.14	. Retrieve the second stake from Suit/UHT attachment.	:54 :56 :58 01:49:00		Page 98
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ask o.	Commander Activity	AI D T (Cumulative)	LM Pilot Activity	Task No.
23.15	. Insert stake through the cable loop and embed into lunar surface using boot or hammer if required.	01:49:00 :02 :04 :06 :08 :10 :12	. Observe bubble level and use UHT to leve the HFE Electronics Pkg.	IP19. 8
23.16	. Walk additional 150 ft deploying geophone cable.	:14 :16 :18 :20 :22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58 01:50:00	. Observe the shadow cast on the compass rose by the shaft of the UHT and use the UHT to align the HFE Electronics Pkg. to a predetermined setting.	Page 99

ask o.	Commander Activity	AL D T (Cumulative)	LM Pilot Activity	Task No.
		01:50:00 :02 :04 :06 :08 :10 :12 :14	<ul> <li>Disengage UHT from HFE Electronics Pkg.</li> <li>Untether UHT from EMU and discard UHT.</li> </ul>	P19. 10
		:18 :20 :22 :24 :26 :28 :30 :32 :34 :36	. LM Pilot ALSEP Activity Complete	
		:38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58		Pa
		01:51:00		Page 100

ask O.	Commander Activity	ALST D Tir (Cumulative)	LM Pilot Activity	Task No.
		01:51:00 :02 :04 :06 :08 :10 :12 :14 :16 :18		
		:22 :24 :26 :28 :30 :32 :34 :36 :38 :40 :42		
		:46 :48 :50 :52 :54 :56 :58 01:52:00		Page 101
a anny dan ni ing malayan panga ang naga ang ng mga ang ng n				

ask o.	Commander Activity	ALSED/ D T (Cumurative)	LM Pilot Activity	Task No.
C23. 17	. Check geophone deployment line for straightness with respect to sun line and the two marker flags.	01:52:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
C23.18	. Emplace third geophone.	:24 :26 :28 :30 :32 :34 :36 :38 :40		
C24. 0 C24. 1	Conduct Thumper Activity Remove Thumper/Geophone dust covers.	:46 :48 :50 :52 :54		
C24. 2	. Lower thumper base plate to lunar surface.	:56 :58 01:53:00		Page 102

Task No.	Commander Activity	A P/ D (Cumulative)	LM Pilot Activity		Task No.
C24.3	<ul> <li>Rotate squib selection knob to first position.</li> </ul>	01:53 :00 :02 :04			
C24. 4	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:06 :08 :10 :12 :14		·	
C <b>2</b> 4.5	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:16 :18 :20 :22 :24			
		:26 :28 :30 :32 :34			
C24.6	. Lower thumper base plate to lunar surface.	:36 :38 :40 :42			
C24.7	. Rotate squib selection knob to second position.	:44 :46 :48 :50			· ·
C24. 8	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:52 :54 :56 :58 01:54:00			Page
		·			103

ask io.	Commander Activity	AL / D T (Cumulative)	LM Pilot Activity	Task No.
C24.9	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	01:54:00 :02 :04 :06 :08 :10 :12		
C24. 10	. Lower thumper base plate to lunar	:16 :18 :20 :22 :24		
<b>6</b> 24 11	surface.	:26 :28		
C24. 11	Rotate squib selection knob to third position.	:30 :32 :34 :36		
C24. 12	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:38 :40 :42 :44 :46	*	
C24.13	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:48 :50 :52 :54 :56 :58		
		01:55:00		Page 104

ask	Commander Activity	AL D Tin(Cumulative)	LM Pilot Activity	7	Task No.
C24. 14 C24. 15	<ul> <li>Lower thumper base plate to lunar surface.</li> <li>Rotate squib selection knob to fourth position.</li> </ul>	01:55:00 :02 :04 :06 :08 :10 :12 :14 :16			
C24. 16	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:20 :22 :24 :26 :28 :30			
C24. 17	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:32 :34 :36 :38 :40 :42		:	
C24. 12	. Lower thumper base plate to lunar surface.	:46 :48 :50 :52 :54 :56 :58 01:56:00			Page 105

No. Activity (Cum ve) Activity No.  C24.19 Rotate squib selection knob to fifth position.  C24.20 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24.21 Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24.22 Lower thumper base plate to lunar surface. 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		· ·	ALSEP/ D		outes.	
C24. 19 Rotate squib selection knob to fifth position.  C24. 20 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21 Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22 Lower thumper base plate to lunar surface.  C24. 23 Rotate squib selection knob to switch position.  C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	Task	Commander	Ti	LM Pilot	and the second	Task
c24.20 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24.21 Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24.22 Lower thumper base plate to lunar surface. 28 28 230 232 24 24 25 26 28 28 230 232 24 25 26 28 28 230 232 24 25 26 28 25 26 28 25 26 28 25 26 28 25 26 28 25 26 28 25 26 26 28 25 26 26 26 26 26 26 26 26 26 26 26 26 26	No.	Activity	(Cum ve)	Activity		No.
C24. 20  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 21  Lower thumper base plate to lunar surface, 28  330  332  34  36  C24. 22  Lower thumper base plate to lunar surface.  C24. 23  Rotate squib selection knob to switch position.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.				,	·	·
C24. 20  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 22  :24 :26 :28 :30 :32 :34 :36 :38 :30 :32 :34 :36 :38 :40 :40 :42  C24. 22  Rotate squib selection knob to switch position.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	C24. 19	. Rotate squib selection knob to fifth	01.56.00			
C24. 20  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 120 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 138 136 136 132 134 136 136 138 136 136 138 136 138 136 138 136 138 136 138 136 138 136 138 136 138 136 138 136 138 136 138 136 138 138 139 139 139 139 139 139 139 139 139 139			1			
C24. 20  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 138  C24. 22  Lower thumper base plate to lunar surface. 138  C24. 22  Rotate squib selection knob to switch position. 144  position. 144  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire. 155  01:57:00		_	1			
C24. 20  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 22  134  136  138  139  134  136  138  140  138  140  141  140  141  140  141  151  16  17  18  18  19  19  19  19  19  19  19  19				,		
C24. 20 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 21 Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22 Lower thumper base plate to lunar surface. C24. 22 Lower thumper base plate to lunar surface. C24. 23 Rotate squib selection knob to switch position.  C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.						
wait at least 4 seconds, and press to fire.  C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface.  C24. 22  Rotate squib selection knob to switch position.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	C24.20	Rotate arm/fire switch to arm position	5			
C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 22  134  136  138  130  132  134  136  138  149  140  140  140  140  140  141  15  160  170  180  180  180  180  180  180  18		wait at least 4 seconds, and press to				
C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22  Lower thumper base plate to lunar surface. 24  C24. 22  Rotate squib selection knob to switch position. 254  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire. 26  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire. 26  116  118  120  122  124  126  128  130  132  134  136  138  140  142  142  144  155  155  152  154  155  155		fire.				
C24. 21  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  22						
C24. 21 Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  C24. 22 Lower thumper base plate to lunar surface.  C24. 23 Rotate squib selection knob to switch position.  C24. 24  C24. 25  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C26. 28  :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :52 :52 :52 :52 :53 :54 :56 :58 :58 :58 :50 :58 :58 :58 :58 :58 :58 :58 :58 :58 :58			1			
15 feet alongside geophone cable toward stake, deploying thumper cable.  22	C24. 21	Lift thumper from lunar surface, walk	9			
C24. 22  C24. 22  C24. 23  C24. 24  C24. 24  C24. 25  C24. 24  C24. 24  C24. 25  C24. 24  C24. 24  C24. 24  C24. 25  C24. 24  C25. 26  28  230  232  234  236  238  240  240  240  242  240  240  240  24		15 feet alongside geophone cable toward				•
126   128   130   132   134   136   138   140   140   142   142   144   146   148   150   152   154   156   158   160		stake, deploying thumper cable.	l I			
C24. 22 . Lower thumper base plate to lunar surface.  C24. 23 . Rotate squib selection knob to switch position.  C24. 24 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C26. 25 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.			1			
C24. 22 . Lower thumper base plate to lunar surface.  C24. 23 . Rotate squib selection knob to switch position.  C24. 24 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.						
C24. 22 Lower thumper base plate to lunar surface.  C24. 23 Rotate squib selection knob to switch position.  C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.			1			
C24. 22 Lower thumper base plate to lunar surface.  C24. 23 Rotate squib selection knob to switch position.  C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.			•			
C24. 22  Lower thumper base plate to lunar surface.  C24. 23  Rotate squib selection knob to switch position.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25  C24. 26  C24. 27  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 26  C24. 27  C24. 29  Rotate squib selection knob to switch 144  146  148  150  151  152  154  155  158  158  11:57:00			1			
C24. 22 Lower thumper base plate to lunar surface.  C24. 23 Rotate squib selection knob to switch position.  C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.			1			
C24. 22 . Lower thumper base plate to lunar surface.  C24. 23 . Rotate squib selection knob to switch position.  C24. 24 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25 . Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.						
C24. 23  Rotate squib selection knob to switch position.  C24. 24  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  C24. 25  C24. 26  :42  :44  :46  :48  :50  :52  :54  :56  :58  01:57:00	C24. 22	. Lower thumper base plate to lunar sur-	£ .			
C24. 23  Rotate squib selection knob to switch position.  144 146 148 150 152 154 156 156 158 11:57:00		face.	1			
position.  146 148 150 152 152 154 156 157 100 157 100	C24 23	Potato squib galaction by ab to your				
C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  :48 :50 :52 :54 :56 :58 01:57:00	024.63					
C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  150 152 154 156 158 01:57:00		position.	•	•		•
C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  152 156 158 01:57:00			•		Ì	
C24. 24 Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  1. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to 1:56 1:58 1:58 1:58 1:57 1:00			I .			
wait at least 4 seconds, and press to fire.  156 158 01:57:00	C24, 24	Rotate arm /fire switch to same position	3			
fire. :58 01:57:00	0111-1	wait at least 4 seconds, and need to				
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		01:57:00			
		:02			
C24.25	7 *64 41 1	:04			
C24. 25	Lift thumper from lunar surface, walk	:06			
	15 feet alongside geophone cable toward stake deploying thumper cable.	:08		1	1
	stake deproying thumper cause.	:10			
		:12		İ	1
		:14		ŀ	
		:16		İ	
		:18		İ	
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~~4 7/		:22		1	
C24.26	. Lower thumper base plate to lunar	:24		1	
	surface.	:26		!	
~24 27		:28		•	
C24. 27	. Rotate squib selection knob to seventh	:30		ļ	
	position.	:32			
		:34	İ		
		:36			
C24. 28	. Rotate arm/fire switch to arm position,	:38		1	
021, 20	wait at least four seconds, and press	:40			
	to fire.	:42		ļ	
		:44			
		:46		,	
		:48	1		·
C24. 29	· Lift thumper from lunar surface, walk	:50 :52			
	15 feet alongside geophone cable toward	:54			
	stake, deploying thumper cable.	:54			
		:58	·		<b></b>
	1	01:58:00		1	Page
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fask No.	Commander Activity	ALSTO D Ti (Cumurative)	LM Pilot Activity	Task No.
7. 2200		01:58:00		
		:02		
		:04		
		:06		į
		:08		1
C24.30	. Lower thumper base plate to lunar	:10		
	surface.	:12		,
		:14		•
C24.31	. Rotate squib selection knob to eighth	:16		
	position.	:18		
		:20		
3		:22		
C24.32	. Rotate arm/fire switch to arm position,	:24		
	wait at least 4 seconds, and press to	:26		
	fire.	:28		
		:30		į į
~24 22		:32		1
C24.33	. Lift thumper from lunar surface, walk	:34		
	15 feet alongside geophone cable toward	:36		
	stake, deploying thumper cable.	:38		
		:40		
		:42		
		:44		<u> </u>
		:46		!
		:48		!
		:50 :52		
C24.34	7 41	:52		
U24. 34	. Lower thumper base plate to lunar	:56		<u> </u>
	surface.	:58		<b> </b>
		01:59:00		Page
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Commander Activity	ALSEP/D Ti (Cumuive)	LM Pilot Activity		Task No.
. Rotate squib selection knob to ninth position.	01:59:00 :02 :04 :06			
<ul> <li>Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.</li> </ul>	:10 :12 :14 :16			
. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:20 :22 :24 :26 :28 :30 :32 :34			
. Lower thumper base plate to lunar surface.	:40 :42 :44			
. Rotate squib selection knob to tenth position.	:46 :48 :50 :52			
. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:54 :56 :58 02:00:00			Page 109
	Rotate squib selection knob to ninth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  Lower thumper base plate to lunar surface.  Rotate squib selection knob to tenth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to	Commander Activity  Rotate squib selection knob to ninth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  Lower thumper base plate to lunar surface.  Rotate squib selection knob to tenth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to 1:2  114  116  118  120  121  121  122  124  126  128  130  132  134  136  138  140  140  141  140  141  140  140  14	Commander Activity  Cumuve)  Rotate squib selection knob to ninth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  Lower thumper base plate to lunar surface.  Rotate squib selection knob to tenth position.  Cumuve)  Activity  LM Pilot Activity  104 :06 :08 :112 :14 :16 :18 :20 :22 :24 :26 :22 :24 :26 :28 :30 :30 :32 :34 :36 :38 :40 :40 :42 :44 :46 :48 position.  Rotate squib selection knob to tenth position.  So :50 :52 :54  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to :56	Commander Activity  Rotate squib selection knob to ninth position.  Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.  Lower thumper base plate to lunar surface.  Rotate squib selection knob to tenth position.  Commander (Cumuve)  Activity  LM Pilot Activity  LM Pilot Activity  LM Pilot Activity  Lower load  102  104  116  118  118  120  124  124  126  128  130  132  134  136  138  Lower thumper base plate to lunar surface.  140  141  140  141  140  141  141  14

(ask Vo.	Commander Activity	ALSED D Tir (Cumulauve)	LM Pilot Activity	Task No.
C24. 41	<ul> <li>Lift thumper from lunar surface, walk</li> <li>15 feet alongside geophone cable toward</li> <li>stake, deploying thumper cable.</li> </ul>	02:00 :00 :02 :04 :06 :08 :10		
		:12 :14 :16 :18 :20 :22		
C24. 42	. Lower thumper base plate to lunar surface.	:24 :26 :28		
C24. 43	. Rotate squib selection knob to eleventh position.	:30 :32 :34 :36 :38	·	
C24. 44	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:40 :42 :44 :46 :48		
C24.45	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:50 :52 :54 :56 :58		ਮੁ
		02:01 :00		Page 110
on in an until the state of the				

ask	Commander Activity	ALSF D Tin (Cumulative)	LM Pilot Activity	Task No.
		02:01:00 :02 :04 :06		
C24.46	<ul> <li>Lower thumper base plate to lunar surface.</li> </ul>	:08 :10 :12 :14		
C24.47	Rotate squib selection knob to twelfth position.	:16 :18 :20 :22		
C24. 48	Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:24 :26 :28 :30		
C24. 49	Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:32 :34 :36 :38 :40 :42 :44 :46		
C24. 50	. Lower thumper base plate to lunar surface.	:50 :52 :54 :56 :58 02:02:00		Page 111

Task No.	Commander Activity	AL / D 1 (Cumulative)	LM Pilot Activity		Task No.
C24. 51	Rotate squib selection knob to thirteenth	02:0200			
	position.	:02			
		:04			
		:06			
C24. 52	. Rotate arm/fire switch to arm position,	:08			
<b>C</b>	wait at least four seconds, and press	:10			
	to fire.	:12 :14			
		:14			ļ
		:18			
C24.53	Lift thuman and from laws a second	:20			İ
021.33	Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward	:22			
	stake, deploying thumper cable.	:24	·		}
	deproying thumper capie.	:26			
		:28			
		:30			ł
		:32			i
		:34			
		:36	j		
C24.54	. Lower thumper base plate to lunar	:38			
	surface.	:40 :42		:	
		:44	1	:	ĺ
C 24.55	. Rotate squib selection knob to fourteenth				ł
	position.	:48			
		:50			
		:52			]
C24.56	. Rotate arm/fire switch to arm position,	:54			
	wait at least 4 seconds, and press to	:56			
	fire.	:58			
		02:03:00			Pag
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Task No.	Commander Activity	ALSED/ D T (Cumulative)	LM Pilot Activity	Task No.
C24. 57	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	02:03:00 :02 :04 :06 :08 :10 :12 :14		
C24. 58	. Lower thumper base plate to lunar surface.	:18 :20 :22 :24 :26 :28		
C24. 60	<ul> <li>Rotate squib selection knob to fifteenth position.</li> <li>Rotate arm/fire switch to arm position,</li> </ul>	:30 :32 :34 :36 :38 :40		
C24.61	wait at least 4 seconds, and press to fire.  Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward	:42 :44 :46 :48 :50 :52		
	stake, deploying thumper cable.	:54 :56 :58 02:04 :00		Page 113

Task No.	Commander Activity	AI P/ D (Cumulative)	LM Pilot Activity		Task No.
		02:04:00			
		:02			
		:04		İ	<u>*</u>
		:06		İ	
C24. 62	. Lower thumper base plate to lunar	:08			
	surface.	:10 :12			
C24. 63	. Rotate squib selection knob to sixteenth	:14			
024.03	Rotate squib selection knob to sixteenth position.	:16			
	position.	:18		-	
		:20	•		
		:22		1	
C24.64	. Rotate arm/fire switch to arm position,	:24		l	
	wait at least 4 seconds, and press to	:26			
	fire.	:28			
		:30 :32			
C24. 65	Tift thuman on forms have	:34			
C24. 05	Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward	:36			
	stake, deploying thumper cable.	:38			
	thanks, deproying thaniper cable.	:40			
		:42		ľ	
		:44		j	
		:46			
		:48			
		:50			
•		:52 :54			
C24 44		:56		•	
C24.66	<ul> <li>Lower thumper base plate to lunar surface.</li> </ul>	:58			
	surface.	02:05 :00			Page
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Task No.	Commander Activity	ALSEP/ D (Cur. tive)	LM Pilot Activity	The state of the s	Tas No.
C24. 67	. Rotate squib selection knob to seventeent	h02:05:00			
	position.	:02			1
		:04			1
!		:06	j		į
e e e e e e e e e e e e e e e e e e e		:08			1
C24.68	. Rotate arm/fire switch to arm position,	:10			
	wait at least 4 seconds, and press to	:12			1
	fire.	:14	1	•	•
		:16			Ì
C24. 69		:18			1
C24. 69	. Lift thumper from lunar surface, walk	:20			1
	15 feet alongside geophone cable toward	:22 :24	-		l
	stake, deploying thumper cable.	:26			1
		:28			l
		:30			1
		:32			1
		:34			•
		:36			1
G2.4 = 0		:38			1
C24.70	· Lower thumper base plate to lunar surface	e. :40			į
		:42			[
C24.71		:44			į
C24. / I	Rotate squib selection knob to eighteenth				ł
	position.	:48			ł
		:50			1
		:52			}
C24.72	Rotate arm/fire switch to arm position,	:54			l
	wait at least 4 seconds, and press to	:56 :58			1
		02:06 :00			ħ
		02:06 :00			9
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Task No.	Commander Activity	A P/ D (Cumulative)	LM Pilot Activity	Task No.
C24.73	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	02:06 :00 :02 :04 :06 :08 :10 :12		
	••• • • • • • • • • • • • • • • • • • •	:16 :18 :20 :22		
C24.74	<ul> <li>Lower thumper base plate to lunar surface.</li> </ul>	:24 :26 :28		
C24.75	. Rotate squib selection knob to nineteenth position.	:30 :32 :34		
C24.76	<ul> <li>Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.</li> </ul>	:36 :38 :40 :42		
		:44 :46 :48		
C24.77	<ul> <li>Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.</li> </ul>	:50 :52 :54 :56 :58		
		02:07 :00	·	Page 116
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Task No.	Commander Activity	AJ P/ D (Cumulative)	LM Pilot Activity	Task No.
C24. 78 C24. 79 C24. 80	<ul> <li>Lower thumper base plate to lunar surface.</li> <li>Rotate squib selection knob to twentieth position.</li> <li>Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.</li> </ul>	02:07 :00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22 :24 :26 :28		
C24. 81	. Lift thumper from lunar surface, walk 15 feet alongside geophone cable toward stake, deploying thumper cable.	:30 :32 :34 :36 :38 :40 :42		
C24. 82	. Lower thumper base plate to lunar surface.	:46 :48 :50 :52 :54 :56 :58 02:08:00		Page 117

.sk ),	Commander Activity	ALSEP/ Time (Cumulative)	LM Pilot Activity	Task No.
C24. 83	. Rotate squib selection knob to twenty- first position.	02:08:00 :02 :04 :06		
C24. 84	. Rotate arm/fire switch to arm position, wait at least 4 seconds, and press to fire.	:08		
C24. 85	. Discard thumper assembly.	:18 :20 :22 :24 :26		
C24.86	. Return to Central Station.	:28 :30 :32 :34 :36 :38		
		:40 :42 :44 :46 :48		
		:50 :52 :54 :56 :58		ъ
		02:09:00		Page 118

Task No.	Commander Activity	ALSEP D Tim (Cumulative)	LM Pilot Activity		Task No.
C24. 87	· Unstow UHT.	02:09:00		~ <u>-</u>	
<b>~~</b>		:02	N. Carlotte and the second sec		
C24.88	· Use UHT to turn off Astronaut switch	:04			
	No. 5 (Sw#5-CW-Disable)	:06			
		:08			
		:10			
		:12	İ		
G24 00		:14			
C24.89	. Stow UHT.	:16			
G35 0		:18			
C25.0	Photograph ALSEP	:20	Ì		
	02:20:00	:22			<u> </u>
		;24			
	· ·	:26			}
		:28			i
	4	:30			
		:32			i
		:34		I	<u> </u>
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ask o.	Commander Activity	ALSEP Time (Cumulative)	LM Pilot Activity	Task No.
226. 0	02:20:00 Recover Core 02:26:00	02:20:00 :02 :04 :06 :08 :10 :12		
		:16 :18 :20 :22 :24 :26 :28 :30 :32		
		:34 :36 :38 :40 :42 :44 :46 :48		
		:50 :52 :54 :56 :58 02:26:00		Page 120

Task No.	Commander Activity	ALSED/ D T (Cumuzative)	LM Pilot Activity	Task No.
C27. 0 C27. 1	Deploy Mortar Pkg. Assembly . Unstow UHT.	02:26:00		
C27.2	Engage UHT in Mortar Package Assembly carry socket.	:04 ly :06 l :08 :10		
C27.3	. Use UHT to lift Mortar Package Assemble from lunar surface.	:12 ly :14   :16		
C27.4	. Walk approximately 50 feet north from	:18 :20 :22 :24		
<del>-</del>	central station (at a right angle to the T/G line).	:26 :28 :30		
		:32 :34 :36 :38		
		:40 :42 :44		
		:46 :48 :50 :52		
		:54 :56 :58		Pa
		02:27 :00		Page 121

ask o.	Commander Activity	ALSEP/ D Tim (Cumul. e)	LM Pilot Activity	 Task No.
		02:27 :00 :02 :04 :06 :08		
		:10 :12 :14 :16 :18		
C27.5	. With UHT lower Mortar Package to lunar surface.	:20 :22 :24 :26 :28		
C27.6	. Disengage UHT from Mortar Package Assembly carry socket.	:30 :32 :34 :36 :38		
C27.7	. Stow UHT.	:40 :42 :44 :46 :48		
C27.8	. Walk to MPA Pallet.	:50 :52 :54 :56 :58 02:28 :00		Page 122
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isk o.	Commander Activity	ALSET Tim (Cumulative)	LM Pilot Activity	Task No.
		02:28:00 :02 :04 :06		
		:08 :10 :12 :14 :16		
e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de		:18 :20 :22 :24		
		:26 :28 :30 :32 :34		
		:36 :38 :40 :42 :44		
C27.9	. Grasp MPA Pallet by handle and lift	:46 :48		
02117	from lunar surface.	:50 :52 :54 :56 :58		ָּטָ
		02:29:00		Page 123
ing on an early confirmation as seeing the continuous and early filling in forther				

iask Jo.	Commander Activity	ALSF D Tir (Cumulative)	LM Pilot Activity	Task No.
C27.10	. Return to Mortar Package Assembly site.	02:29:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
		:24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44		
		:48 :50 :52 :54 :56 :58 02:30 :00		Page 124

ask o.	Commander Activity	ALSEP D Tim (Cumulative)	LM Pilot Activity		Task No.
C27.11	. Release velcroed MPA Pallet anchor pull ring and pull lanyard to deploy the MPA Pallet anchors and discard pull ring/lanyard assembly.	02:30:00 :02 :04 :06 :08 :10 :12			
C27. 12	<ul> <li>Release velcroed MPA Pallet deployment pull ring and use pull ring to remove pull</li> </ul>	:16 :18 :20 :22 :24 :26 :28 :30		·	
	pin and deploy MPA Pallet.	:32 :34 :36 :38 :40 :42 :44 :46			
		:50 :52 :54 :56 :58 02:31:00			Page 125
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Task No.	Commander Activity	(Cur)	LM Pilot Activity		Task No.
		02:31:00		The second secon	THE PERSON OF A PROPERTY OF A STATE OF THE PERSON OF THE P
		:02 :04			·
		:06		•	
		:10 :12			
		:14 :16			
·C27.13	<ul> <li>Discard pallet deployment pull ring/pull pin assembly.</li> </ul>	:18 :20 :22	•		
		:24 :26	•		
C27.14	. Lower MPA Pallet to lunar surface so	:28 :30			
	that the MPA will fire west SW.	:32 :34 :36			
		:38 :40		-	
		:42 :44			
C27.15	• Engage UHT into MPA Pallet UHT	:46 :48			
	socket.	:50 :52 :54	,		
	·	:56 :58		-	•
·		02:32:00			<del>ك</del> ه
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ask o.	Commander Activity	ALSF Tim (Cumulative)	LM Pilot Activity	, who have a second	Task No.
C27.16	. Observing the compass rose/UHT align	02:32:00			
	the MPA pallet on the lunar surface so that the MPA will fire west SW (along	:02			
	sunline) and parallel to the T/G deploy-	:04 :06			
	ment line.	:08			
		:10			
		:12			
		:14			
		:16			
		:18			
C27.17	. Embed pallet anchors into lunar surface				
	with UHT and lunar boot.	:22	[		
	·	:24			
		:26 :28		1	
		:30			
		:32			
		:34			
		:36			
		:38			
C27.18	. Engage UHT in Mortar Package Assembl	y :40			
	carry socket.	:42			
		:44			
		:46			
C27.19	. Use UHT to lift Mortar Package Assemb	! :48			
	from lunar surface.	ly :50   :52			
		:54		<u> </u>	
		:56			
		:58			
		02:33:00			<b>'</b> d
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ask o.	Commander Activity	ALSF D Tin (Cumulative)	LM Pilot Activity		Task No.
C27.20	. Partially unfold Mortar Package Assem	- 02:33:00			
	bly antenna.	:02			
		:04			
		:06			
		:08			
		:10			
		:12			
		:14	,		
		:16			
C27.21	W:41 TTTT	:18			
C21.21	. With UHT emplace and lock Mortar	:20			
	package assembly on MPA Pallet.	:22			
		:24			
		:26			
		:28 :30			
		:32			
		:34			
		:36			
		:38			
		:40			
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C27. 22 . Complete Mortar Package Assembly antenna deployment.  02:34:00 :02 :04 :06 :08 :10 :12	<del>.</del>
:02 :04 :06 :08 :10	
:04 :06 :08 :10	
:06 :08 :10	
:08 :10	
:10	
}	
1 • 1/	
:14	
:16	
:18	
C27.23 . Check level and alignment of the MPA/ :20	
Pallet assembly (MPA/Geophone :22	
alignment must be parallel within ±5°).	
:26	
:28	
:30	
:32	
:34	
:36	
C27.24 Disenagage UHT from Mortar Package	
1.10	
assembly carry socket. :42	
:44	
:46	
C27. 25 Use UHT to rotate latch on safety pin :50	
C27. 25 Use UHT to rotate latch on safety pin :50 :52	
;52 ;54	
:56	
:58	
02:35:00	
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129	

ask o.	Commander Activity	ALSEP D Tim (Cumularive)	LM Pilot Activity	Task No.
C27. 26	. Engage UHT in Mortar package assem- carry socket.	02:35:00 :02 :04		
C27. 27	. Retrieve safety pin removal lanyard.	:06 :08 :10 :12 :14		·
C27. 28	<ul> <li>Pull safety pin removal lanyard, while exerting a counter-force on UHT, to remove safety pin, and discard safety pin.</li> </ul>	:16 :18 :20 :22 :24		
C27. 29	Disengage UHT from Mortar package assembly carry socket.	:26 :28 :30 :32 :34		
C27.30	<ul> <li>Use UHT to turn on two Mortar package assembly safe/arm switches.</li> </ul>	:36 :38 :40 :42 :44		
		:46 :48 :50 :52 :54		
		:56 :58 02:36:00		Page I
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ask io.	Commander Activity	ALSEP/ D Tir (Cumula-ve)	LM Pilot Activity		Task No.
C27.31	. Recheck MPA/Pallet level and alignment	. 02:36:00			
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		:10		I	
		:12			į
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C27.32	· Stow UHT	:16		ĺ	
G27 22		:18		]	
C27.33	. Return to central station.	:20			,
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		:24		j	
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Cask No.	Commander Activity	ALSEP Time (Cumulative)	LM Pilot Activity	Task No.
		02:37 :00 :02 :04	,	-
		:06 :08 :10		
C27.34	. Unstow UHT	:12 :14 :16 :18		
C27.35	. Use UHT to turn on Astronaut switch No. 5 (full CCS rotation).	:20 :22 :24 :26		
C27.36	. Recheck antenna orientation.	:28 :30 :32 :34		
		:36 :38 :40		
		:42 :44 :46 :48		
		:50 :52 :54 :56 :58 02:38:00		
		:58 02:38:00		Page 1
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Гask No.	Commander Activity	ALSI Tim (Cumula'ive)	LM Pilot Activity	Task No.
C27. 37	. Untether UHT from EMU and discard UHT.  ALSEP Deployment Complete	02:38:00 :02 :04 :06 :08 :10 :12 :14 :16 :18 :20 :22		
		:24 :26 :28 :30 :32 :34 :36 :38 :40 :42 :44 :46 :48 :50 :52 :54 :56 :58		Page 133
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