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Tab 11

| | |
|---|---|
| MISSILE | ATLAS (SM-65) |
| SPONSOR | Air Force |
| CONTRACTORS | Prime: Convair Division/General Dynamics - Airframe<br>Associate. North American Aviation - Propulsion<br>General Electric - Guidance (RI)<br>ARMA - Guidance (AI)<br>General Electric - Nose Cone<br>AVCO - Nose Cone<br>Sandia Corporation - Warhead |
| First R&D launch | 11 Jun 57 |

Program currently underway.

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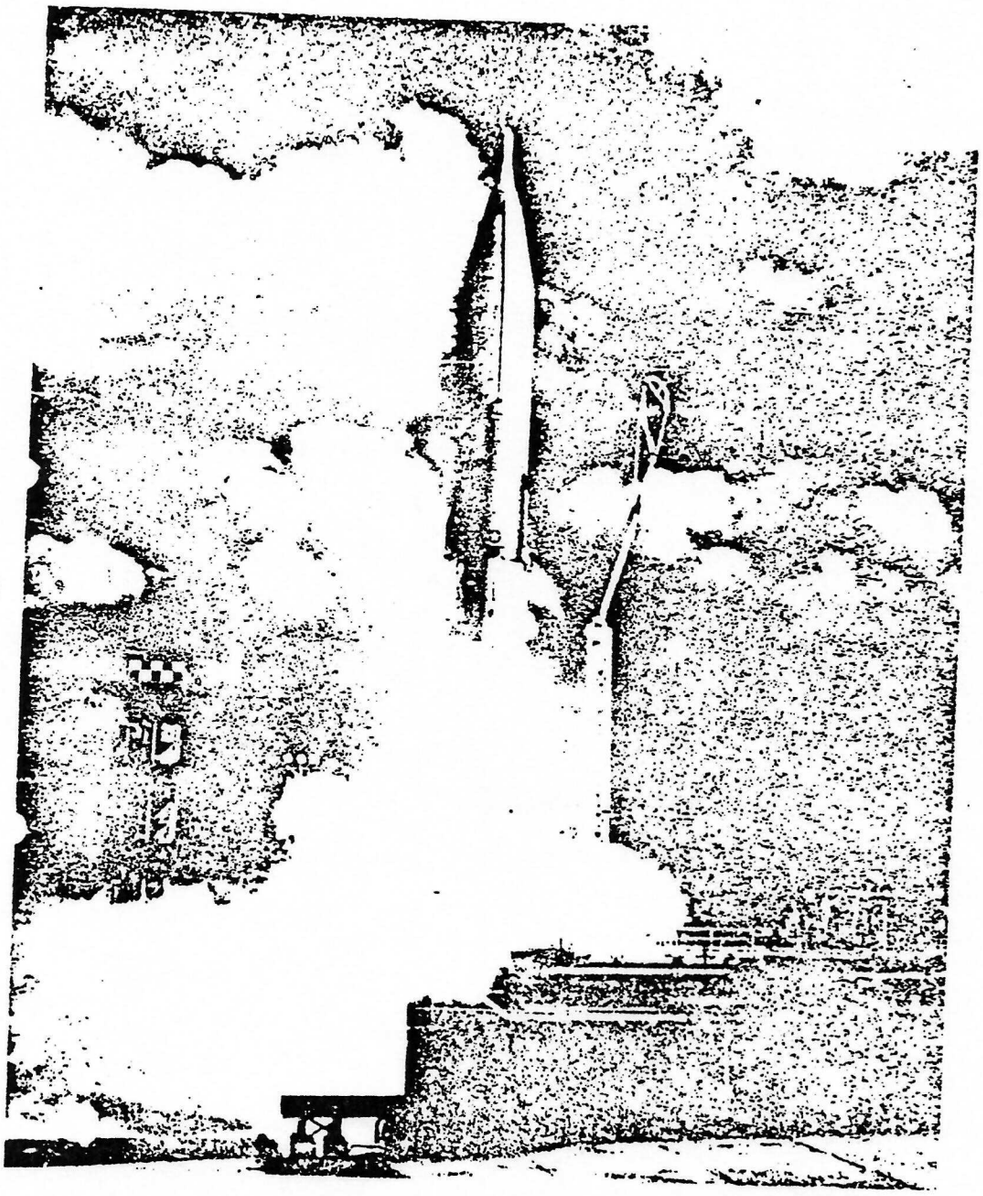

THE U.S. AIR FORCE ATLAS INTER-CONTINENTAL BALLISTIC MISSILE BY CONVAIR LAUNCHED FROM CAPE CANAVERAL LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER

Tab 11

| | |
|---|---|
| MISSILE | ATLAS (SM-65) |
| SPONSOR | Air Force |
| CONTRACTORS | Prime: Convair Division/General Dynamics - Airframe |
| | Associate: North American Aviation - Propulsion<br>General Electric - Guidance (RI)<br>ARMA - Guidance (AI)<br>General Electric - Nose Cone<br>AVCO - Nose Cone<br>Sandia Corporation - Warhead |
| First R&D launch | 11 Jun 57 |

Program currently underway

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ATLAS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1957 | |
| 1 | 1 | XSM-65 No. 4A | 11 Jun 57 | First ATLAS launch. Range Safety destruct at T+50 seconds. |
| | | | JULY - DECEMBER 1957 | |
| 2 | 1 | 6A | 25 Sep 57 | Lost thrust and crashed at T+36 seconds. |
| 3 | 2 | 12A | 17 Dec 57 | First successful ATLAS flight to impact area. |
| | | | JANUARY - JUNE 1958 | |
| 4 | 1 | 10A | 10 Jan 58 | Met all test objectives. |
| 5 | 2 | 13A | 7 Feb 58 | Broke up after engine shut-down. Flight time 167 sec. |
| 6 | 3 | 11A | 20 Feb 58 | Broke up at engine shut-down. Flight time T+125 seconds. |
| 7 | 4 | 15A | 5 Apr 58 | Thrust terminated 22 seconds early. Satisfactory flight otherwise. |
| 8 | 5 | 16A | 3 Jun 58 | Ended series A tests. |

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ATLAS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 9 | 1 | 3B | 19 Jul 58 | First series B ATLAS. Exploded at T+43 seconds. |
| 10 | 2 | 4B | 2 Aug 58 | Met all test objectives. |
| 11 | 3 | 5B | 28 Aug 58 | Met all test objectives. |
| 12 | 4 | 8B | 14 Sep 58 | Met major objectives. |
| 13 | 5 | 6B | 18 Sep 58 | Missile broke up at T+84 sec. |
| 14 | 6 | 9B | 17 Nov 58 | Premature shut-down shortened range 1,000 miles. |
| 15 | 7 | 12B | 28 Nov 58 | First full 5,000 mile flight capability demonstrated. |
| 16 | 8 | 10B | 18 Dec 58 | Entire missile placed in earth orbit as Project Score. Used to relay President's Christmas message. |
| 17 | 9 | 3C | 23 Dec 58 | First "C" series ATLAS. |
| | | | JANUARY - JUNE 1959 | |
| 18 | 1 | 13B | 15 Jan 59 | Thrust lost at T+109 seconds. Missile broke up. |
| 19 | 2 | 4C | 27 Jan 59 | First flight to carry Mod II re-entry vehicle. |
| 20 | 3 | 11B | 4 Feb 59 | Re-entry photographed for first time from airplane. Completed "B" series tests. |
| 21 | 4 | 5C | 20 Feb 59 | First ATLAS launch without a static firing. Exploded at T+173 seconds. |
| 22 | 5 | 7C | 18 Mar 59 | First to carry RVX-2 ablating nose cone. Not recovered. |
| 23 | 6 | 3D | 14 Apr 59 | 1st series "D" missile. Destroyed at T+36 seconds. |
| 24 | 7 | 7D | 18 May 59 | Exploded at T+65 seconds. |
| 25 | 8 | 5D | 6 Jun 59 | Exploded at T+160 seconds. |

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ATLAS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1959 | |
| 26 | 1 | 8C | 21 Jul 59 | First ATLAS full scale nose cone recovered. |
| 27 | 2 | 11D | 28 Jul 59 | 1st full range flight of "D" series ATLAS. Capsule not recovered. |
| 28 | 3 | 14D | 11 Aug 59 | Met test objectives. |
| 29 | 4 | 11C | 24 Aug 59 | 5 000 mi. range nose cone camera recovered with photos of earth from 700 miles up. Completed "C" series tests. |
| 30 | 5 | 10D | 9 Sep 59 | First MERCURY ATLAS launch. Big Joe capsule recovered by ship. |
| 31 | 6 | 17D | 16 Sep 59 | Impact Station #12. |
| 32 | 7 | 18D | 6 Oct 59 | First to carry GE Mark 3 Mod 1 nose cone. Impact Station #12. |
| 33 | 8 | 22D | 9 Oct 59 | Impact Sta. #12. 9th "D" series missile. |
| 34 | 9 | 26D | 29 Oct 59 | Sta. #12 impact. Photographed cloud cover from 300 mi. altitude. |
| 35 | 10 | 28D | 4 Nov 59 | Impact predictor failure forced early cut-off to protect Sta. #12. |
| 36 | 11 | 15D | 24 Nov 59 | Impact Station #12. |
| 37 | 12 | ATLAS-ABLE 20D | 26 Nov 59 | ATLAS-ABLE IV launch attempted moon-orbit, not successful. |
| 38 | 13 | 31D | 8 Dec 59 | 4,384 nm range. Station #12 impact. |
| 39 | 14 | 40D | 18 Dec 59 | First ATLAS to deliver standard nose cone to 5 500 nm range. |

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ATLAS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1960 | |
| 40 | 1 | 43D | 6 Jan 60 | Carried high intensity photo-flash flare. |
| 41 | 2 | 44D | 20 Jan 60 | First to carry AVCO nose cone. Data cassette not recovered. |
| 42 | 3 | 49D | 11 Feb 60 | Met all test objectives. |
| 43 | 4 | 29D | 26 Feb 60 | 1st MIDAS satellite launch. Orbit not achieved. |
| 44 | 5 | 42D | 8 Mar 60 | 1st ATLAS to carry Arma All Inertial Guidance. |
| 45 | 6 | 51D | 10 Mar 60 | Exploded shortly after lift-off. |
| Not a launch | | 48D | 7 Apr 60 | Missile exploded on pad before lift-off. |
| 46 | 7 | 56D | 20 May 60 | 9,000 mile ATLAS landed in Indian Ocean SW of Capetown. |
| 47 | 8 | 45D | 21 May 60 | 2nd and final MIDAS launch from AMR. Orbit achieved. |
| 48 | 9 | 54D | 11 Jun 60 | Met all test objectives. |
| 49 | 10 | 62D | 22 Jun 60 | Met all test objectives. |
| 50 | 11 | 27D | 27 Jun 60 | Met all test objectives. |

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## ATLAS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1960 | |
| 51 | 807 | 63D | 2 Jul 60 | Test AIG Inertial Guidance (AIG). 1st to use AIG. Program. [illegible] IN flight. Impact 40 mi short due to engine thrust decay. |
| 52 | 1505 | 50D | 29 Jul 60 | Second MERCURY capsule test, using 1st McDonnell Aircraft Corp capsule. Undisclosed difficulty on [illegible] T+60 sec. |
| 53 | 1003 | 32D | 9 Aug 60 | Test GE Mod III Guidance Sys over extended 6950 [illegible] range. Impact within 8 NM of Aiming point. |
| 54 | 1004 | 63D | 17 Aug 60 | Evaluate AdW inertial guidance system. 1st AIG flight to Sta 12 MILS net. Test heat shield on re-entry vehicle. Impact as intended. Re-entry vehicle not recovered due to failure of flotation balloon. |
| 55 | 2717 | 76D | 16 Sep 60 | Test ARMA guidance, control [illegible], stability, re-entry [illegible] ablation materials. Impact 3 mi of target in Sta 17 MILS net. Nose cone not recovered. |
| 56 | 802 | 79D | 19 Sep 60 | Test over 7,500 IN (9,000 stat mi) range, with Indian Ocean impact. Evaluate Mod III guidance system. Impact within 2.5 IN of target. |
| 57 | 2001 | 4 stage ATLAS-AGLE VA 80D | 25 Sep 60 | Lunar probe. Interplanetary space probe beyond earth's gravitational field close moon orbit. Low thrust and premature [illegible] of 2nd stage prevented [illegible] |

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ATLAS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | | JULY - DECEMBER 1960 (CONT'D) |
| | | | | gain. 3rd stage accelerated in opposite direction from that desired. Required velocity for lunar exploration not achieved. |
| 58 | 2508 | 3E | 11 Oct 60 | First Series E missile. Test performance of sub-systems, evaluate flight control and ARMA Inertial Guidance System. Nose cone to impact Sta 12 MILS net. Control lost shortly after launch and complete break-up occurred at T+155 sec. Re-entry vehicle impacted 900 mi down range. |
| 59 | 802 | 71D | 13 Oct 60 | Test ARMA Guidance System, evaluate reentry vehicles, with emphasis on ablation materials. Sta 12 MILS net impact planned. Carried mice. Recovered 2 hrs after impact within 2 mi of impact point. |
| 60 | 613 | 55D | 22 Oct 60 | Planned 6350 mi flight, using Mark III Mod 2B re-entry vehicle. Impact 3M of target. |
| 61 | 3503 | 83D | 15 Nov 60 | Test guidance system accuracy. Evaluate AVCO R/V with missile system. Impact Sta 12 within 0.5 mi of aiming point. |
| 62 | 2600 | 1E | 29 Nov 60 | Test sub-systems compatibility. Evaluate ARMA Inertial Guidance. Sta 12 impact planned. Sustainer engine shut down early causing impact only 700 mi down range. Partial success. |

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## ATLAS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1960 (CONT'D)** | | |
| 63 | 4508 | 2nd ABLE VB, 3-stage 7LD | 15 Dec 60 | Lunar probe. Close moon orbit planned. Vehicle lost structural integrity at T+67 sec after lift-off. |
| | | **JANUARY - JUNE 1961** | | |
| 64 | 3505 | 90D | 23 Jan 61 | Last D series ATLAS scheduled for launch as part of the Development program at ARR. Impact within 2 NM of target. |
| 65 | 3502 | 5D | 24 Jan 61 | Missile destroyed itself at T+140 sec. Impact 1,100 NM down range. |
| 66 | 419 | 67D | 21 Feb 61 | 3rd series D ATLAS to carry a MERCURY capsule. MR-2 capsule landed in target area, was recovered. |
| 67 | 3503 | 9E | 24 Feb 61 | 1st successful series E flight in 5 tries. Impact at near maximum range of 6,350 NM. |
| 68 | 403 | 13E | 13 Mar 61 | Fuel control malfunction shortened range from intended 7,863 NM to 1,920 NM. |
| 69 | 811 | 16E | 24 Mar 61 | Low order thrust reduced range from intended 7,863 NM to about 3,500 NM. |
| 70 | 335 | 100D | 25 Apr 61 | Carried MA-3 capsule with intent to orbit and recover. RSO destruct at T+10 sec prevented orbit. |
| 71 | 104 | 12E | 12 May 61 | All primary objectives met. |
| 72 | [illegible] | 18E | 26 May 61 | All primary objectives met. |
| 73 | 812 | 17E | 22 Jun 61 | Destroyed by internal malfunction at T+95 seconds. |

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PERIOD: JULY 1950 - DECEMBER 1968 ~~FOR OFFICIAL USE~~ ONLY

RECAP OF ATLAS LAUNCHES BY WING PERSONNEL --
BY YEAR/PROGRAM SERIES/OVERALL TOTAL

| YEAR/PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES | GRAND TOTAL: ALL ATLAS LAUNCHES |
|---|---|---|---|---|---|
| 1957 | | | | | |
| *ICBM A | First | 3 | 3 | | |
| 1958 | | | | | |
| ICBM A | | 5 | | Total ICBM A: 8 | |
| ICBM B | First | 7 | | | |
| ICBM C | First | 1 | | | |
| *SV 10B | First/Last | 1 | 14 | Total SV B: 1 | |
| 1959 | | | | | |
| ICBM B | Last | 2 | | Total ICBM B: 9 | |
| ICBM C | Last | 5 | | Total ICBM C: 6 | |
| ICBM D | First | 13 | | | |
| *SB D | First | 2 | 22 | | |
| 1960 | | | | | |
| ICBM D | | 17 | | | |
| ICBM E | First | 2 | | | |
| SV D | First | 2 | | | |
| SB D | | 3 | 24 | | |
| 1961 | | | | | |
| ICBM D | Last | 1 | | Total ICBM D: 31 | |
| ICBM E | | 15 | | | |
| ICBM F | First | 4 | | | |
| SB D | | 6 | 26 | | |

*ICBM (Intercontinental Ballistic Missile)
*SV (All AF "Space Vehicle")
*SB (AF "Space Booster")

Note: For applicable space system (Merc/Atlas,Atlas/Agena,etc) see list of individ. lnch

Compiled By: M. A. Kingsley (As of 31 Dec 1968)

CONTINUED

ATLAS LAUNCHES -- RECAP (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

| YEAR/ PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES | GRAND TOTAL: ALL ATLAS LAUNCHES |
|---|---|---|---|---|---|
| 962 | | | | | |
| ICBM E | | 1 | | | |
| ICBM F | | 6 | | | |
| *SB D | | 8 | 15 | | |
| 963 | | | | | |
| **ABRES F | First | 3 | | | |
| SB D | | 1 | | | |
| ***SV D | | 1 | 5 | | |
| 964 | | | | | |
| SV D | | 1 | | | |
| ABRES E | First/Last | 1 | | Total ICBM/ABRES E: 19 | |
| | | | | Total ICBM/ABRES F: 14 | TOTAL ICBMs : 7 |
| 965 | | | | | |
| SV D | | 1 | | | |
| SB D | | 1 | 2 | | |
| 966 | | | | | |
| SB D | | 6 | 6 | | |
| 967 | | | | | |
| No Air Force Atlas Launches -- Supported NASA launches with MOD III facilities & Pers.) | | | | | |
| 968 | | | | | |
| SV (Atlas/Agena D) SLV-3A (Long Tank) (Continuing Program) | First | 1 | 1 | Total SB/SV "D" : 33 | TOTAL SPACE : 34 |
| | | | | | GRAND TOTAL: 121 |
| | | | | | 47 SUPPORT ONLY |

pace Booster
BRES (Advanced Ballistic Re-entry System)
pace Vehicle

ote: For applicable space system (Mercury/Atlas, Atlas/Agena, etc), see list of individual launches.

~~FOR OFFICIAL USE ONLY~~ (CONTINUED)

ATLAS LAUNCHES -- RECAP (CONTINUED)

PERIOD: JANUARY 1969 - _____

GRAND TOTAL BROT FORWARD: 47 SUPPORT ONLY



| YEAR | PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES | GRAND TOTAL: ALL ATLAS LAUNCHES |
|---|---|---|---|---|---|---|
| 1969 | | | | | | |
| | *SV (Atlas/Agena D) (Cont'd) SLV-3A (Long Tank) | | 1 | 1 | | |
| 1970 | | | | | | |

*Space Vehicle

DWL

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LIST OF ATLAS LAUNCHES -- (TOTAL 121+) (+ 47 NASA/AF, Navy [illegible] port Only.)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| ICBM 4A | 11 Jun 57 | Pad 14 | FIRST Atlas Launch. |
| 6A | 25 Sep 57 | Pad 14 | |
| 12A | 17 Dec 57 | Pad 14 | |
| 10A | 10 Jan 58 | Pad 12 | |
| 13A | 7 Feb 58 | Pad 14 | |
| 11A | 20 Feb 58 | Pad 12 | |
| 15A | 5 Apr 58 | Pad 14 | |
| 16A | 3 Jun 58 | Pad 12 | Ended Series A tests. |
| 3B | 19 Jul 58 | Pad 11 | First Series B test. |
| 4B | 2 Aug 58 | Pad 13 | |
| 5B | 28 Aug 58 | Pad 11 | |
| 8B | 14 Sep 58 | Pad 14 | |
| 6B | 18 Sep 58 | Pad 13 | |
| 9B | 17 Nov 58 | Pad 11 | |
| 12B | 28 Nov 58 | Pad 14 | |
| SV 10B | 18 Dec 58 | Pad 11 | FIRST ATLAS SPACE VEHICLE -- PROJECT SCORE. Relayed President Eisenhower's Xmas Message. (ARPA) |
| ICBM 3C | 23 Dec 58 | Pad 12 | First Series C test. |
| 13B | 15 Jan 59 | Cx 14 | End Series B tests. |
| 4C | 27 Jan 59 | Cx 12 | |
| 11B | 4 Feb 59 | Cx 11 | |
| 5C | 20 Feb 59 | Cx 12 | |
| 7C | 18 Mar 59 | Cx 12 | |
| 3D | 14 Apr 59 | Cx 13 | First Series D test. |
| 7D | 18 May 59 | Cx 14 | |
| 5D | 6 Jun 59 | Cx 13 | |
| 8C | 21 Jul 59 | Cx 12 | |
| 11D | 28 Jul 59 | Cx 11 | |
| 14D | 11 Aug 59 | Cx 13 | |

(ATLAS Launches Cont'd)

~~FOR OFFICIAL USE ONLY~~

ATLAS LAUNCHES (CONTINUED)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| ICBM 11C | 24 Aug 59 | Cx 12 | |
| SB 10D | 9 Sep 59 | Cx 14 | FIRST MERCURY-ATLAS Capsule Launch-MA Prototype. (NASA) |
| ICBM 17D | 16 Sep 59 | Cx 13 | |
| SB 9C (NOT A LAUNCH) | 24 Sep 59 | Cx 12 | Last Series C tests. DESTROYED ON PAD. (ATLAS-ABLE). |
| 18D | 6 Oct 59 | Cx 11 | |
| 22D | 9 Oct 59 | Cx 13 | |
| 26D | 29 Oct 59 | Cx 11 | |
| 28D | 4 Nov 59 | Cx 13 | |
| 15 D | 24 Nov 59 | Cx 13 | |
| SB ATLAS-ABLE 20D AGENA | 26 Nov 59 | Cx 14 | ATLAS-ABLE IV Launch -- Attempt Moon Orbit -- Not Successful. (ARPA) |
| ICBM 31D | 8 Dec 59 | Cx 13 | |
| 40D | 18 Dec 59 | Cx 13 | |
| 43D | 6 Jan 60 | Cx 13 | |
| 44D | 26 Jan 60 | Cx 13 | |
| 49D | 11 Feb 60 | Cx 13 | |
| SV 29D/AGENA | 26 Feb 60 | Cx 14 | Launched MIDAS I. (ARPA) |
| ICBM 42D | 8 Mar 60 | Cx 11 | |
| 51D | 10 Mar 60 | Cx 13 | |
| 48D | 7 Apr 60 | Cx 11 | NOT A LAUNCH - Exploded on pad before liftoff. |
| 56D | 20 May 60 | Cx 12 | |
| SV 45D/AGENA | 24 May 60 | Cx 14 | Launched MIDAS II. (ARPA) |
| ICBM 54D | 11 Jun 60 | Cx 11 | |
| 62D | 22 Jun 60 | Cx 14 | |
| 27D | 27 Jun 60 | Cx 12 | |
| 60D | 2 Jul 60 | Cx 11 | |
| SB 50D | 29 Jul 60 | Cx 14 | Launched Second MERCURY Capsule (MA-1). (NASA) |

ATLAS LAUNCHES (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

| | Missile | Launch Date | Launched From | Summary |
|---|---|---|---|---|
| ICBM | 32D | 9 Aug 60 | Cx 12 | |
| | 66D | 12 Aug 60 | Cx 11 | |
| | 76D | 16 Sep 60 | Cx 11 | |
| | 79D | 19 Sep 60 | Cx 14 | |
| SB | Atlas-ABLE VA 4-Stage 80D /AGENA | 25 Sep 60 | Cx 12 | |
| | 3E | 11 Oct 60 | Cx 13 | First Series E Launch. |
| ICBM | 71D | 13 Oct 60 | Cx 11 | |
| | 55D | 22 Oct 60 | Cx 14 | |
| | 83D | 15 Nov 60 | Cx 12 | |
| | 4E | 29 Nov 60 | Cx 13 | |
| SB | 2ND ABLE 5B VB 3-Stage 91D/AGENA | 15 Dec 60 | Cx 12 | |
| ICBM | 90D | 23 Jan 61 | Cx 12 | |
| | 8E | 24 Jan 61 | Cx 13 | |
| SB | MA-2 67D | 21 Feb 61 | Cx 14 | 3RD Series D Atlas -- Mercury Capsule. (NASA) |
| ICBM | 9E | 24 Feb 61 | Cx 13 | First Successful "E" Flight in 4 tries. |
| | 13E | 13 Mar 61 | Cx 13 | |
| | 16E | 24 Mar 61 | Cx 13 | |
| SB | MA-3 100D | 25 Apr 61 | Cx 14 | Launched Mercury Capsule. (NASA) |
| ICBM | 12E | 12 May 61 | Cx 11 | |
| | 18E | 26 May 61 | Cx 13 | |
| | 17E | 22 Jun 61 | Cx 11 | |
| | 22E | 6 Jul 61 | Cx 13 | |
| | 21E | 31 Jul 61 | Cx 11 | |
| | 2F | 8 Aug 61 | Cx 13 | First Series F Launch. |
| SB | AGENA B 111D | 23 Aug 61 | Pad 12 | Launched RANGER I Satellite (NA |

ATLAS LAUNCHES (CONTINUED ~~FOR OFFICIAL USE ONLY~~

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| ICBM 26E | 8 Sep 61 | Cx 13 | |
| SB MA-4 88-D | 13 Sep 61 | Pad 14 | Launched Unmanned Mercury Capsule. (NASA) |
| ICBM 29E | 2 Oct 61 | Cx 11 | |
| 30E | 5 Oct 61 | Cx 13 | |
| 32E | 10 Nov 61 | Cx 13 | |
| SB AGENA B 117D | 18 Nov 61 | Cx 12 | Launched RANGER II. (NASA) |
| ICBM 4F | 22 Nov 61 | Cx 11 | |
| SB MA-5 93-D | 29 Nov 61 | Cx 14 | Orbited Enos, the Chimp. (NASA) |
| ICBM 35E | 1 Dec 61 | Cx 13 | |
| 5F | 12 Dec 61 | Cx 11 | |
| 36E | 19 Dec 61 | Cx 13 | Carried Rhesus monkey in passen. pods. (ARPA) |
| 6F | 20 Dec 61 | Cx 11 | |
| B AGENA B 121D | 26 Jan 62 | Pad 12 | Launched RANGER III. (NASA) |
| ICBM 40E | 13 Feb 62 | Cx 13 | Last E Series. |
| B MA-6 109-D | 20 Feb 62 | Pad 14 | FIRST Manned Orbital Flight -- FRIENDSHIP 7, with Lt Col John Glenn, Jr. (NASA) |
| ICBM 11F | 9 Apr 62 | Cx 11 | Destroyed approx 1 sec after launch. |
| B AGENA B 133D | 23 Apr 62 | Cx 12 | Launched RANGER IV -- First US Payload to Land on Moon. (NASA) |
| B MA-7 107D | 24 May 62 | Pad 14 | Launched for Three Orbits by Astronaut Scott Carpenter. (NASA) |
| AGENA B 145D MR-1 | 22 Jul 62 | Cx 12 | Launched MARINER I - Venus Probe. (NASA) |
| ICBM 7F | 13 Aug 62 | Cx 11 | 1st Atlas launch by an all AF cr |
| AGENA B 179D MR-2 | 27 Aug 62 | Cx 12 | Launched MARINER II - Venus Probe. (NASA) |
| ICBM 8F | 19 Sep 62 | Cx 11 | |
| A-8 113D | 3 Oct 62 | Pad 14 | Launched MERCURY-ATLAS SIGMA 7 for 6 orbits by Astronaut Walter Schirra. (NASA) |

(ATLAS Launches Cont'd) ~~FOR OFFICIAL USE ONLY~~

| | Missile | Launch Date | Launched From | Summary |
|---|---|---|---|---|
| | CB AGENA B 215D RA-5 | 18 Oct 62 | Cx 12 | Launched RANGER V - Moon (NASA) |
| | ICBM 14F | 19 Oct 62 | Cx 11 | |
| | 16F | 7 Nov 62 | Cx 11 | |
| | 21F | 5 Dec 62 | Cx 11 | 10th & final Series "F" Miss |
| | 134F | 1 Mar 63 | Cx 11 | LAST ATLAS ICBM FLIGHT TEST. 11th "F" msl lnch'd;1st ABRE |
| | 135F | 26 Apr 63 | Cx 11 | 12th "F" msl lnch'd;2d ABRES |
| SB | MA-9 130D | 15 May 63 | Pad 14 | Launched MERCURY-ATLAS "FAITH for 22 Orbits with Astronaut Gordon Cooper. (NASA) |
| SV | AGENA B/197D SLV-3/S-01A | 16 Oct 63 | Pad 13 | Launched AF Vela Satellite-1. OF PROGRAM. (ARPA) |
| | ICBM/ABRES 136F | 28 Oct 63 | Pad 11 | Advanced Ballistic Re-entry System (ABRES). (ARPA) |
| | ICBM/ABRES 5E | 25 Feb 64 | Pad 11 | |
| | ICBM/ABRES 137F | 1 Apr 64 | Pad 11 | END OF PROGRAM. |
| SV | 216D/AGENA | 17 Jul 64 | Pad 13 | Launched AF Vela Satellit |
| SV | 225D /1803 AGENA | 20 Jul 65 | Pad 13 | Launched AF Vela Satellite-3. OF PROGRAM. (ARPA) |
| SB | 5301D /5002 AGENA | 25 Oct 65 | Pad 14 | Gemini Agena Target-6 -- FIRS (NASA) |
| SB | 5302 /5003 AGENA | 16 Mar 66 | Pad 14 | GATV-8. (Gemini Agena Target (NASA) |
| SB | 5303/5004 AGENA | 17 May 66 | Pad 14 | GATV-9. " " " (NASA) |
| SB | 5304 AGENA | 1 Jun 66 | Pad 14 | ATDA(GATV-9A) - Augmented Targ Docking Adapter Rendezvous Sa (NASA) |
| SB | 5305 AGENA | 18 Jul 66 | Pad 14 | GATV-10. (NASA) |
| SB | 5306 AGENA | 12 Sep 66 | Pad 14 | GATV-11. (NASA) |
| SB | 5307 AGENA | 11 Nov 66 | Pad 14 | GATV-12. END OF PROGRAM. (NA |
| SV | SLV-3A(Long Tank) AGENA D | 6 Aug 68 | Cx 13 | All AF Space Vehicle - ~~Classi Program. See Wing historie~~ |

ATLAS LAUNCHES (CONTINUED)

~~FOR OFFICIAL USE ONLY~~

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| (HV) Atlas/Agena D SLV-3A (Long Tank) | 12 Apr 69 | Cx 13 | C~~lassified AF program. Sa~~ ~~bitbooks.~~ USAF Payload |



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## ATLAS/AGENA

| Total to Date | Test Number | Pad Number | Missile Number | Date of Launch | Time of Launch | Program | Remarks | Remarks |
|---|---|---|---|---|---|---|---|---|
| 144 | 5346 | 13 | NA | 19 Jun 70 | 0637 EST | USAF | USAF Program | |
| 145 | 7328 | 13 | NA | 31 Aug 70 | 2000 EST | USAF | USAF Program | |
| 146 | 4709 | 13 | NA | 4 Dec 71 | 1730 EST | USAF | Booster malfunction, destroyed by RSO. | |
| 147 | 9228 | 13 | NA | 20 Dec 72 | 1720 EST | USAF | USAF Program | |
| 148 | 3225 | 13 | NA | 6 Mar 73 | 0430 EST | USAF | USAF Program | |

## ATLAS/CENTAUR

| Total to Date | Test Number | Pad Number | Missile Number | Date of Launch | Time of Launch | Program | Remarks | Remarks |
|---|---|---|---|---|---|---|---|---|
| 20 | 1711 | 36A | AC-18 | 12 Aug 69 | 0601 EST | NASA | ATS-5 | |
| 21 | 2969 | 36B | AC-21 | 30 Nov 70 | 1740 EST | NASA | OAO-B but sat didn't separat | |
| 22 | 2222 | 36A | AC-25 | 25 Jan 71 | 1936 EST | NASA | INTELSAT IV | (F-1) |
| 23 | 0366 | 36A | AC-24 | 8 May 71 | 2011 EST | NASA | Mariner 8, Centaur malfuncti | |
| 24 | 3156 | 36B | AC-23 | 30 May 71 | 1723 EST | NASA | Mariner 9 | |
| 25 | 1473 | 36A | AC-26 | 19 Dec 71 | 2010 EST | NASA | INTELSAT IV | (F-3) |
| 26 | 0615 | 36B | AC-28 | 22 Jan 72 | 1912 EST | NASA | INTELSAT IV | (F-4) |
| 27 | 2104 | 36A | AC-27 | 2 Mar 72 | 2049 EST | NASA | Pioneer 10 | |
| 28 | 1240 | 36B | AC-29 | 13 Jun 72 | 1653 EST | NASA | INTELSAT IV | (F-5) |
| 29 | 8508 | 36B | AC-22 | 21 Aug 72 | 0528 EST | NASA | OAO-C | |
| 30 | 8088 | 36B | AC-30 | 5 Apr 73 | 2111 EST | NASA | Pioneer 11 | |
| 31 | 3207 | 36A | AC-31 | 23 Aug 73 | 1757 EST | NASA | INTELSAT IV | (F-7) |
| 32 | 3369 | 36B | AC-34 | 3 Nov 73 | 0045 EST | NASA | Mariner 10 | |
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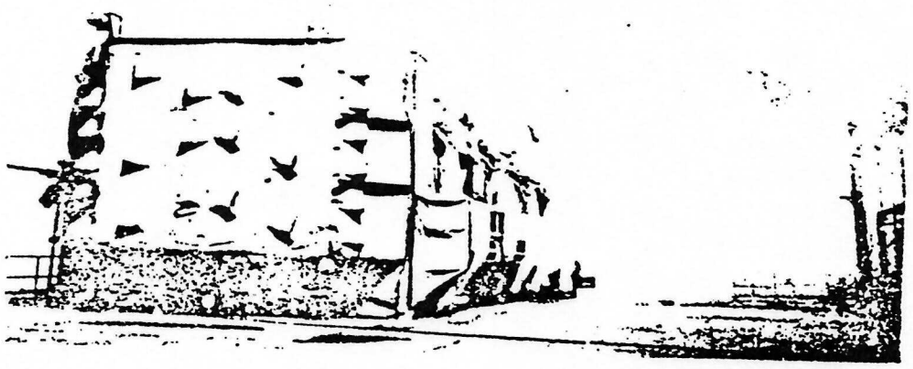

[illegible] INTERCONTINENTAL BALLISTIC MISSILE BY GLENN L. [illegible] ANAVERAL LAUNCHING SITE OF THE AIR FORCE

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Tab 12

| | |
|---|---|
| MISSILE | TITAN (SM-68) |
| SPONSOR | Air Force |
| CONTRACTORS | Prime: Glenn L. Martin Co. - Airframe |
| | Associates: Aerojet General - Propulsion<br>Bell Telephone Laboratories - Guidance, Radio Inertial<br>AC Spark Plug - Guidance, All Inertial<br>AVCO - Nose cone<br>General Electric - Nose cone<br>Sandia Corporation - Warhead |
| First R&D Launch | 6 Feb 58 |

Program currently underway

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Tab 12

| | |
|---|---|
| MISSILE | TITAN (SM-68) |
| SPONSOR | Air Force |
| CONTRACTORS | Prime: Glenn L. Martin Co. - Airframe |
| | Associate: Aerojet General - Propulsion<br>Bell Telephone Laboratories - Guidance, Radio Inertial<br>AC Spark Plug - Guidance, All Inertial<br>AVCO - Nose Cone<br>General Electric - Nose cone<br>Sandia Corporation - Warhead |
| First R&D launch | 6 Feb 59 |

Program currently underway

Declassified by AFSHRC

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TITAN LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1959 | |
| 1 | 1 | A-3 | 6 Feb 59 | First TITAN launch. Multistage heavy ICBM. Impacted as planned. |
| 2 | 2 | A-5 | 25 Feb 59 | Test objectives met 99%. |
| 3 | 3 | A-4 | 3 Apr 59 | Met all test objectives. |
| 4 | 4 | A-6 | 4 May 59 | Completed Lot A missile tests. Unbalanced thrust caused two stages to separate. |
| | | | JULY - DECEMBER 1959 | |
| 5 | 1 | B-5 | 14 Aug 59 | 1st B series missile. Premature lift-off caused explosion. |
| 6 | 2 | C-3 | 12 Dec 59 | Exploded at lift-off damaging pad. 1st Lot C missile. |

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TITAN LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1960 | |
| 7 | 1 | B-7A | 2 Feb 60 | Completed series B tests. Met all test objectives. |
| 8 | 2 | C-4 | 5 Feb 60 | Exploded at T+52 seconds. |
| 9 | 3 | G-4 | 24 Feb 60 | First full range flight of TITAN. Capsule recovered Station #11 area. |
| 10 | 4 | C-1 | 8 Mar 60 | Second stage failed to ignite. |
| 11 | 5 | G-5 | 22 Mar 60 | Data capsule recovered Station #12 area. |
| 12 | 6 | C-5 | 8 Apr 60 | Second stage experienced early shutdown. |
| 13 | 7 | G-6 | 21 Apr 60 | Landed in Station #12 area. |
| 14 | 8 | C-6 | 28 Apr 60 | Completed C series tests. Landed Station #12 area. |
| 15 | 9 | G-7 | 13 May 60 | First TITAN to impact in Ascension splash net. Data cassette recovered. |
| 16 | 10 | G-9 | 27 May 60 | Impacted Station #12 splash net. Data cassette not recovered. |
| 17 | 11 | G-10 | 24 Jun 60 | Met all test objectives. Data cassette recovered within 2 hours. |

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## TITAN LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JULY - DECEMBER 1960** | |
| 18 | 1801 | J-2 | 1 Jul 60 | Break in hydraulic control line just after lift-off caused missile to arc to the northwest. ASO destruct ordered at T+11 sec. The debris impacted 2,500 ft. from launch complex. |
| 19 | 2509 | J-4 | 26 Jul 60 | First stage engine shut down at T+112 sec causing impact 90 mi down range. |
| 20 | 2817 | J-7 | 10 Aug 60 | Met test objectives except for data cassette recovery and full vernier operation. Programmed for NILS net at 4,305 mi. Impact 112 mi short of target. |
| 21 | 2819 | J-5 | 30 Aug 60 | Impact in NILS net at 4,375 mi range 1 NM from aiming point. Data cassette not recovered. |
| 22 | 2820 | J-8 | 28 Sep 60 | To test missile system accuracy. Impact was in NILS net at 4,3[illegible] NM range. Data cassette recovered by ORV Whiskey just 33 min after impact. |
| 23 | 1007 | G-8 | 29 Sep 60 | Scheduled 5,700 mi flight. 1st stage burning time was 11.75 sec short and 2nd stage was [illegible] sec short. Missile impacted 5,300 NM along flight path. |
| 24 | 1503 | J-3 | 7 Oct 60 | Impact was in NILS net at 4,385 mi range. Data cassette was recovered. |
| 25 | 3506 | J-6 | 24 Oct 60 | 1st operationally configured TITAN scheduled for extended range of 5,335 mi. Impact was within target area and data cassette was recovered. |
| 26 | 5104 | J-9 | 20 Dec 60 | To test guidance accuracy. 2nd stage did not ignite. This was the 1,000th missile launch at AFR. |



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TITAN LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1961 | |
| 27 | 5105 | J-10 | 20 Jan 61 | Second stage failed to ignite. Impact was 377 NM down range. |
| 28 | 101 | J-11 | 10 Feb 61 | Carried 22 million candle power strobe light blinker for optical tracking. Impact 5,000 NM down range. |
| 29 | 103 | J-13 | 20 Feb 61 | Carried strobe light for tracking. Impact was at 4,365 NM range within 21M of target. |
| 30 | 110 | J-12 | 3 Mar 61 | Early shut-off of sustainer engine caused impact 730 NM down range. |
| 31 | 109 | J-14 | 28 Mar 61 | Impact was in target area. Data cassette was recovered. |
| 32 | 621 | J-15 | 31 Mar 61 | Programmed for 8,700 NM range. Booster engine shut-down at T+70 sec caused impact 12 NM down range. |
| 33 | 1361 | J-16 | 22 May 61 | Missile system performed as planned. Data cassette was ejected from re-entry vehicle early and sank on impact. |
| 34 | 1361 | M-1 | 23 Jun 61 | Second stage engine shut down after 12 sec of a 155 sec programmed burning time. Impact was 450 NM down range. First of M-1 series. |

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PERIOD: JULY 1960 - DECEMBER 1968

RECAP - TITAN LAUNCHES BY VENG PERSONNEL -- BY YEAR/PROGRAM SERIES/OVERALL TOTAL

~~FOR OFFICIAL USE ONLY~~

| YEAR/PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES | GRAND TOTAL ALL TITAN LAUNCHES |
|---|---|---|---|---|---|
| **1959** | | | | | |
| *Titan I ICBM | First | 6 | 6 | | |
| **1960** | | | | | |
| Titan I ICBM | | 20 | 20 | | |
| **1961** | | | | | |
| Titan I ICBM | | 20 | 20 | | |
| **1962** | | | | | |
| Titan I ICBM | Last | 1 | | Total Titan I ICBMs: 47 | |
| Titan II ICBM | First | 9 | 10 | | |
| **1963** | | | | | |
| Titan II ICBM | | 10 | 10 | | |
| **1964** | | | | | |
| Titan II ICBM | Last | 4 | | Total Titan II ICBMs: 23 | Total ICBMs: |
| *Titan II SB | First | 1 | | | |
| *Titan III-A | First | 2 | 7 | | |
| **1965** | | | | | |
| Titan II SB | | 6 | | | |
| Titan III-A SV | Last | 2 | | Total TitanIII-A SV: 4 | |
| Titan III-C SV | First | 3 | 11 | | |
| **1966** | | | | | |
| Titan II SB | Last | 5 | | Total Titan II SB: 12 | |
| Titan III-C SV | | 3 | 8 | | |
| **1967** | | | | | |
| Titan III-C SV | | 3 | 3 | | |
| **1968** | | | | | |
| Titan III-C SV | (ContinuingProg.) | 2 | 2 | Total TitanIII-C SV: 11 | Total Space: |
| | | | | | GRAND TOTAL: |

*ICBM - Intercontinental Ballistic Missile; *SB - Space Booster; *SV - Space Vehicle.

Compiled By: M. A. Kingsley (As of 31 Dec 1968)

~~FOR OFFICIAL USE ONLY~~

(ATTACHED)

TITAN LAUNCHES -- RECAP (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

PERIOD: JANUARY 1969 - _____

GRAND TOTAL BROT FORWARD:

| YEAR/PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES | GRAND TOTAL: ALL TITAN LAUNCHES |
|---|---|---|---|---|---|
| 1969 | | | | | |
| *SV TITAN III-C | (Cont'd) | 2 | 2 | | |
| 1970 | | | | | |

*Space Vehicle

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LIST OF TITAN LAUNCHES -- (Total: 97 +

TITAN I (ICBM)(XSM-68)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| A-3 | 6 Feb 59 | Cx 15 | FIRST TITAN LAUNCH. ~~Classified AF program - See Wing histories.~~ Titan R&D program |
| A-5 | 25 Feb 59 | Cx 15 | |
| A-4 | 3 Apr 59 | Cx 15 | |
| A-6 | 4 May 59 | Cx 15 | Completed Lot A missile tests. |
| B-5 | 14 Aug 59 | Cx 19 | First B Series missile. |
| C-3 | 12 Dec 59 | Cx 16 | First Lot C missile. |
| B-7A | 2 Feb 60 | Pad 19 | Completed Series B tests. |
| C-4 | 5 Feb 60 | Pad 16 | |
| G-4 | 24 Feb 60 | Pad 15 | First G Series tests. |
| C-1 | 8 Mar 60 | Pad 16 | |
| G-5 | 22 Mar 60 | Pad 15 | |
| C-5 | 8 Apr 60 | Pad 16 | |
| G-6 | 21 Apr 60 | Pad 15 | |
| C-6 | 28 Apr 60 | Pad 16 | Completed C Series tests. |
| G-7 | 13 May 60 | Pad 15 | |
| G-9 | 27 May 60 | Pad 16 | |
| G-10 | 24 Jun 60 | Pad 15 | |
| J-2 | 1 Jul 60 | Pad 20 | First J Series test. |
| J-4 | 28 Jul 60 | Pad 20 | |
| J-7 | 10 Aug 60 | Pad 19 | |
| J-5 | 30 Aug 60 | Pad 20 | |
| J-8 | 28 Sep 60 | Pad 19 | |
| G-8 | 29 Sep 60 | Pad 15 | Completed G Series tests. |
| J-3 | 7 Oct 60 | Pad 20 | |
| J-6 | 24 Oct 60 | Pad 19 | |

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( TITAN Launches Cont'd)

TITAN I (Cont'd)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| J-9 | 20 Dec 60 | Pad 20 | |
| J-10 | 20 Jan 61 | Cx 19 | |
| J-11 | 10 Feb 61 | Cx 20 | |
| J-13 | 20 Feb 61 | Cx 19 | |
| J-12 | 3 Mar 61 | Cx 20 | |
| J-14 | 28 Mar 61 | Cx 19 | |
| J-15 | 31 Mar 61 | Cx 20 | |
| J-16 | 23 May 61 | Cx 20 | |
| M-1 | 23 Jun 61 | Cx 19 | First M Series & First inertially guided Titan missile |
| J-18 | 20 Jul 61 | Cx 20 | |
| M-2 | 25 Jul 61 | Cx 19 | |
| J-19 | 3 Aug 61 | Cx 20 | |
| J-17 | 6 Sep 61 | Cx 20 | |
| M-3 | 7 Sep 61 | Cx 19 | |
| J-20 | 28 Sep 61 | Cx 20 | |
| M-4 | 6 Oct 61 | Cx 19 | |
| J-21 | 24 Oct 61 | Cx 20 | |
| J-22 | 21 Nov 61 | Cx 20 | First All-Air Force Titan laun |
| M-5 | 29 Nov 61 | Cx 19 | |
| J-23 | 13 Dec 61 | Cx 20 | |
| M-6 | 15 Dec 61 | Cx 19 | |
| M-7 | 29 Jan 62 | Cx 19 | LAST TITAN I LAUNCH. |

(TITAN Launches Cont'd)

TITAN II (ICBM) (SPACE BOOSTER)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| N-2 | 16 Mar 62 | Cx 16 | FIRST TITAN II ICBM LAUNCH. ~~Classified AF program -- see Wing historian.~~ Titan R&D program |
| N-1 | 7 Jun 62 | Cx 15 | |
| N-6 | 11 Jul 62 | Pad 15 | |
| N-4 | 25 Jul 62 | Pad 16 | |
| N-5 | 12 Sep 62 | Pad 15 | |
| N-9 | 12 Oct 62 | Pad 16 | |
| N-12 | 26 Oct 62 | Pad 15 | |
| N-11 | 6 Dec 62 | Pad 16 | |
| N-13 | 19 Dec 62 | Pad 15 | |
| N-15 | 10 Jan 63 | Pad 16 | |
| N-16 | 6 Feb 63 | Pad 15 | |
| N-18 | 21 Mar 63 | Pad 15 | |
| N-21 | 19 Apr 63 | Pad 15 | |
| N-14 | 9 May 63 | Pad 16 | |
| N-17 | 24 May 63 | Pad 15 | |
| N-20 | 29 May 63 | Pad 16 | |
| N-24 | 21 Aug 63 | Pad 15 | |
| N-25 | 1 Nov 63 | Pad 15 | |
| N-29 | 12 Dec 63 | Pad 15 | |
| N-31 | 15 Jan 64 | Pad 15 | |
| N-32 | 26 Feb 64 | Pad 15 | |
| N-33 | 23 Mar 64 | Pad 15 | |
| N-3A | 9 Apr 64 | Pad 15 | LAST TITAN II (ICBM), R&D Phase. |
| GLV-1 S/N 62-12556 | 8 Apr 64 | Cx 19 | FIRST TITAN II SPACE BOOSTER - Launched First Gemini Unmanned Capsule. |

TITAN II (SPACE BOOSTER) / TITAN III (SPACE VEHICLE)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| T-III-A (Veh #2) SSLV-2 65-210 | 1 Sep 64 | Cx 20 | FIRST TITAN III-A ALL-AF SPACE VEHICLE LAUNCH. |
| T-III-A (Veh #1) SSLV-1 65-209 | 10 Dec 64 | Cx 20 | |
| T-II GLV-2 65-12557 | 19 Jan 65 | Cx 19 | Unmanned Launch. All objectives met. (Gemini Capsule) |
| T-III-A (Veh #3) 65-211 | 11 Feb 65 | Cx 20 | Orbited LES-1 (Lincoln Experimental Satellite). |
| T-II GLV-3 62-12558 | 23 Mar 65 | Cx 19 | Orbited FIRST 2-MAN SPACECRAFT w/Astron's MajGrissom/LtComdr Young for 3 orbits of earth. |
| T-III-A (Veh #6) | 6 May 65 | Cx 20 | LAST TITAN III-A LAUNCH. Orbite MIT's LES-1 & RCS Satellites. |
| T-II GLV-4 599 | 3 Jun 65 | Cx 19 | Orbited Astr's MajMcDivitt &Maj White--62 revolutions of earth; FIRST US SPACE WALK;WORLD's LONGEST "MAN" SPACE WALK. |
| T-III-C (Veh #7) Unn | 18 Jun 65 | Cx 40 | FIRST TITAN III-C ALL-AF SPACE VEHICLE LAUNCH, AND FIRST LAUNCH FROM PAD 40.Orbited ballast pay- |
| T-II GLV-5 | 21 Aug 65 | Cx 19 | Orbited Astr's MajCooper & LtCo Conrad--8 days & 120 revolution. |
| T-III-C (Veh #4) 65-212 | 15 Oct 65 | Cx 40 | Placed 26,216 lbs in orbit. |
| Titan II GLV-7 | 4 Dec 65 | Cx 19 | Orbited Astr's MajBorman &LtCom Lovell--14 days orbit - WORLD's LONGEST. |
| Titan II GLV-6A 62-12561 | 15 Dec 65 | Cx 19 | Orbited for Rendezvou Mission w/GT-7 Spacecraft. |
| T-III-C (Veh #8) 66-001 | 21 Dec 65 | Cx 41 | FIRST LAUNCH FROM PAD 41. Three satellites released in elliptic transfer orbit. |
| T-II GLV-8 62-12563 | 16 Mar 66 | Cx 19 | Orbited Astr's NeilArmstrong & David Scott for link-up w/Atlas Agena Target Vehicle. |
| T-II GLV-9 | 3 Jun 66 | Cx 19 | Orbited Astr's Stafford & Cernan link-up w/ATDA not accomplished because shroud remained. |





(TITAN Launches Cont'd)

TITAN II (SPACE BOOSTER) / TITAN III (SPACE VEHICLE) - CONTINUED

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| T-III-C (Veh #11) 66-004 | 16 Jun 66 | Cx 41 | Orbited 8 satellites: 1 gravit gradient, & 7 communications. |
| T-II GLV-10 62-12565 | 18 Jul 66 | Cx 19 | Orbited Astronauts John W. Yow. & Michael Collins; performed ex veh. activ., rendezvous & dockin & used Agena propulsion system to change orbits. |
| T-III-C (Veh #12) 66-005 | 26 Aug 66 | Cx 41 | Launch aborted 82 secs after liftoff. |
| T-II GLV-11 62-12566 | 12 Sep 66 | Cx 19 | Orbited Astronauts Conrad and Gordon; rendezvou/docking accom |
| T-III-C (Veh #9) 66-002 | 3 Nov 66 | Cx 40 | Injected modified Gemini space craft into suborbital trajecto carried 11 ARS experiments -- 3 successful. |
| T-II GLV-12 | 11 Nov 66 | Cx 19 | Orbited Astronauts J. A. Lovel. and E.E. Aldrin; rendezvous & docking used Agena propulstion to change orbit. (NASA) END OF GEMINI PROGRAM, AND LAST TITAN II SPACE BOOSTER. |
| T-III-C (Veh #13) 66-006 | 18 Jan 67 | Cx 41 | Eight COMSATS placed in orbit. |
| T-III-C (Veh #10) | 28 Apr 67 | Cx 41 | Two Vela spacecraft & three ER (Environmental Research Satell. placed in orbit. |
| T-III-C (Veh #14) | 1 Jul 67 | Cx 41 | Six satellites placed in orbit: 1 DOD Gravity Exper. (DODGE), 1 LES-5 communs exper., & 4 mil communications satellites. |
| T-III-C (Veh #16) 66-009 | 13 Jun 68 | Cx 41 | Payload of 8 COMSATS for Dept of Defense. |
| T-III-C (Veh #5) 65-213 | 26 Sep 68 | Cx 41 | Orbited 4 satellites: OV2-5; LES-6; OV5-4; & OV5-2. |

TITAN III (SPACE VEHICLE) (Cont'd)

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| Titan III-C Veh #17 | 9 Feb 69 | Cx 41 | Liftoff weight was 1,410,150, including 1 experimental tactical communications satellite. Placed 1600 lb satellite in an equatorial synchronous orbit at 19,367 NM. |
| Titan III-C Veh #15 | 23 May 69 | Cx 41 | 5 satellites placed in 60286/9129 NM elliptical orbit; 2 VELA & 3 small scientific satellites. |

TITAN III (SLV-5) A/C

| Total to Date | Test Number | Pad Number | Missile Number | Date of Launch | Time of Launch | Program | Remarks | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 TIIIA | 4751 | 20 | #2 65-210 | 1 Sep 64 | 1000 EST | USAF | R & D | |
| 2 TIIIA | 6505 | 20 | # 1 65-209 | 10 Dec 64 | 1153 EST | USAF | R & D | |
| 3 TIIIA | 0051 | 20 | # 3 65-211 | 11 Feb 65 | 1019 EST | USAF | R & D | |
| 4 TIIIA | 0130 | 20 | # 6 | 6 May 65 | 1000 EST | USAF | R & D | |
| 5 TIIIC | 0449 | 40 | C-1 # 7 | 18 Jun 65 | 0900 EST | USAF | R & D | |
| 6 C | 3656 | 40 | C-2 # 4 65-212 | 15 Oct 65 | 1224 EST | USAF | R & D | |
| 7 C | 6020 | 41 | C-3 # 8 66-001 | 21 Dec 65 | 0900 EST | USAF | R & D | |
| 8 C | 7379 | 41 | C-4 # 11 66-004 | 16 Jun 66 | 0900 EST | USAF | R & D | |
| 9 C | 2631 | 41 | C-5 # 12 66-005 | 26 Aug 66 | 0900 EST | USAF | R & D | |
| 10 C | 0855 | 41 | C-6 66-002 # 9 | 3 Nov 66 | 0851 EST | USAF | R & D | |
| 11 C | 5870 | 40 | C-7 #13 66-006 | 18 Jan 67 | 0919 EST | USAF | R & D | |
| 12 C | 8275 | 41 | C-8 # 10 66-003 | 28 Apr 67 | 0501 EST | USAF | R & D | |
| 13 C | 4029 | 41 | #14 (~~[illegible]~~) 66-009 | 1 Jul 67 | 0915 EST | USAF | R & D | |
| 14 C | 2035 | 41 | ~~(C-10)~~ # 16 | 13 Jun 68 | 1004 EST | USAF | R & D | |
| 15 C | 3105 | 41 | # 5 (~~[illegible]~~) 66-213 | 26 Sep 68 | 0337 EST | USAF | R & D | |
| 16 C | 1188 | 41 | # 17 (~~[illegible]~~) | 9 Feb 69 | 1609 EST | USAF | R & D | |
| 17 C | 3013 | 41 | # 15 (~~[illegible]~~) | 23 May 69 | 0357 EST | USAF | R & D | |
| 18 C | 4913 | 40 | # 18 (~~[illegible]~~) | 8 Apr 70 | 0550 EST | USAF | Vela 11 & 12 | |
| 19 C | 5960 | 40 | # 19 (~~[illegible]~~) | 6 Nov 70 | 1036 EST | USAF | USAF Program | |
| 20 C | 4598 | 40 | # 20 (~~[illegible]~~) | 5 May 71 | 0243 EST | USAF | USAF Program | |

AFSC FORM JUL 61 1855 GENERAL PURPOSE WORKSHEET (10½" X 8") PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

TITAN IIIA/C

| Total to Date | Test Number | Pad Number | Missile Number | Date of Launch | Time of Launch | Program | Remarks | Remarks |
|---|---|---|---|---|---|---|---|---|
| 21 | 1050 | 40 | # 21 | 2 Nov 71 | 2209 EST | USAF | DSCS II Comsats | |
| 22 | 1485 | 40 | # 22 | 1 Mar 72 | 0438 EST | USAF | USAF Program | |
| 23 | 6157 | 40 | # 24 | 12 Jun 73 | 0214 EST | USAF | USAF Program | |
| 24 | 9433 | 40 | # 26 | 13 Dec 73 | 1857 EST | USAF | DSCS II Comsats | |
| 25 | 7670 | 40 | # 27 | 30 May 74 | 0800 EST | USAF/NASA | ATS-6 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | TITAN IIIE/Centaur | | | | | |
| 1 | 4016 | 41 | E-1 | 11 Feb 74 | 0848 EST | NASA | Proof launch. Destroyed due to Centaur malfunction. | |

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Tab 13

| | |
|---|---|
| MISSILE | THOR (SM-75) |
| SPONSOR | Air Force |
| CONTRACTORS | Prime: Douglas Aircraft Co. - Airframe |
| | Associates: North American Aviation - Propulsion<br>Bell Telephone Laboratories - Guidance, Radio inertial<br>AC Spark Plug - Guidance all inertial<br>General Electric - Nose cone<br>Sandia Corporation - Warhead |
| First R&D launch | 25 Jan 57 |
| Final R&D launch | 29 Feb 60 |

Total launchings in R&D program at AMR 48

Program completed

Future launchings will be space vehicles in the THOR-ABLE and DELTA THOR series.

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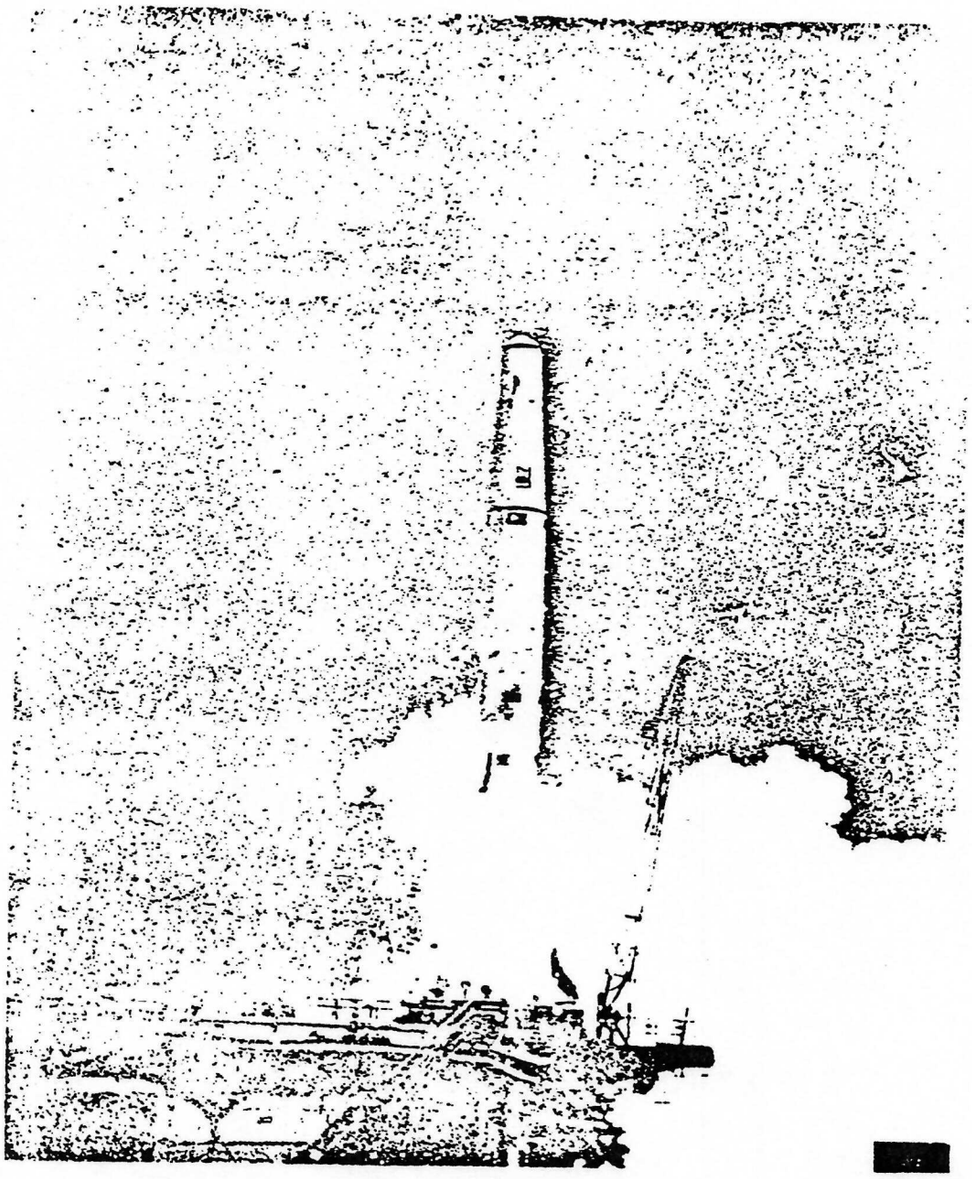

[illegible] INTERMEDIATE RANGE BALLISTIC MISSILE BY DOUGLAS.
[illegible] CANAVERAL LAUNCHING SITE OF THE AIR FORCE MISSILE
[illegible]

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THOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1957 | |
| 1 | 1 | 101 | 25 Jan 57 | First THOR launching. Fell back on pad and burned. |
| 2 | 2 | 102 56-6752 | 19 Apr 57 | False ELSSE-DOVAP data caused Range Safety destruct at T+35 sec. |
| Not a launch | | 103 56-6753 | 21 May 57 | Exploded on the launch pad five minutes before launch time. |
| | | | JULY - DECEMBER 1957 | |
| 3 | 1 | 104 56-6754 | 30 Aug 57 | Broke in half at T+93 seconds. Landed 20 miles off-shore. |
| 4 | 2 | 105 56-6755 | 20 Sep 57 | Met test objectives. |
| 5 | 3 | 107 56-6757 | 3 Oct 57 | Lost thrust, fell back on pad and burned. |
| 6 | 4 | 108 56-6758 | 11 Oct 57 | Met test objectives. |
| 7 | 5 | 109 56-6759 | 24 Oct 57 | Completed Phase I tests. |
| 8 | 6 | 112 56-6783 | 7 Dec 57 | First Phase II, guidance, test. First THOR to carry guidance system. |
| 9 | 7 | 113 56-6784 | 19 Dec 57 | Met all test objectives. |
| | | | JANUARY - JUNE 1958 | |
| 10 | 1 | 114 | 28 Jan 58 | Guidance erratic. Destruct ordered at T+151.5 seconds. |
| 11 | 2 | 120 | 28 Feb 58 | First Phase III test. Early cut-off & shallow water impact marred test. |
| 12 | 3 | 121 | 19 Apr 58 | Rose 4 ft. then exploded and fell. |
| 13 | 4 | 115 | 4 Jun 58 | First launch from Pad 18B. |
| 14 | 5 | 122 | 13 Jun 58 | First recovery of THOR data capsule. |

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MT 60-2544

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THOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 15 | 1 | 123 | 12 Jul 58 | First THOR to use flashing light for ballistic camera instrumentation. Data capsule recovered. |
| 16 | 2 | 126 | 26 Jul 58 | Impacted [illegible] off shore. Major components recovered. Last Phase III test. |
| 17 | 3 | 117 | 6 Aug 58 | Last Phase II test. Nose did not separate. |
| 18 | 4 | 138 | 5 Nov 58 | First Phase IV test. Tumbled out of control at 5,000 ft. altitude. |
| 19 | 5 | 140 | 26 Nov 58 | Met test objectives. |
| 20 | 6 | 145 | 5 Dec 58 | Used 1st thin shield nose cone. |
| 21 | 7 | 146 | 16 Dec 58 | Met test objectives. |
| 22 | 8 | 149 | 30 Dec 58 | Range Safety destruct at T+50 sec. |
| | | | JANUARY - JUNE 1959 | |
| 23 | 1 | 154 | 30 Jan 59 | Re-entry body failed to separate. Impacted short of target. |
| 24 | 2 | 158 | 21 Mar 59 | Met test objectives. |
| 25 | 3 | 162 | 26 Mar 59 | Impact as planned. Data capsule recovered. |
| 26 | 4 | 176 | 23 Apr 59 | 1st THOR to carry camera in data capsule. Capsule recovered. |
| 27 | 5 | 164 | 25 Apr 59 | Met test objectives. No recovery required. |
| 28 | 6 | 187 | 12 May 59 | First use of new 200 min. countdown. Carried camera which photographed separation. |
| 29 | 7 | 194 | 22 May 59 | Met test objectives. No recovery required. |
| 30 | 8 | 198 | 25 Jun 59 | Data capsule recovered. |
| 31 | 9 | 194 | 29 Jun 59 | Impact as planned. Nose did not separate. |

UNCLASSIFIED [redacted]

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THOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1959 | |
| 32 | 1 | 203 | 21 Jul 59 | Range Safety destruct at T+45.6 seconds. |
| 33 | 2 | 202 | 24 Jul 59 | Met test objectives. |
| 34 | 3 | 208 | 5 Aug 59 | Met test objectives. |
| 35 | 4 | 204 | 14 Aug 59 | Met test objectives. |
| 36 | 5 | 216 | 27 Aug 59 | Met test objectives. |
| 37 | 6 | 217 | 12 Sep 59 | Met test objectives. |
| 38 | 7 | 222 | 22 Sep 59 | No guidance data obtained. |
| 39 | 8 | 235 | 6 Oct 59 | Met test objectives. No data capsule carried. |
| 40 | 9 | 221 | 13 Oct 59 | Met test objectives. No data capsule carried. |
| 41 | 10 | 230 | 28 Oct 59 | Met test objectives. No data capsule carried. |
| 42 | 11 | 238 | 3 Nov 59 | Met test objectives. |
| 43 | 12 | 244 | 19 Nov 59 | Met test objectives. |
| 44 | 13 | 254 | 1 Dec 59 | Premature engine cut-off shortened range. 300 mi. |
| 45 | 14 | 255 | 17 Dec 59 | Met test objectives. |

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THOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1960 | |
| 46 | 1 | 256 | 14 Jan 60 | 1st THOR with full 165,000 lb. thrust engine. Data capsule recovered. |
| 47 | 2 | 259 | 9 Feb 60 | Met test objectives. |
| 48 | 3 | 263 | 29 Feb 60 | Completed R&D test program of SM-75 (THOR). |

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Tab 14

| | |
|---|---|
| MISSILE | THOR-ABLE |
| SPONSOR | Air Force and NASA |
| CONTRACTOR | Douglas Aircraft Company |
| First launch | 23 Apr 58 |

Program currently underway.

UNCLASSIFIED

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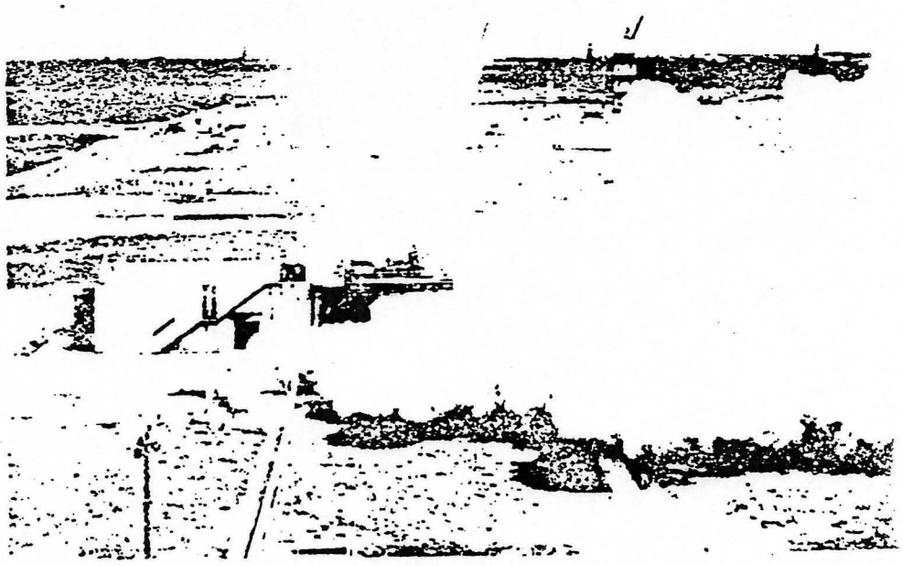
MT 60-2511

Tab 21.

| | |
|---|---|
| MISSILE | [illegible]-AMLE |
| SPONSOR | Air Force and NASA |
| CONTRACTOR | Douglas Aircraft Company |
| First Launch | 03 Apr 59 |

Program currently underway



[illegible] AIR FORCE'S THOR ABLE SATELLITE LAUNCH VEHICLE AT CAPE [illegible] LAUNCH SITE OF THE AIR FORCE MISSILE TEST CENTER.

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THOR-ABLE LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1958 | |
| 1 | 1 | THOR-ABLE 116 | 23 Apr 58 | First THOR-ABLE launch. 1st stage cut off prematurely. 2nd stage did not ignite. |
| | | | JULY - DECEMBER 1958 | |
| 2 | 1 | THOR-ABLE 118 | 9 Jul 58 | Second THOR-ABLE. 1st re-entry vehicle to cover full ICBM range. Nose cone not recovered. |
| 3 | 2 | THOR-ABLE 119 | 23 Jul 58 | Third THOR-ABLE. Carried Vickie the mouse in nose. No recovery. |
| 4 | 3 | THOR-ABLE I 127 | 17 Aug 58 | 1st lunar probe. Objective not achieved. |
| 5 | 4 | THOR-ABLE I 130 | 11 Oct 58 | 2nd lunar probe (PIONEER I). Reached 90,000 mi. into space, the farthest to date. |
| 6 | 5 | THOR-ABLE I 129 | 8 Nov 58 | 3rd lunar probe (PIONEER II). 3rd stage did not ignite. |
| | | | JANUARY - JUNE 1959 | |
| 7 | 1 | THOR-ABLE II 128 | 23 Jan 59 | First THOR-ABLE II. Had guided 2nd stage which failed to ignite. |
| 8 | 2 | THOR-ABLE II 131 | 28 Feb 59 | THOR-ABLE II. Loss of instrument during 2nd stage flight caused Range Safety destruct. |
| 9 | 3 | THOR-ABLE II 132 | 21 Mar 59 | THOR-ABLE II. Met test objectives. Nose not recovered. |
| 10 | 4 | THOR-ABLE II 133 | 8 Apr 59 | First recovery of ablating nose cone from intercontinental range. |
| 11 | 5 | THOR-ABLE II 135 | 21 May 59 | Met test objectives. Nose cone recovered. |
| 12 | 6 | THOR-ABLE II 137 | 11 Jun 59 | Last THOR-ABLE II. Nose cone not recovered. |

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THOR-ABLE LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1959 | | |
| 13 | 1 | THOR-ABLE 3 134 | 7 Aug 59 | ABLE-3 placed EXPLORER VI paddlewheel satellite in earth orbit. |
| 14 | 2 | THOR-ABLE 136 | 17 Sep 59 | TRANSIT 1A, navigational satellite. 3rd stage failed. Orbit not achieved. |
| | | JANUARY - JUNE 1960 | | |
| 15 | 1 | THOR-ABLE #4 219 | 11 Mar 60 | 3-stage vehicle. Deep space probe to place PIONEER V in orbital path of Venus as a satellite around the sun. |
| 16 | 2 | THOR-ABLE 148 | 1 Apr 60 | Placed TIROS I in earth orbit as meteorological satellite to photograph cloud coverage. 3-stage vehicle. |
| 17 | 3 | THOR-ABLE-STAR 257 | 13 Apr 60 | 2-stage vehicle. Placed TRANSIT 1B, navigational aid satellite, in earth orbit. |
| 18 | 4 | THOR-ABLE-STAR 281 | 22 Jun 60 | 2-stage vehicle. Placed TRANSIT 2A, navigational aid satellite, in earth orbit. Also carried piggy-back satellite payload. |

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THOR-ABLE LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1960 | | |
| 19 | 2517 | THOR-ABLE/STAR 262 | 18 Aug 60 | Purpose to place COURIER 1A, an active communications satellite, in orbit around the earth. Missile break-up during first stage operation prevented orbit. |
| 20 | 3508 | THOR-ABLE/STAR 292 | 4 Oct 60 | Purpose to place COURIER 1B in earth orbit. Orbit achieved with apogee of 657 mi and perigee of 503 mi. |
| 21 | 4502 | THOR-ABLE/STAR 253 | 30 Nov 60 | Purpose to place TRANSIT 3-A in earth orbit. 1st stage engine cutoff 11 sec early failed to provide orbital velocity for payload. |
| | | JANUARY - JUNE 1961 | | |
| 22 | 408 | THOR-ABLE/STAR 313 | 21 Feb 61 | Placed 2 payloads in earth orbit - TRANSIT 3-B and LOFTI. Payloads and 2nd stage of missile separation did not occur, and will limit life and performance of payloads. |
| 23 | 1255 | THOR-ABLE/STAR 315 | 28 Jun 61 | Carried triple satellite payload, TRANSIT 4-A, INJUN, and SNAP. 1st satellite powered by nuclear energy. |

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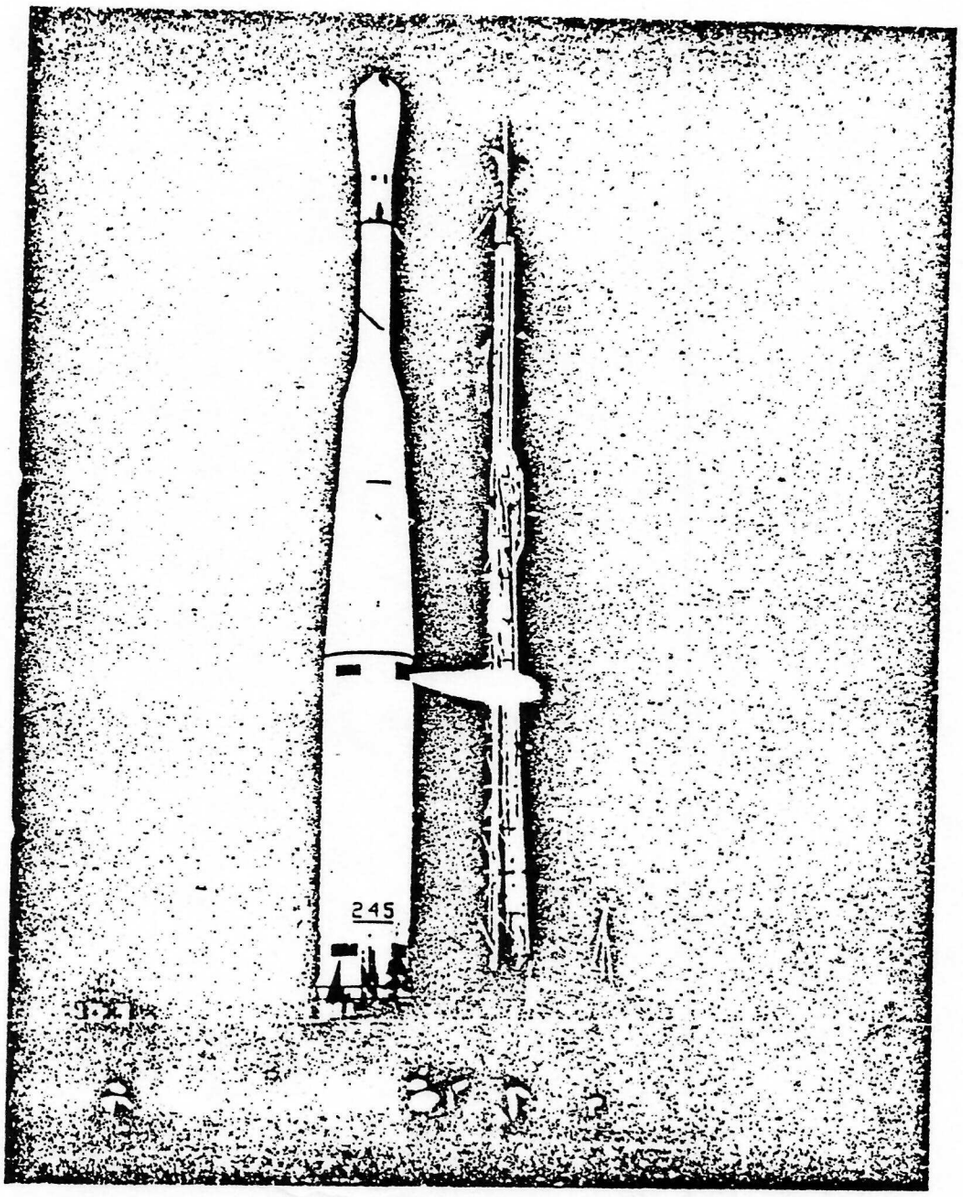
THOR LAUNCHES (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| IRBM #204 | 14 Aug 59 | Pad 18B | |
| 216 | 27 Aug 59 | Pad 17B | |
| 217 | 12 Sep 59 | Pad 18B | |
| THOR-ABLE 136 | 17 Sep 59 | Pad 17A | TRANSIT 1A -- Navigation Satellite. 3d stage failed; orbit not achieved. (ARPA) |
| IRBM #222 | 22 Sep 59 | Pad 17B | |
| 235 | 6 Oct 59 | Pad 18B | |
| 221 | 13 Oct 59 | Pad 17B | |
| 230 | 28 Oct 59 | Pad 18B | |
| 238 | 3 Nov 59 | Pad 17B | |
| 244 | 19 Nov 59 | Pad 17B | |
| 254 | 1 Dec 59 | Pad 18B | |
| 255 | 17 Dec 59 | Pad 17B | |
| 256 | 14 Jan 60 | Cx 18 B | |
| 259 | 9 Feb 60 | Cx 18 B | |
| 263 | 29 Feb 60 | Cx 18 B | Completed R&D test program of SM-75 (THOR). |
| THOR-ABLE #4 219 | 11 Mar 60 | Cx 17 A | PIONEER V -- Venus Satellite. |
| THOR-ABLE 148 | 1 Apr 60 | Cx 17 A | TIROS I -- Meteorological Satellite. |
| THOR-ABLE-STAR 257 | 13 Apr 60 | Cx 17 B | TRANSIT 1B -- Navigation Aid Satellite. |
| THOR-ABLE-STAR 281 | 22 Jun 60 | Cx 17 B | TRANSIT 2A -- Navigation Aid Satellite; Piggyback Satellite Payload. |
| THOR-ABLE-STAR 262 | 18 Aug 60 | Cx 17 B | COURIER 1A. |
| THOR-ABLE-STAR 293 | 4 Oct 60 | Cx 17 B | COURIER 1B. |
| THOR-ABLE-STAR 283 | 30 Nov 60 | Cx 17 B | TRANSIT 3-A. |

(THOR Launches Cont'd)




[illegible] EARTH-[illegible] HEAT [illegible] A INCH THRUST FROM CAPE [illegible] OF THE AIR FORCE MISSILE TEST CENTER

DWL

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LIST OF THOR LAUNCHES (TOTAL 81 )

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| IRBM #101 | 25 Jan 57 | Pad 17B | First THOR launching. |
| 102 56-6752 | 19 Apr 57 | Pad 17B | |
| 103 56-6753 | 21 May 57 | Pad 17B | NOT A LAUNCH -- Exploded on launch pad five minutes before launch time. |
| 104 56-6754 | 30 Aug 57 | Pad 17A | |
| 105 56-6755 | 20 Sep 57 | Pad 17B | |
| 107 56-6757 | 3 Oct 57 | Pad 17A | |
| 108 56-6758 | 11 Oct 57 | Pad 17B | |
| 109 56-6759 | 24 Oct 57 | Pad 17A | |
| 112 56-6783 | 7 Dec 57 | Pad 17B | |
| 113 56-6784 | 19 Dec 57 | Pad 17A | |
| 114 | 28 Jan 58 | Pad 17A | |
| 120 | 28 Feb 58 | Pad 17B | First Phase III test. |
| 121 | 19 Apr 58 | Pad 17B | |
| THOR-ABLE 116 | 23 Apr 58 | Pad 17A | First Thor-Able launch. (USAF) (Objec. not achieved) |
| IRBM #115 | 4 Jun 58 | Pad 18B | |
| 122 | 13 Jun 58 | Pad 17B | |
| THOR-ABLE #118 | 9 Jul 58 | Pad 17A | 1st re-entry veh to cover full ICBM range/nose cone not recov (USAF) |
| 123 | 12 Jul 58 | Pad 17B | |
| THOR-ABLE 119 | 23 Jul 58 | Pad 17A | Carried Vickie(mouse) in nose-no recovery. (USAF) |
| IRBM #126 | 26 Jul 58 | Pad 17B | Last Phase III test. |
| 117 | 6 Aug 58 | Pad 18B | Last Phase II test. |
| THOR-ABLE I 127 | 17 Aug 58 | Pad 17A | 1st lunar probe.(Objec. not achieved. (Pioneer). (USAF) |
| THOR-ABLE I 130 | 11 Oct 58 | Pad 17A | 2nd lunar probe. PIONEER I. Success. (NASA) |

(THOR Launches Cont'd)

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RECAP OF THOR LAUNCHES BY WING PERSONNEL --
BY YEAR/PROGRAM SERIES/OVERALL TOTAL

| YEAR/PROGRAM | YEAR OF FIRST/ LAST LAUNCH IN EACH SERIES | SERIES TOTAL: BY YEAR | TOTAL LAUNCHES: BY YEAR | TOTAL LAUNCHES: BY SERIES AND | GRAND TOTAL: ALL THOR LAUNCHES |
|---|---|---|---|---|---|
| 1957 | | | | | |
| THOR IRBMs* | First | 9 | 9 | | |
| 1958 | | | | | |
| THOR IRBMs | | 13 | | | |
| THOR ABLE | First | 6 | 19 | | |
| 1959 | | | | | |
| THOR IRBMs | | 23 | | | |
| THOR-ABLE | | 8 | 31 | | |
| 1960 | | | | | |
| THOR IRBMs | Last | 3 | | Total THOR IRBMs: 48 | Total IRBMs: 48 |
| THOR-ABLE | Last | 2 | | Total THOR-ABLE (SB)**: 16 | |
| THOR-ABLE-STAR | First | 5 | 10 | | |
| 1961 | | | | | |
| THOR-ABLE-STAR | | 3 | 3 | | |
| 1962 | | | | | |
| THOR-ABLE-STAR | Last | 3 | 3 | Total THOR-AB-STAR (SB): 11 | |
| 1963 | | | | | |
| THOR-ASSET | First | 1 | 1 | | |
| 1964 | | | | | |
| THOR-ASSET | | 4 | 4 | | |
| 1965 | | | | | |
| THOR-ASSET | Last | 1 | 1 | Total THOR-ASSET (SV)***: 6 | Total Space: 33 |
| | | | | GRAND TOTAL: | 81 |

IRBM - Inter-Range Ballistic Missile
SB - Space Booster
SV - Space Vehicle
Compiled By: M. A. Kingsley (As of 31 Dec 1968)

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THOR LAUNCHES (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| IRBM #138 | 5 Nov 58 | Pad 17B | First Phase IV test. |
| THOR-ABLE I 129 | 8 Nov 58 | Pad 17A | Third lunar probe -- PIONEER II. 3rd Stage did no ignite. (NASA) |
| IRBM #140 | 26 Nov 58 | Pad 17B | |
| 145 | 5 Dec 58 | Pad 18B | |
| 146 | 16 Dec 58 | Pad 17B | |
| 149 | 30 Dec 58 | Pad 18B | |
| THOR-ABLE II 128 | 23 Jan 59 | Pad 17A | First THOR-ABLE II. |
| IRBM #154 | 30 Jan 59 | Pad 17B | |
| THOR-ABLE II 131 | 28 Feb 59 | Pad 17A | Objectives not met. |
| THOR-ABLE II 132 | 21 Mar 59 | Pad 17A | Met test objec. Nose not rec |
| IRBM #158 | 21 Mar 59 | Pad 18B | |
| 162 | 26 Mar 59 | Pad 17B | |
| THOR-ABLE II 133 | 8 Apr 59 | Pad 17A | 1st recov.of ablating nose c from intercontn'l range. |
| IRBM #176 | 23 Apr 59 | Pad 17B | |
| 164 | 25 Apr 59 | Pad 18B | |
| 187 | 12 May 59 | Pad 17B | |
| THOR-ABLE II 135 | 21 May 59 | Pad 17A | Met test objecs. Nose cone recovered. |
| IRBM #184 | 22 May 59 | Pad 18B | |
| THOR-ABLE II 137 | 11 Jun 59 | Pad 17A | Last THOR-ABLE II. Nose cone recovered. |
| IRBM #198 | 25 Jun 59 | Pad 18B | |
| 194 | 29 Jun 59 | Pad 17B | |
| 203 | 21 Jul 59 | Pad 17B | |
| 202 | 24 Jul 59 | Pad 18B | |
| 208 | 5 Aug 59 | Pad 17B | |
| THOR-ABLE III 134 | 7 Aug 59 | Pad 17A | EXPLORER VI -- Paddlewheel Satellite. (NASA) |

THOR LAUNCHES (CONTINUED) ~~FOR OFFICIAL USE ONLY~~

| Missile | Launch Date | Launched From | Summary |
|---|---|---|---|
| THOR-ABLE-STAR 313 | 21 Feb 61 | Pad 17B | TRANSIT 3B/LOFTI 1 (Navy |
| THOR-ABLE-STAR 315 | 28 Jun 61 | Pad 17B | TRANSIT 4-A, INJUN, & CREB. |
| THOR-ABLE-STAR 305 | 15 Nov 61 | Pad 17B | TRANSIT 4-B. (Navy) |
| THOR-ABLE-STAR 311 | 24 Jun 62 | Pad 17B | COMPOSITE I. (Navy) |
| THOR-ABLE-STAR 314 | 10 May 62 | Pad 17B | ANNA 1A. (Navy) |
| THOR-ABLE-STAR 319 | 31 Oct 62 | Pad 17A | ANNA 1B. (Navy) |
| THOR-ASSET | | | |
| SLV II (ASSET) THOR 232 (ASV-1) | 18 Sep 63 | Pad 17B | All AF Space Vehicle - Aerothermodynamic/Elastic Structural Systems Environmental tests (ASSET). |
| SLV II (ASSET) THOR 240 (ASV-2) | 24 Mar 64 | Pad 17B | |
| SLV II THOR | 22 Jul 64 | Pad 17B | |
| THOR | 27 Oct 64 | Pad 17B | |
| THOR | 8 Dec 64 | Pad 17B | |
| SLV II THOR 248 | 23 Feb 65 | Pad 17B | |

END OF THOR LAUNCHES



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Tab 15

| | |
|---|---|
| MISSILE | DELTA-THOR |
| SPONSOR | NASA |
| CONTRACTOR | Douglas Aircraft Company |
| First launch | 13 May 60 |

Program currently underway

Tab 15

| | |
|---|---|
| MISSILE | DELTA-THOR |
| SPONSOR | NASA |
| CONTRACTOR | Douglas Aircraft Company |
| First launch | 13 May 60 |

Program currently underway

## DELTA LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1960** | | |
| 1 | 1 | DELTA 1 - THOR #144 | 13 May 60 | 3-stage NASA vehicle. ECHO I communications satellite. a 100 ft. inflatable balloon. Orbit not achieved. |

## DELTA LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - OCTOBER 1960 | |
| 2 | 1506 | 32 | 12 Aug 60 | Placed ECHO I, 100 ft diameter inflatable sphere, in earth orbit as passive communications satellite. Near circular orbit with apogee of 1050 mi, 950 mi perigee, and period 118.3 min achieved. Message from President Eisenhower transmitted from JPL, Goldstone, Calif to BTL, Holmdel, N. J. via ECHO on first orbital pass. |
| 3 | 3604 | 73 | 23 Nov 60 | Placed TIROS II, 300 lb payload in orbit as meteorological cloud cover satellite. Orbital parameters were apogee [illegible] mi, perigee [illegible] mi. Second third stage also went into orbit. |
| | | | JANUARY - JUNE 1961 | |
| 4 | 1607 | 41 | 25 [illegible] | Placed EXPLORER 9 in earth orbit. Apogee 115,000 SM and perigee 110 SM. |

DELTA/THOR Launches

| al to Date | Test Number | Pad Number | Missile Number | Dat f Launch | Time of Launch | Program | Remarks | Remarks |
|---|---|---|---|---|---|---|---|---|
| 62 | 2400 | 17A | D-71/LTTA | 25 Jul 69 | 2106 EST | NASA | INTELSAT III (F-5) Delta fail | |
| 63 | 4744 | 17A | D-72/TAD | 9 Aug 69 | 0252 EST | NASA | OSO-6 | |
| 64 | 2052 | 17A | D-73/LTTA | 27 Aug 69 | 1659 EST | NASA | Pioneer 9, RSO destroyed | |
| 65 | 0155 | 17A | D-74/LTTA | 21 Nov 69 | 1937 EST | NASA/USAF | Skynet-A Comsat for UK | |
| 66 | 8460 | 17A | D-75/LTTA | 14 Jan 70 | 1916 EST | NASA | INTELSAT III (F-6) | |
| 67 | 4100 | 17A | D-77/LTTA | 20 Mar 70 | 1852 EST | NASA/USAF | NATO-A Comsat | |
| 68 | 5423 | 17A | D-78/LTTA | 22 Apr 70 | 1946 EST | NASA | INTELSAT III (F-7) | |
| 69 | 1003 | 17A | D-80/LTTA | 23 Jul 70 | 1623 EST | NASA | INTELSAT III (F-8) | |
| 70 | 5980 | 17A | D-81/LTTA | 19 Aug 70 | 0711 EST | NASA/USAF | Skynet B for UK | |
| 71 | 7911 | 17A | D-82/DSV-3M | 2 Feb 71 | 2041 EST | NASA/USAF | NATO-B comsat | |
| 72 | 9135 | 17A | D-83/LTT/TAD | 13 Mar 71 | 1115 EST | NASA | Explorer 43 (IMP-I) | |
| 73 | 4617 | 17A | D-85/LTD | 29 Sep 71 | 0445 EST | NASA | OSO-H | |
| 74 | 1361 | 17B | D-90/LTT/TAD | 22 Sep 72 | 2020 EST | NASA | IMP-H | |
| 75 | 2489 | 17A | D-92/LTT/TAD | 9 Nov 72 | 2014 EST | NASA | TELESAT-A (ANIK) | |
| 76 | 5887 | 17B | D-94/LTT/TAD | 20 Apr 73 | 1847 EST | NASA | TELESAT-B (ANIK-2) | |
| 77 | 2314 | 17B | D-95/LTT/TAD | 10 Jun 73 | 0913 EST | NASA | Explorer 49 (RAE-B) | |
| 78 | 3964 | 17B | D-97 Model 1604 | 25 Oct 73 | 2126 EST | NASA | Explorer 50 (IMP-J) | |
| 79 | 8232 | 17B | D-100 Model 2313 | 18 Jan 74 | 2039 EST | NASA/USAF | Skynet IIA for UK | |
| 80 | 4417 | 17B | D-101 Model 2914 | 13 Apr 74 | 1833 EST | NASA | WESTAR-A | |
| 81 | 3938 | 17B | D-102 Model 2914 | 17 May 74 | 0431 EST | NASA | SMS-A | |

AFSC FORM JUL 61 185 b GENERAL PURPOSE WORKSHEET (10½" X 8") PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

Tab 1c

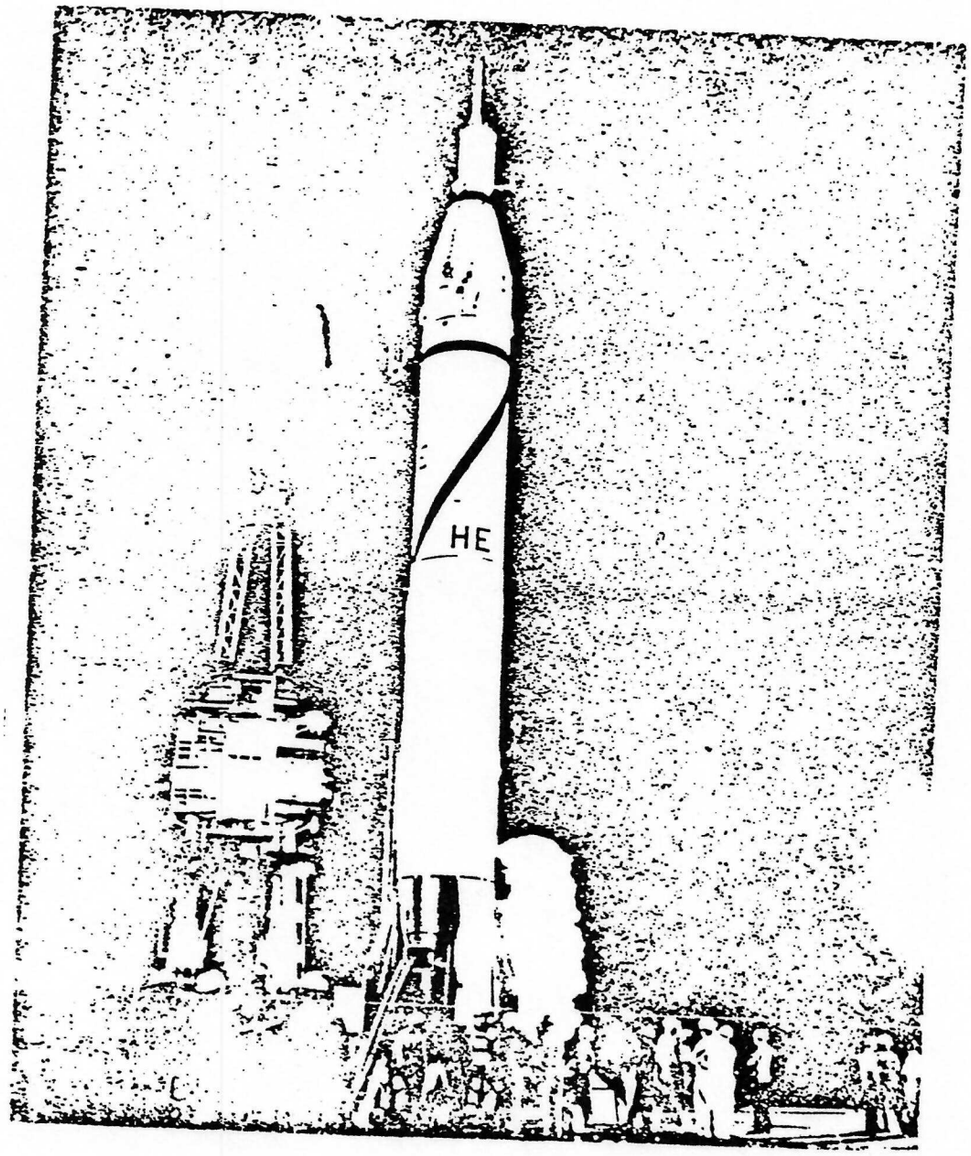
| | |
|---|---|
| MISSILE | REDSTONE |
| SPONSOR | Army |
| CONTRACTOR | Chrysler Corporation |

| | |
|---|---|
| First R&D launch | 20 Aug 53 |
| Last R&D launch | 5 Nov 58 |
| Superseded by JUPITER program | Jul 58 |
| First Engineer User test | 21 Jul 59 |
| Final REDSTONE test at AMR | 26 Jun 61 |

| | |
|---|---|
| Carried MR-1 Mercury capsule | 21 Nov 60 |
| Carried MR-1A Mercury capsule | 19 Dec 60 |
| Carried MR-2 Mercury capsule | 31 Jan 61 |
| Carried MR-BD Mercury capsule | 21 [illegible] 61 |
| Carried MR-3 (1st manned Mercury capsule) | 5 May 61 |

| | |
|---|---|
| REDSTONE R&D launchings | 18 |
| Engineer User launchings | - |
| Mercury program launchings | 5 |
| Total launchings | 3[illegible] |

Program completed




[illegible] MISSILE CARRYING A SATELLITE [illegible] BEING
[illegible] AT CAPE CANAVERAL [illegible]
[illegible] CENTER

Declassified By AFS HRC

UNCLASSIFIED

[redacted]

Tab 1c

| | |
|---|---|
| MISSILE | REDSTONE |
| SPONSOR | Army |
| CONTRACTOR | Chrysler Corporation |

| | |
|---|---|
| First R&D launch | 20 Aug 53 |
| Last R&D launch | 5 Nov 55 |

Superseded by JUPITER program after 5 Dec 55 launch.

| | |
|---|---|
| REDSTONE R&D launchings | 18 |
| Engineer user launchings | 3 |
| Total to date | 21 |

REDSTONE engineer user launchings were initiated in July 1958.

UNCLASSIFIED

[redacted]

Declassified By AFSHRC

UNCLASSIFIED

[redacted]



REDSTONE LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1953 | |
| 1 | 1 | RS #1 | 20 Aug 53 | 1st REDSTONE launched. Largest missile launched to date at AMR. |
| | | | JANUARY - JUNE 1954 | |
| 2 | 1 | RS #2 | 27 Jan 54 | Speed, Mach 5. |
| 3 | 2 | RS #3 | 5 May 54 | Exploded on pad just after lift-off. |
| | | | JULY - DECEMBER 1954 | |
| 4 | 1 | RS #4 | 18 Aug 54 | Satisfactory flight. |
| 5 | 2 | RS #6 | 17 Nov 54 | Altitude of 129,000 ft. |
| | | | JANUARY - JUNE 1955 | |
| 6 | 1 | RS #8 | 9 Feb 55 | Test results satisfactory. |
| 7 | 2 | RS #9 | 20 Apr 55 | First night flight. |
| 8 | 3 | RS #10 | 24 May 55 | First to carry complete guidance up to cut-off. |
| | | | JULY - DECEMBER 1955 | |
| 9 | 1 | RS #7 | 30 Aug 55 | First REDSTONE to carry DOFL fuze. |
| 10 | 2 | RS #11 | 22 Sep 55 | First to carry complete, active guidance system. |
| 11 | 3 | RS #12 | 5 Dec 55 | Carried AZUSA as passenger. |

Superseded by JUPITER program.

No more REDSTONE program launchings until May 1958 when training launchings were initiated.

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REDSTONE LAUNCHINGS

(For Training Purposes)

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1958 | |
| 12 | 1 | 46 | 11 Feb 58 | Landed on target. Assigned objectives to support JUPITER program. |
| 13 | 2 | 43 | 27 Feb 58 | Met test objectives. Assigned objectives to support JUPITER program. |
| 14 | 3 | 1002 | 16 May 58 | Training of 40th Field Artillery Group (Heavy). R&D objectives met. |
| 15 | 4 | 48 | 11 Jun 58 | Overshot target. Carried objectives in support of JUPITER program. |
| 16 | 5 | 54 | 24 Jun 58 | Landed on target. Carried objectives in support of JUPITER program. |
| | | | JULY - DECEMBER 1958 | |
| 17 | 1 | 56 | 17 Sep 58 | Met test objectives. |
| 18 | 2 | 57 | 5 Nov 58 | Last R&D test launch. |
| | | | JANUARY - JUNE 1959 | |
| No REDSTONES launched during first half 1959. | | | | |
| | | | JULY - DECEMBER 1959 | |
| 19 | 1 | 2003 | 21 Jul 59 | Engineer user test. |
| 20 | 2 | 2004 | 4 Aug 59 | Engineer user test. |
| | | | JANUARY - JUNE 1960 | |
| 21 | 1 | 2020 | 21 Mar 60 | Engineer user test. |

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REDSTONE LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1960 | |
| 22 | 623 | 2023 | 9 Aug 60 | To determine suitability for field use. RSO destruct action taken at T+112 sec due to impact predictor data. Post flight inspection indicates impact predictor data may have been in error and missile operation normal. |
| 23 | 2816 | 2037 | 5 Oct 60 | Test suitability for field use. Range 173.9 mi. Complete telemetry dropout just before impact. |
| 24 | 4500 | MR-1 MERCURY REDSTONE | 21 Nov 60 | To launch MERCURY capsule. 1 sec after ignition engine cutoff occurred, but not before some lift-off occurred. Booster settled back on launcher. Capsule prepared for re-entry at engine cutoff. Escape tower jettisoned and landed 1700 ft from launcher. Although the booster was not expended, the fact that it lifted off the pad satisfied the criteria established for classifying it as a launch. |
| 25 | 5111 | MR-1A MERCURY REDSTONE MR-3 booster | 19 Dec 60 | 1st successful MERCURY REDSTONE launched from AMR. Capsule recovered at T+33 min after launch by helicopter from USS Valley Forge. Impact was 305 mi down range. Apogee was 116 mi. |

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REDSTONE LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1961 | |
| 26 | 3802 | 2038 | 21 Jan 61 | Flew prescribed 173.8 NM range to pre-selected target area. Test field suitability use. |
| 27 | 3805 | MR-2 | 31 Jan 61 | Carried MERCURY capsule MR-2 containing a chimp named HAM. Impact was 100 mi long but recovery effected with no ill effects to primate. |
| 28 | 5101 | 2040 | 8 Mar 61 | Field use suitability test. |
| 29 | 1375 | MR-BD | 24 Mar 61 | Carried dummy MERCURY capsule to prove booster for manned flight. Apogee was 98.8 NM and impact was 267.1 NM down range. |
| 30 | 105 | MR-3 | 5 May 61 | Carried first manned MERCURY capsule MR-3. Boost, re-entry and recovery all normal. Alan B. Shepard, Jr first US man in space. |
| 31 | 817 | 2042 | 17 May 61 | Flew prescribed 173.8 NM range in field suitability test. |
| 32 | 1333 | 2043 | 26 Jan 61 | Field use suitability test. Flew prescribed course and met test objectives. Final qualifications test of production missile. All testing of the vehicle at AMR satisfactorily completed. |

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Tab 17

| | |
|---|---|
| MISSILE | JUPITER |
| SPONSOR | Army |
| CONTRACTOR | Chrysler Corporation |

First launch 14 Mar 56

Placed first U.S. satellite in orbit 31 Jan 58.

Declared operationally ready after 6 May 59 launch.

Last R&D series launch 4 Feb 1960.

| | |
|---|---|
| JUPITER A (modified REDSTONE missiles) launched | 20 |
| JUPITER C series launched | 9 |
| JUPITER missiles launched | 29 |
| Total launched at AMR | 58 |

Program completed

[redacted]

Tab 17

| | |
|---|---|
| MISSILE | JUPITER |
| SPONSOR | Army |
| CONTRACTOR | Chrysler Corporation |

| | |
|---|---|
| First launch | 14 Mar 56 |
| Placed first U.S. satellite in orbit | 31 Jan 58 |
| Declared operationally ready after 6 May 59 launch. | |
| Last R&D series launch | 1 Feb 60 |
| Live System Test Launch (LST) | 30 Oct 60 |
| Combat Training Launch (by SAC) | 27 Apr 61 |

| | |
|---|---|
| JUPITER A (modified REDSTONE missiles) launched | 20 |
| JUPITER C series launched | 9 |
| JUPITER R&D missiles launched | 29 |
| JUPITER LST missiles launched | 1 |
| JUPITER Combat Training missiles launched | 1 |
| Total launched at AMR | 60 |

Program complete!

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## JUPITER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1956** | | |
| 1 | 1 | JUPITER A No. 18 | 14 Mar 56 | First launched under JUPITER program. Third fully guided REDSTONE. |
| 2 | 2 | JUPITER A No. 19 | 15 May 56 | Guidance test. |
| | | **JULY - DECEMBER 1956** | | |
| 3 | 1 | JUPITER A No. 13 | 19 Jul 56 | First Chrysler built JUPITER A. Tested complete inertial guidance system. |
| 4 | 2 | JUPITER A No. 20 | 8 Aug 56 | Test objectives met. |
| 5 | 3 | JUPITER C No. 27 | 19 Sep 56 | First JUPITER C launch started Phase II re-entry tests. |
| 6 | 4 | JUPITER A No. 14 | 18 Oct 56 | Used final type inertial guidance. |
| 7 | 5 | JUPITER A No. 25 | 30 Oct 56 | Carried warhead. Broke-up in mid-air and landed on Cape. |
| 8 | 6 | JUPITER A No. 28 | 13 Nov 56 | Carried warhead for deep water impact. |
| 9 | 7 | JUPITER A No. 15 | 29 Nov 56 | Used U-DETA fuel. |
| 10 | 8 | JUPITER A No. 22 | 18 Dec 56 | Used U-DETA fuel. |

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JUPITER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1957 | | |
| 11 | 1 | JUPITER A No. 16 | 18 Jan 57 | Phase I, test guidance. |
| 12 | 2 | JUPITER No. 1-A | 1 Mar 57 | First operational prototype JUPITER. Exploded at T+75 sec. |
| 13 | 3 | JUPITER A No. 32 | 14 Mar 57 | 1st JUPITER shipped directly from Chrysler plant and launched without static test. |
| 14 | 4 | JUPITER A No. 30 | 27 Mar 57 | Phase I guidance test. |
| 15 | 5 | JUPITER No. 1-B | 26 Apr 57 | 2nd JUPITER missile Phase III. Disintegrated at T+93 sec. |
| 16 | 6 | JUPITER-C No. 34 | 15 May 57 | 2nd JUPITER C. 3-stage re-entry vehicle. First to carry nose cone. Separation did not occur. No recovery made. |
| 17 | 7 | JUPITER No. 1 | 31 May 57 | 3rd JUPITER missile Phase III. Set record in distance and altitude for single stage missile. |
| 18 | 8 | JUPITER A No. 31 | 26 Jun 57 | Phase I guidance test. |

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JUPITER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1957 | | |
| 19 | 1 | JUPITER A No. 35 | 12 Jul 57 | Met all test objectives. |
| 20 | 2 | JUPITER A No. 37 | 25 Jul 57 | Met test objectives. |
| 21 | 3 | JUPITER C No. 40 | 8 Aug 57 | 3rd JUPITER-C. First recovery of long range nose cone by Navy within 3 hours. |
| 22 | 4 | JUPITER #2 | 28 Aug 57 | 4th JUPITER. Met test objectives. |
| 23 | 5 | JUPITER A No. 38 | 10 Sep 57 | First to use prototype tactical launching equipment. |
| 24 | 6 | JUPITER A No. 39 | 2 Oct 57 | Met test objectives. |
| 25 | 7 | JUPITER #3 | 22 Oct 57 | 1st prototype JUPITER to employ all inertial guidance. |
| 26 | 8 | JUPITER A No. 41 | 30 Oct 57 | Range Safety destruct. |
| 27 | 9 | JUPITER #3A | 26 Nov 57 | Thrust failure caused premature impact. Partial success. |
| 28 | 10 | JUPITER A No. 42 | 10 Dec 57 | Met test objectives. |
| 29 | 11 | JUPITER #4 | 18 Dec 57 | Thrust failure caused premature impact. |

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JUPITER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1958 | | |
| 30 | 1 | JUPITER-A #45 | 14 Jan 58 | Met test objectives. |
| 31 | 2 | JUPITER-C #~~27~~ 29 | 31 Jan 58 | Placed EXPLORER I, first U.S. satellite, in earth orbit. |
| 32 | 3 | JUPITER-C #26 | 5 Mar 58 | Carried EXPLORER II. Try for orbit failed. |
| 33 | 4 | JUPITER-C #24 | 26 Mar 58 | Placed satellite (EXPLORER III) in orbit. |
| 34 | 5 | JUPITER #5 | 16 May 58 | First recovery of IRBM nose cone. |
| | | JULY - DECEMBER 1958 | | |
| 35 | 1 | JUPITER 6A | 17 Jul 58 | First fully guided JUPITER. 2nd nose recovery. |
| 36 | 2 | JUPITER #44C | 26 Jul 58 | Placed EXPLORER IV in earth orbit. |
| 37 | 3 | JUPITER #47C | 24 Aug 58 | Carried EXPLORER V. Failed to orbit. |
| 38 | 4 | JUPITER #7 | 27 Aug 58 | 2nd fully guided flight. |
| 39 | 5 | JUPITER #9 | 9 Oct 58 | Fire in tail section caused Range Safety destruct |
| 40 | 6 | JUPITER #49C | 22 Oct 58 | Satellite payload of NACA high visibility sphere 12 ft. diameter. Failed to orbit. |
| 41 | 7 | JUPITER #13 | 13 Dec 58 | Carried monkey named GORDO. Nose not recovered. |

Note: REDSTONE missiles no. 43, 46, 48, and 54 carried test objectives in support of the JUPITER program. (See Tab 16)

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## JUPITER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1959** | | |
| 42 | 1 | JUPITER #21 | 21 Jan 59 | First test of production model direct from factory. |
| 43 | 2 | JUPITER #22 | 27 Feb 59 | Met test objectives. |
| 44 | 3 | JUPITER #22A | 3 Apr 59 | Met test objectives. |
| 45 | 4 | JUPITER #12 | 6 May 59 | JUPITER declared operationally ready after this launch. |
| 46 | 5 | JUPITER #17 | 14 May 59 | Met test objectives. |
| 47 | 6 | JUPITER #18 | 28 May 59 | Carried two monkeys ABLE and BAKER. Recovered in good health. |
| | | **JULY - DECEMBER 1959** | | |
| 48 | 1 | JUPITER #15 | 9 Jul 59 | All objectives accomplished. |
| 49 | 2 | JUPITER #19 | 26 Aug 59 | All objectives accomplished. |
| 50 | 3 | JUPITER #23 | 16 Sep 59 | Structural failure & explosion 13 seconds after launch. |
| 51 | 4 | JUPITER #24 | 30 Sep 59 | Met test objectives. |
| 52 | 5 | JUPITER #31 | 21 Oct 59 | All objectives accomplished. Nose cone hit target. |
| 53 | 6 | JUPITER CM 33 | 4 Nov 59 | All objectives accomplished. |
| 54 | 7 | JUPITER #25 | 18 Nov 59 | First short range test. Met test objectives. |
| 55 | 8 | JUPITER AM-32 | 9 Dec 59 | Met test objectives. |
| 56 | 9 | JUPITER AM-26 | 16 Dec 59 | Met test objectives. |
| | | **JANUARY - JUNE 1960** | | |
| 57 | 1 | JUPITER #28 | 25 Jan 60 | Met test objectives. |
| 58 | 2 | JUPITER #30 | 4 Feb 60 | Last of JUPITER R&D series. |

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JUPITER LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | | **JULY - DECEMBER 1960** |
| 59 | 3502 | 217 | 20 Oct 60 | Test tactical launch equipment for field use. 1st JUPITER launch from tactical type emplacement using all tactical handling and launching equipment. Covered prescribed 962.5 NM range within CEP established for the weapon system. Completed live system test (LST) of JUPITER at AMR. Army test firing responsibility completed. Program transferred to Air Force as operational weapon. |
| | | | | **JANUARY - JUNE 1961** |
| 60 | 1263 | 209 | 22 Apr 61 | Launched by Italian Combat Training Crew assigned to NATO. Flew full IRBM range of 1514 NM and impacted in target area. Radial error at impact within established CEP for the weapon system. |

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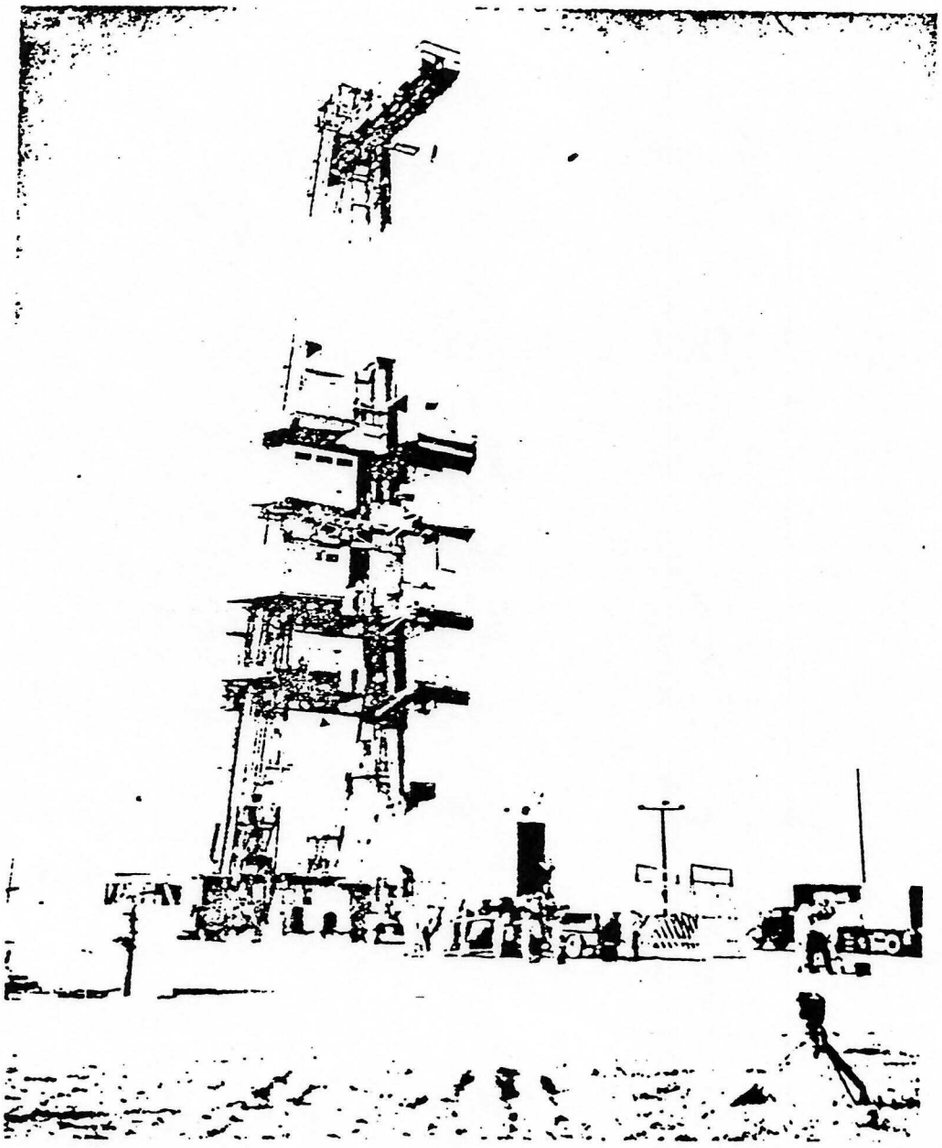

[illegible] A FOUR-STAGE EXPERIMENTAL SPACE [illegible] WITH [illegible] PAYLOAD POISED ON ITS LAUNCHING PAD AT [illegible] ANAVERAL, [illegible] OF THE AIR FORCE MISSILE TEST CENTER, [illegible] ON [illegible] THE NATIONAL AERONAUTICS AND [illegible]

Tab 18

| | |
|---|---|
| MISSILE | JUNO II |
| SPONSOR | Army and NASA |
| CONTRACTOR | Chrysler Corporation |
| First launch | 6 Dec 58 |

Program currently underway

Tab 18

| | |
|---|---|
| MISSILE | JUNO |
| SPONSOR | Army and NASA |
| CONTRACTOR | Chrysler Corporation |
| First launch | 6 Dec 58 |
| Final launch | 28 May 62 |
| Total launched at AMR | 10 |

Program completed

Recap of JUNO Program

| | |
|---|---|
| AM-11 | PIONEER III (Lunar Probe) Discovered Van Allen Belt. |
| AM-14 | PIONEER IV (Lunar Probe) Went into solar orbit. |
| AM-16 | EXPLORER Satellite (IGY Experiment) Exploded after lift-off. |
| AM-19B | BEACON Satellite (IGY Experiment) Payload did not orbit. |
| AM-19A | EXPLORER VII (IGY Experiment) Earth orbit accomplished. |
| AM-19C | EXPLORER Satellite (Van Allen Belt) Payload did not orbit. |
| AM-19D | EXPLORER VIII (Ionosphere Measurement) Earth orbit accomplished. |
| AM-19F | EXPLORER Satellite (Ionospheric Beacon) Payload did not orbit. |
| AM-19E | EXPLORER IX (Gamma Ray Experiment) Earth orbit achieved. |
| AM-19G | EXPLORER Satellite (Ionospheric Beacon) Missile power failure prevented orbit. |

## JUNO LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JULY - DECEMBER 1958** | |
| 1 | 1 | JUNO II AM 11 | 6 Dec 58 | 1st JUNO II. Carried PIONEER III, 15 lb. payload, about 66,654 mi. from earth toward moon. |
| | | | **JANUARY - JUNE 1959** | |
| 2 | 1 | JUNO II 14 | 3 Mar 59 | Placed PIONEER IV in solar orbit. Passed 38,000 mi. from moon. |
| | | | **JULY - DECEMBER 1959** | |
| 3 | 1 | JUNO II 16 | 16 Jul 59 | To place 94 lb. IGY satellite in orbit. Failed and impacted 250 feet from pad. |
| 4 | 2 | JUNO II 19B | 14 Aug 59 | To earth orbit a 12 ft. high visibility, inflatable sphere. Payload failed to orbit. |
| 5 | 3 | JUNO II 19A | 13 Oct 59 | Placed EXPLORER VII in orbit. Apogee 627.5 statute miles Perigee 344.8 statute miles Van Allen radiation study. |
| | | | **JANUARY - JUNE 1960** | |
| 6 | 1 | JUNO II 19C | 23 Mar 60 | Objective to place Van Allen radiation measurement package in orbit. Failed to orbit. Backup for JUNO #16. |

## JUNO II LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JULY - DECEMBER 1960** | |
| 7 | 4504 | 19D | 3 Nov 60 | Purpose to place EXPLORER VIII, a 90 lb satellite, in earth orbit to study radiation. Orbital parameters were apogee 1422.6 statute miles, perigee 258.4 statute miles, period 112.75 min. Life expectancy 3 months. |
| | | | **JANUARY - JUNE 1961** | |
| 8 | 5109 | 19F | 24 Feb 61 | Attempted launch of EXPLORER satellite. Failure of upper stage mechanism caused the Ionospheric Beacon mission to be abortive. |
| 9 | 814 | 19E | 27 Apr 61 | EXPLORER XI, 82 lb earth satellite, placed in orbit. |
| 10 | 1253 | 19G | 24 May 61 | Electric power failure in missile system prevented orbit of 75 lb earth satellite "Ionospheric Beacon (S-45)." This was last of JUNO II missiles. |

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Tab 19

| | |
|---|---|
| MISSILE | PERSHING |
| SPONSOR | Army |
| CONTRACTOR | Glenn L. Martin |
| First launch | 25 Feb 60 |

Program currently underway

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Tab 19

| | |
|---|---|
| MISSILE | PERSHING |
| SPONSOR | Army |
| CONTRACTOR | Glenn L. Martin |
| First launch | 25 Feb 58 |

Program currently underway

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PERSHING LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1960 | |
| 1 | 1 | 105 | 25 Feb 60 | First PERSHING launch. Met test objectives. |
| 2 | 2 | 106 | 20 Apr 60 | Landed in target area. |
| 3 | 3 | 107 | 10 May 60 | Landed in target area. |
| 4 | 4 | 108 | 9 Jun 60 | Landed in target area. |
| 5 | 5 | 109 | 30 Jun 60 | Landed in target area. |

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PERSHING LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1960 | | |
| 6 | 1501 | 110 | 26 Jul 60 | To evaluate missile stability and control. Impact was in target area and all test objectives were met. Range 30 NM. First test firing to use Transporter-Electro-Launcher, AM 174. Last Group I test. |
| 7 | 3501 | 205 | 28 Sep 60 | First Group II series missile tested at AMR. Became erratic during second stage of powered flight requiring RSO destruct at T-61.4 sec following first stage separation. |
| 8 | 3501 | 206 | 16 Nov 60 | Flight covered 145 mi range. All primary objectives accomplished. |
| 9 | 4507 | 207 | 12 Dec 60 | Covered planned 145 mi range. All primary objectives accomplished. |

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PERSHING LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1961 | |
| 10 | 5102 | 208 | 5 Jan 61 | Erratic movements caused missile break-up at T+25 sec. |
| 11 | 101 | 209 | 25 Jan 61 | Flew prescribed range of 145 NM. |
| 12 | 102 | 210 | 15 Feb 61 | Flew prescribed 145 NM range. |
| 13 | 402 | 211 | 2 Mar 61 | Covered prescribed range of 145 NM to impact area. |
| 14 | 816 | 212 | 15 Mar 61 | 8th and last R&D series Group II missile. Impact 145 NM D/R. Launched from Transporter-Electro-Launcher XM 474 track mounted. |
| 15 | 1359 | 308 | 21 Apr 61 | First R&D series Group III missile. Covered prescribed range of 220 NM to impact. |
| 16 | 1801 | 310 | 18 May 61 | Erratic behavior caused ESO to order destruct at T+56.6 sec. |
| 17 | 1802 | 311 | 9 Jun 61 | Flew prescribed course and accomplished all mission objectives. Missile impact was within [illegible] of area. |
| 18 | 2526- | 312 | 30 Jun 61 | Flew prescribed course and met test objectives. |

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# PERSHING 1963 Flight Int.

**October 22** Cape, R&D shot (like most of those following, to refine aeroballistics, guidance and propulsion data, while employing US Army tactical GSE) over 300 miles, successs. This shot, which was the 34th success in 41 Pershing R&D firings—the best R&D record of any US missile—was the first employing the operational XM474 transporter/erector/launcher, and it thus became the first in the history of Cape Canaveral not made from a fixed emplacement.

**November 15** Cape, night (tracking flares) shot employing helicopter-transportable GSE in tactical role, about 150miles, success.

**November 27** Cape, night (tracking flares) shot, missile very close to operational configuration (no separate instrumentation and range-safety), about 300 miles, success.

**December 10** Cape, night (tracking flares) shot from XM474 tracked vehicle, inertial guidance programmed to counteract zig-zag manœuvre resulting from simulated winds of full-gale strength, success.

**January 17** Cape, repeat of December 10 shot, approximately 200 miles, success.

**January 30** Cape, simulated surface winds of near-hurricane strength, 200 miles, v. good c.e.p., success.

**February 14** Cape, warhead failed to separate and fell short, partial. [*Continued overleaf*

**February 25** Cape, night (tracking flares) shot from XM474 parked on sloping sandbank, complete set of tactical GSE without AMR help, about 150 miles, success.

**March 4** Cape, night, repeat of February 25 shot, using helicopter-transportable GSE, long-range, success.

**March 13** Cape, night, helicopter-transportable GSE, success.

**March 21** Cape, night, complete tactical GSE and fully operational missile, success.

**April 3** Cape, night, repeat of March 21 using helicopter GSE, c.e.p. under 300yd on target over 200 miles distant, success (this was the final R&D shot).

**April 5** Cape, first post-R&D test, "integrated service test" consisting of 40-mile cross-country deployment over hard and secondary roads followed by 300-mile shot, success.

**April 12** Cape, launch assisted by user troops (Battery A, 2nd Missile Battalion, 44th Artillery, Ft Sill, Okla), using complete tactical system, 200 miles, success.

**April 17** Cape, daylight troop launch (wholly by same troops as April 12) from XM474 after driving 5½ miles over rough palmetto and scrub terrain, 190 miles, success.

**April 24** Cape, minimum-range shot (by same troops), again after long drive over rough ground, success.

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Tab 20

| | |
|---|---|
| MISSILE | POLARIS |
| SPONSOR | Navy |
| CONTRACTORS | Prime: Lockheed Aircraft - Airframe |
| | Associates: Aerojet-General Corporation - Propulsion<br>General Electric - Guidance<br>Westinghouse Electric - Nose cone |
| First R&D launch | 13 Apr 57 |

Program currently underway

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MT 60-2544

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Tab [illegible]

| | |
|---|---|
| MISSILE | POLARIS |
| SPONSOR | NAVY |
| CONTRACTORS | Prime: Lockheed Aircraft - Airframe |
| | Associate: Aerojet-General Corporation - Propulsion<br>General Electric - Guidance<br>Westinghouse Electric - Nose cone |
| First R&D launch | 13 Apr 57 |

Program [illegible] information

THE NAVY'S FLEET BALLISTIC MISSILE POLARIS, LAUNCHED FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

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## POLARIS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JANUARY - JUNE 1957** | |
| 1 | 1 | Phase VI-1 | 13 Apr 57 | First POLARIS launching. |
| 2 | 2 | 4-204-1 | 27 Jun 57 | Objectives accomplished. |
| | | | **JULY - DECEMBER 1957** | |
| 3 | 1 | 4-204-2 | 16 Jul 57 | Test objectives satisfied. |
| 4 | 2 | 3-204-1 | 19 Jul 57 | Re-entry body test satisfactory. |
| 5 | 3 | 3-204-2 | 9 Aug 57 | Re-entry body test satisfactory. |
| 6 | 4 | 5-204-1 | 16 Aug 57 | Thrust termination test satisfactory. |
| 7 | 5 | 1-204-6 | 3 Sep 57 | Jetevator control test satisfactory. |
| 8 | 6 | 1-204-7 | 22 Oct 57 | Jetevator control test satisfactory. |
| 9 | 7 | 3-204-3 | 24 Oct 57 | Re-entry body test satisfactory. |
| 10 | 8 | 3-204-4 | 8 Nov 57 | Re-entry body test satisfactory. |
| 11 | 9 | 1-204-8 | 15 Nov 57 | Jetevator control test satisfactory. |
| 12 | 10 | 1-204-9 | 10 Dec 57 | Jetevator control test satisfactory. |
| | | | **JANUARY - JUNE 1958** | |
| 13 | 1 | 1-204 | 17 Jan 58 | Met test objectives. |
| 14 | 2 | 1-204-11 (FTV-1-11) | 18 Apr 58 | Met test objectives. First launch from Complex #25. |
| 15 | 3 | 1-204-12 (FTV-1-12) | 8 May 58 | First vertical launch with programmed 14 degree pitch. |
| 16 | 4 | 1-204-13 (FTV-1-13) | 6 Jun 58 | Met test objectives. |
| 17 | 5 | 1-204-14 (FTV-1-14) | 24 Jun 58 | Completed 1-204 series tests. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 18 | 1 | AX-1 | 21 Sep 58 | First full scale POLARIS prototype. Range Safety destruct at T+25 seconds |
| 19 | 2 | AX-2 | 15 Oct 58 | Range Safety destruct at T+6.5 seconds |
| 20 | 3 | AX-3 | 30 Dec 58 | First time second stage was ignited at altitude. Range Safety destruct at T+21 seconds |
| | | | JANUARY - JUNE 1959 | |
| 21 | 1 | AX-4 | 19 Jan 59 | Most major objectives met despite loss of control during first stage flight |
| 22 | 2 | AX-5 | 27 Feb 59 | First to use base heat shields. Loss of control caused break-up at T+38 seconds. |
| 23 | 3 | AX-6 | 20 Apr 59 | Major test objectives achieved |
| 24 | 4 | AX-8 | 8 May 59 | Met test objectives |
| 25 | 5 | AX-7 | 18 May 59 | Objectives partially met despite unstable flight |
| 26 | 6 | AX-10 | 12 Jun 59 | Re-entry body separated prematurely |
| 27 | 7 | AX-9 | 29 Jun 59 | Met test objectives |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1959 | |
| 28 | 1 | AX-11 | 15 Jul 59 | First to carry inertial guidance as passenger. Range Safety destruct at T+73 seconds |
| 29 | 2 | AX-15 | 6 Aug 59 | 2nd stage flight terminated prematurely. |
| 30 | 3 | AX-13 | 14 Aug 59 | First launch from ship motion simulator. All objectives met |
| 31 | 4 | AX-18 | 25 Aug 59 | 2nd stage flight terminated prematurely. |
| 32 | 5 | AX-22 | 27 Aug 59 | First shipboard launch at sea from USS Observation Island (EAG-154). All objectives met. |
| 33 | 6 | AIX-1 | 21 Sep 59 | First tactical prototype series AIX missile |
| 34 | 7 | AX-14 | 28 Sep 59 | Premature 2nd stage separation caused early flight termination |
| 35 | 8 | AX-20 | 2 Oct 59 | Last of the AX series missiles Most objectives met before RSO destruct at T+60 seconds |
| 36 | 9 | AIX-2 | 12 Oct 59 | 2nd stage malfunction caused early flight termination |
| 37 | 10 | AIX-3 | 20 Nov 59 | Landed in target area. |
| 38 | 11 | AIX-4 | 7 Dec 59 | First to carry complete guidance. Used attitude control only |
| 39 | 12 | AIX-6 | 15 Dec 59 | First night launch. 2nd stage malfunction ended flight prematurely. |
| 40 | 13 | AIX-5 | 23 Dec 59 | Launched from ship motion simulator. Malfunction caused Range Safety destruct. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1960 | | |
| 41 | 1 | AIX-7 | 7 Jan 60 | 1st fully guided POLARIS missile. |
| 42 | 2 | AIX-8 | 13 Jan 60 | Met test objectives. |
| 43 | 3 | AIX-9 | 20 Jan 60 | 1st POLARIS with initial azimuth offset requiring in-flight roll. |
| 44 | 4 | AIX-10 | 27 Jan 60 | 2nd flight with azimuth offset. Required opposite roll from AIX-9. |
| 45 | 5 | AIX-12 | 4 Feb 60 | Met test objectives. |
| 46 | 6 | AIX-11 | 10 Feb 60 | Met test objectives for fully guided flight. |
| 47 | 7 | AIX-13 | 26 Feb 60 | Destroyed by RSO at T+105 sec. |
| 48 | 8 | AIX-14 | 9 Mar 60 | Met test objectives. |
| 49 | 9 | AIX-15 | 18 Mar 60 | Ship motion simulator launch. Met test objectives. |
| 50 | 10 | AIX-16 | 25 Mar 60 | Ship motion simulator launch. Met test objectives. |
| 51 | 11 | AIX-18 | 29 Mar 60 | USS Observation Island launch. |
| 52 | 12 | AIX-19 | 18 Apr 60 | USS Observation Island launch. |
| 53 | 13 | AIX-22 | 25 Apr 60 | Pad launched. Met test objectives. |
| 54 | 14 | AIX-23 | 29 Apr 60 | Pad launched. Met test objectives. |
| 55 | 15 | AIX-25 | 29 Apr 60 | Pad launched. Met test objectives. |
| 56 | 16 | AIX-30 | 18 May 60 | Ship motion simulator launched. |
| 57 | 17 | AIX-17 | 23 May 60 | USS Observation Island launched. |
| 58 | 18 | AIX-27 | 7 Jun 60 | Pad launched. 2nd stage failed. |
| 59 | 19 | AIX-32 | 22 Jun 60 | USS Observation Island launched. |
| 60 | 20 | AIX-34 | 23 Jun 60 | Ship motion simulator launched. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1960 | |
| 61 | 1520 | A1X-40 | 6 Jul 60 | Launched from flat pad. Flight normal until approximately T+90 sec. Malfunction in 2nd stage motor at T+90 sec caused flight termination. |
| 62 | 1013 | A1X-39 | 7 Jul 60 | Launched from USS Observation Island. Missile lost thrust immediately after first stage ignition and fell back into sea. RSO took destruct action just prior to impact. |
| 63 | 2502 | A1X-42 | 15 Jul 60 | Launched from ship motion simulator. Re-entry body impacted 958 NM into the BOA with an impact accuracy of 0.17 NM short and 0.49 NM right. |
| 64 | 2501 | A1X-41 | 19 Jul 60 | Launched from flat pad. Re-entry vehicle impacted 1032 NM into the BOA and well within the impact dispersion area for an unguided flight. |
| 65 | 2504 | A1E-1 | 20 Jul 60 | First ballistic missile to be launched from a submerged submarine. Demonstrated the capability of the complete POLARIS Weapons System. The USS George Washington was submerged at a keel depth of 91.5 ft approx 25 NM east of Cape Canaveral lighthouse. First stage ignition occurred when missile was approx 30 ft above the surface of the water. Re-entry vehicle impacted 1,000 NM into the BOA with a miss distance of 0.0 NM in range and [illegible] |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1960 (CONT'D) | |
| 66 | 2792 | A1E-2 | 20 Jul 60 | 2nd POLARIS successfully launched from submerged USS George Washington. Re-entry vehicle impacted 1,000 NM into the ROA with an accuracy of 0.75 NM long and 1.06 NM left of the aim point. |
| 67 | 2507 | A1E-4 | 30 Jul 60 | Launched successfully from USS George Washington. Re-entry vehicle impacted 997 NM into the ROA with an accuracy of 0.62 NM long and 0.1 NM left of the predicted impact point. |
| 68 | 2793 | A1E-3 | 1 Aug 60 | Launched from USS George Washington. Completed series of four tests to demonstrate the capability of the complete POLARIS Weapons System on board the USS George Washington. Just after first stage ignition, a generator failed causing the missile to become unstable at T+25 sec. RSO took destruct action at T-46.2 sec. |
| 69 | 1012 | A1X-37 | 2 Aug 60 | Launched from ship-motion simulator. Missile performance throughout powered flight was normal. Re-entry body impact was out of tolerance because of an excessive azimuth trajectory error induced by a guidance system malfunction. Re-entry body impacted approx 957 NM into the ROA at 20 NM short and 200 NM to the right of planned impact point. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1960 (CONT'D) | | |
| 70 | 2513 | A1X-44 | 4 Aug 60 | Launched from flat pad. Re-entry body impacted 1,097 NM into the BOA and well within the impact dispersion area for an unguided flight. |
| 71 | 2804 | A1X-47 | 12 Aug 60 | Launched from flat pad. Re-entry body impacted 958.6 NM into the BOA with an impact accuracy of 0.74 NM long and 1.73 NM right. The missile executed a planned 150° launch roll maneuver. |
| 72 | 2503 | A1X-43 | 16 Aug 60 | Launched from flat pad. Re-entry body impacted 1,043 NM into the BOA and well within the impact dispersion area for an unguided flight. |
| 73 | 2506 | A1X-45 | 2 Sep 60 | Launched successfully from flat pad. Re-entry body impacted approx 1,070 NM into the BOA with an impact accuracy well within the dispersion area for an unguided flight. |
| 74 | 2803 | A1E-5 | 13 Sep 60 | Launched from USS Patrick Henry. Although launch was perfect, a malfunction occurred in the ignition system and the missile fell back ignited into the water. |
| 75 | 2805 | A1E-6 | 15 Sep 60 | Successfully launched from USS Patrick Henry. Re-entry body impacted approx 1,000 NM into BOA with an accuracy of 1.05 NM to the right and 0.99 NM long of the predicted impact point. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1960 (CONT'D) | | |
| 76 | 3807 | A1E-7 | 22 Sep 60 | Launched from USS Patrick Henry. Launch was normal but the missile fell back into the water after the first stage failed to ignite. |
| 77 | 3808 | A1E-8 | 22 Sep 60 | Launched from USS Patrick Henry. Launch normal until missile broached the surface. At this time a malfunction occurred and the missile ignited and fell back into the water. |
| 78 | 2807 | A1X-48 | 23 Sep 60 | Launched successfully from flat pad. This vehicle was the first in the program scheduled for impact in the Grand Turk MILS. Re-entry body impact was 1,180 ft to the left and 4,850 ft beyond the aim point. |
| 79 | 3509 | A1X-49 | 5 Oct 60 | Launched successfully from flat pad. Re-entry vehicle impacted 1,090 A/M into the ROA and well within the impact dispersion area for an unguided flight. |
| 80 | 3511 | A1X-53 | 10 Oct 60 | Launched successfully from flat pad. Re-entry vehicle impacted into the Grand Turk MILS with a miss distance of 0.7 NM long and 0.4 NM to left of aim point. |

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POLARIS LAUNCHINGS

July - December 1960 Cont'd

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| 81 | 1803 | A1X-46 | 7 Nov 60 | Launched successfully from flat pad. Re-entry body impacted into BOA (958 NM D/R) with an impact accuracy of 0.9 NM long and 0.1 NM to the right of the aim point. |
| 82 | 3811 | A2X-1 | 10 Nov 60 | Launched successfully from flat pad. This was the first flight test of a new series (A2X) POLARIS test vehicles. Re-entry body impacted 1,415 NM into the BOA and within the impact dispersion area for an unguided flight. |
| 83 | 3510 | A1X-52 | 17 Nov 60 | Launched from flat pad. This was the last of the A1X series of POLARIS test vehicles to be launched from the FBM complexes at Cape Canaveral. Shortly after 2nd stage separation, the 2nd stage motor pressure exceeded design conditions and ruptured the motor bottle causing flight termination. |
| 84 | 4503 | A2X-2 | 5 Dec 60 | Launched successfully from flat pad. 2nd of a new series of POLARIS test vehicles. Re-entry body impacted into BOA approx 1,368 NM down range and within the impact area for an unguided flight. |
| 85 | 3809 | A1E-13 | 22 Dec 60 | Launched successfully from the USS Robert E. Lee. Re-entry vehicle impacted 1,100 NM from launch point with miss distance of 3.1 NM to the left and 1.3 NM short of aim point. At time of launch the Robert E. Lee was submerged to a keel depth of 98 ft. in a position approx 30 miles east of PAFB. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1961 | |
| 86 | 5106 | A2X-3 | 10 Jan 61 | Pad launched. Re-entry body impact in BOA at 1,375 NM range. |
| 87 | 107 | A1E-15 | 11 Jan 61 | USS Robert E. Lee launched. Control malfunction required destruct action at T+48 sec. |
| 88 | 3810 | A1E-14 | 14 Jan 61 | USS Robert E. Lee launched. Became erratic at T+40 sec. Destruct at T+79.1 sec. |
| 89 | 106 | A2X-6 | 6 Feb 61 | Pad launched. First stage igniter trouble aborted first stage. 2nd stage ignited at T+2 sec. separated and flew 2,000 ft NW from pad. |
| 90 | 412 | A2X-7 | 1 Mar 61 | USS Observation Island launched. First sea firing of A2X series. First missile launched from development prototype launcher #4 aboard EAG. Impact was 1,390 NM in BOA. |
| 91 | 413 | A2X-8 | 9 Mar 61 | USS Observation Island launched. First fully guided A2X series launched from EAG-154. Impact was within 1.9 NM radial distance of target. |
| 92 | 815 | A2X-10 | 15 Mar 61 | Pad launched. Impact was in target area at range of 1,400 NM. |
| 93 | 411 | A1E-16 | 23 Mar 61 | USS Theodore Roosevelt launched from point 200 NM down range. RSO destruct during 2nd stage flight at T+99.7 sec. |
| 94 | 818 | A1E-17 | 23 Mar 61 | USS Theodore Roosevelt launched from point 200 NM down range. Impact was 5.2 NM from target. |



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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1961 (CONT'D) | | |
| 95 | 1354 | A1E-18 | 23 Mar 61 | USS Theodore Roosevelt launched from point 200 NM down range. RSO destruct at T+51 sec. |
| 96 | 1800 | A1E-19 | 6 Apr 61 | USS Theodore Roosevelt launched. Impact was 1,100 NM down range with radial miss distance of 0.65 NM. |
| 97 | 1352 | A2X-12 | 11 Apr 61 | Pad launched. Second stage failed to ignite. |
| 98 | 1365 | A1E-20 | 19 Apr 61 | USS Robert E. Lee launched. Impact showed radial miss distance of 3.4 NM. |
| 99 | 1356 | A2X-16 | 1 May 61 | Pad launched to 1302 NM range. Impact was .17 NM right and .23 NM beyond target. |
| 100 | 1364 | A1E-22 | 3 May 61 | USS Abraham Lincoln launched. Impact was .006 NM long and .075 NM right of target. |
| 101 | 1256 | A2X-19 | 8 May 61 | Pad launched to Antigua MILS net. Impact was .81 NM long and .92 NM left of target. |
| 102 | 1257 | A1E-26 | 17 May 61 | Launched from submerged USS Abraham Lincoln. Re-entry body did not separate. Impact was 327 NM short and 48 NM left of target. |
| 103 | 1812 | A1E-27 | 17 May 61 | Re-entry body impacted .91 NM long of target. Launched from submerged USS Abraham Lincoln. |

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POLARIS LAUNCHINGS

| TOTAL TO DATE | TEST NUMBER | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1961 (CONT'D) | | |
| 104 | 2124 | A1E-28 | 17 May 61 | Launched from submerged USS Abraham Lincoln. Second stage tumbled causing loss of re-entry body. Impact was 888 NM short of target. |
| 105 | 2125 | A1E-29 | 17 May 61 | Launched from submerged USS Abraham Lincoln. Re-entry body delivered to target area. |
| 106 | 2725 | A1E-33 | 17 May 61 | Launched from submerged USS Abraham Lincoln. Second stage control failure experienced. Impact was 91.8 NM short of target. |
| 107 | 414 | A2X-9 | 25 May 61 | Shipboard launched. Unstable action resulted in RSO destruct at T+10 sec. |
| 108 | 105 | A2X-5 | 12 Jun 61 | Re-entry body impacted 1,433 NM down range. All test objectives met. |
| 109 | 819 | A2X-11 | 26 Jun 61 | First fully guided, warhead equipped A2X missile launched from USS Observation Island. Malfunction occurred during second stage flight. Impact was 857 NM short of target. |

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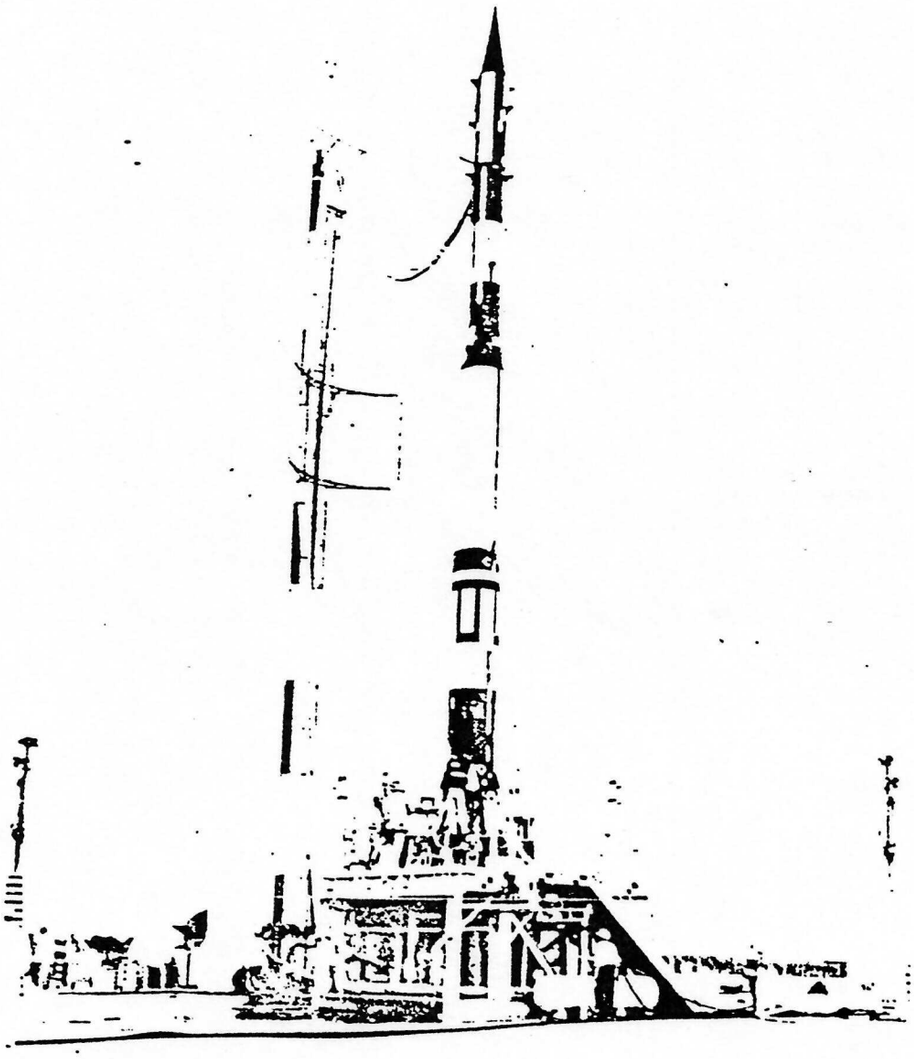

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION'S SATELLITE-CARRYING VANGUARD ON ITS LAUNCH PAD AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER

Tab 21

| | |
|---|---|
| MISSILE | VANGUARD |
| SPONSOR | Navy and NASA |
| CONTRACTOR | Glenn L. Martin |

| | |
|---|---|
| First R&D launch | 8 Dec 56 |
| Final launch | 18 Sep 59 |
| Total launchings at AMR | 14 |

Placed one 6" and two 20" satellites in orbit.

Program completed

## VANGUARD LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1956** | | |
| 1 | 1 | TV-0(RTV-1-12B, Ser. No. 000) | 8 Dec 56 | 1st launch in VANGUARD program using a modified VIKING missile. |
| | | **JANUARY - JUNE 1957** | | |
| 2 | 1 | TV-1 No. 001 | 1 May 57 | High altitude test of 3rd stage separation and ignition. Last time VIKING used in VANGUARD program. |
| | | **JULY - DECEMBER 1957** | | |
| 3 | 1 | TV-2 No. 002 | 23 Oct 57 | First true VANGUARD configuration. Used dummy second and third stages. |
| 4 | 2 | TV-3 No. 004 | 6 Dec 57 | First attempt to launch satellite. Lost thrust one second after lift-off. Impacted on pad. |
| | | **JANUARY - JUNE 1958** | | |
| 5 | 1 | TV-3BU | 5 Feb 58 | Second satellite attempt Vehicle broke up at T+57 sec. |
| 6 | 2 | TV-4 | 17 Mar 58 | Placed VANGUARD I satellite in earth orbit-- a 6" 3 2 lb. sphere Life expectancy 200 to 1000 years. Apogee 2,465 statute miles. Perigee 406 statute miles. |
| 7 | 3 | TV-5 | 28 Apr 58 | Last test vehicle Carried 20" 21.5 lb. satellite. Third stage failed to ignite. |
| 8 | 4 | SLV-1 | 27 May 58 | First IGY satellite launch vehicle. Satellite, injected at high angle, failed to orbit. |
| 9 | 5 | SLV-2 | 25 Jun 58 | Carried 20" 21.5 lb. satellite. Second stage cut off prematurely. Third stage failed to fire. |

VANGUARD LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 10 | 1 | SLV-3 | 26 Sep 58 | Low second stage performance reduced final velocity Satellite made only 3 or 4 orbits before re-entry. |
| | | | JANUARY - JUNE 1959 | |
| 11 | 1 | SLV-4 | 17 Feb 59 | Placed VANGUARD II, 20" 71.5 lb. "cloud cover" satellite, in orbit. Expected life 200 years. Apogee 2063 and perigee 326 statute miles. |
| 12 | 2 | SLV-5 | 13 Apr 59 | Failed to orbit. Second stage controls failed. Third stage did not fire. |
| 13 | 3 | SLV-6 | 22 Jun 59 | 2nd stage regulator valve failure caused explosion. Orbit not achieved. |
| | | | JULY - DECEMBER 1959 | |
| 14 | 1 | SLV-7 | 15 Sep 59 | Completed VANGUARD program by placing VANGUARD III, a 20" 94.6 lb. sphere, in orbit. Apogee 2,326 and perigee 317 statute miles. Life expectancy 50 years. Third stage of rocket collided with VANGUARD II satellite with no ill effects. |

Two 20" and one 6" satellites placed in orbit.