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SUBJECT: MISSION 1112 PHOTOGRAPHIC EVALUATION INTERM REPORT (PEIR)

1. NUMERICAL SUMMARY:

MSN NO DATES: 1112-1, 18-27 NOV 70 REC. 27 NOV 70/2309Z
 1112-2, 27 NOV - 7 DEC REC. 7 DEC 70/2224Z
 LAUNCH DATE TIME: 18 NOV 70/2129Z
 VEHICLE NO: 1658
 CAM SYS: QR-2
 PAN CAMS: AFT LOOKING 300, FILM 7800 FT. 3414; 1000 FT 3404;
 7500 FT. 3414
 FWD LOOKING 301, FILM 7800 FT 3414; 1000 FT 3404;
 7500 FT 3414

DISC UNIT: 8
 STELLAR LENS PORT F/2.8 1.5 SEC NO FILTER
 SIBO F/2.8 1.5 SEC NO FILTER

FILM TYPE: 3401
 TERRAIN LENS F/4.5 WITH MODIFIED F/6.3 SHUTTER 1/500 SEC (FIXED)
 W-12 FILTER

FILM TYPE: 3400
 REC REVS: MSN 1112-1, REC 147
 MSN 1112-2, REV 309
 LAUNCH WINDOW: 2125Z TO 2225Z, 18 NOV 70

2. CAM SETTING:

FWD LOOKING: W-25 GLASS (PRIM)
 W-25 GLASS (ALT)
 SLIT WIDTH POS 1 0.154 INCH
 POS 2 0.189 INCH
 POS 3 0.250 INCH
 POS 4 0.320 INCH
 FAIL SAFE 0.259 INCH
 AFT LOOKING: W-23A GLASS (PRIM)
 W-23A GLASS (ALT)
 SLIT WIDTH POS 1 0.125 INCH
 POS 2 0.160 INCH
 POS 3 0.205 INCH
 POS 4 0.267 INCH
 FAIL SAFE 0.219 INCH

3. PERFORMANCE SUMMARY

A. THE OVERALL IMAGE QUALITY OF MSN 1112 IS GOOD AND COMPARABLE TO THE BEST OF THE CR SYSTEM. IMAGERY RETAINS ITS SHARPNESS AT MAGNIFICATIONS ABOVE 50 TIMES. AN MIP OF 115 WAS ASSIGNED FOR BOTH 1112-1 AND 1112-2. THE MIP CHIP FROM MSN 1112-1 IS CONSIDERED THE BEST EVER ACHIEVED BY A CORONA SYSTEM. THE PER ATTRIBUTES THE IMPROVED QUALITY OF THE IMAGERY TO A COMBINATION OF:

- (1) GLASS FILTERS INCORPORATED ON THIS SYSTEM.
- (2) QUALITY OF 3414 FILM.
- (3) IMPROVED FOCUS TECHNIQUES BEING UTILIZED ON PROGRAM.
- (4) GEOMETRIC STABILITY OF THE QR-2 CAMERA SYSTEM.

CORN TGT READINGS (2:1 CONTRAST AT THE LENS) FOR THE MSN ARE PRESENTED

DESCRIPTION	
CV	OF (JOB) FT
1	(FIXED) SEC. 2
34	APSDV

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BELOW. READINGS ARE THE AVERAGE OF SEVEN READERS FROM [] AND THE PET TEAM. THE AVERAGE RESOLUTION OF [] IS CONSIDERED EXTREMELY GOOD FOR A CORONA SYSTEM. MEAN ON ORBIT RESOLUTION OF BOTH CAMERAS APPEARS TO HAVE BEEN APPROX 130 L/MM WITH THE BEST GROUND RESOLUTION REPRESENTING CAMERA PERFORMANCE IN EXCESS OF 180 L/MM. THE CORN READINGS FROM ORIGINAL NEGATIVES AND DUPE POSITIVES SHOW AN APPROX 18 PCT LOSS IN RESOLUTION IN THE DUPLICATION PROCESS.

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B. PI SUITABILITY: [] REPORTED "THE PI SUITABILITY FOR THIS MSN RANGES FROM POOR TO GOOD WITH THE LARGEST PORTION FALLING IN THE FAIR CATEGORY. THE MAJOR FACTOR FOR THE POOR RATINGS IS SMALL SCALE DUE TO HIGH ALTITUDES. THE PHOTO INTERPRETERS REPORT THAT MOST IMAGERY IS VERY SHARP BUT LACKS THE SCALE NEEDED FOR 'GOOD' INTERPRETATION SUITABILITY." THE [] COMMENT IS BORNE OUT BY THE FACT THAT THIS MISSION RECEIVED THE THIRD LOWEST PERCENTAGE (6 PCT) OF PRIORITY ONE TARGETS RATED GOOD IN THE ENTIRE 1100 SERIES. THE DIFFERENCE BETWEEN THE PET'S "EXCELLENT" RATING AND THE PI SUITABILITY RATING OF "FAIR" REQUIRES CLARIFICATION. THE TWO MAJOR CONTRIBUTING EFFECTS ARE SCALE AND LOSS OF STEREO. DURING MISSION 1112-1 THE STEREO COVERAGE LED TO 10 PCT "GOOD" TARGET RATINGS, WHEREAS THE MONO COVERAGE IN 1112-2 HAD ONLY 4 PCT RATED "GOOD". IT IS POSSIBLE, THEREFORE, TO ATTRIBUTE A PORTION OF THE DECREASE TO A LACK OF STEREO IN THE SECOND HALF OF THE MISSION. HOWEVER, MSN 1112-1 DID NOT HAVE AN OUTSTANDING PERCENTAGE OF GOOD PI RATINGS COMPARED TO PAST INHERENTLY POORER RESOLUTION CAMERA SYSTEMS. THE MAJOR CAUSE FOR THE POOR PI RATINGS IS, AS NOTICED BY THE PIS, THE SMALLER SCALE DUE TO THE HIGHER ALTITUDE. TO BETTER EVALUATE THIS ASPECT, AN ANALYSIS WAS DONE ON THE PI SUITABILITY RATINGS (FOR PRIORITY ONE TGTS) FOR ALL PAST J-3 MSNS. THIS ANALYSIS ILLUSTRATES THAT THE AVG OF THE GOOD PI RATINGS FOR MSNS WITH PERIGEE LOWER THAN 90NM WAS 20 PCT; WHILE THE AVG OF THE GOOD PI RATINGS FOR MSN WITH PERIGEE HIGHER THAN 90NM WAS 9.5 PCT; A SIGNIFICANT REDUCTION. OF THE LOWER THAN 90NM MSNS THE ONES WITH THE LOWEST PERIGEE (I.E., NEAR 80NM) HAD THE HIGHEST PERCENTAGE OF GOOD PI RATINGS OF ALL CORONA J-3 MSNS (I.E., 18, 23, 23 AND 28 PCT). FROM THESE PI SUITABILITY RATINGS IT IS CLEAR THAT THERE IS A DIRECT RELATIONSHIP BETWEEN ALTITUDE OF PHOTOGRAPHY AND PI SUITABILITY. TO IMPROVE THE PI SUITABILITY OF THE PHOTOGRAPHY, [] AND THE PET RECOMMEND THAT ALL FUTURE CORONA MSNS BE FLOWN AT A PERIGEE ALTITUDE OF 80NM.

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4. FWD LOOKING CAMERA NR 301

A. ANOMALY: A FOG PATTERN IS PRESENT ON THE NINTH FR FROM THE END OF MOST FWD CAMERA OPERATES AND ALSO ON THE SEVENTH FR FROM THE END OF MOST AFT CAMERA OPERATES. THE DENSITY OF THESE FOG PATTERNS IS COMMENSURATE WITH CAMERA SIT PERIODS. DEGRADATION TO THE IMAGERY

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IS MINOR.

CAUSE: MOST LIKELY CAUSE: EXAMINATION OF THE FILM PATH OF BOTH CAMERAS REVEALED THAT FOGGING OCCURRED IN THE VICINITY OF THE FOREBODY/FAIRING INTERFACE.

ACTION: NONE RECOMMENDED.

B. ANOMALY: A 0.1 INCH, TRIANGULAR, PLUS DENSITY MARK IS PRESENT AT A 6.25 INCH INTERVAL BEGINNING ON FR 26 OF PASS D04 AND CONTINUES THROUGH FR 61 OF PASS D05. THIS MARK IS APPARENTLY THE RESULT OF PHYSICAL PRESSURE FROM THE BASE SIDE OF THE FILM. A 0.05 INCH WIDE, LONGITUDINAL FILM BASE GOUGE, 7/8 INCH FROM THE TIME TRACK EDGE OF THE FILM, IS CONTINUOUS FROM FR 62 OF PASS D05 THROUGH FR 1 OF PASS D35. THIS BASE GOUGE STARTS 6.25 INCHES AFTER THE LAST TRIANGULAR SHAPED PLUS DENSITY MARK THAT APPEARED ON FR 61 OF PASS D05. AFTER FR 1 OF PASS D35, A SERIES OF MINOR BASE RUBS ARE PRESENT TO THE END OF THE MSN.

CAUSE: STARTING ON FR 26 OF PASS D04, A PARTICLE OF UNKNOWN ORIGIN IMPRESSED THE FILM FROM THE BACK SIDE CAUSING A PLUS DENSITY MARK EVERY 6.25 INCHES. MEASUREMENTS MADE ON RECOVERED FILM INDICATE THIS FOREIGN PARTICLE TO BE INITIALLY ON THE INPUT METERING ROLLER. IT BECAME DISLODGED FROM THE ROLLER ON FR 62 OF PASS D04 AND WAS CARRIED BY THE FILM UNTIL IT AGAIN LODGED BETWEEN A FILM GUIDE AND ROLLER. IT REMAINED IN THIS AREA GOUGING THE FILM UNTIL PASS D35. AT THIS TIME THE GOUGING CEASED BUT A "RUBBING" EFFECT WAS EVIDENT THROUGHOUT THE REMAINDER OF THE 1112-1 MATERIAL. THE 1112-2 MATERIAL, APPROX 70 INCHES, DID NOT SHOW ANY ABRASIONS OR RUBBING THAT COULD BE CORRELATED WITH THE MARKING IN THE 1112-1 MISSION.

ACTION: NONE RECOMMENDED.

C. ANOMALY: A CREASE, BACK TO BACK, 90 DEGREES TO THE MAJOR AXIS AND EXTENDING ACROSS THE FILM WEB IS PRESENT ON FWD CAMERA FR 114 OF PASS D05.

CAUSE: INVESTIGATION OF THE FILM AND T/M RECORDS DOES NOT INDICATE A CAMERA SYSTEM ANOMALY. THE LOCATION OF THE CREASE FROM THE CENTER OF SCAN, PLACES THIS PORTION OF MATERIAL IN THE OUTPUT SHUTTLE ASSEMBLY AT SHUTDOWN. THE ROLLERS AND SUBASSEMBLIES IN THIS AREA DO NOT PROVIDE A REASONABLE SOURCE FOR THIS TYPE OF ANOMALY. THE TAPE RECORDER DATA FOR THE PERIOD OF TIME THAT THIS SECTION OF MATERIAL PASSED THROUGH THE SYSTEM DOES NOT SHOW ANY ABNORMALITIES THAT INDICATE THE CREASING TOOK PLACE DURING OPERATION. IT IS THE OPINION OF THE PET TEAM THAT THIS CREASE OCCURED IN POST FLIGHT HANDLING.

ACTION: NONE RECOMMENDED.

D. ANOMALY: HORIZON IMAGES ASSOCIATED WITH FR 135 OF PASS D06 WERE NOT IMAGED. THE LAST TWO FRs, 134 AND 135 OF PASS D06, ARE BOTH CREEP FRs.

THE FOLLOWING ANOMALIES ARE ASSOCIATED WITH PASS D06:

(1) FR 133 HAS NO TIME WORD, NO CAMERA NUMBER, AND NO SLURRED TIME PULSE.

(2) FR 134 HAS NO TIME WORD, NO CAMERA NUMBER, NO SLURRED TIME PULSE, NO HORIZONS, AND WAS EXPOSED AT CREEP SCAN SPEED.

(3) FR 135 HAS NO TIME WORD, NO CAMERA NUMBER, NO SLURRED PULSE, AND WAS ALSO EXPOSED AT CREEP SCAN SPEED.

CAUSE: THE LOSS OF A CENTER OF FORMAT PULSE RESULTED IN THE MISSING AUXILIARY DATA AND THE TWO CREEP FRs. THE FWD INSTRUMENT WAS GIVEN AN "OFF" COMMAND ON FR 133. FR 134 SHOULD HAVE BEEN A STOW CYCLE; HOWEVER, THE INSTRUMENT CONTINUED TO OPERATE AT A CREEP RATE UNTIL THE 20 SEC. RELAY DROPPED OUT POWER. THIS CARRIED THE INSTRUMENT THROUGH FR 135. T/M DATA ALSO VERIFIED THAT THE CENTER OF FORMAT PULSE DID NOT OCCUR FROM THE SWITCH CLUSTER.

ACTION: SWITCH CLUSTER FUNCTIONS ARE BEING REVERIFIED ON RE-

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MAINTAINING SYSTEMS TO ASSURE PROPER SWITCH OVER-TRAVEL.

E. ANOMALY: FAILURE OF CAMERA NO. 301 AFTER CUT AND WRAP, REV 104. PART OF FR 83, ALL OF FR 84, AND FR 85 OF PASS D103 WERE THE ONLY FWD FRs RECOVERED FROM THE FWD CAMERA ON MSN 1112-2. PART OF FR 82 AND PART OF FR 83 WERE NOT RECOVERED (APPROX 36 INCHES MISSING). FILM AND T/M INVESTIGATION OUTLINED THE FOLLOWING POINTS:

- (1) CUT AND CINCH APPEARED NORMAL.
- (2) FIRST CYCLE OF OPERATION, AT REDUCED SPEED WAS NORMAL UNTIL THE SCAN HEAD REACHED A POINT APPROX 15 DEGREES FROM PLATEN AREA. AT THIS POINT A FILM JAM WAS NOTED.
- (3) FR METERING ROLLER SLOWED DOWN.
- (4) FWD MOTOR VOLTAGE INCREASED.
- (5) UNREG CURRENT INCREASED.
- (6) INPUT FUNCTIONS APPEARED NORMAL.

CAUSE:

- (1) THE JAMMING, POSSIBLY CAUSED BY A FOREIGN OBJECT, RESULTED IN A SHEARED PIN IN THE STARWHEEL ASSEMBLY.
- (2) THIS FAILURE RESULTS IN LOSS OF OUTPUT METERING.
- (3) SWITCH CLUSTER FUNCTIONS CONTINUED.
- (4) INPUT METERING CONTINUED TO PASS FILM INTO THE INSTRUMENT, DEVELOPED SLACK, AND EVENTUALLY WRAPPED ON THE INPUT METERING ROLLER.
- (5) AT THIS POINT THE CAMERA SYSTEM STALLED AND WAS INOPERATIVE FOR THE REMAINDER OF 1112-2.

ACTION: THE CR SYSTEMS ARE CLEANED AS THOROUGHLY AS POSSIBLE WITH THE TECHNIQUES EMPLOYED, I.E., VIBRATION, VACUUM CLEANING AND THROUGH INSPECTION; HOWEVER, THERE HAS BEEN IRREFUTABLE EVIDENCE THAT RESIDUE IS SOMETIMES LODGED IN AREAS INACCESSABLE TO GROUND CLEANING. THE ENVIRONMENTAL CONDITIONS AT LAUNCH TEND TO FREE THESE PARTICLES IN THE VEHICLE. THE CLOSING OF CRITICAL AREAS IN THE CAMERA SYSTEM TO GUARD AGAINST FLOATING PARTICLES HAS BEEN STUDIED. ALTHOUGH THIS COULD BE DONE, THE MERITS OF THIS REDESIGN ARE NOT CONSIDERED FEASIBLE AT THIS PHASE OF THE PROGRAM. NO ACTION RECOMMENDED.

5. AFT LOOKING CAMERA NR 300

A. ANOMALY: THE FOLLOWING DEGRADATIONS WERE NOTED ON THE AFT INSTRUMENT FR 21 (LAST FR) OF PASS D03 AND FR 1 OF PASS D04:

- (1) OUTPUT A.O. FIDUCIALS ARE SMEARED.
- (2) A.O. FORMAT IS OVERLAPPED INTO PASS D04, FR 1.
- (3) PHYSICAL EMULSION DIGS ARE PRESENT ON BOTH FILM EDGES.
- (4) FR 21 IS APPROX 1 INCH LONGER THAN NORMAL.
- (5) HEAVY FOG NEAR CENTER OF FORMAT FROM LENS STOW (OPEN SHUTTER).

(6) SHARP EMULSION TO EMULSION GREASE 90 DEGREES TO MAJOR AXIS ON FR 1 OF PASS D04.

CAUSE: THE FOLLOWING SEQUENCE OF EVENTS IS SUBSTANTIATED BY RECOVERED FILM AND T/M INVESTIGATION:

- (1) CAMERA RECEIVED OFF COMMAND ON FR 20 OF PASS D003.
- (2) DURING THE INTERVAL BETWEEN FR 20 AND 21 THE INSTRUMENT LOST POWER AND ENTERED WHAT SHOULD HAVE BEEN THE CREEP FR AT A RATE SLIGHTLY SLOWER THAN OPERATIONAL SPEED.
- (3) THE INSTRUMENT, WITH POWER, COASTED THROUGH AND SLIGHTLY BEYOND FR 21 WHERE IT CAME TO REST TEMPORARILY.
- (4) DURING THIS COASTING PERIOD IT FOLLOWS (FROM TEST EXPERIENCE) THAT THE INPUT MATERIAL STARTED TO WRAP UP ON THE INPUT METERING ROLLER DUE TO LACK OF TAKE-UP TENSION IN THE SYSTEM.
- (5) FROM A POINT OF REST, SLIGHTLY BEYOND FR 21, THE INSTRUMENT AIDED BY THE TENSION CREATED IN THE DOUBLE NEGATOR ASSEMBLY OF THE SUPPLY CONSTANT TENSION ASSEMBLY, WAS BACKED UP. THIS REVERSAL UNCINCHED THE MATERIAL IN THE INPUT METERING ROLLER.

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(6) THE SCAN HEAD CAME TO REST APPROX IN THE CENTER OF FORMAT OF FR 21 AND REMAINED THERE UNTIL A CAMERA "ON" COMMAND WAS RECEIVED ON PASS D04.

(7) AFTER APPROX 20 CYCLES THE CAMERA SYSTEM RECOVERED ALL THE SLACK MATERIAL AND CONTINUED NORMAL OPERATION.

CAUSE: MALFUNCTION OF INTERNAL CONTACTS--K-8 RELAY (20 SEC RELAY).

CONTACTS COULD HAVE:

(1) FAILED TO CLOSE AT START OF OPERATE.

(2) DROPPED OUT DURING OPERATE.

(3) DROPPED OUT AT OFF COMMAND.

ACTION: INVESTIGATE FEASIBILITY OF A REDUNDANT CIRCUIT TO REDUCE THE PROBABILITY OF A POWER LOSS AS A RESULT OF RELAY K-8 FAILURE. THIS MALFUNCTION WAS EXTREMELY SERIOUS AND IN MOST CASES WOULD HAVE BEEN CATASTROPHIC TO THE CAMERA. THE IMPORTANCE OF CORRECTING THIS POTENTIAL FAILURE MODE CANNOT BE OVEREMPHASIZED.

B. ANOMALY: A 2.5 INCH CREASE, PARALLEL TO THE MAJOR AXIS OF THE FILM, IS PRESENT ON FR 1 OF PASS D103.

CAUSE: THE CREASING WAS BARELY DETECTABLE. THERE WAS NO PHYSICAL DAMAGE ASSOCIATED WITH THIS CREASE AND AN OBVIOUS SYSTEM CAUSE COULD NOT BE FOUND. TAPE RECORDER DATA INDICATED NORMAL SYSTEM OPERATION. THE CHARACTERISTICS OF THIS CREASE INDICATE THAT IT WAS PROBABLY OCCURRED DURING POST MISSION HANDLING.

ACTION: NONE RECOMMENDED.

6. DISC CAMERA PERFORMANCE: POINT-TYPE STAR IMAGES WERE RECORDED BY BOTH STELLAR CAMERAS. APPROX 25 STAR IMAGES WERE RECORDED ON PORT FORMATS AND APPROX. 5-10 STAR IMAGES WERE RECORDED ON STBD FORMATS. INDEX IMAGE QUALITY IS AVERAGE FOR THE DISC CAMERA SYSTEM.

7. DISC ANOMALIES:

A. ANOMALY: THIS DISC CAMERA FAILED TO OPERATE AFTER FR 32 OF PASS 107. THE DISC SYSTEM PERFORMED NORMALLY DURING THE 1112-1 PORTION OF THE MSN. IMMEDIATELY AFTER THE A-SRV TO B-SRV TRANSFER AND DURING A 71 CYCLE SLAVE-INDEPENDENT OPERATION, THE DISC CAMERA FAILED WITH 32 CYCLES BEING COMPLETED.

OBSERVATIONS OF POST FLIGHT DATA:

(1) 83.75 INCHES OF STELLAR FLIGHT FILM WAS ON THE 33MM TAKE UP- SPOOL.

(2) THE 5 INCH FLIGHT SPLICE WAS NOT RECOVERED.

(3) APPROX 44-50 INCHES OF THE TUNA LEADER WAS MISSING FROM THE FIVE INCH SPOOL, INDICATING MOVEMENT BACK TOWARD THE DISC CAMERA.

(4) FAILURE OF THE TERRAIN TAKE-UP SPOOL AFTER 4 MINUTES OF OPERATION DURING A POST FLIGHT ALTITUDE TEST.

CAUSE: THE ABOVE DATA INDICATES THAT THE FLIGHT FAILURE WAS CAUSED BY STOPPAGE OF THE TERRAIN TAKE-UP SPOOL. FAILURE TO TAKE-UP THE FILM AS IT IS METERED WILL CAUSE THE FILM TO WRAP ITSELF AROUND THE METERING ROLLER, CAUSING THE DISC CAMERA TO JAM AND CEASE OPERATING.

ACTION:

RETURN THE RECOVERED DISC TAKE-UP SERIAL NUMBER 21 TO ARBOR AND SUBJECT IT TO AMBIENT AND ENVIRONMENTAL TESTS TO DETERMINE WHICH COMPONENT WAS RESPONSIBLE FOR THE FAILURE. CHANGES TO THE REMAINING DISC TAKE-UP UNITS WILL BE BASED ON THESE TEST RESULTS.

B. ANOMALY: CORONA AND DENDRITIC STATIC TRACES ARE PRESENT CONTINUOUSLY FROM PASS 37 TO THE BEGINNING OF PASS 48 ON THE TERRAIN RECORD OF THE 1112-1 MSN. ALTHOUGH THE MARKS CONTINUE UNINTERRUPTED FOR ALL FRs IN THE AFFECTED SECTION, DEGRADATION TO THE IMAGERY IS MINOR (ALL FRs PRIOR TO PASS 37 AND FOLLOWING PASS 48 ARE CLEAR OF ANY

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MARKS OR ANOMALIES). THE MARKS APPEAR SIMILAR TO THOSE OBSERVED AT THE END OF MSN 1107. THE MARKS APPEAR TO EMANATE FROM TWO SOURCES; ONE ASSOCIATED WITH OPERATION ON ORBIT; THE OTHER FROM GROUND HANDLING.

CAUSE: THE BRANCH DISCHARGES ARE CHARACTERISTIC OF DE-SPOOLING. [] REPORTS THAT MINOR STATIC WAS OBSERVED AT THE TIME OF DE-SPOOLING. THE OTHER CONTINUOUS DISCHARGE APPEARS TO HAVE BEEN CAUSED BY THE FILM RUBBING ON SOME CONTINUOUS SURFACE. THE MOST LIKELY CAUSE FOR FILM RUB OF THIS NATURE IS A LOOP FORMED BY IMPROPER/FILM TENSION, PROBABLY DUE TO A SLOW DISC TAKE-UP.

ACTION: SEE ACTION UNDER PARA 7A ABOVE.

8. SYSTEM ANOMALIES:

A. ANOMALY: DURING CUT AND WRAP DISC OPERATED FOR FOUR UNPROGRAMMED CYCLES. IT IS NORMALLY DISABLED DURING C/W.

CAUSE: A VOLTAGE APPEARED ON THE DISC COMMAND LINE THROUGH A SNEAK CIRCUIT GENERATED AT THE PMU CONTROL. ENGINEERING REVIEW CONFIRMED THE EXISTENCE OF THE SNEAK CIRCUIT. FAILURE ANALYSIS INDICATED NO OTHER ILL EFFECT WOULD BE INTRODUCED EITHER TO THE DISC OR THE CR INSTRUMENTS.

ACTION:

(1) MODIFICATION IS BEING INCORPORATED ON ALL FUTURE DISC-REQUIRED FLIGHT SYSTEMS.

(2) ADDITIONAL SYSTEMS TESTS, AS REQUIRED, TO VERIFY PROPER COMMAND INTEGRITY WILL BE CONDUCTED. ACTION ITEM CLOSED WITH ABOVE MODIFICATIONS.

B. ANOMALY: THE TAPE RECORDER FAILED AFTER APPROX 13 SECONDS OF MSN 1112-2 OPERATION, RESULTING IN LOSS OF ALL IN-FLIGHT OPERATIONAL DATA EXCEPT THAT ACQUIRED OVER TRACKING STATIONS.

CAUSE: IN THE INITIAL POST FLIGHT GROUND TEST, THE TAPE RECORDER FAILED TO OPERATE IN THE "RECORD" MODE AND WAS APPARENTLY JAMMED; HOWEVER, AFTER REVERSING DIRECTION THE JAM WAS CLEARED. THE RECORDER WAS THEN OPERATED IN THE FORWARD "RECORD" DIRECTION AND A FAILURE OCCURRED. INVESTIGATION SHOWED THAT THE DRIVE BELT HAD BROKEN, APPARENTLY CAUSED FROM PUNCTURE BY A SHARP OBJECT. LOOSE FLAKES OF GLYPTOL WERE FOUND IN THE RECORDER AFTER DISASSEMBLY. THE FLIGHT FAILURE WAS APPARENTLY CAUSED BY A GLYPTOL CHIP WHICH LODGED BETWEEN THE BELT DRIVE AND TRANSPORT CASE, JAMMING THE TRANSPORT SYSTEM.

ACTION: THE FOLLOWING ITEMS WILL BE INCORPORATED ON FUTURE REWORK OF THE RECORDERS.

(1) CHANGE MAXIMUM TAPE PACK DIAMETER FROM 2.975 TO 2.945 INCHES.

(2) ELIMINATE THE USE OF GLYPTOL INTERNAL TO THE TAPE RECORDER.

(3) REVIEW AND CORRECT CLEAN ROOM PRACTICES.

9. CHARACTERISTIC ANOMALIES HAVING A MINOR AFFECT ON PERFORMANCE:

A. A FOG PATTERN IS PRESENT ON THE FOURTH FR OF SOME CAMERA OPERATIONS.

B. OUT OF FOCUS AREAS COMMON TO THE SYSTEM.

C. MINOR, DENDRITIC, EDGE STATIC TRACES ARE PRESENT ON PASS D87 AND D88. MINOR, CORONA STATIC TRACES ARE PRESENT ON D90.

D. ROLLER/EQUIPMENT SHADOWGRAPHS ARE PRESENT INTERMITTENTLY THROUGHOUT THE MSN.

ACTION: NONE.

10. OPEN PET ACTION ITEMS WERE DISCUSSED. AC 1111-2 WAS CLOSED WITH THE COMPLETION OF ANALYSIS BY PLUM (A/P AND BOS). CAUSE OF SQUIGGLE MARKS COULD NOT BE ISOLATED. AC 1110-3 (PLUS DENSITY SPOTS) IS STILL UNDER INVESTIGATION. THESE SPOTS WERE PRESENT ON MSN 1112 WITH MAXIMUM OCCURRENCE BEING OBSERVED ON THE FIRST CAMERA OPERATION FOLLOWING RECOVERY RETRO FIRING.

T O P S E C R E T

END OF MESSAGE

GROUP ONE