



Section 7F

Apollo-Saturn V Processing Flows

Appendix 7F - Apollo-Saturn V Processing Flows

This Appendix includes, for reference, typical processing timelines for the Apollo Command Module, Service Module, and Lunar Module Spacecraft; the processing timelines for the Saturn V launch vehicle; and typical countdown timelines. These can be found in NASA's SP-2304 *Moonport: A History of Apollo Launch Facilities and Operations*, by Charles D. Benson and William Barnaby Faherty, 1978.

<http://www.hq.nasa.gov/office/pao/History/SP-4204/cover.html>



AS 504 COUNTDOWN T-130:30 THRU T-100 HOURS

SHEET

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T-130 126 124 122 120 118 116 114 112 110 108 106 104 102 100

START COUNTDOWN
(T-130:30:00)

CSM TURN ON & SYS VERIFY

LM & CSM WATER SERV

CSM SEQUENCER RESET

LM GHE PREPS

MAJOR MILESTONES
SEQUENTIAL EVENTS
T-100 THRU T-72

S	M	S	EVENT
1-00:30:00	00	00	CSM REMOTE RESERVE/CHG
1-00:00:00	00	00	LM/CSM GND/SVR SERVICE PREPS
1-00:00:00	00	00	LM PROPELLANT VENT LINE CONNECT
1-00:30:00	00	00	CSM POWER ON
1-00:30:00	00	00	LM & CSM GND & SVR SERVICE & PROPELLANT LINE DISCONNECT

CSM GHE SERVICE PREPS

CLEAR PERSONNEL FROM ML ZERO LEVEL

LM ED BATT INSTALL & ADA CSM

LM INSTALL P-1 ENGINE BURN-IN

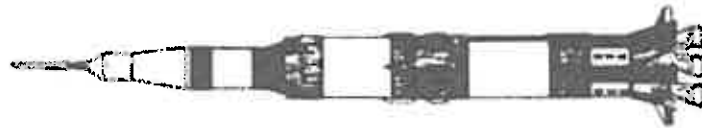
3 HOUR BUILT-IN HOLD

CLEAR NON-ESSENT PERSONNEL FROM PAD SPDN, MISC, ML, & PLUME TRENCH

LM INITIATOR/DETECTOR MOUNT

CSM HEAVY BURN-IN

NOTE: HAZARDOUS OPERATIONS





AS 504 COUNTDOWN T-100 THRU T-72 HOURS

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T-100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72

CLEAR NON-ESSENTIAL PERSONNEL
BEYOND PERIMETER FENCE

CSM REMOTE RESISTANCE GKS

JUMP COUNTDOWN*

CONTROL AREA OPENING

LM/CSM GHE/GHX SERVICE PREPS

CLEAR PERSONNEL FROM CLA S/C AREA

LM PREP VENT LINE CONNECTION

CSM POWER ON

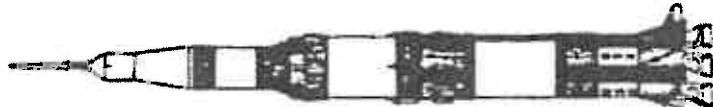
CLEAR NON-ESSENTIAL PERSONNEL
BEYOND PERIMETER FENCE

LM & CSM COX & CSM SERV
& PROP LINE DISCONNECT

*CSM REMOTE RESISTANCE GKS AT T-99:30:00
WILL IMMEDIATELY BE FOLLOWED BY CONTROL
AREA OPENING AT T-98:30:00 WITH NO SCREEN-
CLAD DELAY BETWEEN ACTIVITIES.

MAJOR MILESTONES SEQUENTIAL EVENTS T-72 THRU T-87

TIME	EVENT
T-62:30:30	CSM MESH BR/LOOP & BATT HOODUP
T-64:45:00	LV ORBS/SSB CLOSED LOOP TEST
T-66:00:00	LV ORBS/RANGE CLOSED LOOP TEST
T-68:40:00	F-1 ENGINE HYPERGOL CARTRIDGE INITIAL
T-69:30:00	BOOST PROTECTIVE COVER INITIAL
T-69:30:00	CSM LM2 USE HOODUP PURGE & LEAK ON
T-70:00:00	LM CSM SERVICE
T-70:00:00	CSM FUEL CELL ACTIVATION
T-70:00:00	LM PORTABLE LIFE SUPPORT SYS GKS





AS 504 COUNTDOWN T-72 THRU T-37 HOURS

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T-72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37

LM/CM BOX & CRV SERV. & PROPPELLANT LINE DISCONN

CONTROL AREA CLEARING
 6 HOUR BUILT-IN HOLD
 LM BOX DISCONNECT

CSM MECH BULLDOZ & GATT HOOKUP
 LM MECH BULLDOZ

Q-BALL PWR ON
 PNEU SYS EM TEST
 Q-BALL SIM END
 LV PRESS/CRV CLOSED LOOP TEST
 LV THRSC/RANGE CLOSED LOOP TEST

LM SRV LOADING PREPS
 CLEAN PERSONNEL FROM ML ZERO LEVEL

F-1 ENG HYPERGOL CARTRIDGE INST
 BOOST PROTECT COVER INSTAL

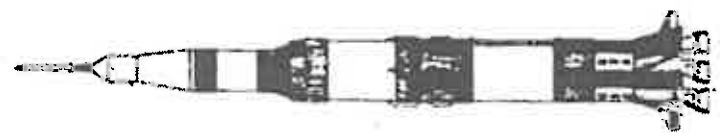
LV COMPUTER MAINTENANCE
 CSM LP2 GSE HOOKUP PURGE & LEAK CK
 CUF ANTENNA CALIBRATION

CLEAR PERSONNEL FROM SLA S/C AREA
 5 HOUR BUILT-IN HOLD
 LM SRV SERVICE

CSM FUEL CELL ACTIVATION
 LM PORTABLE LIFE SUPP SYS CKS

MAJOR MILESTONES
 SEQUENTIAL EVENTS
 T-37 THRU T-22

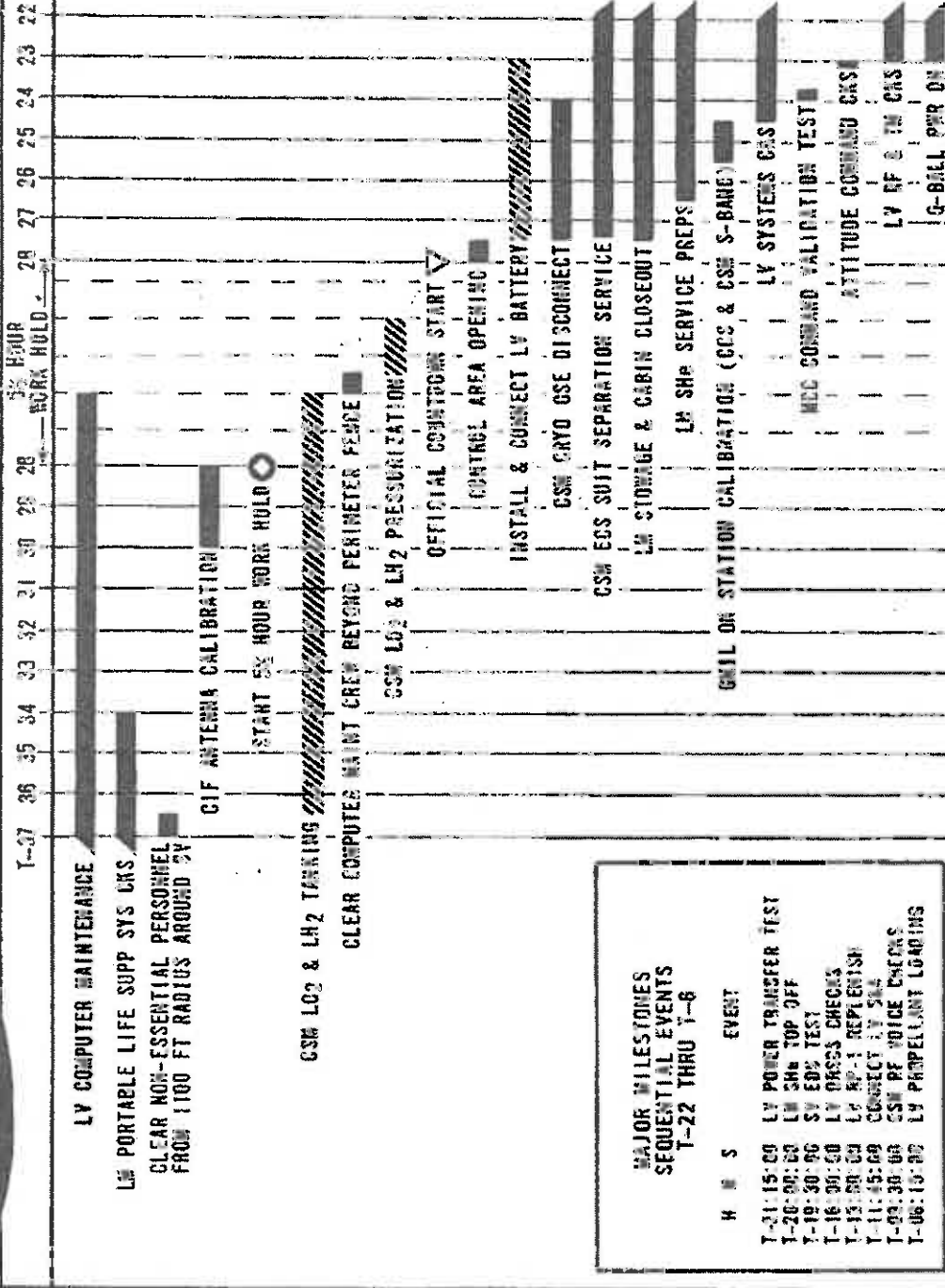
H. M. S	EVENT
T-36:30:30	CSM LP2 & LP2 YANKING
T-36:30:30	CSM LP2 & LP2 PRESS STARTS 2%
T-36:30:30	WAS INFO SCHEDULED BY HR WORK HOLD
T-36:30:30	OFFICIAL COUNTDOWN START (AFTER 5% HR WORK HOLD)
T-37:00:00	INITIAL & CORRECT IN BATTERY
T-37:00:00	CSM EGS SUIT SEPARATOR SERVICE
T-37:00:00	LV SYSTEMS CHECKS
T-37:00:00	CSM COMMAND VALIDATION TEST
T-37:15:00	ATTITUDE FORWARD CHECKS
T-37:30:00	LV RF & LM CHECKS
T-37:00:00	Q-BALL POWER ON





AS 504 COUNTDOWN T-37 THRU T-22 HOURS

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MAJOR MILESTONES SEQUENTIAL EVENTS T-22 THRU T-8

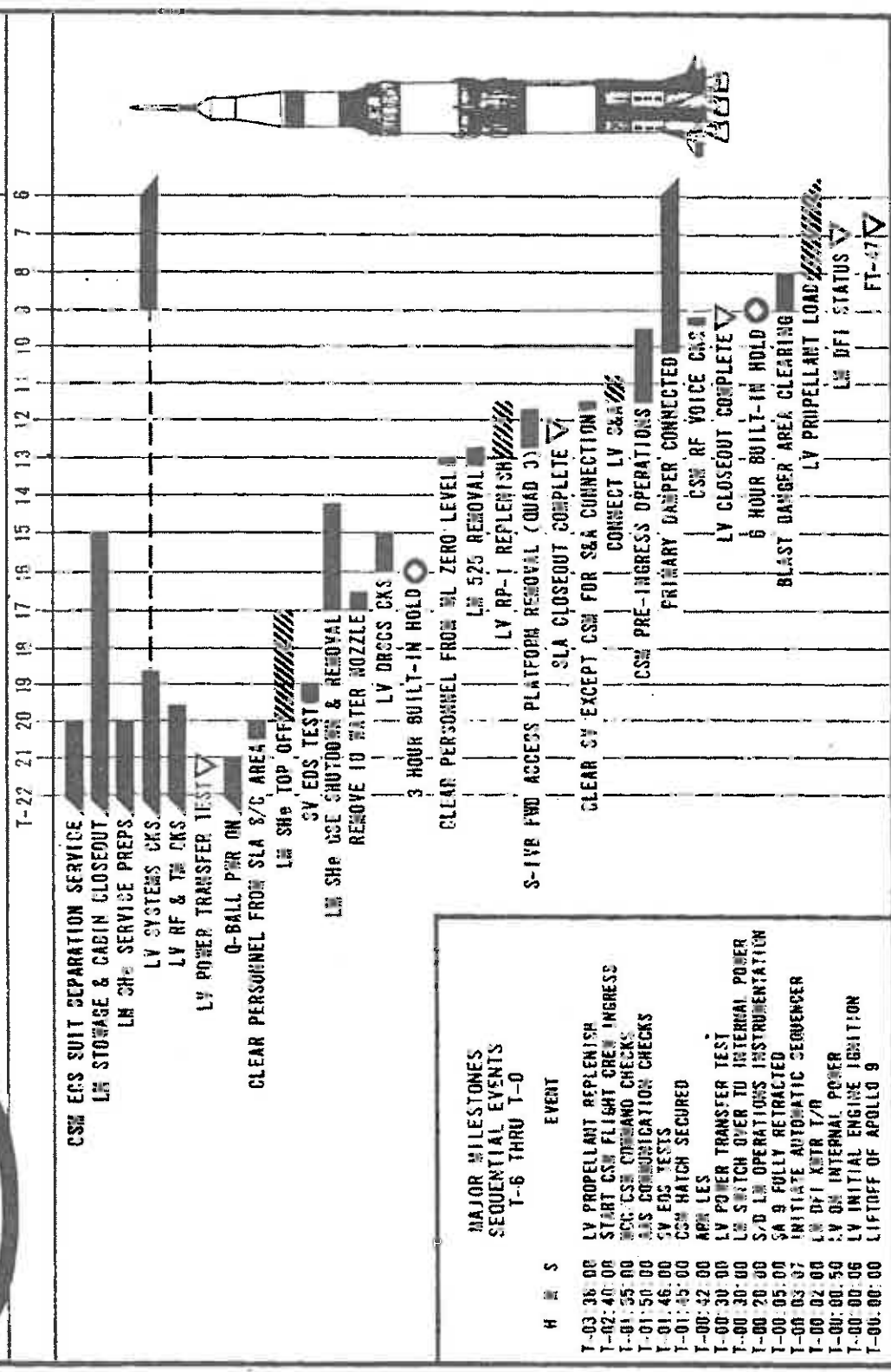
H	M	S	EVENT
T-21	15	00	LV POWER TRANSFER TEST
T-20	00	00	LM SHP TOP OFF
T-19	30	00	SV EDS TEST
T-18	00	00	LV ORDS CHECKS
T-17	00	00	LV RP-1 REPLENISH
T-16	45	00	CONNECT LY SH2
T-09	30	00	CSM RF VOICE CHECKS
T-06	15	00	LV PROPELLANT LOADS



AS 504 COUNTDOWN

T--22 THRU T--6 HOURS

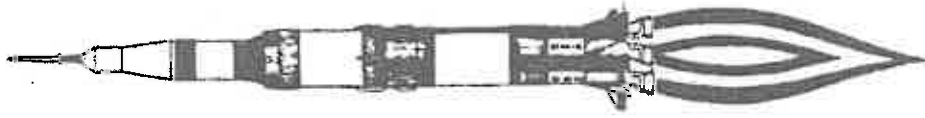
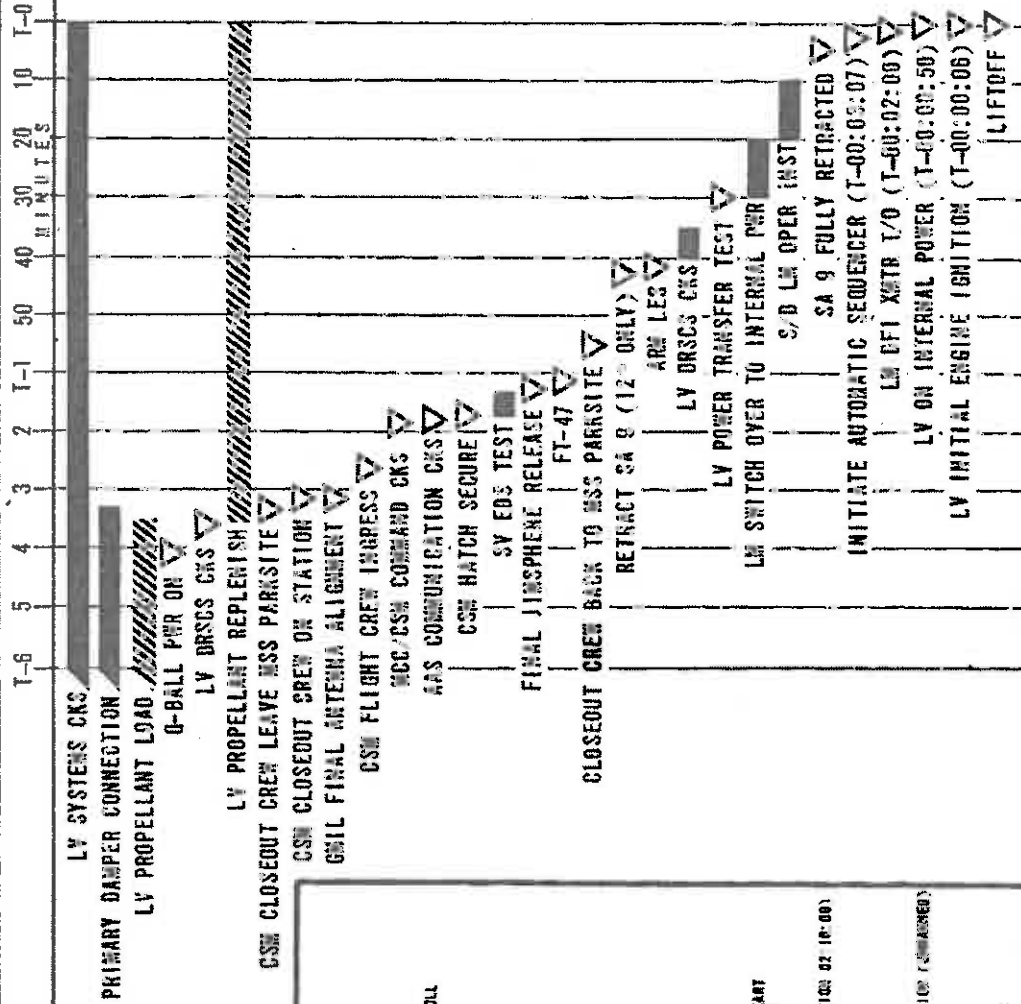
SHEET
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H	M	S	EVENT
T-03	36	00	LV PROPELLANT REPLENISH
T-02	40	00	START CSM FLIGHT CREW INGRESS
T-01	55	00	WCC CSM COMMAND CHECKS
T-01	50	00	AS COMMUNICATION CHECKS
T-01	46	00	SV EDS TESTS
T-01	45	00	CSM HATCH SECURED
T-00	42	00	APR LES
T-00	30	00	LV POWER TRANSFER TEST
T-00	30	00	LM SWITCH OVER TO INTERNAL POWER
T-00	20	00	S/D LM OPERATIONS INSTRUMENTATION
T-00	05	00	SA 9 FULLY RETRACTED
T-00	03	07	INITIATE AUTOMATIC SERVENDER
T-00	02	00	LM DFI XSTR T/R
T-00	00	50	LV ON INTERNAL POWER
T-00	00	06	LV INITIAL ENGINE IGNITION
T-00	00	00	LIFTOFF OF APOLLO 9

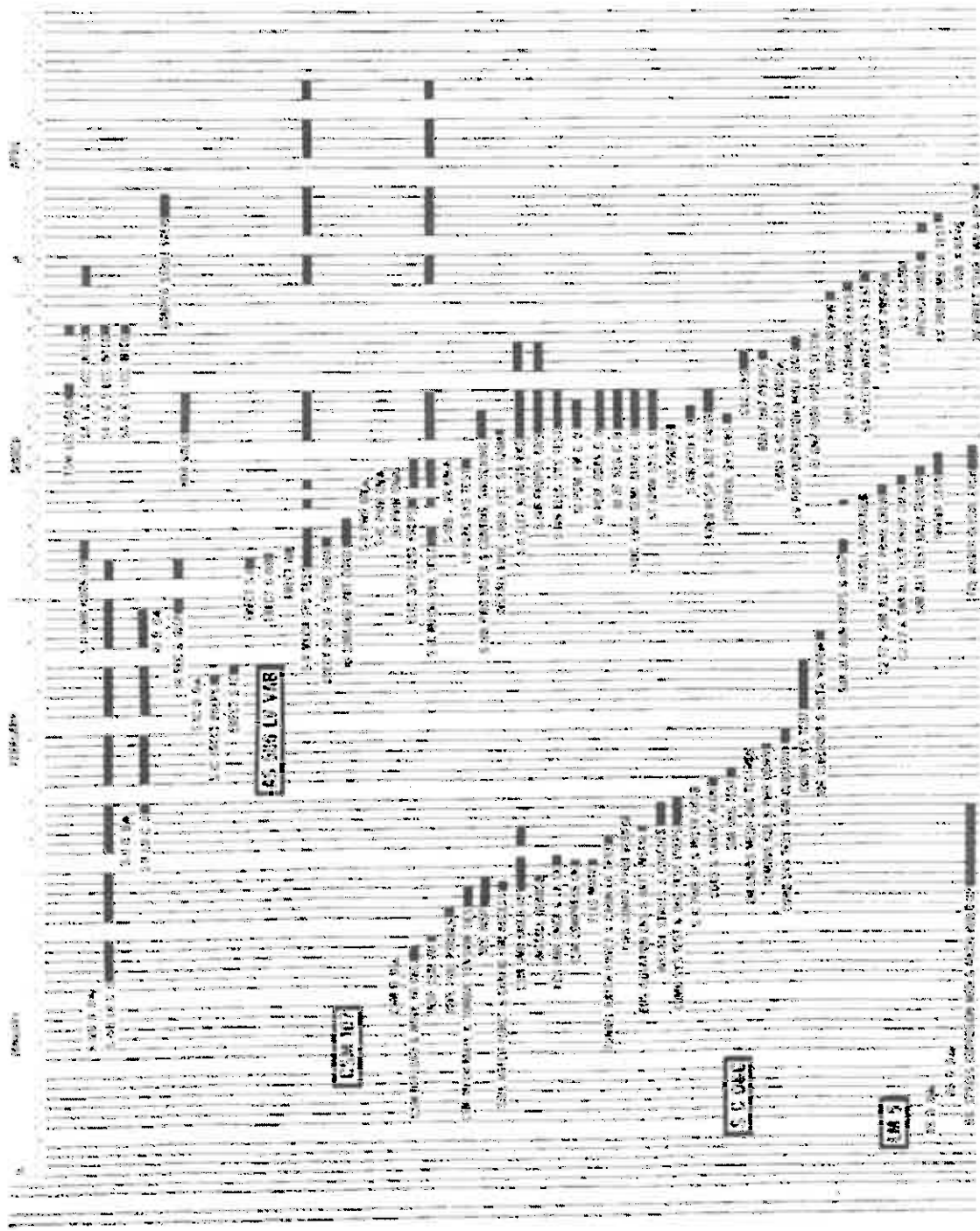
AS 504 COUNTDOWN T-6 THRU T-0 HOURS

SHEET
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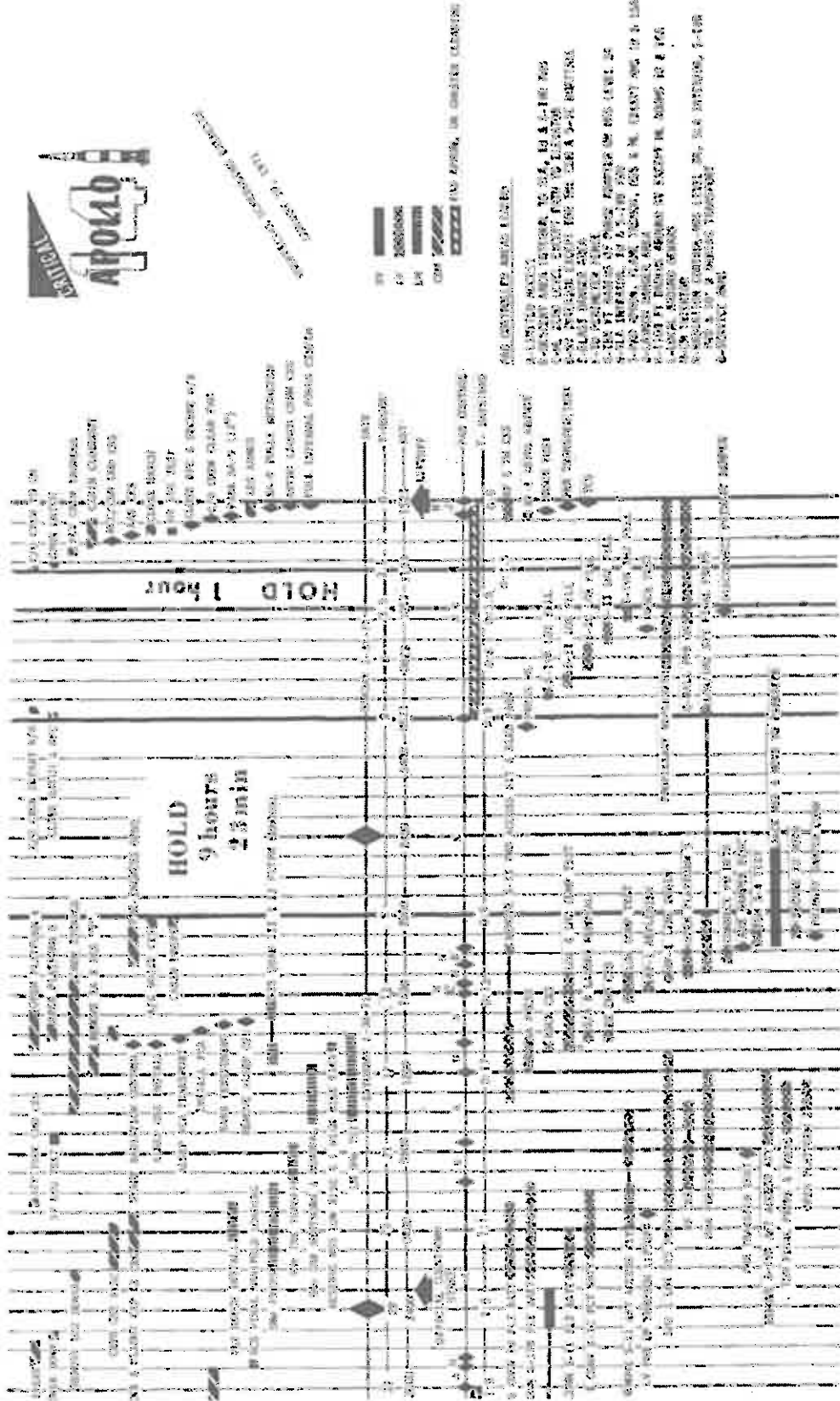


TIME	MAJOR MILESTONES IN FLIGHT (GROUND ELAPSED TIME)	EVENT
T-6:00:00	INITIATION OF VEHICLE PITCH & ROLL	
T-6:00:01	MAX G	
T-6:00:02	S-111 ENGINE CUTOFF	
T-6:00:02:05	S-111 ENGINE IGNITION	
T-6:00:02:50	S-111 ENGINE CUTOFF	
T-6:00:03:00	S-111V1 ENGINE IGNITION	
T-6:00:03:05	S-111V2 ENGINE CUTOFF	
T-6:00:03:10	S-111V3 ENGINE CUTOFF	
T-6:00:03:15	S-111V4 ENGINE CUTOFF	
T-6:00:03:20	S-111V5 ENGINE CUTOFF	
T-6:00:03:25	S-111V6 ENGINE CUTOFF	
T-6:00:03:30	S-111V7 ENGINE CUTOFF	
T-6:00:03:35	S-111V8 ENGINE CUTOFF	
T-6:00:03:40	S-111V9 ENGINE CUTOFF	
T-6:00:03:45	S-111V10 ENGINE CUTOFF	
T-6:00:03:50	S-111V11 ENGINE CUTOFF	
T-6:00:03:55	S-111V12 ENGINE CUTOFF	
T-6:00:04:00	S-111V13 ENGINE CUTOFF	
T-6:00:04:05	S-111V14 ENGINE CUTOFF	
T-6:00:04:10	S-111V15 ENGINE CUTOFF	
T-6:00:04:15	S-111V16 ENGINE CUTOFF	
T-6:00:04:20	S-111V17 ENGINE CUTOFF	
T-6:00:04:25	S-111V18 ENGINE CUTOFF	
T-6:00:04:30	S-111V19 ENGINE CUTOFF	
T-6:00:04:35	S-111V20 ENGINE CUTOFF	
T-6:00:04:40	S-111V21 ENGINE CUTOFF	
T-6:00:04:45	S-111V22 ENGINE CUTOFF	
T-6:00:04:50	S-111V23 ENGINE CUTOFF	
T-6:00:04:55	S-111V24 ENGINE CUTOFF	
T-6:00:05:00	S-111V25 ENGINE CUTOFF	
T-6:00:05:05	S-111V26 ENGINE CUTOFF	
T-6:00:05:10	S-111V27 ENGINE CUTOFF	
T-6:00:05:15	S-111V28 ENGINE CUTOFF	
T-6:00:05:20	S-111V29 ENGINE CUTOFF	
T-6:00:05:25	S-111V30 ENGINE CUTOFF	
T-6:00:05:30	S-111V31 ENGINE CUTOFF	
T-6:00:05:35	S-111V32 ENGINE CUTOFF	
T-6:00:05:40	S-111V33 ENGINE CUTOFF	
T-6:00:05:45	S-111V34 ENGINE CUTOFF	
T-6:00:05:50	S-111V35 ENGINE CUTOFF	
T-6:00:05:55	S-111V36 ENGINE CUTOFF	
T-6:00:06:00	S-111V37 ENGINE CUTOFF	
T-6:00:06:05	S-111V38 ENGINE CUTOFF	
T-6:00:06:10	S-111V39 ENGINE CUTOFF	
T-6:00:06:15	S-111V40 ENGINE CUTOFF	
T-6:00:06:20	S-111V41 ENGINE CUTOFF	
T-6:00:06:25	S-111V42 ENGINE CUTOFF	
T-6:00:06:30	S-111V43 ENGINE CUTOFF	
T-6:00:06:35	S-111V44 ENGINE CUTOFF	
T-6:00:06:40	S-111V45 ENGINE CUTOFF	
T-6:00:06:45	S-111V46 ENGINE CUTOFF	
T-6:00:06:50	S-111V47 ENGINE CUTOFF	
T-6:00:06:55	S-111V48 ENGINE CUTOFF	
T-6:00:07:00	S-111V49 ENGINE CUTOFF	
T-6:00:07:05	S-111V50 ENGINE CUTOFF	
T-6:00:07:10	S-111V51 ENGINE CUTOFF	
T-6:00:07:15	S-111V52 ENGINE CUTOFF	
T-6:00:07:20	S-111V53 ENGINE CUTOFF	
T-6:00:07:25	S-111V54 ENGINE CUTOFF	
T-6:00:07:30	S-111V55 ENGINE CUTOFF	
T-6:00:07:35	S-111V56 ENGINE CUTOFF	
T-6:00:07:40	S-111V57 ENGINE CUTOFF	
T-6:00:07:45	S-111V58 ENGINE CUTOFF	
T-6:00:07:50	S-111V59 ENGINE CUTOFF	
T-6:00:07:55	S-111V60 ENGINE CUTOFF	
T-6:00:08:00	S-111V61 ENGINE CUTOFF	
T-6:00:08:05	S-111V62 ENGINE CUTOFF	
T-6:00:08:10	S-111V63 ENGINE CUTOFF	
T-6:00:08:15	S-111V64 ENGINE CUTOFF	
T-6:00:08:20	S-111V65 ENGINE CUTOFF	
T-6:00:08:25	S-111V66 ENGINE CUTOFF	
T-6:00:08:30	S-111V67 ENGINE CUTOFF	
T-6:00:08:35	S-111V68 ENGINE CUTOFF	
T-6:00:08:40	S-111V69 ENGINE CUTOFF	
T-6:00:08:45	S-111V70 ENGINE CUTOFF	
T-6:00:08:50	S-111V71 ENGINE CUTOFF	
T-6:00:08:55	S-111V72 ENGINE CUTOFF	
T-6:00:09:00	S-111V73 ENGINE CUTOFF	
T-6:00:09:05	S-111V74 ENGINE CUTOFF	
T-6:00:09:10	S-111V75 ENGINE CUTOFF	
T-6:00:09:15	S-111V76 ENGINE CUTOFF	
T-6:00:09:20	S-111V77 ENGINE CUTOFF	
T-6:00:09:25	S-111V78 ENGINE CUTOFF	
T-6:00:09:30	S-111V79 ENGINE CUTOFF	
T-6:00:09:35	S-111V80 ENGINE CUTOFF	
T-6:00:09:40	S-111V81 ENGINE CUTOFF	
T-6:00:09:45	S-111V82 ENGINE CUTOFF	
T-6:00:09:50	S-111V83 ENGINE CUTOFF	
T-6:00:09:55	S-111V84 ENGINE CUTOFF	
T-6:00:10:00	S-111V85 ENGINE CUTOFF	
T-6:00:10:05	S-111V86 ENGINE CUTOFF	
T-6:00:10:10	S-111V87 ENGINE CUTOFF	
T-6:00:10:15	S-111V88 ENGINE CUTOFF	
T-6:00:10:20	S-111V89 ENGINE CUTOFF	
T-6:00:10:25	S-111V90 ENGINE CUTOFF	
T-6:00:10:30	S-111V91 ENGINE CUTOFF	
T-6:00:10:35	S-111V92 ENGINE CUTOFF	
T-6:00:10:40	S-111V93 ENGINE CUTOFF	
T-6:00:10:45	S-111V94 ENGINE CUTOFF	
T-6:00:10:50	S-111V95 ENGINE CUTOFF	
T-6:00:10:55	S-111V96 ENGINE CUTOFF	
T-6:00:11:00	S-111V97 ENGINE CUTOFF	
T-6:00:11:05	S-111V98 ENGINE CUTOFF	
T-6:00:11:10	S-111V99 ENGINE CUTOFF	
T-6:00:11:15	S-111V100 ENGINE CUTOFF	

Processing Apollo 11 Through LC-39



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