ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960	
51	803	60D	2 Jul 60	Test All Inertial Guidance (AIG). 4th to use AIG. Programmed 4306 NM flight. Impact 40 mi short due to engine thrust decay.
52	1505	50D	29 Jul 60	Second MERCURY capsule test, using 1st McDonnell Aircraft Corp capsule. Undisclosed difficulty encountered at T+60 sec.
53	1003	32D	9 Aug 60	Test GE Mod III Guidance System over extended 6350 NM range. Impact within 2 NM of aiming point.
54	1004	66D	12 Aug 60	Evaluate ARMA inertial guidance system. 1st AIG flight to Sta 12 MILS net. Test heat shield on re-entry vehicle. Impact as intended. Re-entry vehicle not recovered due to failure of flotation balloon.
55	2817	76D	16 Sep 60	Test ARMA guidance, combustion, stability, re-entry heat shield performance with emphasis on ablation materials. Impact 3 NM of target in Sta 12 MILS net. Nose cone not recovered.
56	802	79D	19 Sep 60	Test over 7,862 NM (9,000 stat mi) range, with Indian Ocean impact. Evaluate Mod III guidance system. Impact within 2.3 NM of target.
57	2801	4 stage ATLAS-ABLE VA 80D	25 Sep 60	Lunar probe. Interplanetary space probe beyond earth's gravitational field close moon orbit. Low thrust and premature shutdown of 2nd stage prevented velocity

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
				JULY - DECEMBER 1960 (CONT'D)
				gain. 3rd stage accelerated in opposite direction from that desired. Required velocity for lunar exploration not achieved.
58	2508	3E	11 Oct 60	First Series E missile. Test performance of sub-systems, evaluate flight control and ARMA Inertial Guidance System. Nose cone to impact Sta 12 MILS net. Control lost shortly after launch and complete break-up occurred at T+155 sec. Re-entry vehicle impacted 900 mi down range.
59	802	71D	13 Oct 60	Test ARMA Guidance System, evaluate re-entry vehicle, with emphasis on ablation materials. Sta 12 MILS net impact planned. Carried mice. Recovered 2 hrs after impact within 2 mi of impact point.
60	613	55D	22 Oct 60	Planned 6350 mi flight, using Mark III Mod 2B re-entry vehicle. Impact 3NM of target.
61	3503	83D	15 Nov 60	Test guidance system accuracy. Evaluate AVCO R/V with missile system. Impact Sta 12 within 0.5 mi of aiming point.
62	2800	4E	29 Nov 60	Test sub-systems compatibility. Evaluate ARMA Inertial Guidance. Sta 12 impact planned. Sustainer engine shut down early causing impact only 700 mi down range. Partial success.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1960 (CONT'D)		
63	4508	2nd ABLE VB, 3-stage 91D	15 Dec 60	Lunar probe. Close moon orbit planned. Vehicle lost structural integrity at T+67 sec after lift-off.
		JANUARY - JUNE 1961		
64	3505	90D	23 Jan 61	Last D series ATLAS scheduled for launch as part of the Development program at AMR. Impact within 2 NM of target.
65	3504	8E	24 Jan 61	Missile destroyed itself at T+160 sec. Impact 1400 NM down range.
66	419	67D	21 Feb 61	3rd series D ATLAS to carry a MERCURY capsule. MA-2 capsule landed in target area, was recovered
67	3803	9E	24 Feb 61	1st successful series E flight in 4 tries. Impact at near maximum range of 6,350 NM.
68	403	13E	13 Mar 61	Fuel control malfunction shortened range from intended 7,863 NM to 1,920 NM.
69	811	16E	24 Mar 61	Low order thrust reduced range from intended 7,863 NM to about 3,800 NM.
70	835	100D	25 Apr 61	Carried MA-3 capsule with intent to orbit and recover. RSO destruct at T+40 sec prevented orbit.
71	404	12E	12 May 61	All primary objectives met.
72	813	18E	26 May 61	All primary objectives met.
73	812	17E	22 Jun 61	Destroyed by internal malfunction at T+95 seconds.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
74	1251	22E	6 Jul 61	First series E Atlas to fly the 9,000 mile range to the Indian Ocean. It set new distance record of 9,050 statute miles.
75	1360	21E	31 Jul 61	Met all primary test objectives.
76	1805	2F	8 Aug 61	First series F flight at AMR. Met all test objectives except data cassette recovery. Impact 4,388 NM down range.
77	5050 (formerly 2530)	Agena B 111D	23 Aug 61	Launched Ranger I. Second burn of Agena B did not occur. Payload achieved low earth orbit instead of deep space orbit programmed.
78	1803	26E	8 Sep 61	Thrust decay in vernier engine occurred at T+137 seconds.
79	1254	MA-4 88-D	13 Sep 61	Unmanned Mercury capsule, MA-4 launched from Complex 14. Successful single orbit achieved and recovery made near planned impact area.
80	1252	25E	2 Oct 61	Impact 4,388 NM down range in target area. Carried pod containing Centaur guidance system.
81	1804	30E	5 Oct 61	Data cassette was recovered in Indian Ocean, 7,539 NM down range. Longest recorded recovery of data cassette.
82	3203	32E	10 Nov 61	Thrust decay in B2 engine caused RSO destruct at T+35.4 seconds. Squirrel monkey named Goliath died in the flames.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961 (CONT'D)	
83	4507	Agena B 117D	18 Nov 61	Launched Ranger II. Instability of Agena B occurred shortly after separation as result of roll gyro malfunction. Caused improper trajectory for Ranger II. Short lived low earth orbit achieved.
84	3751	4F	22 Nov 61	Missile impacted as planned in the Sta 12 MILS net. 2nd series F missile. Carried 2 pods for AEC to test SNAP system.
85	1810	MA-5 93D	29 Nov 61	MA-5 capsule placed in orbit for two passes piloted by ENOS the Chimp. Two orbits of a planned 3-orbit flight were accomplished.
86	5462	35E	1 Dec 61	Impact as planned in Ascension Island target area.
87	3752	5F	12 Dec 61	Guidance system failure caused impact 600 miles short of target.
88	5464	36E	19 Dec 61	First missile flown to Mid-Ocean Target Array located 6,000 NM down range. Impact in target area. Attempts to recover a pod containing 4-lb Rhesus monkey failed.
89	4501	6F	20 Dec 61	Malfunction in sustainer pumps caused loss of pressure and missile tumbled out of control at T+282 seconds.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962	
90	125	Agena B 121D	26 Jan 62	Carried Ranger III. Guidance malfunction caused RA-3 to miss moon by 24,856 SM and fall into orbit around the sun.
91	101	40E	13 Feb 62	6,000 NM flight. Data cassette not recovered. Completed R&D Program.
92	5460	MA-6 109D	20 Feb 62	MA-6. First manned orbital flight carried Lt Colonel John H. Glenn, Jr on three orbit passes around earth in Friendship 7 from Complex 14.
93	71	11F	9 Apr 62	Explosion in thrust section at T+1 second followed by explosion in propellant tanks destroyed missile.
94	821	Agena B 133D	23 Apr 62	Carried Ranger IV. Impacted on moon on 26 Apr 62.
95	65	MA-7 107D	24 May 62	Second manned orbital flight. Lt Commander Scott Carpenter made 3 orbital passes in Aurora 7. Launched from Complex 14.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
96	2900	Atlas 145D MR-1 Agena B	22 Jul 62	Venus probe carrying Mariner I. RSO destruct at T + 293 seconds. Human error omitted hyphen in computer tape for spacecraft guidance causing deviation from planned trajectory.
97	102	7F	13 Aug 62	First Atlas launched by all Air Force crew. Missile followed planned trajectory throughout flight. Data cassette recovered 24 minutes after impact.
98	3731	Atlas 179D MR-2 Agena B	27 Aug 62	Venus probe with Mariner II. Flight was normal throughout. Mariner II passed within 20,000 miles of Venus on 14 Dec 62.
99	103	8F	19 Sep 62	5000 mile flight followed planned trajectory. Carried scientific passenger pod #17 containing liquid hydrogen zero "G" heat transfer experiment. Second Atlas launch by all AF crew.
100	66	Atlas 113D Mercury MA-8	3 Oct 62	MA-8 capsule Sigma 7 carried Walter Schirra on 6 orbits of the earth. Recovery by USS Kearsarge in Pacific Ocean. This was 3rd U.S. manned orbital flight.
101	5050	Atlas 215D RA-5 Agena B	18 Oct 62	Boosted Ranger V to within 450 miles of the moon and on into solar orbit.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962 (Cont'd)	
102	72	14F	19 Oct 62	Followed planned trajectory throughout flight. Re-entry vehicle recovered from Sta 12 MILS net. Third Atlas launch by all AF crew.
103	73	16F	7 Nov 62	Planned flight trajectory followed throughout. Data cassette recovered in Ascension net soon after impact. Fourth Atlas all "Blue Suit" launch.
104	1906	21F	5 Dec 62	Ended R&D tests of Atlas F in fifth all "Blue Suit" Atlas launch. Planned flight trajectory followed throughout. Data cassette recovered from Ascension MILS net soon after impact. Ended five year R&D test program at AMR.
			JANUARY - JUNE 1963	
105	119	134F	1 Mar 63	First ABRES (Advanced Ballistic Re-entry System) flight test. Tested new nose cone and carried 5 live science experiments. Test successful.
106	1501	135F	26 Apr 63	Second ABRES launch. All Air Force launch by 6555th Test Wing Development.
107	125	130D	15 May 63	Sixth manned space flight under project Mercury. Maj. Gordon Cooper Jr., USAF made 22 and a fraction orbits of the earth in his MA-9 capsule Faith 7. Manual control necessary during re-entry. Recovery was by Carrier Kearsarge in the Pacific.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962		
96	2900	Atlas 145D MR-1 Agena B	22 Jul 62	Venus probe carrying Mariner I. RSO destruct at T + 293 seconds. Human error omitted hyphen in computer tape for spacecraft guidance causing deviation from planned trajectory.
97	102	7F	13 Aug 62	First Atlas launched by all Air Force crew. Missile followed planned trajectory throughout flight. Data cassette recovered 24 minutes after impact.
98	3731	Atlas 179D MR-2 Agena B	27 Aug 62	Venus probe with Mariner II. Flight was normal throughout. Mariner II passed within 20,000 miles of Venus on 14 Dec 62.
99	103	8F	19 Sep 62	5000 mile flight followed planned trajectory. Carried scientific passenger pod #17 containing liquid hydrogen zero "G" heat transfer experiment. Second Atlas launch by all AF crew.
100	66	Atlas 113D Mercury MA-8	3 Oct 62	MA-8 capsule Sigma 7 carried Walter Schirra on 6 orbits of the earth. Recovery by USS Kearsarge in Pacific Ocean. This was 3rd U.S. manned orbital flight.
101	5050	Atlas 215D RA-5 Agena B	18 Oct 62	Boosted Ranger V to within 450 miles of the moon and on into solar orbit.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962 (Cont'd)	
102	72	14F	19 Oct 62	Followed planned trajectory throughout flight. Re-entry vehicle recovered from Sta 12 MILS net. Third Atlas launch by all AF crew.
103	73	16F	7 Nov 62	Planned flight trajectory followed throughout. Data cassette recovered in Ascension net soon after impact. Fourth Atlas all "Blue Suit" launch.
104	1906	21F	5 Dec 62	Ended R&D tests of Atlas F in fifth all "Blue Suit" Atlas launch. Planned flight trajectory followed throughout. Data cassette recovered from Ascension MILS net soon after impact. Ended five year R&D test program at AMR.
			JANUARY - JUNE 1963	
105	119	134F	1 Mar 63	First ABRES (Advanced Ballistic Re-entry System) flight test. Tested new nose cone and carried 5 live science experiments. Test successful.
106	1501	135F	26 Apr 63	Second ABRES launch. All Air Force launch by 6555th Test Wing Development.
107	125	130D	15 May 63	Sixth manned space flight under project Mercury. Maj. Gordon Cooper Jr., USAF made 22 and a fraction orbits of the earth in his MA-9 capsule Faith 7. Manual control necessary during re-entry. Recovery was by Carrier Kearsarge in the Pacific.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1963		
108	5145	Atlas 197D/ Agena B SLV-3/S-01A	16 Oct 63	Launched from Pad 13. Carried two 493 lb. satellites under Vela Program containing radiation sensing equipment. Payload achieved orbit. Booster operation was normal.
109	3868	136F	28 Oct 63	Third ABRES (Advanced Ballistic Reentry System) launched from Pad 11 by 6555th ATW military launch crew. Malfunction in sustainer caused loss of control at T+140 seconds with engine shutdown at T+260 sec.
		JANUARY - JUNE 1964		
110	250	Atlas 199D Agena RA-6	30 Jan 64	Launched from Pad 12 carrying Ranger VI space vehicle which made moon landing. Moon impact occurred 2 Feb 64.
111	150	5E	25 Feb 64	Fourth ABRES test. Launched from Pad 11 by 6555th ATW. It contained G.E. WAC-3 (Wake Analysis and Control) reentry vehicle. Impact was 0.4 NM short and 0.4 NM left of target in Sta 12 MILS net. Also carried Zero "G" Liquid Hydrogen experiment.
112	0575	137F	1 Apr 64	Fifth ABRES test. Launched from Pad 11. This was a FLIP (Flight Launched Infrared Probe) of 8 experiments to study ionosphere. Sponsored by OAR Field Office and launched by 6555th ATW. All test objectives were met.

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ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1964 (Cont'd)	
113	0225	Atlas 263D LV3A	14 Apr 64	Launched from Pad 12. Payload Project FIRE (Flight Investigation Reentry Environment) in preparation for Apollo program. Systems operated as planned.

ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
114	2925	216D Agena D	17 Jul 64	Launched from Pad 13. Carried twin Vela satellites each weighing 493-lbs. Also carried a 4.5-lb hitch hiker satellite. Purpose of the Vela satellites was to detect nuclear test detonations in space. Orbit successful. (ERS-13)
115	448	250D Agena	28 Jul 64	Launched from Pad 12. Carried Ranger VII, an 806-lb spacecraft to photograph the moon prior to impact on 31 Jul 64.
116	4307	Agena	4 Sep 64	Launched from Pad 12. Placed 1073-lb satellite OGO-1 in earth orbit. OGO-1 contained 20 experiments. Reached apogee of 92,827 SM and perigee of 175 SM. Orbital period was 63.59 hrs. A SATAR satellite rode piggy back into orbit.
117	5800	MC-2 Agena	5 Nov 64	Launched from Pad 13. Carried Mariner III for intended Mars fly-by. Failed 8 hrs after launch. Payload weight 575 lbs.
118	5049	2880/ MC-3 Agena	28 Nov 64	Launched from Pad 12. Carried Mariner IV, a 525-lb payload for Mars fly-by. Payload successfully deployed.
			JANUARY - JUNE 1965	
119	0235	RA-8 Agena	17 Feb 65	Launched from Pad 12. Boosted Ranger VIII for a proposed lunar landing.

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ATLAS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1965 (Contd)		
120	0300	RA-9 Agena	21 Mar 65	Launched from Pad 12. Boosted Ranger IX for moon landing.
121	0501	264-D	22 May 65	Launched from Pad 12. This was a Project Fire launch to test re-entry heating problems. The 200-lb blunt-nosed space-craft re-entered the earths atmosphere at 25,400 mph 30 min after launch.

ATLAS/AGENA LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1965	
122	1496 Pad 13	225D/ 1803	20 Jul 65	Boosted two Vela nuclear detection satellites (5 & 6) and a 12-lb Octahedral Research Satellite (ORS) into earth orbit. (ERS-17) The Vela satellites weighed 524 lbs each. A Hitab rocket was fired in connection with this launch
123	4994 Pad 14	5301-D/ 5002	25 Oct 65	Agena stage was to serve as a target vehicle for docking with GT-6 Gemini spacecraft. Agena stage failed and caused GT-6 launch to be scrubbed.
			JANUARY - JUNE 1966	
124	2166 Pad 14	5302/ 5 003	16 Mar 66	Placed Agena stage TDA-3 in earth orbit as docking vehicle for Gemini 8 spacecraft.
125	0050 Pad 12	5001/ 6703	8 Apr 66	Boosted OAO-1 (Orbiting Astronomical Observatory) into earth orbit. The mission was aborted two days after launch as a result of battery failure in the OAO vehicle.
126	2398 Pad 14	5303/ 5004	17 May 66	The Agena stage TDA-5 was to be placed in orbit as the rendezvous target for Gemini 9. The Atlas B2 engine gimballed and locked in an off-centered position which prevented programmed speed and altitude being attained to place Agena stage in orbit. RSO sent manual fuel cutoff signal at T+315 sec. This failure caused GT-9 launch to be scrubbed.

ATLAS/AGENA LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
129	5434 Pad 14	5305 SLV-3	18 Jul 66	Agena stage launched as target docking vehicle for Gemini GT-10. Launch and orbit as planned. Missile was launched on first attempt and no holds were required.
			- - - - -	
130	4003 Pad 13		10 Aug 66	Booster for 850 lb Lunar Orbiter "A" on trajectory to orbit moon. It became Lunar Orbiter I when it achieved moon orbit.
			- - - - -	
131	2429 Pad 14	5306 SLV-3	12 Sep 66	Agena stage launched as target docking vehicle for Gemini GT-11. Launched and orbited as planned. This was third launch attempt. The first on 9 Sep was scrubbed because of trouble with the companion Gemini launch vehicle and the second on 10 Sep because of trouble in SLV-3 autopilot.
			- - - - -	
132	1469 Pad 13		6 Nov 66	Booster for Lunar Orbiter "B" to select landing site on the moon. It became Lunar Orbiter II when it achieved moon orbit.
			- - - - -	
133	3678 Pad 14	5307 SLV-3	11 Nov 66	Agena stage launched as target vehicle for Gemini GT-12. Launched and orbited as planned. This was third launch attempt. Two previous attempts on 9 and 10 Nov were scrubbed because of autopilot difficulty in the Gemini launch vehicle.
			- - - - -	
134	8267 Pad 12	5101/ 6151	6 Dec 66	Booster for ATS-B (Applications Technology Satellite) to provide communications, weather photos, and test platform. First of five ATS vehicles. Became ATS-I when it achieved orbit.

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ATLAS/AGENA LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1967	
135	3424 Pad 13	5803/ 6632	4 Feb 67	Boosted Lunar Orbiter "C" into moon orbit. Mission was to acquire data to aid in selection of a landing site for the manned lunar landing program. Lunar Orbiter III weighed 850 lbs. It became Lunar Orbiter III when it achieved moon orbit.
			- - - - -	
136	4570 Pad 12	5102/ 6152	5 Apr 67	Boosted ATS-A gravity-gradient stabilized satellite into earth orbit. Became ATS-II when it achieved orbit.
			- - - - -	
137	2935 Pad 13	5804/ 6633	4 May 67	Served as booster for Lunar Orbiter "D" (LO-D). Placed in near polar orbit. Became LO-IV when it achieved orbit.
			- - - - -	
138	4102 Pad 12	5401/ 6933	14 Jun 67	Served as booster for Mariner V, Venus Fly-by. Successfully launched on course expected to take it within 2000 miles of Venus.
			* * * * *	

ATLAS/AGENA LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
139	6622 Pad 13	Atlas/ Agena 24	1 Aug 67	Boosted 860-lb Lunar Orbiter "E" or LO-5, into lunar orbit to photograph areas of interest to Apollo Surveyor spacecraft landings. It was the fifth and final vehicle in the lunar orbiter series.
140	2800 Pad 12	Atlas/ Agena 25	5 Nov 67	Placed Applications Technology Satellite (ATS-C) into 22,228 mi synchronous earth orbit over the Atlantic near the mouth of the Amazon River. The 805-lb payload contained 18 experiments to gather weather, navigation, and communications data.
			JANUARY - JUNE 1968	
141	3366 Pad 13	Atlas/ Agena 26	4 Mar 68	Placed 1347-lb satellite OGO-E in earth orbit. This was last OGO scheduled for ETR launch. This was the first use of the stretched Atlas booster SLV-3A (which was 117 inches longer than SLV-3) and supposedly the last use by NASA of the Atlas/ Agena booster.

ATLAS/AGENA LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		July-December 1968		
142	4920 Pad 13	Atlas/ Agena 27	6 Aug 68	Boosted a classified payload of experimental nature into near circular earth orbit. Newsmen assigned various unofficial designations of their own to the payload, but there was no official pronouncement of its nature from the Air Force. It was the first closed launch from the Cape since 1963.
		- - - - -		
		January-June 1969		
143	1069 Pad 13	Atlas/ Agena 28	12 Apr 69	Boosted classified payload of experimental nature into near circular earth orbit. This was the second closed launch of the current series started in August 1968.
		- - - - -		

BLUE SCOUT LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
7	3754	O-1	17 Aug 61	To boost 27-lb HETS payload above 56,000 NM altitude. All telemetry data lost at T+131.6 seconds. Primary objective not achieved.
8	3753	D-8	1 Nov 61	To orbit 150 lb Mercury payload to test global tracking net. Erratic behavior caused automatic destruct of first two stages at T+27 seconds. RSO destruct of 3rd stage occurred at T+43 seconds. Guidance failure caused erratic behavior. Payload not orbited.
			JANUARY - JUNE 1962	
9	105	D-7	12 Apr 62	2nd stage failed to ignite. Missile coasted to impact. No recovery attempted.

BLUE SCOUT JR. LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1963	
10	1599	SLV 1B AD-622	30 Jul 63	Launched from Pad 18A. Carried 52 lb. payload in OAR probe program to height of 7485 NM to plot the form and structure of ionosphere. This was first launch of new configuration of second stage and heat shields.
			JANUARY - JUNE 1964	
11	0550	SLV 1B AD-623	13 Mar 64	Launched from Pad 18A. Carried AFCRL payload in OAR probe program to test earth's magnetic field. Missile's fourth stage did not fire. Payload separated at T+283 seconds as scheduled and followed normal trajectory of a spent third stage. Primary objectives were not met because of low apogee resulting from failure of booster fourth stage.

BLUE SCOUT JR. LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
			None Launched	
			JANUARY - JUNE 1965	
12	0002	SLV/1B 22-3	28 Jan 65	Launched from Pad 18A. RSO destruct ordered at T+101 sec because of abnormal flight conditions which caused the missile to penetrate the destruct zone. Carried AFCRL-309 experiment to study magnetic waves and solar winds.
13	0292	SLV/1B 22-4	30 Mar 65	Launched from Pad 18A. Carried AFCRL-35 experiment to study magnetic waves and solar winds. Vehicle and payload performed satisfactorily.
14	0001	SLV/1B 22-9	9 Apr 65	Launched from Pad 18A. Propelled 30-lb instrumented package to altitude of 15,800 SM. It was a cylinder 14 in. long and 14 in. in diameter. Test was sponsored by OAR. Data return was sporadic after 11 min. Carried experiment AFWL-14 to ascertain radiation hazards.
15.	0301	SLV/1B 22-8	12 May 65	Launched from Pad 18A. Instrumented package AFCRL-335 to study conditions in the earths magnetic fields was boosted to an altitude of 8,444 miles.

BLUE SCOUT JR., LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1965 (Contd)		
16	0198	SLV/1B 22-5	9 Jun 65	Launched from Pad 18A. Seventh and final in a series of OAR radiation probes. The 30.65-lb payload carried imitation human tissue to test radiaton in Van Allen belt. Apogee of probe was 10,897 miles reached after 4 hrs of flight.

Tab 2

MISSILE		CENTAUR
DEVELOPMENT		Sponsored by NASA as second stage for Atlas/Centaur combination space booster.
CONTRACTOR	Prime:	General Dynamics Convair - Airframe
	Associate:	Pratt and Whitney and Jet Propulsion Laboratories - Propulsion
CHARACTERISTICS		Two-Stage Height - 100 feet Diameter - 10 feet Thrust - 388,000 pounds - 1st Stage 30,000 pounds - 2nd Stage
First Launch		8 May 1962
Final R&D Launch		26 Oct 1966

Operational as space booster as of 30 June 1969.

Tab 2

MISSILE		CENTAUR
DEVELOPMENT		Sponsored by NASA as second stage for Atlas/Centaur combination space booster.
CONTRACTOR	Prime:	General Dynamics Convair - Airframe
	Associate:	Pratt and Whitney and Jet Propulsion Laboratories - Propulsion
CHARACTERISTICS		Two Stage Height - 100 feet Diameter - 10 feet Thrust - 388,000 pounds - 1st Stage 30,000 pounds - 2nd Stage
First Launch		8 May 1962
Final R&D Launch		26 Oct 1966

Operational as space booster as of 30 June 1968.

ET68-14761

Tab 2

MISSILE		CENTAUR
DEVELOPMENT		Sponsored by NASA as second stage for Atlas/Centaur combination space booster.
CONTRACTOR	Prime:	Convair Division/General Dynamics - Airframe
	Associate:	Pratt and Whitney and Jet Propulsion Laboratories - Propulsion
CHARACTERISTICS		Two Stage Height - 100 feet Diameter - 10 feet Thrust - 388,000 pounds - 1st Stage 30,000 pounds - 2nd Stage
First Launch		8 May 1962
Final R&D Launch		26 Oct 1966

Operational as space booster as of 30 June 1967.

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Tab 2

MISSILE		CENTAUR
DEVELOPMENT		Sponsored by NASA as second stage for Atlas/Centaur combination space booster.
CONTRACTOR	Prime	Convair Division/General Dymanics - Airframe
	Associate	Pratt and Whitney and Jet Propulsion Laboratories - Propulsion
CHARACTERISTICS		Two Stage Height 100 feet Diameter 10 feet Thrust 388,000 pounds - 1st stage 30,000 pounds - 2nd stage
First Launch		8 May 1962
Final R&D Launch		26 Oct 1966

X Program underway as of 30 June 1966.

CENTAUR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
4	4373	AC-4	11 Dec 64	Launched from Pad 36A. Carried Surveyor, a metal model moonship along with Centaur second stage, was placed in earth orbit on a 103 mile high circular orbit.
			JANUARY - JUNE 1965	
5	0205	AC-5	2 Mar 65	Launched from Pad 36A. Exploded on pad at T+1 sec, causing pad damage

ATLAS/CENTAUR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1965	
6	1920 Pad 36B	AC-6	11 Aug 65	Boosted simulated model of Surveyor spacecraft into lunar trajectory. The launch demonstrated the reliability of the Centaur all inertial guidance system. Payload weight 2100 lbs.
			JANUARY - JUNE 1966	
7	6812 Pad 36B	AC-8	7 Apr 66	The Centaur hydrogen engine failed to restart in space as programmed. Carried mass model spacecraft simulating Surveyor vehicle. Payload weight 1730 lbs.
8	0184 Pad 36A	AC-10	30 May 66	Boosted 2,250-lb Surveyor (SC-1) Spacecraft on trajectory for soft landing on the moon.

ATLAS/CENTAUR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
9	5739 Pad 36A	AC-7	20 Sep 66	Booster for Surveyor II payload. Payload tumbled out of control on 21 Sep when a directional rocket failed to fire. All contact was lost on 22 Sep.
			- - - - -	
10	1906 Pad 36B	AC-9	26 Oct 66	The second stage Centaur was boosted into earth orbit but was not considered a spacecraft. It decayed 6 Nov 66. This was the final R&D test to prove its capability to restart after coast phase and boost mass model Survevor into lunar transfer trajectory.
			JANUARY - JUNE 1967	
11	6950 Pad 36B	AC-12	17 Apr 67	Boosted Survevor SC-3 to soft landing on surface of moon, where it conducted the first lunar ground-breaking exercise experiment.

* * * * *

ATLAS/CENTAUR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
12	4213 Pad 36A	AC-11	14 Jul 67	Boosted 625-lb Surveyor 4 to soft landing on the moon. All communications were lost with the spacecraft during the last few seconds of retro-motor burn preparatory to landing.
13	7231 Pad 36B	AC-13	8 Sep 67	Boosted 616-lb Surveyor 5, which made a soft landing on the moon on 10 Sep 67, in the Sea of Tranquility. It provided the first chemical analysis of the moon's surface and returned over 19,000 photographs of the lunar surface to earth.
14	2020 Pad 36B	AC-14	7 Nov 67	Surveyor F, or 6, boosted to soft landing on moon. Landed in Sinus Medii area on 9 Nov 67. It became the first spacecraft to be moved and relocated on lunar surface after initial landing. Surveyor 6 weighed 617 lbs.
			JANUARY - JUNE 1968	
15	1384 Pad 36A	AC-15	7 Jan 68	Boosted 639-lb Surveyor VII to soft landing on moon. Touch-down was near crater Tycho on 9 Jan 68. Spacecraft was equipped with camera, earth claw, chemistry laboratory, and magnets. This was the last Surveyor launch.

ATLAS/CENTAUR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968	
16	4089 Pad 36A	C-17	10 Aug 68	Carried ATS-4 as payload. Centaur stage failed to restart in space. This malfunction caused payload to be left in its preliminary low elliptical earth orbit instead of the intended synchronous earth orbit. This rendered the experiments aboard useless. Payload weight was 864 lbs.
			- - - - -	
17	1979 Pad 36B	C-16	7 Dec 68	Centaur booster placed OAO-A2 into earth orbit. It was the heaviest and most automated unmanned satellite developed by the U.S. It weighed 4,376 lbs.
			- - - - -	
			January-June 1969	
18	0183 Pad 36B	C-20	24 Feb 69	Boosted Mariner 6 on trajectory for a Mars fly-by mission to study environmental conditions of that planet. The Atlas first stage of the booster initially intended for the payload began to buckle from loss of pressure on 14 Feb 69 and the payload was removed from Pad 36A and replaced on this booster on Pad 36B.
			- - - - -	
19	6891 Pad 36A	C-19	27 Mar 69	Boosted Mariner 7 on trajectory to Mars. This was a twin of Mariner 6 designed to study environmental conditions of Mars and the possibility of life there.
			- - - - -	

Tab 3

MISSILE	DELTA-THOR
DEVELOPMENT	Sponsored by NASA as Space Booster using the Air Force developed Thor as a first stage and a modified Vanguard second stage.
CONTRACTOR	McDonnell Douglas Corporation
CHARACTERISTICS	Three-Stage Height - 90 feet Diameter - 8 feet Thrust - 1st Stage - 170,000 pounds 2nd Stage - 7,500 pounds 3rd Stage - 5,800 pounds TAD adds three strap-on boosters each rated at 54,000 pounds thrust.
First Delta Launch	13 May 1960
First TAD (Thrust Augmented Delta) Launch	19 Aug 1964
First TAID (Thrust Augmented Improved Delta) Launch	6 Nov 1965

Program active as space booster as of 30 June 1969.

Tab 3

MISSILE	DELTA-THOR
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CHARACTERISTICS	Three Stage Height - 90 feet Diameter - 8 feet Thrust - 1st Stage - 170,000 pounds 2nd Stage - 7,500 pounds 3rd Stage - 5,800 pounds TAD adds three strap-on boosters each rated at 54,000 pounds thrust.
First Delta Launch	13 May 1960
First TAD (Thrust Augmented Delta) Launch	19 Aug 1964
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Program active as space booster as of 30 June 1968.

ET68-14761

Tab 3

MISSILE	DELTA-THOR
DEVELOPMENT	Sponsored by NASA as space booster using the Air Force developed Thor as a first stage and a modified Vanguard second stage.
CONTRACTOR	Douglas Aircraft Company
CHARACTERISTICS	Three Stage Height - 90 feet Diameter - 8 feet Thrust - 1st Stage - 170,000 pounds 2nd Stage - 7,500 pounds 3rd Stage - 5,800 pounds TAD adds three strap-on boosters each rated at 54,000 pounds thrust.
First Launch	13 May 1960

Program active as space booster as of 30 June 1967

ET67-14767

Tab 3

MISSILE	DELTA-THOR
DEVELOPMENT	Sponsored by NASA as space booster using the Air Force developed Thor as a first stage and a modified Vanguard second stage.
CONTRACTOR	Douglas Aircraft Company
CHARACTERISTICS	Three stage Height 90 feet Diameter 8 feet Thrust 1st Stage - 170,000 lbs 2nd Stage - 7,500 lbs 3rd Stage - 5,800 lbs TAD adds three strap-on boosters each rated at 54,000 lbs thrust.
First Launch	13 May 1960

Program active as space booster as of 30 June 1966.

DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
27	136	D-25 TAD	19 Aug 64	Launched from Pad 17A. Carried Syncom III into earth orbit. A Thrust Augmented Delta (TAD) was used to boost the payload into a true synchronous orbit.
28	131	D-26	3 Oct 64	Launched from Pad 17A. Boosted Explorer XXI, a 136-lb IMP (Interplanetary Monitoring Platform), into earth orbit. The IMP was hat box shaped, 8 in. high and 28 in. long. It contained 9 experiments. Low thrust of third stage motor provided lower apogee than desired. (IMP-2)
29	2873	D-27	21 Dec 64	Launched from Pad 17A. Placed Explorer XXVI satellite in earth orbit to study energetic particles in earths magnetosphere. Payload weighed 101-lbs.
			JANUARY - JUNE 1965	
30	0285	D-28	22 Jan 65	Launched from Pad 17A. Placed Tiros IX satellite in north-south orbit. First such orbit from ETR. Second stage burned longer than planned causing elliptical instead of circular orbit.

DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1965 (Contd)	
31	0304	D-29	3 Feb 65	Launched from Pad 17B. Placed 545-lb OSO/B-2 (Orbiting Solar Observatory) in 300 mile high earth orbit. Purpose was to study X-ray. Gamma ray, and ultraviolet radiation of the sun.
32	0500	D-30	6 Apr 65	Pad 17A. Placed Early Bird Comsat communications satellite in synchronous earth orbit.
33	1922	D-31	29 May 65	Pad 17B. Placed 130-lb IMP (Interplanetary Monitoring Platform) in earth orbit. This was an Explorer XXVIII satellite to measure magnetic fields, solar winds, and cosmic ray.

DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1965	
34	2756 Pad 17B	D-32	1 Jul 65	Boosted Tiros X weather satellite into earth orbit. This was the second polar orbit conducted from Cape Kennedy.
35	0466 Pad 17B	D-33	25 Aug 65	Attempted to boost OSO-C (Orbiting Solar Observatory) into earth orbit. Third stage of booster ignited prematurely and impacted in the Atlantic Ocean. Payload was not placed in orbit.
36	6400 Pad 17A	D-34 TAID	6 Nov 65	Boosted Explorer XXIX (GEOS-A) satellite into earth orbit.
37	4867 Pad 17A	D-35 TAID	16 Dec 65	This was a TAID (Thrust Augmented Improved Delta) vehicle. It boosted Pioneer VI into solar orbit.
			JANUARY - JUNE 1966	
38	0200 Pad 17A	D-36	3 Feb 66	Boosted Tiros XI weather satellite ESSA-1 (Environmental Science Service Administration) into earth orbit.
39	0405 Pad 17B	D-37	28 Feb 66	Boosted Tiros XII weather satellite into earth orbit.
40	0238 Pad 17B	D-38	25 May 66	Boosted Explorer XXXII, a 485-lb payload, into elliptical earth orbit.

DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
41	3329 Pad 17A	D-39 TAID	1 Jul 66	Booster for Explorer XXXIII, IMP-4 (Interplanetary Monitoring Platform) intended to orbit the moon. Delta stage provided too much thrust for payload to slow down and orbit moon. TAID (Thrust Augmented Improved Delta) carried three solid propellant strap-on rockets around base of the first stage Thor. They ignite at launch, burn about 40 seconds and drop off.
42	3633 Pad 17A	D-40	17 Aug 66	Booster for Pioneer VII space mission. It took approximately 28 weeks to reach designated place in space and eventual solar orbit.
43	5123 Pad 17B	D-42	26 Oct 66	Booster for Intel Satellite II-A (F-1) (Blue Bird) to initiate first operational commercial satellite system. It was twice as large as Early Bird developmental satellite. Entered elliptical orbit instead of planned synchronous circular orbit.
44	7060 Pad 17A	D-43	14 Dec 66	Booster for 940-lb Biosatellite for three-day study of effects of space flight on plants and insects carried in a 290-lb speciman capsule.
			JANUARY-JUNE 1967	
45	7367 Pad 17B	D-44	11 Jan 67	Booster for Intel Satellite II-B (F-2) (Lani Bird), second operational commercial satellite. Placed satellite in stationary earth orbit over the Pacific Ocean.

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1967 (Cont)		
46	6936 Pad 17 A	D-46	8 Mar 67	Boosted OSO-3 satellite containing nine experiments into 350-mile circular earth orbit to study effects of solar radiation. Payload weight was 627 lbs.
			- - - - -	
47	5191 Pad 17B	D-47 TAD	22 Mar 67	Boosted third operational satellite Intel Satellite II (F-3) into stationary orbit over the Atlantic Ocean. From this position it could relay TV and teletype messages between North America and Europe.
			* * * * *	

DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
48	1073 Pad 17B	D-50 TAD	19 Jul 67	Lofted Explorer XXXV, a 230-lb IMP-E spacecraft designed to study solar winds and magnetic fields from vicinity of moon. Purpose was to discover possible hazards to astronauts.
			- - - - -	
49	4447 Pad 17B	D-51 TAID	7 Sep 67	Boosted Bio Satellite 2 into earth orbit on a two-day mission. It carried pepper plants, wheat seedlings, frog eggs, and amoeba to study growth and development in space environment. Communication difficulties and poor weather conditions in the recovery area near Hawaii caused experiment to be terminated after 30 of a planned 47 revolutions. Recovery accomplished by air snatch on 9 Sep 67.
			- - - - -	
50	6988 Pad 17B	D-52 TAD	27 Sep 67	Intel Sat II (F-4) Pacific 2 placed in synchronous earth orbit over the Pacific Ocean to augment the commercial communications satellite network already in being.
			- - - - -	
51	0153 Pad 17B	D-53	18 Oct 67	Placed Orbiting Solar Observatory OSO-D or 4 in earth orbit to study influence of the sun on interplanetary space near the earth. The spacecraft weighed 597 lbs including experiments that weighed 235 lbs.
			- - - - -	

DELTA-THOR LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
				JULY-DECEMBER 1967 (Cont)
52	2898 Pad 17 B	D-55 TAD	13 Dec 67	Placed Pioneer VIII in solar orbit and a lesser satellite in earth orbit. Pioneer payload weighed 145 lbs. A 44-lb Radio Relay Communications satellite rode piggyback into earth orbit to test the worldwide network of Apollo tracking stations. The piggyback satellite was designated TTS-1 (Test and Training Satellite) and was an adaptation from the ERS (Environmental Research Satellite) series.

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DELTA-THOR LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968	
53	7970 Pad 17A	D-59	18 Sep 68	This was a long-tank Delta carrying Intel Sat III-A. First stage guidance malfunction caused structural failure and explosion of booster followed by RSO destruct of second stage shortly after liftoff. Payload weight 632 lbs. Salvage operation was undertaken to learn cause of malfunction.
54	6850 Pad 17B	D-60	8 Nov 68	Delta TAD boosted 148 lb Pioneer IX into solar orbit and a 44 lb TTS-2 hitchhiker into earth orbit.
55	8560 Pad 17B	D-61	5 Dec 68	Thrust Augmented Delta boosted HEOS-A (Highly Eccentric Orbiting Satellite) into earth orbit. This was launched by NASA for the European Space Research Organization. Payload weight 238 lbs. Being a non-NASA mission, NASA received 3.75 million dollars for the booster and launch.
56	1380 Pad 17A	D-63	18 Dec 68	Boosted Intel Sat III-B, F-2) (Atlantic 1) into synchronous earth orbit above the equator at 25°30" west longitude over the Atlantic. It will form part of a global telecommunication network. Satellite weight was 632 lbs.

DELTA-THOR LAUNCHINGS (cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			January-June 1969	
57	5960 Pad 17B	D-64	22 Jan 69	Boosted OSO-5 a 641 lb satellite into a 350 statute mile circular earth orbit to study solar electromagnetic radiation.
			- - - - -	
58	3320 Pad 17A	D-66	5 Feb 69	Boosted Intel Sat III-C, F-3, (Pacific 1) into synchronous earth orbit above the Gilbert Islands in the Pacific. The 632 lb satellite formed another link in the global telecommunication network. This was a commercial satellite system.
			- - - - -	
59	3163 Pad 17B	D-67	26 Feb 69	Boosted TOS-G, a 347 lb Tiros Operational Satellite, into 887 statute mile circular, near polar orbit. The vehicle was to view the earth's cloud cover through television cameras to gather weather data.
			- - - - -	
60	4501 Pad 17A	D-68	21 May 69	Boosted Intel Sat III-D, F-4, into elliptical transfer orbit from where it was kicked into synchronous earth orbit 22,300 miles above the Gilbert Islands in the Pacific Ocean.
			- - - - -	
61	0197 Pad 17A	D-70 Long-Tank Thor	28 Jun 69 2215 EST	Boosted Bio-Satellite carrying 14 lb pigtail monkey into earth orbit. It was to be a 30-day flight to study effects of prolonged weightlessness on man-like mammal.
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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	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960	
18	2520	NAA 024	1 Aug 60	NAA flight. Impact was 2.5 NM over the planned 425 NM range.
19	2515	NAA 026	11 Aug 60	NAA flight. Total flight distance was 620 NM, the longest to date.
20	2823	NAA 027	18 Oct 60	NAA flight. Malfunction of automatic control made manual command control necessary. Total flight distance was 690 NM, the longest to date.
21	4249	SAC 4	25 Oct 60	SAC flight. Low altitude, off-course launch followed by high cruise flight. Launched from B-52. Impact was near target.
22	4414	SAC 8	2 Nov 60	SAC flight. High level launch and cruise and straight-line flight. Range was 600 NM.
23	4520	SAC 9	15 Nov 60	SAC flight. RSO destruct 22 min after launch.
24	3516	NAA 031	21 Dec 60	NAA flight. All systems functioned normally. Radial error at impact was 0.5 NM.

HOUND DOG or (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1961	
25	822	NAA 030	9 Feb 61	Flew 596 NM range. Radial error at impact 1.2 NM.
26	726	SAC #11	10 Feb 61	B-52 launched. Flew 603 NM. Radial error at impact 1.0 NM.
27	830	SAC #12	28 Feb 61	Propulsion malfunction prevented climb to cruise altitude. RSO destruct after 175 mi flight.
28	823	NAA 032	10 Mar 61	Flew 600 NM range. Radial error at impact 0.7 NM.
29	778	SAC #5	24 Mar 61	Flew programmed 45 degree dog-leg turn to target. Impact 9 NM long.
30	832	NAA 033	5 Apr 61	Flew 596 NM range. Radial error at impact 0.4 NM.
31	825	NAA 034	12 Apr 61	Did not climb to cruise altitude. Terminal dive ordered at 190 NM.
32	824	NAA 035	25 Apr 61	Flew 596 NM range. Radial error at impact 0.1 NM.
33	1357	SAC #13	27 Apr 61	All functions normal. Impact was in target area.
34	1358	SAC #14	27 Apr 61	Broke up shortly after launch. Impacted near launch point.
35	401	NAA 028	19 May 61	Became unstable during terminal dive. Range was 600 NM with radial error of 3.6 NM.
36	2950	NAA 036	22 May 61	Programmed 90 degree dog-leg turn executed. Impact 2.2 NM long for total range of 512 NM.

HOUND DOG or (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
37	834	038	7 Jul 61	Guidance failed at T+3 minutes. Missile destroyed by dive-in feature. Impact 210 NM down range.
38	3803	037	1 Sep 61	Fuel starvation lowered engine RPM below requirement for level flight. Impact 95 NM down range.
39	1807	020	15 Sep 61	Fuel exhausted 8 NM short of target and missile started its dive-in.
40	6299	029	3 Oct 61	Normal operation and impact with radial error of 0.8 NM.
41	3005	SAC LV-15	11 Oct 61	Systems functioned normally. Range 575 NM, radial error 0.6 NM.
42	831	SAC LV-6	11 Oct 61	Off-course launch for dog-leg flight. Radial error at impact 0.8 NM.
43	6451	044	1 Nov 61	Flight executed as planned. Radial error at impact 0.4 NM.
44	8639	2130	21 Dec 61	All objectives accomplished. Radial error about 1.1 NM.
			JANUARY - JUNE 1962	
45	58	CEL-2	9 Jan 62	First SAC combat evaluation launch. Range 607 NM. Impact near Sta 7. Radial error 3.3 NM.
46	435	2131	23 Jan 62	Normal flight with impact in selected target area.

HOUND DOG or (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962 (CONT'D)	
47	60	CEL-4	29 Jan 62	Flight control malfunction at release. Required RSO destruct after 7 minutes of flight.
48	61	CEL-5	30 Jan 62	First launch from B-52H aircraft. Range over 600 NM, radial error at impact less than 0.1 NM.
49	63	CEL-7	6 Feb 62	Flight covered dog-leg path to impact at Sta 7. Range 617 NM, radial error 1.2 NM.
50	57	CEL-1	12 Feb 62	Automatic destruct after about 9 minutes of flight. Impact off west shore of Great Abaco Island. Parts recovered.
51	74	CEL-8	14 May 62	Guidance computer failure prevented dive signal. Missile overflew target resulting in RSO destruct.
52	75	CEL-9	15 May 62	Missile impacted north of Sta 7 at range of 607 NM with radial error of 2.25 NM.
53	809	CEL-12	21 May 62	Impact was north of Sta 7 at 607 NM range with radial error of 1.5 NM.
54	1907	CEL-16	18 Jun 62	SAC B-52 launch at 42,000 ft altitude. Missile climbed to 58,000 ft and flew dog-leg course to impact. Miss distance 2.5 NM. 617 NM range.
55	1909	CEL-18	26 Jun 62	SAC B-52 launch. Flew straight path to impact north of Sta 7. 607 NM range; miss distance 0.33 NM.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
56	59	CEL-3	14 Aug 62	Undetected power fluctuation at T - 2 minutes caused missile to veer left and impact was 5 miles left of course.
57	62	CEL-10	17 Oct 62	Flight was as programmed with impact in intended area.
58	76	2202	17 Dec 62	Malfunction of jet engine intake velocity control prevented engine from cruising above 40,000 ft altitude. Engine flamed out as result of fuel exhaustion and impact was 450 nautical miles downrange.
			JANUARY - JUNE 1963	
59	140	CEL-232	15 Jan 63	Launched from B-52 to photograph planned detonation of small explosive during terminal dive. Test successful. Impact was 3.3 NM long and 3 NM right of target.
60	141	60-2211 CEL	5 Feb 63	Launched from B-52 on high profile to impact north of Sta 7. Impact was 6 miles left of course at 607 NM range.
61	974	61-2331 CEL	18 Feb 63	First dual launch in the CEL program. B-52 launched on straight line, high profile for impact north of Sta 7, with range of 607 NM. Impact was 3 miles left of target.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
62	975	61-2332 CEL	18 Feb 63	Conducted as part of dual launch test. Flight path was dog leg for impact north of Sta 7 at 617 NM range. Impact was 7 miles left. Miss distanceswere not within acceptable limits. Investigation to determine cause started.
63	3446	CEL	3 Jun 63	Launched by SAC Combat Ready Crew from B-52. Programmed for straight line flight path of 442 NM. Release was at 42,000 ft altitude and speed of Mach 0.8. Impact was 3 NM left of target.
64	3551	CEL	11 Jun 63	Programmed for high profile straight line flight by SAC crew. Missile performed normally for eight minutes when flameout occurred. RSO destruct action was taken and debris fell in ocean off the east end of GBI. All major portions of the missile, except the aft tail cone of the engine, were recovered.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
56	59	CEL-3	14 Aug 62	Undetected power fluctuation at T - 2 minutes caused missile to veer left and impact was 5 miles left of course.
57	62	CEL-10	17 Oct 62	Flight was as programmed with impact in intended area.
58	76	2202	17 Dec 62	Malfunction of jet engine intake velocity control prevented engine from cruising above 40,000 ft altitude. Engine flamed out as result of fuel exhaustion and impact was 450 nautical miles downrange.
			JANUARY - JUNE 1963	
59	140	CEL-232	15 Jan 63	Launched from B-52 to photograph planned detonation of small explosive during terminal dive. Test successful. Impact was 3.3 NM long and 3 NM right of target.
60	141	60-2211 CEL	5 Feb 63	Launched from B-52 on high profile to impact north of Sta 7. Impact was 6 miles left of course at 607 NM range.
61	974	61-2331 CEL	18 Feb 63	First dual launch in the CEL program. B-52 launched on straight line, high profile for impact north of Sta 7, with range of 607 NM. Impact was 3 miles left of target.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
62	975	61-2332 CEL	18 Feb 63	Conducted as part of dual launch test. Flight path was dog leg for impact north of Sta 7 at 617 NM range. Impact was 7 miles left. Miss distanceswere not within acceptable limits. Investigation to determine cause started.
63	3446	CEL	3 Jun 63	Launched by SAC Combat Ready Crew from B-52. Programmed for straight line flight path of 442 NM. Release was at 42,000 ft altitude and speed of Mach 0.8. Impact was 3 NM left of target.
64	3551	CEL	11 Jun 63	Programmed for high profile straight line flight by SAC crew. Missile performed normally for eight minutes when flameout occurred. RSO destruct action was taken and debris fell in ocean off the east end of GBI. All major portions of the missile, except the aft tail cone of the engine, were recovered.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1963	
65	6150	62-149	11 Oct 63	Launched from B-52 aircraft 20 miles east of Cape Canaveral at 25,000 ft. altitude. It was the final R&D launch in the GAM-77 test program conducted by the APGC, Eglin AFB. The flight was successful.
			JANUARY - JUNE 1964	
				Program dormant. No Hound Dog (GAM-77) launchings conducted during this period.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
66	2975	592827	8 Jul 64	Launched from B-52. This with Test 2900 comprised the first SAC operational test mission consisting of dual launches of AGM-28 missiles at less than 60 sec intervals. Actual interval was 31 seconds.
67	2900	592839	8 Jul 64	Launched from B-52. See remarks for Test 2975.
68	2876	612-221	29 Jul 64	Launched from B-52. Release was at altitude of 25,000 ft. Free flight lasted 32 minutes. Range was 572 NM.
69	2950	62-0183	5 Aug 64	Launched from B-52. Dual launch with Test 2885 staged from Fairchild AFB, Washington, SAC, OTM Range 382 NM.
70	2885	62-0188	5 Aug 64	Launched from B-52. S-Band and telemetry track lost. Destruct action taken by Station 5 at T+21 min 26 sec. This was dual launch with Test 2950 SAC OTM Range 572 NM.
71	4515	62-0131	12 Aug 64	Launched from B-52 SAC OTM. Staged at Ellsworth AFB, South Dakota, as dual launch with Test 4501. Programmed range 382 NM.
72	4501	62-0137	12 Aug 64	Launched from B-52. Vehicle made unscheduled 90° left turn causing Station 3 to take destruct action at T+4 min 28 sec. SAC OTM.

HOUND DOG (GAM-77) LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY-DECEMBER 1964 (Contd)		
73	5027	612-155	2 Sep 64	Launched from B-52 staged from Columbus AFB, Mississippi as SAC OTM.
74	4520	2181	11 Sep 64	Launched from B-52 staged from Dow AFB, Maine as SAC OTM.
75	6875	602-135	23 Sep 64	Launched from B-52. Fell 30 NM short of target. Staged from Dow AFB, Maine as SAC OTM.

JUPITER LAUNCHINGS

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

JUPITER LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
61	3213	218	4 Aug 61	Combat Training Launch by NATO Italian launch crew to test operational type warhead. Objectives achieved. Impact 1.24 NM long and .13 NM left of target.
62	6201	CTL-115	6 Dec 61	CTL by NATO Italian launch crew. Missile performance satisfactory and followed prescribed flight path. Impact .62 NM long and .39 NM right of target.
			JANUARY - JUNE 1962	
63	811	114	18 Apr 62	CTL by NATO Turkish launch crew. Incorrect setting of engine fuel control valve caused fuel depletion prior to guidance cut-off. Nose cone impacted 232.9 NM short of target.

JUPITER LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
64	3492	CTL-111	1 Aug 62	Normal flight throughout. Nose cone impact was 0.26 NM short and 0.81 NM left of target. Italian NATO launch crew.
			JANUARY - JUNE 1963	
65	101	106	22 Jan 63	Combat Training launch by Italian NATO crew from pad 26A. Landed 23 NM long and 13 NM left of target. Delay in thrust decay caused excess velocity of 258 ft per second, which prevented vernier ignition, and enabled missile to exceed target. Slow closing LOX or fuel valves believed to be cause of additional thrust.

JUPITER LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
64	3492	CTL-111	1 Aug 62	Normal flight throughout. Nose cone impact was 0.26 NM short and 0.81 NM left of target. Italian NATO launch crew.
			JANUARY - JUNE 1963	
65	101	106	22 Jan 63	Combat Training launch by Italian NATO crew from pad 26A. Landed 23 NM long and 13 NM left of target. Delay in thrust decay caused excess velocity of 258 ft per second, which prevented vernier ignition, and enabled missile to exceed target. Slow closing LOX or fuel valves believed to be cause of additional thrust.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960	
8	810	No. 20 58-1417	11 Jul 60	Stalled out at 190 mi D/R. RSO destruct ordered. Hardsite launch OK.
9	2516	No. 21 58-1226	21 Sep 60	Hardsite launch. Impacted Sta 9 impact area with radial error of 1.12 NM.
10	2813	No.22 58-1427	7 Oct 60	Hardsite launch. Missile stalled out during climb about 230 NM D/R and impacted .
11	3514	No.23 59-4976	21 Oct 60	Hardsite launch. Impact in Sta 9 target area with radial error of 0.5 NM.
12	3813	No.27 59-4980	15 Nov 60	Hardsite launch. Failed to follow second programmed course deviation. Placed on course by command guidance then inertially guided to target area. Impact showed radial error of 5.22 NM.
13	2812	No. 8 56-2889	16 Dec 60	Hardsite launch. At end of 1st programmed course deviation guidance failure necessitated command control during remainder of flight to get terminal dive data.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1961		
14	109	TM-76B #26 59-4979	7 Mar 61	Airborne. Telemetry lost at T+3 sec. Miss distance 1 NM right and 0.7 NM long.
15	1264	TM-76B #24 59-4977	16 Mar 61	Flew prescribed 665 NM on inertial guidance. Impact was 1 NM right and 0.25 NM short of target.
16	828	TM-76B #25 59-4978	28 Mar 61	Immediately after clearing launch bay it rolled left, impacted on cape and burned at T+7.5 sec.
17	1350	TM-76B #46 59-4874	28 Apr 61	Flew prescribed 665 NM on inertial guidance. Impact was 1.2 NM long and 2.5 NM right of target.
18	1259	TM-76B #48 59-4876	2 Jun 61	Flew entire 947 NM course on inertial guidance. Impact was 4.5 NM short and 7 NM right of target.
19	1260	TM-76B #51 59-4879	16 Jun 61	Flew entire 947 NM course on inertial guidance. Impact was 2 NM right of target.
20	1808	TM-76B #55 59-4883	21 Jun 61	Completed R&D testing under Category II MACE program. Missile failed to make programmed turn at 460 NM. Error was corrected by test team. Total range was 666 NM and miss distance was 2 NM over and 1.6 NM right of target.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
21	1814	60-5397	18 Jul 61	Blast-off shorted power lines disabling range safety radars and command transmitters causing fail-safe destruct at T+31 sec.
22	2528	60-5399	4 Aug 61	Impact 4.24 NM short of aiming point.
23	2529	60-5398	1 Sep 61	Launch and flight normal. Impact in target area. Miss distance 1 NM long and 5 NM left of target.
24	3206	60-5400	22 Sep 61	Failed to maintain altitude, and warhead detonation did not occur. Impact 4.5 NM from target.
25	3208	60-5396	14 Nov 61	Missile performance satisfactory. Target miss distance about 1.3 NM.
26	6228	59-4887	5 Dec 61	Launch and flight phases normal. Impact in planned target area.
			JANUARY - JUNE 1962	
27	5959	60-5401	12 Jan 62	All phases of flight satisfactory. Range 665 NM.
28	408	60-5405	12 Jan 62	Telemetry signals lost at T+35 minutes. RSO destruct at T+65 minutes.
29	130	59-4885	24 Jan 62	Missile satisfactorily executed vertical maneuvers during low level flight. Impact 1 NM left of target.
30	107	59-2468	26 Jan 62	Chase plane aborted the mission. Fail-safe supposedly destroyed the missile. RSO sent destruct signal as precautionary measure.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962 (CONT'D)	
31	106	60-5403	1 Feb 62	1130 NM flight ended in wings-off, powered, ballistic dive to target. Miss distance 1.5 NM left.
32	131	60-5406	8 Feb 62	Planned maneuvers executed on 665 NM range flight. Impact 1.2 NM short of target.
33	109	59-4886	15 Feb 62	Longest Mace flight to date of 1194 NM. Impact about 4.3 NM short of target.
34	108	59-4889	21 Feb 62	Altitude controlled high-low mission to target 665 NM down range. Impact 2.3 NM right of target.
35	110	58-1425	1 Mar 62	Airspeed/altitude controlled flight to target 665 NM down range. Impact 2 NM short and 2.4 NM right of target.
36	111	59-4888	2 Mar 62	Hard site launch. Guidance error injected at launch caused impact 22.9 NM short of target located 1194 NM down range. Final launch in Category III Mace test program.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962		
37	4226	58-1443	31 Oct 62	Launch from pad 21, bay 1. Missile performance satisfactory. Total flight time was 85 minutes. Impact was 5 NM right of target.
38	4227	59-4891	8 Nov 62	Launch from pad 21, bay 1. Performance satisfactory. Impact 1.5 NM short and 0.75 NM right of target. Total flight time 85.07 minutes.
39	5028	59-4892	4 Dec 62	Launch from pad 21, bay 2. Performance satisfactory. Impact 2 NM long and 2.5 NM right of target. Total flight time 75.03 minutes.
40	5029	59-4890	11 Dec 62	Launch from pad 21, bay 2. Performance satisfactory. Impact 0.5 NM long and 2 NM right of target. Flight time 80 minutes, 55 seconds. The launch concluded MACE test series.
		JANUARY - JUNE 1963		
41	3267	58-1423	5 Jun 63	Training launch Tactical Air Command. Launch from pad 21, bay 1. Flight time 85 minutes, 6 seconds. Missile was on course and 3.5 NM beyond target at time of I.G. detonate. All test objectives were met
42	1597	58-1435	12 Jun 63	Training launch by 4504th Training Wing personnel from pad 21, bay 1. Total flight time 81 min., 52.5 seconds. Position at time of I.G. detonate was 1320 ft left and 2640 ft beyond target. All test objectives were met.
43	2800	59-2484	28 Jun 63	Training launch by 4504th Training Wing personnel from pad 21, bay 2. Flight time was 84 min., 16 sec. Position at time of I.G. detonate was 1765 ft left of course and 608 ft short of target. All test objectives were met.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
37	4226	58-1443	31 Oct 62	Launch from pad 21, bay 1. Missile performance satisfactory. Total flight time was 85 minutes. Impact was 5 NM right of target.
38	4227	59-4891	8 Nov 62	Launch from pad 21, bay 1. Performance satisfactory. Impact 1.5 NM short and 0.75 NM right of target. Total flight time 85.07 minutes.
39	5028	59-4892	4 Dec 62	Launch from pad 21, bay 2. Performance satisfactory. Impact 2 NM long and 2.5 NM right of target. Total flight time 75.03 minutes.
40	5029	59-4890	11 Dec 62	Launch from pad 21, bay 2. Performance satisfactory. Impact 0.5 NM long and 2 NM right of target. Flight time 80 minutes, 55 seconds. The launch concluded MACE test series.
			JANUARY - JUNE 1963	
41	3267	58-1423	5 Jun 63	Training launch Tactical Air Command. Launch from pad 21, bay 1. Flight time 85 minutes, 6 seconds. Missile was on course and 3.5 NM beyond target at time of I.G. detonate. All test objectives were me
42	1597	58-1435	12 Jun 63	Training launch by 4504th Training Wing personnel from pad 21, bay 1. Total flight time 81 min., 52.5 seconds. Position at time of I.G. detonate was 1320 ft left and 2640 ft beyond target. All test objectives were met.
43	2800	59-2484	28 Jun 63	Training launch by 4504th Training Wing personnel from pad 21, bay 2. Flight time was 84 min., 16 sec. Position at time of I.G. detonate was 1765 ft left of course and 608 ft short of target. All test objectives were met.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1961	
1	5103	401	1 Feb 61	First launch under MINUTEMAN program at AMR. First time all stages of multi-stage weapon system tested on first launch. Impact 4,600 NM down range.
2	406	402	19 May 61	Nozzle malfunction during second stage caused erratic behavior that required destruct action.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
3	2531	403	27 Jul 61	Met 95% of the test objectives. Propulsion pressure in third stage dropped 10 seconds early at T+167.7; acceleration continued until T+172 seconds. Impact was 425 NM short of target.
4	3205	404	30 Aug 61	Guidance failure before missile cleared silo caused missile to fail and destroy itself in launch area.
5	3755	405	17 Nov 61	Satisfactory performance of all three stages. Impact was in selected target area.
6	4503	406	18 Dec 61	All three stages performed satisfactorily. Impact in planned target area.
			JANUARY - JUNE 1962	
7	117	407	5 Jan 62	All stages performed as planned. Silo launch. Impact in target area.
8	114	408	25 Jan 62	Performance and impact as planned. Silo launch.
9	112	410	15 Feb 62	Performance satisfactory. Impact as planned. 3,900 statute mile range. Silo launch.
10	115	409	8 Mar 62	Performance satisfactory. Impact in target area. 3,000 NM range. Silo launch.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962 (CONT'D)	
11	113	411	22 Mar 62	Performance satisfactory. Impact as planned. Silo launch.
12	116	412	24 Apr 62	Silo launched. First stage engine failure at T+20 seconds caused self destruct. Landed 10 NM from Cape.
13	812	413	11 May 62	Silo launched from 32B. Met 95% of assigned test objectives.
14	813	414	18 May 62	Silo launched. Met 90% of assigned test objectives.
15	1332	415	8 Jun 62	Launched from Silo 32B. Performance as planned with impact in target area.
16	1911	416	29 Jun 62	Silo launched from 32B. Flight and impact as planned.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
17	2519	417	12 Jul 62	Silo launched from 31B. Flight was normal until T + 47 seconds. Missile destroyed itself when it exploded at T + 50 seconds.
18	2888	418	9 Aug 62	Silo launched from Complex 32. Guidance problems appeared at T + 12 seconds and violent maneuvers began at T + 24 seconds. Destroyed itself shortly after launch.
19	3722	421	18 Sep 62	Launched from Silo 31B. Landed in planned impact area. Met 95% of test objectives.
20	3721	420	19 Sep 62	Launched from Silo 31B. Impact occurred in target area. Met 95% of test objectives.
21.	4229	422	17 Oct 62	Launched from Silo 31B. Guidance and control computer failed. Missile veered toward mainland causing RSO destruct at T + 8 seconds. Fire and debris fell on Cape.
22	4228	421A	19 Nov 62	Launched from Silo 31B. Landed in planned impact area. Met 98% of test objectives.
23	4230	424	7 Dec 62	First Minuteman missile to carry Mark II re-entry vehicle. Launched from Silo 32B by all Air Force crew. Impact as planned. Met 98% test objectives.
24	5032	423	14 Dec 62	First Minuteman missile launched into Station 12 MILS net and first to have all interim Wing II motors. Silo launched from pad 31B. Impact as planned. Met 98% of test objectives.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962 (Cont'd)		
25	5031	426	20 Dec 62	First Minuteman launch with missile offset from silo center. Emergence was successful. Premature second stage engine failure at T + 50 seconds tumbled guidance control platform which shortened range.
		JANUARY - JUNE 1963		
26	5033	423A	7 Jan 63	Launched from Silo 31B. Premature loss of thrust by first and third stages caused impact 1990 NM short of target and 40 NM left of intended course. Only 32% of test objectives were met.
27	116	419	23 Jan 63	Launched from Silo 32B. Impact was in target area. Re-entry vehicle did not electrically disconnect from third stage motor. Met 90% of test objectives.
28	143	421B	20 Feb 63	Launched from Silo 32B to range of 3132 NM. Last planned launch of Wing I configured missile. Impact was 0.32 NM short and 0.41 NM right of target. Met 98% of test objectives.
29	118	425	18 Mar 63	Launched from Silo 31B. Flight normal until 10 seconds after third stage ignition. Engine failure was followed by self destruct. RSO destruct taken as precautionary measure at T + 2.5 minutes. 71% of test objectives met. First test of Wing II cylindrical skirt configuration.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
30	117	419A	27 Mar 63	Launched from Silo 32B. Flight normal with impact in target area. Met all test objectives. It was a Wing II configured missile.
31	976	425A	10 Apr 63	Launched from Silo 31B. Landed in Sta 12 impact area. Flight normal through thrust termination. Re-entry vehicle did not separate cleanly which caused abnormal oscillation.
32	977	425B	18 May 63	Launched from Silo 32B. Malfunctioned and destroyed itself at T + 45 seconds. No RSO destruct required. Second and third stages did not ignite. Met 43% of test objectives.
33	1598	428	28 May 63	Launched from Silo 31B. Landed in impact area. Met 95% of test objectives. Was first Minuteman equipped with retro-rockets to increase distance between impact points of third stage and re-entry vehicle.
34	978	427	5 Jun 63	Launched from Silo 32B. Landed on target 5000 miles downrange. It was launched by 6555th Aerospace Test Wing crew. 83% of test objectives were met.
35	103	429	27 Jun 63	Launched from Silo 31. Impact on target 5000 miles downrange. Launch was conducted by 6555th Aerospace Test Wing crew. All test objectives were met.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1963	
36	3301	431	1 Jul 63	Launched from Silo 32B by 6555th ATW. It flew 5000 mi to Sta 12 splash net. Met all test objectives. It was the first Minuteman to use the MISTRAM Tracking System.
37	2080	430	16 Jul 63	Launched from Silo 32B. It exploded only seconds after launch and the debris fell on the Cape. It was last Minuteman to use Azusa Tracking System.
38	3302	432	24 Jul 63	Launched from Silo 31B by 6555th ATW. Met all test objectives. Impact was in target area.
39	3815	433	5 Aug 63	Launched from Silo 32B by 6555th ATW. Fell short of programmed range because third stage ruptured at T+128.8 seconds. 58% of test objectives were achieved.
40	4951	435	27 Aug 63	Launched from Silo 31B by 6555th ATW. Impact was in Broad Ocean Area. Met all test objectives.
41	3775	434	7 Nov 63	Launched from Silo 32B. Missile exploded with RSO destruct at T+11.9 seconds. Rained debris in Cape area. 40% of test objectives were met.

MINUTEMAN LAUNCHINGS (Cont'd)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER (Cont'd)	
42	6001	446	13 Nov 63	Launched from Silo 31B by 6555th ATW. Impact was in target area and all test objectives were met.
43	6080	447	18 Dec 63	Launched from Silo 32B by 6555th ATW. Made successful 5000-mile flight to Ascension MILS net. Met all test objectives.
			JANUARY - JUNE 1964	
44	305	438	16 Jan 64	Launched from Silo 32B by 6555th ATW with impact in Sta 12 MILS net. First test flight to demonstrate the Wing II dual target flight maneuver.
45	376	448	28 Jan 64	Launched from Silo 31B by 6555th ATW. Impact was in Ascension MILS net. Met all test objectives.
46	0526	436	12 Feb 64	Launched from Silo 32B by 6555th ATW. Made successful 5000-mile flight. This was first flight to carry penetration aids.
47	0201	437	25 Feb 64	Launched from Silo 31B by 6555th ATW. Impact was in designated target area.
48	0430	439	27 Feb 64	Launched from Silo 32B by 6555th ATW. All test objectives were met.
49	0351	440	13 Mar 64	Launched from Silo 32B by 6555th ATW. Impact was in the target

MINUTEMAN LAUNCHINGS (Cont'd)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1964 (Cont'd)	
50	0050	442	20 Mar 64	Launched from Silo 31B by 6555th ATW. Impact was in the designated target area.
51	0037	441	30 Mar 64	Launched from Silo 32B by 6555th ATW. Impact was in designated area.
52	0040	443	7 Apr 64	Launched from Silo 31B by 6555th ATW. Impact was in designated area.
53	1060	444	24 Apr 64	Launched from Silo 31B by 6555th ATW. Passenger pods were ejected but not properly deployed. Impact of reentry was in target area.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
54	3552	449 Minuteman II	24 Sep 64	Launched from Silo 32B. This was first improved Minuteman II missile. It was also the only Air Force Ballistic Missile still in the R&D test phase. Launched by joint team from 6555th Aerospace Test Wing and Boeing Co. Primary objectives met. Results satisfactory.
55	1075	445 Minuteman I	29 Sep 64	Launched from Silo 31B. RSO destruct at T+165 sec by Station 5. Missile was erratic from T+46 sec. This was the last Minuteman I R&D missile. Launch was by the 6555th ATW.
56	4943	450 Minuteman II	29 Oct 64	Launched from Silo 32B. It was a Blue Suit launch by the 6555th ATW. Results satisfactory.
57	6524	451 Minuteman II	15 Dec 64	Launched from Silo 32B by 6555th ATW Military launch team. All systems performed properly.
58	6969	452 Minuteman II	18 Dec 64	Launched from Silo 31B. Landed on target at 5000 mi range. This was first test of high-roll capability through 156°. Launch was a composite effort of Boeing and 6555th ATW. All systems performed properly.

MINUTEMAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1965		
59	0075	453 Minuteman II	28 Jan 65	Launched from Silo 31 by all military crew from 6555th ATW. Met all test objectives.
60	0241	455 Minuteman II	7 May 65	Launched from Silo 32 by all Air Force crew. For the second time, the missile successfully demonstrated the launch capability from the guidance gyro-compass mode.
61	1596	456 Minuteman II	25 May 65	Launched from Silo 32. This flight was a major milestone in the program in that it was the first Minuteman II to use the fully operational guidance and control system.

MINUTEMAN II LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
69	2091 Silo 32	463 M'Man II	8 Jul 66	First flight equipped with Mark 12 reentry vehicle. Placed payload in Ascension MILS net. Launched by all Air Force crew.
			JANUARY - JUNE 1967	
70	6866 Silo 32	464 M'Man II	17 Jan 67	Second flight equipped with Mark 12 reentry vehicle. Flight was as programmed by all Air Force crew.
			- - - - -	
71	2975 Silo 32	465 M'Man II	24 Feb 67	Carried Mark 12 reentry vehicle. Flight was as programmed. Launched by Air Force crew. This was second launch attempt for this missile. Previous launch attempt on 17 Feb was scrubbed because of telemetry system failure.

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MINUTEMAN II LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
72	3572 Silo 32B	M'Man II 466	17 Aug 67	This was the 18th straight successful launch in the Minuteman II program. It was launched by the 6555th Aerospace Test Wing launch crew.
			- - - - -	
73	1801 Silo 32B	M'Man II 467	6 Nov 67	Launched by all Air Force crew from the 6555th Aerospace Test Wing. Impact was in Ascension MILS net. This was the 5th test of the new Mark 12 warhead.
			- - - - -	
			JANUARY - JUNE 1968	
74	0447 Silo 32B	M'Man II 468	6 Feb 68	Last of current Minuteman II series successfully launched by 6555th Aerospace Test Wing. This was the 20th straight successful Minuteman launch.
			- - - - -	

MINUTEMAN III LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968	
1	1721 Silo 32	201	16 Aug 68	This was the first launch of the Minuteman III missile. It accomplished objectives and impacted in target area. The Minuteman III was a multiple warhead missile. Met test objectives.
			- - - - -	
2	3739 Silo 32	202	24 Oct 68	Second launch of Minuteman III. The launch was successful and impact was in target area, but test objectives were not met because of malfunction of the PBV system.
			- - - - -	
			January-June 1969	
3	1688 Silo 31	203	26 Mar 69	Launch and flight normal to T+7 minutes. Third stage thrust termination occurred at T+10 minutes. Destruct signal sent as precautionary measure.
			- - - - -	
4	9228 Silo 31	204	22 Apr 69	Performed as programmed and met all test objectives.
			- - - - -	
5	8975 Silo 32	205	27 May 69	Launched on 5000 mile trajectory downrange. All three stages fired normally. Carried all reentry vehicles to successful deployment. Met test objectives.

PERSHING LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960	
6	1501	110	26 Jul 60	To evaluate missile stability and control. Impact was in target area and all test objectives were met. Range 30 NM. First test firing to use Transporter-Electro-Launcher, XM 474. Last Group I test.
7	3501	205	28 Sep 60	First Group II series missile tested at AMR. Became erratic during second stage of powered flight requiring RSO destruct at T+68.4 sec, following first stage separation.
8	3801	206	16 Nov 60	Flight covered 145 mi range. All primary objectives accomplished.
9	4507	207	12 Dec 60	Covered planned 145 mi range. All primary objectives accomplished.

PERSHING LAUNCHINGS

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

PERSHING LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
19	2527	313	19 Jul 61	Launched from Transporter-Erector-Launcher. All test objectives met. Impact was within allowable limits.
20	3201	315	10 Aug 61	Launched from Transporter-Erector-Launcher. Automatic destruct at T+55 sec. caused by violent roll, pitch, and yaw maneuvers. RSO destruct ordered at T+76 sec as precautionary measure.
21	3500	316	22 Aug 61	Primary and secondary missions accomplished.
22	3756	318	13 Sep 61	All primary objectives met. Impact was within target area.
23	3757	319	26 Sep 61	Impact was in target area. All test objectives met.
24	4505	320	10 Oct 61	Primary test objectives met. Impact was within selected target area.
25	5457	322	2 Nov 61	All assigned missions accomplished.
26	5458	323	15 Nov 61	All test missions accomplished.
27	5459	324	30 Nov 61	All test objectives met.
28	8600	327	28 Dec 61	Flight normal. Impact within designated area. All test objectives met.

PERSHING LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962	
29	54	334	16 Jan 62	All test objectives met. Flight time 440.26 seconds. Range of flight 385 NM.
30	53	332	24 Jan 62	Flight normal. Flight time 370.24 seconds. Range 220 NM.
31	79	335	19 Feb 62	Met test objectives. Flew 300 NM.
32	127	328	15 Mar 62	Performance satisfactory. Met test objectives.
33	128	326	4 Apr 62	Performance normal. Met all test objectives.
34	1335	337	24 Apr 62	RSO destruct at T+27.7 seconds because of yaw to the right of planned course.
35	52	329	27 Apr 62	System performance normal. All test objectives accomplished. This was a short range flight to test device for quicker separation of warhead.
36	129	330	9 May 62	Violent roll, pitch and yaw maneuvers resulted in command destruct at T+107.67 seconds during second stage of flight.
37	1337	339	4 Jun 62	All test objectives accomplished. Launch conducted under simulated conditions of near hurricane force winds.
38	1913	342	14 Jun 62	Second stage exploded about two seconds after ignition and plunged into ocean 75 NM down range at T+40 seconds of flight.

PERSHING LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
39	1336	338	21 Aug 62	Launched from pad 30A. Met all test objectives. Warhead section impacted 16.5 yards right and 88.3 yards short of target.
40	1914	347	26 Sep 62	Launched from pad 30. Met all test objectives. Nose cone impacted in target area 419 seconds after launch.
41	2879	351	22 Oct 62	First Pershing launched from unprepared sandy ground to test launch capabilities under field conditions. Met all test objectives. Impact was in preselected target area.
42	3725	348	15 Nov 62	Launched from pad 30A. Nose cone landed in target area. All test objectives met.
43	3727	354	27 Nov 62	Launched from pad 30A. All systems functioned as planned and impact was in target area. All test objectives were accomplished.
44	3726	353	10 Dec 62	Launched from pad 30A. Impact was in target area and all test objectives were met.
			JANUARY - JUNE 1963	
45	4233	358	17 Jan 63	Fired from mobile erector launcher on pad 30A. Re-entry body impact was 147.5 yards right and 585 yards short of target point. Missile met assigned test objectives. Range 200 NM.

PERSHING LAUNCHINGS

TOTAL TO. DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
46	133	363	30 Jan 63	Fired from erector launcher on pad 30A. Range was 200 NM. Impact was 105 yards right and 14.1 yards short of target. Assigned test objectives met.
47	113	403	14 Feb 63	Fired from erector launcher on pad 30A. Programmed cutoff of second stage motor did not occur and re-entry body did not separate. Impact of the two was 109.9 NM long and 1.3 NM right of intended 200 NM range.
48	114	406	25 Feb 63	Fired from erector launcher on pad 30A. Operation was normal and test objectives were accomplished. Impact was 62 yards long and 81 yards left of target at 145 NM range.
49	134	405	4 Mar 63	Fired from erector launcher sloped earth surface on pad 30D. Both stages performed normally and all test objectives were accomplished. Programmed range was 300 NM.
50	135	407	13 Mar 63	Tactically fired from erector launcher on pad 30A. Programmed range was 110 NM. Impact of warhead was 170 yards left and 462 yards short of target. All test objectives accomplished.
51	507	410	21 Mar 63	Launched under tactical conditions from pad 30A to planned range of 300 MN. Powered flight was normal and all test objectives were accomplished.

PERSHING LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1963 (Cont'd)	
52	506	408	3 Apr 63	Launched on planned 203 NM range from erector launcher located on sand slope adjacent to pad 30A. Warhead impact was 660 yards short and 1867 yards left of target. All test objectives were accomplished.
53	509	511	5 Apr 63	First Group V missile was fired from erector launcher located on sand slope adjacent to pad 30A. Planned range was 326 NM. All essential test objectives accomplished.
54	982	515	12 Apr 63	Tactical launch operations performed by 2nd Missile Battalion, 44th Artillery for first time. Programmed range was 220 NM. Impact was 182 yards short and 363 yards right of target. Essential objectives met.
55	983	520	17 Apr 63	Launched under field conditions from earth pad 30E on programmed 145.3 NM range. Impact was 2 yards long and 621 yards right of target. Test objectives were met.
56	984	521	24 Apr 63	Last launch of Group V configuration. Range was 109.97 NM. Impact was 123 yards short and 170 yards left of target. Essential test objectives were accomplished.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
				JULY - DECEMBER 1960
61	1520	A1X-40	6 Jul 60	Launched from flat pad. Flight normal until approximately T+90 sec. Malfunction in 2nd stage motor at T+90 sec caused flight termination.
62	1013	A1X-39	7 Jul 60	Launched from USS Observation Island. Missile lost thrust immediately after first stage ignition and fell back into sea. RSO took destruct action just prior to impact.
63	2502	A1X-42	15 Jul 60	Launched from ship-motion simulator. Re-entry body impacted 958 NM into the BOA with an impact accuracy of 0.17 NM short and 0.49 NM right.
64	2501	A1X-41	19 Jul 60	Launched from flat pad. Re-entry vehicle impacted 1032 NM into the BOA and well within the impact dispersion area for an unguided flight.
65	2504	A1E-1	20 Jul 60	First ballistic missile to be launched from a submerged submarine. Demonstrated the capability of the complete POLARIS Weapons System. The USS George Washington was submerged at a keel depth of 91.5 ft approx 25 NM east of Cape Canaveral lighthouse. First stage ignition occurred when missile was approx 20 ft above the surface of the water. Re-entry vehicle impacted 1,000 NM into the BOA with a miss distance of 0.0 NM in range and 1.7 NM left of the aiming point.

POLARIS LAUNCHINGS

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

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960 (CONT'D)	
70	2513	A1X-44	4 Aug 60	Launched from flat pad. Re-entry body impacted 1,097 NM into the BOA and well within the impact dispersion area for an unguided flight.
71	2804	A1X-47	12 Aug 60	Launched from flat pad. Re-entry body impacted 958.6 NM into the BOA with an impact accuracy of 0.74 NM long and 1.23 NM right. The missile executed a planned 150° launch roll maneuver.
72	2503	A1X-43	18 Aug 60	Launched from flat pad. Re-entry body impacted 1,043 NM into the BOA and well within the impact dispersion area for an unguided flight.
73	2806	A1X-45	2 Sep 60	Launched successfully from flat pad. Re-entry body impacted approx 1,070 NM into the BOA with an impact accuracy well within the dispersion area for an unguided flight.
74	2803	A1E-5	13 Sep 60	Launched from USS Patrick Henry. Although launch was perfect, a malfunction occurred in the ignition system and the missile fell back unignited into the water.
75	2805	A1E-6	15 Sep 60	Successfully launched from USS Patrick Henry. Re-entry body impacted approx 1,000 NM into BOA with an accuracy of 1.05 NM to the right and 0.93 NM long of the predicted impact point.

POLARIS LAUNCHINGS

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

POLARIS LAUNCHINGS
July - December 1960 Cont'd

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

POLARIS LAUNCHINGS

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

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1961 (CONT'D)	
95	1354	A1E-18	23 Mar 61	USS Theodore Roosevelt launched from point 200 NM down range. RSO destruct at T+51 sec.
96	1800	A1E-19	6 Apr 61	USS Theodore Roosevelt launched. Impact was 1,100 NM down range with radial miss distance of 0.65 NM.
97	1352	A2X-12	11 Apr 61	Pad launched. Second stage failed to ignite.
98	1365	A1E-20	19 Apr 61	USS Robert E. Lee launched. Impact showed radial miss distance of 3.4 NM.
99	1356	A2X-16	1 May 61	Pad launched to 1302 NM range. Impact was .37 NM right and .23 NM beyond target.
100	1364	A1E-22	3 May 61	USS Abraham Lincoln launched. Impact was .006 NM long and .075 NM right of target.
101	1256	A2X-19	8 May 61	Pad launched to Antigua MILS net. Impact was .81 NM long and .92 NM left of target.
102	1257	A1E-26	17 May 61	Launched from submerged USS Abraham Lincoln. Re-entry body did not separate. Impact was 327 NM short and 48 NM left of target.
103	1812	A1E-27	17 May 61	Re-entry body impacted .91 NM long of target. Launched from submerged USS Abraham Lincoln.

POLARIS LAUNCHINGS

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

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
110	1813	A2X-20	13 Jul 61	Short range fully guided flight met all test objectives. Impact was .21 NM long and .076 NM left of target.
111	2532	A2X-21	2 Aug 61	Pad launched on fully guided flight. Miss distance .61 NM short and .17 NM right of target.
112	4911	A1E-42	12 Aug 61	Launched from submarine Abraham Lincoln. Control malfunction caused RSO destruct at T+97 sec.
113	3881	A1E-43	12 Aug 61	Launched from submarine Abraham Lincoln. Control malfunction required RSO destruct at T+54 sec.
114	3489	A1E-34	12 Aug 61	Launched from submarine Abraham Lincoln. Performed satisfactorily; impact .82 NM long and .79 NM left.
115	3490	A1E-35	12 Aug 61	Launched from submarine Abraham Lincoln. Miss distance .48 NM long and .30 NM left of target.
116	3491	A1E-36	12 Aug 61	Launched from submarine Abraham Lincoln. Miss distance .57 NM long and .15 NM left of target.
117	3492	A1E-37	12 Aug 61	Launched from submarine Abraham Lincoln. Miss distance .35 NM long and .15 NM left of target.
118	2533	A2X-22	18 Aug 61	Launched from Observation Island. Control malfunction required RSO destruct at T+35 seconds.
119	3077 (Initially assigned test no. 5451)	A1X-50	29 Sep 61	Pad launched, fully guided flight. Performance satisfactory. First Polaris to demonstrate pre-prototype A3 second stage thrust

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961 (CONT'D)	
				control system using fluid injection to deflect gas flow.
120	5900	A2X-13	4 Oct 61	Launched from Observation Island.
121	3760	A1E-38	16 Oct 61	Sub launched from Ethan Allen. Range 1098.9 NM. Miss distance .49 NM long and .90 NM left.
122	3762	A2X-4 (A2EX-1)	23 Oct 61	Sub launched from Ethan Allen.
123	3761	A1E-39	3 Nov 61	Sub launched from Ethan Allen at target 1100 NM down range. Miss distance 25 NM short and 2.46 NM left of target.
124	4509	A1E-40	3 Nov 61	Sub launched from Ethan Allen at target 1100 NM down range. Impact was .05 NM long and .89 NM left.
125	4510	A1E-41	3 Nov 61	Sub launched from Ethan Allen at target 1100 NM down range. Impact .22 NM short and .46 NM left of aim point.
126	839	A2X-15 (A2EX-2)	8 Nov 61	Sub launched from Ethan Allen. Impact 1400 NM down range with miss distance of .12 NM long and .16 NM left of target.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961 (CONT'D)	
127	4511	A2X-14 (A2G-1)	9 Nov 61	First Polaris to carry the new MK-2 guidance system. Pad launched. Went out of control after second stage separation. RSO destruct at T+75.48 seconds.
128	3076	A2X-23	1 Dec 61	Pad launched. Unguided flight. Impact 1480 NM down range.
129	3763	A1X-51	5 Dec 61	Pad launched on short range flight of 750 NM to insure control of second stage flight by fluid injection control system. Met all test objectives.
			JANUARY - JUNE 1962	
130	121	A2X-17 (A2G-2)	23 Jan 62	Carried MK-2 guidance. Pad launched on long range fully guided flight. 2nd stage malfunction caused premature flight termination.
131	122	A2X-27 (A2G-5)	1 Mar 62	Carried MK-2 guidance. Pad launched on long range fully guided flight. Impact 1713 NM down range. 1.93 NM long and 1.48 NM right of target.
132	70	A2X-28 (A2M-3)	30 Mar 62	Pad launched on unguided flight. Flight control malfunction caused RSO destruct at T+18.1 seconds.
133	68	A2PE-1	25 Apr 62	Sub launched by USS Sam Houston while submerged at depth of 98 ft. Miss distance .54 NM long and .48 NM left at 1260 NM range.
134	819	A2X-18 (A2MG-1)	3 May 62	Carried MK-2 guidance. Re-entry body impacted 1826 NM down range in BOA.. Miss distance .11 NM long and 2.37 NM right of target.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962 (CONT'D)	
135	3000	A2PE-3	9 May 62	Sub launched from USS Sam Houston at depth of 90.5 ft. Loss of control caused command destruct at T+82.9 seconds.
136	3001	A2PE-4	11 May 62	Sub launched from USS Sam Houston at depth of 88.5 ft. Impact was .56 NM long and 1.81 NM left of target.
137	1338	A2PE-5	23 May 62	Sub launched from USS Thomas Edison at depth of 92 ft. Impact was 1.14 NM long and .50 NM left of target.
138	1339	A2PE-6	23 May 62	Sub launched from USS Thomas Edison at depth of 92 ft. Impact was .72 NM long and 1.89 NM left of target.
139	1915	A2PE-7	2 Jun 62	Sub launched from USS Thomas Edison from keel depth of 92 ft. Impact was .37 NM long and .57 NM left of target.
140	1916	A2PE-8	2 Jun 62	Sub launched from USS Thomas Edison from keel depth of 94.8 ft. Impact was .78 NM long and .05 right of target.
141	1340	A2X-30 (A2MG-2)	4 Jun 62	Flight control malfunction during second stage caused deviation from flight path. RSO destruct of 2nd stage at T+90 seconds.
142	1917	A2X-29 (A2M-4/G)	29 Jun 62	Carried MK-2 guidance. Pad launched.. Impact was 1874 NM down range, .03 NM short and .25 NM right of target.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
143	2881	A2PE-11	12 Jul 62	Launched by USS John Marshall from submerged depth of 91 feet, into Antigua MILS net. Impact was.0865 NM long and .588 NM right of target.
144	2882	A2PE-10	12 Jul 62	Launched by USS John Marshall from submerged depth of 91 feet, into Antigua MILS net. Impact was .14 NM long and 1.236 NM right of target.
145	4475	A2P-12	21 Jul 62	Launched from USS John Marshall from submerged depth of 92 feet, on long-range flight into BOA. Impact was 1.432 NM short and 2.05 NM left of target on 1554 NM flight.
146	2885	A2P-13	21 Jul 62	Launched by USS John Marshall
147	4121	A2P-2	21 Jul 62	Launched by USS John Marshall from submerged depth of 92 feet, on short-ranged flight to Grand Turk MILS net. Impact was 0.08 NM long and 0.022 NM right of target on 622 NM flight.
148	2883	A2TF-1	26 Jul 62	Pad launched from 25A. Second stage guidance malfunction steered missile off course. RSO sent flight termination command at T + 92.238 seconds ending flight.

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POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962 (Cont'd)	
149	4301	A1P-1	27 Jul 62	These four missiles were sub-launched by USS Geo. Washington at one minute intervals on an operational basis. Test results will be released only on a strict need to know basis by the Chief of Naval Operations.
150	4302	A1P-2	27 Jul 62	
151	4303	A1P-3	27 Jul 62	
152	4304	A1P-4	27 Jul 62	
153	2884	A3X-1	7 Aug 62	
154	2887	A2TF-2	10 Aug 62	Pad launched from 25A. All systems functioned normally during powered flight. Impact was 1.07 NM long and 0.21 NM left of target.
155	4235	A2TF-3	17 Aug 62	Pad launched from 25A. Smoke seeped from interstage bleed holes and interstage hand access doors were blown off about T + 10 seconds. RSO sent flight termination command, at T + 15.014 seconds.
156	4236	A2TF-4	27 Aug 62	Pad launched from 25A. Flight normal throughout. Impact in BOA 0.3264 NM long and 0.070 NM left of target.
157	4237	A3X-2	6 Sep 62	

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962 (Cont'd)		
158	4240	A1T-6	14 Sep 62	Shipboard launch from USS Observation Island. Met all test objectives.
159	5596	A1T-5	15 Sep 62	Shipboard launched from USS Observation Island. First stage followed planned trajectory. Re-entry vehicle did not separate from second stage. No primary objectives met.
160	4238	A3X-3	5 Oct 62	Pad launched from 29A.
161	6521	A1T-8	14 Oct 62	Shipboard launched from USS Observation Island. All systems functioned normally and impact was in target area.
162	6616	A1T-7	14 Oct 62	Shipboard launched from USS Observation Island. Missile failed to stabilize on desired trajectory. RSO destruct at T + 92.46 seconds.
163	4241	A3X-4	5 Nov 62	Pad launched from 29A.
164	5631	A3X-5	17 Nov 62	Pad launched from 29A.
165	5632	A3X-6	6 Dec 62	Pad launched from 29A.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962 (Cont'd)		
166	5635	A2G-4	19 Dec 62	Pad launched from 25A. Carried A3 guidance. Flight normal. Impact was in target area. All test objectives met.
		JANUARY - JUNE 1963		
167	108	A2P	4 Feb 63	Fired into Antigua MILS net by submarine returning from patrol duty to prove operation of missile system after undergoing sea patrol.
168	109	A2P	4 Feb 63	
169	110	A2P	5 Feb 63	Fired into Antigua MILS net by submarine returning from sea patrol to prove operation of missile system after a period on sea patrol.
170	111	A2P	5 Feb 63	
171	145	A3X-8	7 Feb 63	Pad launched from 29A.
172	1255	A3X-7	11 Feb 63	Pad launched from 25A.
173	126	A3X-9	18 Feb 63	Pad launched from 29A.
174	130	A2P-117	21 Feb 63	Submarine launched from SS Thomas Jefferson. First launch from this sub. All systems functioned properly and re-entry body impacted as predicted.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
175	305	A2P-116	7 Mar 63	Sub launched from Thomas Jefferson. Missile cleared sub tube properly but abnormal operation just after first stage ignition resulted in RSO destruct at T + 17.43.
176	501	A2P-120	7 Mar 63	Sub launched from Thomas Jefferson at keel depth of 91 feet. Both first and second stages followed desired trajectory and impact was as predicted.
177	146	A2P	14 Mar 63	Fired into Antigua MILS net by submarine returning from sea patrol to prove operation of missile system after a period on sea patrol.
178	147	A2P	14 Mar 63	
179	301	A2P	14 Mar 63	
180	127	A3X-11	19 Mar 63	Pad launched from 29A.
181	304	A3X-18	8 Apr 63	Launched from pad 29A.
182	129	A3X-14	10 Apr 63	Shipboard launched from Observation Island.
183	2029	A2P	17 Apr 63	Fired into Antigua MILS net by submarine returning from sea patrol to prove operation of missile system after a period of sea patrol.
184	2048	A2P	17 Apr 63	
185	2067	A2P	17 Apr 63	

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
186	2086	A2P	18 Apr 63	Fired into the Antigua MILS net by submarine returning from sea patrol to prove operation of missile system after a period of sea patrol.
187	2240	A2P	18 Apr 63	
188	2266	A2P	18 Apr 63	
189	2076	A3X-20	26 Apr 63	Shipboard launched from Observation Island.
190	112	A3X-12	10 May 63	Launched from pad 25A.
191	303	A3X-15	17 May 63	Launched from pad 25A.
192	2825		4 Jun 63	
193	2793		4 Jun 63	
194	2744		4 Jun 63	
195	2718		4 Jun 63	
196	2834		4 Jun 63	
197	2849		4 Jun 63	

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1963 (Cont'd)		
198	2401	A3X-25	6 Jun 63	Launched from pad 25A.
199	2801	A2P-121	13 Jun 63	Sub launched from USS Lafayette. Loss of the 800 CPS power supply caused loss of missile control and destruct command was sent at 98.78 seconds.
200	2802	A2P-154	13 Jun 63	Sub launched from USS Lafayette at keel depth of 90 ft and speed of 1.1 knots. Missile performance was satisfactory and re-entry body was delivered to target area.
201	2804	A3X-24	17 Jun 63	Shipboard launched from USS Observation Island.
202	2803	A3X-22	21 Jun 63	Shipboard launched from USS Observation Island.
203	2691		24 Jun 63	Launched by submarine on sea patrol
204	2785		24 Jun 63	
205	2675		24 Jun 63	
206	2810		24 Jun 63	
207	3983		24 Jun 63	
208	3999		24 Jun 63	

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1963		
209	2805	A2P-118	2 Jul 63	Launched from submarine USS Lafayette by Gold Crew. Impact in target area. Met all test objectives.
210	2806	A2P-167	2 Jul 63	Launched from submarine USS Lafayette by Gold Crew from a keel depth of 92.5 ft. Impact was in target area.
211	2402	A3X-26	3 Jul 63	Launched from flat Pad 25A.
212	2807	A3X-27	18 Jul 63	Launched from flat pad 25A.
213	3304	A3X-33	26 Jul 63	Launched from flat Pad 29A.
214	3840	A2P-210	9 Aug 63	Launched from submarine USS Alexander Hamilton by Blue Crew for impact in Antigua MILS net. Impact was in target area.
215	3818	A2P-209	9 Aug 63	Launched from submarine USS Alexander Hamilton by Blue Crew for impact in Antigua MILS net. Impact was in target area.
216	3305	A3X-36	13 Aug 63	Launched from flat Pad 25A.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1963 (Cont'd)		
217	5225	A2OT	17 Aug 63	Submarine launch from sea patrol to prove operation of missile system after a period of time at sea.
218	5250	A2OT	17 Aug 63	
219	5275	A2OT	17 Aug 63	
220	5299	A2OT	17 Aug 63	
221	5311	A2OT	17 Aug 63	
222	5330	A2OT	17 Aug 63	
223	3790	A3X-37	19 Aug 63	Launched from Pad 29A in a night operation.
224	3797	A2P-208	23 Aug 63	Launched from submarine USS Alexander Hamilton by Gold Crew. Impact was in Antigua MILS net as planned.
225	3810	A2P-211	23 Aug 63	Launched from submarine USS Alexander Hamilton by Gold Crew. Impact was in Antigua MILS net as planned.
226	3780	A3X-38	30 Aug 63	Launched from flat Pad 25A in night operation.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1963 (Cont'd)		
227	5334	A1OT	4 Sep 63	Submarine launched from sea patrol to test operation of missile system after undergoing sea patrol duty.
228	5348	AIOT	4 Sep 63	
229	5113	AIOT	4 Sep 63	
230	5114	AIOT	4 Sep 63	
231	5280	AIOT	4 Sep 63	
232	5237	AIOT	4 Sep 63	
233	5003	A3X-39	26 Sep 63	Launched from USS Observation Island
234	5344	A2P-222	1 Oct 63	Launched from submarine USS Andrew Jackson by sub's Blue Crew. Missile performed properly and impact was in target area.
235	5120	A3X-41	4 Oct 63	Shipboard launched from USS Observation Island in night operation
236	6100	A2P-221	16 Oct 63	Launched from submarine USS Andrew Jackson by sub's Gold Crew. Missile performed properly and impact was in target area.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1963 (Cont'd)	
237	5329	A20T	24 Oct 63	Submarine launched from sea patrol to test operation of missile system after sea patrol duty.
238	5340	A20T	24 Oct 63	
239	5775	A20T	24 Oct 63	
240	5833	A20T	24 Oct 63	
241	5855	A20T	24 Oct 63	
242	5349	A20T	24 Oct 63	
243	5343	A3X-43	26 Oct 63	Launched from submarine USS Andrew Jackson.
244	5347	A3X-42	11 Nov 63	Launched from submarine USS Andrew Jackson.
245	7678	A2P-233	16 Nov 63	Launched from submarine USS Andrew Jackson by sub's Gold Crew. Met all test objectives Impact was in target area.
246	6740	A3X-44	27 Nov 63	Shipboard launched from USS Observation Island.
247	6090	A3X-48	9 Dec 63	Launched from Pad 25A.
248	6666	A3X-46	11 Dec 63	Shipboard launched from USS Observation Island.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1964	
249	5844	A3X-50	7 Jan 64	Launched from Pad 29A.
250	195	A2P-243	13 Jan 64	Launched from submarine USS Nathan Hale by Blue Crew. This was first operational use of new steam ejection system. Loss of nozzle feedback voltage at first staging caused loss of control of missile. Impact was short of target area.
251	22	A2P-244	13 Jan 64	Launched from submarine USS Nathan Hale using new steam ejection system. Test objectives met. Blue Crew launched. Impact was in target area.
252	100	A2P-226	13 Jan 64	Launched from submarine USS Nathan Hale by Blue Crew using new steam ejection system. Malfunction caused loss of control at T+17 seconds and RSO destruct at T+ 32 secs.
253	324	A3X-57	20 Jan 64	Shipboard launched from USS Observation Island.
254	220	A2P-227	26 Jan 64	Launched from submarine USS Nathan Hale from submerged position off Canaveral coast. RSO destruct of second stage was taken at T+81.9 seconds. Post flight analysis showed trajectory normal until destruct action was taken. Gold Crew launched.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1964 (Cont'd)		
255	303	A2P-191	26 Jan 64	Launched from submarine USS Nathan Hale from submerged position. Met all test objectives. Gold Crew made launch.
256	238	A2P-255	3 Feb 64	Launched from submarine USS James Monroe by Blue Crew. Impact was in predicted target area. Test objectives were met.
257	501	A2P-257	17 Feb 64	Launched from submarine USS James Monroe by Gold Crew. Impact was in target area and all test objectives were met.
258	0041	A2P-294	2 Mar 64	Launched from submarine USS Woodrow Wilson by Blue Crew. Met test objectives. Impact was in target area.
259	0005	A3X-58	11 Mar 64	Launched from Pad 25A.
260	0045	A2P-288	16 Mar 64	Launched from submarine USS Woodrow Wilson by Gold Crew. All test objectives met. Impact was in target area.
261	0038	A2P-320	6 Apr 64	Launched from submarine USS Henry Clay by Blue Crew. All test objectives met. Impact was in target area.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
				JANUARY - JUNE 1964 (Cont'd)
263	2084	A2P-119	20 Apr 64	Launched from submarine USS Henry Clay by Gold Crew while surfaced. Impact was in target area.
264	2903	A3P-6	25 May 64	Launched from submarine USS Daniel Webster
265	2955	A3P-1	25 May 64	Launched from submarine USS Daniel Webster
266	2930	A-3P-2	8 Jun 64	Launched from submarine USS Daniel Webster
267	2906	A-3P-4	8 Jun 64	Launched from submarine USS Daniel Webster
268	2901	A2P-296	23 Jun 64	Launched from submerged submarine USS John Adams by Blue Crew. Impact was in target area. All test objectives met.
269	2875	A2P-297	23 Jun 64	Launched from submerged submarine USS John Adams by Blue Crew. Impact was in target area. Met all test objectives.
270	2949	A2P-319	23 Jun 64	Launched from submerged submarine USS John Adams by Blue Crew. Impact was in target area. Met all test objectives.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1964		
271	3599	A-3X-10	2 Jul 64	Launched from Pad 25A.
272	3610	A-2P-295	8 Jul 64	Launched from USS Submarine John Adams from submerged position by Gold Crew. Re-entry systems impacted in target area.
273	3651	A-2P-155	8 Jul 64	
274	3622	A-2P-232	8 Jul 64	
275	3635	A-3P-19	16 Jul 64	Launched from USS Submarine Daniel Boone.
276	3640	A-3P-03	16 Jul 64	
277	3670	A-3P-14	30 Jul 64	Launched form USS Submarine Daniel Boone
278	3688	A-3P-32	30 Jul 64	
279	4300	A-3P-7	6 Aug 64	Sub launched by USS Tecumseh
280	4698	A-3P-33	20 Aug 64	Sub launched by USS Tecumseh
281	5815	A-3P-13	5 Sep 64	Sub launched by USS Grant
282	5819	A-3P-38	21 Sep 64	Sub launched by USS Grant

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964 (Contd)	
283	4941	A-3P-57 ✓	28 Sep 64	Sub launched by USS James Madison
284	5026	A-3P-17 ✓	13 Oct 64	Sub launched by USS James Madison
285	5860	A-2 FOT	19 Oct 64	Launched by sea patrol submarine USS Alexander Hamilton to test operational reliability of the weapon system after period of sea patrol duty.
286	5925	A-2 FOT	19 Oct 64	
287	5909	A-2 FOT	19 Oct 64	
288	5888	A-2 FOT	19 Oct 64	
289	6119	A-2 FOT	28 Oct 64	Launched by sea patrol submarine USS Lafayette to test operational reliability of the weapon system after period of sea patrol duty.
290	6136	A-2 FOT	28 Oct 64	
291	6127	A-2 FOT	28 Oct 64	
292	6148	A-2 FOT	28 Oct 64	
293	5827	A-3P-72 ✓	31 Oct 64	Sub launched USS Casimir Pulaski.
294	5920	A-3P-87 ✓	13 Nov 64	Sub launched by USS Casmir Pulaski.
295	7180	A-3P-100 ✓	2 Dec 64	Sub launched by USS Stonewall Jackson

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1964 (continued)		
296	7190	A-3P-45	16 Dec 64	Sub launched by USS Stonewall Jackson
297	7199	A-3P-46	22 Dec 64	Sub launched USS Von Steuben
		JANUARY - JUNE 1965		
298	0005	A-3P-67	11 Jan 65	Sub launched from USS Von Steuben
299	0010	A-3P-157	23 Jan 65	Sub launched from USS Sam Rayburn
300	0260	A-2 FOT	6 Feb 65	Launched by sea patrol submarine USS Woodrow Wilson to test operational reliability of the weapon system after period of sea patrol duty.
301	0400	A-2 FOT	6 Feb 65	
302	0347	A-2 FOT	6 Feb 65	
303	0273	A-2 FOT	6 Feb 65	
304	0126	A-3P-05	8 Feb 65	Sub launched by USS Sam Rayburn.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1965 (Contd)		
305	0141	A-2 FOT ✓	12 Feb 65	Launched by sea patrol submarine USS Thomas Jefferson to test operational reliability of the weapon system after period of sea patrol duty.
306	0315	A-2 FOT ✓	12 Feb 65	
307	0013	A-3P-171 ✓	15 Feb 65	Sub launched by USS John C. Calhoun.
308	0392	A-3P-172 ✓	1 Mar 65	Sub launched USS John C. Calhoun.
309	0007	A-2EA-193 ✓	5 Mar 65	Pad launched from 25A. All systems performed properly and impact was in target area.
310	0355	A-3P-158 ✓	15 Mar 65	Sub launched by USS Nathanael Greene.
311	0399	A-3P-21 ✓	15 Mar 65	Sub launched by of USS Nathanael Greene.
312	0390	A-3P-11 ✓	29 Mar 65	Sub launched USS Nathanael Greene.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE (Contd)		
313	0366	C2X-1 (Mod A-1)	14 Apr 65	Launched from Pad 29A. Polaris booster veered to right requiring RSO destruct at T+73 sec. This was one of four Stellar Acquisition Feasibility Flight (STAFF), to test new stellar-inertial guidance system.
314	1470	A-2 FOT	31 May 65	Launched by sea patrol submarine USS Nathan Hale to test operational reliability of the weapon system after period of sea patrol duty.
315	1499	A-2 FOT	31 May 65	
316	2739	A-2 FOT	15 Jun 65	Launched by sea patrol submarine USS John Adams to test operational reliability of the weapon system after period of sea patrol duty.
317	2752	A-2 FOT	15 Jun 65	
318	1749	C2X-2 (Mod A-1)	16 Jun 65	Pad launched from 29A. Second of four STAFF (Stellar Acquisition Feasibility Flights) to test new guidance system. The new stellar-inertial guidance system uses several predetermined stars as reference points which permits it to operate independently of ground control. The equipment successfully demonstrated its capability to star track during period of maximum stress.

POLARIS LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
406	2425 SSBN-611	A2E	11 Jun 68	Launched by submarine USS John Marshall (SSBN-611) from submerged position off Cape Kennedy. This was a DASO test.
407	1451 SSBN-610	A2E	18 Jun 68	Launched by submarine USS Thomas A. Edison (SSBN-610) from submerged position off Cape Kennedy. This was a DASO test. Missile veered off course prior to second stage ignition and required RSO destruct.

POLARIS LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968	
408	1469 SSBN-610	A2E	11 Jul 68	This was a DASO launch from submarine USS Thomas A. Edison (SSBN-610) while cruising submerged 30 miles off Cape Kennedy. Met test objectives.
409	1869 SSBN-611	A2E	19 Jul 68	This was a DASO launch from submarine USS John Marshall (SSBN-611) while cruising submerged 30 miles off Cape Kennedy. Met test objectives.
410	7230 SSBN-618	A2E	30 Jul 68	This was a DASO launch from submarine USS Thomas Jefferson (SSBN-618) while cruising submerged 30 miles off Cape Kennedy. Met test objectives.
411	6740 SSBN-618	A2E	14 Aug 68	This was a DASO launch from submarine USS Thomas Jefferson (SSBN-618) while cruising submerged 30 miles off Cape Kennedy. Met test objectives.

POLARIS LAUNCHINGS (cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968 (cont)	
415	8280 SSBN-617	A2E	26 Sep 68	This was a DASO launch from submarine USS Alexander Hamilton (SSBN-617) while cruising submerged 30 miles off Cape Kennedy. Met test objectives.
			- - - - -	
416	8586	A2E	21 Oct 68	Launch by Sea Patrol sub-
417	1641	A2E	21 Oct 68	marine USS Ethan Allen
418	2925	A2E	21 Oct 68	(SSBN-608) to test weapon
419	8986	A2E	21 Oct 68	system after period of sea
420	5940 SSBN-608	A2E	21 Oct 68	patrol duty.
			- - - - -	
			January-June 1969	
421	2509 SSBN-616	A2E	20 Feb 69	This was a DASO launch from submarine USS Lafayette (SSBN-616) from submerged position off Cape Kennedy. Test objectives met.
			- - - -	

POLARIS LAUNCHINGS (cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			January-June 1969 (cont)	
427	9403 SSBN-616	A2E	4 Apr 69	This was a DASO launch from USS Submarine Lafayette (SSBN-616) from submerged position 30 miles off coast. Test objectives met.
			- - - - -	
428	2087 UK-03	A3E 645	14 Apr 69	This was the second training launch of the British nuclear submarine HMS Repulse. Met test objectives. The Repulse returned to England after this launch.
			- - - - -	

REDSTONE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1960		
22	623	2023	9 Aug 60	To determine suitability for field use. RSO destruct action taken at T+112 sec due to impact predictor data. Post flight inspection indicates impact predictor data may have been in error and missile operation normal.
23	2816	2037	5 Oct 60	Test suitability for field use. Range 173.9 mi. Complete telemetry dropout just before impact.
24	4500	MR-1 MERCURY REDSTONE	21 Nov 60	To launch MERCURY capsule. 1 sec after ignition engine cutoff occurred, but not before some lift-off occurred. Booster settled back on launcher. Capsule prepared for re-entry at engine cutoff. Escape tower jettisoned and landed 1700 ft from launcher. Although the booster was not expended, the fact that it lifted off the pad satisfied the criteria established for classifying it as a launch.
25	5111	MR-1A MERCURY REDSTONE MR-3 booster	19 Dec 60	1st successful MERCURY REDSTONE launched from AMR. Capsule recovered at T+33 min after launch by helicopter from USS Valley Forge. Impact was 205 mi down range. Apogee was 116 mi.

REDSTONE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1961	
26	3802	2038	21 Jan 61	Flew prescribed 173.8 NM range to pre-selected target area. Test field suitability use.
27	3805	MR-2	31 Jan 61	Carried MERCURY capsule MR-2 containing a chimp named HAM. Impact was 100 mi long but recovery effected with no ill effects to primate.
28	5101	2040	8 Mar 61	Field use suitability test.
29	1375	MR-BD	24 Mar 61	Carried dummy MERCURY capsule to prove booster for manned flight. Apogee was 98.8 NM and impact was 267.1 NM down range.
30	108	MR-3	5 May 61	Carried first manned MERCURY capsule MR-3. Boost, re-entry and recovery all normal. Alan B. Shepard, Jr first US man in space.
31	817	2042	17 May 61	Flew prescribed 173.8 NM range in field suitability test.
32	1333	2043	26 Jun 61	Field use suitability test. Flew prescribed course and met test objectives. Final qualifications test of production missile. All testing of the vehicle at AMR satisfactorily completed.

SKYBOLT LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1962	
1	118	20025	19 Apr 62	First launch at AMR. Air launched from B-52 carrier aircraft at 40,000 ft altitude. Release, first stage ignition and second stage separation OK. Second stage did not ignite.
2	815	20026	29 Jun 62	Drop successful but ignition failed to occur. Missile fell ballistic into ocean near launch point.

SKYBOLT LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962		
3	1912	20027	13 Sep 62	Released from B-52 aircraft at 40,000 ft altitude. First stage failed to ignite. After first stage separation, second stage ignited but missile was erratic. RSO destruct at T + 58 seconds.
4	2877	20028	25 Sep 62	Released from B-52 aircraft at 40,000 ft altitude and Mach 0.8. Flight normal until 2 seconds after second stage ignition when premature thrust reversal occurred. Impact was 173 NM downrange in BOA.
5	5035	20031	28 Nov 62	First guided launch of Skybolt missile to use celestial navigation for inflight guidance. Missile tumbled end over end at T + 4 seconds. Impact in BOA.
6	6324	20032	22 Dec 62	First successful launch of the program, also the last launch. Program was cancelled. All test objectives were met.

MACE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
JULY - DECEMBER 1963				
44	3300	59-4981	17 Jul 63	Launched from Pad 21, a simulated hardsite pad, by 4505th MTW of Orlando AFB. It was the fourth and final flight of the current series. Met all test objectives. Inertial guidance detonate was 0.19 NM long and 0.112 NM right of course.
JANUARY - JUNE 1964				
Program dormant. No more launchings conducted during this period.				

Tab 6

MISSILE		SATURN
DEVELOPMENT		Sponsored by NASA as Space booster primarily for Manned Lunar Landing Program.
CONTRACTOR	Prime:	Chrysler Corporation - S-1 Booster
	Associate:	North American Rockwell Corporation - Engine Propulsion
CHARACTERISTICS	Saturn I	Two Stage Height - 120 feet Diameter - 21.6 feet Thrust - 1st Stage - 1,500,000 lbs 2nd Stage - 90,000 lbs Orbital Velocity - 17,500 mph
	Saturn IB	Two Stage Height - 142 feet Diameter - 21.6 feet Thrust - 1st Stage - 1,600,000 lbs 2nd Stage - 200,000 lbs
	Saturn V	Three Stage Height - 281 feet Diameter - 33 feet Thrust - 1st Stage - 7.5 million lbs 2nd Stage - 1 million lbs 3rd Stage - 200,000 lbs Escape Velocity - 25,000 mph
First Launch Saturn I		27 Oct 1961
SA I Tests Completed		30 Jul 1965
First Launch AS IB		26 Feb 1966
First Launch of Saturn V		9 Nov 1967

Program underway as of 30 June 1968.

SATURN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
7	4444	SA-7	18 Sep 64	Launched from Pad 37B. Carried boilerplate model of 3-man Apollo capsule into orbit, along with Saturn second stage. Capsule re-entered earths atmosphere over the Indian Ocean on 22 Sep 64. Total weight orbited was 36,700 lbs.
			JANUARY- JUNE 1965	
8	0143	SA-9	16 Feb 65	Launched from Pad 37B. Boosted 3200-lb Pegasus I satellite for micrometeoroid detection. This was the first operational payload carried by Saturn.
9	2222	SA-8	25 May 65	Pad 37B. Placed Pegasus II in earth orbit.

SATURN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY-DECEMBER 1965	
10	3530 Pad 37B	SA-10	30 Jul 65	This completed Saturn I series of 10 launchings, all successful Boosted the 3,200-lb Pegasus III satellite into earth orbit. Expected life of satellite was 3 years. Total weight boosted into orbit on this launch was 33,800 lbs consisting of Pegasus III, spent Saturn IV stage, and Apollo boilerplate module.
			JANUARY-JUNE 1966	
11	0195 Pad 34	AS-201 Saturn 1B	26 Feb 66	Carried unmanned Apollo spacecraft in suborbital flight. Impact was 200 NM east of Sta 12. Both booster and spacecraft performed as programmed. A scrub was announced at one stage of the countdown, but was later rescinded and the launch was accomplished. This was the first record of a rescinded scrub on the Eastern Test Range.

SATURN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
12	7207 Pad 37B	AS-203 IB*	5 Jul 66	Placed 29-ton, 92-foot long, S-IVB second stage in earth orbit. It was the heaviest payload orbited by United States up to that time. Purpose was to test suitability of liquid hydrogen for use as a space fuel. Destruct charge on S-IVB was detonated to end test. It was not considered a spacecraft.
			- - - - -	
13	7897 Pad 34	AS-202 IB*	25 Aug 66	Boosted unmanned Apollo spacecraft two-thirds around the world for a landing in the Pacific Ocean as a final test of the space vehicle. This was a suborbital flight.
			* * * * *	
			JANUARY - JUNE 1967	
			No launch activity in Saturn Program during this period.	
			* * * * *	

* Saturn IB was officially redesignated as "Uprated Saturn I" effective 12 May 1966.

SATURN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
14	0072 Pad 39A	Saturn V AS-501	9 Nov 67	This was the first launch of the Saturn V. It placed its S-IV-B third stage in earth orbit. Reignition of the third stage motor during its second orbital pass over north Florida was photographed by the Melbourne Beach ROTI Site. This was the first time a ground station had photographed reignition in orbit, futhermore, it was accomplished during daylight hours.
			JANUARY - JUNE 1968	
15	2320 Pad 37B	Saturn IB* AS-204/ LM-1	22 Jan 68	Apollo 5 mission boosted unmanned Apollo spacecraft into orbit in first test of Lunar Module (LM-1), the vehicle designed to land two men on the moon.
16	6343 Pad 39A	Saturn V AS-502/	4 Apr 68	Apollo 6 mission carried unmanned spacecraft including service module and lunar module. Launch was perfect and exactly on time at 0700 hours. Two engines of the second stage booster shut down prematurely and the third would not restart after initial burn period. The payload achieved orbit despite these propulsion difficulties.

* Effective 15 January 1968, designation of the uprated Saturn I reverted to its original designation of Saturn IB.

SATURN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		July-December 1968		
17	0066 Pad 34	Saturn IB (AS-205) Apollo 7	11 Oct 68	This was seventh Apollo mission and the first manned Apollo Flight. It carried three astronauts, Walter Schirra, Donn Eisele, and Walter Cunningham into earth orbit for eleven days. Splashdown was on 22 Oct 1968, at 0712 hours after 163 revolutions of the earth. Recovery was by helicopter to Carrier Essex. Impact area was south of Bermuda.
		- - - - -		
18	0170 Pad 39A	Saturn V (AS-503) Apollo 8	21 Dec 68	Saturn V boosted three astronauts, Frank Borman, James Lovell, Jr., and William Anders on moon trajectory. The three orbited the moon ten times and returned to earth on 27 Dec 68, after 148 hours of flight time.
		- - - - -		
		January-June 1969		
19	9025 Pad 39A	Saturn V (AS-504) Apollo 9	3 Mar 69	The Apollo 9 mission placed astronauts McDivitt, Scott, and Schweickart in earth orbit on a 10-day mission, to test the Apollo system and check out the Lunar Module in space environment. Splashdown occurred at 1200 hours 53 seconds on 13 Mar 69. Impact was near Grand Turk. Recovery was by helicopter to recovery ship Guadalcanal. Recovery area was moved to Grand Turk area to avoid high seas in the area south of Bermuda.
		- - - - -		

SATURN LAUNCHINGS (cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		January-June (cont)		
20	0920 Pad 39B	Saturn V (AS-505) Apollo 10	18 May 69	Apollo 10 mission placed astronauts Stafford, Cernan, and Young into earth orbit from which they entered translunar injection trajectory then lunar orbit. While in lunar orbit, Stafford and Cernan entered the LEM, separated it from the Command Module and dropped down to within 9.5 miles of the moon's surface. The Command Module stayed at 69 miles altitude. Upon completion of the 8-day mission, splashdown took place in the Pacific Ocean.

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SNARK LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1960		
92	1017	N-3446 (SM-62A) AF59-1876	8 Jul 60	6th of 11 modified Category II APAC Extension Program. Launched by 702 Strategic Missile Wing. Scheduled for Sta 12 impact. Impact 2250 mi D/R attributed to guidance failure. NORAIR support. Tech backup.
93	1507	N-3448 (SM-62A) AF59-1878	26 Aug 60	SAC launch crew, NORAIR tech support. 7th modified Category II. Impact Sta 12 area. Flight time 8 hrs 33 min. 2.4 mi miss distance.
94	2514	N-3452 (SM-62A) AF59-1882	26 Sep 60	SAC crew launch, NORAIR back-up. 8th Category II. Automatic ballistic nose release at Sta 12. Miss distance 1 mi.
95	2802	N-3454 (SM-62A) AF59-1884	14 Oct 60	SAC launch crew backed up by NORAIR. 9th modified Category II Extension missile. Failure in missile electrical system caused flight termination after 7 min of flight.
96	3513	N-3460 (SM-62A) AF59-1890	14 Nov 60	SAC launch crew backed up by NORAIR. 10th modified Category II Extension Program. RSO destruct T+3 min.
97	3512	N-3458 (SM-62A) AF59-1888	5 Dec 60	SAC launch crew backed up by NORAIR. 11th and last modified Category II Extension Program missile. Last SNARK programmed for launch at AMR. Programmed Sta 12. Impact 4,100 mi D/R 300 mi left of course.

END OF PROGRAM

THOR-ABLE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1960		
19	2517	THOR-ABLE/STAR 262	18 Aug 60	Purpose to place COURIER 1A, an active communications satellite, in orbit around the earth. Missile break-up during first stage operation prevented orbit.
20	3508	THOR-ABLE/STAR 293	4 Oct 60	Purpose to place COURIER 1B in earth orbit. Orbit achieved with apogee of 657 mi and perigee of 503 mi.
21	4502	THOR-ABLE/STAR 283	30 Nov 60	Purpose to place TRANSIT 3-A in earth orbit. 1st stage engine cutoff 11 sec early failed to provide orbital velocity for payload.
		JANUARY - JUNE 1961		
22	408	THOR-ABLE/STAR 313	21 Feb 61	Placed 2 payloads in earth orbit - TRANSIT 3-B and LOFTI. Payloads and 2nd stage of missile separation did not occur, and will limit life and performance of payloads.
23	1255	THOR-ABLE/STAR 315	28 Jun 61	Carried triple satellite payload, TRANSIT 4-A, INJUN, and GREB. 1st satellite powered by nuclear energy.

THOR-ABLE LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
24	3210	305 Able Star	15 Nov 61	Transit 4-B placed in orbit with apogee of 582 NM, perigee of 528 NM. Missile performance was normal.
			JANUARY - JUNE 1962	
25	126	311 Able Star	24 Jan 62	Carried Composite I satellite consisting of 5 satellite packages. Rupture in second stage engine bell caused it to tumble. Both missile stages and payload impacted in same general area.
26	78	314 Able Star	10 May 62	Attempt to orbit satellite Anna 1A failed. Second stage failed to ignite. Both stages and payload impacted in same general area. Failure of blast band microswitches to release prevented start signal from being sent to second stage at separation time.

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1962		
27	3723	319 Able-Star	31 Oct 62	Booster Thor-Able/Star carrying 350 pound satellite launched from pad 17A. Launch accomplished without incident. Mission objectives were to place satellite ANNA in earth orbit. Near circular orbit of payload was successfully achieved.

Tab 10

MISSILE	THOR-ASSET
SPONSOR	Air Force
CONTRACTOR	Douglas Aircraft Company
First Launch	18 Sep 63

Thor-Asset Program completed 23 February 1965.
Thor employed as space booster SLV-II.

THOR-ASSET LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1964	
1	3680	SLV-II Thor 232	18 Sep 63	Launched from Pad 17B. This was one of the Thor missiles returned from England when Thor bases were discontinued. It carried Asset ASV-1 glide vehicle which was not recovered. Booster operation was normal. Asset glide vehicle followed prescribed trajectory. This was first in a series of six Asset launchings.
			JANUARY - JUNE 1964	
2	0075	SLV-II Thor 240	24 Mar 64	Launched from Pad 17B. Carried Asset payload ASV-2. First stage booster followed closely the planned trajectory. Second stage operation was abnormal with unstable attitude. Test objectives were not accomplished.

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THOR-ASSET LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY-DECEMBER 1964	
3	1088	SLV II Thor	22 Jul 64	Launched from Pad 17B. Carried Asset vehicle ASV-3. Flight was normal and vehicle was recovered.
4	5821	SLV II Thor	27 Oct 64	Launched from Pad 17B. Boosted fourth Asset vehicle, the AEV-1 into glide pattern. The Asset was a delta-wing glide vehicle 68.7 inches long. It followed glide path within allowable limits to impact point 844 NM down range.
5	7200	SLV II Thor	8 Dec 64	Launched from Pad 17B. Carried Asset vehicle AEV-2 into glide path. Vehicle flew within the prescribed limits of the programmed flight path and impacted within the target area.
			JANUARY - JUNE 1965	
6	0175	SLV II Thor 248	23 Feb 65	Launched from Pad 17B. Boosted ASV-4 into glide path. Payload not recovered. All systems except recovery operated normally. Concluded the Asset program.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1960	
18	1801	J-2	1 Jul 60	Break in hydraulic control line just after lift-off caused missile to arc to the northwest. RSO destruct ordered at T+11 sec. The debris impacted 2,500 ft. from launch complex.
19	2509	J-4	28 Jul 60	First stage engine shut down at T+142 sec causing impact 90 mi down range.
20	2818	J-7	10 Aug 60	Met test objectives except for data cassette recovery and full vernier operation. Programmed for MILS net at 4,385 mi. Impact 112 mi short of target.
21	2819	J-5	30 Aug 60	Impact in MILS net at 4,385 mi range 1 NM from aiming point. Data cassette not recovered.
22	2820	J-8	28 Sep 60	To test missile system accuracy. Impact was in MILS net at 4,385 NM range. Data cassette recovered by ORV Whiskey just 33 min after impact.
23	1007	G-8	29 Sep 60	Scheduled 8,700 mi flight. 1st stage burning time was 11.75 sec short and 2nd stage was .7 sec short. Missile impacted 5,300 NM along flight path.
24	1503	J-3	7 Oct 60	Impact was in MILS net at 4,385 mi range. Data cassette was recovered.
25	3506	J-6	24 Oct 60	1st operationally configured TITAN scheduled for extended range of 5,335 mi. Impact was within target area and data cassette was recovered.
26	5104	J-9	20 Dec 60	To test guidance accuracy. 2nd stage did not ignite. This was the 1,000th missile launch at AMR.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1961	
27	5105	J-10	20 Jan 61	Second stage failed to ignite. Impact was 377 NM down range.
28	104	J-11	10 Feb 61	Carried 22 million candle power strobe light blinker for optical tracking. Impact 5,000 NM down range.
29	103	J-13	20 Feb 61	Carried strobe light for tracking. Impact was at 4,385 NM range within 2NM of target.
30	410	J-12	3 Mar 61	Early shut-off of sustainer engine caused impact 730 NM down range.
31	409	J-14	28 Mar 61	Impact was in target area. Data cassette was recovered.
32	821	J-15	31 Mar 61	Programmed for 8,700 NM range. Booster engine shutdown at T+70 sec caused impact 12 NM down range.
33	1361	J-16	23 May 61	Missile system performed as planned. Data cassette was ejected from re-entry vehicle early and sank on impact.
34	1261	M-1	23 Jun 61	Second stage engine shut down after 12 sec of a 155 sec programmed burning time. Impact was 450 NM down range. First of M-1 series.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961	
35	1815	J-18	20 Jul 61	Flight normal; impact in selected area. Data cassette carried bio-pack of non-pathological tissues. Cassette was recovered.
36	3211	M-2	25 Jul 61	Performance satisfactory with impact in target area. Lot M missiles similar to J missiles but carry inertial guidance instead of radio guidance.
37	2534	J-19	3 Aug 61	Performance satisfactory. Impact was in target area. No data cassette carried.
38	1262	J-17	6 Sep 61	Performance as planned. Impact within target area.
39	3212	M-3	7 Sep 61	Performance as planned. Impact near designated target area.
40	3765	J-20	28 Sep 61	Normal flight with impact in target area.
41	3764	M-4	6 Oct 61	All systems performed within limits except guidance. Impact was 80 NM short of target.
42	5454	J-21	24 Oct 61	Lift-off timed to coincide with pass of Midas satellite. Performance normal except that data cassette did not eject. Impact 80 NM short as result of guidance error.
43	4502	J-22	21 Nov 61	First Titan launch by all Air Force crew. Performance normal. Impact in target area.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1961 (CONT'D)	
44	4512	M-5	29 Nov 61	Performance as planned. Impact in target area.
45	6203	J-23	13 Dec 61	Second all military launch by 6555th Aerospace Test Wing. Performance as planned. Impact in target area. Re-entry vehicle was a 600 lb graphite cone designated as Nike-Zeus Target Vehicle.
46	5455	M-6	15 Dec 61	Second stage did not ignite. Impact was 420 NM down range in broad ocean area.
			JANUARY - JUNE 1962	
47	119	M-7	29 Jan 62	Lift-off and flight were normal. Re-entry vehicle impact was in target area.
48	120	N-2	16 Mar 62	First Titan II launch. Met all test objectives. Impact was in target area.
49	64	N-1	7 Jun 62	Launch successful. Second stage thrust below normal. RSO ordered fuel cut-off because of loss of track. Impact 1100 NM down range.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1962	
50	2080	N-6	11 Jul 62	Third Titan II launched at AMR. All systems operated as planned. Impact was within target area in Station 12 MILS net. Pad 15.
51	4604	N-4	25 Jul 62	Fourth Titan II launch. First stage systems operated successfully. Second stage fuel system malfunctioned about 60 seconds after staging which reduced thrust. Impact was only 1600 NM downrange. Launch pad 16.
52	1500	N-5	12 Sep 62	Titan II launch from pad 15. First Titan II to carry a decoy. First and second stage operations satisfactory. Impact was in Station 12 MILS net.
53	3724	N-9	12 Oct 62	Titan II launch from pad 16. All test objectives met. Impact in Station 12 MILS net.
54	4232	N-12	26 Oct 62	Titan II launch from pad 15. Carried radiation study payload. Met all test objectives. Impact in Station 12 MILS net.
55	4231	N-11	6 Dec 62	Titan II launch from pad 16. Excessive airframe vibration caused failure in various engine parts that reduced burning time. Sustainer engine shutdown 69 seconds early. Velocity too low for re-entry vehicle separation. Impact was 703 NM downrange.
56	5591	N-13	19 Dec 62	Titan II launch from pad 15. First Titan II launched with operational flight program using operational autopilot. Flight most satisfying to date, and lowest vibration level. Impact was close to target area.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1963	
57	5592	N-15	10 Jan 63	First night launch of a Titan II. Failure of a sustainer engine prevented accomplishment of test objectives. Impact was 525 NM downrange.
58	106	N-16	6 Feb 63	First launch of Titan II by all Air Force crew. Missile was programmed for impact in BOA at range of 5875 NM. Depletion of sustainer oxidizer caused impact 71 NM short of target.
59	123	N-18	21 Mar 63	Blue Suit launch of Titan II from pad 15. Programmed for impact in BOA at 5800 NM. Operation normal. Impact 4.38 NM short and 2.5 NM right of target.
60	353	N-21	19 Apr 63	Programmed for impact in Ascension splash net. Flight normal to T + 250 seconds when second stage sustainer engine shut down causing impact 1100 NM downrange.
61	352	N-14	9 May 63	Programmed for impact in BOA at 5001 NM range northeast of St. Helena Island. Early second stage exhaustion caused impact 550 NM short of target.
62	107	N-17	24 May 63	All systems performed as planned. Impact was within 1 NM of target 5876 NM downrange.
63	124	N-20	29 May 63	First stage malfunction caused premature separation which activated destruct system at T + 50 seconds after lift-off. Second stage destroyed by RSO as precautionary measure.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1963		
64	354	Titan II N-24	21 Aug 63	Titan II launched from Pad 15. It was the first Titan II to boost a scientific passenger pod for radiation study. Impact was in Ascension MILS net.
65	3303	Titan II N-25	1 Nov 63	Launched from Pad 15. Carried recoverable camera capsule and other test pods. Impact was in Ascension target area. Camera capsule was recovered.
66	3787	Titan II N-29	12 Dec 63	Launched from Pad 15. Nose cone impacted in Ascension area. Camera cassette recovered near San Salvador by men who parachuted into the area and were picked up by Twin Falls Victory ship. Met all test objectives.
		JANUARY - JUNE 1964		
67	525	Titan II N-31	15 Jan 64	Launched from Pad 15. Carried liquid-to-gaseous oxygen converter pod. Impact was 34 NM short of target.
68	227	Titan II N-32	26 Feb 64	Launched from Pad 15. Impact was in target area of Sta 12 MILS net.
69	0104	Titan II N-33	23 Mar 64	Launched from Pad 15. Impact was in Sta 12 MILS net. All test objectives met.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1964 (Cont'd)		
70	0275	Titan II AFSN 62-12556 GLV-1	8 Apr 64	Launched from Pad 19. Carried first Gemini capsule to initiate the Gemini test program. The spacecraft achieved an orbit of 86.6 to 173 NM. All test objectives were met.
71	0158	Titan II N-3A	9 Apr 64	Launched from Pad 15. This was the final launch in Titan II R&D test program at AMR. All test objectives were met.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JULY - DECEMBER 1964		
72	4751	SSLV-2 65-210 Titan IIIA	1 Sep 64	Launched from Pad 20. Carried 3750 lbs of lead as dummy payload. Malfunction of third stage prevented orbit. This was first space mission for Titan IIIA.
73	6505	SSLV-1 65-209 Titan IIIA	10 Dec 64	Launched from Pad 20. Placed 3750-lb orbital payload and final stage of missile, making 9000 lb total weight, in 100 NM earth orbit. The 124-ft Titan IIIA set a record of 13 min burning time. The payload was a lead dummy to test ability of Titan as space booster.
		JANUARY - JUNE 1965		
74	4466	65-12557 Titan II	19 Jan 65	Launched from Pad 19. Carried Gemini unmanned capsule GT-2 on suborbital test flight. It was the second and final unmanned Gemini flight. Capsule was recovered 2127 miles down range by USS Lake Champlain. All test objectives met.
75	0051	SLV-5 65-211 Titan IIIA-3	11 Feb 65	Launched from Pad 20. Placed transtage (wt 5930 lbs) and LES-1 (Lincoln Experimental Satellite), weighing 1070 lbs, in earth orbit. Total weight orbited was 7000 lbs.

TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
		JANUARY - JUNE 1965 (Contd)		
76	0475	62-12558 Titan II	23 Mar 65	Launched from Pad 19. Boosted Gemini capsule GT-3 (Molly Brown) containing Gus Grissom and John Young into earth orbit. Three earth orbits were made. First 2-manned flight by United States. Capsule landed near Grand Turk. Recovered by helicopter and placed aboard aircraft carrier Intrepid.
77	0130	Titan IIIA-6 65-214	6 May 65	Launched from Pad 20. Placed two satellites and booster transtage in earth orbit. The transtage used as a flying launch platform shifted orbit four times to demonstrate space maneuverability. One satellite was LES-2 (Lincoln Experimental Satellite) weighing 80 lbs. The other was a 75-lb radar calibration sphere.
78	1777	Titan II-599 GT-[redacted]	3 Jun 65	Launched from Pad 19. Fourth in Gemini Program. Placed GT-4 capsule containing astronauts, Edward White and James McDivitt in earth orbit. Made 62 orbits before landing in Atlantic Ocean 400 mi east of the Cape. Astronauts were picked up by helicopter and taken to Carrier Wasp. White left the capsule for a 20 min walk in space during the third orbit.

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TITAN LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1965 (Contd)	
79	0449	Titan III-C	18 Jun 65	Launched from Pad 40. First Titan III-C launch. It consisted of the Titan III-A core vehicle with two solid propellant motors strapped to its sides. The core vehicle was a 4-stage, 124 ft tall, liquid fuel rocket. The two solid boosters were 10 ft in diameter and 75 ft tall. The vehicle developed approximately 2 1/2 million lbs of thrust capable of placing a 12-ton payload in orbit. This launch placed 21,000 lb test load of lead ballast in orbit.

TITAN II AND III LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY-DECEMBER 1965	
80	2315 Pad 19	GT-5 Titan II 62-12560	21 Aug 65	Boosted Gemini GT-5 spacecraft into earth orbit. Astronauts Gordon Cooper and Charles Conrad, Jr., made a flight of 7 days, 22 hours, 56 minutes and completed 120 orbits. They were recovered 29 August 1965, 325 SMI southwest of Bermuda, by helicopter and flown to the USS Lake Champlain.
81	3656 Pad 40	VEH-4 Titan IIIC 65-212	15 Oct 65	This was the second Titan IIIC launch. Placed transtage carrying two satellites in orbit, but transtage engine only fired two of the planned ten restarts. As a bonus the Titan was to deposit two satellites, an OV2 and radar calibration satellite LCS (Lincoln Calibration Sphere) in different orbits. There was no indication that satellites were ejected from the transtage.
82	6145 Pad 19	GT-7 Titan II 62-12562	4 Dec 65	Boosted GT-7 Gemini spacecraft into earth orbit. Astronauts Frank Borman and James Lovell made 14-day flight which set endurance record for space flights. Made rendezvous with GT-6 on 15 December. Completed 206 orbits before splashdown in vicinity of Grand Turk on 18 December 1965.

TITAN II AND III LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
				JULY-DECEMBER 1965 (Cont)
83 77	7100 Pad 19	GT-6 Titan II 62-12561	15 Dec 65 08 27:00 EST	Boosted GT-6 Gemini spacecraft into earth orbit. Astronauts Walter Schirra and Thomas Stafford rendezvoused to within 6 to 10 feet of GT-7 and flew formation with it for 4 hours. Completed 16 orbits before splash-down on 16 December. GT-6 launch had been scrubbed on 25 October when Agena target vehicle failed to achieve orbit, and again on 12 December when automatic shut-down of launch vehicle occurred 1.6 seconds after ignition.
4	6020 Pad 41	8 Titan IIIC 66-001	21 Dec 65	On its third launch the Titan IIIC boosted 4 satellites into earth orbit. Transtage malfunctioned 6 hours after flawless launch by failing to restart the third time. This prevented achievement of planned circular orbit and scattered satellites in disoriented elliptical orbits having 105 NM perigee and 18,174 NM apogee. The 931-lb payload consisted of two communication satellites, LES 3 and 4; one solar activity satellite, OV2-3; and one OSCAR (Orbiting Satellite Carrying Amateur Radio). This was the first launch from Complex 41.

TITAN II AND III LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY-JUNE 1966	
85	1503 Pad 19	GT-8 Titan II 62-12563	16 Mar 66	Boosted GT-8 Gemini spacecraft into earth orbit. Astronauts Neil Armstrong and David Scott rendezvoused and docked with orbiting Agena vehicle. Severe yaw and roll forced undocking action. Use of re-entry control thrusters to stabilize vehicle reduced fuel to extent that an early landing had to be made in the Western Pacific during the 7th orbit. Destroyer USS Mason recovered the astronauts.
86	2433 Pad 19	GT-9 Titan II 62-12564	3 Jun 66	Boosted GT-9 Gemini spacecraft into earth orbit. Astronauts Thomas Stafford and Eugene Cernan could not accomplish docking mission because the ATDA docking vehicle failed to jettison its shroud. Flight terminated on 6 June after 45 orbits. Splashdown was 380 NM east of Cape Kennedy and only 3.2 miles from the carrier Wasp which made the recovery.
87	7379 Pad 41	Titan IIIC #11 66-004	16 Jun 66	Boosted 8 satellites into random circular orbit of the earth. Each satellite weighed about 100 lbs. Seven were communication satellites in the Initial Defense Communication Satellite Program (IDCSP). The other was a gravity gradient satellite. Booster operated as programmed, all satellites separated properly and functioned as required.

TITAN II LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
80	6833 Pad 19	62-12565	18 Jul 66	Booster for Gemini GT-10 which carried astronauts Comdr John W. Young (USN), and Maj Michael Collins (USAF) into earth orbit. GT-10 space vehicle weighed 8294 lbs. Launch was normal and liftoff was on schedule.
81	3287 Pad 19	62-12566	12 Sep 66	Booster for Gemini GT-11 which carried astronauts Comdr Charles P. Conrad, Jr. (USN), and Lt Comdr Richard F. Gordon, Jr. (USN) into earth orbit. This flight set a number of space records. It made quickest docking, conducted longest space walk, and set highest altitude for man. This was third launch attempt. A small leak in the oxidizer tank caused a scrub on 9 Sep and trouble with booster of target vehicle caused the second scrub on 10 Sep.
82	2742 Pad 19	62-12567	11 Nov 66	Booster for Gemini GT-12 which carried astronauts Capt James A. Lovell, Jr. (USN), and Maj Edwin E. Aldrin, Jr. (USAF) into earth orbit. Last Gemini Program launch. Launch was normal and liftoff was on schedule. Launch was first scheduled for 9 Nov and scrubbed because the telemetry autopilot indicated a malfunction. It was scrubbed again on 10 Nov as result of defective secondary autopilot system.
			JANUARY - JUNE 1967	
No launch activity in the Titan II Program during this period.				

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Tab 8

MISSILE		TITAN III
DEVELOPMENT		Sponsored by Air Force as a standard space launch vehicle system SSLV with two basic configurations Titan IIIA (SLV-5A) and Titan IIIC (SLV-5C).
CONTRACTOR	Prime:	Martin Marietta Corporation - Airframe
	Associates:	Aerojet - Propulsion core vehicle United Technology Corp. - Solid Booster AC Spark Plug - Guidance, All Inertial
CHARACTERISTICS		
	Titan IIIA:	Three Stage and Control Module Height - 126 feet Diameter - 10 feet Thrust - 1st Stage - 430,000 pounds 2nd Stage - 100,000 pounds 3rd Stage - 16,000 pounds
	Titan IIIC:	Same as IIIA with the addition of two strap-on boosters of 1,000,000 pounds thrust each.
First Titan III Launch		1 Sep 1964
First Titan IIIC Launch		18 June 1965

Program underway as space booster, as of 30 June 1967.

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TITAN III LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1966	
9	2631 Pad 41	#12 66-005	26 Aug 66	Mission was to place eight IDCSPs having a combined weight of 800 lbs, in earth orbit. Booster exploded at T+80 seconds, aborting the mission. Payload fairing failed structurally causing severe pitch, roll, and yaw resulting in missile break up.
			- - - - -	
10	0855 Pad 40	#9 66-002	3 Nov 66	Booster for refurbished Gemini capsule and Titan II tank as heat shield qualification test for MOL program. Also boosted OAR satellite OV1-6 and two Air Force satellites OV4-1R and OV4-1T into orbit. Transtage III was ignited three times to inject its payload into proper orbit. A 110-minute hold was caused in this launch countdown by upper-air wind conditions.
			JANUARY - JUNE 1967	
11	5870 Pad 41	#13 66-006	18 Jan 67	Boosted 8 IDCSP (Initial Defense Communications Satellite Program) into orbit. This was the second group of IDCSPs comprising the global communications network. Each satellite weighed 100 lbs, had 26 sides, and was 36 inches in diameter. All were placed in 21,000-mile synchronous orbit. Launch was delayed briefly at T-3 minutes by poor weather conditions in local area.
			- - - - -	

TITAN III LAUNCHINGS (Cont)

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JANUARY - JUNE 1967 (Cont)	
12	8275 Pad 41	#10 66-003	28 Apr 67	Boosted five satellites into earth orbit. Thev were Vela 7 and 8, and three environmental research satellites consisting of two OAR OVs and one SSD satellite. A cluster of small solar power conversion cells achieved 60,000 nautical mile orbit with the nuclear detection Vela satellite. Purpose was to test their self-healing capabilities after bombardment by solar particles.

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Tab 7

MISSILE		TITAN III
DEVELOPMENT		Sponsored by Air Force as a standard space launch vehicle system SSLV with two basic configurataions Titan IIIA (SLV-5A) and Titan IIIC (SLV-5C).
CONTRACTOR	Prime:	Martin Marietta Corporation - Airframe
	Associates:	Aerojet - Propulsion core vehicle United Technology Corp. - Solid Booster AC Spark Plug - Guidance, All Inertial
CHARACTERISTICS		
	Titan IIIA:	Three Stage and Control Module Height - 126 feet Diameter - 10 feet Thrust - 1st Stage - 430,000 lbs 2nd Stage - 100,000 lbs 3rd Stage - 16,000 lbs
	Titan IIIC:	Same as IIIA with the addition of two strap-on boosters of 1,000,000 pounds thrust each.
First R&D Titan I Launch		6 Feb 1959
Last Titan I Launch		29 Jan 1962
First Titan II Launch		16 Mar 1962
Titan II R&D Tests Completed		9 Apr 1964
Last Titan II boosted Gemini GT-12 capsule into orbit.		11 Nov 1966
First Titan III Launch		1 Sep 1964
First Titan IIIC Launch		18 Jun 1965

Program underway as space booster, as of 30 June 1968.

TITAN III LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			JULY - DECEMBER 1967	
13	4029 Pad 41	14	1 Jul 67	Boosted 6 satellites into orbit. Three were IDCSPs (Initial Defense Communications Satellite Program) designed to join 15 others in a globe girdling communications network; LES was to lay the groundwork for direct communications with front-line troops; DATS was to test methods of directing antenna beam earthward; and one was the Navy sponsored DODGE, a DOD gravity gradient satellite.
			- - - - -	
			JANUARY - JUNE 1968	
14	2035 Pad 41	16	13 Jun 68	Boosted 8 IDCSPs (Initial Defense Communications Satellite Program) into near synchronous earth orbit. These brought to 26 the number of IDCSPs in orbit. The booster first achieved a low altitude parking orbit; next switched to a high altitude elliptical orbit; converted to a circular orbit above the equator; then proceeded to eject the 8 comsats at precise time and point. The timing never varied more than 5 sec from the flight sequence plan and final circular orbit was only 3 mi. off the 18,200 NM planned.
			- - - - -	

TITAN IIIC LAUNCHINGS

TOTAL TO DATE	TEST NUMBER	MISSILE NUMBER	DATE LAUNCHED	REMARKS
			July-December 1968	
15	3105 Pad 41	No. 5	26 Sep 68	Titan IIIC placed four satellites in synchronous earth orbit. The satellites were LES-6, OV2-5, OV5-2, and OV5-4. OV5-2 was placed in a highly elliptical earth orbit and the other three were released in sequence in a near synchronous earth orbit. Combined payload weight was approximately 880 pounds.
			- - - - -	
			January-June 1969	
16	1188 Pad 41	No. 17	9 Feb 69	Payload, TAC COM SAT, a 1600 pound Air Force Communication satellite, was placed in synchronous orbit over the Pacific.
			- - - - -	
17	3013 Pad 41	No. 15	23 May 69	Titan IIIC boosted payloads consisting of two Vela satellites, and three OV5 satellites into elliptical earth orbit. The launch completed the R&D testing program for the Titan IIIC.
			- - - - -	

ABRES PROGRAM

ABRES*

(Advanced Ballistic Reentry System)

Booster: Atlas 134F
Sponsor: Office of Aerospace Research

Test No: 119
Launch Pad 11

1 Mar 63 — First ABRES flight test of new reentry vehicle. Two decoy pods and Scientific Passenger Pod #1 containing four science experiments were carried. Test objectives accomplished.

ABRES*

Booster: Atlas 135F
Sponsor: Office of Aerospace Research

Test No: 1501
Launch Pad 11

26 Apr 63 — Second ABRES flight test. R/V impacted 0.107 NM short and 0.54 NM left of aim point at Sta 12. Two decoy pods were carried. Operation was satisfactory.

ABRES

Booster: Atlas 136F
Sponsor: Office of Aerospace Research

Test No: 3686
Launch Pad 11

28 Oct 63 — Third ABRES launch. The R/V carried G.E. WAC-1 (Wake Analysis and Control) experiment. Two decoy pods, two FLIP (Flight Launched Infrared Probes), and Scientific Passenger Pod #21 containing five experiments were also carried. Malfunction in sustainer section at T+140 seconds caused loss of control, however, the R/V did separate and impact 507 NM down range.

* The first two ABRES flight tests were flown in FY-63 and properly belong in the report for that year.

ABRES PROGRAM

ABRES

Booster: Atlas 5E
Sponsor: Office of Aerospace Research

Test No: 150
Launch Pad 11

25 Feb 64

Fourth ABRES launch. The R/V a G.E. WAC-3 (Wake Analysis Control), impacted in Sta 12 MILS net about 0.4 NM short and 0.4 NM left of target. One Optical Particle Decoy pod and Scientific Passenger Pod #18, containing a Zero "G" Liquid Hydrogen experiment, were carried.

ABRES

Booster: Atlas 137F
Sponsor: Office of Aerospace Research

Test No; 575
Launch Pad 11

1 Apr 64

Fifth ABRES launch. The R/V a G.E. WAC-2 (Wake Analysis Control), impacted 0.88 NM long and 0.24 NM right of target in Sta 12 MILS net. Two decoy pods and Scientific Passenger Pod #2, containing 8 AFCRL experiments, were carried. The latter failed to eject. Two FLIP (Flight Launched Infrared Probes) were aboard and flight launched at T+150 and T+190 seconds respectively. A camera capsule was ejected and recovered.

ASSET PROGRAM

ASSET (Aerothermodynamic Structural System Evaluation Test) Booster: Thor 232 SLV II Sponsor: Air Force Test No: 3680 Launch Pad 17B	18 Sep 63	Launched ASV-1. A boost-glide reentry vehicle. This was the first in a series of six aerothermodynamic structural tests. The payload was a delta-form glider, 6-ft long, with 4-ft span, and lifting surface of 14 sq ft. It weighed 1100 lbs. The vehicle followed the planned trajectory but was not recovered.
ASSET (Aerothermodynamic Structural System Evaluation Test) Booster: Thor 240 SLV II Sponsor: Air Force Test No: 75 Launch Pad 17B	24 Mar 64	Launched ASV-2 ASSET glide vehicle to test structural integrity. Instability of booster second stage prevented accomplishment of test objective.

ET64-15759

ASSET PROGRAM

ASSET — 22 Jul 64

(Aerothermodynamic Structural System Evaluation Test)

Booster Thor SLV II

Sponsor Air Force
Test No. 1088
Launch Pad 17B

ASV-3 was a boost-glide re-entry vehicle designed to obtain temperature and pressure distribution data and to test materials and structural concepts during re-entry. The vehicle was a delta-winged craft 69 inches long, 33 inches high at base, with a wing span of 55 inches. It was boosted to an altitude of 40 mi and plunged back to earth at 13,000 mph and re-entry temperatures of 4000° F. Vehicle was recovered by para-rescue divers 1650 mi southeast of Cape Kennedy and taken aboard the ORV Coastal Crusader.

ASSET — 27 Oct 64

(Aerothermoelastic Structural System Evaluation Test)

Booster Thor SLV II

Sponsor Air Force
Test No. 5821
Launch Pad 17B

AEV-1, first of two tests to obtain data on structural behavior under re-entry conditions with emphasis on thermoelastic effects. This vehicle carried no flotation gear or recovery system. These were omitted to provide room for additional experiments.

ASSET PROGRAM (Contd)

ASSET (Aerothermoelastic Structural System Evaluation Test)

Booster	Thor 247 SLV II
Sponsor	Air Force
Test No.	7200
Launch Pad	17B

8 Dec 64

AEV-2 was the fifth Asset vehicle and the second aerothermoelastic test. It followed flight path within allowable limits to target area 844 NM down range. Vehicle recovery was not intended on this test.

ASSET (Aerothermodynamic Structural System Evaluation Test)

Booster	Two stage Thor 248 SLV II
Sponsor	Air Force
Test No.	0175
Launch Pad	17B

23 Feb 65

ASV-4 was the sixth and final vehicle in the Asset Program. It was dubbed the Polka-Dot Glider because it was covered with several thousand dots of various paints to help determine the heat experienced on different parts of the craft. The glider flew 2400 NM, reached a speed of 13,300 mph, and withstood temperatures up to 4200° F. This was farther, faster, and hotter than any previous Asset vehicle had traveled. Vehicle was not recovered and presumably sank on impact.

FIRE PROGRAM

PROJECT FIRE II	22 May 65	Project Fire involved lofting a 200-lb blunt-nosed spacecraft for re-entry into the earth atmosphere at speeds approximately 25,000 mph in order to study re-entry heating. The spacecraft reached a re-entry speed of 25,400 mph as it was propelled back into the earth's atmosphere near Ascension Island.
Booster	Atlas 264D	
Sponsor	NASA	
Test No.	0501	
Launch Pad	12	

ET65-9858

OAR PROBE EXPERIMENTS

OAR PROBE — 30 Jul 63

Booster: Blue Scout Jr.
AD-622
SLV-1B
Sponsor: Air Force

Test No: 1599
Launch Pad 18A

Purpose was to study radio noise and electromagnetic propogation, measure long wavelength cosmic radio background, topside electron density, and antenna (dipole) performance. 52-lb payload was boosted to height of 7485 NM. This was AFCRL experiment 1/21, the first of 9 OAR Probe Experiments.

OAR PROBE — 13 Mar 64

Booster: Blue Scout Jr.
AD-623
SLV-1B
Sponsor: Air Force

Test No: 550
Launch Pad 18A

This was AFCRL Experiment No. 9 the second of 9 OAR Probes. Its purpose was to study the magnetic fields in and above the ionosphere. The fourth stage of the booster failed to fire and payload failed to reach the required height to accomplish its mission.

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OAR PROBE EXPERIMENTS

OAR PROBE AFCRL-309	28 Jan 65	This was the third in a series of seven OAR probes. Purpose of the AFCRL-309 experiment was to study magnetic waves and solar winds beyond the Van Allen Radiation Belt. RSO destruct of booster at T+101 sec aborted the mission.
Booster	Blue Scout Jr. SLV-1B	
Sponsor	Air Force, Ofc of Aero-space Research	
Test No.	0002	
Launch Pad	18A	
OAR PROBE AFCRL-35	30 Mar 65	This was the fourth in a series of seven OAR probes. AFCRL-35 was a copper plated 46.5-lb package designed to measure variations in radiation trapped in the earths magnetic field. During its two hour climb to a 7,500 mi altitude and its two hour plunge back to earth, it relayed data on the radiation profile to ground stations.
Booster	Blue Scout Jr SLV-1B	
Sponsor	Air Force, Ofc of Aero-space Research	
Test No.	0292	
Launch Pad	18A	
OAR PROBE AFWL-14	9 Apr 65	This was the fifth in a series of seven OAR probes. AFWL-14 was a 30-lb package designed to measure radiation hazards to manned space flights. The package was a cylinder 14 inches long and 14 inches in diameter. It was boosted to an altitude of 15,800 SM but data returns were sporadic after the first 11 minutes of flight.
Booster	Blue Scout Jr SLV-1B	
Sponsor	Air Force, Ofc of Aero-space Research	
Test No.	0001	
Launch Pad	18A	
OAR PROBE AFCRL-335	12 May 65	This was the sixth of seven OAR probes. The AFCRL-335 package was boosted to an altitude of 8444 mi to ascertain the angle between the particle velocity vector and the magnetic field vector, determine the intensity of the magnetic field, and to obtain these objectives along the magnetic equatorial plane at attained altitude. Booster and payload performed satisfactorily.
Booster	Blue Scout Jr. SLV-1B	
Sponsor	Air Force, Ofc of Aero-space Research	
Test No.	0301	
Launch Pad	18A	

OAR PROBE EXPERIMENTS (Contd)

OAR PROBE AFWL-304	9 Jun 65	This was the seventh and final probe of the current series. The 30.65-lb package constituting AFWL-304 experiment carried imitation human tissue in a radiation test to determine the total ionizing radiation dose versus time produced in two shielded and two unshielded ion chambers while passing through the Van Allen Belt. Although the apogee reached of 10,897.4 miles was lower than programmed and telemetry blanked out temporarily during the return arc, the test provided the desired data.
Booster	Blue Scout Jr. SLV-1B	
Sponsor	Air Force, Ofc of Aerospace Research	
Test No.	0198	
Launch Pad	18A	

ET65-9858