CLASSIFIED MESSAGE

~~TOP SECRET~~

TOP SECRET

ROUTING

1	4
2	5
3	

14 000000820

PRIORITY

PRIORITY

DATE Ø154Z 22 FEB 61

TO : DIRECTOR

FROM : [redacted]

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

INFO : S/C (5)

JS

TOR Ø407Z 22 FEB 61

[redacted]

TO [redacted] INFO [redacted] CITE [redacted]

[redacted]

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

~~TOP SECRET~~

TOP SECRET

This document contains information referring to Project [redacted]

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.)

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 RTN 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 61 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 AQUISITION
307	"S" BAND AQUISITION
308	ACQ BEACON ACQ
908	INCREASE STEP ONE (& VARIF) (AND 1)
954	TOC SEN
78035	RESET NBR 3 (& VARIF)
039	TOC SON
041	RM ON
074	TOC STATION
101	RM OFF
118	RM ON (UNITL FADE)
121	INC. CMD 6 SENT (& VARIF)

///MORE///

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 & BEA PROGRAMMED TO GO OFF-DIDN'T
632		TOC STATION
708		S BAND FADE
723		T/M FADE (RM STILL ON)
PASS 32		
83638	[redacted]	ACQ BEACON & TM ACQ.
840		S BAND ACQ.
737		RESET VARIF.
750		TOC-60 N
752		RESET VARIF.
795		TOC STATION
969		S BAND FADE
971		ACQ BEACON FADE
980		T/M FADE
(84037)	[redacted]	T/M ACQ (TERM)
(033)		ACQ BEACON ACQ (TERM)
034		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)

///MORE///

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 (80 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

///MORE///

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 UMBILICAL 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

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