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From small but daring beginnings a giant capability grew, and with it the safety of a nation in a menacing era. It is no easy task for the historian to select the most meaningful milestones in the history of the USAF missile program but some dates and acts do stand out, and they are recorded below . . .

TEN CRUCIAL YEARS

1954

February 10—Report of Strategic Missiles Evaluation Committee concluded that a beginning operational capability in long-range missiles could be attained within five to six years if proper management, funds, and priority were given the program and missile performance characteristics were relaxed.

February 26—Contract to develop a sustainer rocket engine for Project MX-1593 (Atlas) issued to North American Aviation Corp.

March 11—Trevor Gardner, Special Assistant to the Secretary of Air Force for Research and Development, submitted plan to accelerate attainment of an operational capability in the Atlas missile. Plan called for a preliminary operational capability (two launch sites and four operational missiles) by mid-1958 and an expanded capability comprising twenty launch sites by mid-1960.

March 19—Air Force Secretary Harold E. Talbott directed Gen. Nathan F. Twining, Air Force Chief of Staff, to take all necessary steps to accelerate the Atlas project.

March 23—General Twining approved Air Force Council recommendations to relax performance specifications for Atlas missile; accelerate Atlas program as much as possible; finance the program from Air Force funds; reorient it to achieve earliest possible operational capability; assign program responsibility to the Air Research and Development Command; and establish a special development-management organization to recommend measures to accelerate the project.

March—An Air Force study reemphasized feasibility and utility of earth satellites for reconnaissance, intelligence, and weather observation.

April 8—Air Force Headquarters established a new Assistant Chief of Staff for Guided Missiles—a move in-

terpreted as evidence of how far the Chief of Staff was prepared to deviate from normal staff procedures to emphasize and accord the program special treatment.

May 28—Air Force assigned its highest development priority to development of the Atlas.

June 21—Lt. Gen. Donald L. Putt, Air Force Deputy Chief of Staff for Development, assigned full responsibility for accelerating Atlas program to ARDC. This responsibility to be discharged through a field office which was to be established under command of a general officer on the West Coast. Procurement and contracting authority for the project to remain with Air Materiel Command.

July 1—Western Development Division, an "operating location" rather than staff agency of ARDC, established at Inglewood, Calif., under command of Brig. Gen. Bernard A. Schriever.

December—Configuration of Atlas missile established. Design changed from five to three engines.

1955

January 29—Contract assigning responsibility for technical direction and systems engineering of ICBM program to the Ramo-Wooldridge Corp. concluded.

September—President Eisenhower and the National Security Council stated that Atlas had highest R&D priority, and that this would be subject to change only by presidential action. Secretary of Defense directed to proceed with Atlas program with maximum urgency.

October 27—Contract to develop alternate ICBM configuration (XSM-68) issued Glenn L. Martin Co.

November 8—Defense Secretary Charles E. Wilson approved the "Air Force Plan for Simplifying Administrative Procedures for the ICBM" (Gillette Report) and took action to

Highlights of the USAF Missile Program

carry out its recommendations; he established the Office of the Secretary of Defense Ballistic Missiles Committee (OSD/BMC) with exclusive Defense Department authority to review and approve all ballistic missile program requirements; established Air Force prerogatives for construction of ballistic missile operational bases; authorized the Air Force to choose its own construction agency, perform all necessary design work, and establish construction completion dates.

November 8—Responsibility to develop intermediate-range ballistic missile (Thor) assigned to ARDC.

November 14—Air Force Secretary Donald A. Quarles established Air Force Ballistic Missile Committee with exclusive Air Force authority to review and approve all ballistic missile program requirements. Committee included the Assistant Air Force Secretaries for Research and Development (Trevor Gardner), Financial Management (Lyle S. Garlock), Materiel (Dudley C. Sharp), and Assistant Air Force Chief of Staff for Guided Missiles (Maj. Gen. Samuel R. Brentnall). Secretary Quarles was chairman.

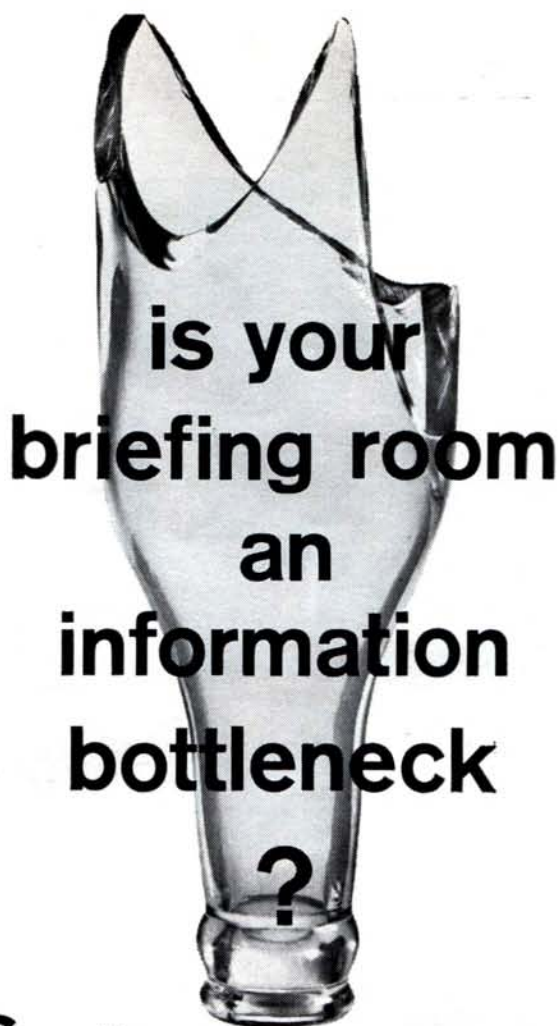
November—Memo from Secretary of Defense assigned highest priority to ICBM, added IRBM #1 (Thor) to Air Force ballistic missile program—programs to be carried out at maximum rate permitted by technology.

November 18—Gen. Thomas D. White, Air Force Vice Chief of Staff, assigned ARDC total responsibility for establishing an Initial Operational Capability in long-range missiles.

December 14—Western Development Division assigned Initial Operational Capability mission and responsibility to develop IRBM with priority second only to Atlas.

December 27—Letter contract to develop airframe for IRBM (Thor) awarded Douglas Aircraft Co.

December 28—Composition and
(Continued on page 244)



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TEN CRUCIAL YEARS

time-phasing of Initial Operational Capability buildup defined. Directive called for 120 missiles to be deployed on three prototype bases by January 1960.

1956

January 20—Coequal priority assigned to development of intermediate- and long-range ballistic missiles.

May—SAC and ARDC agreed on responsibilities for IRBMs. WDD would be responsible for developing, manning, training, and equipping operational units in accordance with SAC-ARDC planning. SAC would be responsible for overseas deployment of WDD-trained wings for further training to combat readiness. As units showed combat readiness, SAC would assume command jurisdiction.

July—The Air Force began development of the Agena space vehicle.

November 10—Air Force Ballistic Missile Committee approved new ballistic missile program in principle. Revised plan eliminated one wing (four squadrons) of Atlas missiles and stretched out time phasing of the buildup. New program called for four Atlas and four Titan squadrons to be fully deployed by March 1961.

November 16—Defense Secretary Wilson approved transfer of portion of Camp Cooke, Calif., from Department of Army to Air Force for use as first operational prototype missile base.

1957

January 25—Flight testing of Thor IRBM began thirteen months after award of airframe contract. Initial launch attempt unsuccessful due to propellant contamination and resultant thrust decay.

April 19—Second attempt to launch Thor missile failed.

May 21—Third unsuccessful flight test of Thor.

May 27—Francis E. Warren AFB, Wyo., approved for use as second operational prototype base for Initial Operational Capability program.

June 1—Western Development Division redesignated Air Force Ballistic Missile Division.

June 11—Flight testing of Series A Atlas missile began with unsuccessful attempt to launch Atlas 4A. Missile destroyed following thrust decay after twenty-five seconds of flight.

August—National Security Council approved DoD recommendation to reorient ballistic missile programs. Recommendations included: (1) combination of Thor-Jupiter programs and

joint Air Force-Army-OSD committee to evaluate both programs, (2) suspension or cancellation of Thor and Jupiter production to test requirements, (3) curtailment of contractor overtime except for flight test, (4) continuation of Atlas at highest priority, (5) reduction of Titan priority, and (6) recognition of slight delay in IRBM programs as result of above.

September 20—First fully successful flight test of Thor missile.

September 25—Second unsuccessful flight test of Series A Atlas missile (Atlas 6A).

October 4—First Soviet Sputnik placed in orbit.

October 11—Second successful flight test of Thor.

November 27—Air Force directed to proceed with operational deployment of both Thor and Jupiter missiles. First units to be ready for deployment by December 1958.

December 12—Expansion and acceleration of Atlas program to deploy nine operational squadrons by July 1962 directed.

December 17—First successful flight test of Series A Atlas missile (Atlas 12A) launched.

December 19—First completely successful test of Thor all-inertial guidance system. Accuracy far exceeded expectations.

1958

January 1—SAC-Mike established to conduct Initial Operational Capability planning; 672d Strategic Missile Squadron, using Thor, activated.

February 1—Governments of the US and United Kingdom announced agreement whereby IRBMs for four Thor squadrons would be supplied to the UK, the first squadron to be operational by December 1958.

February 27—Air Force authorized to proceed with research and development of solid-propelled Minuteman ICBM.

April 10—Coequal Defense Department priority assigned to Atlas, Titan, Thor, and Jupiter development programs.

April 24—Programmed operational force expanded to nine Atlas squadrons, the last seven to be deployed in 3x3 dispersal configuration. Incorporation of all-inertial guidance and hardening to twenty-five pounds per square inch directed, beginning with fifth squadron.

June 3—Flight testing of Series A Atlas missile (booster engines only) completed with successful launch of Atlas 15A, eighth in the series.

July 23—Deployment of Titan squadrons in 3x3 dispersal configuration approved. Squadrons to be located at Lowry AFB, Colo.; Ellsworth AFB, S. D.; and Mountain Home AFB, Idaho.

August 2—First successful flight test of Series B Atlas missile and first successful staging of long-range missile.

August 28—First fully closed-loop guided flight of long-range missile successfully flown (Atlas 5B).

October 4—Cooke AFB, Calif., renamed in honor of the late Gen. Hoyt S. Vandenberg, former Chief of Staff.

October 9—Boeing Airplane Co. approved as assembly and test contractor for Minuteman long-range missile.

October 11—Thor-Able launched the NASA Pioneer I satellite to a new altitude record of 71,300 statute miles.

November 28—First successful full-range Atlas flight, 5,506 nautical miles downrange of AFMTC.

December 18—Project Score, a complete four-ton Atlas with a communications repeater satellite, was placed into orbit broadcasting to the world a Christmas message from President Eisenhower, the first time the human voice was beamed from space.

1959

February 6—First successful Titan I flight test.

February 28—Air Force Discoverer I, boosted by a Thor-Agena, became the world's first polar-orbiting satellite.

April 13—Air Force Discoverer II became the world's first satellite to be stabilized in orbit in all three axes, to be maneuvered in orbit on command from earth, to separate a reentry vehicle on command, and to send its reentry vehicle back to earth. The capsule was not recovered.

April 14—Flight testing of Series D (first operational configuration) Atlas missile commenced with unsuccessful launch of Atlas 3D.

April 16—First Thor operational training launch successfully conducted by a Royal Air Force crew at Vandenberg AFB, Calif.

June—First Thor operational squadron transferred to RAF.

July 21—First full-scale test of ablation reentry vehicle conducted with successful launch of Atlas 8C.

July 28—First successful flight test of Series D Atlas missile (Atlas 11D) launched.

September 1—First operational At-
(Continued on page 248)



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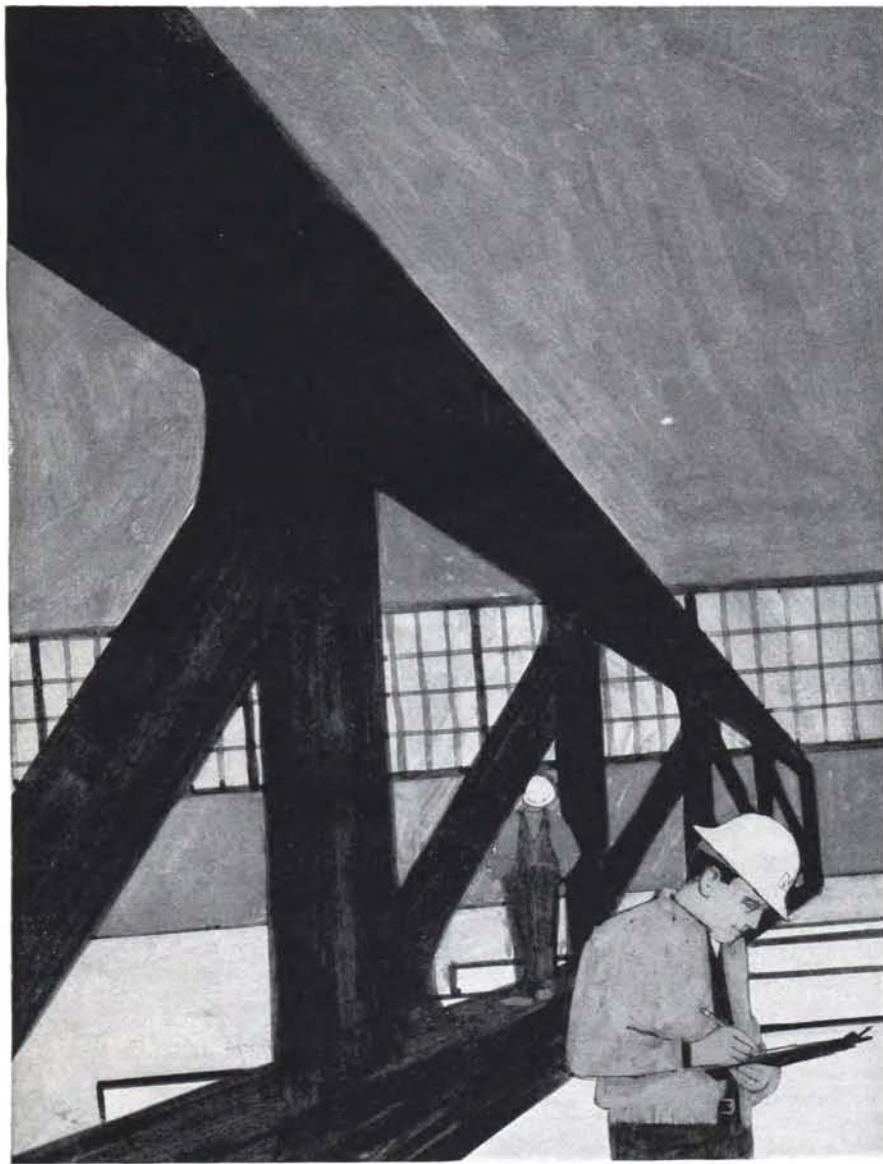
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TEN CRUCIAL YEARS

las complex (576A) transferred to SAC at Vandenberg AFB, Calif.

September 4—"DX" rating (highest national priority) assigned to Minuteman program.

September 9—First Strategic Air Command operational launch of Atlas-D missile successfully conducted, with contractor assistance, from Vandenberg AFB (Complex 576A). Achievement signified successful fulfillment of objectives to attain Initial Operational Capability in Atlas missile in final stages of missile development program.

September 15—First silo launch of full-scale Minuteman missile successfully conducted using dummy second and third stages.

December—Third Thor squadron deployed and turned over to RAF.

December—Flight testing of Thor missile completed.

December 9—British Air Ministry announced attainment of operational status in Thor missile.

1960

January 1—Executive Management Responsibility for Thor missile transferred from Air Force Ballistic Missile Division to San Bernardino Air Materiel Area, marking successful culmination of Thor research-and-development program.

January 13—Atlas 50D accepted as the booster for the NASA manned spaceflight program, Project Mercury.

February 26—First successful Atlas-Agena launch.

March 11—Thor-Able IV launched the NASA Pioneer V resulting in record-setting transmission of radiation and magnetic-field measurements from 22 million miles.

April 1—Thor-Able successfully placed in orbit NASA's Tiros I weather satellite, thus marking a new era in meteorology.

April 13—Thor-Able-Star successfully placed into orbit the Navy's Transit-1B navigational satellite.

May 20—Atlas 56D successfully flown 7,859 nautical miles (9,040 statute miles), the longest US missile flight to date.

July—Flight-test facilities for Minuteman missile completed at Atlantic Missile Range.

July—Boeing Airplane Co. selected as integrating contractor for installation and checkout of Minuteman operational facilities and awarded contract.

July—Phase-in of Aerospace Corp. to perform systems engineering for Air Force space programs begun.

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9404

August 10—Launch by Thor-Agena-A of Discoverer XIII, whose capsule was the first man-made object to be recovered from space.

August 12—Thor-Delta launched NASA's Echo I, the first passive-communications satellite.

August 18—Launch by Thor-Agena-A of Discoverer XIV, whose capsule was the first man-made object to be recovered in midair.

August 30—First Atlas-D operational squadron, 564th Strategic Missile Squadron at Warren AFB, Wyo., transferred to SAC.

1961

February 1—First flight test of Minuteman missile successfully launched with all stages and systems operating. This was first time a first test missile was launched with all systems and stages functioning.

February 24—First successful flight test of Series E Atlas missile (Atlas 9E).

March—Construction of Minuteman operational facilities at Malmstrom AFB, Mont., begun.

March 4—Second Atlas operational squadron, 565th Strategic Missile Squadron at Warren AFB, Wyo., transferred to SAC.

March 30—Deployment of Atlas-D operational squadrons completed with turnover of 566th Strategic Missile Squadron to the Strategic Air Command at Offutt AFB, Neb.

March 31—Mobile Minuteman force (three squadrons) deferred and three fixed-base squadrons added.

April 1—Air Force Ballistic Missile Division and Ballistic Missiles Center discontinued. Ballistic Systems Division and Space Systems Division established under command of Maj. Gen. Thomas P. Gerrity and Maj. Gen. Osmond J. Ritland, respectively. Both divisions placed under command of Maj. Gen. Howell M. Estes, Jr., Air Force Systems Command Deputy Commander for Aerospace Systems.

May 3—Titan I first successfully launched from an underground silo.

September 28—First Atlas-E operational squadron, 567th Strategic Missile Squadron at Fairchild AFB, Wash., turned over to SAC.

November 17—At Cape Canaveral, Fla., a Minuteman made its first successful untethered launch from a silo.

December 15—The Air Force Titan III Standard Space Launch Vehicle Program begun by Deputy Commander for Aerospace Systems (DCAS), now Air Force Space Systems Division (SSD).

1962

February 20—An Atlas-B launched Marine Lt. Col. John Glenn in the first Project Mercury orbital flight.

March 16—First successful Titan II flight test.

April 26—An Atlas-launched NASA Ranger IV delivered the first US instrument package on the moon.

May—First Titan I operational squadron transferred to SAC at Lowry AFB, Colo.

May 24—An Atlas launched Navy Lt. Cmdr. M. Scott Carpenter into orbit in Project Mercury.

July 10—Thor-Delta launched Telstar, the first commercial international communications satellite.

August 26—An Atlas-Agena-B booster combination launched the NASA Mariner II space probe which passed within 21,000 miles of Venus.

October 3—An Atlas launched the third American into orbit in Project Mercury, Navy Lt. Cmdr. Walter Schirra, Jr.

1963

February 28—First operational Minuteman squadron transferred to SAC at Malmstrom AFB, Mont.

May 15—An Atlas boosted Air Force Maj. Gordon Cooper, Jr., into space for twenty-two trips around the earth in the fourth and final Project Mercury manned orbital flight.

June 8—First Titan II operational squadron, the 570th Strategic Missile Squadron, activated at Davis-Monthan AFB, Ariz., and turned over to the Strategic Air Command.

June 15—200th Thor launch was recorded.

July 20—100th Agena launch was recorded.

September 18—World's largest solid rocket motor, the USAF Titan III solid booster, was fired at United Technology Center's San Jose, Calif., test facility, producing more than 1,000,000 pounds of thrust.

September 18—Asset, an Air Force experimental glide-reentry vehicle, was successfully launched by the Thor Standard Launch Vehicle (SLV-II).

October 25—The Air Force Titan II Gemini Launch Vehicle was accepted for use as the booster in NASA's two-man Gemini manned spaceflight planned for 1965.

December 28—Sixth operational Titan II squadron transferred to SAC at Little Rock AFB, Ark. With this turnover, the entire Titan ICBM force was operational and had been transferred to the using command.—END

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