

DATE 0154Z 22 FEB 61

~~TOP SECRET~~

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ROUTING	
1	4
2	5
3	

14 000080420

PRIORITY

PRIORITY

TO : DIRECTOR

FROM :

ACTION: OPS (1,2,3,4)

INFO : S/C (5)

JS

TOR 0407Z 22 FEB 61

TO

INFO

STIE

FROM LT/COL MURPHY

REF 9014A

1. PRIME WAS REQUESTED TO EVALUATE FAILURE AND PREPARE A CONCLUSION AS TO STATUS OF RECOVERY SITUATION. FOLLOWING QUOTED REPORT WAS WRITTEN BASED ON THAT REQUEST.

QUOTE:

1. ON PASS 31, A "SUBCYCLE SKIP" COMMAND WAS TRANSMITTED, AND THE COMMAND VERIFIED BY THE VEHICLE.
2. ON PASS 31, THE S-BAND BEACON AND THE TELEMETRY HAD NOT TURNED OFF AS THE VEHICLE FADED OVER THE HORIZON, ALTHOUGH THE TIMER HAD PROGRAMMED A TURN-OFF 92 SEC EARLIER.
3. ON PASS 32, THE BEACON AND TELEMETRY WERE ON AT ACQUISITION, IN SPITE OF THE FACT THAT A PROPERLY EXECUTED "SKIP" WOULD HAVE RESULTED IN PASS 32 BEING DEAD.
4. ON PASS 32, THE RESET MONITOR WAS ON AT ACQUISITION.
5. RESET COMMANDS WERE SENT AT 50.0 DEGREES N ON PASS 32, BUT

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This document contains information referring to Project AUNON

Declassified and Released by the NRC

In Accordance with E. O. 12958

NOV 26 1997

WERE NOT ACTED ON, SUBCYCLE I.D. MARKERS DID NOT APPEAR.

6. THE TEMPERATURES OF THE S-BAND BEACON, THE T/M TRANSMITTER, THE BEACON POWER SUPPLY, AND SEVERAL STRUCTURAL POINTS HAD RISEN FOR 10 DEGREES TO 50 DEGREES F.

7. ON PASS 32, THE TELEMETRY WAS ON UNTIL A NORMAL HORIZON FADE AT CHRISTMAS ISLAND.

8. SINCE PASS 32, THERE HAVE BEEN NO OBSERVATIONS OF THE BEACON OF THE TELEMETRY FROM ANY STATION. THE CW ACQUISITION TRANSMITTER HAS BEEN OBSERVED AT ALL PASSES.

PROBABLE MODE OF MALFUNCTION:

THE S-BAND BEACON AND THE TELEMETRY WERE LEFT IN THE ON-STATE FROM PASS 31 ONWARD. SOMETIME BETWEEN THE CHRISTMAS ISLAND PORTION OF PASS 32, AND THE ASCENSION PORTION OF PASS 33, BOTH FAILED, BECAUSE OF EXCEEDING TEMPERATURE LIMITS.

POSSIBLE CAUSE OF THE MALFUNCTION:

THE TELEMETRY AND THE BEACON HAVE NO POWER SUPPLY IN COMMON EXCEPT THE PRIMARY BATTERY. THEIR ONLY COMMON CONTROL POINT IS RELAY K11 IN THE ORBITAL (FAIRCHILD) TIMER. IT MUST BE CONCLUDED THAT SOME TIMER MALFUNCTION CAUSED K11 TO REMAIN IN THE ON-STATE.

POSSIBLE TIMER MALFUNCTIONS ARE AS FOLLOWS:

1. FOR SOME UNKNOWN REASON, THE POWER AMPLIFIER FAILED, OR THE MOTOR STEPPED SOMETIME AFTER SYSTEM TIME 72118 ON PASS 31. (THIS MALFUNCTION HAS NEVER OCCURRED ON ANY INTERIM TIMER, INCLUDING A 2400-HOUR MIDAS LIFE TEST.)

2. BRUSH 4 FAILED TO LATCH K11 TO THE OFF STATE ON PASS 31. (THE FAILURE OF A BRUSH HAS NEVER OCCURRED EITHER.)

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3. THE TAPE WAS INCORRECTLY INDEXED IN THE TIMER, SO THAT THE SUBCYCLE SKIP OPERATION WAS INITIATED WHILE THE VEHICLE WAS IN CONTACT WITH THE STATION. (A VERIFICATION RUN DATED 1-23-61 VERIFIES THAT THE TAPE WAS PROPERLY INDEXED; VAFB PERSONNEL ASSERT THAT THIS TAPE HAS NOT BEEN REMOVED FROM THIS TIMER.)

4. TIMER SWITCH S-101 WAS MOVED TO THE ACTUATION POSITION, AS BY VIBRATION DURING ASCENT. WITH S-101 ACTUATED, THEN THE SUBCYCLE SKIP OPERATION WOULD HAVE BEEN INITIATED UPON RECEIPT OF COMMAND SI AT SYSTEM TIME 78121. THIS WOULD HAVE RESULTED IN JAMMING OF THE TIMER AGAINST A MECHANICAL STOP. LIKE PARA 3 ABOVE, ANY SUBCYCLE SKIP OPERATION WHICH IS INITIATED WHILE K11 IS IN THE ON-STATE, WILL RESULT IN PERMANENTLY STOPPING THE TIMER.

PASS 31

SYSTEM TIME

77305	[REDACTED]	TM ACQUISITION
307		"S" BAND ACQUISITION
308		ACQ BEACON ACC
908		INCREASE STEP ONE (& VARIF) (AND 1)
934		TOC 55M
78035		RESET NBR 3 (& VARIF)
039		TOC 60M
041		RM ON
074		TOC STATION
101		RM OFF
118		RM ON (UNTIL FADE)
121		INC. CMD 5 SENT (& VARIF)

///MORE///

[REDACTED]

196 DEC STEP ONE (& VARIF)

350 T/MN S BAND & ACQ. BEACON FADE (RM STILL ON)

376 [REDACTED] T/M ACQ, RM WAS ON

412 S BAND ACQ.

576 TOC 25N

631 T/M S BEA PROGRAMMED TO GO OFF-DIDN'T

632 TOC STATION

708 S BAND FADE

723 T/M FADE (RM STILL ON)

PASS 32

83538 [REDACTED] ACQ BEACON & TM ACQ.

840 S BAND ACQ.

737 RESET VARIF.

760 TOC-60 N

762 RESET VARIF.

795 TOC STATION

969 S BAND FADE

971 ACQ BEACON FADE

980 T/M FADE

(84037) [REDACTED] T/M ACQ (TERM)

(063) ACQ BEACON ACQ (TERM)

064 TM SEQ [REDACTED] (56 SEC EARLY)

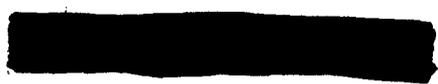
094 ACQ BEACON & APL ACQ. [REDACTED]

098 S BAND ACQ. [REDACTED]

297 TOC 25N [REDACTED]

(301) (TERM) ACQ. BEACON LOST-WEAK & INTERMITTENT AFTERWARD(TERM)

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348	TOC STATION	[REDACTED]
(630)	T/M FADE (TERM)	
660	ACQ. BEACON & APL FADE (RM STILL ON)	[REDACTED]
669	S BAND FADE	[REDACTED]
697	T/M FADE	[REDACTED]
XMAS	T/M ACQ	2336:20
	ACQ BEACON ACQ.	2326:35
		NO CUT-OFF FADE
	ACQ BEACON FADE	2334:10
	T/M FADE	2336:55

ADDITIONAL NOTES TO INVESTIGATION OF POSSIBLE PROGRAMMER FAILURE-
(VEHICLE 1104):

SUB-CYCLE SWITCH

S110 IS ACTUATED EVERY ORBIT (60 DEGREES S ON DARK SIDE). ON EACH CLOSURE IT CHARGES A 10 UF CONDENSER AND ENERGIZES K18 "SKIP A PULSE," (THROUGH CONTACTS OF K24 "BRUSH LIFTER"). ENERGISATION OF K18 DOES NOT TRANSFER CONTACTS AND NO SIGNIFICANT EVENT OR INDICATION OCCURS.

FAILURE OF S110, EITHER OPEN OR SHORTED, SUBSEQUENT TO THE PAD CHECKOUT WOULD HAVE NO EFFECT ON THE VEHICLE UNTIL A SKIP OR REPEAT WAS COMMANDED.

ON VEHICLE 1104 IT APPEARS S110 WELDED CLOSED BEFORE PASS 31. THEREFORE TRANSMITTAL OF COMMAND 6 AT 77121 SYSTEM TIME CAUSED IMMEDIATE ENGAGEMENT OF THE FAST DRIVE CLUTCH L102. SINCE THE RESET CLUTCH L100 WAS ALSO ENGAGED (AS ALWAYS WHEN T/M IS ON), THE ROLLERS ON THE RESET DISK FORCED THE RESET ACTUATOR ARM INTO ITS

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STOP (IN ABOUT 50 SECONDS), JAMMING THE TIMER. EITHER THE MOTOR STALLS OR A DRIVE CLUTCH SLIPS UNDER THIS CONDITION-- IN EITHER CASE THE TAPE STOPS.

ONLY TWO EVENTS CAN FREE A JAMMED TIMER:

1. A BRUSH 4 CONTACT TO GROUND WILL RELEASE THE RESET CLUTCH; PERMITTING COMPLETION OF THE SKIP AND THEN RESUMPTION OF NORMAL OPERATION OR, 2. RELEASE OF THE RESET CLUTCH DUE TO LOW VOLTAGE OR CLUTCH FAILURE.

(1) BRUSH 4 CONTACT TO GROUND CAN BE ACCOMPLISHED THROUGH THE UNBILICAL BUT NOT BY RADIO CONTACT. ALL BRUSHES ARE LIFTED BY A SOLENOID AT INITIATION OF A SKIP (OR REPEAT). LOW VOLTAGE WILL, IN TIME, RELEASE THE SPRING LOADED BRUSH LIFTER SOLENOID; OR A SOLENOID FAILURE COULD RELEASE IT. CHANCES ARE THEN 37 IN 5400 THAT CONTACT WILL BE MADE THROUGH A TAPE HOLE. HOWEVER, RELEASE DUE TO LOW VOLTAGE OCCURS AT A VOLTAGE BELOW THAT NECESSARY FOR TIMER OPERATION.

(2) RELEASE OF THE RESET CLUTCH ITSELF DUE TO LOW VOLTAGE ALSO WOULD OCCUR AT A VOLTAGE BELOW THAT NECESSARY FOR TIMER OPERATION.

IT CAN BE SEEN THAT WHEN LOW VOLTAGE DOES EVENTUALLY RELEASE THE RESTRAINTS ON THE TIMER, THE TIMER WILL NOT START DUE TO THIS SAME LOW VOLTAGE AND HENCE NO EVENTS WILL OCCUR.

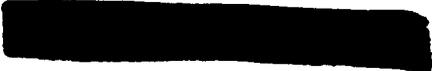
THE CONCLUSION IS THEREFORE THAT THE H TIMER IN VEHICLE 1104 WILL NOT START AGAIN. THE D TIMER WILL CONSEQUENTLY NOT START AND CAPSULE EJECTION WILL NOT TAKE PLACE.

UNQUOTE

2. ONLY ITEMS THAT HAVE OCCURED THAT DISPUTES ABOVE REPORT

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IS ACQUISITION ON T/M BY TURKEY ON PASS 47 AND 61. THESE REPORT HAS NOT BEEN VALIDATED YET. REALIZE ABOVE REPORT NOT IN FINAL FORM, BUT BECAUSE OF SERIOUSNESS OF SECURITY ASPECTS HAVE DECIDED TO FORWARD TO KEEP HDQ ABREST OF THINKING HERE.

END OF MESSAGE

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