AEROSPACE TEST W6 VAFB TO SPACE SYSTEM NS DIV LOSA

SUBJECT 8 - HOUR LAUNCH FLASH REPORT

I. A SATELLITE VEHICLE CONSISTING OF THRO BOOSTER NO 333 AND AGENA B ORBITAL STAGE NO. 1125 WAS LAUNCHED ON THE FIRST ATTEMPT FROM VAFB COMPLEX 75-3 PAD 4 AT 1630:12.45 PST ON 28 APRIL 1962, THE PRIMARY LAUNCH OBJECTIVE, TO PLACE THE AGENA SATELLITE WITH PAYLOAD IN A NEAR-POLAR ORBIT, WAS ACCOMPLISHED. READINGS FROM THE VS RADAR FLOTTOING BOARD GAVE AN INJECTION ALTITUDE OF 136 STATUTE MILES, AN

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INJECTION PAD REFERENCED VELOCITY OF APPROXIMATELY 25,750 FPS, AN INJECTION FLIGHT PATH ANGLE OF ABOUT 0 DEG, AND AN INITIAL DEPARTURE FLIGHT AZIMUTH OF APPROXIMATELY 178.5 DEG. THE INFLIGHT YAW LEFT MANEUVER DURING THE LATTER PART OF THE THOR BOOST SEEMS TO HAVE BEEN SUCCESSFULLY ACCOMPLISHED. KODIAK TRACKING STATION CONFIRMED ORBITAL STATUS THROUGH RECEPTION OF TELEMETRY, RADAR, AND ACQUISITION BEACON SIGNALS ON THE FIRST ORBITAL PASS.

THE ORBIT ATTAINED APPEARS TO BE VERY CLOSE TO NOMINAL WITH AN ORBITAL PERIOD AND ALTITUDE ONLY SLIGHTLY ABOVE PREDICTED.

A LIST OF SIGNIFICANT LAUNCH EVENTS FOLLOWS:

LIFTOFF: ZERO (1630:12.45 PST)

STEERING INITIATED 90.87 SEC

MECO (S1) 147.63 SEC

MECO 156.68 SEC

ENABLE D1 AND D2 (S2) 152.98 SEC

D1 ON 155.29 SEC

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D1 OFF 158.18 SEC

D2 ON 158.42 SEC

D2 OFF 164.43 SEC

SEPARATION COMMAND (S3) 165.69 SEC

SEPARATION COMPLETE 167.38 SEC

AGENA THRUST ATTAINMENT 90 PER CENT PC 194.94 SEC

AGENA BURNOUT (70 PER CENT PC) 428.85 SEC

TO UPFLT RADAR 450 SEC
'TS TELEMETRY FADE
436 SEC
II. PRELIMINARY EVALUATION INDICATES THAT LAUNCH TEST OBJECTIVES WERE ACHIEVED AS FOLLOW (REF DETAILED TEST OBJECTIVES, LMSC 446404, SECTION 2)
A. THRO BOOST-OBJECTIVE ACHIEVED
BOOSTER IGNITION AND LIFTOFF WERE SATIS-
FACTORY. THE THOR ROLL PROGRAM AND PITCH PROGRAM APPEAR TO HAVE BEEN PROPERLY EXECUTED.

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THE PROGRAMMED YAW-LEF MANEUVER DURING THOR
10D-BOOST WAS SATISFACTORILY ACCOMPLISHED. AT
ENGINE CUTOFF, VEHICLE POSITION WAS WITHIN
A SPHERE OF 5 NM RADIUS, FLIGHT PATH ANGLE WAS
WITHIN PLUS OR MINUS 4 DEG, AND VELOCITY WAS WITHIN
500 FPS OF THE NOMINAL VALUE.
BOOSTER-STEERING AND EVENT COMMANDS WERE
GENERATED AND TRANSMITTED SATISFACTORILY BY THE
GROUND GUIDANCE SYSTEM AND VEHICLE RESPONSE TO
THE COMMANDS APPEARS TO HAVE BEEN PROPER. MECO
OCCURRED AT 147.64 SEC AS A RESULT OF COMMAND FROM
GROUND GUIDANCE SYSTEM. VERNIER ENGINE SOLO
OPERATION LASTED 9.0 SEC WITH MECO OCCURRING AT
156.68 SEC. SEPARATION WAS INITIATED BY A GROUND
GUIDANCE COMMAND AT 165.09 SEC. GROUND GUIDANCE
SYSTEM PRELIMINARY EVALUATION DATA INDICATE THE
BOOSTER COAST APOGEE ALTITUDE WAS 107.77 NM (NOM-
INAL: 107.59 NM), AND THE BOOSTER COAST APOGEE
VELOCITY WAS 9959 FPS (NOMINAL: 9974 FPS).
THE THOR TELEMETRY COMMUTED CHANNELS

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BECAUSE INOPERATIVE IMMEDIATELY AFTER LIFTOFF
AND REMAINED OUT THROUGHOUT FLIGHT.
B. SATELLITE VEHICLE - OBJECTIVES ACHIEVED
1. AGENA AIRFRAME AND ADAPTER
STRUCTURAL INTEGRITY WAS MAINTAINED AND
NO EXCESS LOADS WERE APPLIED. THE USUAL 18-20 CPS
VEHICLE LONGITUDINAL OSCILLATIONS WERE PRESENT
DURING THE THOR BOOST PERIOD. ALL PYROTECHNIC
FUNCTIONS OCCURRED AT APPROXIMATELY NOMINAL
TIMES. THE RETRO-ROCKET SATISFACTORILY PROVIDED
THE THRUST NECESSARY FOR COMPLETE SEPARATION BY
167.36 SEC.
2. AGENA PROPULSION SYSTEM
ULLAGE ROCKET IGNITION WAS SATISFACTORY. AGENA
ENGINE IGNITION OCCURRED IN A NORMAL MANNER AT
T PLUS 193.73 SEC AND 90 PERCENT CHAMBER PRESSURE WAS
ACHIEVED WITHIN 1.2 SEC. THE ENGINE OPERATED SATIS-
FACTORILY FOR 233.9 SEC AND ENGINE SHUTDOWN OCCURRED
AT T PLUS 438.85 SEC ON INTEGRATOR COMMAND. THE INTEG-
RATOR DATA SHOWN A SENSIBLE VELOCITY GAIN OF 14.700
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PS FURING ORBITAL STAGE BOOST, THE IMPULSE PROVIDED BY AGENA ENGINE WAS SUFFICIENT TO GIVE THE VEHICLE ORBITAL VELOCITY AT THE FLIGHT INJECTION ALTITUDE.

3. AGENA ELECTRICAL POWER SYSTEM

NO EVIDENCE OF AGENA ELECTRICAL POWER SYSTEM PROBLEMS HAS BEEN NOTED.

4. AGENA GUIDANCE AND FLIGHT CONTROL SYSTEM

THE AGENA GUIDANCE SYSTEM RESPONDED PROPERLY TO A 8.9 SEC TIME-TO-FIRE CORRECTION AND 1.29 SEC VELOCITY-TO-BE-GAINED CORRECTION Commanded BY THE GROUND GUIDANCE SYSTEM. VEHICLE ATTITUDE APPEARS TO HAVE BEEN CONTROLLED SATISFACTORILY DURING THE COAST PHASE AND THE ORBITAL BOOST PHASE, AND CONTROL GAS EXPENDITURE WAS NORMAL DURING BOTH OF THOSE PERIODS. ENGINE SHUTDOWN WAS Commanded SATISFACTORYLY BY THE INTEGRATOR, AND THE ASCENT TIMER PROPERLY Commanded THE TIME AND SEQUENCE OF ALL PROGRAMMED EVENTS THAT WERE SCHEDULED TO OCCUR PRIOR TO LOSS OF TELEMETERED DATA AT VTS. HYDRAULIC

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SYSTEM PERFORMANCE WAS ADEQUATE. CONTROL GAS SUPPLY PRESSURE AT FADE WAS APPROXIMATELY 3100 PSI.

5. AGENA SPACE COMMUNICATIONS SYSTEM

EDCIVERT Radar Operation was SATISFACTORY AND AUTO-TRACK WAS MAINTAINED ON S-BAND BEACON RESPONSE FROM LIFTOFF TO T PLUS 459 SEC. WITH A MINIMUM OF BEACON COUNTDOWN AND NO OUTSIDE RADAR INTERFERENCE.

OPERATION OF THE ACQUISITION BEACON WAS SATISFACTORY, VTS TRACKED THE ACQUISITION BEACON FROM LIFTOFF TO 484 SEC. AT 486 SEC, THE TIME OF LINK 1 TELEMETRY DATA FADE FOR VTS, ALL TELEMETRY CHANNELS WERE OPERATING. AT THIS TIME THE ORBITAL TIMER WAS SET AT STEP 19, IN THE RE-ENTRY INCREASE MODE, AND ALTERNATE RE-ENTRY DISARM STATE. AGENA LINK2 WAS NOT ON DURING ASCENT 10 GROUND COMMANDS WERE SENT DURING THE ASCENT PHASE. TRACKING STATION COMMUNICATIONS DURING THE LAUNCH OPERATION WERE ADEQUATE.
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THE CONTROL GAS PRESSURE (LOW RANGE) WAS READING
NORMAL. THE CONTROL GAS PRESSURE (HIGH RANGE) WAS
READING NORMAL.

IN TASK 7, THE TELEMETRY MEASUREMENT OF TIMER
MOTOR FREQUENCY BECAME INOPERATIVE AND REMAINED
INOPERATIVE THROUGHOUT THE LAUNCH PHASE.

C. AEROSPACE GROUND EQUIPMENT - OBJECTIVE
ACHIEVED

BOOSTER AND ORBITAL STAGE CHECKOUT WAS
SATISFACTORILY ACCOMPLISHED DURING THE PRE-LAUNCH
COUNTDOWN BY THE AEROSPACE GROUND EQUIPMENT
HOWEVER, THE FOLLOWING PROBLEMS WERE ENCOUNTERED:

1. IN TASK 7, A 10 MINUTE DELAY RESULTED WHEN
VERLORI ENCOUNTERED PROBLEMS IN ACQUIRING THE
BEACON SIGNAL. THE PROBLEM WAS ELIMINATED BY
SHIFTING THE VERLORI ANTENNA ANGLE.

2. IN TASK 13, THE AGENA UNBILICAL LINES BECAME EN-
JAGLED AND PROBLEMS WERE ENCOUNTERED IN
REMOVING THE AGENA TEST PLUGS USING A PERSONNEL

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"HI LIFT" BECAUSE OF HIGH SURFACE WINDS.

E. IN TASK 14, THE LAUNCHES AND BASE OF THE MISSILE AS
WELL AS PERSONNEL ON THE PAD WERE FLOODED WHEN
THE THROGAGE DELUGE SYSTEM CAME ON. THE PROBLEM
WAS DETERMINED TO BE DUE TO FAILURE OF A BATTERY
IN THE AGE. THE BATTERY WAS REPLACED WITH A
BATTERY FROM PAD NO. 5. AFTER LIFTOFF THE DELUGE
SYSTEM FAILED TO SHUT OFF ON COMMAND FROM THE
BLOCKHOUSE. SHUT-OFF WAS ACCOMPLISHED BY HAND
VALVES AT THE PAD.

4. IN TASK 15, THE FIRE TRUCK BROKE DOWN WHILE RETURN-
ING TO THE BLOCKHOUSE AND WAS LEFT IN THE PAD AREA
UNTIL AFTER LIFTOFF.

5. DURING AGENA GUIDANCE GAS PRESSURIZATION IT WAS
NECESSARY TO SEND PERSONNEL TO THE PAD TO ADJUST
A REGULATOR IN THE GUIDANCE GAS AGE.

6. IN PHASE III OF THE TERMINAL COUNTDOWN THE THOR
AGE LOX FINE LOAD VALVE MALFUNCTIONED. TWO
MICROSWITCHES THAT CONTROL THE VALVES WERE
ADJUSTED AND NORMAL OPERATION RETURNED
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1. ALSO IN TASK 14 THE AGENA MEASUREMENT OF AIR
CONDITIONER TEMPERATURE WAS LOST AND REMAINED
INOPERATIVE THROUGHTOUT LAUNCH.

2. COUNTDOWN

COUNTDOWN STARTED AT 0830 PST ON 28
MAY 1962 AND PROGRESSSED TO LIFTOFF WITH 1 HOLD
TOTALING 31 MIN. AN AUTOMATIC TECHNICAL HOLD WAS
IMPOSED DURING PHASE III OF THE TERMINAL COUNTDOWN
THEN THE LOX FINE LOAD VALVE IN THE THOR AGE
MALFUNCTIONED. NORMAL OPERATION WAS RESTORED
WHEN THE TWO MICROSWITCHES THAT CONTROL THE
VALVE WERE MANUALLY ACTUATED.

3. PAD DAMAGE

DAMAGE TO THE PAD EQUIPMENT AND FACILITIES
WAS NORMAL, AND THE REHABILITATION WORK IS EXPECTED TO BE SIMILAR TO THAT AFTER PREVIOUS LAUNCHES
FROM THIS PAD.

MESSAGE CORRECTION PAGE NINE LINE 4

THE THOR AGE DELUGE SYSTEM CAME ON. THE PROBLEM

9/0730Z APR VAFB