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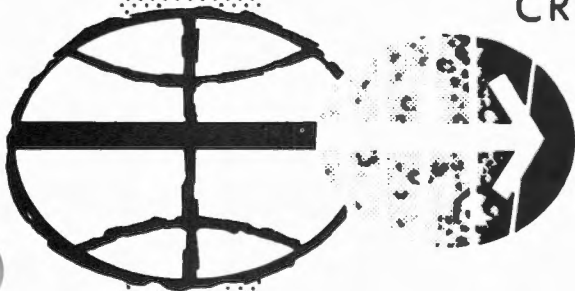
CHANGE A
LM CUE CARDS

PREPARED BY

FLIGHT PLANNING BRANCH
CREW PROCEDURES DIVISION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NOVEMBER 29, 1972



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LM CUE CARDS

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REVISION A 11/3/72

CHANGE A 11/29/72

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PDI - 30 MINUTES TO TD

11/29/72

LIGHT	MEANING	IMMEDIATE ACTION (POSSIBLE OPERATIONAL IMPLICATIONS)	
DC BUS BATTERY ~11 C&W LIGHTS	CDR BUS FAILURE	(DPS TO 100% AND GDA LOCKED) GUID CONT - AGS, SUIT FAN-2, CDR AUDIO CONT-BU, S-BD-XMTR/RCVR & PWR AMPL -PRIM, INV 2, ACT SEC GLYCOL. <u>TO START DPS: ENG ARM -DES; DES ENG CMD OVRD-ON (2ND BURN ONLY); (M8-3)</u> <u>TO STOP DPS: DES ENG CMD OVRD-OFF, ENG ARM-OFF.</u>	RECONFIG IF TIME PERMITS: CB16(11) ASC ECA CONT-CL; CDR(LMP) BAT (S)-OFF/RESET; CB11(16) BAT FEED TIE (2)-OPN; [BAT 6(5) BACKUP FEED-ON]. IF FEED FAULT LT OFF-BUS SHORT; CB16(11)
DC BUS BATTERY ~6 C&W LIGHTS	LMP BUS FAILURE	(DPS TO 100% AND GDA LOCKED) GUID CONT - PGNS, SUIT FAN - 1, LMP AUDIO CONT - BU, S-BD-XMTR/RCVR & PWR AMPL - SEC, INV 1; <u>TO START DPS: ENG ARM - DES; ENG START - PUSH;</u> <u>TO STOP DPS: ENG STOP - PUSH; ENG ARM - OFF (M8-3)</u>	ASC ECA CONT-OPN; IF ON-DES BATS-DEADFACE; IF FEED FAULT LT OFF-ALL DES BATS-OFF; CBT1(16)-BAT FEED TIE (2)-CL; BAT 6(5) BACKUP FEED-OFF; BAT 6(5) NORMAL FEED-ON; IF FEED FAULT LT ON-DES BATS-CONNECT; RESTORE BUS.
BATTERY	BAT OVERTEMP REV CURRENT >10A OVERCURRENT	CHECK ALL BATS VOLTS, AMPS & TB's. IF VOLTS, AMPS OK: FAULTY BAT-OFF THEN ON; IF VOLTS, AMPS NOT OK; FAULTY BAT - OFF. (M8-8)	LOSS OF ASC BAT 5(6) (REVERSE CURRENT ONLY) CB(11) DES ECA-OPEN. IF STAGING REQD OR IF PAST HI GATE, CB(16) BUS CROSSTIE-CLOSE. IF ABT STG REQD, CB(16) DES ECA -OPEN. IF TIME PERMITS, BAT 6(5) BU FEED-ON, DES BATS OFF AT 5 SEC INTERVALS.
INVERTER	AC VOLTS <112 398>FREQ>402	CHECK AC VOLTS & FREQ. SWITCH TO INV-2. BUS A&B BUS TIE INV 1 (2)-OPEN (INV 1 FEED SHORT). BUS B: BUS TIE INV 2 - OPEN (BUS B SHORT). BUS A&B: BUS TIE INV 1 (2) - CLOSE; SELECT INV 1. BUS A: BUS TIE INV 2 - OPEN (INV 2 FEEDER SHORT). BUS A: BUS TIE INV 1 - OPEN (BUS A SHORT, LT STAYS ON; CLOSE BUS B: BUS TIE INV 2 BEFORE SELECTING INV 2). (M8-10)	CYCLE DECA GMBL CB FOR LOSS OF INV 1/AC BUS A: MASTER ARM-ON ENGINE START-PUSH MASTER ARM-OFF.
ED RELAY & (ONE/BTH) STG SEQ RELAY LIGHTS ON	ED RELAYS K1 TO K6 CLOSE WITH MASTER ARM OFF	<u>BEFORE PDI: DO NOT SET MASTER ARM-ON, STAGE RELAY-RESET; IF LT STILL ON, ASC He SEL-TANK 1, ASC He PRESS-FIRE. IF APS PRESS, ABORT; IF NOT (NEXT STEP MAY STAGE VEHICLE) MASTER ARM-ON; IF NO STAGE, GO NORMAL PROCEDURES.</u> <u>AFTER PDI: DO NOT SET MASTER ARM - ON; STAGE RELAY-RESET; IF STAGE SEQ RELAY LT STILL ON: ASC He PRESS - FIRE, IF APS PRESSURIZES, ABORT (M11-3)</u>	AFTER LANDING-BAD SYSTEM/LOGIC PWR CB-OPEN.
STAGE SEQ RELAY LT OFF AT PDI	POSSIBLE RELAY FAIL	LAMP TEST. <u>AT PDI: MASTER ARM-OFF, OPEN LOGIC PWR CB ON SYSTEM WHICH HAD SEQ LT-ON, MASTER ARM - ON. AT IGNITION MONITOR DPS SHe AND FUEL/OXID PRESS. SHe TANK INOPERATIVE: STOP PB - PUSH, ENG ARM - OFF. SHe TANK OK: MASTER ARM - OFF, LOGIC PWR CB - CLOSE, ASC He PRESS - FIRE, IF APS PRESSURIZES, ABORT.</u> (M11-4)	
DES REG	220>He PRESS>260	DES He REG 1 - CLOSE, DES He REG 2 - OPEN, MONITOR TEMP/PRESS, MAINTAIN FUEL/OXID>160.(M5-3)	
ENG GMBL	GMBL CMD/RESP FAIL	ENG GMBL - OFF. IF LIGHT STILL ON: CWEA FAIL. IF LT OFF: WAIT FOR MSFN TEST. (M4-7)	
CES DC	ATCA DC OUT OF TOLERANCE	CMD THRUST 10%: TTCA-MAX;SEL MAN THROT;DECA GMBL-OPEN;IF THROTTLE CONTROLLABLE CLOSE (M4-9) DECA GMBL FOR MAX THRUST. IF COMMANDED THRUST NORM: GYRO TEST POS RT; IF LT ON-CWEA FAIL; IF LT OFF-CYCLE CWEA CB. IF LT STAYS OFF-TRANSIENT. LT ON-EVAL AGS CONT; <u>IF FAIL CDR BUS CRIT</u>	
NO AUTO START	RELAY DRIVER FAILURE	ENG START-PUSH. ✓ ENG ARM CB. AFTER THROTTLE UP: MODE CONT(AGS)-ATT HOLD. GUID CONT-AGS. MSFN WILL DETERMINE AGS APS REDUNDANCY. <u>FOR LOSS OF AUTO-CDR BUS CRITICAL FOR APS BURNS.</u>	

RESTORE BUS VIA CROSSTIE

RAPID IMU REALIGN

CDR
 CB(11) - UTIL LT; ANUN/DK/CMPT;
 GLY PUMP 1&2; S-BND
 XMTR/RCVR & PWR AMP;
 LR; RR; LGC; IMU OPR; INV 1.
 VHF B XMTR - OPEN
 CB(16) CROSSTIE BUS - CLOSE
 CLOSE ABOVE CB'S AND SYNCHRONIZE CLOCKS.

LMP
 CB(16) - FLOOD; ANUN/
 DOCK/CMPT; AEA; ATCA;
 VHF A XMTR; S-BAND
 XMTR/RCVR & PWR AMP;
 INV 2 - OPEN
 CB(16) CROSSTIE BUS-CLOSE

- 1) AGS INERTIAL FDAI TO 0°, 0°/XXX°, 0°
 - 2) V41 N20E, E, E/XXXE, E
 - 3) V40 N20 at 0°, 0°/XXX°, 0° ON AGS FDAI, WAIT 11 SEC
 - 4) V25N07E, 77E, 10000E, 1E
 - 5) P51E, PRO, POOE
 - 6) PERFORM P52, OPTION 3 (AUTO OPTICS ARE GOOD)
- NOTE: FOR TEMPORARY LOSS OF CDR'S BUS, UPDATE LGC CLOCK WITH V55 TO COMPLETE RECOVERY

LIGHT	MEANING	IMMEDIATE ACTION (POSSIBLE OPERATIONAL IMPLICATIONS)	
RCS TCA WITH QUAD FLAG	ONE OR MORE THRUSTERS FAIL OFF, COLLINEAR THRUSTERS FIRING SIMULTANEOUSLY	ULLAGE: Disable 1st Flag. If 2nd Flag (V-UP), OPEN CB; Disable Flag. Enable 1st Flag. POWERED FLIGHT: If JET ON; CB QUAD TCA - OPEN DETERMINE CRITICAL QUAD (DO NOT DISABLE CRITICAL QUAD UNLESS V-JET AVAILABLE*). BUS WITH GOOD SYSTEM CRITICAL. (M7-4)	*H-JET ON: ENABLE FOR CRITICAL V-JET FAIL AND DISABLE CRITICAL JET V-JET ON: ENABLE FOR CRITICAL V-JET FAIL OFF V-JET OFF: SELECT DIRECT (P, R) FOR CRITICAL V-JET FAIL OFF
ABNORMAL THRUSTERS W/O RCS TCA, QD FL	POSSIBLE SWITCH FAILURE ON SECONDARY COILS, ACA, OR TTCA	ACA 4-JET (2) - DISABLE (FOR PDI: ISOLATE BY TIG + 15 SEC OR THROTTLE UP MANUALLY) TTCA/TRANS (2) - DISABLE ACA PROP (2) - DISABLE	(M7-4)
RCS A REG RCS B REG	165psi>REG PRESS >218psi	Monitor MANF PRESS, When <100psi: Bad System MAIN SOV - CLOSE CRSFD - OPEN	(M7-4)
RCS	A OR B He Press <1700psi	Monitor He PRESS & QTY. CB(11 or 16) QUAD TCA(4)-OPEN. Affected Sys: LGC THR CMDS (4)-DISABLE, MAIN SOV-CLOSE. Monitor MANF PRESS. CDR BUS CRITICAL if Pn1 16 QUAD TCA CB OPEN. Go to Mal Proc RCS 1. (M7-3)	FOR LOSS OF ONE SYSTEM WITH NO XFD, CONFIGURE CRITICAL BUS
LGC	LGC Power, Scaler, or Counter Fail	MODE CONT (AGS)-ATT HOLD;GUID CONT-AGS. IF LT ON-CWEA FAIL. IF RESTART LT ON; LGC FAIL. CB(11).AEA-CLOSE. LMP BUS CRITICAL. IF RESTART LT OFF; EVAL PGNS. (M2-4)	
ISS	IMU, ICDU or PIPA (Thrusting) FAIL	MODE CONT (AGS) - ATT HOLD; GUID CONT - AGS. IF LT ON - CWEA FAIL. IF PROG LT NOT ON CWEA Fail. CB(11) AEA - CLOSE. LMP BUS CRITICAL. (M2-3)	
CES AC	ATCA AC Out of Tolerance	GUID CONT - PGNS, GYRO TEST - POS RT. IF Light Stays ON - CWEA Fail. IF Light OFF; Check rate needles - NO RESPONSE: Loss of AGS Control and AGS FDAI Error Needles, RR Usable in LGC Mode Only. If Rate Needles VALID-CYCLE CWEA CB: IF LIGHT REAPPEARS; Possible Loss of AGS Control, DO NOT REMOVE ATCA CB PWR. CDR BUS CRITICAL FOR AGS CONTROL LOSS. (M4-9)	
AGS	AGS Power Supply Out of Tolerance, AGS Heater Failed ON, AGS Self Test FAILED, ASA FREQ OUT OF TOLERANCE	MODE CONT (AGS) - ATT HOLD; GUID CONT - PGNS. Cycle O2/H2O Qty Mon Sw: If Light OFF - Perform 412R. If Light ON - CWEA CB OPEN: If Light Stays ON - CWEA Failure. If Light OFF: CLOSE CWEA CB; If Light Stays OFF - PWR Transient. If Light ON: Evaluate AGS Control & Steering. CES Rate Cmd OK. (M3-3)	