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~~S E C R E T~~

11 SEPTEMBER 1965

[redacted] INFO [redacted] CITE [redacted]

CORONA/RESIDENT OFFICE

ATTN: [redacted] FOR [redacted]

[redacted] FOR [redacted]

REF: A. [redacted]

B. [redacted]

C. [redacted]

D. [redacted]

FOLLOWING IS REPORT COVERING PAYLOAD ANOMALIES FOR MISSION 1023. REPORT [redacted] IS IN THREE PARTS.

PART I MASTER INSTRUMENT FAILURE

PART II CAPSULE ANOMALIES

PART III POSSIBLE OBJECT SEEN ON HORIZON OPTICS ON REV 2.

PART I - MASTER INSTRUMENT FAILURE.

1. SUMMARY OF FAILURE

MISSION 1023 FLIGHT VEHICLE OPERATED NORMALLY FOR FIRST ONE HUNDRED AND ONE ORBITS. DURING ORBIT NO. 102 WITH THE SYSTEM PROGRAMMED TO OPERATE IN THE PROGRAM 1 MODE (SYSTEM ON STEREO AND BY-PASSING INTERMIX CIRCUITS) THE SLAVE INSTRUMENT COMPLETED 147 CYCLES AS PROGRAMMED WHILE THE MASTER INSTRUMENT ONLY OPERATED ON THE FIRST 34 CYCLES OF THE PROGRAM. AS A RESULT OF THE ORBIT 102 A NIGHT ENGINEERING STEREO OPERATION WAS PROGRAMMED FOR ORBIT 104. ON ORBIT NO. 10 (ENGINEERING PASS) THE MASTER INSTRUMENT FAILED TO OPERATE. TELEMETRY DATA SHOWED NO DRIVE VOLTAGE ON THE INSTRUMENT INDICATING THAT THE OPERATE RELAYS WE NOT PULLED IN. AT THE SAME TIME THE PROGRAM ON/OFF MONITOR TELEMETRY DATA REFLE THE RECEIPT OF THE OPERATE COMMAND. AFTER ANALYZING THE T/M DATA IT WAS CONCLU

THE PROBABLE CAUSE OF THE FAILURE LAY BETWEEN THE HOLDING RELAY FOR THE MASTER INSTRUMENT OPERATE SIGNAL IN THE COMMAND BOX, AND THE OPERATE RELAYS ON THE MASTER INSTRUMENT. (SEE REF C).

THE MASTER INSTRUMENT FAILED TO RESPOND TO OPERATE SIGNAL IN EITHER MONO 1 MODE OR STEREO MODE FROM ORBIT No. 104 THRU ORBIT NO. 132. MEANWHILE NO PMU TM CHANGES WERE NOTED DURING ANY OF THE MONO 1 MODE OPERATIONS. ON ORBIT NO. 133 THE MASTER INSTRUMENT OPERATED ON THE LAST 2 CYCLES OF 162 PROGRAMMED CYCLES. ON ORBITS NO. 134 AND 135 IT RESPONDED TO OPERATE SIGNALS AS PROGRAMMED, BUT FROM THEM ON UNTIL ORBIT NO. 144, SRV-B RECOVERY, IT FAILED AGAIN TO RESPOND TO ANY OPERATE COMMAND. ON ORBIT NO. 183 THE VEHICLE WENT THROUGH THE DEACTIVATE EXERCISE AND THE SYSTEM RESPONDED AS DESIGNED, BOTH THE MASTER AND SLAVE INSTRUMENT OPERATED.

2. CONCLUSION

IN ANALYSING THE EVENTS, IT WAS CONCLUDED THAT SINCE NEITHER THE INSTRUMENT OR THE PMU WERE RECEIVING THE NECESSARY VOLTAGE, THAT THE MOST PROBABLE CAUSE OF FAILURE IS LOCATED IN THE COMMAND BOX ON THE CIRCUIT ASSOCIATED WITH THE MASTER INSTRUMENT OPERATE RELAY, K-13. THIS CONCLUSION WAS FURTHER SUBSTANTIATED WHEN THE BY-PASS CIRCUIT, VEHICLE DEACTIVATE, SUCCESSFULLY OPERATED THE SYSTEM.

3. CORRECTIVE ACTIONS

AS RESULT OF THE ANALYSIS, THE FOLLOWING ACTIONS WERE INITIATED TO MINIMIZE FAILURES OF SIMILIAR NATURE ON FUTURE SYSTEMS.

A. PAD-READIED SYSTEM

ALL BLACK-BOX ASSEMBLIES FROM J-24 SYSTEM WERE SUBJECTED TO VIBRATION AND FUNCTIONAL RE-TESTS TO ASSURE INTEGRITY AND TO DEVELOP HIGHER CONFIDENCE LEVELS OF THE HOLDING RELAYS AND THEIR ASSOCIATED CIRCUITRIES. NO ANOMALIES WERE DETECTED AND ALL ASSEMBLIES UNDERWENT TESTS SUCESSFULLY.

B. FUTURE SYSTEMS

1) DIODES CR 114, CR 115 AND CR 117 ON THE OPERATE RELAY/LINE IN THE INSTRUMENT WERE DETERMINED TO BE NO LONGER NECESSARY IN THE SYSTEM. SINCE A FAIL OPEN, OR CONNECTING LEAD BREAK ON THESE DIODES WOULD HALT THE OPERATION OF THE INSTRUMENT THEY WILL BE REMOVED ON FUTURE SYSTEMS.

2) OPERATE RELAYS IN THE COMMAND BOX FEED OPERATE VOLTAGES TO THE INSTRUMENTS FOR BOTH STANDARD OPERATION MODE AND EMERGENCY OPERATION MODE. ANY RELAY CIRCUIT FAILURE AS IN THE CASE OF MISSION 1023 [redacted] WILL DISABLE THE INSTRUMENT. IN-VESTIGATION OF POSSIBLE CORRECTIVE ACTION FOR THE EMERGENCY [redacted].

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PART II CAPSULE ANOMALIES

1. SUMMARY OF FAILURE.

REF B INDICATED THE FOLLOWING ANOMALIES WERE OBSERVED DURING CAPSULE DEFILMING:

A) SPOOLS ROTATED EASILY WITH NO POWER APPLIED TO BRAKES.

B) CLICKING SOUND ON SIDE ONE SPOOL DURING ROTATION.

C) BROWN SYNTHANE STRIP 3/4 X 1/4 X1/8" FOUND LOOSE IN SRV.

D) TWO SMALL FLEXIBLE WHITE SHIPS FOUND LOOSE IN SRV.

E) 10 TO 15 FEET OF PAYLOAD LOOSE ON EACH SPOOL.

2. TESTS AND CONCLUSIONS

A) THE BREAKAWAY FORCE REQUIRED TO OVERCOME BRAKES WAS FOUND TO BE 6.2 LBS ON EACH EMPTY SPOOL WITH BRAKES ENGAGED. BRAKES OPERATED NORMALLY WITH AND WITHOUT POWER. A FULL CASSETTE CAN [redacted] BE ROTATED EVEN WITH BRAKE APPLIED). IT WAS CONCLUDED, [redacted] THAT THERE HAD BEEN NO BRAKE MALFUNCTION.

B) CLICKING SOUND ON SIDE ONE WAS FOUND TO BE THE RESULT OF BALL BEARING CLICK. RPM CHECK SHOWED SPOOLS WERE FREE FROM DRAG.

C) BROWN SYNTHANE STRIP WAS AN ADJUSTING BLOCK GUIDE FROM THE CASSETTE MOUNTING FLANGE. THE ADHESIVE HAD FAILED TO RETAIN IT IN POSITION.

D) TWO SMALL CHIPS ARE CONDUCTIVE PAINT CHIPS LOOSENED FROM COVER AS RESULT OF P-5 BLOWOFF SQUIB SHOCK FIRED AT TIME OF THRUST CONE SEPARATION.

E) THE LOOSE PAYLOAD IS BELIEVED TO BE RESULT OF MOTION OF CAPSULE DURING RECOVERY AND HANDLING.

3. CORRECTIVE ACTIONS

NO CORRECTIVE ACTIONS ARE REQUIRED FOR ITEMS A, B, AND C. [redacted] IS INVESTIGATING THE POSSIBILITY OF REMOVING BROWN SYNTHANE STRIP FROM THE CASSETTE MOUNTING FLANGE [redacted] OF 4 SUCH STRIPS WHICH APPEAR TO BE MERE UNNECESSARY TO THE SYSTEM. [redacted] IS CONSIDERING REMOVING THE UNNECESSARY STRIPS ON FUTURE VEHICLES. [redacted] ARE INVESTIGATING USE OF A GRAPHITE IMPREGNATED COVER WHICH MAY ELIMITATE THE NEED FOR THE PRESENT CONDUCTIVE PAINT ON THE CAPSULE COVER.

PART III POSSIBLE OBJECT SEEN ON HORIZON OPTICS ON REV 2.

A POSSIBLE "OBJECT" WAS REPORTED TO HAVE BEEN OBSERVED BY [redacted] ON SEVERAL FRAMES OF THE FORWARD TAKE-UP HORIZON CAMERA (STARBOARD OF VEHICLE) PHOTOGRAPHY ON REV 2. [redacted] HAS COMPLETED A DRAWING TO ASSIST SHOWING THE OVERLAP BETWEEN FORWARD AND AFT HORIZON CAMERAS FOR IN THE ANALYSIS [redacted] OF [redacted] IS RESPONSIBLE FOR COORDINATING THE INVESTIGATION OF THIS ANOMALY.

END OF MESSAGE

[redacted]

~~SECRET~~