# HISTORICAL OFFICE

## OFFICE OF INFORMATION

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INDEX OF MISSILE LAUNCHINGS BY MISSILE PROGRAM

JULY 1950 - JUNE 1960

FIRST TEN YEARS OF EFFORT BY THE ATLANTIC MISSILE RANGE



COPY NO. 34

The lessons of history correctly interpreted are vital to the national safety

- Jerome Ellison

AIR FORCE MISSILE TEST CENTER

AIR RESEARCH AND DEVELOPMENT COMMAND

PATRICK AIR FORCE BASE, FLORIDA

**MT 60-2544**

[redacted]

January 12, 1961

From Marshall
To NASA Headquarters

Reply Attention: M-LOD-F
Attention: D (Dr. Silverstein)

Subject: Index of Missile Launchings, July 1950 thru June 1960

1. The attached publication, subject as above, classified [redacted] is forwarded for your information and files.

J. W. Rosenberry

J. W. ROSENBERRY
Office of Flight Missions
Launch Operations Directorate

Enc.
Index of Missile Launchings
by Missile Program - 1950-1960
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# INDEX OF MISSILE LAUNCHINGS

# BY MISSILE PROGRAM

JULY 1950 - JUNE 1960

FIRST TEN YEARS OF EFFORT BY

THE ATLANTIC MISSILE RANGE

DEC 15 1960

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[redacted]TER 12 YEARS.

Marven R. Whipple
Center Historian

Historical Branch
Office of Information
Air Force Missile Test Center
(Air Research and Development Command)
Patrick Air Force Base, Florida

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MT 60-2544

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July 1950 - June 1960

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INDEX OF MISSILE LAUNCHINGS
July 1950 - June 1960

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APPROVED

SID F. SPEAR, Lt Colonel, USAF
Director of Information

MT 60-2544

[redacted]

## FOREWORD

The purpose of this brochure is to provide a ready reference index of missiles launched over the Atlantic Missile Range during its first ten years of operation. It contains a record of missiles launched during the period July 1950 through June 1960. Launch dates are in chronological order according to missile program. Missile numbers are also included. Highlights concerning various launchings are recorded in the remarks section. No attempt was made to give specific launch objectives or test results. The inclusion of such information would have required a classification different from the one assigned to some of the missile programs.

Meteorological rockets of the HUGO and ARCAS class and dead-weight slugs used in the POLARIS program are not included. Dummy missiles, scale models, and live missiles are all included, provided a launch was intended and was accomplished.

A launch is defined as a definite lift-off of the vehicle from its launch stand after a completed pre-launch countdown with intent to launch. Vehicles that exploded on the pad during the countdown operation prior to T-time, or that exploded and burned at the time of being ignited before accomplishing lift-off, are not considered to have been launched; consequently, they are not included in this brochure.

Annex A - Tab 27 - contains data on the space probes and passenger satellites launched from the Atlantic Missile Range.

The large number of requests from staff officers of the Air Force Missile Test Center and other agencies for the type information included in this brochure prompted the Historical Office to prepare it for distribution to interested agencies.

Marven R. Whipple

MARVEN R. WHIPPLE
Center Historian

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ANNEX A Tab 27

Space Flights and Passenger Satellites

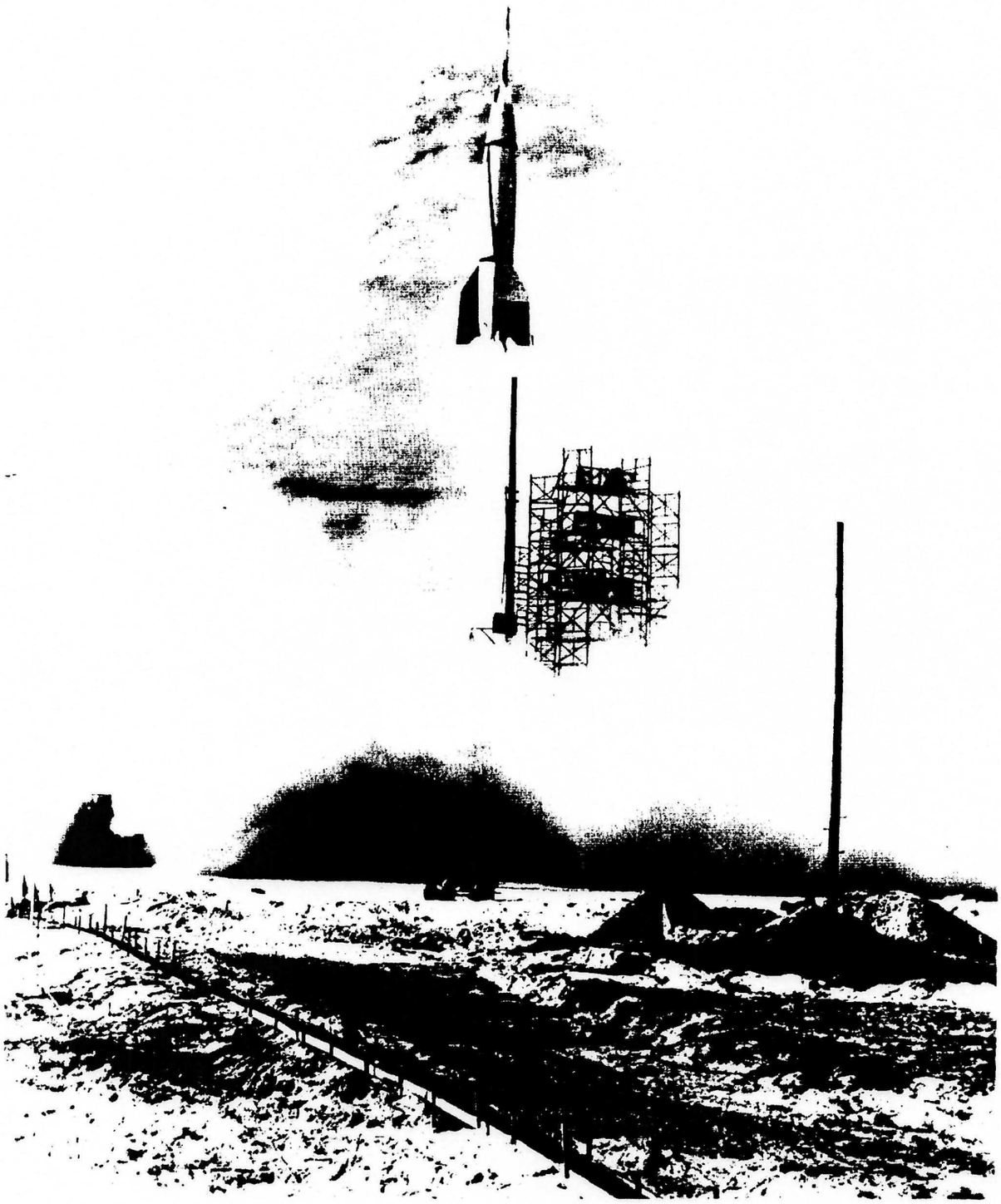
ATLANTIC MISSILE RANGE
RECORD OF MISSILES LAUNCHED
July 1950 through June 1960

| | FY 51 | | FY 52 | | FY 53 | | FY 54 | | FY 55 | | FY 56 | | FY 57 | | FY 58 | | FY 59 | | FY 60 | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUMPER | 2 | - | | | | | | | | | | | | | | | | | | | 2 |
| LARK | 3 | 7 | 6 | 8 | 6 | 9 | 1 | - | | | | | | | | | | | | | 40 |
| MATADOR | | 2 | 7 | 9 | 12 | 13 | 23 | 50 | 9 | 25 | 10 | 19 | 12 | 4 | 9 | 4 | 6 | 14 | 11 | 21 | 260 |
| MACE | | | | | | | | | | | | | | | | | | | 2 | 5 | 7 |
| SNARK | | | | | 5 | 2 | 2 | 4 | 5 | 5 | 6 | 3 | 10 | 11 | 8 | 7 | 7 | 6 | 5 | 5 | 91 |
| BOMARC | | | | | 1 | 2 | 2 | 0 | 3 | 4 | 5 | 5 | 3 | 4 | 8 | 8 | 12 | 7 | 4 | 2 | 70 |
| RVA-10 | | | | | | 4 | - | | | | | | | | | | | | | | 4 |
| NAVAHO X-10 | | | | | | | | | | | 2 | 5 | 5 | - | | | 2 | 1 | - | | 15 |
| NAVAHO SM-64 | | | | | | | | | | | | | 1 | 3 | 3 | 2 | 2 | - | | | 11 |
| BULL GOOSE | | | | | | | | | | | | | | 3 | 4 | 4 | 9 | - | | | 20 |
| X-17 | | | | | | | | | | 5 | 4 | 4 | 16 | 8 | 1 | - | | | | | 38 |
| ATLAS | | | | | | | | | | | | | | 1 | 2 | 5 | 9 | 8 | 14 | 11 | 50 |
| TITAN | | | | | | | | | | | | | | | | | | 4 | 2 | 11 | 17 |
| THOR | | | | | | | | | | | | | | 2 | 7 | 5 | 8 | 9 | 14 | 3 | 48 |
| THOR-ABLE | | | | | | | | | | | | | | | | 1 | 5 | 6 | 2 | 4 | 18 |
| DELTA-THOR | | | | | | | | | | | | | | | | | | | | 1 | 1 |
| REDSTONE | | | | | | | 1 | 2 | 2 | 3 | 3 | | | | | 5 | 2 | 0 | 2 | 1 | 21 |
| JUPITER | | | | | | | | | | | | 2 | 8 | 8 | 11 | 5 | 7 | 6 | 9 | 2 | 58 |
| JUNO | | | | | | | | | | | | | | | | | 1 | 1 | 3 | 1 | 6 |
| PERSHING | | | | | | | | | | | | | | | | | | | | 5 | 5 |
| POLARIS | | | | | | | | | | | | | | 2 | 10 | 5 | 3 | 7 | 13 | 20 | 60 |
| VANGUARD | | | | | | | | | | | | | 1 | 1 | 2 | 5 | 1 | 3 | 1 | - | 14 |
| BOLD ORION 199B | | | | | | | | | | | | | | | | 2 | 6 | 3 | 1 | - | 12 |
| ALBM 58 199C | | | | | | | | | | | | | | | | | 2 | 1 | - | | 3 |
| DRACO 199C | | | | | | | | | | | | | | | | | | 3 | - | | 3 |
| JASON | | | | | | | | | | | | | | | | | 12 | - | | | 12 |
| HOUND DOG GAM 77 | | | | | | | | | | | | | | | | | | 2 | 4 | 11 | 17 |
| TOTAL | 5 | 9 | 13 | 17 | 24 | 30 | 29 | 56 | 19 | 42 | 30 | 38 | 56 | 47 | 65 | 58 | 94 | 81 | 87 | 103 | 903 |
| | CY 50 | | CY 51 | | CY 52 | | CY 53 | | CY 54 | | CY 55 | | CY 56 | | CY 57 | | CY 58 | | CY 59 | | CY 60 |

Tab 1

| | |
|---|---|
| MISSILE | BUMPER |
| SPONSOR | Army |
| CONTRACTOR(S) | General Electric (Prime)<br>Douglas (Associate) |
| First launch | 24 Jul 50 - This was first missile launched from Cape Canaveral |
| Final launch | 29 Jul 50 |
| Total launchings at AMR | 2 |

Program completed



1. BUMPER, A GERMAN V-2 WITH WAC CORPORAL IN NOSE. UNDERGOING LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

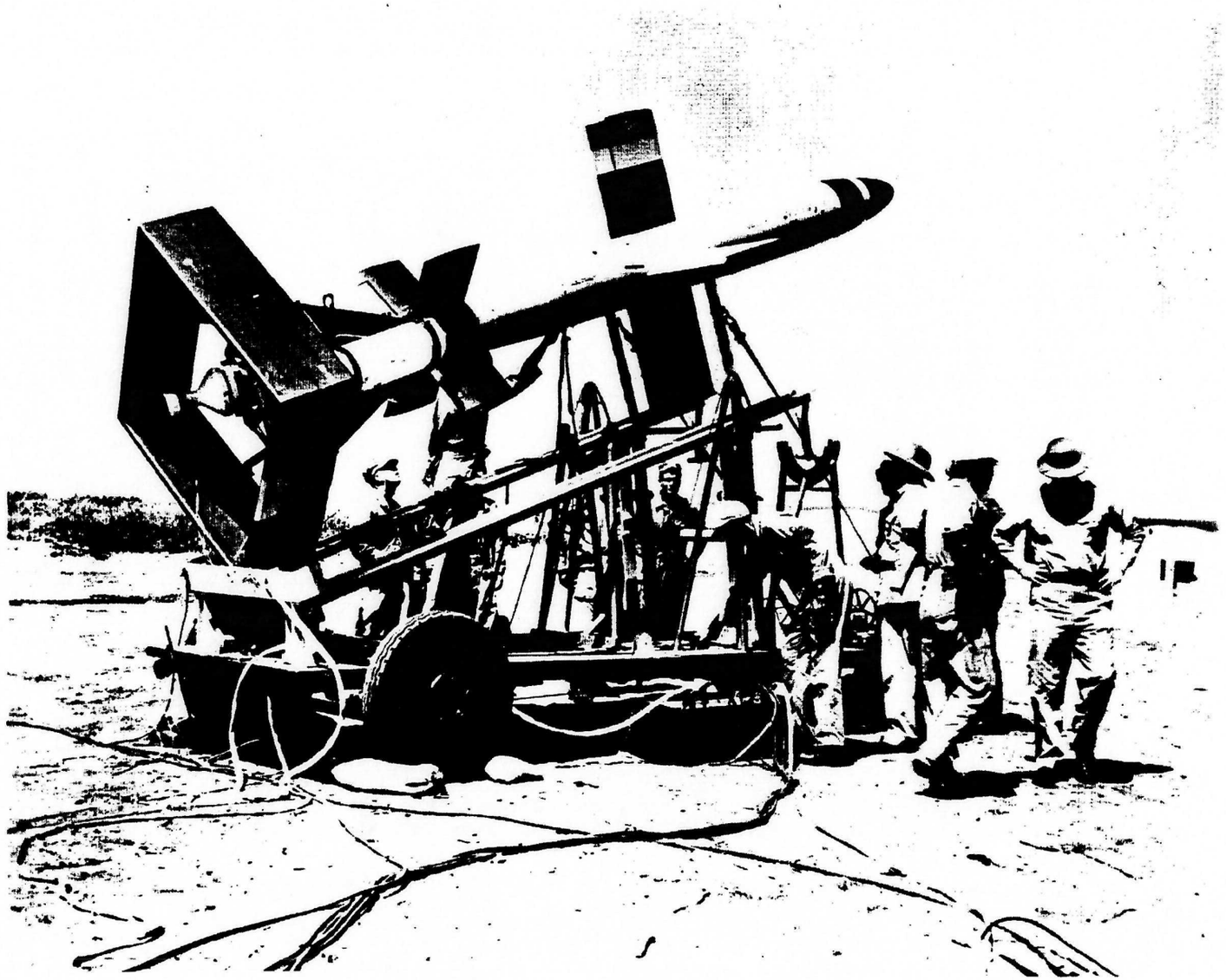
## BUMPER LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1950 | |
| 1 | 1 | #8 | 24 Jul 50 | German V2 with WAC corporal as second stage. First missile launched from Cape Canaveral, Fla. |
| 2 | 2 | #7 | 29 Jul 50 | Second and final BUMPER launching at AMR. |

Tab 2

| | |
|---|---|
| MISSILE | LARK |
| SPONSOR | Air Force |
| CONTRACTOR | Fairchild Aircraft Company |
| First launch | 25 Oct 50 |
| Final launch | 8 Jul 53 |
| Total launchings at AMR | 40 |

Program completed



2. THE LARK MISSILE TRAINING VEHICLE FOR MISSILE LAUNCH TEAMS BEING PREPARED FOR LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## LARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1950 | |
| 1 | 1 | 225 | 25 Oct 50 | First LARK launch at AMR. |
| 2 | 2 | 226 | 26 Oct 50 | Command guidance ineffective. |
| 3 | 3 | 227 | 21 Nov 50 | Flight limited by range of Optical tracker to 15 min. |
| | | | JANUARY - JUNE 1951 | |
| 4 | 1 | 231 | 11 Apr 51 | Exploded 2 seconds after booster separation. |
| 5 | 2 | 232 | 17 Apr 51 | Last of command type LARK. |
| 6 | 3 | 234 | 3 May 51 | First mid-course LARK launch. |
| 7 | 4 | 235 | 11 May 51 | Traveled 28,000 yards. |
| 8 | 5 | 242 | 29 May 51 | Entered cloud bank at T+121 sec. and had to be destroyed. |
| 9 | 6 | 236 | 7 Jun 51 | First time two missiles were launched on same day at AMR. |
| 10 | 7 | 238 | 7 Jun 51 | Pitch control failed. |
| | | | JULY - DECEMBER 1951 | |
| 11 | 1 | 240 | 3 Jul 51 | All objectives accomplished. |
| 12 | 2 | 239 | 20 Jul 51 | Low order explosion at T+18 sec. |
| 13 | 3 | 593 | 13 Sep 51 | Structural failure at T+2 sec. |
| 14 | 4 | 595 | 19 Sep 51 | Passed within 35 yards of target. |
| 15 | 5 | 597 | 4 Oct 51 | Flight lasted only 12 sec. |
| 16 | 6 | 598 | 11 Dec 51 | Came within 35 yards of target. |

## LARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JANUARY - JUNE 1952** | |
| 17 | 1 | 600 | 28 Jan 52 | Poor response to control. |
| 18 | 2 | 604 | 12 Feb 52 | Explosion and destruct at T+1.5 min. |
| 19 | 3 | 596 | 28 Feb 52 | Loss of track brought destruct at T+64 sec. |
| 20 | 4 | 594 | 21 Mar 52 | Missile destroyed at T+1.4 min. |
| 21 | 5 | 602 | 10 Apr 52 | Lack of control required destruction. |
| 22 | 6 | 601 | 17 Apr 52 | Launch phase good. Loss of power and radar track required destruct. |
| 23 | 7 | 603 | 16 May 52 | Short flight of 46 seconds. |
| 24 | 8 | 230 | 24 Jun 52 | Test of Thompson Launcher successful. |
| | | | **JULY - DECEMBER 1952** | |
| 25 | 1 | 592 | 7 Jul 52 | Straight line flight to impact. |
| 26 | 2 | 606 | 15 Jul 52 | Exploded at T+7 seconds. |
| 27 | 3 | 608 | 17 Sep 52 | First gimballed antenna configuration. |
| 28 | 4 | 610 | 28 Nov 52 | Failed to track target. |
| 29 | 5 | 599 | 4 Dec 52 | Teamed with MATADOR in first same-day launch under two missile programs. |
| 30 | 6 | 605 | 16 Dec 52 | Destroyed after 1 min. of flight. |

## LARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JANUARY - JUNE 1953** | |
| 31 | 1 | 607 | 12 Feb 53 | Successful training operation. |
| 32 | 2 | 612 | 24 Feb 53 | Passed within 1,000 ft. of target. |
| 33 | 3 | 611 | 3 Mar 53 | Emergency fired to prevent explosion on launcher. |
| 34 | 4 | 621 | 16 Mar 53 | Reached 27,000 ft. altitude and 16,050 yd. range. |
| 35 | 5 | 622 | 8 Apr 53 | Test objectives accomplished. |
| 36 | 6 | 614 | 22 Apr 53 | Motor malfunctioned. |
| 37 | 7 | 623 | 28 Apr 53 | Launch and boost phase normal. |
| 38 | 8 | 624 | 12 May 53 | Exceptionally good flight. |
| 39 | 9 | 613 | 14 May 53 | Satisfactory flight. |
| | | | **JULY - DECEMBER 1953** | |
| 40 | 1 | 626 | 8 Jul 53 | Final LARK launch at AFMTC. |

End of Program

Tab 3

| | |
|---|---|
| MISSILE | MATADOR (TM-61) |
| SPONSOR | Air Force |
| CONTRACTOR | Glenn L. Martin Company |
| First R&D launch | 20 Jun 51 |
| R&D testing completed | 30 Nov 56 |

Subsequent launchings were for unit training of tactical missile squadrons.

Training launchings still being conducted.

3. THE U.S. AIR FORCE'S MATADOR, A TACTICAL CRUISE MISSILE BY GLENN L. MARTIN, STARTING FLIGHT FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JANUARY - JUNE 1951** | |
| 1 | 1 | GM-544 | 20 Jun 51 | First MATADOR test at AMR. First to use GBI instrumentation. |
| 2 | 2 | GM-545 | 29 Jun 51 | Reached altitude of 41,000 ft. and range of 205 mi. |
| | | | **JULY - DECEMBER 1951** | |
| 3 | 1 | GM-546 | 18 Jul 51 | Launch and flight response good. |
| 4 | 2 | GM-548 | 10 Aug 51 | Completely trouble-free operation. |
| 5 | 3 | GM-549 | 31 Aug 51 | Dump signal not received by missile. |
| 6 | 4 | GM-550 | 6 Sep 51 | Stalled and landed 50 yds off-shore. |
| 7 | 5 | GM-551 | 26 Oct 51 | Utilized new control gear. |
| 8 | 6 | GM-547 | 7 Dec 51 | First all military launch of MATADOR by 6555th GM Sq. |
| 9 | 7 | GM-552 | 13 Dec 51 | Dump was on course but short of target |
| | | | **JANUARY - JUNE 1952** | |
| 10 | 1 | GM-554 | 15 Jan 52 | Only 12 min. of flight time. |
| 11 | 2 | GM-555 | 13 Feb 52 | Attained 40,000 ft. alti., 291.5 mph speed, and 207 mi. range. |
| 12 | 3 | GM-556 | 10 Mar 52 | Received automatic dump signal. |
| 13 | 4 | GM-558 | 20 Mar 52 | Only 3 min. flight time. |
| 14 | 5 | GM-561 | 4 Apr 52 | First to use MARC guidance control. |
| 15 | 6 | GM-559 | 9 Apr 52 | Automatic dump ineffective. |
| 16 | 7 | GM-560 | 2 May 52 | Last to use Long Base Leg guidance. |
| 17 | 8 | GM-563 | 15 May 52 | Hydraulic failure caused impact at T+8 min. |
| 18 | 9 | GM-562 | 22 May 52 | First flight participated in by 1st Pilotless Bomber Sq (Light). |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JULY - DECEMBER 1952** | |
| 19 | 1 | GM-565 | 9 Jul 52 | First test of new configuration. |
| 20 | 2 | GM-566 | 19 Jul 52 | Impact on course, range 205.6 mi. |
| 21 | 3 | GM-568 | 10 Sep 52 | Premature dump signal caused impact on south shore of GHI. |
| 22 | 4 | GM-569 | 16 Sep 52 | Missile refused dump signals. |
| 23 | 5 | GM-570 | 9 Oct 52 | Satisfactory flight performance. |
| 24 | 6 | GM-2353 | 4 Nov 52 | First test of new tail configuration. |
| 25 | 7 | GM-567 | 7 Nov 52 | Most successful flight to date. |
| 26 | 8 | GM-2354 | 17 Nov 52 | First time 2 MATADORS launched on same day. |
| 27 | 9 | GM-11042 | 17 Nov 52 | First "S" or production model MATADOR. |
| 28 | 10 | GM-553 | 4 Dec 52 | Launched by 69th Pilotless Bomber Sq. |
| 29 | 11 | GM-2356 | 15 Dec 52 | First SHANICLE Guidance flight. |
| 30 | 12 | GM-11043 | 19 Dec 52 | Camera and radar coverage 100%. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1953 | |
| 31 | 1 | GM-557 | 12 Jan 53 | Impact 800 yds from launcher. |
| 32 | 2 | GM-11046 | 14 Jan 53 | First special warhead test. |
| 33 | 3 | GM-11050 | 30 Jan 53 | Failure of command control caused missile destruct. |
| 34 | 4 | GM-2357 | 5 Feb 53 | Shanicle guided. Entered dive and broke up at T+6 min. |
| 35 | 5 | GM-11048 | 17 Feb 53 | First rise of directional gyro heading. |
| 36 | 6 | GM-2358 | 4 Mar 53 | Shanicle guidance system failed. |
| 37 | 7 | GM-11062 | 18 Mar 53 | New cathedral wing configuration. |
| 38 | 8 | GM-11045 | 31 Mar 53 | First all-military launch by 1st Pilotless Bomber Sq. |
| 39 | 9 | GM-11044 | 1 Apr 53 | Terminal dive break-up as in previous flights. |
| 40 | 10 | GM-11049 | 24 Apr 53 | Broke-up during terminal dive. |
| 41 | 11 | GM-2369 | 29 Apr 53 | Shanicle guidance fair. Broke-up during terminal dive. |
| 42 | 12 | GM-11053 | 4 May 53 | Shanicle guidance flight poor. Broke-up during terminal dive. |
| 43 | 13 | GM-11056 | 12 Jun 53 | Used drag chute during terminal dive to solve break-up problem. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1953 | |
| 44 | 1 | GM-11059 | 2 Jul 53 | Use of drag chute did not prevent terminal dive break-up. |
| 45 | 2 | GM-11057 | 9 Jul 53 | Tried full power dive in terminal dive problem without success. |
| 46 | 3 | GM-11081 | 4 Aug 53 | Use of beefed-up tail to solve terminal dive break-up successful. Warhead test OK. |
| 47 | 4 | GM-11083 | 24 Aug 53 | Beefed-up tail permitted impact intact. |
| 48 | 5 | GM-11082 | 23 Sep 53 | Confirmed solution of terminal dive break-up problem. Warhead test. |
| 49 | 6 | GM-2368 | 21 Oct 53 | 1st Low-level test of YB-61. |
| 50 | 7 | GM-11072 | 22 Oct 53 | 1st night launching of B-61A. |
| 51 | 8 | GM-11097 | 2 Nov 53 | Test of special warhead. |
| 52 | 9 | GM-11100 | 17 Nov 53 | Excellent flight results. |
| 53 | 10 | GM-11107 | 18 Nov 53 | Terminal dive break-up occurred. |
| 54 | 11 | GM-11104 | 18 Nov 53 | Broke-up during terminal dive. |
| 55 | 12 | GM-11098 | 19 Nov 53 | Special warhead test. |
| 56 | 13 | GM-2359 | 19 Nov 53 | 2nd Low-level test of YB-61. |
| 57 | 14 | GM-11101 | 27 Nov 53 | Structural integrity test. |
| 58 | 15 | GM-11099 | 2 Dec 53 | Structural integrity test. |
| 59 | 16 | GM-11080 | 11 Dec 53 | Shanicle guidance test |
| 60 | 17 | GM-11105 | 15 Dec 53 | Five launched in sustained 22 hour operation to test operational readiness of 1st PB Sq (Light). |
| 61 | 18 | GM-11106 | 15 Dec 53 | |
| 62 | 19 | GM-11110 | 15 Dec 53 | |
| 63 | 20 | GM-12418 | 15 Dec 53 | |
| 64 | 21 | GM-12419 | 16 Dec 53 | |
| 65 | 22 | GM-11103 | 16 Dec 53 | To determine final warhead configuration. |
| 66 | 23 | GM-11102 | 17 Dec 53 | Special warhead design test. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1954 | |
| 67 | 1 | GM-12427 | 7 Jan 54 | Missile broke-up. Warhead test. |
| 68 | 2 | GM-12421 | 8 Jan 54 | First simultaneous check-out of missiles on two separate pads. To provide tactical training under night black-out conditions to 69th Pilotless Bomber Sq (Light) |
| 69 | 3 | GM-12420 | 8 Jan 54 | |
| 70 | 4 | GM-11109 | 8 Jan 54 | |
| 71 | 5 | GM-12422 | 21 Jan 54 | Warhead design test. |
| 72 | 6 | GM-12423 | 29 Jan 54 | Group II Terminal dive tests. Three tests to prove airframe modifications for terminal dive. |
| 73 | 7 | GM-12425 | 4 Feb 54 | |
| 74 | 8 | GM-12424 | 19 Feb 54 | |
| 75 | 9 | GM-12447 | 25 Feb 54 | First use of smoke signal to aid tracking. Warhead test. |
| 76 | 10 | GM-2360 | 5 Mar 54 | Low level test. |
| 77 | 11 | GM-12437 | 5 Mar 54 | Group III terminal dive test. |
| 78 | 12 | GM-12445 | 23 Mar 54 | First time two warhead missiles launched on same day. |
| 79 | 13 | GM-12444 | 23 Mar 54 | |
| 80 | 14 | GM-12446 | 26 Mar 54 | Training for 69th PB Sq (Light). |
| 81 | 15 | GM-12438 | 30 Mar 54 | Group III terminal dive test. |
| 82 | 16 | GM-12432 | 30 Mar 54 | To provide tactical training for 69th PB Sq (light). |
| 83 | 17 | GM-12468 | 9 Apr 54 | |
| 84 | 18 | GM-12429 | 9 Apr 54 | |
| 85 | 19 | GM-12436 | 9 Apr 54 | |
| 86 | 20 | GM-12426 | 9 Apr 54 | |
| 87 | 21 | GM-12452 | 9 Apr 54 | |
| 88 | 22 | GM-12453 | 13 Apr 54 | Warhead configuration test. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1954 (Cont'd) | |
| 89 | 23 | GM-12439 | 13 Apr 54 | Group IV terminal dive test. |
| 90 | 24 | GM-12428 | 15 Apr 54 | Warhead configuration test. |
| 91 | 25 | GM-12470 | 23 Apr 54 | Determine assembly and launch capability of 69th PB Sq (L) |
| 92 | 26 | GM-12469 | 23 Apr 54 | |
| 93 | 27 | GM-12462 | 23 Apr 54 | |
| 94 | 28 | GM-12479 | 23 Apr 54 | |
| 95 | 29 | GM-12440 | 27 Apr 54 | Demonstrate successful terminal dive. |
| 96 | 30 | GM-12477 | 30 Apr 54 | Four tests to collect OST data. Last two destroyed by In-Flight Safety Officer. |
| 97 | 31 | GM-12476 | 30 Apr 54 | |
| 98 | 32 | GM-12482 | 30 Apr 54 | |
| 99 | 33 | GM-12480 | 30 Apr 54 | |
| 100 | 34 | GM-12481 | 14 May 54 | Three tests to determine assembly capabilities. |
| 101 | 35 | GM-12478 | 14 May 54 | |
| 102 | 36 | GM-12487 | 14 May 54 | |
| 103 | 37 | GM-12441 | 18 May 54 | Group V terminal dive test. |
| 104 | 38 | GM-12473 | 19 May 54 | Training flights for 69th PB Sq (L) |
| 105 | 39 | GM-12484 | 19 May 54 | |
| 106 | 40 | GM-12458 | 20 May 54 | First extended flight, race track pattern. |
| 107 | 41 | GM-12472 | 3 Jun 54 | Maximum range attempt failed by defective RATO. |
| 108 | 42 | GM-12454 | 4 Jun 54 | Reliability system test. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1954 (Cont'd) | |
| 109 | 43 | GM-12471 | 4 Jun 54 | Destroyed by In-Flight Safety after loss of engine power. |
| 110 | 44 | GM-12431 | 9 Jun 54 | First race track pattern flown with warhead. |
| 111 | 45 | GM-12460 | 10 Jun 54 | Only 11 min. flight time. |
| 112 | 46 | GM-12489 | 10 Jun 54 | Broke-up during terminal dive. |
| 113 | 47 | GM-52-1824 | 18 Jun 54 | Flew race track pattern and dived intact. |
| 114 | 48 | GM-52-1826 | 24 Jun 54 | Last fired by 69th PB Sq. |
| 115 | 49 | GM-12442 | 29 Jun 54 | Group V terminal dive test. First extended hold test after completion of pre-launch check. |
| 116 | 50 | GM-12435 | 30 Jun 54 | Special warhead design test. Terminal dive without break-up. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JULY - DECEMBER 1954** | |
| 117 | 1 | GM-11067 | 7 Jul 54 | First B-61A specially modified for low-level flight test. |
| 118 | 2 | GM-12459 | 20 Jul 54 | Flew long race track pattern with special warhead. |
| 119 | 3 | GM-11070 | 22 Jul 54 | Low-level flight test series. |
| 120 | 4 | GM-11074 | 10 Sep 54 | Last low-level flight test series. |
| 121 | 5 | GM-12443 | 29 Sep 54 | Premature dump caused impact on GBI. |
| 122 | 6 | GM-12467 | 20 Oct 54 | First redeveloped Shanicle test. First YB 61-C tested at AFMTC. |
| 123 | 7 | GM-12455 | 20 Oct 54 | Special warhead test. |
| 124 | 8 | GM-12456 | 20 Oct 54 | Special warhead test. Erratic behavior required early destruct. |
| 125 | 9 | GM-12430 | 16 Dec 54 | Special warhead test. Failure of MARC control system made command control necessary. |
| | | | **JANUARY - JUNE 1955** | |
| 126 | 1 | GM-12434 | 14 Jan 55 | MARC guidance test showed marginal control. |
| 127 | 2 | GM-52-1849 | 18 Jan 55 | YB-61C MATADOR, Shanicle test. |
| 128 | 3 | GM-52-1865 | 18 Jan 55 | YB-61C MATADOR, Shanicle test. |
| 129 | 4 | GM-12450 | 16 Feb 55 | 1st B-61A to be controlled and dumped automatically by MARC guidance. Extended flight. |
| 130 | 5 | GM-12486 | 21 Feb 55 | 1st launching by 11th TMS. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1955 (Cont'd) | | |
| 131 | 6 | GM-12449 | 24 Feb 55) | |
| 132 | 7 | GM-12461 | 2 Mar 55) | |
| 133 | 8 | GM-12448 | 2 Mar 55) | (ADMAT) Series of three Air Defense MATADOR tests. |
| 134 | 9 | GM-52-1889 | 9 Mar 55 | YB-61C, Shanicle guidance test. |
| 135 | 10 | GM-12483 | 17 Mar 55 | 11th TMS training flight. |
| 136 | 11 | GM-12451 | 17 Mar 55 | MARC guidance control test. |
| 137 | 12 | GM-52-1900 | 1 Apr 55 | First launch of YTM-61C by 6555th GM Sq. Shanicle test. |
| 138 | 13 | GM-11075 | 20 Apr 55 | 1st launch from Goodyear trans-launcher. (Dummy missile #1) |
| 139 | 14 | GM-53-92 | 21 Apr 55 | YB-61C Shanicle test. Premature automatic dump ended flight at T+10.7 min. |
| 140 | 15 | GM-53-205 | 28 Apr 55 | 11th Tactical Missile Sq. tng. |
| 141 | 16 | Dummy #2 | 29 Apr 55 | 2nd test of Goodyear translauncher. |
| 142 | 17 | GM-52-1895 | 6 May 55 | YB-61C Shanicle test satisfactory. |
| 143 | 18 | GM-53-203 | 10 May 55 | 11th Tactical Missile Sq. tng. |
| 144 | 19 | GM-52-1902 | 17 May 55 | Shanicle test of YB-61C. |
| 145 | 20 | GM-53-98 | 19 May 55 | Shanicle test of YB-61C. |
| 146 | 21 | GM-12463 | 1 Jun 55 | YB-61C Shanicle test. Used Goodyear translauncher. |
| 147 | 22 | GM-52-1857 | 1 Jun 55 | YB-61C Shanicle test. Used Goodyear translauncher. |
| 148 | 23 | GM 54-1 | 9 Jun 55 | 11th TM Sq. training. |
| 149 | 24 | GM 54-3 | 10 Jun 55 | 11th TM Sq. training. |
| 150 | 25 | GM 54-2 | 10 Jun 55 | 11th TM Sq. training. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1955 | |
| 151 | 1 | GM 54-8 | 8 Jul 55 | Warhead test and tactical training for 11th TM Sq. |
| 152 | 2 | GM 54-5 | 8 Jul 55 | Warhead test and tactical training for 11th TM Sq. |
| 153 | 3 | GM 54-6 | 18 Jul 55 | Tactical training for 11th TM Sq. |
| 154 | 4 | GM 54-7 | 18 Jul 55 | Warhead test and tactical training. 11th TM Sq. |
| 155 | 5 | GM 54-4 | 22 Jul 55 | First detonation of HE warhead during dive. Tactical training. |
| 156 | 6 | GM 54-9 | 29 Jul 55 | Second detonation of HE warhead during dive. Tactical training. |
| 157 | 7 | GM 54-10 | 29 Jul 55 | Last TM-61A/W-5 warhead OST series. Tactical training. |
| 158 | 8 | GM-11089 | 1 Sep 55 | "Two-min. Alert" test by 6555th GMS. |
| 159 | 9 | GM-11051 | 27 Oct 55 | "Two-min. Alert" test by 6555th GMS. |
| 160 | 10 | GM-11055 | 10 Nov 55 | "Two-min. Alert" test by 6555th GMS. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1956 | | |
| 161 | 1 | 54-17 (TM-61C) | 19 Jan 56 | 11th TM Sq. tng. Shanicle guided. Destroyed as Range Safety measure. |
| 162 | 2 | 54-18 (TM-61C) | 25 Jan 56 | 11th TM Sq. tng. Shanicle guided. |
| 163 | 3 | 54-16 (TM-61C) | 27 Jan 56 | 11th TM Sq. Tng. Shanicle failed. MSQ1 guided. |
| 164 | 4 | 54-12 (TM-61C) | 6 Feb 56 | 11th TM Sq. tng. Shanicle. |
| 165 | 5 | 54-11 (TM-61C) | 6 Feb 56 | 11th TM Sq. tng. Shanicle. Dumped prematurely at T+7 min. |
| 166 | 6 | 54-22 (TM-61C) | 23 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. |
| 167 | 7 | 54-26 (TM-61C) | 23 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. |
| 168 | 8 | 54-31 (TM-61C) | 26 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. Destroyed by Range Safety. |
| 169 | 9 | 54-19 (TM-61C) | 26 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. |
| 170 | 10 | 54-35 (TM-61C) | 26 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. Destroyed by Range Safety. |
| 171 | 11 | 54-21 (TM-61C) | 28 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. |
| 172 | 12 | 54-30 (TM-61C) | 28 Mar 56 | 11th TM Sq. tng. and CEP Shanicle. Premature dump. |
| 173 | 13 | 54-25 (TM-61C) | 28 Mar 56 | 11th TM Sq. tng. MSQ-1. |
| 174 | 14 | 54-36 (TM-61C) | 28 Mar 56 | 11th TM Sq. tng. Shanicle. |
| 175 | 15 | 54-28 (TM-61C) | 4 Apr 56 | 11th TM Sq. tng. Shanicle. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1956 (CONT'd)** | | |
| 176 | 16 | 54-34 (TM-61C) | 6 Apr 56 | 11th TM Sq. Tng. Shanicle. Premature dump. |
| 177 | 17 | 54-23 (TM-61C) | 6 Apr 56 | 11th TM Sq. tng. completed. |
| 178 | 18 | 11065 (TM-61C) | 2 May 56 | Evaluate ASTRAL launcher. Missile destroyed by Range Safety. |
| 179 | 19 | 11091 (TM-61C) | 20 May 56 | 1st public launching as Armed Forces Day demonstration. |
| | | **JULY - DECEMBER 1956** | | |
| 180 | 1 | 55-528 (TM-61C) | 29 Aug 56 | First tng. launch by 17th TM Sq. MARC guidance. |
| 181 | 2 | 55-529 (TM-61C) | 30 Aug 56 | 17th TM Sq. tng. MARC guidance. |
| 182 | 3 | 55-527 (TM-61C) | 12 Sep 56 | 17th TM Sq. tng. Destroyed by Range Safety. |
| 183 | 4 | 54-132 (TM-61C) | 12 Sep 56 | 17th TM Sq. tng. MARC guidance. |
| 184 | 5 | 54-13 (TM-61C) | 20 Sep 56 | 6555th GM Sq. Shanicle test. |
| 185 | 6 | 54-133 (TM-61C) | 26 Sep 56 | 17th TM Sq. tng. MARC guidance. |
| 186 | 7 | 54-230 (TM-61C) | 26 Sep 56 | 17th TM Sq. tng. Destroyed by Range Safety. |
| 187 | 8 | 54-14 (TM-61C) | 4 Oct 56 | 6555th GM Sq. Shanicle test. Destroyed by fail-safe system in target area. |
| 188 | 9 | 54-15 (TM-61C) | 12 Oct 56 | 6555th GMS. Shanicle test. |
| 189 | 10 | 54-127 (TM-61C) | 9 Nov 56 | 6555th GMS. Shanicle test. |
| 190 | 11 | 54-128 (TM-61C) | 21 Nov 56 | 6555th GMS. Shanicle test. |
| 191 | 12 | 54-129 (TM-61C) | 30 Nov 56 | 6555th GMS. Completed MATADOR R&D tests. Shanicle redevelopment program concluded. |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **JANUARY - JUNE 1957** | |
| 192 | 1 | | 10 Apr 57 | 17th TM Sq. tng. Radar track lost. Destruct ordered. |
| 193 | 2 | | 11 Apr 57 | 17th TM Sq. tng. Missile stalled. Destruct ordered at T+27 sec. |
| 194 | 3 | | 16 May 57 | 17th TM Sq. tng. Premature dump signal made destruct necessary. |
| 195 | 4 | | 17 May 57 | 17th TM Sq. tng. Training halted to calibrate range guidance equipment. |
| | | | **JULY - DECEMBER 1957** | |
| 196 | 1 | 54-137 | 29 Aug 57 | 588th TM Gp. tng. Flight normal. |
| 197 | 2 | 54-20 | 3 Sep 57 | 588th TM Gp. tng. Crashed 4 nm off shore. |
| 198 | 3 | 64-139 | 5 Sep 57 | 588th TM Gp. tng. Flight normal. |
| 199 | 4 | 64-32 | 5 Sep 57 | 588th TM Gp. tng. Results not available. |
| 200 | 5 | 54-177 | 25 Sep 57 | 588th TM Gp. tng. Flight normal. |
| 201 | 6 | 54-27 | 26 Sep 57 | 588th TM Gp. tng. Flight normal. |
| 202 | 7 | 54-140 | 1 Oct 57 | 588th TM Gp. tng. Dump difficulty. |
| 203 | 8 | 54-38 | 1 Oct 57 | 588th TM Gp. tng. Guidance difficulty. |
| 204 | 9 | 54-138 | 14 Nov 57 | 588th TM Gp. tng. Flight normal. |
| | | | **JANUARY - JUNE 1958** | |
| 205 | 1 | 56-1963 | 13 Mar 58 | Training flights. Three flights were uneventful. One would not respond to commands and destruct was ordered at T+4 min. |
| 206 | 2 | 54-24 | 13 Mar 58 | |
| 207 | 3 | 54-142 | 13 Mar 58 | |
| 208 | 4 | 56-1962 | 13 Mar 58 | |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1958** | | |
| 209 | 1 | Tng. No. 1 | 12 Nov 58 | |
| 210 | 2 | Tng. No. 2 | 13 Nov 58 | |
| 211 | 3 | Tng. No. 3 | 2 Dec 58 | All routine training flights. |
| 212 | 4 | Tng. No. 4 | 3 Dec 58 | |
| 213 | 5 | Tng. No. 5 | 4 Dec 58 | |
| 214 | 6 | Tng. No. 6 | 4 Dec 58 | |
| | | **JANUARY - JUNE 1959** | | |
| 215 | 1 | Tng. No. 7 | 7 Jan 59 | One January flight required Range Safety destruct at T+25.7 min. |
| 216 | 2 | Tng. No. 8 | 8 Jan 59 | |
| 217 | 3 | Tng. No. 9 | 25 Feb 59 | Track lost on one April flight and destruct ordered at 105 mi. point. |
| 218 | 4 | Tng. No. 10 | 25 Feb 59 | |
| 219 | 5 | Tng. No. 11 | 25 Feb 59 | One June flight crashed into sea at T+22 min. |
| 220 | 6 | Tng. No. 12 | 26 Feb 59 | |
| 221 | 7 | Tng. No. 13 | 22 Apr 59 | All others routine training flights. |
| 222 | 8 | Tng. No. 14 | 22 Apr 59 | |
| 223 | 9 | Tng. No. 15 | 23 Apr 59 | |
| 224 | 10 | Tng. No. 16 | 23 Apr 59 | |
| 225 | 11 | Tng. No. 17 | 10 Jun 59 | |
| 226 | 12 | Tng. No. 18 | 10 Jun 59 | |
| 227 | 13 | Tng. No. 19 | 11 Jun 59 | |
| 228 | 14 | Tng. No. 20 | 11 Jun 59 | |

## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1959 | |
| 229 | 1 | 54-46 | 25 Aug 59 | One November flight lost altitude and required Range Safety destruct at T+28 min. All others were routine training flights. |
| 230 | 2 | 54-47 | 25 Aug 59 | |
| 231 | 3 | 54-48 | 22 Sep 59 | |
| 232 | 4 | 54-43 | 22 Sep 59 | |
| 233 | 5 | 54-45 | 27 Oct 59 | |
| 234 | 6 | 54-49 | 27 Oct 59 | |
| 235 | 7 | 54-52 | 10 Nov 59 | |
| 236 | 8 | 54-50 | 24 Nov 59 | |
| 237 | 9 | 54-51 | 24 Nov 59 | |
| 238 | 10 | 54-44 | 24 Nov 59 | |
| 239 | 11 | 54-53 | 9 Dec 59 | |

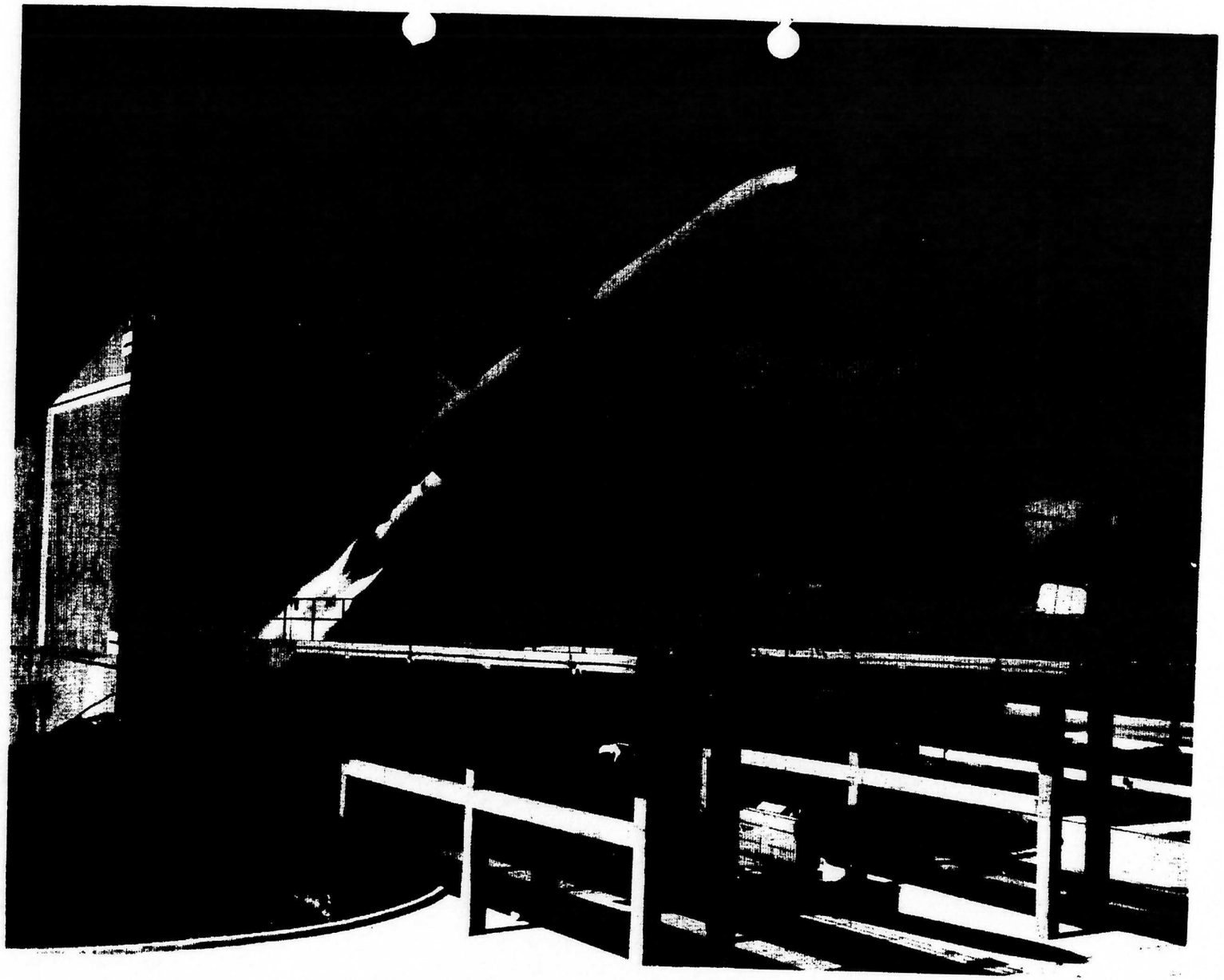
## MATADOR LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1960 | |
| 240 | 1 | 54-0054 | 13 Jan 60 | Training. 4504th Missile Test Wing. |
| 241 | 2 | 54-0055 | 13 Jan 60 | |
| 242 | 3 | 54-0056 | 10 Feb 60 | Training. Failed to dump properly. Destruct ordered. |
| 243 | 4 | 54-0058 | 9 Mar 60 | Training. Crashed at T+11 min 61 nm down range. |
| 244 | 5 | 54-57 | 13 Apr 60 | Training. One landed long because of dump malfunction. |
| 245 | 6 | 56-1925 | 13 Apr 60 | |
| 246 | 7 | 54-62 | 12 May 60 | Training. One lost booster at launch. Crashed 100 ft. from pad. One exceeded safety limits at Station #3 and was destructed. |
| 247 | 8 | 54-60 | 12 May 60 | |
| 248 | 9 | 56-1928 | 24 May 60 | |
| 249 | 10 | 54-67 | 24 May 60 | |
| 250 | 11 | 56-1927 | 8 Jun 60 | Training. 4504th Missile Test Wing. One would not make right turn. Was placed on target by 270° left turn. |
| 251 | 12 | 55-427 | 8 Jun 60 | |
| 252 | 13 | 54-63 | 8 Jun 60 | |
| 253 | 14 | 55-426 | 9 Jun 60 | |
| 254 | 15 | 54-124 | 10 Jun 60 | |
| 255 | 16 | 54-125 | 10 Jun 60 | |
| 256 | 17 | 54-61 | 13 Jun 60 | |
| 257 | 18 | 56-1918 | 13 Jun 60 | |
| 258 | 19 | 56-1919 | 15 Jun 60 | |
| 259 | 20 | 56-1914 | 28 Jun 60 | |
| 260 | 21 | 56-1915 | 28 Jun 60 | |

Tab 4

| | |
|---|---|
| MISSILE | MACE (TM-76) |
| SPONSOR | Air Force |
| CONTRACTOR | Glenn L. Martin Company |
| First R&D launch | 29 OCT 59 |

Program currently underway.



4. THE U.S. AIR FORCE'S MACE, A TACTICAL CRUISE MISSILE BY GLENN L. MARTIN, STARTING FLIGHT FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

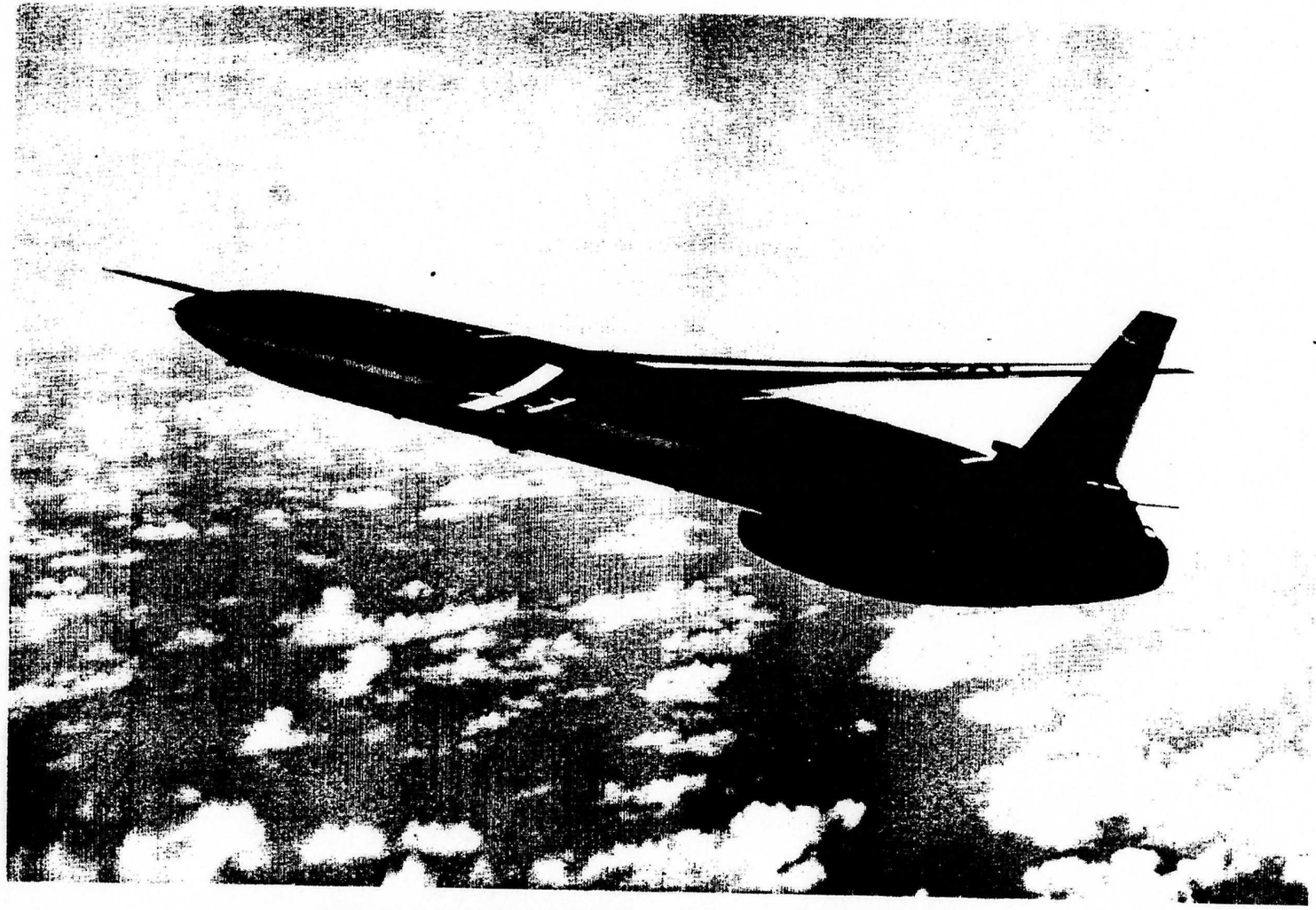
## MACE LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1959 | | |
| 1 | 1 | Inertial #7 56-2884 | 29 Oct 59 | First AFMTC launch of MACE. Objectives 97% accomplished. |
| 2 | 2 | Inertial #9 56-2893 | 4 Dec 59 | Test objectives met. |
| | | JANUARY - JUNE 1960 | | |
| 3 | 1 | Inertial #14 57-2445 | 11 Feb 60 | First MACE with programmed track deviations. |
| 4 | 2 | Inertial #15 57-2452 | 31 Mar 60 | 1st MACE with altitude programming. |
| 5 | 3 | Inertial #19 58-1408 | 27 Apr 60 | Crashed during first programmed dive. |
| 6 | 4 | Inertial #17 58-1391 | 3 Jun 60 | Crashed during programmed dive. |
| 7 | 5 | Inertial #6 56-2898 | 24 Jun 60 | Met test objectives. |

Tab 5

| | |
|---|---|
| MISSILE | SNARK (SM-62) |
| SPONSOR | Air Force |
| CONTRACTOR | Northrop Aircraft Corporation |
| First R&D launch | 29 Aug 52 |

Program currently underway



THE U. S. AIR FORCE'S SNARK INTERCONTINENTAL RANGE MISSILE IN FLIGHT DOWNRANGE FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1952** | | |
| 1 | 1 | Dynamic Model #2 | 29 Aug 52 | 1st SNARK test at AFMTC. Stage 1 firings. |
| 2 | 2 | Dynamic Model #1 | 1 Oct 52 | 2nd test of N-73 launcher |
| 3 | 3 | Dynamic Model #3 | 30 Oct 52 | 3rd zero-length launcher test. |
| 4 | 4 | GM-246 (N-25) | 26 Nov 52 | First N-25 launch from zero-length launcher. |
| 5 | 5 | GM-972 (N-25) | 19 Dec 52 | 2nd N-25 launch over AMR. |
| | | **JANUARY - JUNE 1953** | | |
| 6 | 1 | GM-974 (N-25) | 6 Feb 53 | Failed structurally during terminal dive. |
| 7 | 2 | GM-2337 (N-25) | 10 Mar 53 | Completed Stage 1 tests. |
| | | **JULY - DECEMBER 1953** | | |
| 8 | 1 | GM-3391 (N-69A) | 6 Aug 53 | 1st N-69 launched AFMTC. |
| 9 | 2 | GM-3393 (N-69A) | 15 Oct 53 | Lost wings and burst into flames at T+5 min. |
| | | **JANUARY - JUNE 1954** | | |
| 10 | 1 | GM-3395 (N-69A) | 2 Feb 54 | Lost wings and exploded at T+9 min. |
| 11 | 2 | GM-3396 (N-69A) | 18 Feb 54 | Impact 200 yds. off shore. |
| 12 | 3 | GM-11111 (N-69A) | 26 Apr 54 | Impact 3,000 ft. from launcher. |
| 13 | 4 | GM-3394-1 (N-69A) | 3 Jun 54 | First attempt to skid land missile at Cape unsuccessful. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1954** | | |
| 14 | 1 | GM 3392-1 (N-69A) | 21 Jul 54 | Last in aerodynamic test series. |
| 15 | 2 | GM 11113 (N-69B) | 21 Sep 54 | Missile returned up-range for shallow water dump. |
| 16 | 3 | GM 11114 (N-69B) | 12 Oct 54 | Became unstable after landing skids extended and impacted 28 mi. off shore. |
| 17 | 4 | GM 11116 (N-69B) | 12 Nov 54 | Carried North American guidance capsule. |
| 18 | 5 | GM 11115 (N-69B) | 10 Dec 54 | Went out of control at T+31 min. |
| | | **JANUARY - JUNE 1955** | | |
| 19 | 1 | GM 13097 (N-69B) | 13 Jan 55 | Last of modified B type carrying N2C data recorder. |
| 20 | 2 | GM 13106 (N-69C) | 10 Feb 55 | Start of Phase II testing. First N-69C model SNARK. First terminal dive test. |
| 21 | 3 | GM 13107 (N-69C) | 6 Apr 55 | N-69C broke up in terminal dive. |
| 22 | 4 | GM 13108 (N-69C) | 26 Apr 55 | N-69C broke up at T+15 sec. |
| 23 | 5 | GM 11112 (N-69A) | 13 May 55 | Last recoverable type SNARK. Collided with photo plane. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBERS | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1955** | | |
| 24 | 1 | AF 51-17579 (N-69C)<br>GM 13112<br>N-3293 | 13 Jul 55 | Engine trouble caused impact 5 miles off-shore. |
| 25 | 2 | AF 51-17580 (N-69C)<br>GM 13113<br>N-3294 | 9 Aug 55 | Last of unmodified N-69C missiles. |
| 26 | 3 | AF 52-10972 (N-69C)<br>GM 52-1710<br>N-3296 | 26 Oct 55 | First N-69C with modified ballistic nose. |
| 27 | 4 | AF 52-10977 (N-69D)<br>GM 52-1715<br>N-3301 | 26 Nov 55 | First unmanned flight under stellar supervised inertial guidance. First missile to use Stations 5, 6, and 7. |
| 28 | 5 | AF 52-10973 (N-69C)<br>GM 52-1711<br>N-3297 | 9 Dec 55 | Ballistic nose performance excellent. |
| 29 | 6 | AF 52-10974 (N-69C)<br>N-3298 | 16 Dec 55 | Nose delivery not satisfactorily demonstrated. |
| | | **JANUARY - JUNE 1956** | | |
| 30 | 1 | N-3295 (N-69C)<br>52-10971 | 27 Jan 56 | Nose delivery system failed to operate. |
| 31 | 2 | N-3302 (N-69D)<br>52-10978 | 8 Feb 56 | Stellar guidance test. Flew only 2 minutes. |
| 32 | 3 | N-3299 (N-69C)<br>52-10975 | 17 Feb 56 | Nose test failed. Flights suspended for component qualification tests. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBERS | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1956 | | |
| 33 | 1 | N-3291 (N-69C) 51-17577 | 10 Jul 56 | Ballistic nose test. |
| 34 | 2 | N-3300 (N-69C) 52-10976 | 26 Jul 56 | Ballistic nose test. |
| 35 | 3 | N-3290R (N-69C) 51-17571 | 31 Aug 56 | Nose test. First use of alternate impact area. |
| 36 | 4 | N-3305 (N-69D) 52-10981 | 13 Sep 56 | Stellar guidance test. |
| 37 | 5 | N-3292 (N-69C) 52-17578 | 26 Sep 56 | Ballistic nose test. |
| 38 | 6 | N-3303 (N-69D) 52-10979 | 2 Oct 56 | 1st successful recovery of SNARK at Cape Canaveral. |
| 39 | 7 | N-3286 (N-69C) 51-17572 | 31 Oct 56 | Completed ballistic nose test program, Phase II. |
| 40 | 8 | N-3306 (N-69D) 52-10982 | 14 Nov 56 | Stellar guidance test. |
| 41 | 9 | N-3309 (N-69D) 53-8172 | 5 Dec 56 | Refused guidance and destruct signals. Landed in S. A. jungles. First to use Stations 8, 9, & 10. |
| 42 | 10 | N-3308 (N-69D) 53-8171 | 20 Dec 56 | Stellar guidance test. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBERS | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1957 | | |
| 43 | 1 | AF 52-10983 (N-69D) | 11 Jan 57 | Guidance test. Skid landed OK. |
| 44 | 2 | AF 53-8173 (N-69D) | 23 Jan 57 | Guidance test. Major damage on landing. |
| 45 | 3 | AF 52-10983 (N-69D) | 5 Feb 57 | Guidance test. Major damage on landing. |
| 46 | 4 | AF 53-8175 (N-69D) | 18 Feb 57 | Guidance test. Skid landed OK. |
| 47 | 5 | AF 53-8174 (N-69D) | 12 Mar 57 | Guidance test. Skid landed OK. |
| 48 | 6 | Inertial #1 | 13 Mar 57 | Mobile launcher test. |
| 49 | 7 | Inertial #2 | 15 Apr 57 | Mobile launcher test. |
| 50 | 8 | AF 53-8176 (N-69D) | 16 Apr 57 | Guidance test. Skid landed OK. |
| 51 | 9 | AF 53-8178 (N-69D) | 3 May 57 | Guidance test. Broke up 25 miles down range. |
| 52 | 10 | AF 53-8177 (N-69D) | 28 May 57 | Guidance test. Destroyed on landing. |
| 53 | 11 | AF 53-8184 (N-69E) N-3321 | 20 Jun 57 | First operational prototype. Crashed at T+3 sec. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBERS | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1957 | | |
| 54 | 1 | N-3313 (N-69D) AF 53-8176 | 17 Jul 57 | Crashed into sea near Station #5. |
| 55 | 2 | N-3323 (N-69E) AF 53-8186 | 16 Aug 57 | First N-69E to meet test objectives. Crashed near Station #9. |
| 56 | 3 | N-3317 (N-69D) AF 53-8180 | 27 Aug 57 | First SNARK flight to Station #10 area. Completed Phase III contractor guidance tests. |
| 57 | 4 | N-3322 (N-69E) AF 53-8185 | 19 Sep 57 | Flew to 1365 mile point and returned. |
| 58 | 5 | N-3316 (N-69D) AF 53-8179 | 1 Oct 57 | First all-military SNARK launching by 6555th GMS. |
| 59 | 6 | N-3324 (N-69E) AF 53-8187 | 31 Oct 57 | First missile flight to Station #12, Ascension. |
| 60 | 7 | N-3316-2 (N-69D) AF 53-8179 | 20 Nov 57 | Destroyed in skid strip landing. |
| 61 | 8 | N-3326 (N-69E) AF 53-8189 | 5 Dec 57 | 2nd flight to Ascension. |

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1958** | | |
| 62 | 1 | N-3327 (N-69E) AF 53-8190 | 25 Jan 58 | Landed on target at 5,000 mile range. |
| 63 | 2 | N-3328 (N-69E) AF 53-8191 | 14 Feb 58 | Impact in Station #12 area. |
| 64 | 3 | N-3330 (N-69E) AF 53-8193 | 8 Mar 58 | Flew to Station #12 area. |
| 65 | 4 | N-3329 (N-69E) AF 53-8192 | 3 Apr 58 | Track lost between Sta.#9 and #12. Destruct ordered. |
| 66 | 5 | N-3409 (N-69E) AF 55-3147 | 6 May 58 | Nose released by radio control in Station #12 area. |
| 67 | 6 | N-3410 (N-69E) AF 55-3148 | 28 May 58 | Last contractor programmed flight. Crashed 615 nm downrange. |
| 68 | 7 | N-3413 (N-69E) AF 55-3151 | 27 Jun 58 | First E & ST launch by 556th SM Sq. assisted by 6555th GMS. |
| | | **JULY - DECEMBER 1958** | | |
| 69 | 1 | N-3411 (N-69E) AF 55-3149 | 25 Aug 58 | Contact lost at T+33 min. Destruct ordered. |
| 70 | 2 | N-3412 (N-69E) AF 55-3150 | 30 Aug 58 | Turned around at Sta. #9 and returned to Sta. #1 impact area for nose release. |
| 71 | 3 | N-3414 (N-69E) AF 55-3152 | 19 Sep 58 | Completed Phase IV tests. |
| 72 | 4 | N-3318 (N-69D) AF 53-8181 | 23 Oct 58 | First follow-on Phase V test using Airborne Parabolic Arc Computer. |
| 73 | 5 | N-3317 (N-69D) AF 53-8180 | 8 Nov 58 | First SAC training flight using recovered missiles. Again recovered with slight damage. |
| 74 | 6 | N-3319 (N-69D) AF 53-8182 | 11 Dec 58 | Second APAC test crashed during landing approach. |
| 75 | 7 | N-3308 (N-69D) AF 53-8171 | 16 Dec 58 | 2nd SAC tng. flight. Turned around at Sta #7 & ditched in shallow water of Cape Canaveral. |

MT 60-2544

## SNARK LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1959** | | |
| 76 | 1 | N-3312-2 (N-69D) AF 53-8175 | 12 Feb 59 | 556th SM Sq., SAC training flight. False radar plot caused destruct near Sta. #5. |
| 77 | 2 | N-3320 (N-69D) AF 53-8183 | 10 Mar 59 | 3rd APAC R&D launch. Returned and landed at Cape. |
| 78 | 3 | N-3422 (SM-62A) AF 57-008 | 6 Apr 59 | 1st of 3 extended Phase IV tests. First production model SM-62A. |
| 79 | 4 | N-3320-2 (N-69D) AF 53-8183 | 21 Apr 59 | APAC R&D test. 2nd flight of this missile. Recovered again. |
| 80 | 5 | N-3423 (SM-62A) AF 57-009 | 5 May 59 | Extended Phase IV test. Longest flight to date of 8 hrs. 34 min. |
| 81 | 6 | N-3424 (SM-62A) AF 57-010 | 26 May 59 | Last extended Phase IV test. |
| | | **JULY - DECEMBER 1959** | | |
| 82 | 1 | N-3320 (N-69D) AF 53-8183 | 2 Jul 59 | 3rd launch for this APAC vehicle. Accomplished 3rd landing. |
| 83 | 2 | N-3415 (SM-62A) AF 57-001 | 25 Sep 59 | 1st production type SNARK to carry APAC. Crashed 200 yards from pad. |
| 84 | 3 | N-3417 (SM-62A) AF 57-003 | 6 Nov 59 | Carried APAC. Missile lost 2,200 miles down range. |
| 85 | 4 | N-3416 (SM-62A) AF 57-002 | 11 Dec 59 | Destroyed itself at 3,000 mile range. |
| 86 | 5 | N-3317-3 (N-69D) AF 53-8180 | 16 Dec 59 | Last programmed N-69D flight. Missile recovered. |

## SNARK LAUNCHINGS

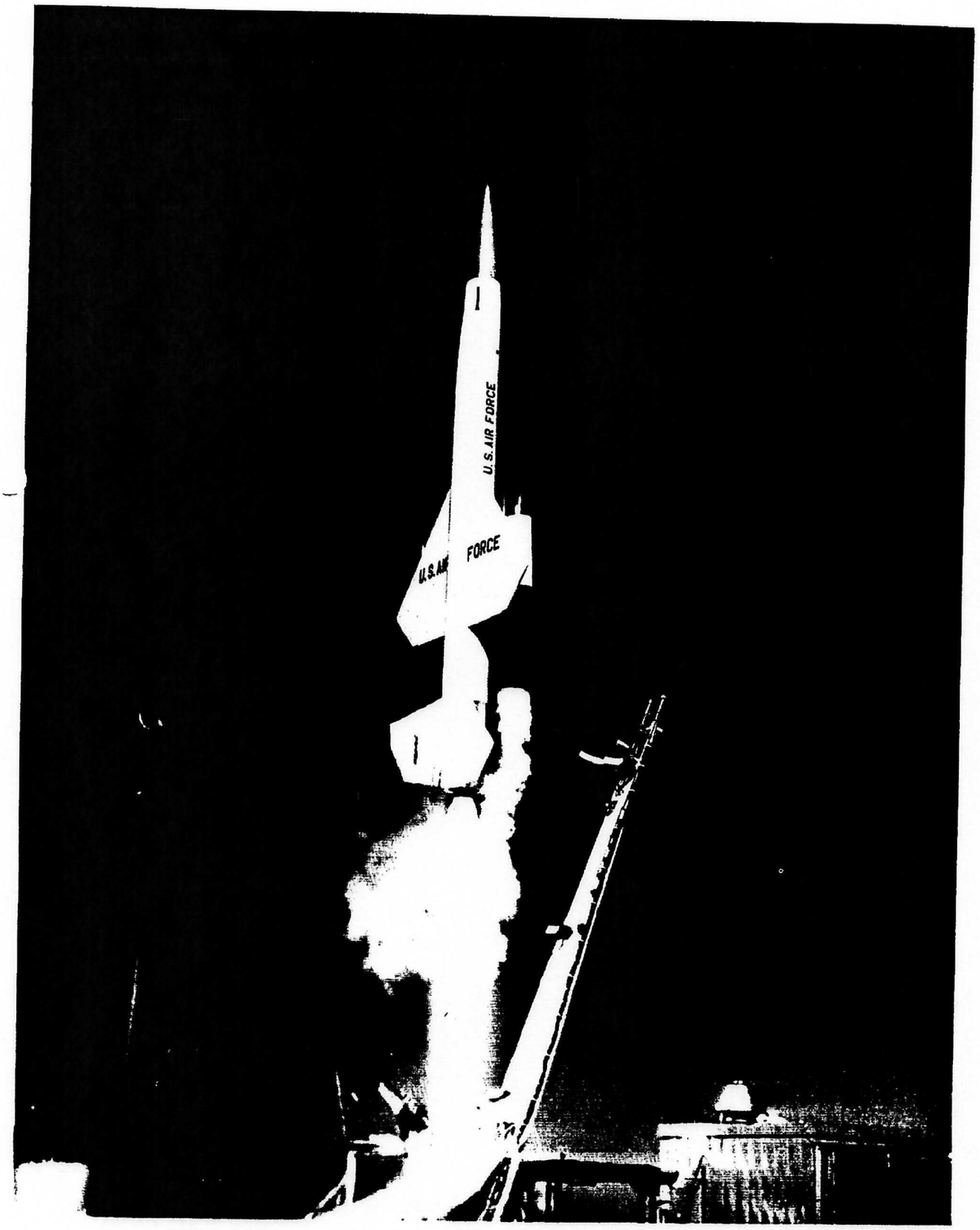
| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1960 | | |
| 87 | 1 | N-3425 (SM-62A) AF 57-011 | 12 Feb 60 | First of 11 APAC extended tests. Launched by 702nd SM Wing, SAC |
| 88 | 2 | N-3426 (SM-62A) AF 57-012 | 3 Mar 60 | APAC extension test. By 702 SMW, SAC. |
| 89 | 3 | N-3427 (SM-62A) AF 57-013 | 6 Apr 60 | APAC extension test by 702nd SMW, SAC. Impact Station #12. |
| 90 | 4 | N-3444 (SM-62A) AF 59-1874 | 16 May 60 | APAC extension test by 702nd SMW, SAC. Impact Station #12. |
| 91 | 5 | N-3445 (SM-62A) AF 59-1875 | 16 Jun 60 | APAC extension tests by 702nd SMW, SAC. Stalled and crashed at T+6 min. |

Tab 6

| | |
|---|---|
| MISSILE | BOMARC (IM-99) |
| SPONSOR | Air Force |
| CONTRACTOR | Boeing Airplane Company |

| | |
|---|---|
| First R&D launch | 10 Sep 52 |
| Last R&D launch at AMR | 15 Apr 60 |
| Total launchings at AMR | 70 |

Program transferred to Eglin range.




THE U. S. AIR FORCE'S BOMARC INTERCEPTOR MISSILE STARTS ITS FLIGHT FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

[redacted]



BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1952 | |
| 1 | 1 | 621-1 | 10 Sep 52 | 1st BOMARC launched AFMTC. Impact 800 ft. N.W. of launcher. |
| | | | JANUARY - JUNE 1953 | |
| 2 | 1 | 621-2 | 23 Jan 53 | Flight failure at 7 ft. altitude. |
| 3 | 2 | 623-1 | 10 Jun 53 | Exploded at 17,000 ft. |
| | | | JULY - DECEMBER 1953 | |
| 4 | 1 | 623-2 | 27 Jul 53 | Also exploded. |
| 5 | 2 | 623-3 | 4 Sep 53 | Failed structurally. |
| | | | JULY - DECEMBER 1954 | |
| 6 | 1 | 623-7 | 5 Aug 54 | 11 mon. period spent to redesign missile. Broke up after 15 seconds of flight. |
| 7 | 2 | 623-8 | 25 Oct 54 | 1st stable flight to impact. |
| 8 | 3 | 623-9 | 24 Nov 54 | Performance satisfactory. |
| | | | JANUARY - JUNE 1955 | |
| 9 | 1 | 623-10 (53-8268) | 19 Jan 55 | Successful flight. |
| 10 | 2 | 623-21 (54-3061) | 24 Feb 55 | Ramjet test vehicle. |
| 11 | 3 | 623-11 (54-3051) | 3 Mar 55 | Demonstrated ability to fly predetermined path. |
| 12 | 4 | 623-22 (54-3062) | 5 May 55 | Structural failure at supersonic speed. Ramjet test vehicle. |



[redacted]

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JULY - DECEMBER 1955** | | |
| 13 | 1 | BAC 623-12<br>AF 54-3052 | 27 Jul 55 | Last of Boost Test vehicles. Completed Phase I tests. Structural failure at T+35.5 seconds. |
| 14 | 2 | BAC 623-23<br>AF 54-3063 | 25 Aug 55 | Ramjet propulsion test. |
| 15 | 3 | BAC 623-24<br>AF 54-3064 | 29 Sep 55 | Ramjet propulsion test. |
| 16 | 4 | BAC 623-25<br>AF 54-3059 | 17 Nov 55 | Ramjet propulsion test. First flight to carry radome. |
| 17 | 5 | BAC 623-26<br>AF 54-3060 | 30 Nov 55 | 1st night flight of BOMARC. 6th and final ramjet propulsion test. End Phase II. |
| | | **JANUARY - JUNE 1956** | | |
| 18 | 1 | BAC 623-13<br>AF 54-3053 | 2 Feb 56 | First guidance test. Prematurely destroyed by fail-safe. |
| 19 | 2 | BAC 623-14<br>AF 54-3054 | 15 Mar 56 | Guidance test. First successful attempt at combining mid-course and terminal guidance. |
| 20 | 3 | BAC 623-15<br>AF 54-3055 | 14 Apr 56 | Guidance test. Missed target by 165 ft. |
| 21 | 4 | BAC 623-16<br>AF 54-3056 | 21 May 56 | Guidance test. Missile broke-up at T+28 sec. |
| 22 | 5 | BAC 623-17<br>AF 54-3057 | 19 Jun 56 | Guidance test. Malfunction prevented target intercept. |
| | | **JULY - DECEMBER 1956** | | |
| 23 | 1 | BAC 623-18<br>AF 54-3058 | 13 Jul 56 | Guidance tests completed. |
| 24 | 2 | BAC 624-6<br>AF 54-3070 | 12 Oct 56 | Tirst tactical prototype BOMARC. |
| 25 | 3 | BAC 624-2<br>AF 54-3066 | 29 Nov 56 | Second tactical prototype. |

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1957 | |
| 26 | 1 | BAC 624-3<br>AF 54-3067 | 3 Jan 57 | Tactical prototype test. Objectives not accomplished. |
| 27 | 2 | BAC 624-4<br>AF 54-3068 | 13 Feb 57 | Phase IV continued. First from interim tactical launcher. |
| 28 | 3 | BAC 624-5<br>AF 54-3069 | 28 Feb 57 | Phase IV test. All objectives accomplished. |
| 29 | 4 | BAC 624-1<br>AF 54-3065 | 17 Apr 57 | Broke up at T+36 seconds. |
| | | | JULY - DECEMBER 1957 | |
| 30 | 1 | BAC 624-7<br>AF 54-3071 | 22 Jul 57 | Exploded at T+63.5 seconds. |
| 31 | 2 | BAC 624-8<br>AF 54-3072 | 15 Aug 57 | First split-day countdown. |
| 32 | 3 | BAC 624-9<br>AF 54-3073 | 16 Sep 57 | First operation against QF-80 drone target. |
| 33 | 4 | BAC 624-10<br>AF 54-3074 | 27 Sep 57 | First to carry HE warhead. |
| 34 | 5 | BAC 624-11<br>AF 54-3075 | 11 Oct 57 | First successful destruct of QB-17 target. |
| 35 | 6 | BAC 624-16<br>AF 54-3080 | 23 Oct 57 | First low level target acquisition attempt. Direct hit. |
| 36 | 7 | BAC 624-12<br>AF 54-3076 | 14 Nov 57 | Final live HE warhead test. |
| 37 | 8 | BAC 624-14<br>AF 54-3078 | 9 Dec 57 | First to carry dummy nuclear warhead. |

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1958 | |
| 38 | 1 | AF 54-3077 | 14 Jan 58 | Head-on intercept not effected. |
| 39 | 2 | BAC 624-17<br>AF 54-3081 | 20 Mar 58 | Stalled at 100 miles down range. |
| 40 | 3 | BAC 624-18<br>AF 54-3082 | 2 Apr 58 | Demonstrated range of 187 nm. |
| 41 | 4 | BAC 624-19<br>AF 54-3083 | 1 May 58 | Command system failure prevented intercept. |
| 42 | 5 | BAC 624-21<br>AF 54-3085 | 20 May 58 | Telemetry failure prevented intercept data. |
| 43 | 6 | BAC 624-23<br>AF 54-3087 | 9 Jun 58 | Head-on intercept of zig-zag target within kill distance. |
| 44 | 7 | BAC 624-24<br>AF 54-3088 | 20 Jun 58 | Cross-course intercept within kill distance. |
| 45 | 8 | BAC 624-20<br>AF 54-3084 | 26 Jun 58 | Cross-course intercept within kill distance. |

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1958 | | |
| 46 | 1 | BAC 624-25<br>AF 54-3089 | 11 Jul 58 | Entered vertical dive at T+129 seconds and was destroyed. |
| 47 | 2 | BAC 624-XY1<br>AF 56-4028 | 7 Aug 58 | 1st production line BOMARC. 1st launch directed and controlled by SAGE system, Kingston, N.Y. |
| 48 | 3 | BAC 624-XY2<br>AF 56-4030 | 15 Aug 58 | 1st BOMARC completely processed and launched by 6555th GM Sq. Guided to direct hit by SAGE. |
| 49 | 4 | BAC 624-22<br>AF 54-3086 | 21 Aug 58 | Cross-course intercept under SAGE within kill distance. |
| 50 | 5 | BAC 624-XY3<br>AF 56-4031 | 3 Sep 58 | Erratic flight required destruct at T+101 seconds. |
| 51 | 6 | BAC 624-XY4<br>AF 56-4033 | 24 Sep 58 | 1st flight against supersonic QX-10 target. |
| 52 | 7 | BAC 624-XY5<br>AF 57-2731 | 21 Oct 58 | Two launched by SAGE within 12 seconds of one another at separate targets. Both scored kills, one by direct hit. |
| 53 | 8 | BAC 624-XY6<br>AF 56-4027 | 21 Oct 58 | |
| 54 | 9 | BAC 624-XY7<br>AF 57-2734 | 21 Nov 58 | SAGE controlled. Intercept within kill distance. |
| 55 | 10 | BAC 624-XY8<br>AF 57-2735 | 13 Dec 58 | Launched by SAGE with HE warhead. Intercept within kill distance. |
| 56 | 11 | BAC 624-XY9<br>AF 57-2737 | 19 Dec 58 | Last SAGE compatibility test at AMR. Target change ordered during flight. Scored kill. |
| 57 | 12 | BAC 624-XY10<br>AF 57-2738 | 24 Dec 58 | Launched against QF-80 maneuvering target. |

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **JANUARY - JUNE 1959** | | |
| 58 | 1 | BAC 624-XY16 AF 57-2832 | 27 Jan 59 | Entered dive too soon. Passed in front of target. |
| 59 | 2 | BAC 624-XY11 AF 57-2739 | 27 Jan 59 | Scored direct hit on QF-80 target. |
| 60 | 3 | BAC 624-XY12 AF 57-2741 | 13 Feb 59 | Erratic behavior brought Range Safety destruct. |
| 61 | 4 | BAC 624-XY13 AF 57-2744 | 4 Mar 59 | Fuse failed to detonate warhead at intercept. |
| 62 | 5 | BAC 624-XY14 AF 57-2747 | 31 Mar 59 | Warhead failed detonate at intercept. |
| 63 | 6 | BAC 624-XY15 AF 57-2749 | 21 Apr 59 | Last IM-99A missile. Target intercepted. |
| 64 | 7 | BAC 631-1 AF 58-6999 | 27 May 59 | 1st XIM99B missile. Ramjets failed to ignite. |
| | | **JULY - DECEMBER 1959** | | |
| 65 | 1 | BAC 631-2 AF 58-7000 | 14 Jul 59 | 2nd XIM99B. Left ramjet flamed-out at T+45 seconds. |
| 66 | 2 | BAC 631-3 AF 58-7001 | 12 Aug 59 | 3rd XIM99B. Ramjets flamed-out. |
| 67 | 3 | BAC 631-4 AF 58-7002 | 2 Sep 59 | 4th XIM99B. Entered vertical dive at T+150 seconds. |
| 68 | 4 | BAC 631-5 AF 58-7003 | 28 Oct 59 | 1st IM99B to use full rated solid booster of 50,000 lb. thrust. Right ramjet flamed-out at T+51 seconds and left ramjet at T+81 seconds. |

## BOMARC LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JANUARY - JUNE 1960 | | |
| 69 | 1 | BAC 631-6<br>AF 58-7004 | 29 Jan 60 | XIM-99B. Flight control failure caused engine flame-out and impact at 32 miles down range. |
| 70 | 2 | BAC 631-8<br>AF 58-7006 | 15 Apr 60 | Ended BOMARC testing at AMR. XIM-99B. |

Tab 7

| | |
|---|---|
| MISSILE | RV-A-10 |
| SPONSOR | Army |
| CONTRACTOR | General Electric Company |

| | |
|---|---|
| First launching | 11 Feb 53 |
| Final launching | 25 Mar 53 |
| Total launchings at AMR | 4 |

Program completed

7. THE ARMY'S RVA-10 TEST BED VEHICLE UNDERGOING LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## RV-A-10 LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1953 | |
| 1 | 1 | #1 | 11 Feb 53 | First launch in RV-A-10 program. |
| 2 | 2 | #2 | 4 Mar 53 | Flight erratic. Attempted destruct failed. Impact 50 nm down range. |
| 3 | 3 | #3 | 25 Mar 53 | Scheduled night launching. |
| 4 | 4 | #4 | 25 Mar 53 | Final RV-A-10 launch. |

Tab 8

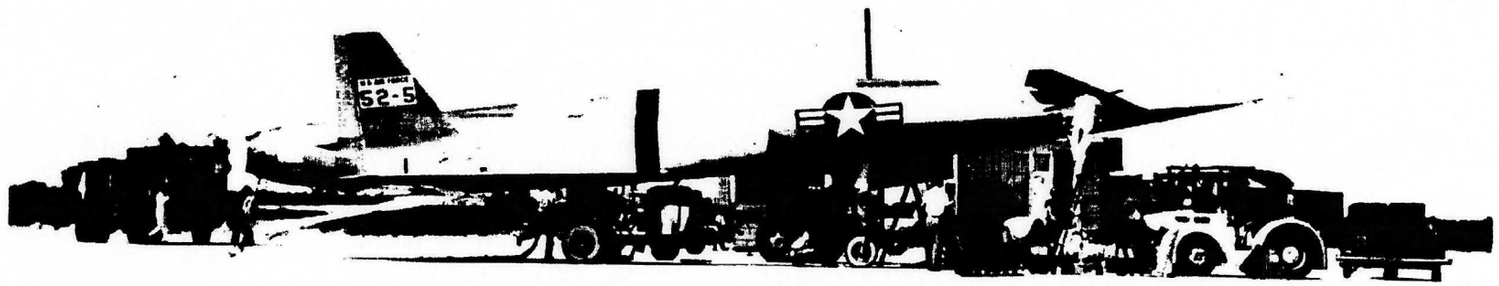
| | | |
|---|---|---|
| MISSILE | NAVAHO (SM-64) | |
| SPONSOR | Air Force | |
| CONTRACTOR | North American Aviation, Inc. | |
| First X-10 launch | 19 Aug 55 | 12 launchings |
| Final X-10 launch | 20 Nov 56 | |
| First XSM-64 | 6 Nov 56 | 9 launchings |
| Final XSM-64 | 25 Feb 58 | |
| First RISE (XSM-64) | 11 Sep 58 | 2 launchings |
| Final RISE (XSM-64) | 18 Nov 58 | |
| First X-10 Drone | 24 Sep 58 | 3 launchings |
| Final X-10 Drone | 25 Jan 59 | |
| Total launchings at AMR | 26 | |

X-10 portion of program completed.

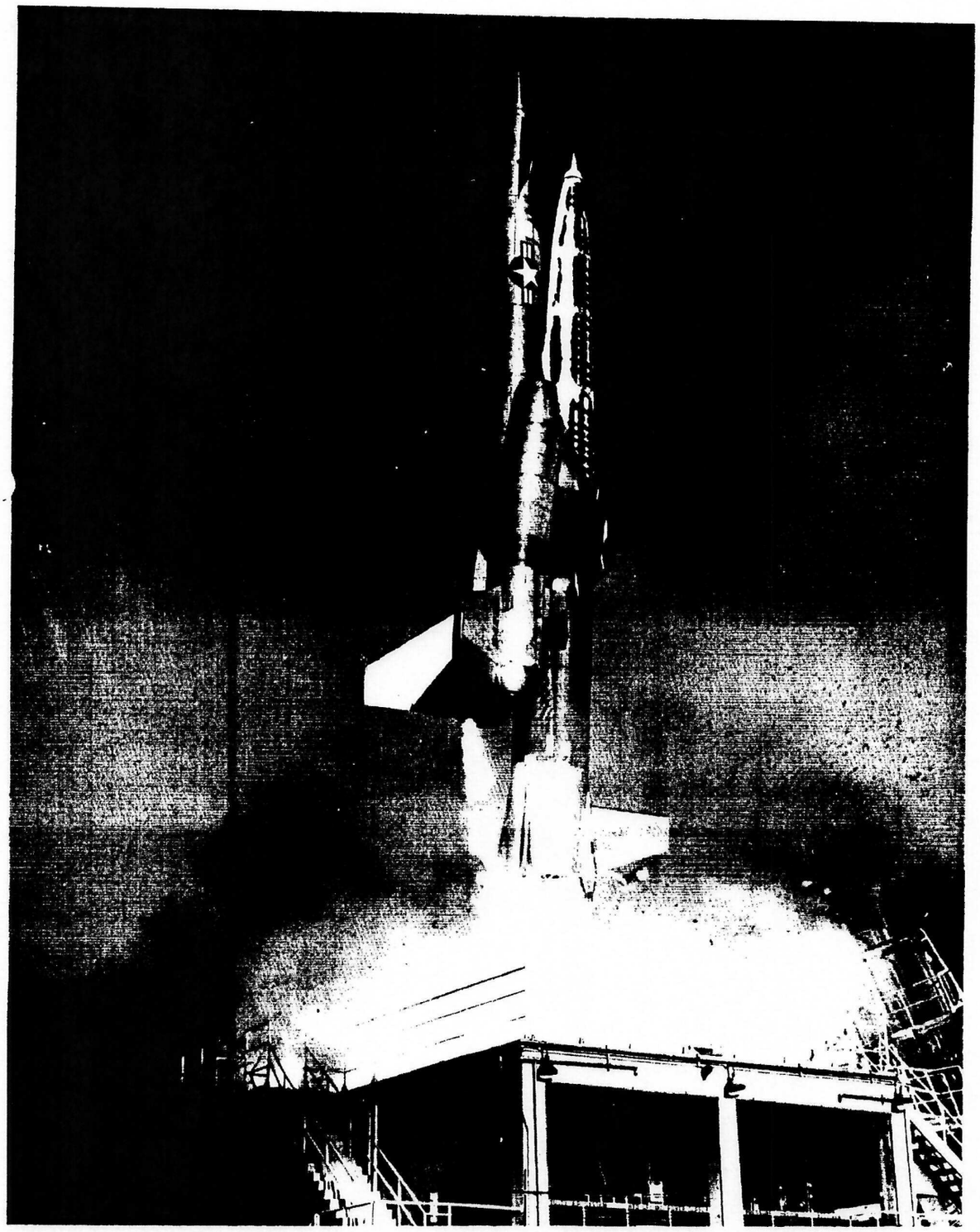
XSM-64 portion of program cancelled.

RISE (XSM-64) program cancelled.

X-10 Drone program cancelled.




8. THE U.S. AIR FORCE'S X-10 RESEARCH VEHICLE FOR THE NAVAHO PROGRAM AFTER LANDING ON MISSILE SKID STRIP AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.



THE AIR FORCE'S EXPERIMENTAL MISSILE, NAVAHO,
BLASTS OFF FROM ITS LAUNCHING PAD AT
CAPE CANAVERAL, FLORIDA

## NAVAHO LAUNCHINGS

### X-10 LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | JULY - DECEMBER 1955 | | |
| 1 | 1 | GM 19312 (X-10) | 19 Aug 55 | First NAVAHO test at AMR. Wrecked in landing. |
| 2 | 2 | GM 52-4 (X-10) | 24 Oct 55 | Wrecked in attempted landing. |
| | | JANUARY - JUNE 1956 | | |
| 3 | 1 | GM 52-1 (X-10) | 3 Feb 56 | First successful missile landing on Cape skid-strip. |
| 4 | 2 | GM 52-1 (X-10) | 29 Feb 56 | Completed aerodynamic and take-off tests. |
| 5 | 3 | GM 52-1 | 20 Mar 56 | Satisfied high-angle approach landing test requirements. |
| 6 | 4 | GM 52-2 | 24 Apr 56 | First terminal dive test; missile lost prior to dive-in. |
| 7 | 5 | GM 52-5 | 5 Jun 56 | First autonavigator test. Missile landed on skid-strip. |
| | | JULY - DECEMBER 1956 | | |
| 8 | 1 | GM 52-5 | 18 Jul 56 | Autonavigator test. |
| 9 | 2 | GM 52-1 | 27 Aug 56 | Terminal dive test. |
| 10 | 3 | GM 52-6 | 21 Sep 56 | Autonavigator test. |
| 11 | 4 | GM 52-6 | 24 Oct 56 | Autonavigator test. |
| 12 | 5 | GM 52-6 | 20 Nov 56 | Final X-10 program launch, final autonavigator test, and final terminal dive test. |

## NAVAHO LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | **XSM-64** | | |
| | | **JULY - DECEMBER 1956** | | |
| 1 | 1 | AF 52-10989 | 6 Nov 56 | First XSM-64 missile launched. Missile #1, Booster #3, Part II. |
| | | **JANUARY - JUNE 1957** | | |
| 2 | 1 | AF 52-10990 | 22 Mar 57 | Missile #2, Booster #6, Part II test. Impacted 25 mi. downrange. |
| 3 | 2 | AF 53-8272 | 25 Apr 57 | Missile #5, Booster #7, Part II test. Fell back on pad and exploded. |
| 4 | 3 | AF 53-8270 | 26 Jun 57 | Missile #3, Booster #8, Part II test. Ramjets failed. |
| | | **JULY - DECEMBER 1957** | | |
| 5 | 1 | AF 53-8271 | 12 Aug 57 | Missile #4, Booster #9, Part II test. Ramjets failed at 230 mi. range. |
| 6 | 2 | AF 54-3095 | 18 Sep 57 | Missile #6, Booster #10, Part II test. Completed 1/3 of 1500 mile flight. |
| 7 | 3 | AF 54-3096 | 13 Nov 57 | Missile #7, Booster #11, Part II test. Crashed 90 mi. downrange. |
| | | **JANUARY - JUNE 1958** | | |
| 8 | 1 | AF 54-3098 | 10 Jan 58 | Missile #9, Booster #13. Flameout occurred after turn around at Station #9. |
| 9 | 2 | AF 54-3097 | 25 Feb 58 | Program final. Missile #8, Booster #12. Booster shut-off at T+20 seconds caused destruct. |

## NAVAHO LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | **PROJECT RISE** | |
| | | | **JULY - DECEMBER 1958** | |
| 1 | 1 | AF 55-4223 Booster #4 | 11 Sep 58 | First RISE launch. Ramjets failed to ignite. Crashed 82 miles down range. |
| 2 | 2 | AF 55-4222 Booster #14 | 18 Nov 58 | RISE program cancelled. Broke up at 77,000 ft. altitude. |
| | | | **X-10 DRONE** | |
| | | | **JULY - DECEMBER 1958** | |
| 1 | 1 | GM 52-5 | 24 Sep 58 | First X-10 drone used as BOMARC target. Failed to engage runway barrier on landing. Ran off end of skid-strip and burned. |
| 2 | 2 | GM 19313 | 13 Nov 58 | Runway barrier broke and X-10 burned on skid-strip. |
| | | | **JANUARY - JUNE 1959** | |
| 3 | 1 | GM 52-3 | 26 Jan 59 | Final drone. Missile lost 57 miles down range. |

## NAVAHO

## SUMMARY OF LAUNCHINGS

| | |
|---|---|
| X-10 R&D Vehicle | 12 |
| XSM-64 R&D Vehicle | 9 |
| XSM-64 Rise Program | 2 |
| X-10 Drone Program | 3 |
| Total launchings | 26 |

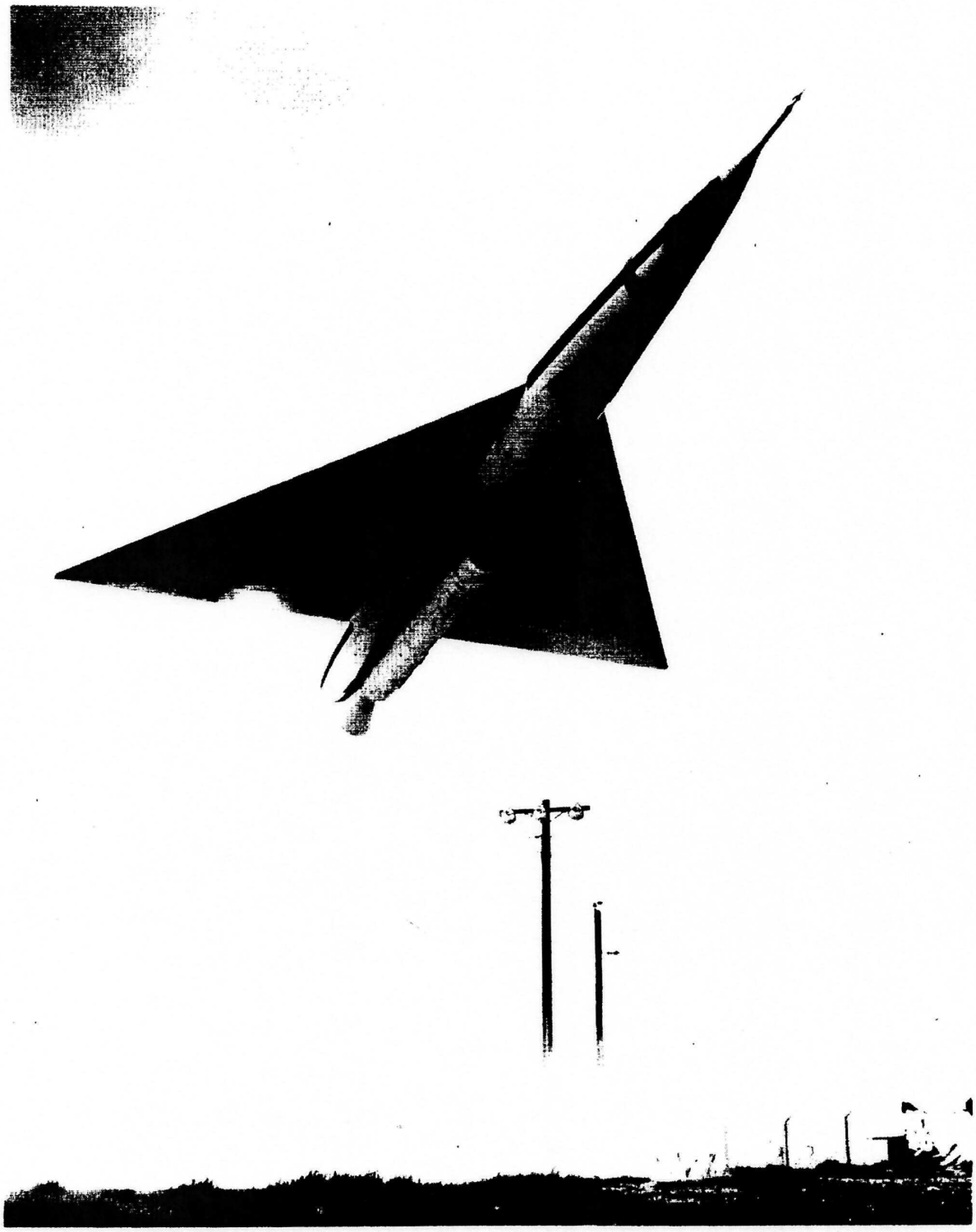
Tab 9

| | |
|---|---|
| MISSILE | BULL GOOSE (SM-73) |
| SPONSOR | Air Force |
| CONTRACTOR | Fairchild Aircraft Company |

| | |
|---|---|
| First R&D launch | 13 Mar 57 |
| Final launch | 5 Dec 58 |

| | |
|---|---|
| Dummy launchings | 5 |
| Dynamic missiles launched | 15 |
| Total launchings at AMR | 20 |

Program cancelled 12 Dec 58



10. THE U.S. AIR FORCE'S BULL GOOSE MISSILE BY FAIRCHILD, AFTER LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## BULL GOOSE LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1957 | |
| 1 | 1 | Dummy | 13 Mar 57 | First launch of BULL GOOSE program. |
| 2 | 2 | Dummy | 13 May 57 | Zero-length launcher test. |
| 3 | 3 | No. 2 | 27 Jun 57 | First live missile test of BULL GOOSE program. |
| | | | JULY - DECEMBER 1957 | |
| 4 | 1 | No. 3 | 20 Aug 57 | Met test objectives. |
| 5 | 2 | No. 4 | 26 Sep 57 | Fuel leak limited flight to one hour. |
| 6 | 3 | No. 5 | 27 Oct 57 | Throttle control difficulty limited flight to 2 hours. |
| 7 | 4 | No. 6 | 26 Nov 57 | Flew four hours. |
| | | | JANUARY - JUNE 1958 | |
| 8 | 1 | No. 7 | 31 Jan 58 | Flew 2 hours of scheduled 5 hour flight. Crashed 60 miles off coast. |
| 9 | 2 | No. 9 | 18 Mar 58 | Flew 5 hours in race-track pattern between Stations #1 and #3. |
| 10 | 3 | No. 10 | 18 Apr 58 | First flight from modified launcher. Caught fire, crashed, and exploded at T+5 seconds. |
| 11 | 4 | No. 8 | 15 May 58 | Went out of control after 2½ hours of flight. |

## BULL GOOSE LAUNCHINGS

(Changed to GOOSE in August 1958)

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 12 | 1 | No. 12 | 24 Jul 58 | Stalled and crashed at T+50 min. due to fuel starvation. |
| 13 | 2 | No. 13 | 28 Aug 58 | Premature flight termination at T+172 min. |
| 14 | 3 | No. 11 | 12 Sep 58 | Broke up at T+138 min. |
| 15 | 4 | Dummy No. 4 | 18 Sep 58 | Evaluated booster performance and modified launcher. |
| 16 | 5 | Dummy No. 5 | 25 Sep 58 | Proved suitability of tactical launch shelter. |
| 17 | 6 | No. 14 | 30 Sep 58 | Inverted spin impact occurred at T+56 minutes. |
| 18 | 7 | No. 15 | 14 Nov 58 | First test with YJ-83 engine. Fuel starvation caused crash at T+29 minutes. |
| 19 | 8 | No. 18 | 28 Nov 58 | Engine flame-out occurred at T+180 minutes. |
| 20 | 9 | Dummy No. 6 | 5 Dec 58 | Tested booster preheated to 150° F. |

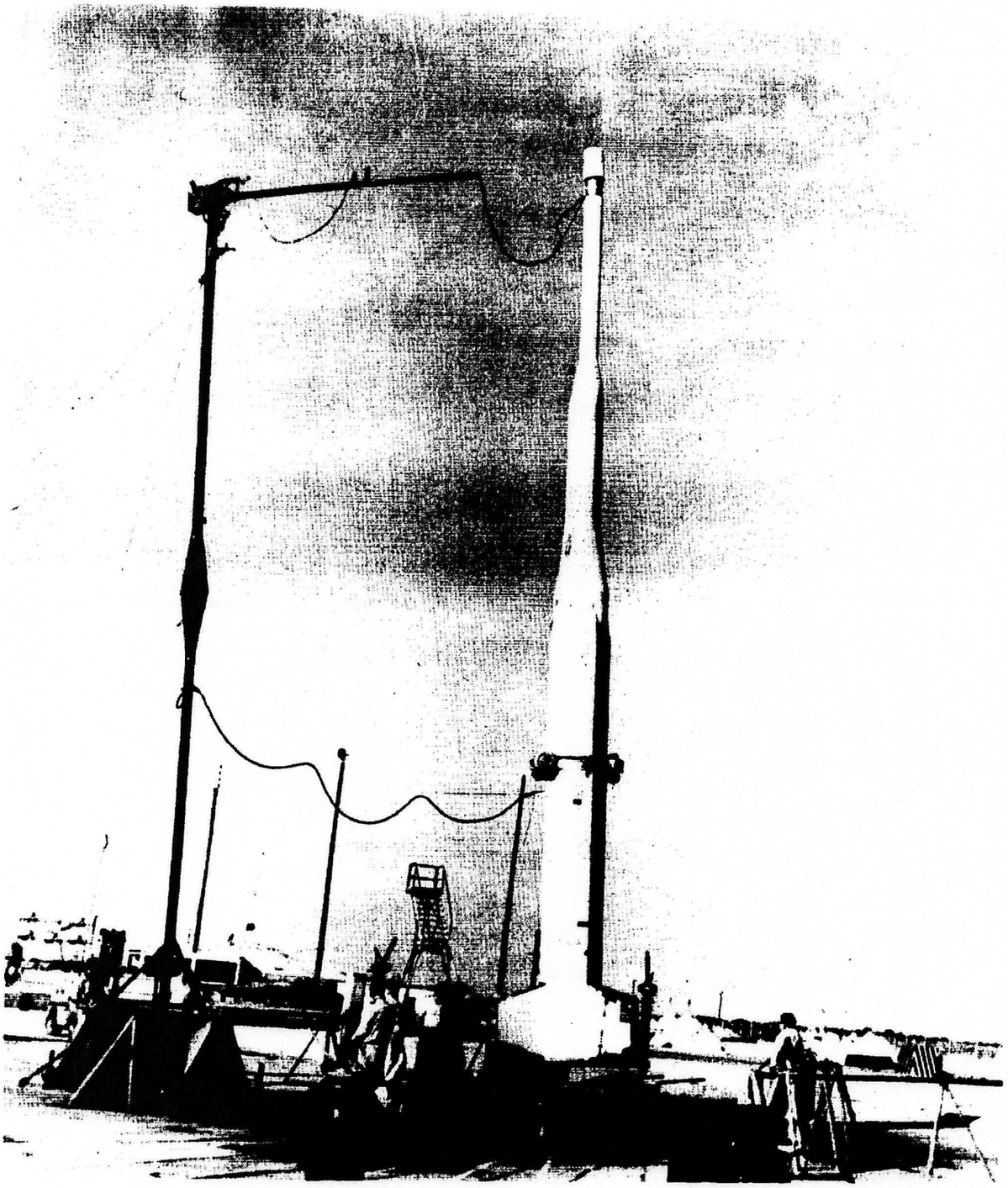
Teletype 12 Dec 58 directed termination of program.
No further launchings.

Tab 10

| | |
|---|---|
| MISSILE | X-17 (RTV) |
| SPONSOR | Air Force |
| CONTRACTOR | Lockheed Aircraft |
| First R&D launch | 23 May 55 |
| Final launch | 22 Aug 57 |

| | |
|---|---|
| Quarter-scale models launched | 3 |
| Half-scale models launched | 3 |
| Full-scale models launched | 6 |
| Research models launched | 26 |
| Total launchings at AMR | 38 |

Program completed



11. THE U.S. AIR FORCE'S X-17, RESEARCH VEHICLE FOR THE WS-107A PROGRAM, BY LOCKHEED. READY FOR LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## WS 107A PROGRAM

### X-17

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1955 | |
| 1 | 1 | Q-1 | 23 May 55 | First quarter scale model. |
| 2 | 2 | Q-2 | 23 May 55 | Second quarter scale model. |
| 3 | 3 | Q-3 | 13 Jun 55 | Third and final quarter scale model. |
| 4 | 4 | H-1 | 23 Jun 55 | First half scale model. |
| 5 | 5 | H-3 | 30 Jun 55 | Second half scale model. |
| | | | JULY - DECEMBER 1955 | |
| 6 | 1 | H-2 | 14 Jul 55 | Third and final half scale model. |
| 7 | 2 | D-1 | 26 Aug 55 | First full scale development model. Failed structurally. |
| 8 | 3 | D-2 | 23 Sep 55 | Second full scale model. Disintegrated at 17,000 ft. |
| 9 | 4 | D-3 | 1 Dec 55 | Third and final full scale model. Satisfactory test. |
| | | | JANUARY - JUNE 1956 | |
| 10 | 1 | D-4 | 20 Jan 56 | 1st & 2nd stages active, dummy 3rd stage. |
| 11 | 2 | D-5 | 5 Mar 56 | All 3 stages active. |
| 12 | 3 | R-1 | 17 Apr 56 | 1st full scale research model. |
| 13 | 4 | D-6A | 26 Jun 56 | All 3 stages active. Last development model. |

WS-107A PROGRAM

X-17

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1956 | |
| 14 | 1 | R-2<br>4203-3 | 17 Jul 56 | 2nd research model with 3 active stages. |
| 15 | 2 | R-3<br>4203-4 | 27 Jul 56 | 3rd stage failed to ignite. |
| 16 | 3 | R-4<br>4203-2 | 18 Aug 56 | Exploded at T+18 seconds. |
| 17 | 4 | R-5<br>4203-5 | 23 Aug 56 | Objectives accomplished. |
| 18 | 5 | R-6<br>4203-6 | 28 Aug 56 | Telem signal lost at T+106 seconds. |
| 19 | 6 | R-7<br>4203-7 | 8 Sep 56 | 2nd and 3rd stages fired prematurely. |
| 20 | 7 | R-8<br>4203-8 | 1 Oct 56 | Objectives accomplished. |
| 21 | 8 | R-9<br>4203-9 | 5 Oct 56 | Objectives accomplished. |
| 22 | 9 | R-10<br>4203-10 | 13 Oct 56 | Objectives accomplished. |
| 23 | 10 | R-11<br>4203-11 | 18 Oct 56 | Objectives accomplished. |
| 24 | 11 | R-12<br>4203-12 | 25 Oct 56 | Objectives accomplished. |
| 25 | 12 | R-13<br>4203-13 | 5 Nov 56 | Carried nose cone. |
| 26 | 13 | R-14<br>4203-14 | 16 Nov 56 | Carried nose cone. |
| 27 | 14 | R-15<br>4203-15 | 23 Nov 56 | Carried nose cone. |
| 28 | 15 | R-16<br>4203-16 | 3 Dec 56 | Carried nose cone. |
| 29 | 16 | R-17<br>4203-17 | 11 Dec 56 | Carried nose cone. |

MT 60-2544

## WS-107A PROGRAM

## X-17

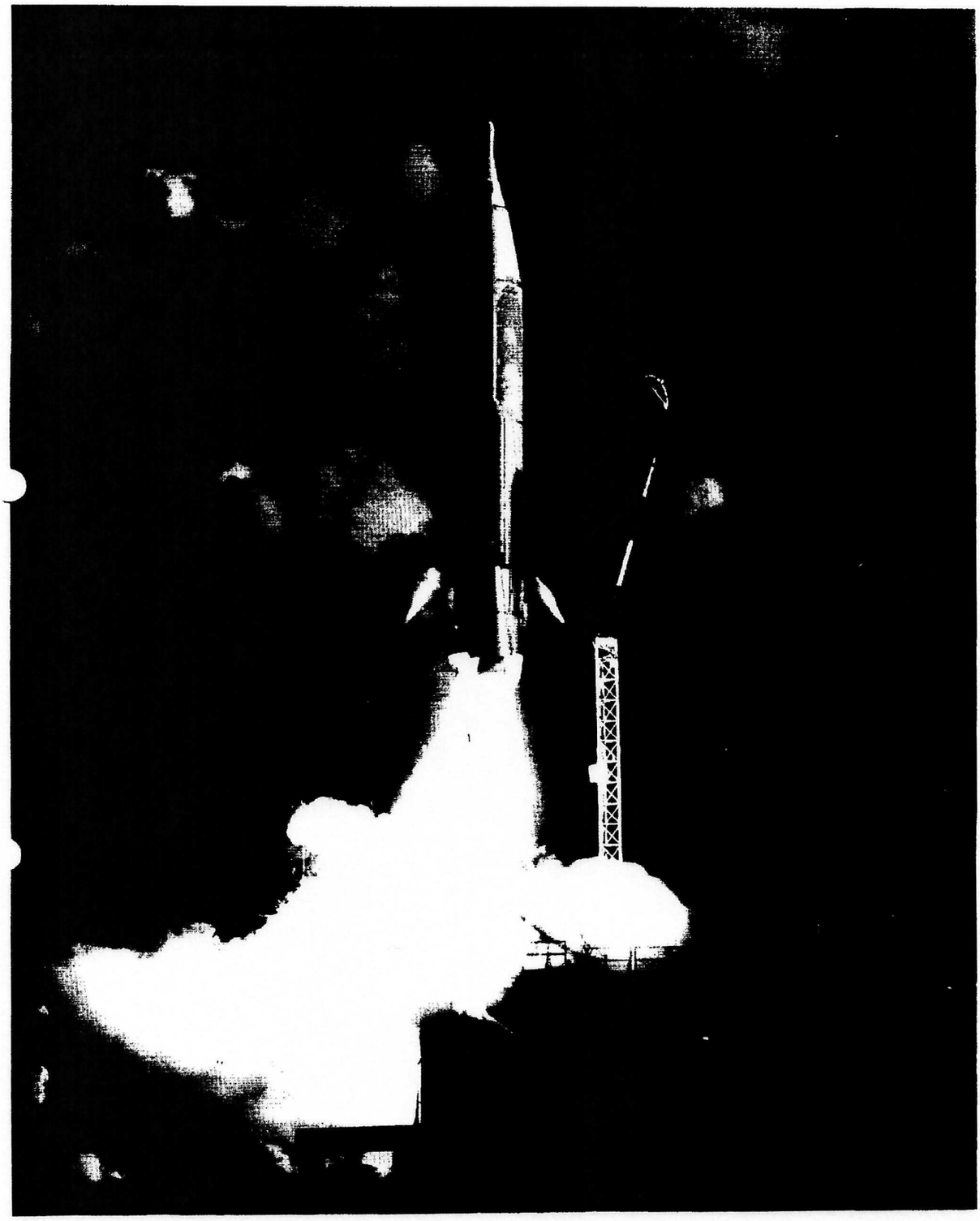
| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1957 | |
| 30 | 1 | R-18<br>4203-18 | 8 Jan 57 | All test objectives accomplished. |
| 31 | 2 | R-19<br>4203-19 | 15 Jan 57 | 2nd and 3rd stages failed to ignite. |
| 32 | 3 | R-20<br>4203-20 | 29 Jan 57 | Range Safety destruct at T+ 24 seconds. |
| 33 | 4 | R-21<br>4203-21 | 7 Feb 57 | |
| 34 | 5 | R-22<br>4203-22 | 14 Feb 57 | All test objectives accomplished. |
| 35 | 6 | R-23<br>4203-23 | 1 Mar 57 | |
| 36 | 7 | R-24<br>4203-A3 | 11 Mar 57 | |
| 37 | 8 | R-25<br>4203-A4 | 21 Mar 57 | Final launch in program. |
| | | | JULY - DECEMBER 1957 | |
| 38 | 1 | R-26 | 22 Aug 57 | Post program launch. |

PROGRAM COMPLETED

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.



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

## 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. |

## 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. |

## 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. |

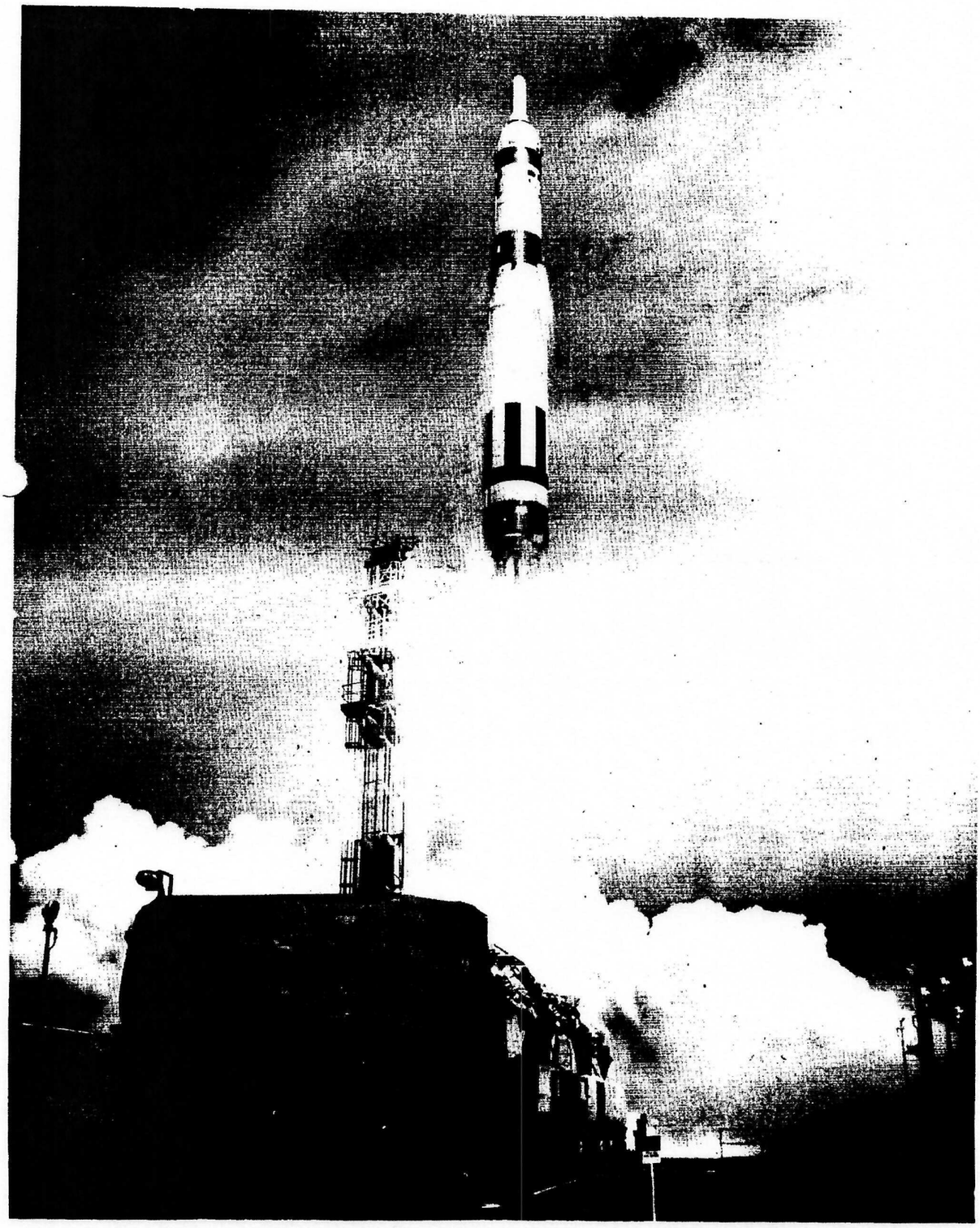
## ATLAS LAUNCHINGS

| 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 | 26 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 | 24 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. |

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 59 |

Program currently underway



13. THE AIR FORCE'S TITAN, INTER-CONTINENTAL BALLISTIC MISSILE BY GLENN L. MARTIN. LAUNCHED FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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. |

## 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 #12 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. |

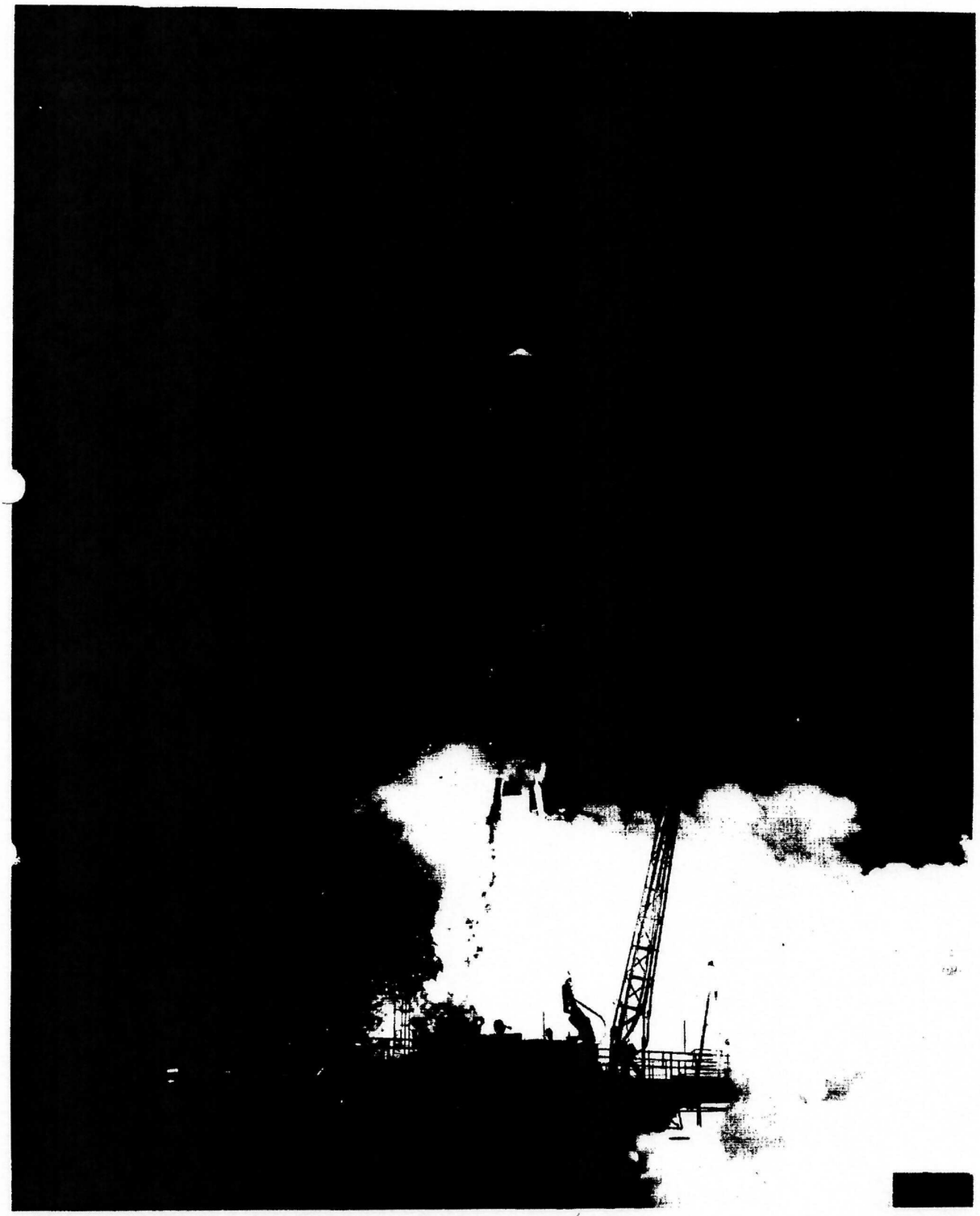
Tab 13

| | |
|---|---|
| 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.



14. THE U.S. AIR FORCE'S THOR, INTERMEDIATE RANGE BALLISTIC MISSILE BY DOUGLAS. LAUNCHED FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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<br>56-6752 | 19 Apr 57 | False ELSSE-DOVAP data caused Range Safety destruct at T+35 sec. |
| Not a launch | | 103<br>56-6753 | 21 May 57 | Exploded on the launch pad five minutes before launch time. |
| | | | **JULY - DECEMBER 1957** | |
| 3 | 1 | 104<br>56-6754 | 30 Aug 57 | Broke in half at T+93 seconds. Landed 20 miles off-shore. |
| 4 | 2 | 105<br>56-6755 | 20 Sep 57 | Met test objectives. |
| 5 | 3 | 107<br>56-6757 | 3 Oct 57 | Lost thrust, fell back on pad and burned. |
| 6 | 4 | 108<br>56-6758 | 11 Oct 57 | Met test objectives. |
| 7 | 5 | 109<br>56-6759 | 24 Oct 57 | Completed Phase I tests. |
| 8 | 6 | 112<br>56-6783 | 7 Dec 57 | First Phase II, guidance, test. First THOR to carry guidance system. |
| 9 | 7 | 113<br>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. |

## 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 5 mi. 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 | 184 | 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. |

## 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. |

## 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). |

Tab 14

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

Program currently underway.

THE U. S. AIR FORCE'S THOR-ABLE SATELLITE LAUNCH VEHICLE AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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. |

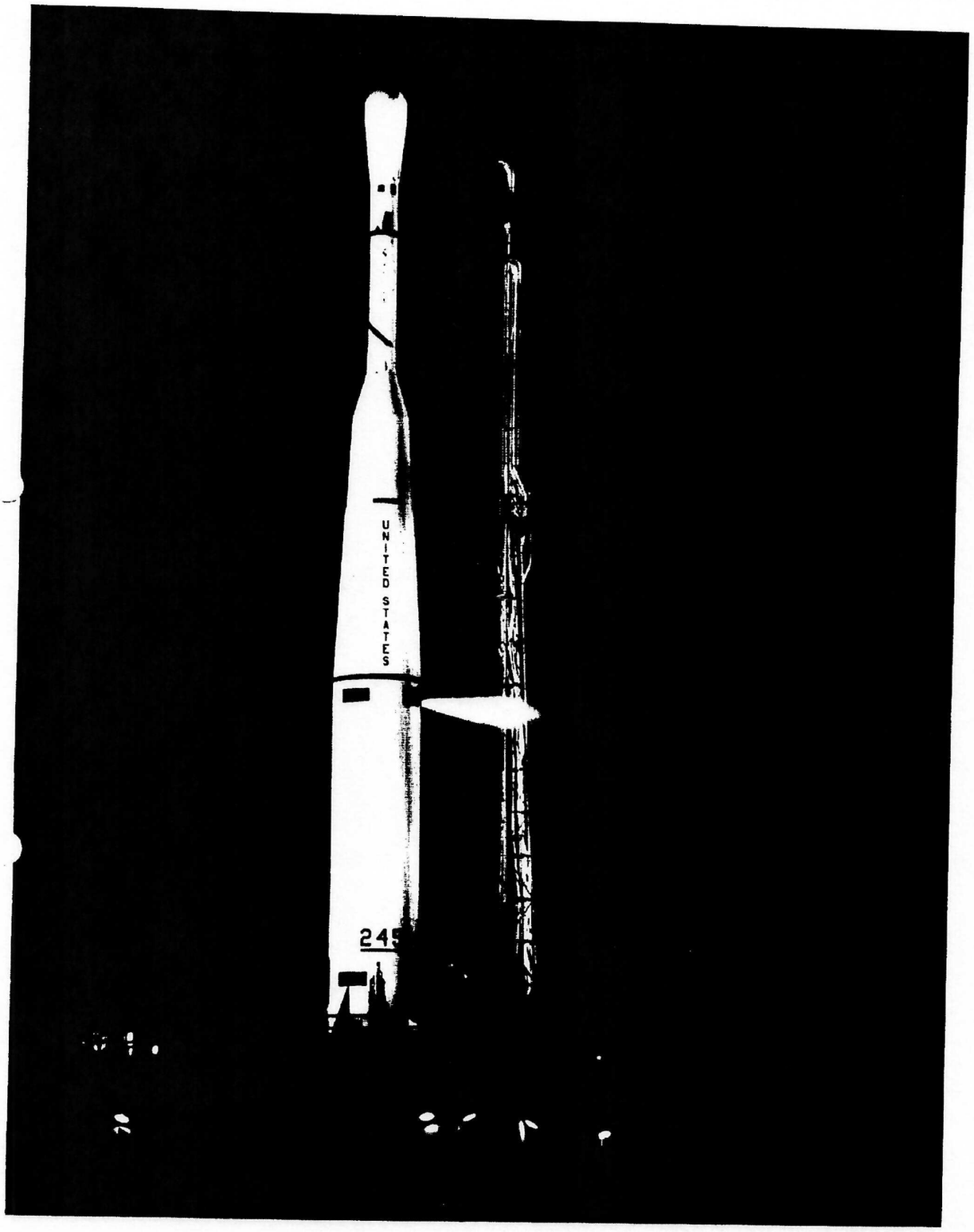
## THOR-ABLE LAUNCHINGS

| 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. |

Tab 15

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

Program currently underway




16. NASA'S DELTA SPACE RESEARCH VEHICLE READY TO LAUNCH TIROS II FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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. |

Tab 16

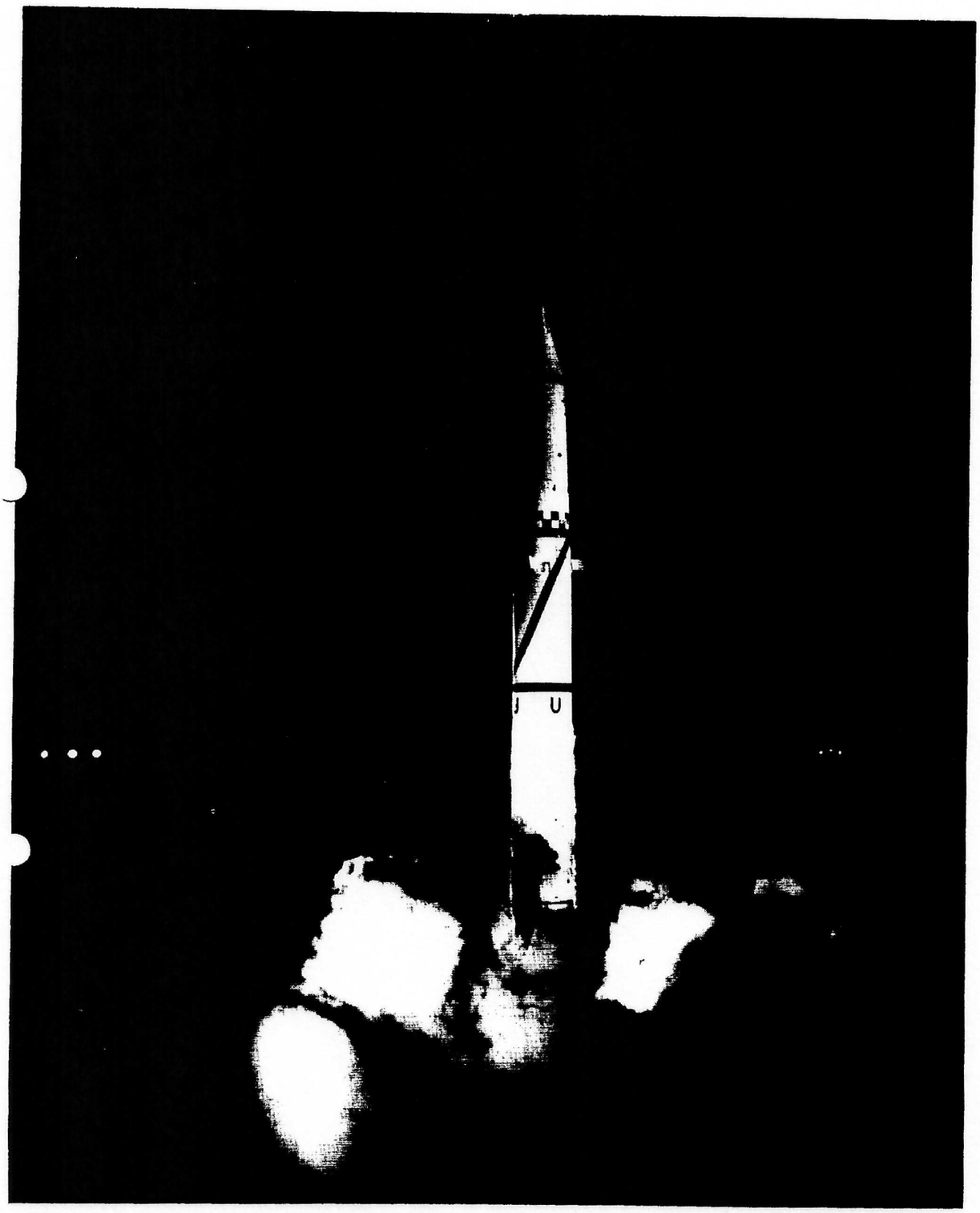
| | |
|---|---|
| MISSILE | REDSTONE |
| SPONSOR | Army |
| CONTRACTOR | Chrysler Corporation |

| | |
|---|---|
| First R&D launch | 20 Aug 53 |
| Last R&D launch | 5 Nov 58 |

Superseded by JUPITER program 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 1959.



17. ARMY'S REDSTONE TACTICAL BALLISTIC MISSILE. LAUNCHED FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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.

## 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. |

Tab 17

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

First launch 14 Mar 56

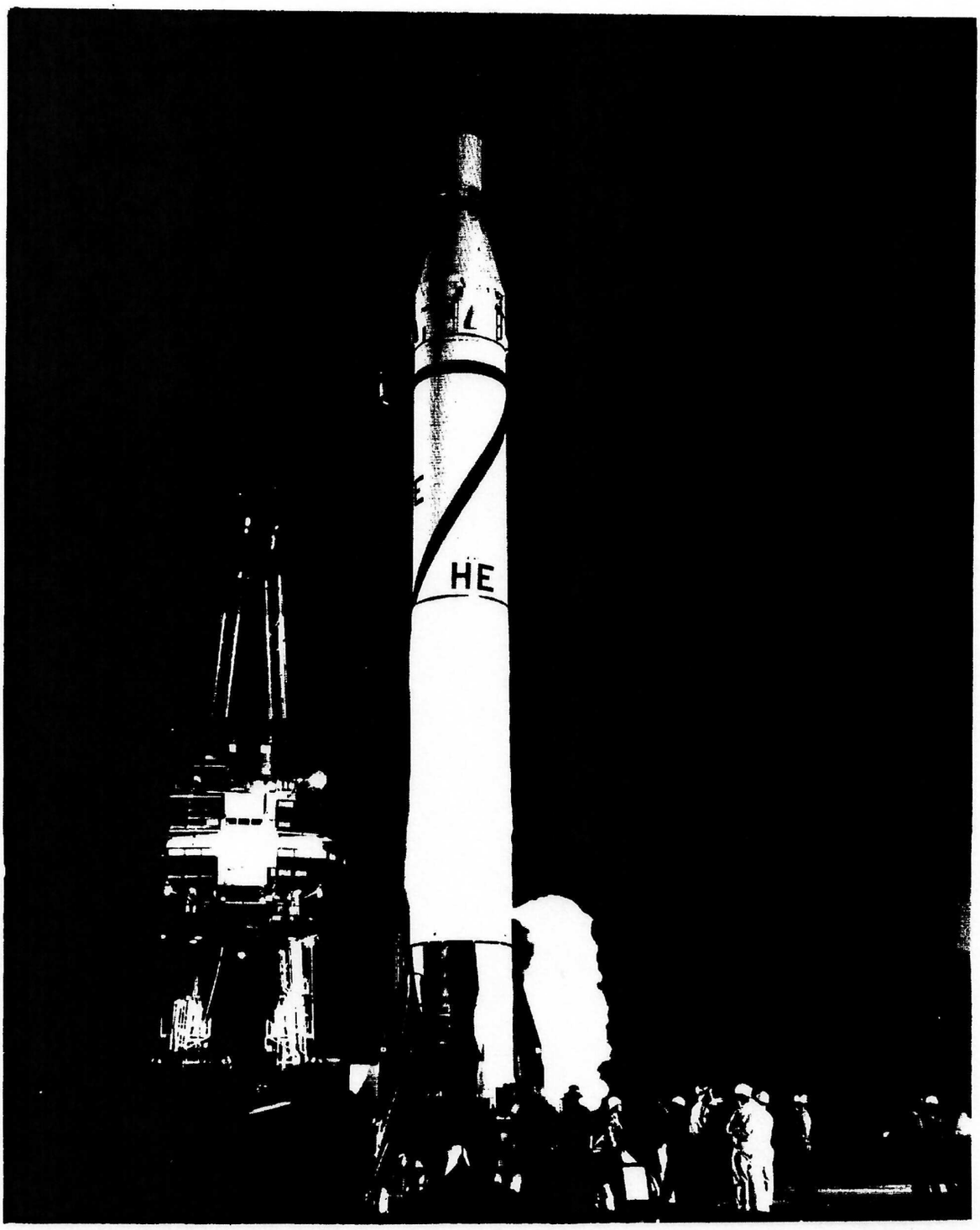
Placed first U.S. satellite in orbit 31 Jan 58.

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




AN ARMY JUPITER-C MISSILE, CARRYING A SATELLITE AS ITS PAYLOAD, BEING PREPARED FOR LAUNCHING AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## 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. |

## 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. |

## 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. |

## 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 | 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 | 18 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)

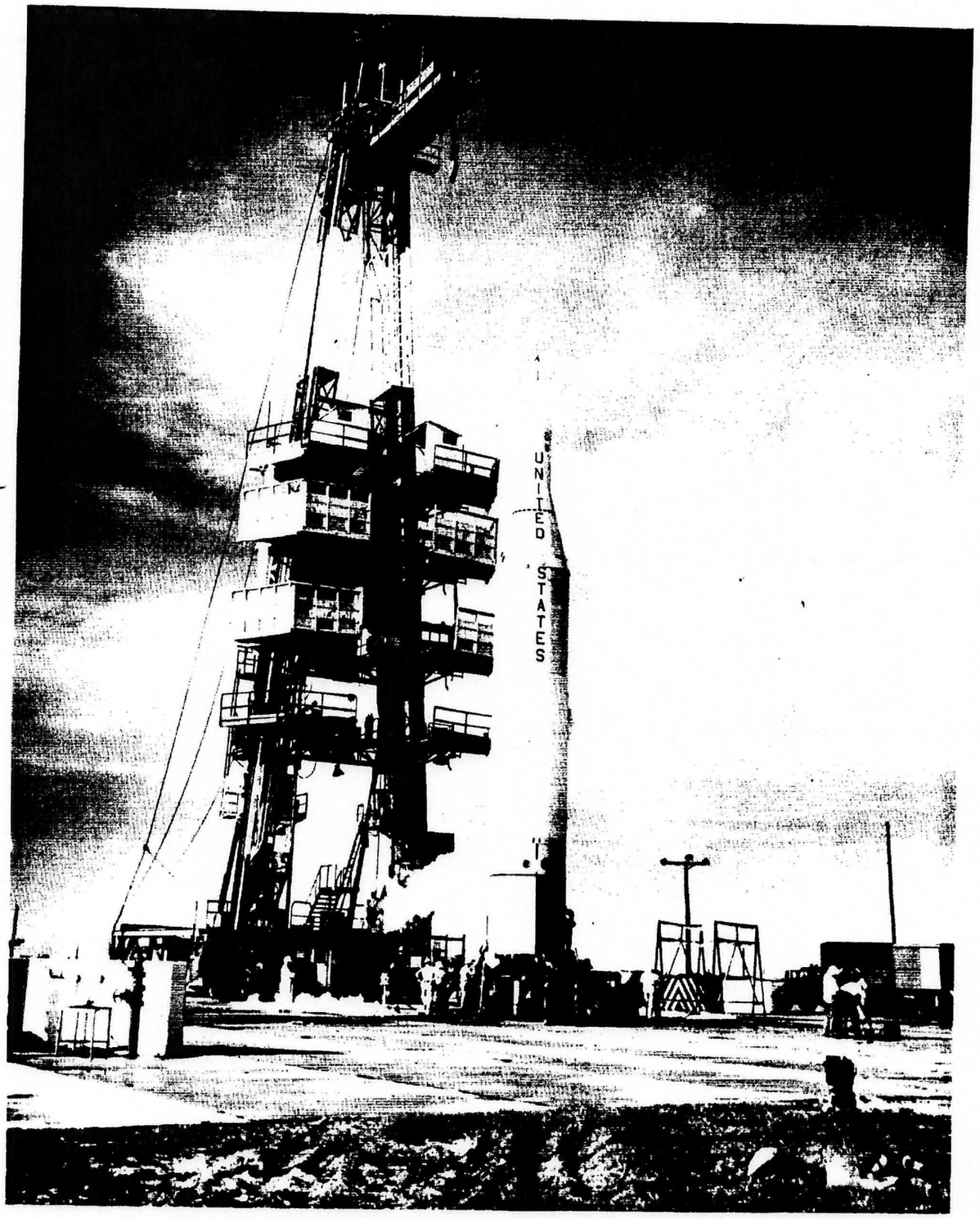
## JUPITER LAUNCHINGS

| 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. |

Tab 18

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

**Program currently underway**




THE U. S. ARMY-DEVELOPED JUNO II, A FOUR-STAGE EXPERIMENTAL SPACE VEHICLE WITH INSTRUMENTED PAYLOAD, POISED ON ITS LAUNCHING PAD AT CAPE CANAVERAL, LAUNCH SITE OF THE AIR FORCE MISSILE TEST CENTER, BEFORE BEING FIRED UNDER DIRECTION OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.

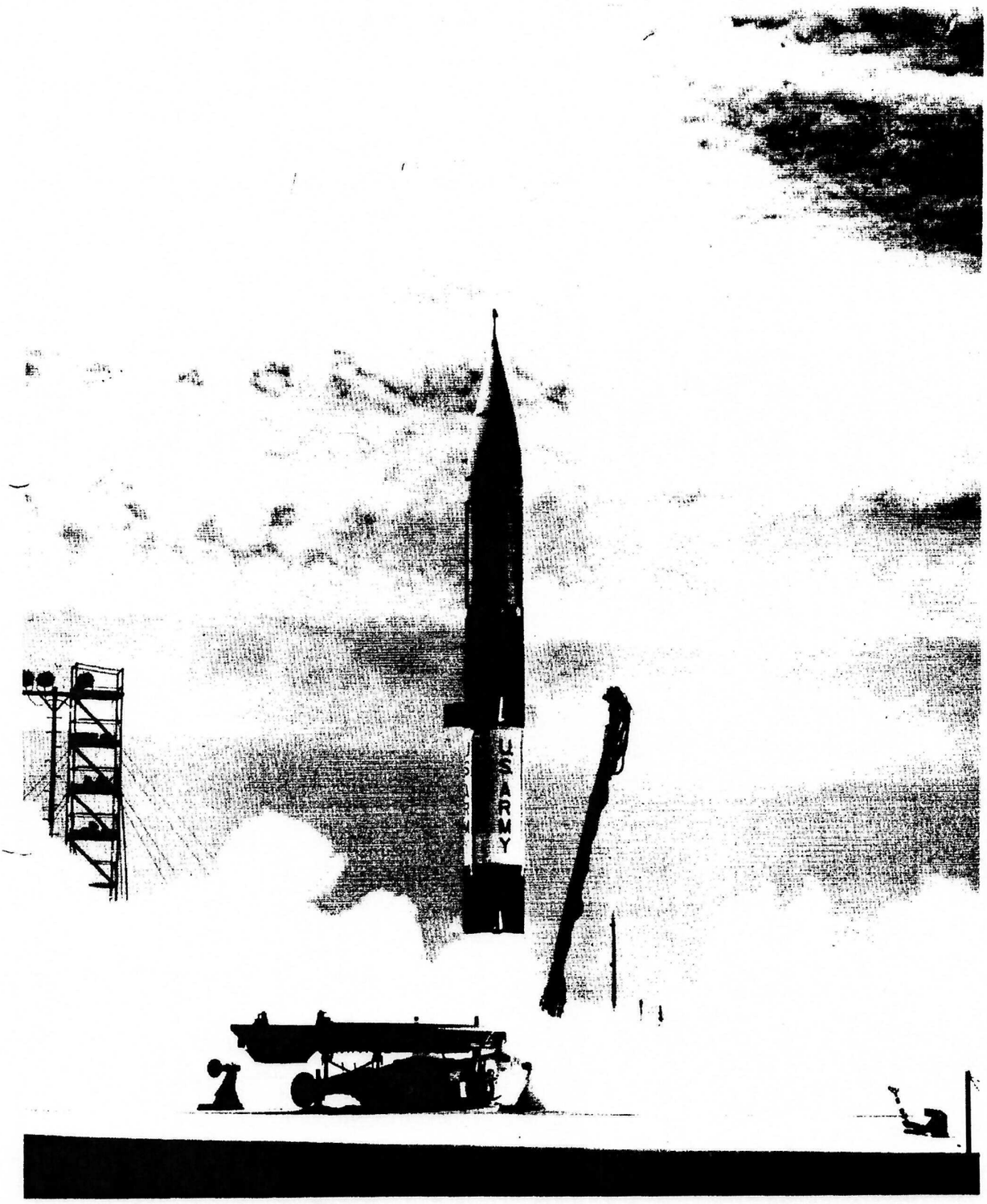
## JUNO LAUNCHINGS

| 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. |

Tab 19

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

Program currently underway




20. THE ARMY'S PERSHING TACTICAL BALLISTIC MISSILE. LAUNCHED FROM CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

PERSHING LANUCHINGS

| 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. |

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

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

## 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. |

## POLARIS LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 18 | 1 | AX-1 | 24 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+82 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. |

## 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+80 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. |

## 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. |

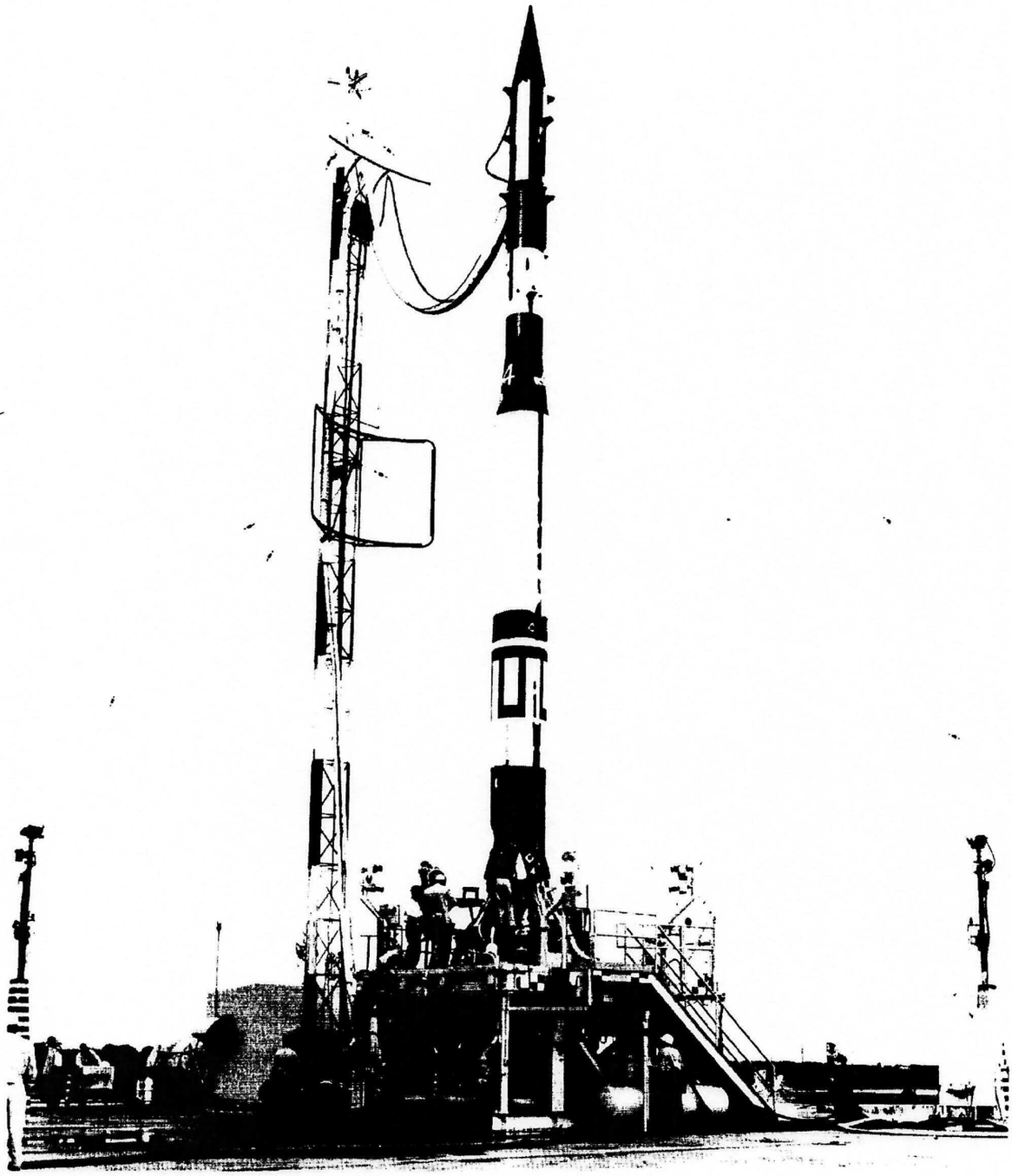
Tab 21

| | |
|---|---|
| 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



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.

## 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 346 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 | 18 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.

Tab 22

| | |
|---|---|
| MISSILE | BOLD ORION (199B) |
| SPONSOR | Air Force |
| CONTRACTOR | Prime: Martin - Airframe |
| | Associate: Thiokol Chemical - Propulsion |

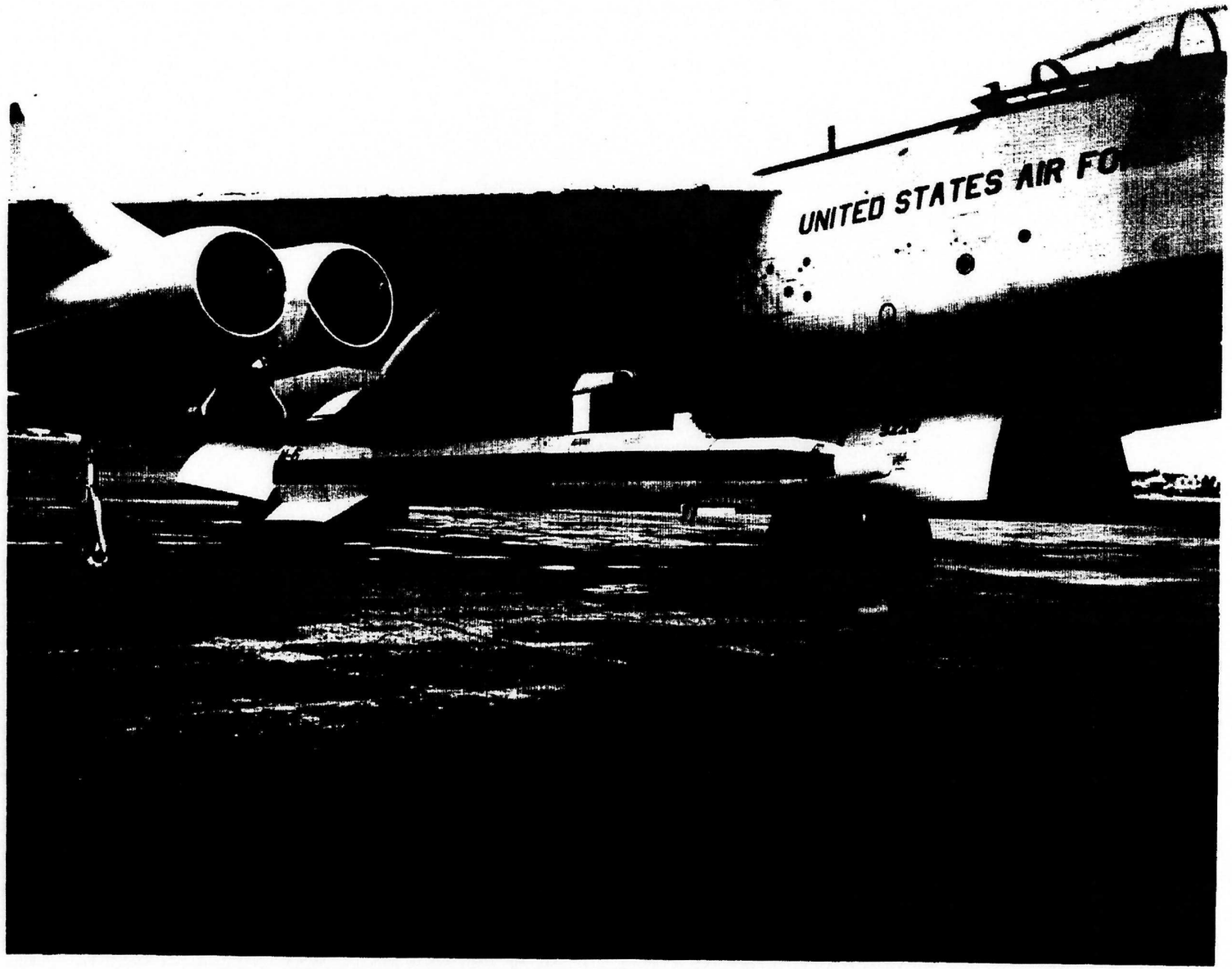
| | |
|---|---|
| First R&D launch | 26 May 58 |
| Final launch | 13 Oct 59 |

Total launchings at AMR 12

(8 single and 4 two-stage vehicles.)

(Used B-47 carrier for air launch.)

Program completed




23. THE AIR FORCE'S BOLD ORION (1998), AIR LAUNCHED BALLISTIC MISSILE ON THE FLIGHT LINE FOR LAUNCH ON THE ATLANTIC MISSILE RANGE.

## BOLD ORION or 199B LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1958 | |
| 1 | 1 | 1 | 26 May 58 | First launch at AMR. Success made 2nd Phase I flight unnecessary. |
| 2 | 2 | 2 | 27 Jun 58 | 1st Phase II launch. High pitch altitude caused erratic flight. |
| | | | JULY - DECEMBER 1958 | |
| 3 | 1 | 3 | 18 Jul 58 | 90° roll tumbled gyro causing erratic flight. |
| 4 | 2 | | 25 Sep 58 | Range Safety destruct at T+19 seconds. |
| 5 | 3 | | 10 Oct 58 | Range Safety destruct at T+26 seconds. |
| 6 | 4 | 6 | 17 Nov 58 | Met all test objectives. |
| 7 | 5 | 7 | 8 Dec 58 | First two-stage version. Impacted as dud. |
| 8 | 6 | 8 | 16 Dec 58 | 2nd two-stage version. Met test objectives. |
| | | | JANUARY - JUNE 1959 | |
| 9 | 1 | 3rd 2 Stage | 3 Apr 59 | 2nd stage failed to operate. |
| 10 | 2 | 7th Single Stage | 8 Jun 59 | Met test objectives. |
| 11 | 3 | 8th Single Stage | 19 Jun 59 | Met test objectives. |
| | | | JULY - DECEMBER 1959 | |
| 12 | 1 | 4th Two Stage | 13 Oct 59 | Launched for satellite intercept with EXPLORER VI. Miss distance not recorded. This launch completed the 199B test program. |

MT 60-2544

Tab 23

| | |
|---|---|
| MISSILE | 199-C B-58 ALBM |
| SPONSOR | Air Force |
| CONTRACTOR | Prime: Convair |
| | Subcontractor: Lockheed (Builder) |

| | |
|---|---|
| First R&D launch | 5 Sep 58 |
| Final launch | 4 Jun 59 |
| Total launchings at AMR | 3 |

(Used B-58 carrier for air launch.)

Program transferred to Eglin AFB for final launch.

## 199-C LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 1 | 1 | 1 | 5 Sep 58 | First launch. Flight erratic. |
| 2 | 2 | 2 | 19 Dec 58 | Met test objectives. |
| | | | JANUARY - JUNE 1959 | |
| 3 | 1 | 3 | 4 Jun 59 | Last launch at AMR. Program moved to Eglin AFB. |

[redacted]

Tab 24

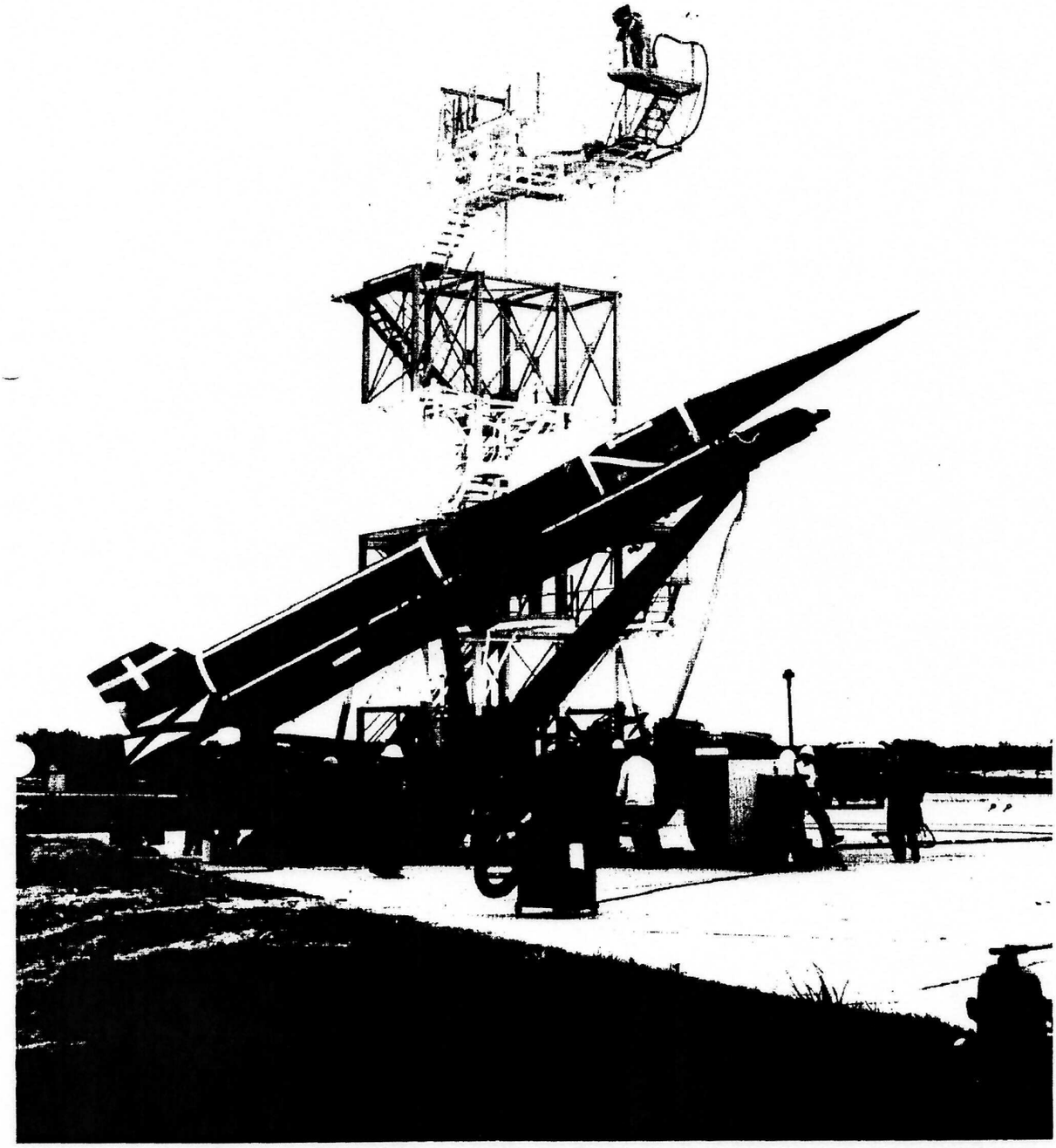
| | |
|---|---|
| MISSILE | DRACO (199-D) |
| SPONSOR | Air Force |
| CONTRACTOR | McDonnell Aircraft |

| | |
|---|---|
| First R&D launch | 16 Feb 59 |
| Final Launch | 27 Apr 59 |
| Total launchings at AMR | 3 |

Program completed



[redacted]



24. THE AIR FORCE'S DRACO (199D) READY FOR LAUNCH AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## DRACO or 199-D LAUNCHINGS

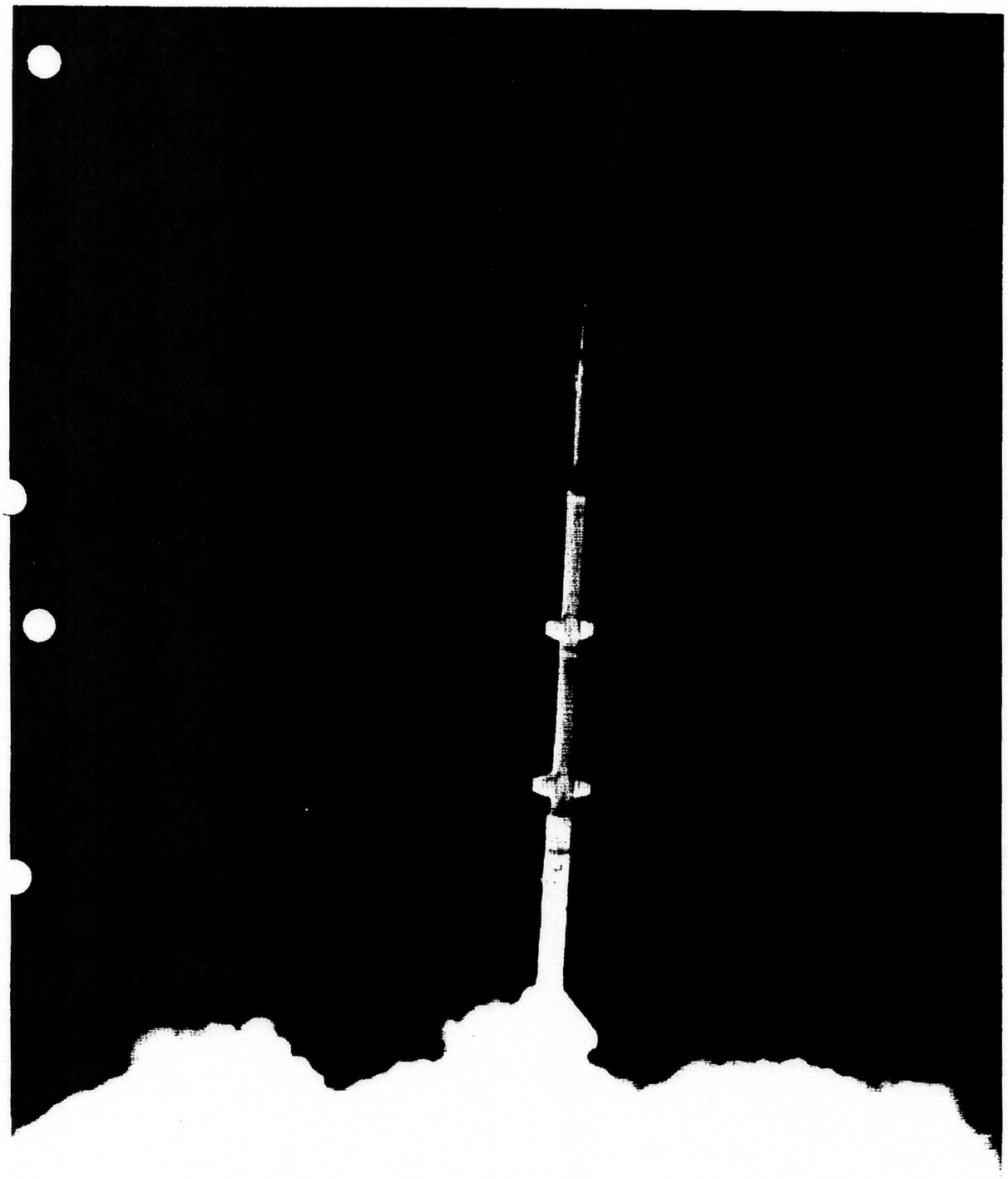
| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1959 | |
| 1 | 1 | 1 | 16 Feb 59 | First launch at AMR. Met test objectives. |
| 2 | 2 | 2 | 16 Mar 59 | Met test objectives. |
| 3 | 3 | 3 | 27 Apr 59 | Final launch at AMR. Program completed. |

Tab 25

| | |
|---|---|
| MISSILE | JASON |
| SPONSOR | Air Force |
| CONTRACTOR | Aerolab, Pasadena, California |
| First launch | 14 Aug 58 |
| Final launch | 2 Sep 58 |

| | |
|---|---|
| Launchings from Cape Canaveral | 6 |
| Launchings from Ramey AFB | 6 |
| Total launchings at AMR | 12 |

Program cancelled 15 Sep 58



25. THE AIR FORCE'S JASON MISSILE. LAUNCHED AT CAPE CANAVERAL, LAUNCHING SITE OF THE AIR FORCE MISSILE TEST CENTER.

## JASON LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JULY - DECEMBER 1958 | |
| 1 | 1 | 1 | 14 Aug 58 | |
| 2 | 2 | 2 | 27 Aug 58 | |
| 3 | 3 | 3 | 29 Aug 58 | |
| 4 | 4 | 4 | 30 Aug 58 | |
| 5 | 5 | 5 | 30 Aug 58 | |
| 6 | 6 | 6 | 2 Sep 58 | |

Project cancelled as of 15 Sep 58

6 launchings from Ramey AFB, Puerto Rico. Also some from Wallops Island, Va.

Tab 26

| | |
|---|---|
| MISSILE | HOUND DOG (GAM-77) |
| SPONSOR | Air Force |
| CONTRACTOR | North American Aviation |

First R&D launch 23 Apr 59

(Used B-52 carrier for air launch.)

Program currently underway

## HOUND DOG or (GAM-77) LAUNCHINGS

| TOTAL TO DATE | DURING PERIOD | MISSILE NUMBER | DATE LAUNCHED | REMARKS |
|---|---|---|---|---|
| | | | JANUARY - JUNE 1959 | |
| 1 | 1 | 001 | 23 Apr 59 | First GAM-77 launch at AMR. |
| 2 | 2 | 003 | 9 Jun 59 | Met major test objectives. |
| | | | JULY - DECEMBER 1959 | |
| 3 | 1 | 002 | 21 Aug 59 | Defective autonavigator prevented climb to proper altitude. |
| 4 | 2 | 005 | 30 Oct 59 | Flew exactly as planned. |
| 5 | 3 | 007 | 18 Dec 59 | Met all test objectives. |
| 6 | 4 | 008 | 23 Dec 59 | Carried dummy warhead by Sandia. |
| | | | JANUARY - JUNE 1960 | |
| 7 | 1 | 011 | 25 Feb 60 | Met all test objectives. |
| 8 | 2 | 2796 | 29 Feb 60 | 1st production missile in SAC category III program. |
| 9 | 3 | 2792 | 29 Feb 60 | First off-course launch. Production model. Met test objectives. |
| 10 | 4 | 009 | 11 Mar 60 | Met test objectives. |
| 11 | 5 | 012 | 24 Mar 60 | Met test objectives. Flew dog-leg course. |
| 12 | 6 | | 12 Apr 60 | 3rd category III launch. Met test objectives. |
| 13 | 7 | 014 | 18 Apr 60 | Longest GAM-77 flight to date. Traveled over 500 nautical miles. |
| 14 | 8 | 015 | 17 May 60 | Met test objectives. |
| 15 | 9 | 017 | 24 May 60 | Flight erratic, but met objectives. |
| 16 | 10 | 018 | 9 Jun 60 | Met test objectives. |
| 17 | 11 | 023 | 23 Jun 60 | Met test objectives. |

Tab 27

ANNEX A

# SPACE FLIGHTS

# and

# PASSENGER SATELLITES

## ECHO PROGRAM

| | | |
|---|---|---|
| ECHO | 13 May 1960 | Purpose to place 100 ft. inflatable balloon in 900 nm orbit around the earth as a passive communications aid satellite. Orbit of payload was not achieved. |
| Booster: | DELTA 1 - THOR #144 | |
| Sponsor: | NASA | |

## EXPLORER PROGRAM

| | | |
|---|---|---|
| EXPLORER I<br>Booster: JUPITER-C #27 | 31 Jan 58 | First U.S. earth satellite placed in orbit. Cylinder 80" long, 6" diameter, weight 30.8 lbs. Expected life, 3 to 5 years. |
| EXPLORER II<br>Booster: JUPITER-C #26 | 5 Mar 58 | Failed to achieve orbit. Size and weight same as EXPLORER I. |
| EXPLORER III<br>Booster: JUPITER-C #24 | 26 Mar 58 | Placed in earth orbit. Size and weight same as EXPLORER I. Re-entered earth's atmosphere 27-29 Jun 58. |
| EXPLORER IV<br>Booster: JUPITER-C #44 | 26 Jul 58 | 38.64 lb. earth satellite to study cosmic ray intensity. Placed in earth orbit. Re-entered earth's atmosphere 23 Oct 59. |
| EXPLORER V<br>Booster: JUPITER-C #47 | 24 Aug 58 | Failed to achieve orbit. 2nd and 3rd stages fired at incorrect angle for orbital flight. |
| EXPLORER VI<br>Booster: #134 THOR-ABLE 3 | 7 Aug 59 | Paddlewheel satellite placed in earth orbit. Life expectancy over 1 year. Purpose to study environment encountered. |
| EXPLORER VII<br>Booster: JUNO II #19A | 13 Oct 59 | Placed in orbit a 91.5 lb. earth satellite with a life expectancy of 20 years. |

## LUNAR PROBES AND ORBITS

| | | |
|---|---|---|
| 1st lunar probe<br>Booster: #127 THOR-ABLE 1 | 17 Aug 58 | Escape earth's gravity field and place instrumented payload in vicinity of the moon. 1st stage malfunction terminated flight at T+75 seconds. |

For information on 2nd, 3rd, 4th, and 5th lunar probes see the PIONEER program.

| | | |
|---|---|---|
| 1st attempted moon orbit<br>Booster: 20D ATLAS-ABLE IV<br>Sponsor: NASA | 26 Nov 59 | Purpose to overcome earth's gravitational field and place instrumented payload in orbit around the moon. 2nd stage fell from vehicle at T+47.8 seconds. No orbit. |

## MERCURY PROGRAM

| | | |
|---|---|---|
| MERCURY<br>Booster: ATLAS 10D<br>Sponsor: NASA | 9 Sep 59 | 1st MERCURY capsule launch at AMR. Shipboard recovery accomplished. Ablating heat shield was in excellent condition. There was a delayed separation between capsule and booster but test objectives were achieved. |

## MIDAS PROGRAM

| | | |
|---|---|---|
| MIDAS I<br>Booster: ATLAS 29D<br>Sponsor: Air Force from ARPA | 26 Feb 60 | 1st of two MIDAS shots. Purpose to place MIDAS capsule in earth orbit with infrared detection payload as Missile Defense Alarm System. Orbit not achieved. |
| MIDAS II<br>Booster: ATLAS 45D<br>Sponsor: Air Force from ARPA | 24 May 60 | Placed MIDAS capsule containing infrared detection device in earth orbit as Missile Defense Alarm System. Life expectancy 3 or 4 months. Completed MIDAS program at AFMTC. |

Program completed.

## PIONEER PROGRAM

| | | |
|---|---|---|
| PIONEER I<br>Booster: THOR-ABLE I #130<br>Sponsor: NASA | 11 Oct 58 | PIONEER I was not a satellite. It was the second lunar probe. Booster traveled 90,000 statute miles into space, farthest to date. Major test objectives were not achieved. Verified Van Allen radiation belt. |
| PIONEER II<br>Booster: THOR-ABLE I #129<br>Sponsor: NASA | 8 Nov 58 | Third lunar probe. Third stage of booster did not ignite and objectives were not achieved. |
| PIONEER III<br>Booster: JUNO II (AM-11)<br>Sponsor: NASA | 6 Dec 58 | Fourth lunar probe to obtain radiation data regarding Van Allen belt by placing 15 lb. payload in the vicinity of the moon. Short burning time of 1st stage failed to produce required velocity and it traveled only 66,654 miles into space. |
| PIONEER IV<br>Booster: JUNO II #14<br>Sponsor: NASA | 3 Mar 59 | Fifth lunar probe to obtain radiation data regarding Van Allen belt by placing 15 lb. payload in the vicinity of the moon. By-passed moon by 38,000 miles and went into orbit around the sun. Became first U.S. satellite in solar orbit. |
| PIONEER V<br>Booster: THOR-ABLE #4<br>Sponsor: NASA | 11 Mar 60 | Deep space probe around the sun in orbital path of Venus. Placed satellite, known as paddlewheel planet, in orbit around sun. On 29 Apr 60 it was 6.5 million miles from earth, had a velocity of 6,500 mph, and its 5 watt transmitter was still operating. 2nd U.S. sun satellite. |

## PROJECT SCORE

| | | |
|---|---|---|
| ATLAS satellite<br>Booster: ATLAS 10B<br>Sponsor: ARPA | 18 Dec 58 | ATLAS missile 10B placed in earth orbit. Used to relay President Eisenhower's Christmas message to the world. Satellite decayed 21 Jan 1959. |

## TIROS PROGRAM

| | | | |
|---|---|---|---|
| TIROS I | | 1 Apr 60 | Purpose to place meteorological satellite in earth orbit to photograph cloud coverage of the earth. Orbited 270 lb. package with life expectancy of 50 years. |
| Booster: | THOR-ABLE | | |
| Sponsors: | NASA, AF, Army, Navy, and Weather Bureau | | |

## TRANSIT PROGRAM

| | | |
|---|---|---|
| TRANSIT 1A<br>Booster:<br>Sponsors: | 17 Sep 59<br>THOR-ABLE #136<br>ARPA, Navy | Purpose to place a navigational aid satellite in orbit around the earth. Booster third stage failure prevented satellite orbit. |
| TRANSIT 1B<br>Booster:<br>Sponsors: | 13 Apr 60<br>THOR-ABLE-STAR #257<br>ARPA, Navy | Purpose to place navigational aid satellite in orbit around the earth. Orbit achieved with life expectancy of 16 months. |
| TRANSIT 2A<br>Booster:<br><br>Sponsors: | 22 Jun 60<br>THOR-ABLE-STAR #281<br>ARPA, Navy | Navigational aid earth satellite 36" diameter ball weighing 223 lbs. placed in orbit around earth. It carried aloft a 42 lb. basketball size sphere, known as the "piggy-back" satellite, to measure radiation in the ionosphere which also achieved orbit. |

## VANGUARD PROGRAM

| | | |
|---|---|---|
| VANGUARD I | 17 Mar 58 | 1st VANGUARD satellite, a 6" diam., 3.2 lb. sphere, placed in earth orbit. Apogee 2,465 and perigee 406 statute miles. Life expectancy 200 to 1000 years. |
| VANGUARD II | 17 Feb 59 | 2nd VANGUARD satellite, a 20" diam. 71.5 lb. sphere placed in earth orbit. Apogee 2,063 and perigee 346 statute miles. Life expectancy 200 years. |
| VANGUARD III | 18 Sep 59 | 3rd VANGUARD satellite, a 20" diam. 94.6 lb. sphere placed in earth orbit. Apogee 2,326 and perigee 317 statute miles. Life expectancy 50 years. |

Program completed.

See Tab 21 for complete VANGUARD program.

## MISCELLANEOUS SATELLITE ATTEMPTS

| | | |
|---|---|---|
| IGY satellite<br>Booster JUNO II #16 | 6 Jul 59 | Attempt to place 94 lb. IGY earth satellite in orbit. Booster failure caused impact 250 ft. from launch pad. |
| Inflatable sphere<br>Booster: JUNO II #19B | 14 Aug 59 | Attempt to orbit 12 ft. diam. inflatable sphere around earth. Payload failed to achieve orbit. |
| Van Allen measurement<br>Booster: JUNO II #19C | 23 Mar 60 | Attempt to place radiation measurement package in earth orbit to study Van Allen belt radiation. 4th stage of vehicle did not ignite; orbital velocity not achieved. |