

JOINT MESSAGEFORM

SECURITY

SECTION BELOW RESERVED FOR COMMUNICATION CENTER

7017

File Ver 1103

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|------------------------------|-----------------|-------------------|--------------------|-----------------------------|
| PRIORITY                     | TYPE MSG (Date) | ACCOUNTING SYMBOL | ORIG. OR REFERS TO | CLASSIFICATION OF REFERENCE |
| ACTION OPERATIONAL IMMEDIATE | MULTI SINGLE    |                   |                    |                             |

FROM: 6565 TEST WG VANDENBERG AFB CALIF

TO: AFRLD LOS ANGELES CALIF

6594 TEST WG (SATELLITE) SUNNYVALE CALIF

LOCKHEED MISSILES &amp; SPACE DIVISION SUNNYVALE CALIF

LOCKHEED MISSILES & SPACE DIVISION P. O. BOX 1506  
VANDENBERG AFB CALIF (COURIER) ZENDOUGLAS AIRCRAFT COMPANY, P. O. BOX 1596, VANDEN-  
BERG AFB CALIF (COURIER) ZENINFO: 1ST MISSILE DIVISION VANDENBERG AFB CALIF (COURIER)  
ZEN

6565 TEST WG VANDENBERG AFB CALIF (COURIER) ZEN

SECRET FROM VWZ-12-7-C

LOSA FOR WDZY; 6594 TEST WG FOR COL MOORE, LMSD/

SUNNYVALE FOR DEPT 61-44 (B. W. MARSH); LMSD/VAFB

FOR DEPT 65-44 AND 61-79 ZEN; DAG FOR MR. HECKMAN ZEN.

INFO: LMD FOR COMMAND POST ZEN; 6565 TEST WG FOR

|                                                                                    |                                                                                                             |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| SYMBOL<br>VWZ                                                                      | SIGNATURE<br><i>Harold M. Powell, Jr.</i>                                                                   |
| TYPED NAME AND TITLE (Signature, if required)<br>Harold M. Powell, Jr., Maj., USAF | TYPED (or stamped) NAME AND TITLE<br>LUCIUS A. FERRY, JR., Col, USAF<br>Deputy Commander for Space Launches |
| PHONE 8-5050                                                                       | PAGE 1                                                                                                      |
| SECURITY C                                                                         | NO. OF PAGES 8                                                                                              |

CLASSIFICATION CHANGED TO  
TOP SECRET  
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DO NOT SIGN AT THIS POINTDATE 7  
TIME  
MONTH DEC  
YEAR 1960FORM 173  
1 MAY 58

REPLACES DD FORM 173, 1 OCT 49, WHICH WILL BE USED UNTIL EXHAUSTED

FROM: 6565 TEST WGT VANDENBERG AFB CALIF

VWZE (MR. FISCHER) ZEN. SUBJECT: FLASH REPORT ON  
LAUNCHING OF DISCOVERER XVII (NIGHT SHIFT - PRESTO)

1. DISCOVERER XVII COMPRISED OF THOR BOOSTER NO.  
296 AND AGENA B ORBITAL STAGE NO. 1103 WAS LAUNCHED  
FROM SM-3 PAD 4 AT 1221 PST ON 7 DECEMBER 1960.

THE PRIMARY LAUNCH OBJECTIVE TO PLACE THE DISCOVERER  
SATELLITE WITH PAYLOAD INTO NEAR-POLAR ORBIT WAS  
ACHIEVED, AND VEHICLE TRACK HAS BEEN ACQUIRED ON  
FIRST PASS BY THE KODIAK AND HAWAIIAN STATIONS.

2. THE PRIMARY TEST OBJECTIVES FOR DISCOVERER XVII  
LAUNCH AND ASCENT WERE AS FOLLOWS (REFERENCE  
DETAILED TEST OBJECTIVES, LMSD 446404, SECTION 2):

A. DISCOVERER BOOSTER

THE BOOSTER MUST POSITION THE DISCOVERER  
VEHICLE WITHIN FIVE NAUTICAL MILES OF A SPECIFIED  
POINT AT BURNOUT WITH A FLIGHT PATH ANGLE WITHIN  
FOUR DEGREES AND A VELOCITY WITHIN 500 FPS OF THE  
SPECIFIED NOMINAL VALUES.

B. AGENA AIRFRAME AND ADAPTER

THE AGENA AIRFRAME AND ADAPTER MUST WITH-  
STAND THE LAUNCH AND FLIGHT ENVIRONMENT.

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## C. AGENA PROPULSION SYSTEM

THE AGENA RETRO-ROCKETS MUST PROVIDE THE THRUST REQUIRED TO EFFECT SEPARATION. THE AGENA PROPULSION SYSTEM MUST PROVIDE THE IMPULSE REQUIRED AFTER SEPARATION TO ATTAIN ORBITAL VELOCITY AT THE INJECTION ALTITUDE.

## D. AGENA ELECTRICAL POWER SYSTEM

THE AGENA ELECTRICAL POWER SYSTEM MUST PROVIDE THE ELECTRICAL POWER REQUIRED FOR SATISFACTORY SYSTEMS OPERATION.

## E. AGENA GUIDANCE AND FLIGHT CONTROL SYSTEM

THE AGENA GUIDANCE AND FLIGHT CONTROL SYSTEM MUST DERIVE THE TIME TO INITIATE ORBITAL BOOST AND THE VELOCITY TO BE GAINED DURING ORBITAL BOOST AND MUST INITIATE AND TERMINATE ORBITAL BOOST IN ACCORDANCE WITH THESE VALUES. THE SYSTEM MUST ALSO MAINTAIN PROPER VEHICLE ATTITUDE AFTER SEPARATION AND MUST CONTROL THE TIME AND SEQUENCE OF CERTAIN SPECIFIED OPERATIONS.

## F. AGENA SPACE COMMUNICATIONS SYSTEM

THE AGENA SPACE COMMUNICATIONS SYSTEM MUST PROVIDE A CONTINUOUS IDENTIFICATION SIGNAL.

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# UNIT MESSAGE - CONTINUATION SHEET

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6565 TEST W.G. VANDENBERG AFB CANE

MONITOR OPERATION AS REQUIRED FOR TRACKING AND COMMAND BY GROUND STATIONS.

## G. GROUND SUPPORT EQUIPMENT

THE GROUND SUPPORT EQUIPMENT MUST SATISFACTORILY CHECK OUT THE DISCOVERER BOOSTER AND ORBITAL STAGE.

## H. DISCOVERER SYSTEM FACILITIES

THE DISCOVERER SYSTEM FACILITIES MUST PROVIDE ADEQUATE DATA RECORDS, A SATISFACTORY GROUND COMMAND CAPABILITY, AND NECESSARY STATION COMMUNICATIONS.

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## 3. PRELIMINARY EVALUATION OF TEST OBJECTIVE ACHIEVEMENT FOLLOWS

### A. DISCOVERER BOOSTER OBJECTIVE ACHIEVED

BOOSTER MECG OCCURRED AT T+149.3 SEC AND MECG OCCURRED AT T+156.6 SEC. VEHICLE POSITION, VELOCITY, AND FLIGHT PATH ANGLES AT BURNOUT WERE WITHIN THE SPECIFIED LIMITS. AGENA ACCELEROMETER RECORDS SHOW A 20 GPS LONGITUDINAL ACCELERATION WITH A MAXIMUM MAGNITUDE OF 3.5 GPS PEAK TO PEAK DURING THE BOOST PHASE.

### B. AGENA AIRFRAME AND ADAPTER OBJECTIVE

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## JOINT MESSAGE CONTINUATION SHEET

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AVAILABLE RECORDS INDICATE NO STRUCTURAL PROBLEMS

C. AGENA PROPULSION SYSTEM - OBJECTIVE ACHIEVED.

THE AGENA RETRO-ROCKETS EFFECTED A SATISFACTORY SEPARATION AT T+170.6 SEC. AGENA ENGINE IGNITION OCCURRED AT T+255.0 SEC AND SHUTDOWN OCCURRED AT T+489.8 SEC. TOTAL ENGINE OPERATING TIME WAS 234.8 SEC. ENGINE OPERATION WAS SATISFACTORY.

THE SENSIBLE VELOCITY GAIN OF APPROXIMATELY 16,400 FPS DURING AGENA ENGINE OPERATION WAS SUFFICIENT TO OBTAIN ORBIT AT THE INJECTION ALTITUDE.

D. AGENA ELECTRICAL POWER SYSTEM - OBJECTIVE ACHIEVED.

ELECTRICAL POWER SYSTEM OPERATION APPEARS TO HAVE BEEN SATISFACTORY.

E. AGENA GUIDANCE AND FLIGHT CONTROL SYSTEM - OBJECTIVE ACHIEVED.

THE TIME FOR INITIATION OF ORBITAL BOOST AND THE REQUIRED VELOCITY TO BE GAINED WERE SATISFACTORILY DERIVED FROM THE POINT MUGU VERLORT TRACKING DATA. THE DURATION OF COMMANDS 5 AND 6 WERE:

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# IDENTIFICATION - CONFIRMATION SHEET

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42.4 SEC ANT 15.1 SEC RESPECTIVELY. THE COMMANDS WERE PROPERLY ACCEPTED BY THE VEHICLE, AND THE VELOCITY GAIN OF 15,400 FPS CLOSELY AGREES WITH THE INTEGRATOR SETTING AS ADJUSTED BY COMMAND 6. AGENA ENGINE SHUTDOWN APPEARS TO HAVE BEEN COMMANDED BY THE INTEGRATOR.

F. AGENA SPACE COMMUNICATIONS SYSTEM - OBJECTIVE ACHIEVED.

OPERATION OF THE ACQUISITION BEACON AND THE S-BAND TRANSPONDER WAS SATISFACTORY DURING ASCENT. THE ACQUISITION BEACON WAS TRACKED UNTIL T+545 SEC AND THE TRANSPONDER UNTIL T+550 SEC.

G. GROUND SUPPORT EQUIPMENT - OBJECTIVE ACHIEVED.

THE DISCOVERER BOOSTER AND ORBITAL STAGE WERE SATISFACTORILY CHECKED OUT DURING THE COUNT-DOWN BY THE GROUND SUPPORT EQUIPMENT. PROBLEMS WERE ENCOUNTERED WITH THE AGENA FUEL TRUCK AND THOR LOADING COMPUTER BUT THEY WERE OVERCOME PRIOR TO LAUNCH.

H. DISCOVERER SYSTEM FACILITIES - OBJECTIVE ACHIEVED.

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GROUND COMMANDS WERE SATISFACTORILY TRANSMITTED, AND STATION COMMUNICATIONS WERE ADEQUATE. TELEMETRY DATA WERE SATISFACTORILY RECEIVED AND RECORDED. THE TELEMETRY DATA WERE NOT DECOMMUTATED SATISFACTORILY IN REAL TIME AT THE VAFB TRACKING STATION BECAUSE OF LOW LINE VOLTAGE TO THE DECOM EQUIPMENT. THE TELEMETRY SIGNAL WAS RECEIVED UNTIL T-332 SEC.

## 4. ADDITIONAL INFO

A. THE TRAJECTORY OF THE VEHICLE DURING ASCENT VERY CLOSELY FOLLOWED THE PREDICTED TRAJECTORY IN AZIMUTH AND WAS SLIGHTLY HIGH. INJECTION ALTITUDE WAS 151 STATUTE MILES, INJECTION VELOCITY WAS 25,900 FPS, AND INJECTION FLIGHT PATH ELEVATION ANGLE WAS -1 DEGREE AS DETERMINED FROM THE VERLORT PLOTTING BOARD CHART.

B. TOTAL HOLD TIME DURING THE COUNTDOWN WAS 40 MIN. THE TWO HOLDS WERE CALLED TO ALLOW TRAINS TO CLEAR THE HAZARD AREA AND TO INVESTIGATE AND CORRECT THE THOR LOADING COMPUTER PROBLEM.

C. PAD EQUIPMENT, PARTICULARLY ELECTRICAL

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NAVY MESSAGE CONTINUATION SHEET

6565 TEST WQ VANDENBERG AFB CALIF

CABLING INCURRED GREATER DAMAGE THAN DURING THE  
PREVIOUS DISCOVERER LAUNCHING. HOWEVER THE  
RECOVERY TIME IS NOT EXPECTED TO EXCEED ONE WEEK.

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