

# Mercury Atlas

**History:** In October 1945 the USAAC sought proposals for a new missile system and a contract was issued to Consolidated Vultee (later Convair) to develop a system called MX-774. Three important innovations were a thin skinned rocket in which the pressure of the fuel in the tanks kept it from collapsing, a detachable payload section and gimballed rocket engines that gave more precise steering than the exhaust deflector vanes that had been pioneered in the German A-4 missile. Despite these innovations the project was cancelled in 1947 when priority was given to development of unmanned flying missiles like the Snark and Matador. Convair continued to develop the new missile and test fired three of them that had been ordered. These launches were not successful but Convair continued with project research and developed a new innovation, the 'stage-and-a-half' propulsion system in which three engines were used for launch, all fuelled from the same tanks. After the initial flight stage the two outer engines shut down and fell away to save weight while the central sustainer engine continued to fire.

In 1951, with the outbreak of the Korean War and rising Cold War tensions, Convair received a new contract from the USAF to develop a long range ballistic missile capable of carrying a nuclear warhead, incorporating the main features of the MX-774. The project was given the name Atlas. In September 1955 the project was given the highest national priority and the first Atlas launch took place on 14 April 1959, unsuccessfully. Despite this setback the missile system went into service as the United States' first Inter Continental Ballistic Missile in 1959. Atlas D, E and Fs continued in front line service until the mid 1960s when they were eclipsed by more advanced missiles such as the Titan and Minuteman. However, by then the Atlas had become the first stage for a series of increasingly useful launch vehicles for various types of space craft. They included the Atlas-Able, Atlas-Agena and Atlas-Centaur and, more recently, the Atlas II-Centaur and Atlas V that was developed by Lockheed Martin and introduced to service in 1999.

The second stage of the United States' manned space program was the Mercury-Atlas system. The Atlas rocket was a standard Atlas D adapted to carry the Mercury capsule with the same engine thrust and certain safety features introduced to protect the astronaut. There were nine Mercury-Atlas flights between July 1960 and May 1963, each one attempting to further exploration of the capabilities of the system and the effects of space flight on a human being. The first five flights were conducted to test the system and the following four were manned missions.

The first test on 29 July 1960 was planned to be a sub-orbital flight to test the system but the Atlas exploded shortly after lift-off. The second test firing on 21 February 1961 was successfully completed and the project moved on to the next stage which was to test the Mercury capsule in orbit with a 'mechanical astronaut' on board. The first test on 25 April 1961 was another failure; the Atlas failed to manoeuvre properly, the abort systems pulled the Mercury capsule free and the rocket was destroyed by the safety officer. A similar test on 13 September 1961 went more successfully and the capsule returned to earth after one



orbit. The final test flight took place on 21 November 1961 with a chimpanzee on board, which was successfully returned to earth after two orbits.

There were four manned Atlas-Mercury flights, conducted after two manned sub-orbital flights using the Mercury-Redstone system. The first, named *Freedom 7* took place on 20 February 1962 when John Glenn made three orbits of the earth in a flight time of four hours and 43 minutes. The second flight, *Aurora 7*, with Scott Carpenter, took place on 24 May 1962 and made three orbits that lasted four hours and 56 minutes. The third flight on 24 May 1962 was *Sigma 7*, with Walter Schirra, who made almost six orbits before landing in the Pacific Ocean after a flight time of 9 hours and 13 minutes. The fourth flight on 15 October 1962, *Faith 7*, was flown by Gordon Cooper who made 22 orbits before landing after 34 hours and 19 minutes.

*Sigma 7* had tested the small Mercury capsule to its limits and, by the time Cooper landed, virtually all the capsule's systems had failed so he had to make a manually initiated re-entry. As a result a planned longer Mercury-Atlas flight, to be flown by Alan Shepherd to challenge the Soviet space endurance record, was cancelled. The United States manned space effort then moved onto the Gemini-Titan project.

**Data:** Engines two Rocketdyne XLR-89-NA5 booster engines of 166,440kg (367,000lb) thrust and one Rocketdyne XLR-105-NA5 sustainer engine of 26,755kg (59,000lb) thrust. Height 29.0m (95.3ft). Diameter 3.05m (10ft). Weight 117,915kg (260,000lb).

**The kit:** New Ware 1/144

When it was quite young my father told me stories about what it was like to follow on the radio the progress of Kingsford-Smith and Ulm's pioneering flight across the Pacific in the *Southern Cross*. How exciting, then, for us to be sitting around the radio in October 1962 listening to the short-wave radio broadcast of the launch of *Friendship 7*. It was the middle of the night but nobody was going to sleep, not my father and I anyhow, when something as epic as that was taking place. I'd already started making scale models by then but there were no kits of the Mercury missions although Revell released a very nice set of the Mercury and Gemini capsules in 1/48 a few years later. I've harboured a desire to make models of all the American manned spacecraft since that time but only the arrival of broadband has given me the opportunity to track down limited run kits of them.

*New Ware* in the Czech Republic offer Mercury-Redstone and Mercury-Atlas kits in 1/144 resin. They are not cheap but, amazingly, they seem to be the only kits available in this scale. I've since tracked down American kits in 1/72 but 1/144 is preferable because it allows me to stand the Mercury-Atlas beside the Airfix Saturn 1b and Saturn V kits to give a sense of the rapid developments that took place in rocket technology in the 1960s.

The Mercury-Atlas kit came in an alarmingly small box, but then it is a small model. (As somebody pointed out, the Mercury-Atlas, minus its escape tower, would fit into the cargo bay of a Space Shuttle.) There are only a handful of parts but they are beautifully cast with very good detail. The only disappointment is the engraved detail on the Atlas that looks very nice but is not apparent on any photos I've seen. I'm sure that there are ways to overcome this problem but I preferred not to try anything in case I made a blunder and wasted a lot of money. Construction is very simple and takes perhaps 20 minutes, including liberating the kit parts from the resin plugs. The most difficult part is assembling the etched brass escape tower but *New Ware* give you two, one to practise on and one to get right. The body of the Atlas is bare metal and the Mercury capsule is very dark blue but not quite black. The decals are excellent and go on beautifully. The result is an excellent little model.

