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SUBJECT. CONSIDERATION OF LAUNCHING OF ATLAS/AGENA "L" SYSTEM FROM VANDENBERG AFB FOR USE AGAINST CUBA.

1. CERTAIN CHARACTERISTICS OF THE "L" SYSTEM EFFECT THE OPERATIONAL PROBLEM. FOR INSTANCE, THE NON-CONTINUOUS STEREO CAPABILITY AND THE RELATIVELY SMALL AREA COVERED BY A GIVEN "L" OPERATION REQUIRE ACCURATE ORBIT DETERMINATION; ACCURATE "H" TIMER TAPE CONTROL AND PAYLOAD RE-MAPPING AS SOON AS POSSIBLE PRIOR TO TARGET ACQUISITION. ANOTHER ITEM THAT IS PAYLOAD PECULIAR IS THAT THE STELLAR CAMERA IN ITS PRESENT LOCATION WILL BECOME SUN STRUCK DURING PORTIONS OF THE ORBIT AND THIS DATA WILL BE LOST TO THE SYSTEM. TWO APPROACHES CAN BE INVESTIAGED TO OVERCOME THIS PROBLEM. ONE INVOLVES REVERSING "LOOK DIRECTION" OF THE S/I CAMERA AND THE OTHER INVOLVES BRINGING DATA FROM THE VEHICLE GUIDANCE SYSTEM MUCH AS WAS DONE ON THE "A" PROGRAM.

2. THE ORBITAL MECHANICS OF THE SITUATION ARE SUCH THAT MAXIMUM TARGET OPTIMIZATION OF THE ORBIT CAN ONLY BE ACHIEVED BY USING AN INCLINATION ANGLE EQUAL TO THE LATITUDE OF THE TARGET AREA. IN THIS CASE, INCLINATION ANGLE SHOULD BE NOT MORE THAT 24 DEG AND PREFERABLY SOMEWHAT LESS. WITH AN INCLINATION ANGLE OF APPROXIMATELY 23 DEG FOUR REVS PER DAY PASS OVER THE TARGET AREA. TWO REVS RUN FULL LENGTH OF THE TARGET AREA AND TWO CROSS AT ABOUT 40 DEG ANGLE. THIS ORBIT IS ESSENTIALLY INDEPENDENT OF PERIOD BUT HIGHLY DEPENDENT ON ECCENTRICITY WHICH SHOULD BE AS LOW AS POSSIBLE SINCE PERIGEE ROTATION WILL AMOUNT TO APPROXIMATELY 13 DEG PER DAY AND ORBITS WITH HIGH ECCENTRICITY COULD CAUSE UNACCEPTABLE HIGH ALTITUDES TO OCCUR OVER THE TARGET AREA. IF INCLINATION ANGLES ARE INCREASED ABOVE 24 DEG, THE NUMBER OF TARGET ACQUISITIONS DROPS RAPIDLY AND BECOMES DEPENDENT ON THE ORBIT PERIOD, AND INCORRECT PERIODS COULD RESULT IN FEW TO ZERO ACQUISITIONS OF THE TARGET AREA. ANOTHER FACTOR THAT COMES INTO PLAY IS THAT USE OF THE "ASCENDING/DESCENDING" TECHNIQUE BECOMES QUESTION-

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ABLE AT INCLINATIONS ABOVE 24 DEG BECAUSE OF THE LOCAL TIME SHIFT ON LOW INCLINED ORBITS WILL AMOUNT TO APPROXIMATELY HALF AN HOUR A DAY AND WITHIN A FEW DAYS THE ASCENDING PORTION WILL ENTER DARKNESS. AT AN INCLINATION OF 26 DEG THE ASCENDING AND DESCENDING PASSES WILL BE SEPARATED BY APPROXIMATELY EIGHT HOURS OF LOCAL TIME. A FURTHER FACTOR IS THAT LOW ECCENTRICY, LOW ALTITUDE ORBITS MAY REQUIRE DRAG MAKE UP DEPENDING UPON THE LENGTH OF THE MISSION.

3. AS STATED ABOVE, THE OPTIMUM ORBIT IS APPROXIMATELY 23 DEG INCLINATION ANGLE. AT THIS INCLINATION ONLY ONE OF THE EXISTING TRACKING STATIONS [redacted] IS POSITIONED TO PROVIDE SUPPORT. THIS STATION WILL ACQUIRE DURING FOUR CONSECUTIVE REVS IN ONE DAY. HOWEVER, THIS IS NOT ADEQUATE FOR EITHER COMMANDING OR TRACKING. ADEQUATE SUPPORT MAY REQUIRE THE USE OF A PROPERLY LOCATED MOBILE TRACKING STATION AND THE SUPPORT OF ONE OR MORE ETR STATIONS SUCH AS ASCENSION ISLAND. PLANS FOR A MOBILE STATION ARE UNDERWAY AND WILL BE AVAILABLE FOR CONSIDERATION NINE MONTHS FROM NOW. COMMUNICATIONS PROBLEMS AND THE LACK OF PRELORT RADAR FOR TRACKING MAKES THE IOS TRACKING STATION A POOR PROSPECT AT THIS TIME. FURTHERMORE, ITS RATHER ANTIPODAL LOCATION RELATIVE TO [redacted] DOES NOT MATERIALLY RELIEVE THE DUNCLING PROBLEM.

4. PRELIMINARY COMPUTER CALCULATIONS INDICATE THAT MINIMUM INCLINATION ANGLE OBTAINABLE WITH "L" PAYLOAD AND FIVE ACTIVE DAY LIFE IS 24 DEG. THIS INCLINATION ANGLE WOULD BE OBTAINED BY USING AGENA DUAL BURN CAPABILITY AFTER ORBIT IS OBTAINED. ORBITAL DISPERSION UNDER THESE CONDITIONS WILL BE LARGER THAN THOSE PRESENTLY ENJOYED. PERIOD WILL BE MOST EFFECTED WITH A TWO SIGMA DISPERSION OF ABOUT .3 MINUTES. IN ORDER TO OBTAIN THE DESIRED LOWER INCLINATION ANGLE WEIGHT MUST BE REMOVED FOR THE VEHICLE. IN VIEW OF FACT THAT TARGET OPTIMIZATION CAPABILITY DECREASES RAPIDLY ABOVE INCLINATION ANGLES OF 24 DEG, IT MUST BE CONCLUDED THAT A NEAR OPTIMUM ORBIT CAN BE OBTAINED. HOWEVER, CAPABILITY IS MARGINAL.

5. INITIAL STUDIES INDICATE THAT THE LAUNCH ENVIRONMENT OF THE ATLAS/AGENA IS COMPATIBLE WITH THE "L" SYSTEM. THIS SITUATION PRESENTS A GENERALLY LESS SEVERE ENVIRONMENT THAT THE TAT/AGENA SITUATION.

6. THE ESTIMATED LEAD TIME TO IMPLEMENT THIS ACTION IS SIX MONTHS IF LONGER TIME REQUIRED IF CERTAIN THERMAL MODS ARE TO BE MADE AS PER REF. B. AND C.

7. THE "L" SYSTEM COSTS AND THERMAL MODS RECOMMENDATIONS ARE AS PER REFS B. AND C. WHICH ARE STILL VALID. IN ADDITION, THE ONE TIME COST FOR ATLAS/AGENA CONVERSION PLUS PAD MODS ARE ESTIMATED TO BE [redacted] THE ADDITIONAL COST OF ATLAS/AGENA VS TAT/AGENA ARE [redacted] PER LAUNCH INCLUDING HARDWARE AND LAUNCH SERVICES.

8. IT IS ESTIMATED THAT TYPE OF ORBITS DISCUSSED ABOVE WILL NOT JEOPARDIZE THE RELIABILITY OF THE "L" SYSTEM, AND THE SAME RELIABILITY FIGURES SHOULD BE USED THAT WERE USED IN THE ORIGINAL L MISSIONS.

NOTE: ALL INCLINATION ANGLES ARE RETROGRADE.

[redacted] ATLAS/AGENA "L" [illegible] 1 "L" [illegible] CONTINUOUS "L" "A" TIME TAPE "L DOM DISPOSAL" 8/1 "A" 8 SHOULD NOT BE MORE THAN 24 DEG 28 DEG FOUR REVS PER DAY 40 DEG ANGLE 13 DEG PER DAY 24 DEG ZERO ACQUISITIONS "ABOVE 1-2/BELOW 15 MIN" 24 DEG 26 DEG 3 23 DEG [redacted] ASCENSION ISLAND 4 "L" 24 DEG .3 MINUTES 24 DEG 5 ATLAS/AGENA "L" TAT/AGENA 6 SIX MONTHS REF B AND C 7 "L" PER REFS B AND C [redacted] ATLAS/AGENA VS TAT/AGENA ARE [redacted] PER LAUNCH 8 "L" L MISSIONS NOTE: ALL INCLINATION ANGLES ARE RETROGRADE

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