TOP SECRET PRIORITY 1

T O P S E C R E T 022217Z MAY 68 CITE [redacted] 3640. 1968 MAY 2 22 5[redacted] 25X1

25X1

[redacted]

OUT 64988

CORONA

~~SECTION ONE OF TWO~~

SUBJ: MISSION 1046 PHOTOGRAPHIC EVALUATION INTERIM REPORT (PEIR)

REF: A. [redacted] 9633
B. [redacted] 9727

25X1

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ADVANCE CY SANITIZED WITH TEXT 1

1. NUMERICAL SUMMARY

MSN NO AND DATES:	1046-1, 14-21 MARCH 1968 1046-2, 21-29 MARCH 1968
LAUNCH DATE AND TIME:	14 MARCH 1968/2200Z
VEHICLE NUMBER:	1638
CAMERA SYSTEM:	J48
PAN CAMERA NO:	FORWARD-LOOKING, 220 AFT-LOOKING,
MSN 1046-1, S/I NO:	D119/151/157
MSN 1046-2, S/I NO:	D120/153/158
RECOVERY REVS:	MSN 1046-1, 113 MSN 1046-2, 240

2. CAMERA SETTINGS

FWD-LOOKING	0.140 INCH SLIT, WRATTEN 23A
AFT-LOOKING	0.110 INCH SLIT, WRATTEN 21

PAGE 2 [redacted] 3640 T O P S E C R E T

3. PERFORMANCE SUMMARY

THE PET JUDGED THE QUALITY OF MISSION 1046-1 AS GOOD, AND COMPARABLE TO THE BETTER J-1 MISSIONS. PORTIONS OF 1046-1 WERE COMPARABLE TO THE BEST PHOTOGRAPHY EVER PRODUCED BY A J-1 CAMERA. THE PHOTO-INTERPRETERS RATED 1046-1 AS FAIR TO GOOD AND 1046-2 AS FAIR TO POOR. THERE WAS A PROGRESSIVELY WORSENING ANOMALY ON THE ENTIRE MISSION THAT PRODUCED VARYING IMAGE QUALITY ACROSS THE WEB. ON 1046-2 THIS QUALITY VARIED FROM GENERALLY GOOD ON THE OUTBOARD SIDE TO GENERALLY POOR ON THE INBOARD SIDE. THE ANOMALY APPEARS TO BE DUE TO SIGNIFICANT EMULSION BUILD-UP ON THE SCAN HEAD ROLLERS AND IS DISCUSSED IN MORE DETAIL IN LATER SECTIONS IN THIS REPORT. WEATHER CONDITIONS WERE GENERALLY FAVORABLE, WITH A HIGH PERCENTAGE OF CLOUD AND HAZE FREE ACQUISITIONS. THE INCIDENCE OF SMEAR AS REPORTED IN PARA D (1) OF B. WAS NOT VERIFIED BY THE PET. THE POOR IMAGERY CAUSED BY THE ANOMALY WAS OUT OF FOCUS AND NOT SMEARED.

4. ANOMALIES

A. ANOMALY: IMAGERY WAS OUT OF FOCUS ON THE BINARY BLOCK SIDE. IMAGERY IMPROVED IN QUALITY AND FOCUS ACROSS THE FILM WIDTH.

CAUSE: APPARENT CAUSE OF THIS DISCREPANCY WAS DUE TO EMULSION BUILD-UP ON SCAN HEAD ROLLERS EFFECTING THE FOCUS.

PAGE 3 [redacted] 3640 T O P S E C R E T 25X1

ACTION: SEE SECTION 5 BELOW

B. ANOMALY: LIGHT LEAKS OF DIFFERING SEVERITY OCCURRED ON THE FOLLOWING FRAMES OF MOST PASSES. THE AFT CAMERA, LAST FRAME, FIRST, SECOND, THIRD, FOURTH, AND SIXTH FROM LAST, THE FORWARD CAMERA LAST, FIRST, AND FIFTH FROM LAST.

CAUSE: TWO DIFFERENT SOURCES OF LIGHT LEAKS CAUSED THE

TOP SECRET [redacted] 25X1

GROUP 1 Excluded from automatic downgrading and declassification

FOGGING; ONE WAS THE AREA AROUND THE DRUM AND THE OTHER IN THE VICINITY OF THE INTERMEDIATE ROLLER ASSEMBLY. THE FOGGING NEAR THE INTERMEDIATE ROLLER ASSEMBLY IS ESPECIALLY SEVERE WHEN THERE IS A LONG SET PERIOD BETWEEN CAMERA OPERATES.

ACTION: IN ORDER TO ALLOW FOR THE INCREASED SPEED OF SO-230, INCREASE THE DURATION AND/OR INTENSITY OF THE LIGHT LEAK CHECK. (MONITOR: 25X1

C. ANOMALY: A BREAKDOWN OF THE FORWARD LOOKING INSTRUMENT FREQUENCY MARKER SPACING PRODUCED WHAT IS CONSIDERED TO BE AN ABNORMAL SCAN VELOCITY SIGNATURE WHILE THE AFT LOOKING INSTRUMENT PRODUCED A NORMAL SIGNATURE. THE ABNORMAL TRACE INDICATED AN INCREASED SCAN VELOCITY ERROR OF APPROX TEN PERCENT AS COMPARED TO AN APPROX EIGHT PERCENT ERROR NORM. ANOTHER ABNORMALITY TO THE TRACE WAS A DOUBLE PEAK ON THE FASTER VELOCITY ERROR POSITION OF THE NORMAL

 25X1

CURVE. OTHER SIGNATURE CHARACTERISTICS APPEARED NORMAL. A SIGNATURE OF A FORWARD INSTRUMENT FRAME TIME TRACK WAS MADE OF A SAMPLE FRAME FROM THE HIVOS TEST AT WITH A RESULTING SIMILAR SIGNATURE. 25X1

ACTION: THIS ANOMALY APPEARED TO BE A NORMAL SIGNATURE FOR THIS INSTRUMENT AND DID NOT CONTRIBUTE TO THE IMAGE DEGRADATION. NO ACTION INDICATED.

5. EVALUATION OF SO-230 FILM:

TYPE SO-230 FILM WAS USED IN MISSION 1046. THE USE OF SO-230 PERMITTED A REDUCTION IN THE CAMERA SLIT WIDTHS BECAUSE OF THE INCREASE IN PHOTOGRAPHIC SPEED OF THIS FILM WHEN COMPARED TO TYPE 3404 FILM. SLIT WIDTHS OF .110 AND .140 INCH USED ON THIS MISSION PROVIDED A 2/3 STOP (.20 LOG E) EXPOSURE REDUCTION FROM THE NOMINAL 3404 SLITS. THE RESOLVING POWER OF SO-230 COMPARES TO THAT OF TYPE 3404. THE GRANULARITY OF SO-230 IS SLIGHTLY GREATER THAN 3404. THE COMBINATION OF FASTER FILM SPEED WITH ONLY SLIGHTLY GREATER GRAIN SIZE MAKES TYPE SO-230 FILM A DESIRABLE FILM FOR BOTH J-1 AND J-3 USE.

EXCELLENT SYSTEM PERFORMANCE WAS ACHIEVED (TO WIT, MIP 90 ON 1046-1); HOWEVER, SYSTEM PERFORMANCE WAS NOT MAINTAINED THROUGHOUT THE MISSION. OBSERVATIONS RELATIVE TO THE FILM WHICH MAY HAVE SOME

 25X1

BEARING ON PERFORMANCE ARE AS FOLLOWS:

A. PRIOR TO PROCESSING, THE SO-230 FILM WAS OBSERVED TO HAVE A GREATER THAN NORMAL CURL.

B. EMULSION DUST WAS OBSERVED ON THE HUB ROLLER OF THE 1046-2 (B) SRV. (SEE REF THE DUST FORMED TWO CIRCUMFERENTIAL BANDS AROUND THE ROLLER WITH A SPACING SIMILAR TO THE MARKINGS INTRODUCED ONTO THE FILM BY THE CAMERA RAILS. 25X1

C. BASE PLUS FOG INCREASES OF .04 TO .06 DENSITY WERE OBSERVED ON PORTIONS OF THE 1046-1 SEGMENT IN AREAS WHERE THE FILM WAS AT REST FOR PROLONGED PERIODS OF TIME. MINUS DENSITY MARKS PERPENDICULAR TO THE LONG FILM DIMENSION WERE OBSERVED IN THE PLUS DENSITY REGION. THE REDUCTION IN DENSITY IS OF THE SAME MAGNITUDE AS THE DENSITY INCREASE AND IS BELIEVED TO BE ASSOCIATED WITH THOSE FILM AREAS WHICH WERE IN CONTACT WITH ROLLERS. AFTER PASS 95 THE

MARKS ARE BARELY DETECTABLE AND CANNOT BE IDENTIFIED DENSITOMETRICALLY.

D. SOME INCREASE IN GRAININESS WAS OBSERVED ON THIS MISSION. THIS MAY BE DUE IN PART TO THE APPARENT OVEREXPOSURE OBSERVED ON THIS MISSION. THE MISSION RECEIVED A SIGNIFICANT PROPORTION OF PRIMARY PROCESSING (APPROX 34 PERCENT) AND AN UNUSUALLY LOW AMOUNT OF FULL PROCESSING (APPROX 19 PERCENT). ANALYSIS OF THE ABOVE FILM OBSERVATIONS ARE:

A. CURL: OBSERVATIONS MADE DURING A SPECIAL POSTFLIGHT TEST IN THE [redacted] HIGH VACUUM CHAMBER INDICATE THAT THE FILM FLATNESS OF 3404 AND SO-230 FILM APPEARED SIMILAR. ANALYSIS OF CURL CHARACTERISTICS HAVE BEEN INITIATED AT [redacted] BUT HAS NOT BEEN COMPLETED. (MONITOR: [redacted]

B. EMULSION DUST: TESTS OF THE PHYSICAL HARDNESS OF SO-230 COMPARED TO TYPE 3404 FILM AT [redacted] INDICATE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN THESE TWO FILMS. OBSERVATIONS MADE ON A SPECIAL POSTFLIGHT TEST IN THE [redacted] HIGH VACUUM CHAMBER INDICATED THAT:

(1) EMULSION DUST (FROM RAIL SCRATCHES) WAS GENERATED WHEN USING BOTH TYPE 3404 AND SO-230 FILM.

(2) EMULSION DUST WAS GENERATED ON BOTH CAMERAS.

(3) A LARGER AMOUNT OF EMULSION DUST FROM SO-230 FILM WAS OBSERVED ON BOTH CAMERAS.

(4) THE AMOUNT OF DUST GENERATED BY ONE CAMERA WAS GREATER ON BOTH FILMS THAN THAT PRODUCED BY THE OTHER.

ACTION:

A. [redacted] WILL INVESTIGATE THE POTENTIAL OF IMPROVING THE ABRASION RESISTANCE OF SO-230. (MONITOR: [redacted]

B. [redacted] WILL INVESTIGATE POTENTIAL IMPROVEMENTS IN THE MANUFACTURE AND OR POLISHING OF RAILS OR OTHER FILM CONTACT POINTS TO MINIMIZE FILM ABRASION. (MONITOR: [redacted]

C. FOG BUILD-UP: THOUGH NOT DESIRABLE, THE MAGNITUDE OF THIS DEFECT DOES NOT APPEAR TO SIGNIFICANTLY AFFECT THE INTELLIGENCE VALUE OF THE MISSION.

D. INCREASE IN GRAININESS:

(1) [redacted] IS MAKING AN ANALYSIS OF THE GRAININESS OF SO-230. THESE FINDINGS WILL BE REPORTED. (MONITOR: [redacted]

(2) [redacted] IS MAKING AN ANALYSIS OF THE RELATIVE DIFFERENCES IN PHOTOGRAPHIC SPEED OF SO-230 AND 3404 FILM WHEN EXPOSED IN A VACUUM. (MONITOR: [redacted]

E. FURTHER J-1 TESTS: THE CORONA RESIDENT OFFICE IS

PLANNING TO CONDUCT ADDITIONAL GROUND (HIVOS) TESTING OF SO-230 IN A J-1 SYSTEM UPON DETERMINATION THAT ADDITIONAL SMOOTHING OF THE RAIL SURFACES CAN BE READILY ACHIEVED. (MONITOR: [redacted]

[redacted] WILL DETERMINE THE FEASIBILITY OF OBTAINING DR. A TESTS WHILE THE J-1 AND J-3 IS IN THE HIVOS. (MONITOR: [redacted]

END OF MESSAGE