[redacted]

TIGER FISH

~~CONFIDENTIAL~~

MISSILE: Thor #177 (AF 58-2288)

LAUNCHED: 2 May 1962, 1344:53 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts on this operation. However, the installation of pyrotechnics in the pod release mechanism took extremely long due to the inaccessability to this area. This caused a one hour extension of the firing window. There was also one hold in Phase IV to readjust a liftoff switch.

FLIGHT PERFORMANCE:

1.

	Flight Time (Sec)
MECO	157.1
VECO	163.9
RV Separation	175.1
Pod 3 Separation	157.2
Pods 2 & 1 Separation	173.7

2. Warhead total miss distance at simulated detonation time was 1.5 statute miles.

3. High roll moments were experienced during high dynamic pressure region of flight.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

The AGE performed satisfactorily except for the liftoff switch maladjustment noted above.

REMARKS:

This was a certification launch with a dummy warhead. The launch crew, AGE and missile, as modified, all demonstrated the capability to satisfactorily perform subsequent Fishbowl missions from the Johnston Island site. All pods were recovered. The operation was considered completely successful.

~~CONFIDENTIAL~~

6 Jan 67

[redacted]

[redacted]

BLUEGILL

~~CONFIDENTIAL~~

MISSILE: Thor #199 (AF 58-2310)

LAUNCHED: 3 June 1962, 2344:17 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts on this missile.

FLIGHT PERFORMANCE:

1.

	Flight Time (Sec)
MECO	154.6
VECO	161.0
RV Separation	172.2
Pod 1 Separation	170.8
Pods 2 & 3 Separation	Did not separate

2. Warhead total miss distance as extrapolated to intended detonation point was 0.7 statute miles.

3. High roll moments were experienced during high dynamic pressure region of flight.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

1. Launcher pins failed to retract in Phase III due to a tripped circuit breaker.

2. The T-3 second signal was not given to guidance which resulted in some residual errors at liftoff.

REMARKS:

1. The warhead was destroyed at 811 seconds since tracking of the vehicle was lost shortly after MECO.

2. A relay did not activate in the pod separation circuitry, thus two pods did not separate.

3. Absence of the T-3 second signal essentially shifted the target point; however, extrapolated data indicates a warhead trajectory well within specified limits.

4. All pods were recovered.

6595-63-0566

2-B
~~6~~ BLUE GILL

~~CONFIDENTIAL~~ [redacted]

Cy # 1 of 3 cys

[redacted] CONFIDENTIAL

STARFISH

MISSILE: Thor #193 (AF 58-2304)

LAUNCHED: 19 June 1962, 2246:16 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts on this missile.

FLIGHT PERFORMANCE:

1. The flight was normal for the first 58 seconds. At approximately 59 seconds the missile exploded. The re-entry vehicle was destroyed by Range Safety immediately thereafter.

2. High roll moments were experienced during the high dynamic pressure region of flight.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All AGE performed satisfactorily during the countdown.

REMARKS:

The failure was determined to be caused by reverse flow of hot turbine exhaust gases under the external pods. This caused a weakening of the engine thrust frame attach points which led to the rupturing of the LOX tank and subsequent explosion. The warhead was then destroyed by Range Safety command.

[redacted] CONFIDENTIAL

STAR FISH
3B

[redacted] CONFIDENTIAL

STARFISH PRIME

MISSILE: Thor #195 (AF 58-2306)

LAUNCHED: 8 July 1962, 2246:28 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts on this missile. However, thermal modifications and weather delayed the launch four days from its originally scheduled date.

FLIGHT PERFORMANCE:

1.

	Flight Time (Sec)
MECO	157.1
VECO	164.2
RV Separation	175.4
Pod 1 Separation	157.2
Pod 2 Separation	157.6
Pod 3 Separation	158.5

2. Warhead total miss distance at detonation was 2,780 feet.

3. High roll moments were again experienced during the high dynamic pressure region of flight.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All AGE performed satisfactorily.

REMARKS:

1. First nuclear device to be carried and detonated in space by an operational missile.

2. All objectives were met.

3. All pods were recovered.

4. Boattail of the missile was covered with cork for thermal protection from reverse flow of gas generator exhaust.

[redacted] CONFIDENTIAL

[redacted]

CONFIDENTIAL

BLUEGILL PRIME

MISSILE: Thor #180 (AF 58-2291)

LAUNCH ATTEMPTED: 25 July 1962, 2313:53 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts on this missile due to missile or AGE malfunctions. However, the launch was delayed for two days due to adverse weather conditions. During the terminal countdown, two holds totaling 90 minutes were imposed for aircraft problems and unfavorable weather.

FLIGHT PERFORMANCE:

The missile burned on the pad. During the engine ignition sequence, the main LOX valve did not open fully. After approximately 10 seconds of burning the Range Safety Officer destroyed the warhead; this led to destruction of the fuel tank and a subsequent LOX-fuel explosion.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All AGE performed satisfactorily during the countdown.

REMARKS:

The pad was totally destroyed as a result of the fire. The cause of the failure was traced to near total restriction of the pneumatic control lines which control the oxidizer valve.

CONFIDENTIAL
CS 6Jan67

[redacted]

[redacted]

CONFIDENTIAL

BLUEGILL DOUBLE PRIME

MISSILE: Thor #156 (AF 58-2267)

LAUNCHED: 15 October 1962, 2314:38 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There were no aborted launch attempts or holds during the terminal countdown with this missile. However, a 24 hour hold was imposed due to adverse weather.

FLIGHT PERFORMANCE:

The flight was normal until approximately 86 seconds when vehicle attitude control was lost. The engine shut down approximately 8 seconds later; there was no explosion. The Range Safety Officer sent a destruct signal at approximately 100 seconds to destroy the warhead and vehicle.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All AGE performed satisfactorily.

REMARKS:

1. The cause of failure is believed to be due to the reverse flow problem which carried flame into the vernier engine doghouse and burned control wires.

2. Retro rockets were mounted internally. This reduced the roll moment substantially from previously experienced values.

[redacted]

[redacted]

~~CONFIDENTIAL~~

BLUEGILL TRIPLE PRIME

MISSILE: Thor #141 (AF 58-2252)

LAUNCHED: 25 October 1962, 2344:05 HST, Johnston Island, Pad 2

COUNTDOWN HISTORY:

There were no aborted launch attempts on this missile. However, the launch attempt was delayed for 24 hours to complete checkout of the new AGE. A total hold of two hours was imposed for weather, tracking equipment problems, a satellite in a nearby orbit, and failure of the pins to retract in Phase III.

FLIGHT PERFORMANCE:

1.

	Flight Time (Sec)
MECO	156.9
VECO	165.6
Pods 1, 2, 3 Separation	175.5
RV Separation	176.3

2. Warhead total miss distance at detonation was 4,880 feet.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

All AGE performed satisfactorily except for a loose cable connection which resulted in no pin retraction in Phase III.

REMARKS:

The mission was a oomplete success. All instrumented pods were recovered.

~~CONFIDENTIAL~~
6 Jan 67

[redacted]

~~51~~ BLUEGILL TRIPLE PRIM
7B

Cy #1 of 3 cys

[redacted]

KING FISH

~~CONFIDENTIAL~~

MISSILE: Thor #266 (AF-59-2347)

LAUNCHED: 1 November 1962, 0154:48 HST, Johnston Island, Pad 1

COUNTDOWN HISTORY:

There was one aborted launch attempt on this missile. It occurred during the first part of the window when the engine slew did not complete in Phase II. The system was recycled after a 4 hour 30 minute hold to find and fix an open wire in the main engine yaw actuator circuit.

FLIGHT PERFORMANCE:

1.

	Flight Time (Sec)
MECO	157.8
VECO	166.6
Pad 1 Separation	164.6
Pad 2 Separation	165.4
Pad 3 Separation	165.8
RV Separation	177.7

2. Warhead total miss distance at detonation was 3,466 feet.

3. Roll moments experienced on earlier flights were again reduced due to the internal mounting of the retro rockets.

AEROSPACE GROUND EQUIPMENT PERFORMANCE:

There were no AGE problems during this launch.

REMARKS:

1. All test objectives were met.

2. All instrumented pods were recovered.

[redacted]

6 Jan 67

6595-63-0560

[redacted]

Cy # 1 of 3 cys

PROGRAM 437

MISSILE: DAC DSV-2J (LV-2D) Thor S/N 20002/Sandia Corporation Payload Vehicle/Bell Telephone Laboratories Guidance System.

LAUNCHED: 2147:50.8 Hawaii Standard Time (HST) on 14 February 1964 at Johnston Island.

COUNTDOWN HISTORY: The 6:05 countdown was normal with no holds encountered.

FLIGHT PERFORMANCE:

	PREDICTED	ACTUAL
Liftoff	0747:51 GMT	0747:50.8 GMT
MECO	T + 156.13	T + 157.91
VECO	MECO + 4	T + 161.96
Unlatch Command	MECO + 15	T + 172.13
Separation	MECO + 15 (Approx)	T + 172.85

TOTAL SYSTEM MISS DISTANCE

	PAYLOAD VEHICLE MISS	TARGET PREDICTION ERROR	TOTAL SYSTEM MISS
Delta X	0.44 n.m.	0.74 n.m.	0.30 n.m.
Delta Y	0.10 n.m.	-0.82 n.m.	-0.92 n.m.
Delta Z	0.65 n.m.	1.70 n.m.	1.05 n.m.
Vector Sum	0.79 n.m.	2.04 n.m.	1.42 n.m.

REMARKS: This was the first launch of Program 437 and was performed to demonstrate the feasibility and capability of the total system to negate a satellite by launching a vehicle within a precise time interval, guiding the vehicle through main engine cutoff, delivering the payload to a pre-selected time-space point, and arming and firing the warhead at the appropriate time. All primary and secondary objectives for the mission were achieved.

VWZH-65-5

PROGRAM 437

MISSILE: DAC DSV-2J Thor, S/N 20006 (LV-2D)/Sandia Corporation Payload Vehicle (P/V)/Bell Telephone Laboratories (BTL) Guidance System.

LAUNCHED: 2040:55.75 Hawaii Standard Time (HST) on March 1, 1964 at Johnston Island (J.I.)

COUNTDOWN HISTORY: An instrumentation failure in Sandia payload unit 159-5 (Pad - 2) occurred at T-5:30. A replacement payload unit was installed in 1:20 and the countdown was resumed. The 6:00 countdown was normal in all other respects.

FLIGHT PERFORMANCE:

	PREDICTED	ACTUAL
Liftoff	0640:56 GMT	0640:55.75 GMT
MECO	T + 148.99	T + 144.61
VECO	MECO + 4	T + 148.85
Unlatch Command	MECO + 15	T + 159.05
Separation	MECO + 15 (Approx)	T + 159.7

TOTAL SYSTEM MISS DISTANCE

	PAYLOAD VEHICLE MISS	TARGET PREDICTION ERROR	TOTAL SYSTEM MISS
Delta X	2.13 n.m.	0.39 n.m.	1.74 n.m.
Delta Y	0.57 n.m.	-0.41 n.m.	0.98 n.m.
Delta Z	0.01 n.m.	-0.38 n.m.	0.39 n.m.
Vector Sum	2.21 n.m.	0.68 n.m.	2.03 n.m.

REMARKS:

This was the second launch of the Program 437 non-orbital satellite interceptor system and was performed to demonstrate the feasibility and capability of the total system to negate a satellite by launching a vehicle through main engine cutoff, delivering the payload to a preselected time - space point, and arming and firing the warhead at the appropriate time. All primary and secondary objectives were achieved.

~~CONFIDENTIAL~~ [redacted]

PROGRAM 437

MISSILE: DAC DSV-2J Thor, S/N 20003 (LV-2D)/Sandia Corporation Payload Vehicle (P/V)/Bell Telephone Laboratories (BTL) Guidance System.

LAUNCHED: 2015:37.626 Hawaii Standard Time (HST) on 21 April 1964 at Johnston Island (J.I.)

COUNTDOWN HISTORY: A first attempt to launch was made at 21:29 (HST) on 19 April. The launch was aborted at engine start since the main LOX valve did not open. Parts were not available on site and arrived from Vandenberg Air Force Base at 2200 hours on 20 April. Installation and checkout were completed at 0900 hours on 21 April. The 4:10 countdown was normal and the second attempt was successful.

FLIGHT PERFORMANCE:

	PREDICTED	ACTUAL
Liftoff	0615:37.6 GMT	0615:37.626 GMT
MECO	T + 149.73	T + 149.71
VECO	MECO + 4	T + 153.74
Unlatch Command	MECO + 15	T + 163.90
Separation	MECO + 15 (Approx)	T + 164.55

TOTAL SYSTEM MISS DISTANCE

Delta X	-0.186 n.m.
Delta Y	1.070 n.m.
Delta Z	-0.750 n.m.
Vector Sum	1.320 n.m.

REMARKS:

This was the third launch of the Program 437.
Phase I effort. The required special error probability (SEP) for Phase I tests is 3.4 nautical mile radius. The SEP is defined as the radius of that sphere in which 50% of the shots targeted to the center of the sphere will be at intercept time. The test objectives were achieved with a near perfect launch and demonstration of total system performance.

[redacted]

~~CONFIDENTIAL~~

VWZH-65-

~~CONFIDENTIAL~~
~~SECRET~~

PROGRAM 437

MISSILE: DAC DSV-2J Thor, S/N 20007 (LV-2D)/Sandia Corporation Payload Vehicle (P/V)/Bell Telephone Laboratories (BTL) Guidance System.

LAUNCHED: 2132:45.79 Hawaii Standard Time (HST) on 29 May 1964 at Johnston Island (J.I.)

COUNTDOWN HISTORY: The countdown was normal up to engine start command. This command was received at the blockhouse 4.164 seconds before liftoff. The normal time from engine start command to liftoff is 3.5 seconds with a one sigma deviation of 0.167 seconds. Thus the actual start time occurred 3.9 sigmas later than the nominal time. A delayed burn through of the igniter detector link appears to have been the cause of this unusually long start time. The sequence of events was entirely normal up to the receiving of the "ignition detection link burn through" signal and was normal after it finally received the detector link signal.

FLIGHT PERFORMANCE: Liftoff occurred 0.65 seconds late due to the malfunction in the ignition detector link. The trajectory of the booster was very close to nominal until 109 seconds of flight, at which time a load on the flight controller 165 volt D.C. circuitry caused the engine position feedback voltage to be in error. The most suspect cause is wire insulation burn through due to excessive heat in the engine section. Complete loss of control occurred at about 153 seconds. Thrust decay occurred at 160 seconds as a result of LOX depletion.

REMARKS: This was the fourth launch of the 437 Program and was conducted by the 10th Aerospace Defense Squadron (10 ADS) under the technical surveillance of the 6595th Aerospace Test Wing. It was performed to demonstrate the capability of the 10 ADS to successfully operate the Program 437 system. The preparation, countdown, and launch were successful until approximately 109 seconds of flight at which time the vehicle began losing attitude control. However, the test was considered adequate for the capability demonstration and the Program 437 system was declared operational.

~~CONFIDENTIAL~~
~~SECRET~~

VW2H-65

PROGRAM 437AP

MISSILE: DAC DSV-2J Thor, S/N 20011/General Electric Company Payload Vehicle 903/Bell Telephone Laboratories (BTL) Guidance System.

LAUNCHED: 1628:43.048 Hawaii Standard Time (HST) on 7 December 1965 at Johnston Island (J.I.)

FLIGHT PERFORMANCE:

	PREDICTED	ACTUAL
Liftoff	0228:43.000 GMT	0228:43.048 GMT
MECO	T + 158.694	T + 155.65
VECO	MECO + 4	MECO + 4.2
Separation	MECO + 16	MECO + 15.38

REMARKS: The payload appeared to function normally until Sub-system "C" separation. There was no indication of this event occurring.

FROM: 6595 STGp (TBB) 69023/4/5 20 Oct 1970

SUBJECT: Commander's Summary Report (High Altitude Program) (HAP)

MISSILE: LV2D 59D-2392

LAUNCHED: The HAP modified Thor was launched at 1254:01Z on 24 Sep 70.

LAUNCH CONTROLLERS: Pad Chief - Capt Brand

Test Controller - Lt Butt

Test Director - Col Murphy

COUNTDOWN HISTORY:

The first HAP launch attempt on 21 Sep 70 (Zulu) was aborted during Task 10, Booster Guidance Steering and Command Checks, due to the inadvertent firing of the booster retro-rockets. The launch was re-scheduled, with liftoff at 1254Z 24 Sep 70. The second launch countdown was completed successfully.

1. FLIGHT PERFORMANCE:

EVENT	NOMINAL	ACTUAL
Liftoff	1254.00Z	1254.01Z
MECO	157.556	153.74
VECO	161.556	157.73
Payload Separation	165.556	161.745
Kick Rocket Firing	T+195.556 sec	T+191.74 sec
Displacement Rocket Firing	T+210.556 sec	T+206.755 sec
*SXRE	85%	

The Thor performed satisfactorily.

2. SYSTEM COMMENTS

Upper Payload total miss distance, 319 ft east, 333 ft north, 1289 ft low. The upper payload optical beacon failed to operate correctly. It is believed that the 300 volts power supply began arcing at altitude, causing a premature destruct signal to be sent to the simulated device assembly.

3. AEROSPACE GROUND EQUIPMENT: All functioned normally.

This was launched from J. I.

4. REMARKS:

*85% of the proportional counters in SXRE functioned correctly. The SXRE attitude control system functioned correctly. The telemetry data was received; the camera and electronic packages were ejected and recovered. Pending detailed analysis of data, the SXRE is considered highly successful.