CLASSIFIED MESSAGE

~~SECRET~~

[redacted]

TO :

FROM :

ACTION:

INFO :

[redacted]

TO ~~SECRET~~ 280002Z INFO CITE [redacted] CITE

[redacted]

CORONA/PRESIDENT OFFICE HANDLE VIA TWX FACILITIES ONLY

REF [redacted]

ATTN: [redacted] EYES ONLY

PER OUR TELECON THE FOLLOWING IS A VERY PRELIMINARY ANALYSIS OF THE 1101-1 PERFORMANCE AS COMPARED TO OUR PREDICTIONS AND EXPECTATIONS.

1. FROM THE STANDPOINT OF OPTICAL PERFORMANCE, INSTRUMENTS 302 AND 303 WERE AVERAGE QUALITY CORONA CAMERAS THROUGHOUT THEIR TEST HISTORY. BOTH INSTRUMENTS CONTAINED FIRST GENERATION LENS CELLS WHICH WERE MADE FROM THE RQ QUALITY GLASS LEFT IN THE GLASS BANK NEAR THE END OF THE J-1 PROGRAM. SYSTEM LOW CONTRAST DYNAMIC RESOLUTION READINGS FOR CR-1 WERE AS FOLLOWS:

INSTRUMENT NO.	RESOLUTION VALUE
302	118
303	118

FOR COMPARISON PURPOSES THE BEST OF THE J-1 SYSTEMS (J-39 MISSION 1039) PRODUCED GROUND TEST VALUES OF 125 AND 119 L/MM AT PEAK FOCUS.

~~SECRET~~

ORDER 1 EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

[redacted]

THE AVERAGE OF THE PAST 6 J-1 MISSIONS FLOWN HAS BEEN 113 L/MM.

2. IT HAD BEEN ANTICIPATED THAT IN SPITE OF THE AVERAGE OPTICAL PERFORMANCE ON CR-1, THAT THE IMAGERY FROM MISSION 1101 WOULD BE NOTICABLY IMPROVED AS A RESULT OF SCALE FROM LOWER ALTITUDE PHOTOGRAPHY. UNFORTUNATELY A 15 DEGREE DISPERSION ON PERIGEE LOCATION COUPLED WITH THE SELECTED HIGH PERIOD, ECCENTRIC ORBIT, AND AN UNUSUALLY LOW ATMOSPHERIC DRAG SITUATION RESULTED IN THE AVERAGE ALTITUDE OF PHOTOGRAPHY TAKEN ON 1101-1 BEING APPROXIMATELY THE SAME AS WOULD HAVE BEEN EXPERIENCED ON A NORMAL J-1 MISSION. THE FOLLOWING IS A TABLE WHICH SHOWS A COMPARISON OF PHOTOGRAPHIC ALTITUDE FOR 1101-1 VERSUS THE SAME OPERATIONS TAKEN ON A NORMAL J-1 ORBIT SUCH AS FLOWN ON MISSION 1042. MISSION 1042 WAS ONE OF THE BETTER CORONA MISSIONS. THE ORBIT WAS A TYPICAL 80 DEGREE INCLINATION, HIGH PERIOD, 11TH DAY SYNC, WITH PERIGEE AT 100 NM, INITIALLY PLACED AT 20 DEG N. 1101 FLEW BASICALLY THE SAME ORBIT 80 DEG INCL, HIGH PERIOD, 11TH DAY SYNC, HOWEVER, PERIGEE ALTITUDE WAS 85 NM INITIALLY PLACED AT 05 DEG N.

1101-1 CR-1 MISSION					J-1 MISSION
FROM LAT	TO LAT	TOTAL FRAMES	PCT OF MSN	MEAN ALT (NM)	MEAN ALT (NM)
275	270	14	0.51	124.9	121.5
270	265	113	4.11	119.0	117.4
265	260	154	5.60	113.8	113.8
260	255	319	11.60	108.9	110.8
255	250	425	15.45	104.4	108.1
250	245	189	6.87	100.3	105.6
245	240	168	6.11	96.7	103.5
240	235	283	10.29	93.5	101.9
235	230	265	9.65	90.8	100.8
230	225	183	6.65	88.7	100.0
225	220	241	8.76	87.0	99.8

220	215	65	2.36	86.0	99.9
215	210	5	0.18	85.4	100.5
210	205	2	0.07	85.0	101.7
205	200	40	1.45	86.4	103.4
200	305	21	0.76	87.8	105.8
305	310	136	4.96	89.7	108.4
310	315	67	2.44	92.2	111.7
315	320	11	0.40	95.3	115.2
320	325	0	0.00	98.9	119.0
325	330	3	0.11	103.9	123.5
330	335	18	0.65	107.5	128.2
335	340	0	0.00	112.5	133.1
340	345	15	0.55	117.8	138.4
345	350	13	0.47	123.5	143.4
TOTAL		2750	100.00		

3. AS CAN BE SEEN FROM THE TABLE , THE MEAN ALTITUDE OF PHOTOGRAPHY FROM 40 DEG - 60 DEG N ON 1101-1 WAS ESSENTIALLY THE SAME AS WOULD HAVE BEEN OBTAINED HAD A J-1 ORBIT BEEN FLOWN. YOU WILL NOTE THAT ONLY TWO FRAMES OR .07 PERCENT OF THE COVERAGE ON 1101-1 WAS TAKEN IN THE LOWEST ALTITUDE BAND. IT FOLLOWS THAT FROM KNOWN PARAMETERS OF SCALE AND RESOLUTION IT COULD BE EXPECTED THAT 1101-1 WOULD APPEAR TO THE PI'S AS A NORMAL CORONA MISSION.

4. IN ADDITION TO THE FACT THAT THE 1101-1 ORBIT IS NOT NOMINAL FOR J-3, AN ACTUAL CAMERA PERFORMANCE DEGRADATION IS ALSO BEING EXPERIENCED. A NOTICABLE LOSS OF SCAN RESOLUTION CAN BE SEEN IN THE PHOTOGRAPHY. PRELIMINARY ANALYSIS IS BEING CONDUCTED ON THIS PROBLEM IN SEVERAL AREAS. TWO OF THE AREAS UNDER INVESTIGATION ARE THERMAL AND FILTER WARP. TEMPERATURES OF THE MAIN CAMERAS ARE RUNNING APPROX 25 DEG BELOW PREDICTED, AND THE EFFECT OF THE TEMPERATURE DIFFERENTIAL IS AN INCREASE IN LIFT CHARACTERISTICS OF THE CAMERA. TESTING ON INSTRUMENT 307 AT [redacted] HAD DEMONSTRATED THE LOSS OF RESOLUTION ON THE J-3 SYSTEM AS A FUNCTION OF LIFT. [redacted] TESTS HAVE ALSO SHOWN THE EFFECTS OF FILTER WARP WHICH CAN OCCUR WITH THE USE OF GELATIN FILTERS. A PROGRAM FOR DEVELOPMENT OF GLASS FILTERS HAS BEEN UNDERWAY FOR SOME MONTHS AT [redacted] IT HAD BEEN EXPECTED THAT 1101 WOULD BE FLOWN WITH GLASS

FILTER, HOWEVER INSUFFICIENT TESTS HAD BEEN ACCOMPLISHED BY THE LAUNCH DATE.

5. A COMPLETE ANALYSIS OF 1101 PROBLEMS WILL BE MADE AT THE PET MEETING 9, 17-19 OCT. IF 1101-2 IS BETTER THAN 1101-1 IT WILL BE DUE TO SCALE ALONE AND ONE OBVIOUS RECOMMENDATION WILL BE THAT 1102 FLY A LOW PERIOD ORBIT TO MORE FULLY TEST THE J-3 CAPABILITIES.

SHOWN BELOW IS AN ALTITUDE PROFILE OF REV 1 OF A LOW PERIOD 30 DEG INCL, 11TH DAY SYNC J-3 ORBIT (PO 3006). PERIGEE SHOWN IS 85 NM AT 22 DEG N. PERIGEE ON THIS ORBIT WOULD BE ROTATED DURING THE EARLY DAYS OF THE MISSION TO 40 DEG N.

J-3 MISSION

(PO 3006)

FROM LAT	TO LAT	MEAN ALT
275	270	102.1
270	265	98.8
265	260	96.2
260	255	93.9
255	250	91.7
250	245	89.8
245	240	88.2
240	235	86.8
235	230	85.7
230	225	85.0
225	220	84.6
220	215	84.6
215	210	85.0
210	205	85.8
205	200	87.0
200	305	88.5
305	310	90.3
310	315	92.7
315	320	95.3
320	325	98.2
325	330	101.4
330	335	104.8
335	340	108.4
340	345	112.2
345	350	116.1