

LMSC 0000470
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JOINT MESSAGEFORM				SECURITY CLASSIFICATION	
SPACE BELOW RESERVED FOR COMMUNICATION CENTER					
<u>LXI</u>					
PRECEDENCE		TYPE MSG (Check)		ACCOUNTING SYMBOL	ORIG. OR REFERS TO
ACTION		BOOK	MULTI	SINGLE	CLASSIFICATION OF REFERENCE
INFO					
FROM: 6595TH AEROSPACE TEST WG, VANDENBERG AFB, CALIF. VWZD					SPECIAL INSTRUCTIONS
TO: SPACE SYSTEMS DIV, LOSA CALIF.					CLASSIFICATION CHANGED TO 12 APR 1966 DOWN-GRATED AT 3 YEAR INTERVALS CLASSIFIED AFTER 12 YEARS DOD DIRECTIVE 520000
SUBJECT: EIGHT-HOUR FLASH REPORT VWZD 18-3-106					
I. SUMMARY A VEHICLE CONSISTING OF SLV-2A BOOSTER NO. 360 AND S-01A ORBITAL STAGE NO. 1164 WAS LAUNCHED ON THE FIRST ATTEMPT FROM VAFB COMPLEX 75-3, PAD 4, AT 1313:00.90 (EST), ON 18 MARCH 1963. THIS WAS THE SECOND FLIGHT ON WHICH THE SLV-2A BOOSTER WAS USED AND THE FIRST FLIGHT ON WHICH THE AIRBORNE PORTION OF THE BTL GUIDANCE SYSTEM WAS INSTALLED IN THE S-01A VEHICLE. THE PRIMARY LAUNCH OBJECTIVES WERE ONLY PARTIALLY ATTAINED. THE TAT BOOSTER (SLV-2A) PERFORMED SATISFACTORILY. THE S-01A, HOWEVER, EXPERIENCED A PERMANENT LOSS OF PNEUMATIC CONTROL SHORTLY AFTER ACTIVATION DUE TO AN ELECTRICAL MALFUNCTION. THE CONSEQUENT LACK OF					DATE MONTH YEAR
SYMBOL		TYPED NAME AND TITLE (Signature, if required) C. S. WALLER, LT. COL., USAF		SIGNATURE	
PHONE 866-3771		PAGE NR. 1		TYPED (or stamped) NAME AND TITLE	
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ROLL CONTROL DURING THE S-01A THRUST INTERVAL
PREVENTED THE PROPER EXERCISE OF GUIDANCE AND APPARENTLY
CAUSED A PREMATURE SHUTDOWN OF THE ENGINE
PRECLUDING ORBITAL ATTAINMENT.

II. SIGNIFICANT EVENTS

PRELIMINARY VALUES OF SIGNIFICANT LAUNCH EVENTS ARE:

LIFTOFF (131300.90 PST)	ZERO
SOLID MOTOR THRUST DECAY (WEB BURN-OUT)	28 SEC
SOLID MOTOR ZERO THRUST (END OF THRUST TAILOFF)	40 SEC
SOLID MOTORS JETTISONED	71.5 SEC
SLV-2A STEERING INITIATED	92.44 SEC
MECO (S1) (START S-01A STANDARD TIMER)	150.75 SEC
VECO	159.72 SEC
SEPARATION COMMAND (S2)	164.25 SEC
SEPARATION COMPLETE (S-01A PNEUMATIC CONTROL ACTIVATED)	166.66 SEC
S-01A PNEUMATIC CONTROL LOSS	167.57 SEC
ULLAGE ROCKET IGNITION	168.68 SEC
S-01A ENGINE IGNITION	171.70 SEC
S-01A THRUST ATTAINMENT (90 PER CENT PC)	172.83 SEC
S-01A STEERING INITIATED	182.63 SEC

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S-01A STEERING STOPPED	309.88 SEC
S-01 ENABLE VELOCITY METER (S3)	337.89 SEC
S-01A BURN-OUT (78 PER CENT PC)	403.62 SEC
VTS VEHICULAR RADAR FADE	410 SEC
VTS ACQUISITION BEACON FADE	460 SEC
S-01A LINK 1 TELEMETRY DATA LOSS (VTS)	459.5 SEC
S-01A LINK 2 TELEMETRY DATA LOSS (VTS)	459.5 SEC

III. SLV-2A PERFORMANCE

ALL SLV-2A SUB-SYSTEMS PERFORMED ADEQUATELY FOR ACHIEVEMENT OF THE BOOSTER LAUNCH OBJECTIVES. SOLID MOTOR PERFORMANCE WAS NOMINAL WITH WEB BURNOUT, TALLOFF, AND JETTISON OCCURRING ESSENTIALLY AT PREDICTED TIMES. THE TELEMETRY CHANNEL MONITORING OF THE ELECTRICAL SEPARATION OF THE THREE SOLID MOTORS INDICATED THAT SOLIDS 2 AND 3 SEPARATED FROM THE BOOSTER AT 71.53 SEC AND THAT SOLID NO. 1 LAGGED SLIGHTLY, SEPARATING AT 71.56 SEC. MECO OCCURRED APPROXIMATELY 2 SEC LATER THAN PREDICTED, BUT WAS COMMANDED BY GROUND GUIDANCE.

IV. S-01A PERFORMANCE

THE S-01A VEHICLE WAS NOT SUCCESSFUL IN ACHIEVING ORBIT. PNEUMATIC ATTITUDE CONTROL WAS LOST SHORTLY

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AFTER SEPARATION AND THE ORBITAL STAGE ROLLED DURING THE THRUST INTERVAL. ENGINE IGNITION WAS NOMINAL BUT SHUTDOWN OCCURRED PREMATURELY, RESULTING IN A VELOCITY DEFICIENCY OF APPROXIMATELY 820 FPS, AS INDICATED BY VELOCITY METER INTERROGATION AFTER SHUTDOWN. PITCH AND YAW WERE CONTROLLED BY HYDRAULICS DURING THE THRUST INTERVAL, BUT GROUND GUIDANCE STEERING OF THE S-01A VEHICLE, WHICH WAS INITIATED 11 SEC. AFTER IGNITION, WAS DISCONTINUED AFTER 127 SEC. VEHICLE RESPONSE TO THE STEERING COMMANDS WAS ERRATIC, BECAUSE OF LOSS OF ROLL CONTROL, AND THE GROUND GUIDANCE SYSTEM IS DESIGNED TO TERMINATE STEERING AFTER ACCUMULATED STEERING ORDERS REACH A SPECIFIED LIMIT.

UPON COMPLETION OF SEPARATION (166.66 SEC) THE PNEUMATIC CONTROL SYSTEM ACTIVATED AS EXPECTED, BUT CONTROL WAS EXERCISED FOR ONLY 0.9 SEC. DURING THIS INTERVAL THE UNREGULATED 28 VOLT MEASUREMENT SHOWED A 5.4 VOLT DROP WHICH WAS INDICATIVE OF A TEMPORARY ELECTRICAL SHORT. OTHER MEASUREMENTS SUPPORT THE EXISTENCE OF A SHORT DURING THIS INTERVAL, HOWEVER,

AT THIS TIME ITS LOCATION HAS NOT BEEN DETERMINED.

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SUBSEQUENT TO THE LOSS OF PNEUMATIC CONTROL THE ROLL AND PITCH GYROS INDICATED DIVERGING ATTITUDES. UPON ATTAINMENT OF HYDRAULIC PRESSURE DURING IGNITION PITCH AND YAW CONTROL WAS PROPERLY ASSUMED BY THE HYDRAULIC CONTROL SYSTEM. HOWEVER, THE VEHICLE ACCELERATED IN ROLL. THE HIGH ROLL RATE IS ASSUMED TO HAVE CAUSED THE PREMATURE ENGINE SHUTDOWN BY ADVERSELY AFFECTING PROPELLANT SUPPLY TO THE PUMPS. UPON ENGINE SHUTDOWN THE PITCH AND YAW ATTITUDES DIVERGED GIVING FURTHER EVIDENCE OF THE PERMANENT LOSS OF PNEUMATIC CONTROL. THE COMMAND GUIDANCE SYSTEM INITIATED SLV-2A STEERING AT 92.44 SEC WITH MODERATE YAW LEFT AND PITCH DOWN ORDERS. SUBSEQUENT STEERING ORDERS BECAME LIGHT AND WERE TERMINATED AT 147.31 SEC. MECO RESULTED FROM GUIDANCE SYSTEM COMMAND AT 150.75 SEC, INDICATING THAT THE BOOSTER HAD ATTAINED THE VELOCITY REQUIRED BY THE GUIDANCE GOAL. SEPARATION WAS COMMANDED AT 164.25 SEC AND FOLLOWED BY INITIATION OF LIGHT S-01A STEERING ORDERS AT 182.63 SEC. THE MAGNITUDE OF THE STEERING ORDERS GRADUALLY INCREASED DURING ASCENT WITH PREDOMINANTLY PITCH DOWN AND YAW LEFT ORDERS. THE FINAL YAW STEERING ORDER WAS AT 278.31 SEC. AND THE

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PITCH STEERING TERMINATED AT 309.88 SEC. THE LAST COMMAND ENABLED THE S-01A VELOCITY METER AT 337.88 SEC.

V. SPACE-GROUND COMMUNICATIONS

VERLORT RADAR EXPERIENCED DIFFICULTY IN MAINTAINING CONTINUOUS TRACK OF THE VEHICLE DUE TO PROBLEMS IN THE RANGE TRACKING SYSTEM.

LOSS OF TRACK OCCURRED REPEATEDLY, AS JITTER IN THE 12 MICROSECOND RESET GATE CAUSED THE BEACON VIDEO RETURN TO JUMP THE TRACK GATE IN THE 2000 YARD STEPS.

VI. COUNTDOWN

THE COUNTDOWN WAS INITIATED ON SCHEDULE AT 0229 PST ON 18 MARCH 1963 AND PROCEEDED TO LIFTOFF WITH ONE TECHNICAL HOLD IMPOSED FROM 1215 TO 1258 TO COMPLETE WORK WHICH HAD FALLEN BEHIND SCHEDULE.

THE FOLLOWING PROBLEMS AND DELAYS WERE ENCOUNTERED:

A. TASK 1 CLOSING WAS DELAYED ONE HOUR TO ALLOW DAC TO COMPLETE SOLID BOOSTER CHECKS SCHEDULED TO BE COMPLETED ON R-1 DAY.

B. TASK 2 WAS DELAYED 30 MIN WHEN LMSC ENCOUNTERED

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DIFFICULTY IN INSTALLING THE PAYLOAD BLANKET.

A PERSONNEL HIGH-LIFT MALFUNCTIONED WHILE
EXTENDED AND CAUSED AN ADDITIONAL DELAY OF 45

MIN WHILE THE HYDRAULIC SYSTEM WAS MANUALLY

BIED TO EFFECT RETRACTION. A TYPE 15 AIR

CONDITIONING UNIT MALFUNCTIONED AND WAS REPLACED.

C. TASK 3 WAS DELAYED 37 MIN WHILE ELECTRICAL

LEADS WHICH HAD BEEN INTERCHANGED ON THE DAC

SAFE AND ARM MECHANISM WERE PROPERLY CONNECTED.

D. TASK 4 WAS DELAYED DUE TO A PROBLEM ENCOUNTERED
IN STRAY VOLTAGE CHECKS OF THE S-01A DESTRUCT
SYSTEM CIRCUITRY.

E. IN TASK 6, DURING S-01A RF CHECKS, VERLORT
EXPERIENCED DIFFICULTY IN INTEGRATING CODE 3, AND/OR
CODE 3 PULSE SHEDDING. THIS LATER CLEARED ITSELF.

DURING PAYLOAD CHECKS, THE VERLORT BECAME
INACTIVE. PAYLOAD COMMANDS WERE SENT FROM THE
BLACKHORSE VIA HARDLINE WHILE A TRANSFORMER WAS

REPLACED IN THE VERLORT POWER SUPPLY. THE
HARDLINE CHECKS WERE VERIFIED BY VERLORT DURING
THE TERMINAL COUNT.

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F. IN TASK 12, SOLID MOTOR ARMING REQUIRED 68 MIN LONGER THAN SCHEDULED DUE TO A NEW ARMING PROCEDURE. LMSC COUNTDOWN COMMUNICATIONS CHANNELS WERE NOISY. THE CHANNELS WERE CLEARED BY REPLACING A BLOCKHOUSE AMPLIFIER.

G. IN TASK 14, EIGHTY-ONE LBS EXCESS ACID WERE LOADED ABOARD THE S-01A DUE TO AN ERROR IN SCALE SETTING. THE EXCESS WAS REMOVED.

VII. AEROSPACE GROUND EQUIPMENT

THE AEROSPACE GROUND EQUIPMENT FUNCTIONED SATISFACTORILY TO ACCOMPLISH THE BOOSTER AND ORBITAL STAGE PRE-LAUNCH CHECKOUT, WITH THE FOLLOWING EXCEPTIONS:

- A. A TYPE 15 AIR CONDITIONING UNIT MALFUNCTIONED.
- B. AN AMPLIFIER IN THE LMSC COUNTDOWN COMMUNICATION SYSTEM MALFUNCTIONED.
- C. A PERSONNEL HIGH LIFT MALFUNCTIONED. THE VEHICLE HAS BEEN REMOVED FOR REPAIR.

VIII. PAD DAMAGE

PAD DAMAGE IS NOT CONSIDERED EXCESSIVE AND NORMAL TURNAROUND SCHEDULE CAN BE MAINTAINED.

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