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CORONA/PET

SUBJ: MISSION 1033 PHOTOGRAPHIC EVALUATION INTERIM REPORT
(PEIR)

REF:

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1. NUMERICAL SUMMARY

MISSION NO AND DATES: MSN 1033-1, 24-29 MAY 1966
MSN 1033-2, 29 MAY-3 JUN 1966
LAUNCH DATE AND TIME: 24 MAY 1966/02-00-33 GMT
VEHICLE NUMBER: 1630
CAMERA SYSTEM: J-33
PAN CAMERA NOS: FWD-LOOKING (MASTER) 194
AFT-LOOKING (SLAVE) 195
S/I CAMERA NOS: MSN 1033-1, D91/105/109
MSN 1033-2, D84/075/102
RECOVERY REVS: D83 AND D178

2. CAMERA SETTINGS

FWD-LOOKING 0.200 INCH SLIT
WRATTEN 21 FILTER
AFT-LOOKING 0.200 INCH SLIT
WRATTEN 21 FILTER

17 JUN 1966

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3. PERFORMANCE SUMMARY

THE OVERALL IMAGE QUALITY OF MISSIONS 1033-1 AND 1033-2 WAS GOOD AND COMPARABLE TO MISSION 1031. ATMOSPHERIC HAZE THROUGHOUT MOST PHOTOGRAPHY WAS NOTICEABLY HIGH AND COMPARABLE TO RECENT MISSIONS. THE PI'S COMMENTED FAVORABLY ON THE QUALITY OF THE ASCENDING PHOTOGRAPHY AS COMPARED TO PREVIOUS ASCENDING PHOTOGRAPHY. IT IS SIGNIFICANT TO NOTE THAT THE MIP FRAMES FOR THIS MISSION WERE FROM FORWARD INSTRUMENT ASCENDING PHOTOGRAPHY. THESE COMMENTS WERE THE RESULT OF TWO FACTORS: FIRST, THE NEAR CIRCULAR ORBIT PROVIDED NEARLY EQUAL SCALE ON BOTH DESCENDING AND ASCENDING PASSES; SECOND, THE PI'S FELT THAT THE VARIATION IN ILLUMINATION CONDITIONS ON THE MULTIPLE PASSES PROVIDED A DIFFERENT AND HELPFUL LOOK AT THE TARGETS. THERE WERE NO CORN OR BAR TARGETS PHOTOGRAPHED ON THIS MISSION.

4. ANOMALIES

ANOMALIES INCLUDING THOSE REPORTED IN THE 31 MESSAGES (REF A AND B) WERE REVIEWED.

A. LOSS OF START OF PASS MARK

CAUSE: THE START OF PASS MARK WAS PRESENT AT START-UP (REV 82A FRAME 79) BUT WAS MISSING AT "SHUT DOWN" (FRAME 99) AND FAILED TO APPEAR FOR THE REMAINDER OF THE MISSION. THE START OF PASS LAMP DID NOT OPERATE DURING THE LAST OPERATIONAL PASS OF 1033-1, AND IS ATTRIBUTED TO A RANDOM LAMP FAILURE.

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ACTION: NONE.

B. FAILURE OF THE FREQUENCY LAMP TO EXTINGUISH COMPLETELY

CAUSE: THIS PROBLEM APPEARS TO HAVE BEEN CAUSED BY FAILURE OF A TRANSISTOR TO COMPLETELY TURN OFF (THERMAL RUN-AWAY). THIS CONCLUSION IS CONSISTENT WITH THE HIGH TEMPERATURES EXHIBITED AT THE INSTRUMENT MAIN PLATE (AND THEREFORE THE LAMP SYNC UNIT) OF THE FORWARD INSTRUMENT DURING MISSION 1033-1.

ACTION: REVIEW "UNIVERSAL THERMAL PAINT PATTERN" AS APPLICABLE TO SPECIAL ORBITS

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C. VEILING OF STARBOARD HORIZON CAMERA IMAGERY - THE STARBOARD HORIZONS ARE SEVERELY VEILED STARTING ON THE FIRST FRAME OF D01, 1033-1 WITH ONLY SLIGHT IMPROVEMENT IN QUALITY BY PASS 82D. THE VEILED CONDITION GRAUDALLY LESSENS IN 1033-2 AND APPEARS NORMAL IN THE FWD CAMERA PASS A114 THROUGH THE END OF THE MISSION.

CAUSE: UNKNOWN. IT IS SUSPECTED THAT ONE CONTRIBUTING FACTOR MAY BE THE SHINY BLACK RUBBER BOOTS ON THE SUN SIDE OF THE PAYLOAD. THESE BOOTS COULD BE REFLECTING NON-IMAGED LIGHT ONTO HORIZON IMAGERY. ALSO REFER TO REF C.

ACTION: ELIMINATE SPECULAR REFLECTIONS FROM HORIZON BOOTS.

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D. STELLAR CAMERA SHUTTER MALFUNCTION 1033-2;

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INTERMITTENT DELAY IN SHUTTER CLOSING.

CAUSE: EXCESSIVE INTERNAL FRICTION IN SHUTTER.

ACTION: SUBSEQUENT CAMERA SYSTEMS HAVE BEEN MODIFIED TO INCORPORATE STRONGER SHUTTER CLOSING SPRINGS.

E. INTERMITTENT BASE SCRATCHING FWD CAMERA THROUGH-OUT MISSION

CAUSE: UNKNOWN.

ACTION: NONE.

F. INTERMITTENT EMULSION SCRATCH FWD 1033-2 ONLY

CAUSE: UNKNOWN.

ACTION: NONE.

G. A TINY METAL CHIP WAS FOUND IMBEDDED IN THE MASTER CAMERA FILM - FRAME ONE, CENTER OF TAKE-UP END OF THE CUT AND WRAP SEGMENT. MINOR ASSOCIATED SCRATCHES AND DIMPLES ARE FOUND ON ADJACENT WRAPS WITH PITCH CORRESPONDING TO THE DIAMETER OF THE "B" TAKE-UP SPOOL CORE.

CAUSE: IT IS CONCLUDED THAT THE METAL PARTICLE WAS INTRODUCED INTO THE "B" TAKE-UP ROLL DURING CUT AND WRAP.

ACTION: UNDER INVESTIGATION AT A/P (MONITOR:



H. A DISCREPANCY EXISTS IN THE NUMBER OF FRAMES INDICATED TAKEN AND THE NUMBER RETURNED ON THE "B" INDEX CAMERA - THE LAST 8 THROUGH 13 FRAMES APPARENTLY ARE MISSING. OF APPROXIMATELY 118 FEET ON THE FLIGHT SUPPLY

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SPOOL, APPROXIMATELY 93 FEET WERE RETURNED.

CAUSE: UNKNOWN.

ACTION: RE-EXAMINATION OF T/M AND OFF SPOOLING
DATA (MONITOR:)

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I. HIGHER THAN NORMAL THERMAL ENVIRONMENT CAUSING
IMAGE QUALITY CHANGE ACROSS FORMAT - ON BOTH CAMERAS
THROUGHOUT THE MISSION A VARIATION OF IMAGE QUALITY WAS
OBSERVED UNDER HIGH MAGNIFICATION.

CAUSE: DUE TO THE INCREASED TEMPERATURES THE
CAMERAS PROBABLY SAW A SHIFT FROM OPTIMUM FOCUS.
THERMAL INFORMATION WOULD INDICATE THIS SHIFT WAS
PROBABLY IN THE ORDER OF 0.0015". NORMAL VARIATION
ACROSS THE FIELD OF VIEW BECAME APPARENT AS THE IDEAL
FOCAL SETTING WAS CHANGED.

ACTION: THERMAL PAINT PATTERN WILL BE REVIEWED
ON FURTHER MISSIONS OF THIS NATURE

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J. THE NUMBER SIX BINARY LAMP ON THE FWD INSTRUMENT
OPERATED INTERMITTENTLY THROUGHOUT MISSION 1033-1 AND FOR
THE FIRST PASS OF MISSION 1033-2.

CAUSE: THE BIT INTERMITTENTLY REMAINED IN THE
"ONE" STATE THEREBY INTRODUCING A CONSTANT OFF-SET IN THE
EFFECTED TIME WORDS. DURING THE READINESS RUN AT BEACH
THE SAME LAMP WAS FOUND TO BE INTERMITTENTLY MISSING.
AT THIS TIME THE PROBLEM WAS ATTRIBUTED TO A LOOSE CONNECTION

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WHICH WAS SUBSEQUENTLY CORRECTED. THIS GROUND PROBLEM COUPLED WITH THE FLIGHT MALFUNCTION MAY INDICATE A DEFECTIVE CLOCK. THIS MALFUNCTION PRESENTED NO SIGNIFICANT PROBLEMS TO THE DATA REDUCTION EFFORT.

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ACTION: NONE.

K. CHARACTERISTIC ANOMALIES: THERE ARE CERTAIN CHARACTERISTIC ANOMALIES THAT ARE CONSIDERED INHERENT TO THE OPERATION OF THE CORONA SYSTEM. WHILE THESE ITEMS WARRANT ATTENTION TO PREVENT FURTHER DEGRADATION IT IS NOT FELT THAT SPECIFIC ACTION ITEMS SHOULD BE ASSIGNED. A SUMMARY OF THESE ITEMS AND THE DEGREE OF DEGRADATION IS PRESENTED BELOW.

(1) STATIC DISCHARGE ALONG THE EDGES OF BOTH PAN CAMERA FILMS ARE LESS THAN NORMAL.

(2) RAIL SCRATCHES FROM BOTH PAN CAMERAS WERE LESS THAN NORMAL.

(3) NO RAGGED FORMAT EDGES WERE OBSERVED.

(4) SCRATCHES IN THE FORMAT OF BOTH CAMERA SYSTEMS ARE CONSIDERED NORMAL WITH THE EXCEPTION OF AN INTERMITTENT BASE SCRATCH (SEE E ABOVE) IN THE FORWARD CAMERA THROUGHOUT MISSION AND AN INTERMITTENT EMULSION SCRATCH MISSION 1033-2 ONLY (SEE F ABOVE).

5. COMMENTS

THERE ARE NO PARTICULAR COMMENTS TO BE MADE FOR THIS MISSION. THE PET INDEX CAMERA PHOTOGRAPHY ANALYSIS IS

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PRESENTED BELOW:

MISSION 1033-1

TOTAL INDEX FRAMES - 430

TOTAL CLEAR TERRAIN - 92 OR 21 PER CENT

MISSION 1033-2

TOTAL INDEX FRAMES - 412

TOTAL CLEAR TERRAIN - 54 OR 14 PER CENT

T O P S E C R E T

-END OF MESSAGE-

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