

Air and Space this Week

Item of the Week

Walter Marty Schirra, Jr.

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This week's Item focuses on Wally Schirra, the only astronaut who flew in all three of NASA's big manned Space programs: Mercury, Gemini, and Apollo. He was a fierce warrior, a steel-nerved test pilot/astronaut, and a successful businessman. He would have been 100 on Sunday, March 12, 2023.

PRE-NASA LIFE

Walter Marty Schirra Jr., known widely as "Wally," was born on March 12, 1923, (100 year ago this week!), in Hackensack, New Jersey. He was surrounded by aviation from a very early age. His father flew with the RCAF in WWI and became a barnstormer afterward; his mother performed wing-walking feats in their air shows. The Schirra family settled in New Jersey. He was a good student, and went into the ROTC program at the predecessor of the New Jersey Institute of Technology, and was there when Pearl Harbor happened. He decided to move over to a service academy to finish his college degree before entering service. His father pressed for West Point, but Wally chose Annapolis. He graduated in 1945, and was commissioned in the US Navy on June 6, 1945. He shipped out on the cruiser *Alaska* just before V-J Day. After a short post-War stint in China, he came back to the U.S. to train to be a naval aviator.

Schirra won his wings in 1948 and began squadron life flying the F8F Bearcat, a hot propellor-driven interceptor. He then transitioned to jets, first with the P-80 Shooting Star, and then with the F9F Panther. His squadron was based aboard the aircraft carrier *USS Midway*, which was in the Mediterranean when hostilities in Korea broke out. He wanted to fly combat, and successfully applied for the exchange program, flying in a new U.S. Air Force squadron equipped with F-84 Thunderjets.

Wally's squadron deployed to Japan, during which he flew 90 combat missions, and scored two victories over MiG-15s.

After the Korean Armistice was signed, Schirra became a test pilot at the Naval Ordnance Test Station at China Lake, California, testing various new weapon systems, including the new Sidewinder heat seeking missile (he was the first to fly with, fire, and almost be shot down by, a live Sidewinder!). Naval flight test had numerous locations in those days, and Schirra moved to different ones to test specific aircraft and systems. He helped test the F7U Cutlass, the F3H Demon, and others, and received further training, which allowed him to apply (successfully) to

the Naval Test Pilot School at Patuxent, where he tested and flew numerous other of the latest naval aircraft.

The call went out from NASA in early 1959 for test pilots to apply to become Project Mercury Astronauts. Squadron and unit commanders were asked to forward the names of their best precision flyers. Wally Schirra was one of the 110 who made the first cut. We would succeed in the vigorous and invasive test process and was selected to become one of the “Original Seven” astronauts for the Mercury program, announced in April, 1959.

NASA ASTRONAUT

MERCURY BEFORE SCHIRRA’S FLIGHT

The Mercury astronauts were outstanding test pilots, most with engineering degrees and military experience. They were expected to provide meaningful input into the design and function of the Mercury capsule and the systems that support it. But Mercury in its entirety is too large for one person to understand in detail, and also to train to use it, so the astronauts specialized. Schirra’s area of responsibility was the spacesuit and the capsule life-support system, dovetailing with Glenn’s capsule design area.

The first two flights were by Shepard and Grissom, using the Redstone booster that didn’t have enough oomph to put them in orbit. Their sub-orbital flights did provide a preparation opportunity to develop the technology and practices needed to get us to the Moon. The biggest setback occurred at the end of Gus Grissom’s flight, when the capsule escape hatch blew out prematurely. The capsule flooded and sank, and Grissom almost did, too. He was snagged by the rescue helicopter just in the nick of time. Was there some sort of flaw in the capsule escape hatch control that caused the hatch to blow, or did Gus somehow screw it up? Grissom swore he did not pull or even bump the hatch ejection control.

The Atlas missile was used for the rest of the Mercury series, starting with John Glenn’s “First American in Orbit” flight. Glenn’s flight went well, but there were some significant spacecraft glitches, such as the (thankfully false) signal indicating the critical heat shield was loose.

Deke Slayton was supposed to be next, with Schirra as his backup. But Slayton developed a medical issue that grounded him, and Scott Carpenter replaced him. Wally would get the fifth manned Mercury. Deke would manage the Astronaut Corps.

Slayton now reported to the Mercury program manager was Chris Kraft, a very tough-minded guy. It was best to not get cross-wise with him.

Scott Carpenter was an interesting character. The medicos loved him, because he was the fittest among the Seven; only Glenn came close. He was a capable, experienced pilot, but I believe he had a touch of a dreamer/poet in him, too.

The first design of the Mercury capsule had no window or other provision for seeing outside. There admittedly wasn’t too much room for one or even a need for one, but the taunts of their

test pilot buddies who called them “Spam in the can” rather than real pilots hurt enough for the Mercury guys to insist on an external view, even if it was only more like a periscope.

Carpenter had a very full flight task list, and his attitude control system was giving him fits. He also was using it far more than Glenn had and Schirra would, perhaps distracted a bit by the view. He overshot the landing zone significantly, and did not fully complete his assigned tasks. But at least his capsule escape hatch operated as designed.

Kraft was very unhappy. Carpenter did not fly in Space again.

SIGMA 7

Wally Schirra was the polar opposite of Carpenter in terms of approach to mission. His *Sigma 7* capsule was launched on October 3, 1962. He accomplished the system tests assigned promptly, and then worked to demonstrate that the capsule could be controlled precisely by the pilot. Schirra was able to manually position the capsule absolutely correctly for its retro-rocket sequence, and came down only five miles from the pick-up carrier. In all respects, the flight of Schirra and *Sigma 7* was a wonderful shakedown of both equipment and control.

Schirra did not leave the capsule until it was recovered by helicopter and taken to the *USS Kearsarge*. Once there, Schirra blew the hatch. It operated properly, but left a distinctive bruise, one that Grissom did not have. Score one for Gus.

Kraft was very happy. Schirra would fly for Gemini.

GEMINI 6A

The first two numbered Gemini missions were non-crewed tests of the capsule and Titan booster. *Gemini 3* was to be manned by Alan Shepard and Tom Stafford. However, Shepard developed Meniere’s disease, a disorder of the inner ear, and was grounded. Schirra was put on the *Gemini 3* back-up team, along with Stafford; Grissom and John Young would fly *Gemini 3*. Deke Slayton by this time had developed his “three mission” pattern for astronaut rotation: you would train as a back-up crew member for a given flight, and then fly the mission third after the one you backed-up. This system gave the astronauts real-time training, then time to train for their specific flight.

Backing-up the *Gemini 3* crew meant that Schirra and Stafford would be the prime crew for *Gemini 6*. Each Gemini mission was designed to develop the skills, technology, and experience set needed for Apollo. *Gemini 4* (White and McDivitt) and *Gemini 5* (Cooper and Conrad) went well, and soon it was Schirra and Stafford’s turn. The first US spacewalk was Ed White on *Gemini 4*, and *Gemini 5* tested new fuel cell technology and extended the capsule livability to a week or more.

The initial plan for *Gemini 6* was to perform the first orbital rendezvous and docking, with an Agena target vehicle that would be launched separately, just ahead of *Gemini 6*. *Gemini 7*’s mission would be a two-week stay in LEO, to demonstrate the ability of capsule life-support systems to operate effectively for the time it will take for a Moon landing mission.

Alas, on October 25, 1965, the Agena launch vehicle failed, and the Agena target vehicle was destroyed. Wally and Tom were already aboard *Gemini 6* but the mission was postponed for a couple of months.

A replacement Agena would not be ready in time for the Gemini launch schedule. To compensate, Kraft and others decided to go ahead and launch *Gemini 7*, and then launch *Gemini 6*, which could perform a rendezvous with it. There was no chance for an actual docking, but demonstrating that skill could come with *Gemini 8*. The mission was redesignated *Gemini 6A*.

Gemini 7 was launched successfully on December 4, 1965. *Gemini 6A* was scheduled for launch on December 12, at 9:54 AM EST. The appointed moment arrived, the rocket ignited, and then almost immediately shut down. "Almost" means about 1.5 seconds.

No manned mission had suffered an abort on the pad before, or has since.

The emergency protocol for a launch abort after ignition called for immediate use of the capsule ejection seats. The Titan booster was loaded with very volatile fuel, a pad explosion would have a 250-meter-wide fireball. The ejection charge was strong enough for them to clear the flames, but the astronauts would almost certainly be injured and burned (the capsule atmosphere was pure oxygen), the capsule damaged beyond repair, the booster wrecked or immolated, and the Apollo program set back by many months. **If** Schirra had ejected at the first sign of trouble.

The noise of engine ignition was unmistakable, but Schirra had not felt the motion of the rocket actually leaving the pad. Therefore, he chose not to activate the ejection mechanism. The booster didn't explode, and all the bad things in the previous paragraph did not happen.

The shut-down had been caused by a minor electrical problem, easily fixed. But when the performance telemetry and hardware was examined closely, the engineers were shocked to see that one of the booster's two engines was in the process of failing when the electrical problem shut both down. A cover had been left on its oxidizer plumbing.

The normal launch sequencing was for lift-off to occur 3.2 seconds after engine ignition. The electrical cut-off came at 1.5 seconds after ignition, and the engine two cut-off would have occurred 2.2 seconds after ignition. So neither problem would have allowed the rocket to lift off, but in any case, Wally was a hero.

The *Gemini 6A* spacecraft launched successfully three days later, at 8:37 AM EST on December 15. After a series of thruster burns, it was able to rendezvous with *Gemini 7* after only four orbits. Schirra gave the fine-scale maneuvering system a thorough check-out, literally flying close circles around *Gemini 7*. Schirra and Stafford, and *Gemini 7*'s Lovell, were all Annapolis grads, while Frank Borman was a West Pointer. The annual Army-Navy football game had been played a few weeks earlier to a 7-7 tie. So Wally ribbed Frank by holding up a "Beat Army" sign in his capsule window for Frank (and Jim) to see.

Wally and Tom had another trick up their sleeve. They reported a UFO passing by in a polar orbit, heading northward. The next thing the mission capcom heard was Schirra tooting out “Jingle Bells” on a harmonica, while Stafford accompanied him with sleigh bells.

Wally and Tom were all business with capsule operations though, and performed their retrorocket sequencing accurately, landing only 11 miles from the *USS Wasp*.

Once again, Chris Kraft was *really* happy. Wally Schirra’s lack of action had literally saved the day. He would not only fly for Apollo, he would fly the second crewed Apollo mission, a repeat of the LEO test planned for *Apollo 1*, to be crewed by *Gemini 4*’s Ed White, *Gemini 3*’s Gus Grissom, and rookie Roger Chaffee.

I can still remember to body-blow punch on hearing of the capsule test fire that killed the *Apollo 1* crew.

The accident revealed a number of design flaws that had to be corrected before a crewed Apollo capsule could be flown, a process that would take almost two years. Schirra, along with rookies Donn Eisele and Walter Cunningham, would fly it. In the renumbered scheme for Apollo, it would be ...

APOLLO 7

Schirra was a test pilot’s test pilot, and absolutely the right person to command the first crewed shake-down mission of the complex Apollo Command/Service capsule. He was rigidly focused on the engineering test part of the mission. But Apollo was more than just an engineering accomplishment; as a Moon landing “before the decade was out” came closer to becoming a reality, Apollo took on an engaging and symbolic component, one that required a lot of image management and public relations.

All crewed mission profiles are crammed full of action items (well, maybe not *Gemini 7*!), and *Apollo 7* was no exception. The astronaut’s workload was going to be heavy.

Launch day was October 11, 1968. It was a windy day, and Schirra objected to launch because of the danger such winds imposed. He was overruled. The launch went off on schedule and was successful. The first major task was to demonstrate a separation from the Saturn’s fourth stage, followed by a simulated extraction of a lunar module from it, an essential part of the Apollo Moon landing mission profile. The practice rendezvous/docking was successful. On the second day of the mission, the crew conducted the first live TV interview from Space. It was a Big Deal to the public, and was on the task list, but it was a diversion from flight test. Then the crew came down with head colds, particularly uncomfortable in a space capsule environment. The crew was really hurting, especially Schirra, but the workload, if anything, increased. The crew put up with the items that were important to the mission, but became increasingly reluctant to perform tasks or tests that were not mission-critical or that were being added at the last minute.

The last straw came just before reentry. Mission protocol called for full spacesuits with helmets be worn during re-entry. The suits were no problem, but the sealed helmet would really

aggravate their cold-caused congestion, so they [declined to wear them](#), even in the face of a direct order from Kraft to do so.

The mission had been a resounding success, but Chris Kraft was extremely upset at the crew's insubordination, and vowed that none of the *Apollo 7* guys would fly in Space again, and they didn't. Schirra had earlier announced plans to retire after the flight anyway, but ... Eisele resigned from the Astronaut Corp in 1970, but stayed at NASA Langley for two more years, retiring as soon as he was eligible. Cunningham was made leader of the Astronaut's Office Skylab division, and had been led to believe he would command the first *Skylab* crew, but when that went to Pete Conrad. Cunningham then resigned from the Astronaut Corps, too, in 1971. Previous crews had received a DFC upon their return; Schirra had ones from both his Mercury and his Gemini missions. But the *Apollo 7* crew were not similarly recognized, until NASA Administrator Michael Griffin decided to belatedly give the crew their DFCs. By then, both Schirra and Eisele had passed away. But Chris Kraft did send a nice conciliatory video message to the ceremony.

The Smithsonian National Air and Space Museum has awarded two major annual awards in aviation and Space exploration since 1985, one for outstanding achievement in the previous year, and one for outstanding career achievement. It was originally named the "[NASM Trophy](#)," but the name was changed in 2020 to the Michael Collins Trophy, in honor of the Apollo 11 astronaut and first Director of NASM. The 2010 awardees were Captain Sullenberger and the crew of USAirways Flight 1549 (annual) and Christopher C. Kraft, Jr. (career). We were experimenting with live on-line webcasting, and I was involved with providing logistical and programming support for one of the first, associated with this Trophy presentation. I worked with Sully's crew (delightful folks) and I was able to arrange for flight controller Patrick Harten to call into the live program – it was the first time that he and co-pilot Jeff Skiles had talked together since the ditching. I also got some time to visit with Chris Kraft. He was no doubt a hard-nosed manager, but I found him to be quite a personable guy, and a font on knowledge about Apollo and manned Spaceflight. Most definitely two worthy choices!

POST-NASA LIFE

Captain Schirra resigned from NASA and the Navy on July 1, 1969. His final task at NASA was to investigate the crash of the *Lunar Landing Research Vehicle* that [almost killed](#) Neil Armstrong.

His first position after NASA was consultant to CBS News, from 1969 to 1975. He was the "color commentator" for Walter Cronkite's extensive Moon coverage on CBS and other "scienc-y" things. Later, he did ads for the same decongestant the *Apollo 7* astronauts used to fight their colds.

He also had considerable success in business. He led a financial investment and leasing company, then led an environmental control company. He was involved in the construction of the Alaska Pipeline, and had an extensive consulting practice. Like many astronauts, he served on the Boards of a variety of companies, and was on an advisory board for the U.S. National Park system.

Walter M. Schirra was recognized by numerous awards, trophies, and other accolades. Notable among them are his military decorations: the DSM, and the DFC with three gold stars. He received a number of NASA-related awards, including sharing the 1962 Collier Trophy, and was a fellow of the Society of Experimental Test Pilots. He's in all the aviation and Space-related Halls of Fame, and the New Jersey Hall of Fame, too. The Navy named a cargo ship after him.

The Mercury astronauts made one more collective final service to the American public. They established the Mercury Seven Foundation, now known as the [Astronaut Scholarship Foundation](#), which awards college scholarships to science and engineering students.

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Where are Schirra's capsules now?

Schirra's spacecraft all found good homes. *Sigma 7* is on display at the Kennedy Space Center, the *Gemini VI* capsule is on display at the Stafford Air & Space Museum in Oklahoma, and the *Apollo 7* capsule is on display at the Frontiers of Flight Museum in Dallas.

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DIDJA KNOW?

The Mercury astronauts were allowed to name their capsules. Each decided on an inspiring name, all of which would be followed by a “7,” because there were seven Mercury astronauts. Thus, we had: *Freedom 7*, *Liberty Bell 7*, *Friendship 7*, *Aurora 7*, *Sigma 7*, and *Faith 7*. The Gemini capsules were designated by number only (Roman Numerals). Apollo would go back to names, but only after *Apollo 7* and *8*. Such names were great for engaging the public, especially when somewhat whimsical (*Apollo 9*'s were *Gumdrop* and *Spider*; *Apollo 10*'s were *Charlie Brown* and *Snoopy!*). And “the *Eagle* has landed” sounds a lot more inspiring than “the *Apollo 11 Lunar Module* has landed!”

The malfunction of escape hatch on *Liberty Bell 7* almost killed Gus Grissom, and led to the sinking of the capsule, on July 21, 1961, as related in this week's Item. It was found in waters three miles deep offshore of Port Canaveral, and recovered on July 21, 1999, exactly 38 years to the day after it sank. It was reconditioned and is now on display at the Cosmosphere in Hutchinson, Kansas. For more on this part of the story, see:

<https://cosmo.org/blog/view/liberty-bell-7-the-peril-and-promise-of-space-exploration>.

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