

GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA

Memorandum

TO : All Employees

DATE July 9, 1969

FROM : Manager, Mission Operations Office,
PM-MO-MGR

In reply refer to:
PM-MO-MGR-114-69

SUBJECT : Abbreviated Apollo 11 Timeline

Because of the importance and historical significance of the Apollo 11 Mission, we have prepared an abbreviated Apollo 11 timeline from Liftoff to Splashdown to help you in following this mission from day to day.

This timeline is based on a nominal liftoff time of 8:32 a. m. CDT on July 16, 1969, which corresponds to a 72° Launch Azimuth. A space is left in the timeline (CDT, Actual) to allow you to make any corrections to this nominal time. Highlights of this mission include the LM Lunar touchdown at 3:19 p. m. CDT on Sunday, July 20, and then at 1:17 a. m. CDT on Monday. Astronaut Neil Armstrong is scheduled to be the first man to step onto the moon's surface. Liftoff from the lunar surface is scheduled to occur just 21 hours 36 minutes after touchdown, or 12:55 p. m. CDT, Monday, July 21.

The Mission Profile for Apollo 11 is:

	hrs:min	Ground Elapsed Time (GET)
Launch Phase	0:11	T-0 to 0:11
Earth Parking Orbit	2:33	0:11 to 2:44
Translunar Coast (TLC)	73:10	2:44 to 75:54
Lunar Orbit (LO)	59:30	75:54 to 135:24
LM Undocked from CSM	27:45	100:15 to 128:00
Transearth Coast to Splashdown	59:53	135:24 to 195:17

The Flight Crew for Apollo 11 is:

Commander (CDR)	Neil Armstrong
Command Module Pilot (CMP)	Michael Collins
Lunar Module Pilot (LMP)	Edwin Aldrin

TV transmission times were not available and will be announced during the mission. A list of acronyms is included for your information. If additional information is required, please contact Mr. Beutjer, PM-MO-H, 453-2260.

F. A. Speer

F. A. Speer

Distribution: SDL-5

APOLLO 11



AS-506

LUNAR LANDING

Abbreviated Timeline

prepared by

**MISSION OPERATIONS OFFICE
MARSHALL SPACE FLIGHT CENTER
Huntsville, Alabama**

LIST OF ACRONYMS

AOS	Acquisition of Signal
APS	Ascent Propulsion Subsystem
CDH	Constant Delta Altitude
CDR	Commander
CM	Command Module
CMP	Command Module Pilot
C/O	Check out
CSI	Coelliptic Sequence Initiation
CSM	Command Service Module
DOI	Descent Orbit Insertion
DPS	Descent Propulsion Subsystem
DST	Daylight Saving Time
EASEP	Early Apollo Scientific Equipment Package
EI	Earth (atmosphere) Interface
EVA	Extravehicular Activity
EOI	Earth Orbit Insertion
GET	Ground Elapsed Time
IVT	Intravehicular Transfer
LM	Lunar Module
LMP	Lunar Module Pilot
LO	Lunar Orbit
LOI	Lunar Orbit Insertion
LOS	Loss of Signal
LPO	Lunar Parking Orbit
LV	Launch Vehicle
MCC	Midcourse Correction
MSFN	Manned Space Flight Network
PDI	Powered Descent Initiate
RCS	Reaction Control System
RNDZ	Rendezvous
SM	Service Module
SPS	Service Propulsion System
SWC	Solar Wind Composition
SR	Sunrise
SS	Sunset
TEC	Trans Earth Coast
TEI	Transearch Insertion
TLC	Trans Lunar Coast
TLI	Translunar Insertion
TPI	Terminal Phase Initiation
TV	Television

ABBREVIATED APOLLO 11 TIMELINE
LUNAR LANDING
(BASED ON A NOMINAL LIFTOFF OF 8:32 a.m. CDT ON JULY 16, 1969)

Wednesday, July 16				Saturday, July 19 (cont'd)				
GET	CDT	CDT Actual	EVENT	GET	CDT	CDT Actual	EVENT	REV
00:00:00	8:32a		Liftoff	76:19	12:51p		AOS:85 Min. (SS-43)	
00:02:41	8:35		S-IC/S-II Separation	78:27	2:59		AOS:85 Min. (SS-43)	<u>2</u>
00:02:42	8:35		S-II Ignition	80:09:30	4:42		• LOI ₂ (54x66)(SR+12) (SPS:16.4sec)	
00:09:11	8:41		S-II/S-IVB Separation	80:37	5:09		AOS:72 Min. (SS-33)*	<u>3</u>
00:09:15	8:41		S-IVB Ignition	81:32	6:04		Clear Tunnel-Open Hatch	
00:11:40	8:44		S-IVB Cutoff	81:46	6:18		LMP IVT To LM (Housekeeping Chores)	
02:44:26	11:16		S-IVB Reignition-TLI	82:35	7:07p		AOS:72 Min (SR+39)	<u>4</u>
02:49:46	11:22		S-IVB Cutoff	83:41	8:13		LMP IVT To CSM	
03:15	11:47		LV/CSM Separation	83:45	8:17		Close LM Hatch	
03:25	11:57		CSM/LM Docking	84:33	9:05		AOS:72 Min (SR+38)	<u>5</u>
04:09:45	12:42p		LM Ejection	85:00	9:32		Begin Rest (9 Hours)	
04:39:45	1:12		CSM/LM Evasive (SPS:3sec)					
05:01	1:33		S-IVB Slingshot					
11:45	8:17		MCC ₁ (SPS)					
13:30	10:02		Begin Rest (9 Hours)					
Thursday, July 17				Sunday, July 20 (Lunar Landing Day)				
22:30	7:02a		End Rest	94:00	5:32a		End Rest	
26:45	11:17		MCC ₂	94:24	6:56		AOS:72 Min (SR+37)	<u>10</u>
37:00	9:32p		Begin Rest (10 Hours)	95:50	6:56		• LMP IVT To LM	
				96:22	8:54		AOS: 72 Min (SR+36)	<u>11</u>
				96:25	8:57		LM Power ON	
				96:50	9:22		CDR IVT To LM	
				97:20	9:52		LMP IVT To CSM	
				97:35	10:07		• LMP IVT To LM	
				97:55	10:27		• Close CSM & LM Hatch	
				98:21	10:53		AOS:71 Min (SR+37)	<u>12</u>
				99:05	11:37		Deploy Landing Gear	
				99:22	11:54		GO/NO-GO For Undocking	
				100:15	12:47p		• Undocking	<u>13</u>
				100:19	12:51		AOS (CSM/LM):71 Min(SR+36)	
				100:39:50	1:12		CSM Separation Burn(RCS:8sec)	
				101:18	1:50		GO/NO-GO For DOI	
				101:38:48	2:11		DOI (DPS 28.5sec)(9x58)	
				102:17	2:49		AOS(CSM):72 Min(SR+36)	<u>14</u>
				102:19	2:51		AOS(LM) Continuously (22 Hours 51 Min.)	
				102:35:13	3:07		PDI (DPS:11 Min 58sec)	
				102:47:11	3:19		Touchdown(Lun.Stay21:36:15)	
				102:50	3:22		LM Checkout & Simulated Countdown	
				103:50	4:22		Photograph Lunar Surface	
				104:15	4:47		AOS(CSM): 71 Min(SR+36)	<u>15</u>
				104:22	4:54		GO/NO-GO For Lunar Surface Operations	
				105:30	6:02		Begin Rest-LM(4 Hours)	
				106:13	6:45		AOS(CSM):72 Min(SR+35)	<u>16</u>
				107:05:33	7:38		CSM Plane Change(SPS: .8 Sec)	
				107:20	7:52		Begin Rest-CSM (4 Hours)	
Friday, July 18								
47:00	7:32a		End Rest					
53:55	2:27p		MCC ₃					
56:00	4:32		Clear Tunnel-Open Hatch					
56:15	4:47		LMP IVT To LM					
56:20	4:52		CDR IVT To LM					
56:28	5:00		LM Familiarization					
57:45	6:17		LMP IVT To CSM					
57:50	6:22		CDR IVT To CSM					
58:00	6:32		Close LM Hatch					
60:00	8:32		Begin Rest (9 Hours)					
Saturday, July 19								
69:00	5:32a		End Rest					
70:00	6:32		200,000 nm From Earth					
70:55	7:27		MCC ₄					
71:18	7:50		Enter Moon's Shadow					
73:52	10:24		Leave Moon's Shadow					
75:35	12:07p		GO/NO-GO For LOI ₁					
75:46	12:18		LOS LM/CSM					
75:54:28	12:27		• LOI ₁ (59x170) (SPS:360sec)					<u>1</u>

• Event performed outside range of MSFN

* After LOI₂: Lunar day is approx. 72 min long;
Lunar night is approx. 46 min long

GET	CDT	CDT Actual	EVENT	REV	GET	CDT	CDT Actual	EVENT	REV
Sunday, July 20 (Cont'd)									
109:30	10:02 _p		End Rest-LM		127:28:08	4:00 _p		● Rndz MCC ₂ :LM RCS	
110:09	10:41		AOS(CSM):72 Min(SR+34) <u>18</u>		127:36:57	4:09		● Begin LM RCS Braking (5 Maneuvers)	
110:32	11:04		Begin Prep.For Egress.		127:53	4:25		AOS(CSM & LM)72 Min (SR+32)	<u>27</u>
111:21	11:53		End Rest-CSM		128:00	4:32		Docking	
					129:51	6:23		AOS:72 Min(SR+32)	<u>28</u>
					130:10	6:42		CDR IVT To CSM	
					130:45	7:17		LMP IVT To CSM	
					131:50	8:22		AOS:71 Min(SR+32)	<u>29</u>
Monday, July 21					131:53:05	8:25		LM Jettison(CSM-RCS: 3.1 sec)	
112:08	0:40 _a		AOS(CSM):71 Min(SR+34) <u>19</u>		133:47	10:19		AOS:72 Min(SR+31)	<u>30</u>
112:30	1:02		Depress Cabin, Open Hatch.Start EVA (2 Hr. 40 Min)		135:24:34	11:57		● TEI (SPS:149 sec)	
112:45	1:17		Initial EVA(CDR),TV On		Tuesday, July 22				
112:55	1:27		Sample Collection(CDR)		135:35	0:07 _a		AOS: Continuously	
113:13	1:45		Initial EVA (LMP)		137:00	1:32		Begin Rest (10 Hours)	
113:15	1:47		TV Deployment(CDR)		147:00	11:32		End Rest	
113:20	1:52		SWC Deployment (LMP)		150:24	2:56 _p		MCC ₅	
113:24	1:56		Bulk Sample Collection (CDR)		Wednesday, July 23				
113:40	2:12		LM Inspection(CDR/LMP)		160:00	0:32 _a		Begin Rest (10 Hours)	
113:55	2:27		EASEP Deployment (CDR/LMP)		170:00	10:32		End Rest	
114:06	2:38		AOS (CSM):72 Min <u>20</u> (SR+34)		172:00	12:32 _p		MCC ₆	
114:08	2:40		Documented Sample Collection(CDR/LMP)		182:00	10:32		Begin Rest (7 Hours)	
114:42	3:14		Terminate EVA (LMP)		Thursday, July 24				
115:00	3:32		Terminate EVA (CDR)		189:00	5:32 _a		End Rest	
115:10	3:42		Close Hatch, Repress Cabin, End EVA		192:06	8:38		MCC ₇	
116:04	4:36		AOS(CSM):72 Min(SR+34) <u>21</u>		194:50	11:22		CM/SM Separation	
116:12	4:44		Cabin Depress		195:03:27	11:35		EI (400 KFT)	
116:18	4:50		Open Hatch-Jettison Equipment		195:03:45	11:36		Enter S-Band Blackout	
116:20	4:52		Begin Rest-CSM(4 Hr. 50 Min)		195:04:49	11:37		Peak G	
116:24	4:56		Repress Cabin - LM		195:06:51	11:39		Exit S-Band Blackout	
117:20	5:52		Begin Rest-LM(4 Hr. 40 Min)		195:11:39	11:44		Drogue Chute Deploy	
121:10	9:42		End Rest-CSM		195:12:27	11:44		Main Chute Deploy	
122:00	10:32		End Rest-LM		195:17:22	11:49		Splashdown (25 Min Prior to SR Local Time)	
123:56	12:28 _p		AOS(CSM):72 Min(SR+32) <u>25</u>						
124:23:26	12:55		APS Liftoff(7 Min 18 Sec)						
124:30:44	1:03		Orbit Insertion(10x45)						
125:10	1:42		LOS (LM)						
125:21:19	1:53		● CSI:LM RCS(45 Sec)						
125:50:28	2:22		● Plane Change:LM RCS						
125:54	2:26		AOS(CSM):72 Min(SR+32) <u>26</u>						
125:57	2:29		AOS(LM):69 Min(SR+35)						
126:19:37	2:52		CDH:LM RCS (1.9 Sec)						
126:58:08	3:30		TPI:LM RCS (22.4 Sec)						
127:13:08	3:45		● Rndz MCC ₁ :LM RCS						