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ATLAS - "BIG SUE"

Missile: 39-D (S/N 58-2210)

Launched: 0244:07.6 PST, 25 January 1963

Countdown History:

This was the fourth Group B, Atlas D booster to be launched from the 576-B launch complex in support of the Nike-Zeus development program. The launch was from Pad 2. The first launch attempt was aborted at 0010 PST, 23 Jan 1963 when the Nike-Zeus weapon system failed to correct a fault which developed early in the countdown. The second attempt resulted in a successful launch after an approximate two hour hold for range safety problems. The terminal count was a nominal 15 minutes with a hold of approximately 2 minutes to evaluate the guidance loop test. The commit sequence was nominal.

Flight Performance:

1. The target booster experienced a malfunction and failed to make its programmed trajectory. The first anomaly occurred about T-80 seconds when missile hydraulic pressure, as measured by telemetry, dropped to 1450 PSI. This was followed by a rise to normal pressure by T+20 seconds. Analysis of data indicates a cryogenic leak in the propellant line between the V-2 engine and the propellant valve. Evidence of the leak is substantiated by lift-off launch film showing possible explosion in thrust section, loss of V-2 engine at T+86.3 seconds, erratic movements of B-1 engine believed caused by loss of autopilot servo feedback control circuitry due to high environmental temperatures in the thrust section, loss of telemetry power supply believed due to high environmental temperatures, and B-1, B-2 engine thrust decay prior to programmed BECO. Validity of telemetry data after T+91 seconds is questionable. No discrete commands were sent since the guidance equation was never solved.

2. MOD III Guidance acquired lock-on in the first cube at T+85 seconds and tracked the missile until it was lost below the radar horizon.

3. PMR GERTS station acquired in the first cube and tracked until short of impact.

4. Impact Data: The MOD III Guidance IIP was not available. The GERTS IIP indicated maximum flight range of 142 NM at which time the missile appeared to make a right turn and was observed on radar (FPS-16) to break into several large pieces. These pieces impacted approximately on course 99 NM from VAFB.

Remarks:

The above is based on preliminary analysis of available data. 1st STRATAD is convening a missile incident board to investigate the mishap.

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ATLAS - "FAINT CLICK"

Missile: 176-D (S/N 62-5994)

Launched: 0051:51.35 PST, 31 January 1963

Countdown History:

This launch was the second of a series of Group A, Nike-Zeus boosters processed, checked out and launched by SAC 576th SMS personnel with technical assistance by the 6595th ATW. The first attempt on 30 Jan 1963 was aborted during the commit sequence when the V-2 engine igniter failed to fire. Subsequent testing of this igniter revealed an open circuit in the igniter squib bridge wire. The second attempt resulted in a successful launch after an approximate 20 minute hold to correct a range safety problem. The terminal count and commit sequence were nominal.

Flight Performance:

1. All missile sub-systems performed satisfactorily and the discrete commands were as follows:

Event	Planned	Actual
BECO	135.9	135.3
SECO	273.7	271.9
VECO	293.6	290.5
R/V Separation	296.6	293.7
Retro Rocket Fire	298.6	295.5

2. MOD III Guidance acquired lock-on in the first cube at T+85 seconds.

3. PMR GERTS station acquired in the first cube and tracked until T+346 seconds.

4. Impact Data: The MOD III guidance IIP, looking down range from VAFB along the flight azimuth, was 0.8 NM short and 0.4 NM right for a CE of 0.89. The GERTS IIP was 0.4 NM short and 0.5 NM right.

Remarks:

The Nike-Zeus weapon system acquired and tracked the incoming target however for some unknown reason the target intercept computer failed to send the launch command to the Zeus missile. Cause of igniter squib bridge wire failure is under investigation.

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ATLAS - "FLAG RACE"

Missile: 182-D (S/N 62-5995)

Launched: 0355:05.37 PST, 13 February 1963, 576A-1

Countdown History:

This launch was the third of a series of Group A, Nike-Zeus boosters processed, checked out and launched by SAC 576th SMS personnel with technical assistance by the 6595th ATW. The countdown was delayed by holds totaling 3 hours and 56 minutes of which 1 hour and 55 minutes was due to a GERTS transmitter malfunction, 1 hour and 11 minutes caused by the repair of a helium line on the launcher which ruptured during the T count, 31 minutes due to trains in the launch area and 19 minutes caused by the Nike-Zeus weapon system. The T count was delayed slightly by the failure of a pressurization valve to open but a re-sequencing corrected the valve position and a normal commit sequence followed.

Flight Performance:

1. All missile sub-systems performed satisfactorily and the discrete commands were as follows:

Event	Planned	Actual	
BECO	136.1	135.09	
Staging	138.7	138.34	
SECO	278.9	276.15	
VECO	298.2	293.23	
Pre-Arm	298.7	293.8	
R/V Separation	301.2	296.53	
Decoy Eject	301.2	296.13	(start)
		297.63	(end)
Retro Rocket Fire	303.5	298.22	

2. MOD III Guidance acquired lock-on in the first cube at T+85 seconds.

3. PMR GERTS Station acquired in the first cube and tracked for 806 NM.

4. Impact Data: The MOD III Guidance IIP, looking down range from VAFB along the flight azimuth, was 0.0 NM in range and 0.2 NM right in azimuth. The GERTS IIP was 0.9 NM short and 0.2 NM left.

Remarks:

The Nike-Zeus weapon system acquired and tracked the incoming target vehicle and reported a successful launch and intercept with a missed distance of 3 meters by the Zeus missile. A Scientific Passenger Pod with four OAR experiments was carried. A decoy system with two mid-course decoys performed satisfactorily during the flight.

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ATLAS - "PITCH PINE"

Missile: 188-D (S/N 62-5996)

Launched: 0102:48.95 PST, 28 February 1963, 576A-3

Countdown History:

The eleventh launch in the Nike-Zeus support program was accomplished on the second attempt. The first attempt on 27 February 1963 resulted in an abort at "Engine Arm" in the commit sequence. The abort was caused by an open B2 ignition detection link circuit. Detanking to correct this malfunction resulted in GN2 contamination of LO2 and since one of the criteria for this high trajectory flight was extremely pure LO2, the mission was cancelled. The total countdown was extremely smooth with the only delay being a 21 minute hold called by PMR to correct a computer malfunction. An additonal 18 minutes was added to the terminal count to provide three LOX topping cycles to insure a high density LOX load for this high lofted flight.

Flight Performance:

1. All missile and subsystems performed satisfactorily and the discrete commands were as follows:

Event	Planned	Actual
BECO	136.1	134.58
SECO	286.1	289.15
VECO	304.1	305.76
R/V Separation	307.4	309.03
Retro Rocket Fire	309.4	310.64

2. Both MOD III Guidance and PMR GERTS acquired in the first cube and tracked until out of radar range. Telemetry data was received for the first 40 minutes of flight at which time the telemetry receivers were shut down.

3. Impact Data:

GERTS: 0.19 NM long and 0.58 NM left
MOD III: 0.05 NM long and 0.10 NM left

Remarks:

The trajectory for this launch provided a re-entry angle of -51.05 degrees at intercept. There were no decoys and no scientific passenger pod on this flight. A Nike-Zeus missile was launched and performed an intercept with a missed distance of 6.2 NM.

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ATLAS "TALL TREE III" (SAC)

MISSILE: SM 65D-102D

LAUNCHED: 1842 PST, 9 March 1963, from Complex 576B-3.

COUNTDOWN HISTORY: R-180 at 1500 PST, 9 March 1963 (initial attempt. R-0 at 1800 PST, 9 March 1963. Terminal count started at 1807 PST. Lift-off at 1842 PST. R/V battery temperature RED condition was waived and electrically jumpered for this launch. It would have aborted an operational launch.

FLIGHT PERFORMANCE: 1. The minimum instrumentation package failed during terminal count.

2. Analysis of film coverage shows:

a. Roll program normal.

b. Pitch program abnormal in that missile pitched at a rate of about 18 degrees a second through an angle of about 320 degrees and destroyed itself at low altitude.

3. No serious damage to facilities was sustained.

4. Preliminary analysis of debris did not reveal specific cause for uncontrolled pitch. Gyro canister in use was not the latest model available.

REMARKS: Operation "TALL TREE" was an exercise involving 5 Atlas missiles selected from operational complexes and airlifted to Vandenberg AFB for expedited launch by crews from the operational site. Missiles were equipped with IRSS kits after arrival at Vandenberg AFB. A minimum of telemetry was installed at VAFB.

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ATLAS "TALL TREE II" (SAC)

MISSILE: SM 65D-64D

LAUNCHED: 2121 PST, 11 March 1963, from Complex 576B-2

COUNTDOWN HISTORY: R-180 at 1730 PST, 11 March 1963 (initial attempt). R-0 at 2040 PST, 11 March 1963. Terminal count started at 2045 PST - two guidance loop tests. Lift-off at 2121 PST, 11 March 1963.

FLIGHT PERFORMANCE: Actual trajectory was 30 miles higher than planned. CEP was 1.3 N.M.

REMARKS: Operation "TALL TREE" was an exercise involving 5 Atlas missiles selected from operational complexes and airlifted to Vandenberg AFB for expedited launch by crews from the operational site. Missiles were equipped with IRSS kits after arrival at Vandenberg AFB. A minimum of telemetry was installed at VAFB.

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ATLAS "TALL TREE I" (SAC)

MISSILE: SM 65D-46D

LAUNCHED: 0338 PST, 15 March 1963, from Complex 576B-1.

COUNTDOWN HISTORY: During preparation for readiness two shrouded helium bottles and the boil-off valve were replaced. R-180 at 2100 PST, 14 March 1963 (initial attempt). R-0 at 0225 PST, 15 March 1963. Range holds for 2 hours and 25 minutes. IRSS verifications at 0230 PST showed IRSS would not go internal. Battery and signal conditioner were changed. Terminal count started at 0322 PST. Lift-off at 0338 PST, 15 March 1963.

FLIGHT PERFORMANCE: 1. Normal till T plus 83 seconds.

2. Malfunction at T plus 83 seconds in sustainer hydraulic system caused loss of control of sustainer and vernier engines. Booster operation normal.

3. BECO sent at T plus 137 seconds and missile became unstable due to uncontrolled sustainer engine. Sustainer shut down at T plus 145 seconds.

4. No impact data is available, however it is assumed entire missile fell in the usual booster impact area which is 400 to 500 N.M. downrange.

REMARKS: Operation "TALL TREE" was an exercise involving 5 Atlas missiles selected from operational complexes and airlifted to Vandenberg AFB for expedited launch by crews from the operational site. Missiles were equipped with IRSS kits after arrival at Vandenberg AFB. A minimum of telemetry was installed at VAFB.

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ATLAS - "TALL TREE V" (SAC)

MISSILE: SM65F - 63F

LAUNCHED: 1805:40.09 PST, 15 March 1963

COUNTDOWN HISTROY: Countdown was scheduled for 9 minutes and 30 seconds. Actual Countdown was 11 minutes and 40 seconds. A 1 minute and 10 second hold was required for range clearance. This was the second attempt to launch this missile.

AEROSPACE GROUND EQUIPMENT: Satisfactory

FLIGHT PERFORMANCE: Available data indicates all systems operated satisfactorily except the vernier solo hydraulic system which bottomed out at 875 psig at 12.8 seconds after sustainer cutoff. Minimum pressurization time is 15.0 seconds. The re-entry vehicle is reported to have self-destructed at approximately 50,000 feet altitude of its final trajectory. GE/MSVD is presently investigating.

IMPACT DATA: GERSIS indicated impact of 4.0 N.M. short and 0.2 N.M. right.

REMARKS: This was the first Atlas "F" and the fourth launch in SAC's Operation "Tall Tree." This was the second flight missile utilizing the wet start technique on the MA-3 booster (inert lead).

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ATLAS - "LEADING EDGE"

Missile: 193-D (S/N 62-5997)

Launched: 0032:22.63 PST, 16 March 1963, 576A-1

Countdown History:

This launch was the fifth of a series of Group A Boosters processed, checked out and launched by SAC 576th SMS personnel with technical assistance by the 6595th ATW and contractor support. The readiness count was nominal. The terminal count was lengthened to allow for three LOX topping cycles which provided a constant LOX density at time of launch. Total time for the terminal count was 33:55 minutes.

Flight Performance:

1. The target booster failed to make its programmed trajectory due to a loss of missile stability during the early phase of flight. An initial study of available data indicates that the instability was caused by the loss of B-2 engine pitch feedback circuit to the autopilot system, although several other anomalies are being investigated. The first abnormal indication came at T+76 seconds at which time the engine compartment ambient temperature began a gradual increase from 40°F to more than 350°F by 153.5 seconds. At T+103.3 there was a loss of pitch stability and at T+149.5 an abrupt loss of Sustainer Engine hydraulics occurred. The only discrete command sent was BECO at the nominal time of 135.9 seconds. The apparent malfunction of the feedback circuit is borne out by the following: (1) B-2 engine was out of phase with the pitch gyro while B-1 engine appeared to react normally, (2) B-2 engine led the pitch gyro displacement by .3 seconds, (3) B-2 engine failed to respond properly to steering command signals, (4) B-2 engine was sluggish in nulling for separation.

2. MOD III Guidance acquired lock-on in the first cube at T+85 seconds and tracked the missile until it was lost below the radar horizon.

3. PMR GERTS Station acquired in the first cube and tracked until short of impact.

4. Impact Data:

GERTS impact prediction data indicated booster impact at approximately 390 NM downrange on the planned azimuth.

Remarks:

Scientific Passenger Pod #19 was flown but the pod was not ejected. No decoys were carried. 1st STRATAD will conduct an Incident Investigation of this failure. Additionally, General Dynamics/Astronautics has been requested to conduct a thorough analysis of the flight.

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ATLAS - "KENDAL GREEN'

MISSILE: SM65F-83F

LAUNCHED: 1310:08.24 PST, 21 March 1963

COUNTDOWN HISTORY:

Countdown was normal with a planned hold for range clearance of 1 minute and 2 seconds. Actual countdown time was 11 minutes and 2 seconds.

FLIGHT PERFORMANCE:

Flight performance was nominal throughout. All objectives were satisfied.

IMPACT DATA:

GERSIS data indicated impact to be 14 N.M. short and 1.5 N.M. right. Splash net indicated impact to be 2.8 N.M. long and 2.8 N. M. right.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All equipment operated satisfactorily.

REMARKS:

The entire operation was nominal throughout. Data reduction and analysis is required to confirm this. Also, splash net data has not been officially confirmed but is supported by other data received. Navy reports the recovery of the staging camera. Both lift-off cameras were also recovered. Pad damage was minimal and less than previous launches.

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ATLAS "TALL TREE IV" (SAC)

MISSILE: SM65F-52F

LAUNCHED: 1629.14 PST, 23 March 1963.

COUNTDOWN HISTORY: Terminal countdown was started at 1617:52 PST and completed at 1629:14 PST. Lift-off was normal. There was a 1 minute and 52 seconds hold for range clearance.

This was the second attempt to launch this missile. The first attempt was started at 1714:15 PST and aborted 1812:09 PST, 22 March 1963. Reason for abort was Guidance failed (Amber) at 00:06. No action taken or required. Guidance failed (Red) at 07:40. Recycled target at 07:55. This did not clear problem. Guidance ready extinguished. Abort completed without incident.

AEROSPACE GROUND EQUIPMENT: Satisfactory.

FLIGHT PERFORMANCE: Available data indicates that the launch phase was satisfactory. Missile flight appeared to be nominal up to 90.17 seconds at which time the missile self-destructed.

REMARKS: Camera film indicates missile self-destruct occurred with little or no change in normal flight attitude. Telemetry data was insufficient to disclose any possible cause of missile failure.

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ATLAS "E" - OPERATION "BLACK BUCK"

MISSILE TYPE AND NUMBER: SM65E, 65E

LAUNCH DATE: 1259:36.85 PST, 24 April 1963

COUNTDOWN HISTORY: Normal countdown time for the Atlas "E" Series missile is 15 minutes. Actual countdown time was 16 minutes and 48 seconds. There was a 1 minute and 48 second hold for range clearance and status checks. This was the first attempt to launch this missile.

AEROSPACE GROUND EQUIPMENT: Performance of all systems was nominal.

FLIGHT PERFORMANCE: The launch and flight of this missile was satisfactory throughout with the exception of the vernier hydraulics which decayed 2.4 seconds after SECO resulting in missile roll of about 110 degrees. Normal decay takes approximately 30 seconds after SECO. This roll did not adversely affect the remainder of the flight. Flight discretes occurred close to their planned times. Guidance was nominal.

IMPACT DATA: GERSIS indicated R/V impact to be 0.8 N.M. short and 0.51 N.M. left. Visually confirmed splash reported the R/V to be 0.8 N.M. short and on azimuth.

REMARKS: This was the fifth launch of an Atlas "E" missile from an operational coffin configuration and was the first to be fully successful. This missile flew all of the latest design features including the Inert Lead, latest fixes for the booster and sustainer boots, and the two-inch acoustic liner around the ARMA computer.

Preliminary estimate is that approximately 97% of the landline and telemetry data has been recovered. All cameras ran, but the quality of the film is not known at this time.

Pad damage was nominal.

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ATLAS E - OPERATION "DOCK HAND"

Missile: WS107A, ATLAS 62-E

Launch Data: 1312:18.16 PDT, 4 June 1963, OSTF-1

Countdown History: This missile was launched on its first scheduled countdown. The only hold was for 79 seconds to confirm range status and to start instrumentation recorders.

Aerospace Ground Equipment: Operated satisfactorily.

Flight Data: Launch and flight of this missile was satisfactory throughout. All key events were close to planned.

Impact Data: GERSIS predicted impact to be 1.08 NM long and 1.09 NM left. Visually confirmed splash was 1.6 NM long and .8 NM left.

Remarks: This was the sixth and final launch of an Atlas E Series Missile in the Category II Test Program.

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ATLAS - "HARPOON GUN"

Missile: 198-D (S/N 62-5998)

Launched: 0103:01.72 PST, 12 June 1963, 4300A-3 (576-A)

Countdown History:

The 15th launch in the Nike-Zeus Support Program was accomplished on the first attempt. A technical hold of 24 minutes was called when the RP-1 ground fill and drain valve failed to open when line drain was initiated. This trapped approximately two gallons of RP-1 between the airborne and ground fill and drain valves. LO_2 chilldown was stopped and LO_2 drain was performed. Fuel drain was then initiated and stopped when the 100% fuel probe was uncovered. Fuel loading was re-accomplished and the line drain sequence performed normally. An additional 17 minutes was added to the terminal count to provide three LO_2 topping cycles to insure a LO_2 load of constant density for this lofted flight.

Flight Performance:

1. All missile and subsystems performed satisfactorily and the discrete commands were as follows:

EVENT	PLANNED	ACTUAL
BECO	136.2	134.46
SECO	285.8	284.24
VECO	303.8	300.76
TVX Separation	306.8	304.02
Retro Fire	308.8	305.70

2. Both MOD III Guidance and PMR GERTS acquired in the first cube and tracked until out of radar range.

3. Impact Data:

GERTS: 0.357 NM long and 0.102 NM left
MOD III: 0.25 NM short and 0.00 off azimuth

Remarks:

The trajectory for this launch provided a re-entry angle of -51.06 degrees at intercept. There were no decoys and no scientific passenger pod on this flight. A Nike-Zeus missile was launched and performed an intercept.

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ATLAS - "HARPOON GUN"

Missile: 198-D (S/N 62-5998)

Launched: 0103:01.72 PST, 12 June 1963, 4300A-3 (576-A)

Countdown History:

The 15th launch in the Nike-Zeus Support Program was accomplished on the first attempt. A technical hold of 24 minutes was called when the RP-1 ground fill and drain valve failed to open when line drain was initiated. This trapped approximately two gallons of RP-1 between the airborne and ground fill and drain valves. LO_2 chilldown was stopped and LO2 drain was performed. Fuel drain was then initiated and stopped when the 100% fuel probe was uncovered. Fuel loading was re-accomplished and the line drain sequence performed normally. An additional 17 minutes was added to the terminal count to provide three LO_2 topping cycles to insure a LO_2 load of constant density for this lofted flight.

Flight Performance:

1. All missile and subsystems performed satisfactorily and the discrete commands were as follows:

EVENT	PLANNED	ACTUAL
BECO	136.2	134.46
SECO	285.8	284.24
VECO	303.8	300.76
TVX Separation	306.8	304.02
Retro Fire	308.8	305.70

2. Both MOD III Guidance and PMR GERTS acquired in the first cube and tracked until out of radar range.

3. Impact Data:

GERTS: 0.357 NM long and 0.102 NM left
MOD III: 0.25 NM short and 0.00 off azimuth

Remarks:

The trajectory for this launch provided a re-entry angle of -51.06 degrees at intercept. There were no decoys and no scientific passenger pod on this flight. A Nike-Zeus missile was launched and performed an intercept.

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OPERATION "GO BOY" (SAC)

MISSILE: SM65, Atlas E, 69E

LAUNCHED: 1413:57.2 PDT, 3 July 1963 from 576-C Complex

COUNTDOWN HISTORY: During the terminal countdown while loading fuel, the guidance system failed red. Target re-selection was attempted and also failed red. A second target re-selection was accomplished resulting in guidance green. Five minutes and 21 seconds of hold was needed to clear the guidance problem. The guidance problem was assumed to be in the Missile Airborne Guidance Computer.

AEROSPACE GROUND EQUIPMENT: Satisfactory

FLIGHT PERFORMANCE: Launch and flight of this missile was satisfactory throughout. All events occurred close to nominal times. Target Vehicle (R/V) impact estimates were within System Operational Specifications.

IMPACT DATA: GERSIS indicates impact to have been 1.96 N.M. left and 0.44 N.M. short, CEP 2.01 N. M.

REMARKS: This missile flew the Nike-Zeus Target Vehicle. This was the first launch from the 576-C Complex and the first in the Category III Atlas E test program. Pad damage was minimal and less than experienced at OSTF-1.

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OPERATION "SILVER DOLL" (SAC)
WS107A-1

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MISSILE: SM 65, Atlas 24E

LAUNCHED: 1219 PDT, 26 July 1963, 576-F (OSTF-1)

COUNTDOWN HISTORY: This missile was launched on its first countdown.

AEROSPACE GROUND EQUIPMENT: Satisfactory

FLIGHT PERFORMANCE: Launch of this missile was satisfactory. Flight of the missile was nominal until approximately 13 seconds after separation at which time a premature SECO was electrically generated. The missile impacted approximately 600 miles downrange.

REMARKS: Cause of the premature SECO is undetermined at this time and is under investigation. Data indicates that the signal for the premature SECO probably resulted from a malfunction in the missiles' IRSS Command Destruct System. Pad damage was minimal and less than previous launches.

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OPERATION "BIG FLIGHT" (SAC)
WS107A-1

MISSILE: SM 65, Atlas 70E

LAUNCHED: 1036:49.859 PST, 30 July 1963, 576-C

COUNTDOWN HISTORY: This missile was launched on its first countdown. A hold of 36 minutes was experienced because of technical difficulties in the flight control system. This resulted in the reselection of target approximately 15 times. Guidance green was obtained after the pre-launch Monitor, Countdown Group and LCC were manually positioned on the same target.

AEROSPACE GROUND EQUIPMENT: Satisfactory

FLIGHT PERFORMANCE: Launch and flight of this missile was satisfactory throughout, impacting within the Systems Operational Specification 9000 miles downrange.

IMPACT DATA: GERSIS indicated impact to be 1.6 N.M. long and .37 N. M. right.

REMARKS: This was a maximum range flight. Pad damage minimal.

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MINUTEMAN R/V TEST - "COOL WATER I"

R&D

MISSILE: Atlas 143D

LAUNCHED: Complex 576B, Pad 1, on 31 July 1963

BACKGROUND:

The "Cool Water" Program is a series of four special flight tests of Minuteman Re-entry Vehicles (R/V's). Because of the weight of the instrumentation package, destruct system, and tracking beacon on Minuteman missiles launched from Vandenberg AFB, those missiles programmed to the Eniwetok Lagoon must carry R/V's of lighter than operational weight. To more closely simulate the re-entry environment of operational Minuteman R/V's, the "Cool Water" test program was initiated, using fully-weighted R/V's boosted by Atlas D missiles.

OBJECTIVES:

"Cool Water I" tested a Mark 5, Mod 5B R/V of the latest operational configuration and containing a full weight training kit. The purpose of the test was to obtain maximum re-entry heating conditions under a typical operational flight trajectory and to recover the R/V for detailed inspection and analysis. The flare section had incorporated ECP 111, the latest spin fin configuration of refrasil material, coated with Avcoat ablative material. ECP's 112 and 113 were also incorporated, modifying the vehicle to include friction washers in the flare assembly to ensure maximum relaxation of torque loading on the attachment bolts and the latest modifications to the in-flight electrical separation connector.

RESULTS:

Analysis of the actual flight trajectory indicates that the R/V underwent heating equivalent to 93% of that experienced on a full range operational Minuteman flight. About 96% of the vehicle components were recovered from the Eniwetok Lagoon and preliminary analysis indicates that the test was highly successful.

REMARKS:

Missile processing, countdown and launch were conducted from 576B as a routine SAC training launch. An AVCO designed transition section adapted the R/V interface to the booster. AVCO processed the R/V in accordance with applicable tech orders. Launch was attempted on 29 July and after ignition, automatic shutdown occurred before lift-off. The shutdown was caused by premature booster engine umbilical separation due to ignition shock. Although guidance loop tests delayed the launch about two hours on 31 July, flight and R/V performance were nominal.

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OPERATION: PIPE DREAM (SAC)

MISSILE: WS 107A-1, ATLAS ~~70E~~ 72E

LAUNCHED: 0250:57 PDT, 24 August 1963, OSTF-1 (576F)

COUNTDOWN HISTORY: This missile was launched on its first countdown. Countdown time 14.47 minutes from initiation of terminal count to lift-off.

AEROSPACE GROUND EQUIPMENT: Satisfactory

FLIGHT PERFORMANCE: The launch and flight of this missile was satisfactory throughout. All flight events occurred as planned.

IMPACT: GERSIS indicated impact to have been .3 nm short and .26 nm right.

REMARKS: This was the fourth launch in the Category III testing program. This booster flew the Nike-Zeus Target Vehicle. Pad damage was nominal.

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MINUTEMAN R/V TEST - "COOL WATER 2"

MISSILE: Atlas 142D

LAUNCHED: Complex 576B, Pad 3, on 28 August 1963

BACKGROUND:

The "Cool Water" Program is a series of special flight tests of Minuteman Re-entry Vehicles on Atlas D boosters. To obtain greater R/V heating a modified canister was substituted in the auto pilot.

OBJECTIVES:

"Cool Water 2" tested a Mark 11, Mod 5B R/V of the latest operational configuration and contained full weight training kit. The purpose of this test was to obtain maximum re-entry heating conditions and to recover the R/V for detailed inspection and analysis.

RESULTS:

Analysis of the actual flight test trajectory indicates that the R/V underwent heating equivalent to 95% of that experienced on a full range operational Minuteman flight. Preliminary analysis indicates that the R/V would have successfully performed a full range flight.

REMARKS:

Missile processing, countdown and launch were conducted from 576B as a routine SAC training launch. An AVCO designed transition section adapted the R/V interface to the booster. AVCO processed the R/V in accordance with applicable technical orders. Launch was attempted on 20 Aug 63 and at approximately T-3 minutes an R/V NO-GO light was obtained due to release of the separation connector. Another launch was attempted on 26 Aug 63 and a similar R/V NO-GO was obtained. An investigation showed that Atlas unique vibrations caused premature mechanical disconnect of the cable separation connector. The mechanical separation system was locked out leaving either of two squibs to separate the connector. An investigation of the R/V after recovery showed that the separation connector worked properly.

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MINUTEMAN R/V TEST - "COOL WATER 3"

MISSILE: Atlas 63D

LAUNCHED: Complex 576B, Pad 2, on 6 September 1963

BACKGROUND:

The "Cool Water" Program is a series of special flight tests of Minuteman Re-entry Vehicles on Atlas D boosters.

OBJECTIVES:

"Cool Water 3" using a Mark 11, Mod 5B R/V was to substantiate the information obtained in the "Cool Water 2" launch. The R/V and trajectory were programmed to be the same as the "Cool Water 2" launch.

RESULTS:

Due to a hydraulic failure the Atlas engines shut down just prior to BECO causing the flight not to go full range. Obviously no R/V objectives were met.

REMARKS:

Missile processing, countdown and launch were conducted from 576B as a routine SAC training launch. An AVCO designed transition section adapted the R/V interface to the booster. AVCO processed the R/V in accordance with applicable technical orders. The launch was originally scheduled for 3 Sep 63, however a failure on the 400 cycle generator caused a scrub on that date. The launch was again attempted on 4 Sep 63, however a malfunction occurred on the gyro stabilizer when power was transferred internal to the missile at T-10 seconds. When this was corrected Atlas 63D was launched on 6 Sep 63.

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MINUTEMAN R/V TEST - "COOL WATER 4"

MISSILE: Atlas 84D

LAUNCHED: Complex 576B, Pad 1, 14 September 1963

BACKGROUND:

The "Cool Water" Program is a series of special flight tests of Minuteman Re-entry Vehicles on Atlas D boosters.

OBJECTIVES:

"Cool Water 4" was designed to duplicate "Cool Water 2" due to the failure of "Cool Water 3."

RESULTS:

Due to a hydraulic failure in the last four seconds of flight the R/V did not impact in the target area. Therefore the R/V objectives were not met.

REMARKS:

Missile processing, countdown and launch were conducted from 576B as a routine SAC training launch. An AVCO designed transition section adapted the R/V interface to the booster. AVCO processed the R/V in accordance with applicable technical orders. The missile preparation, countdown and launch until the last four seconds of flight were nominal.

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ATLAS - "FILTER TIP" UNCLASSIFIED

Missile: 71E (S/N 62-12122)

Launched: 1104:41.7Z, 25 September 1963, 576C

COUNTDOWN HISTORY:

This was the last of five "E" Series Category III (DASO) launches from the Pacific Missile Range, and was in support of the Nike-Zeus Program. This was the first attempt to accomplish this test. This missile was processed, checked out and launched by Launch Crew S-27 from the 548th Strategic Missile Squadron, Forbes AFB, Kansas (SAC). This team was under the test control of the 576th Strategic Missile Squadron, VAFB, California and the 6595th ATW. The total terminal countdown time was 18 minutes 18.7 seconds, including a hold of 3 minutes 0.7 seconds for Nike-Zeus downrange operations and a 60 second additional commit sequence for inverter time delay relay.

Flight Performance:

1. Missile failed to reach target area due to in-flight malfunction of sustainer hydraulics. Performance of the missile systems and subsystems was normal until booster jettison at T / 127.4 seconds; simultaneously sustainer hydraulic pressure was evidenced which was followed immediately by loss of sustainer engine control and resultant loss of missile control. A final conclusion as to cause of this malfunction has not been reached. The most probably cause would be a rupture in the low pressure line between the staging coupling and the hydraulic reservoir.

2. The Pacific Missile Range GERTS Station acquired in the first cube.

3. Impact Data: Missile failed to reach target area.

Remarks:

This missile was processed using the SAC (MAMS) short flaw.

Downrange Information:

Missile failed to reach target area.

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COMMANDER'S SUMMARY REPORT
Operation: HOT RUM
WS 107 A-1

Missile: Atlas 45F

Launched: 2217:49.322 Hours PDT, 3 October 1963, OSTF-2

Countdown History:

First Attempt: Aborted when overspeed sensor to the missile lift system malfunctioned.

Second Attempt: Aborted when Staging Camera plug aborted.

Third Attempt: Aborted when overspeed condition was sensed in the missile lift system.

Fourth Attempt: Aborted when instrumentation indicated autopilot failure with the B-2 engine hard over.

Fifth Attempt: Aborted because of mid course weather.

Sixth Attempt: Countdown proceeded normally through engine ignition.

FLIGHT PERFORMANCE:

Flight terminated at 3.9 seconds after liftoff because of a failure in the B-1 engine propellant systems. Analysis indicated that the B-1 engine did not enter main-stage operation due to the B-1 engine main fuel valve failing to open during engine atart. Because of this failure, the missile did not achieve sufficient thrust and tipped from the launcher toward the B-1 side. Missile exploded on impact with the ground but clear of the silo cap.

REMARKS:

Suspected cause of the failure of the B-1 engine main fuel valve to open is a restriction in the pressure line between the hypergol and the main fuel valve actuator. Investigation continuing. Because of pad damage estimate, this occurrence is classified as a missile accident.

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MINUTEMAN R/V TEST - "COOL WATER 5"

MISSILE: Atlas 163D

LAUNCHED: Complex 576B, Pad 3, 7 October 1963

BACKGROUND:

The "Cool Water" Program is a series of special flight tests of Minuteman Re-entry Vehicles on Atlas D boosters.

OBJECTIVES:

"Cool Water 5" was added to the "Cool Water" Program to duplicate the flight of "Cool Water 2" because of the failure of "Cool Water 3" and "Cool Water 4."

RESULTS:

An explosion occurred at approximately T+75 seconds causing failure of the flight. Obviously no R/V objectives were met.

REMARKS:

Missile processing, countdown and launch were conducted from 576B as a routine SAC training launch. An AVCO designed transition section adapted the R/V interface to the booster. AVCO processed the R/V in accordance with applicable technical orders. Launch was attempted on 4 Oct 63 but was scrubbed because of a malfunction in the J-Box which caused erroneous readings during the loop test. Also during troubleshooting of this problem the airborne telemetry transmitter (a requirement for flight) failed. On 7 Oct 63 the launch was held for approximately two hours because of down range weather. When weather improved, the countdown and lift-off were nominal.

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ATLAS - "HICKORY HOLLOW"

Missile: 232-D (S/N 62-12429)

Launched: 0133:43.92 PST, 4 November 1963

Countdown History:

This was the first launch of an ABRES missile from the Pacific Missile Range. This was the third attempt to accomplish this test. The first attempt was cancelled because of downrange weather and the second attempt because of the METEOR DC-4 Instrumentation Aircraft difficulties. This missile was processed, checked out and launched by SAC personnel of the 4300th Support Squadron assisted by GD/A personnel. This team was under the test control and direction of the 6595th ATW. The total terminal count was 37 minutes including a 17 minute hold to provide for three LOX topping cycles to insure a high density LOX load for this flight.

Flight Performance:

1. Missile flight was normal through SECO at which time the Navy GERTS Range Safety equipment sent All Engine Cut Off (AECO). No significant Vernier Solo Operation was achieved. Discrete commands follow:

Event	Planned	Actual
BECO	136.9	135.29
SECO	276.9	276.13
VECO	296.0	276.38 (AECO Sent)
Decoy Fire	VECO + 4	VECO + 3.3
HIRS Pitch Rocket	VECO + 11	VECO + 10.88
HIRS Rocket Fire	VECO + 23 ± 3	VECO + 22.28

2. MOD III Guidance acquired lock-on in the first cube at T+86 seconds. All track was lost at HIRS Retro Rocket Fire.

3. PMR GERTS Station acquired in the first cube at T+49.39 seconds. Preliminary data indicates GERTS sensed missile over-flight of Kwajalein impact area and automatically sent AECO.

4. Impact Data: A preliminary GERTS IIP indicates an impact 34.684 NM short and 0.496 NM right. Since MOD III Guidance did not send VECO, the Guidance Equation was not solved and a MOD III IIP is not available.

Remarks:

A MOD 1A Decoy Pod containing one Acquisition Aid Vehicle, a modified ADP Mark 6 decoy, was carried by the missile. The decoy was ejected early because of the AECO signal. A preliminary report indicates SOFAR information received; TRAP aircraft had 100% coverage; Navy Ground Tracking had zero optics due to cloud coverage; and the METEOR Aircraft had good radar and optics.

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MINUTEMAN R/V TEST - "COOL WATER 6"

MISSILE: Atlas 158D (61-2581)

LAUNCHED: 2235:39.49Z, 13 November 1963, Complex 576B, Pad 2

OBJECTIVES:

The "Cool Water" program is a series of flight tests of operational weight Minuteman re-entry vehicles on Atlas boosters. The prime objective of "Cool Water 6" was to create the most severe heating conditions on the Mark XI R/V during re-entry in order to determine the adequacy of the heat shield. The Atlas booster trajectory was shaped to create a re-entry velocity of 23,100 ft/sec at an angle of 18.5 degrees. The target was the Eniwetok Lagoon, Hot Point Option 18. R/V recovery was planned.

FLIGHT PERFORMANCE:

Missile countdown and lift-off were normal. Flight was normal until approximately T+112.1 seconds when a rapid decay of sustainer/vernier hydraulic pressure began. Within 5.7 seconds the pressure dropped from a nominal value of 3100 pounds to 600 pounds. At 117.8 seconds the missile exploded and was tracked to impact, approximately 160 N.M. down range on the launch azimuth. Obviously, no "Cool Water" re-entry vehicle objectives were met.

REMARKS: This was the fourth consecutive unsuccessful "Cool Water" launch because of Atlas booster failure. Missile processing, countdown, and launch were conducted by the 576th SMS (SAC), using the long flow time checklists. An Avco designed transition section adapted the R/V interface to the booster. Avco processed the R/V in accordance with applicable T.O.'s. Additional "Cool Water" launches are probable until successful re-entry data is obtained.

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ATLAS -"LENS COVER"

Missile: 233-D (S/N 62-12430)

Launched: 0152:27.212 PST, 18 December 1963, 4300-A, Pad Number 1

Countdown History:

This was the second launch of an ABRES missile from the Pacific Missile Range. It was the first of eight Atlas/LORV series launches from the Pacific Missile Range. This was the first attempt to accomplish this test. This missile was processed, checked out and launched by SAC personnel of the 4300th Support Squadron assisted by GD/A personnel. This team was under the test control and direction of the 6595th ATW. The total terminal count was 39:17 minutes including a 20 minute hold to provide for three LOX topping cycles to insure a high density LOX load for this flight.

Flight Performance:

1. Missile flight was normal throughout the flight. Discrete commands follow:

Event	Planned	Actual
BECO	136.7	135.79
SECO	277.3	275.66
VECO	297.0	294.78
R/V Separation	VECO + 3.0	VECO + 3.0
Decoy Eject	VECO + 4.0	Not indicated.
HIRS Pitch Rocket	VECO + 11	VECO + 13.6
HIRS Rocket Fire	VECO + 21.0	VECO + 25.62

2. MOD III Guidance acquired lock-on in the first cube at T+85 seconds. The PMR GERTS Station also acquired in the first cube.

3. Impact Data: A preliminary MOD III Guidance IIP indicates an impact 0.2 NM short and 0.4 NM left. The GERTS IIP indicates an impact of 0.59 NM short and 0.72 NM left.

Downrange Information:

Project PRESS reports Ground Radar tank track was acquired and appeared as a sharply scintillating target. A target believed to be the R/V was acquired and tracked to splash. This target did not appear to scintillate. Optics reported good coverage. Zeus Radar reports that only the tank was tracked with no observation of the R/V. Preliminary reports indicate that all aircraft and ground sensors acquired good data.

Remarks:

A MOD 1A Decoy Pod containing one Acquisition Aid Vehicle, a modified ADP Mark 6 Decoy, was carried by the missile. Preliminary data indicates that the decoy did not eject.

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ATLAS - "DAY BOOK"

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Missile: 109F (S/N 62-12145)

Launched: 1456:22.247 PST, 18 December 1963, OSTF-2

COUNTDOWN HISTORY:

This was the last of five "F" series Category II launches from the Pacific Missile Range. This was the first attempt to accomplish this test. This missile was processed, checked out and launched by a team consisting of SAC personnel of the 576th Missile Squadron and GD/A personnel. This team was under the test control and direction of the 6595th ATW. The total terminal count was 16 minutes including a five minute range hold for train traffic.

Flight Performance:

1. Missile flight was normal throughout flight. Discrete Commands follow:

Event	Planned	Actual
BECO	126.03	127.5
SECO	303.5	302.2
VECO	317.96	317.6
R/V Separation	323.96	323.6
Decoy Eject	325.7	325.8
Tank Frag	519.2	Not Accomplished

2. The Pacific Missile Range GERTS Station acquired in the first cube.

3. Impact Data: The GERTS IIP indicates an impact 0.72 NM long and 1.3 NM right. Eniwetok spotting indicates an impact 1.75 NM long and on azimuth.

Remarks:

Two MOD II Decoy Pods, each containing four re-entry decoys and five vacuum decoys were carried by the missile. This system functioned normally. Tank fragmentation, programmed for 505 seconds, was not achieved.

Downrange Information:

Indicates that the staging camera was recovered and will be in port on 20 December 1963.

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Commander's Summary Report

Name of Missile: Atlas E
(Ballistic Systems)

MISSILE: SM65E-48, Operation "Blue Bay"

LAUNCHED: Complex 576-F; 1159:40:09 PST, 12 February 1964.

COUNTDOWN HISTORY:

Countdown was completely normal and missile lifted off within 19 seconds of scheduled time.

FLIGHT PERFORMANCE:

1.

EVENT	NOMINAL	ACTUAL
Booster Cutoff	124.7	119.476
Booster Separation	127.7	122.263
Sustainer Cutoff	298.2	198.844
Vernier Cutoff	313.3	198.844
R/V Separation	316.3	Not Accomplished
Retro-Rocket	318.3	203.727

2. GERTS: Performance of GERTS missile borne system was satisfactory. The operation was not successful due to ARMA (AIG) guidance computer failure.

3. Impact Data: Estimated 3,730 nautical miles short.

REMARKS:

A guidance computer malfunction occurred during the lift off portion of the flight. Engine cutoff discretes were all generated within 3.1 seconds after ignition. These discretes were prevented from affecting missile systems by the programmer which allows staging discretes to be accepted only after 120 seconds and SECO/VECO discretes to be accepted only after staging plus 80 seconds. Reference paragraph 1 above, it can be seen that these discretes were sent as soon as the programmer circuitry enabled them. Failure of the guidance computer first became apparent at 0.25 seconds after engine ignition. After approximately 3.5 seconds no further anomolies were observed in operation of the guidance system. The computer failure was the first on an Atlas "E" missile and is the same type of failure experienced on Atlas "F" which is under investigation in the current "F" DASO Program.

This operation was a special launch in support of the Mark 11 R/V program. It was conducted by 576 SMS. 6595th and their contractors provided monitoring and surveillance of the processing, checkout, and launching of this missile.

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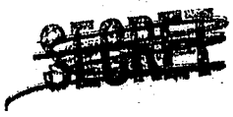

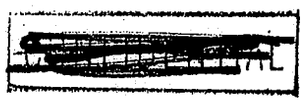

26 June 1964

Commander's Summary Report
"High Ball"
Name of Missile: Atlas F
(Ballistic Systems)

MISSILE: 3F

LAUNCHED: 2026:22:08Z, 3 April 1964 from 576G (OSTF-2)

COUNTDOWN HISTORY:

First countdown was aborted due to High Gox concentration warning in LO_2 Storage Area received prior to commit. Silo check revealed no evidence of spillage.

Second countdown was initiated. All systems functioned normally through commit. At engine ignition B-1 main fuel valve failed to open and booster failed to achieve main stage. Normal ignition of B-2, sustainer and verniers was accomplished. Missile toppled from launcher impacting in Quad I. Considerable pad damage and destruction of the water cooling tower resulted. This failure was similar to that encountered with missile 45F but exact cause has not been determined.

REMARKS: This was the first launch of the SAC DASO program. Missile was processed, checked out, and launched by personnel of the 576th SMS under surveillance of 6595th/Contractor personnel.

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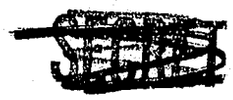

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ATLAS "IRON LUNG"

Missile: 243-D (S/N 62-12431)

Launched: 0756:13.972 PDT, 18 June 1964, 4300-A Complex, Pad 1

Countdown History:
This was the third launch of an ABRES missile from the Pacific Missile Range. It was the second of eight Atlas/LORV series launches from the Pacific Missile Range. This was the second attempt to accomplish this test. The first attempt was aborted during the R Count when the KC-135 TRAP aircraft lost an engine and could not support the test. This missile was processed, checked out and launched by SAC personnel of the 4300th Support Squadron assisted by GD/A personnel. This team was under the test control and direction of the 6595th ATW. Due to a variety of GERTS, PRESS, ZEUS and train problems, the missile was held in a LOXED condition for approximately one hour and 20 minutes.

Flight Performance:
1. Missile flight was normal throughout the flight. Discrete commands follow:

EVENT	PLANNED	ACTUAL
BECO	137.9	136.6
SPP Capsule Eject 1	149	Unknown
SPP Capsule Eject 2	194	Unknown
SPP Capsule Eject 3	233	Unknown
SECO	276.2	268.4
VECO	296.0	287.7
R/V Separation	299	290.8
Decoy Eject	300.2	294.8
R/V Pitch	301.2	294.8
R/V De-Pitch	311	302.4
R/V Spin	312	303.4
HIRS Pitch	309	300.8
HIRS Retro	333.9 plus	312

2. MOD III Guidance acquired lock-on in the first cube at T+87 seconds. The PMR GERTS Station also acquired in the first cube.

3. Impact Data: A preliminary MOD III Guidance IIP indicates an impact of 0.3 nautical miles short and 0.3 nautical miles left. The GERTS IIP indicates an impact of 0.78 nautical miles short and 0.64 nautical miles left.

Downrange Information:
Preliminary reports indicate that all aircraft and ground sensors acquired good data. All Kwajalein radars obtained good data through re-entry. Kwajalein ground optics reported fair data obtained. Three objects were tracked by both PRESS and ZEUS radars.

Remarks:
Two decoys were ejected from ADP MOD 1A Pods carried on the booster. One decoy was a Graphite Test Vehicle equipped with a PAM/FM/FM telemetry system. The other decoy was an OPaDec (Optical Partical-Decoy) Mark 6 MOD 2 equipped with a one square meter radar reflective balloon and an ion generator. The Mark 6 MOD 2 Decoy was used as an acquisition aid for the downrange radar sensors to assist in acquiring the prime re-entry vehicle. The booster also carried a parasite OAR Scientific Passenger Pod number A-205 which in turn carried three capsules to be ejected sequentially during ascent. These capsules were equipped with telemetry to evaluate missile plume ionization properties.

ATLAS - "KNOCK WOOD"

Missile: 248-D (S/N 62-12434)

Launched: 0922:56.349Z,29 July 1964, 4300-A Complex, Pad III

Countdown History:

The ninth Group 'A' launch in the Nike Target Measurement Program was accomplished on the first attempt. A 30 minute technical hold was called at 0021 PDT due to a range safety equipment problem. A 15 minute technical hold was called at 0050 PDT because of a ground guidance recorder failure and a GERTS lock problem. There was also a planned 20 minute hold in the countdown to provide for a minimum of three LOX topping cycles. These cycles were necessary to assure that a constant LOX density LOX load was in the missile oxidizer tank.

Flight Performance:

1. All missile subsystems performed satisfactorily and the discrete commands were as follows:

Event	Planned	Actual
BECO	136.9	136.75
SECO	270.5	274.10
VECO	290.1	292.90
TVX Separation	293.1	295.95
Decoy #1	VECO + 3 to VECO + 5	296.6
Decoy #2	VECO + 3 to VECO + 5	297.1
HIRS Retro	VECO + 21	217.45

2. Both AFWTR GERTS and MOD III Guidance acquired in the first cube and tracked until out of radar range.

3. Impact Data:

GERTS: 0.2 NM short and 1.176 NM right
MOD III: 0.1 NM long and 0.1 NM right

Remarks:

Mission KX-13 was flown to gather downrange radar and optical data by the NIKE and PRESS Systems. A Nike-Zeus intercept was not scheduled. The STV was a modified Series 30 TVX with PRESS instrumentation, Harry Diamond Laboratories electrostatic experiment, and a disabled MDI system. A Decoy Ejection Mechanism (DEM), mounted in Quad 1 on the Atlas Missile, ejected two Series 32 re-entry decoys. Target area telemetry and radar was good but ground optics was poor because of weather.

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22 OCT 1964

ATLAS -- "GALLANT GAL"

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Missile: 57E (S/N 60-5515)

Launched: 0954Z, 27 August 1964, 576F Site.

Countdown History:

Launch countdown was initiated at 0939Z, 27 August 1964, and was conducted normally with no holds to lift-off at 0954Z, 27 August 1964.

Flight Performance:

1. Initial reduction of telemetry data indicated that all subsystems operated normally; however, SBAMA initiated a detailed data analysis to include IGS digital data, to locate the cause for the very large miss distance. Discrete commands were as follows:

Event	Planned	Actual
BECO	124.75	124.41
SECO	297.06	301.46
VECO	311.62	314.76
R/V Separation	318.62	317.81

2. The PMR GERTS station acquired in the first cube.

3. Impact Data:

GERTS: 88 Nautical Miles Short, 0.41 Nautical Mile Right

Nike-X radar indicated an impact of approximately 70.0 Nautical Miles short.

Remarks:

Mission 57E "Gallant Gal" was an operational Atlas E missile originally scheduled to support CGM-16E Operational Testing Program. The missile was brought from EWO at the 566th SMS, Francis E. Warren AFB, Wyoming to Vandenberg AFB, California. A SAC message cancelled the OT Program, and another message directed that this missile be fired to support Nike-X Mission K-48. An additional test objective was to provide data for the five-second computer timer reset test. The operational configuration consisted of an AVCO Mark 4E, Mod5B, Re-entry Vehicle, and an instrumentation and range safety system. A standard telemetry kit was installed to provide data on booster functions.

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ATLAS - "BIG DEAL"

Missile: 36-F (S/N 60-5559)

Launched: 1546:17.10Z, 31 August 1964, 576-D Site.

Countdown History:

This was the third of five Series "F"-DASO launches on the Pacific Missile Range. Countdown opened at 1050Z and proceeded smoothly to R minus 50 when NIKE-ZEUS radar had a technical hold. Missile count continued until it was held up by the ARMY radar problem for 1 hour 37 minutes. The count picked up at R minus 5 and continued smoothly to a successful lift-off on the first attempt.

Flight Performance:

1. GERTS locked on to a side lobe of the missile radiating antenna instead of the center lobe, which resulted in "lock-on" approximately 0.9 degrees off normal in the side lobe area. This error caused the missile to appear to violate the missile debris box in azimuth. Automatic All Engine Cut-off (AECO) was then sent by GERTS just after normal SECO but before normal VECO. This caused a 50 mile short impact. Discrete commands follow:

Event	Planned	Actual
BECO	125.25	125.9
SECO	297.125	298.85
VECO	312.75	303.55
R/V Separation	313.81	309.52
Retro	330.75	321.0

2. The Pacific Missile Range GERTS acquired lock by the first cube and lost lock after SECO when automatic AECO was sent.

3. Impact Data:

GERTS:	59 NM Left	51 NM Short
Kwajalein:	On Azimuth	50 NM Short

Remarks:

Mission 36-F "Big Deal" was flown to obtain data on IGS computer, thrust section environment, and hydraulic system. An AVCO Mark IV MOD 5B Re-entry vehicle and one decoy pod containing two decoys were employed. IGS performance measurement employed a trailing wire system.

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CY [redacted] OF [redacted] OYS

DOWNGRADE AT 3 YEAR INTERVALS; DECLASSIFIED AFTER 12 YEARS DOD DIR 5200.10

[redacted] 6 NOV 1967

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ATLAS - "BUTTERFLY NET"

7 OCT 196

Missile: 245-D (S/N 62-12432)

Launched: 1527Z, 15 September 1964, 4300A Complex, Pad 1

Countdown History:

This was the third of eight Atlas/LORV series launches from the Pacific Missile Range. The first launch attempt was aborted because of downrange weather on 11 September 1964. The second launch attempt was aborted on 12 September 1964 because of a yaw integrator chopper motor failure in the attitude control system of the LORV-3 Re-entry Vehicle. Repairs required demating the payload. The third launch attempt occurred on 15 September 1964. A short hold was imposed for a sticking gantry platform and a longer hold was imposed to replace the LOX transfer pressure valve solenoid. After three normal LOX topping cycles, a successful lift-off occurred.

1. Flight Performance:

Telemetry data indicated that the GERTS missileborne rate beacon failed at 63.8 seconds after lift-off. Flight effects were that error box was automatically elongated and Navy Safety GERTS sent an automatic All Engines Cutoff (AECO) at 1.1 seconds after SECO. VECO was never sent because of AECO.

Event	Planned	Actual
BECO	139.4	139.10
SECO	267.5	267.15
VECO	286.7	268.25
R/V Separation	289.7	271.3
GTV Ejection	290.7	272.3
HIRS Pitch	299.7	281.4
HIRS Retro	307.7	292.95

2. MOD III Guidance acquired in the first cube and tracked until GERTS sent AECO. GERTS acquired with the pulse beacon in the first cube and dropped out at 287.0 seconds. The rate beacon acted abnormally at 61.2 seconds and failed at 63.8 seconds.

3. Impact Data:

GERTS: 44 NM Short; 2.8 NM Right
MOD III: 39.1 NM Short; 7 NM Right

Remarks:

This was the first of two cone-cylinder-flare R/V configurations. An ADP Graphite Test Vehicle was located in Missile Quad III and ejected by a MOD 1A Payload Ejection Mechanism (PEM). A Scientific Passenger Pod (SPP), located in Missile Quad II, contained two OAR experiments. The SPP signal was lost at 356 seconds. SPP eject was not received, and it was due at 450 seconds. Although missile flight was terminated early because of rate beacon failure and missile impacted approximately 40 miles short, downrange radar, telemetry, and optical coverage was very good.

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12 OCT 1964

ATLAS - "BUZZING BEE"

Missile: 247-D (S/N 62-12433)

Launched: 1308:41.36 Z, 22 September 1964, 4300A Complex, Pad 3

Countdown History:

This was the tenth Group "A" launch in the Nike Targets Measurements Program. The countdown began at 0450Z. A two hour and forty-five minute hold was imposed at 0505Z because a base missile emergency at another complex prevented open loop radiation. At 1153Z the Army reported a downrange hold, but missile launch preparation continued. No holds were imposed during this countdown for missile problems. The launch was accomplished on the first attempt.

1. Flight Performance:

All missile subsystems performed satisfactorily and the discrete commands were as follows:

Event	Planned	Actual
BECO	136.9	135.75
SECO	270.5	271.61
VECO	290.1	290.25
TVX Separation	293.1	293.51
Decoy #1	295.1	294.42
Decoy #2	295.1	294.97
HIRS Retro	301.1	303.62
HIRS Pitch	311.1	315.42

2. Both GERTS and MOD III Guidance acquired in the first cube and tracked until out of radar range.

3. Impact Data:

GERTS: 0.162 NM Short: 0.557 NM Right
MOD III: 0.3 NM Short: 0.2 NM Right

Remarks:

Mission KX-19 was a twin follow-on to mission KX-13 and was flown to gather downrange radar and optical data by the Nike and PRESS Systems. A Nike-Zeus intercept was not scheduled. The Special Test Vehicle (STV) was a modified 30 TVX with PRESS instrumentation, Harry Diamond Laboratories electrostatic-experiment, and a disabled MDI system. A Decoy Ejection Mechanism (DEM), in Quad I on the missile, ejected two Series 32 re-entry decoys. Target area telemetry, radar, and optics were good. The Army extended the window two hours. The Army reported that this appears to have been a very successful mission from the Nike-X point of view.

~~CONFIDENTIAL~~ 6 NOV 1967 ~~SECRET~~ 64-462 UNCLASSIFIED

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ATLAS - "BROOK TROUT"

Missile: 210D (S/N 62-12427)

Launched: 0845:04.830Z, 1 December 1964, 576-A Site, Pad 1.

Countdown History:

The first attempt to launch this vehicle was on 28 November 1964. A commit stop was initiated to diagnose GERTS ground station malfunction and an R/V Telemetry interference problem. A second commit stop was initiated when the missile 98 per cent LOX probe indicated low LOX supply. There was an actual low LOX supply caused by normal boiloff due to a two hour lapsed time from the initial LOX tanking. AGE LOX tanks were refilled and the count was again picked up. A third commit sequence was aborted and the mission was scrubbed when the autopilot programmer failed to indicate reset. Also at 1227 Z PRESS declared inability to support. A second countdown was initiated at 0400 Z, 1 December 1964 and proceeded smoothly with minor holds. The launch was successful. This was the fourth of eight Low Observable Re-entry Vehicles (LORV) to be launched from the Pacific Missile Range.

Flight Performance:

1. Performance was nominal for all subsystems. Discrete flight commands were as follows:

Event	Planned	Actual
BECO	139.4	140.20
SECO	267.5	265.70
VECO	286.7	285.35
R/V Separation	290.1	288.45
GTV Ejection	290.7	289.45
HIRS Retro-Rocket	310.1	310.20

2. The Pacific Missile Range GERTS acquired in the first cube.

3. Impact Data:

GERTS	1.9 NM right and 0.5 NM short
MOD III	1.3 NM right and 0.2 NM short

Remarks:

Operation "Brook Trout" was flown to evaluate the effect of slender re-entry vehicle configurations upon re-entry optical and radar observables. A LORV-5 re-entry vehicle and a Graphite Test Vehicle (miniature R/V-Auxiliary Payload) were employed in this test.

VWTA-4-10

ATLAS - "OPERA GLASS"

Missile: 300-D (S/N 62-12603)

Launched: 1109:17.316Z, 4 December 1964, 576-A Site, Pad 3.

Countdown History:

Launch countdown operations were initiated at 0420Z (T minus 200) on 4 December 1964. At T minus 40, Nike-Zeus Discrimination Radar (DR) requested a 90-minute hold and then two additional 30-minute holds. During the first 90-minute hold a leak of 3 to 4 PSI per minute was detected in the RMV Attitude Control System (ACS). Repair and recharge of the ACS system began during the first 90-minute Nike-Zeus DR hold. The Atlas count picked up at 0930Z (T minus 50) and was held again at 1000Z (T minus 21) to complete ACS recharge and clear a gantry removal problem. First commit start was aborted because of lack of flame bucket water deluge. The second commit start began at 1107 and continued through a successful lift-off at 1109:17.316Z.

Flight Performance:

1. Performance was normal for all subsystems except for a complete dropout of missile telemetry from 242.65 seconds to 271.25 seconds of flight. Discrete flight commands were as follows:

Event	Planned	Actual
RMV TLM Turn-On	98.0	130.
BECO (Engine Relay Box Closure)	137.0	137.10
SECO	269.0	270.20
VECO	288.0	291.40
RMV Separation	291.0	293.65
Decoy Eject	291.0	295.15
HIRS Pitch Rocket	301.0	303.75
HIRS Retro Rocket	309.0 (approx)	315.70

2. The Pacific Missile Range GERTS acquired in the first cube.

3. Impact Data:

GERTS	2.49 NM right and 2.21 NM Short
MOD III	1.8 NM right and 0.1 NM Long

Remarks:

Operation "Opera Glass" was flown to gather downrange radar, optical, and telemetry data on the performance of the RMV. No Nike intercept was scheduled.

VWTA-4-12

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ATLAS - "STEP-OVER"

Missile: 111F (S/N 62-12443)

Launched: 1915:20.745Z, 22 December 1964, 576-E Site.

Countdown History:

The first attempted launch for Operation "Step-Over" occurred on 22 December 1964. The P-Count began at 1540Z. The count proceeded smoothly to P-0, at 1840Z. R-7 and holding occurred at this time. R-7 and counting occurred at 1850Z. R-0 was attained at 1857Z. The T-Count began at 1858Z, and ended at "Ready for Commit", 8 seconds later, at 1906Z. A 5-minute tape change hold was imposed at this point and ended at 1911Z. Commit was established at 1911Z and proceeded to lift-off four minutes later, at 1915:20.745Z. There were no anomalies, and the missile was launched on the first attempt.

Flight Performance:

1. Performance was nominal for all subsystems. Flight event times occurred as follows:

Event	Planned	Actual
BECO (Engine relay switch closure)	125.3	125.8
SECO	303.8	302.20
VECO	317.2	320.20
Separation	323.2	326.20
Retro	335.2	338.05
Tank Frag	519.2	520.60

2. The Pacific Missile Range GERTS acquired in the first cube.

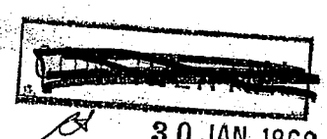
3. Impact Data:

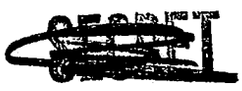
GERTS:	0.9 NM Long	0.36 NM Left
PRESS:	4.8 NM Long	0.68 NM Left
Visual (Theodolite)	0.0 NM Long	0.80 NM Left

Remarks:

Operation "Step-Over" was flown to evaluate the flight performance, accuracy, and environment of the Intertial Guidance System (IGS) computer. Data was also obtained on thrust section environment, sustainer hydraulic system performance, and CEP estimates.

VWTA-4-18





30 JAN 1968

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