

THE Day of the Flight ~~Being~~ Cleared  
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CAPE CANAVERAL -- After days of intense preparation the giant Atlas launch vehicle stood on the pad ready for flight, the Mercury spacecraft riding atop its monolithic height. The gantry still enclosed it. Scores of technicians completed the last minute details of checking and rechecking.

The astronaut was awakened at 2 a.m. and dressed for the first American orbital flight around the earth -- a flight for which he had spent more than two years training under the direction of the National Aeronautics and Space Administration.

Medical sensors were attached to his body to record heart beat, respiration and body temperature <sup>and blood pressure.</sup> After getting into his space suit he entered a medical van equipped with a "vibrating chair" to insure normal circulation. In the van he was also given last minute medical checks. A little after 5 a.m. he was taken to the launch site. At 6:30 a.m. he took the gantry elevator to the third level, entered the spacecraft and with the help of the astronaut medical official and technicians, fitted himself into the astronaut couch.

Under his Mercury spacecraft the big Atlas was poised for the journey into space. The Atlas is the oldest, most tried and tested <sup>of</sup> American launch vehicles. Atlas stands 82.5 feet (25 meters) high, is 10 feet (3 meters) in diameter and at launch weighs 260,000 pounds (119,000 kilograms). It is powered by two booster engines producing 150,000 pounds (68,000 kilograms) of thrust each and by one sustainer engine producing 60,000 pounds (27,200 kilograms) of thrust. It is fueled with kerosene and liquid oxygen.

In the Mercury Control Center and the launch pad blockhouse the countdown was going on. On his couch the astronaut made his pre-flight checks of the instruments over which he had manual control -- communications, the escape system, temperature, horizon scanner units, retro rockets, repressurization, flight instruments and spacecraft attitude control. He was in voice communication with two other astronauts, one in the blockhouse and the other in the control center. They were friends and friendly voices. They knew the program equally as well as he and he would be in

voice contact with them for most of his flight.

With the final checks completed, the technicians bolted down the hatch of the spacecraft, filled the cabin with oxygen and made a final inspection of the exterior. As they left the gantry was pulled back and the final stages of the countdown began.

The technicians in the blockhouse were responsible for the actual launching of Mercury-Atlas. Once the vehicle left the pad, control passed to the Mercury Control Center, a large, instrumented room at Cape Canaveral. At one end is a large parabolically curved <sup>World</sup> map marked with the plan of the orbital flight.

In front of the flight plan a battery of instruments and panels were manned by a score of launch technicians. There, also, <sup>was</sup> ~~was the Range Safety Officer and the Flight Controller.~~ <sup>Director</sup> Back of them and separated by a glass partition, were some 50 observers. Directly overhead were two closed-circuit television sets focused on the launching pad. The Flight Controller, <sup>Director and his Team of Flight Controllers</sup> ~~with the Safety Officer and the technicians~~ had responsibility for the following:

Monitoring the flight from launch to re-entry; monitoring the astronaut and spacecraft status; initiating an abort (escape) decision; determining procedures which would follow an abort; monitoring re-entry; informing astronaut on mission progress; coordinating communications facilities; informing recovery forces.

The countdown for the first orbital flight followed normal procedures. In the final minutes the various stations in the blockhouse gave the favorable reply -- "Medical, go," "Telemetry, go," "Pressure, go," and so on. After the last second, the Atlas vehicle lifted slowly into the air, its base shrouded in flames and smoke. Rapidly accelerating under full power, it arched out over the Atlantic ocean.

Launch time in rocketry parlance is "T-time." At T plus 2 minutes the space vehicle was at an altitude of 210,000 feet (61,750 meters) and 45 miles (75 kilometers) down range. The booster engines burned out and dropped. ~~The escape tower to launch and fall-powered flight was jettisoned.~~ The escape tower was jettisoned.

At T plus 5 minutes the vehicle was at orbital altitude, approximately 90 miles (150 kilometers), <sup>high</sup> some 435 miles (7,250 kilometers) down range and its speed was 17,500 miles (28,160 kilometers) an hour. The sustainer engine burned out, and <sup>(was turned)</sup> using attitude jets, ~~the Mercury spacecraft~~ the Mercury spacecraft <sup>into</sup> orbital position, that is, blunt nose forward as opposed to the launch position of blunt nose downward.

bit the astronaut had ~~almost~~ complete control over the spacecraft. He ~~could~~ continually correct <sup>it</sup> its attitude as necessary. He ~~could~~ lock <sup>it</sup> out the viewing port and into his ~~telescope~~ periscope, reporting what he saw to the Control Center and to the tracking stations along the way -- cloud formations, storms, coastlines and continents, various celestial bodies. He checked other controls constantly. He ate and drank from squeeze tubes.

His route took him over <sup>the North Atlantic ocean,</sup> ~~England, France, Italy,~~ Africa (~~Spain~~), the Indian Ocean, <sup>Australia</sup> ~~the Pacific~~, the Pacific and back to the Western Coast of North America. At T plus 90 minutes he completed his first orbit, crossing southeast of Bermuda. At T plus 180 minutes he completed his second orbit, crossing several hundred miles farther south of Bermuda.

At T plus 250 minutes (approximately) the Mercury spacecraft was 370 miles (6,165 kilometers) west of the California coast and the astronaut prepared for his 3,000-mile (50,000-kilometer) descent course back into the atmosphere. He tilted the blunt nose of the Mercury upward <sup>35</sup> ~~about~~ degrees and fired the retro rockets which slowed his speed and dropped the spacecraft out of orbit. He then <sup>changed</sup> ~~corrected~~ his <sup>spacecraft</sup> attitude so that the blunt, heat-ablating nose of Mercury was pointing <sup>correctly</sup> ~~downward~~. He was ready for re-entry and recovery.