

## Historian Corner

By Barb Sande

[barbsande@comcast.net](mailto:barbsande@comcast.net)

### GENERAL ITEM OF INTEREST

I have eliminated the decadal milestone events in this history column starting with this issue and going forward. Because there are still printed copies of the MARS STAR created every quarter, the space taken by the milestone events is being freed up to allow for more pictures and stories about expanding group activities and events. The milestone events have been replaced by daily major events for our heritage space companies that are posted on the MARS Associates Facebook page. Those daily events will be aggregated into a file for access by members on the web site later this year. If you would like to access the Facebook page, please register with Facebook as a user and request membership or contact me via my email address noted above.

**ERRATA:** In the last Historian Corner (History on the Road Kennedy Space Center), a photo caption incorrectly identifies STS-107 Commander Rick Husband as Rick Hubbard.

### Program Profile

On February 20, 1962, Mercury astronaut John H. Glenn made history by becoming the first American to orbit the Earth. This program profile explores the highlights of that mission that involved an Atlas D LV-3B launch vehicle provided 60 years ago from our heritage company General Dynamics Space Systems (Convair division). A biography of John Glenn is also included.

#### Mercury-Atlas MA-6 (*Friendship 7*) Mission Overview

Launched: 02/20/1962 14:47:39 UTC, Launch Complex (LC) 14, Cape Canaveral Air Force Station (renamed Cape Canaveral Space Force Station in December, 2020)

Mercury Capsule: No. 13 (McDonnell Aircraft)

Call Sign: *Friendship 7*

Launch Vehicle: Atlas LV-3B 109-D (Convair Division of General Dynamics) – man-rated and derived from the SM-65D Atlas ICBM missile family

Splashdown: 02/20/1962 19:43:02 UTC, North Atlantic Ocean, USS *Noa* Recovery ship

Crew: USMC Lt. Colonel John H. Glenn, Jr.

3 total orbits – 80 nautical miles by 134 nautical miles with an inclination of 32.5 degrees

Mission duration: 4 hours, 55 minutes, 23 seconds



John H. Glenn in his Mercury Flight Gear

Photo courtesy NASA-Glenn Research Center

### Preparing for an Orbital Mission

In late 1961, NASA was under enormous political and media pressure to answer the space advances made by the Soviet Union. The USSR had successfully launched two cosmonauts to orbit on Vostok 1 and 2 missions. Gherman Titov, the cosmonaut on Vostok 2, completed 17 orbits of the Earth in August, 1961, as a follow-up to the first human spaceflight (and single orbit) in April, 1961, by cosmonaut Yuri Gagarin. Those two ventures were met by short suborbital flights on Redstone rockets for American Astronauts Alan Shepard and Virgil "Gus" Grissom because the planned orbital launch vehicle, Atlas LV-3, was not ready. Finally, on November 29, 1961, NASA successfully launched Enos the chimp in a Mercury capsule on an Atlas LV-3 (93-D). The plucky primate completed two orbits of Earth before splashing down near Bermuda. This success prompted NASA leadership to accelerate the first orbital flight for an American on Mercury-Atlas (MA)-6. Coincidentally, the MA-6 Atlas booster arrived at Cape Canaveral on November 30, 1961, a day after the flight of MA-5 with Enos. The booster, designated #109-D, was the third fully man-rated Atlas LV-3 booster delivered for flight.

#### **Background: Challenges for Mercury-Atlas Development**

The Mercury-Atlas test program began with MA-1, using Atlas LV-3 50-D, in an attempt at a suborbital test of the combined systems. With several subsystems uninstalled, this vehicle launched on July 29, 1960, and suffered a structural failure 58 seconds after launch. Weather conditions at the Cape kept observers from seeing exactly what happened; parts were recovered from the ocean floor and engineers speculated that the skin of the launch

vehicle buckled just below the spacecraft interface point. A modification was made to put doublers in the thin tank skin of the Atlas and use a shallower trajectory angle to reduce aerodynamic loads.

MA-2 was successful, launching on February 21, 1961, using Atlas LV-3B 67-D and Mercury Capsule #6. This suborbital flight met all test objectives, with the only problem being propellant slosh. This launch was three weeks after the successful suborbital flight of Ham the chimpanzee on Mercury-Redstone 2.

MA-3, launched on April 25, 1961, was not a success, unfortunately. Incorporating many of the man-rated system upgrades including a robotic astronaut and the launch escape tower, this mission, using Atlas LV-3B 100-D and Mercury Capsule #8, appeared to launch successfully from pad LC-14. At T-20 seconds the pitch and roll sequence failed to initiate and the vehicle continued on a trajectory straight up from the launch pad. Fearing the booster could threaten facilities at the Cape or nearby communities, the Range Safety Officer held his finger over the destruct command button, hoping for a recovery as the flight converged with the destruct limits. At 43 seconds after liftoff, MA-3 was destroyed, with debris raining down on the Cape area. The launch escape tower activated at destruct and brought the Mercury capsule only a short distance downrange intact. This capsule was re-used on the next flight. Although the flight programmer was recovered on a nearby beach, the exact cause of this guidance anomaly was not determined. It was speculated that the programmer reset due to a transient voltage or pin contamination. Several design flaws were also seen during the programmer investigation that required redesign. This flight failure, occurring thirteen days after the successful single-orbit flight of Yuri Gagarin, was very disheartening to the Mercury astronauts and NASA program managers, not to mention the political leadership in the US.

Delays due to the corrective actions and design improvements resulted in MA-4 not launching until September 13, 1961. By this time, Vostok-2 had been successfully launched, with Gherman Titov completing 17 orbits (a full day in space). The USSR rattled its usual saber, noting that their nuclear weapons could now easily reach any place on the planet. MA-4 was a re-flight of Mercury Capsule #8 and used Atlas LV-3B 88-D as the launch vehicle. Failures in the interim between MA-3 and MA-4 of two Atlas E ICBM test launches due to rate gyroscope malfunction and combustion instability (these both happened in June, 1961) and a programmer reset (again) on an Atlas-MIDAS launch led Convair to incorporate changes to the autopilot to counteract programmer malfunctions and work solutions for the Atlas E failure modes (the gyroscope mitigation, Spin Motor Rotation Detection System, was not incorporated until MA-5). MA-4 was declared successful, however, and the capsule completed one orbit. Minor issues were noted with oxygen rates due to a leak and orientation in orbit

due to an open circuit in a pitch gyro. A relieved Bob Gilruth, the NASA director of Manned Spaceflight, declared the Atlas LV-3B to be man-rated.

The program arrived at the launch of MA-5 on November 29, 1961, as noted earlier in this article. After chimpanzee astronaut Enos survived his flight, NASA called a press conference in early December, 1961 to announce that John Glenn had been selected as the primary pilot for MA-6, with M. Scott Carpenter functioning as backup. Donald "Deke" Slayton was chosen for MA-7, with Walter M. Schirra as his back-up. Now it was a full-court press to get this mission off the ground!

### **Mercury-Atlas 6 Pre-Launch Delays**

Mercury Capsule #13 and Atlas LV-3B 109-D were stacked on Launch Complex 14 on January 2, 1962. The launch date was announced as January 16, 1962. This was postponed until January 20 because of problems with leaks in the Atlas propellant tanks. Then there were day-to-day slips from January 20 to January 27 due to unfavorable weather.

Glenn actually boarded the Mercury capsule on January 27, but the launch was called off at T-29 minutes due to thick cloud cover that would prevent photographing the vehicle after T+20 seconds; the flight controllers learned their lesson after the failure of MA-1, when no visual confirmation of cause could be seen. The Mission Director (Walter Williams) was secretly relieved at the bad weather on that day because he felt the booster and spacecraft were not ready to fly.

The decision was made to postpone the launch until February 1 so that appropriate attention could be paid to ensuring safety standards. However, during propellant loading on January 30, a fuel leak was discovered between the RP-1 (Refined Petroleum-1 or Kerosene) and LOX (liquid Oxygen) tanks, necessitating two weeks of repairs. On February 14, the weather again caused a delay; the weather finally broke on February 18 and February 20 appeared to be a favorable day to attempt the launch.

### **MA-6 Launch and First Orbit**

Glenn entered Friendship 7 at 11:03 UTC on February 20 after a 90-minute delay to replace a faulty component in the Atlas guidance system. The hatch required 70 bolts for securing and a broken bolt was noticed when almost every single bolt had been installed. This led to another ground delay as all of the bolts were removed and the defective bolt replaced. The gantry was finally moved back at 13:20 UTC, but another ground delay occurred due to a repair of a LOX propellant valve.

At 14:47 UTC, Convair Engineer T. J. O'Malley pressed the button in the blockhouse launching MA-6. O'Malley said

"the Good Lord ride all the way" and capsule communicator Scott Carpenter chimed in with "Godspeed, John Glenn." Due to a glitch in Glenn's radio at liftoff, he did not hear these encouraging words.



**MA-6 Launch, February 20, 1962**

Photo Courtesy NASA

MA-6 initiated a roll program at T+2 seconds, rotating along the roll axis 2.5 degrees per second, from 30 to 0 degrees. The pitch program began at T+16 seconds, with a 0.5 degree per second pitch from 90 to 0 degrees.

Thirty seconds after lift-off, the Atlas guidance system (designed by General Electric/Burroughs) locked onto a radio transponder in the booster to guide the vehicle to orbit. Max Q (maximum dynamic pressure) occurred at T+1:24 and measured 980 pounds force/square foot. All flight parameters appeared nominal and the booster engines cut off at two minutes and 14 seconds after launch. The escape tower, which was built by Grand Central Rocket Company from Redlands, California (later becoming Lockheed Propulsion Company) was jettisoned at two minutes and 24 seconds into flight right at the predicted time. Sustainer engine cutoff occurred at T+5:20. Booster performance was nearly flawless and the Atlas accelerated the Mercury capsule to a speed only 7 ft/sec below nominal. AT 14:52 UTC, Friendship 7 entered Earth orbit. Computers at the Goddard Space Flight Center indicated that the orbital parameters were good enough for nearly 100 orbits. Glenn was informed that the mission would fly for seven orbits.

Posigrade rockets were used to separate the capsule from the booster; when these fired, the five-second rate-damping operation started 2 ½ seconds late, causing a

substantial roll error as the capsule turned around. The attitude control system took 38 seconds to place Friendship 7 in the proper orbital attitude, using 5.4 pounds of the total control system fuel supply of 60.4 pounds. Final orbital velocity was 17,544 mph.

One of the things that Glenn insisted on before this flight was a personal camera to capture his own views of Earth (there were video cameras on board to capture his movements during flight). He brought on board a Minolta Hi-Matic 35-mm camera that he bought at a local drugstore; the camera had been modified to work with flight suit gloves, but he still had difficulty changing film and one canister ended up floating behind an instrument panel. The photo below is one of the images Glenn took during the first orbit. He also had a survival kit for post-splashdown contingencies and a medical kit with morphine and other drugs to treat shock symptoms and motion sickness. The Soviets had not shared any of the physical effects of space travel on humans with the Americans, obviously.



**Image Taken during Flight by John Glenn**

Photo Courtesy NASA/JSC Digital Image Collection

Friendship 7 crossed the Atlantic and passed over the Canary Islands. Observing the African coastline, Glenn reported to the tracking station team in Kano, Nigeria, that he could see a dust storm in the area; the ground station crew confirmed this observation. At this point Glenn took manual control of the spacecraft and started a yaw adjustment until he was facing into the flight path. After crossing Africa, Glenn saw his first sunset from orbit, describing it as "beautiful". As he neared the Australian coast line, he made star, weather and landmark observations before coming into radio contact with the Mucnea, Australia, tracking station. Mercury astronaut Gordon Cooper was on comm at this station 60 miles north of Perth; Glenn reported he was feeling fine and noticed the bright lights of Perth and Rockingham on the western coast. The people in those cities had turned on as many lights as possible in the hopes that he would see them from orbit. Shortly after passing over Australia, Glenn observed the startling "fireflies" around the capsule on the outside, which were likely ice crystals venting from on-board systems.

As Friendship 7 passed over Kauai, Hawaii, Glenn noticed a lot of interference on the High-Frequency radio band. Crossing the Pacific Coast of North America near Guaymas, Mexico, the ground crew informed Glenn that a yaw thruster was causing attitude control problems; this issue remained for the rest of the flight, resulting in Glenn eventually using manual fly-by-wire techniques to control the spacecraft attitude.

## Second and Third Orbits

Friendship 7 crossed over Cape Canaveral and Mercury Control to start its second orbit (see photo of the control room below). A flight systems controller noticed that a sensor providing data on the spacecraft landing system was giving a reading that the heat shield and landing bag were no longer locked in position. If this was true, the heat shield was being held onto the spacecraft only with the straps of the retro rocket package. The sensor was known as "Segment 51" and all ground stations were asked to monitor it during the next orbital pass. Glenn was also advised to immediately put the landing-bag deploy switch in the off position. Glenn was not advised of the concern, but he became suspicious when every ground tracking station reiterated the request to keep the landing-bag deploy switch in the off position.



**Mercury Control Room at Cape Canaveral**

Photo Courtesy NASA Archives

As Glenn crossed the Atlantic, he kept busy with flight plan tasks and manually controlling the attitude control system to keep it properly oriented. Crossing the Canary Islands, Glenn felt that his spacesuit was too warm, but did not try to adjust it until a little later in the orbit. The African tracking sites at Kano, Nigeria, and Zanzibar, Tanganyika (now Tanzania), noted a sudden 12 percent drop in the secondary oxygen supply. As he passed over the Indian Ocean, a tracking ship had planned to release balloons for an observation experiment, but instead released flares due to the weather conditions. Glenn was able to see lightning in storms but did not see the flares.

Trying to adjust his suit temperature resulted in an imbalance in cabin humidity versus suit cooling, another

issue that required him to constantly adjust the balance of cooling and cabin humidity. While passing over Australia, another warning light came on, indicating that the fuel supply for the control system was down to 62%. Mercury Control recommended that Glenn let the spacecraft drift to conserve fuel. However, he did continue to consume more fuel by tweaking the spacecraft attitude and more than 6 pounds from the automatic control tank and 11.8 pounds from the manual tank were consumed just during the second orbit.

The third orbit was relatively uneventful, although Mercury Control was still undecided about what to do about the "Segment 51" sensor reading. The Hawaiian tracking station asked Glenn to toggle the landing bag deploy switch into the automatic position. If a light came on, reentry should take place while retaining the retro pack. Glenn finally realized that there was a possible concern about a possible loose heat shield. He performed this switch toggle and no light came on. Flight Director Chris Kraft and Mission Director Walter Williams finally decided to keep the retro pack on during reentry as assurance to keep the heat shield in place.

## Friendship 7 Reentry and Splashdown

Glenn was now preparing for reentry as he crossed the North American coastline. Keeping the retro pack in place meant that he had to retract the periscope manually and would have to activate the 0.05 g sequence by pushing an override switch. The US National Archives have kept the transmissions from this portion of the mission:

*Texas Com Tech: Friendship 7, Friendship 7, this is Texas Com Tech. Do you read? Over*

*Friendship 7: Roger, Texas, go ahead.*

*Texas Com Tech: Ah, Roger. Reading you 5 square. Stand by for Texas Cap Com.*

*Friendship 7: Roger*

*Texas Cap Com: This is Texas Cap Com, Friendship 7. We are recommending that you leave the retropackage on through the entire reentry. This means that you will have to override the 0.05 g switch, which is expected to occur at 04:43:03. This also means that you will have to manually retract the scope. Do you read?*

*Friendship 7: This is Friendship 7. What is the reason for this? Do you have any reason? Over*

*Texas Cap Com: Not at this time; this is the judgment of Cape Flight*

Glenn was perplexed, but followed the instructions to the letter and began retrofire for reentry. As he crossed Cape Canaveral, he noted that he had been controlling the spacecraft manually and would use the automatic fly-by-

wire mode as a backup. He was given a mark command to press the override button for the 0.05 g switch. Things began heating up, literally, outside Friendship 7 as the reentry plasma stream burned up pieces of the retro package (Glenn feared that was the heat shield, as he watched searing chunks fly by the window). Attitude control system fuel was at critical levels and Glenn switched to the automatic tank and fly-by-wire. After passing the peak g region, Friendship 7 began oscillating severely, crossing 10 degrees on both sides of a vertical zero-degree point. Glenn activated the auxiliary damping system, which helped stabilize the yaw and roll instabilities.

Fuel continued to be depleted, finally running out in the automatic fuel supply nearly two minutes before drogue chute deployment and 51 seconds before deployment in the manual fuel tank. Oscillations resumed and Glenn decided to deploy the drogue chute manually to regain attitude stability. Just before he reached for the switch, the chute deployed at 28,000 feet (programmed for 21,000 feet), restoring attitude stability to the spacecraft. The periscope opened and was available for use; the window was coated with so much soot and film that Glenn could not see any details. The main chute deploy happened at 10,000 feet, slowing the descent rate significantly. Glenn was reminded to manually deploy the landing bag. A loud clunk could be heard as the heat shield and landing bag dropped into place below the capsule.

Friendship 7 splashed down in the North Atlantic at 21 degrees 21 minutes North, 68 degrees 40 minutes West, which was 40 miles short of the planned landing zone. Retrofire calculations had not taken into account changes to the spacecraft weight due to loss of onboard consumables. The USS Noa, a destroyer in the recovery group, spotted the spacecraft when it was descending on its parachute. The destroyer came alongside Friendship 7 seventeen minutes later. The spacecraft and its earth-orbiting American occupant were pulled from the water onto the destroyer deck. Glenn was suffocating from the heat and decided to blow the side hatch, warning the crew members to stand aside. He slightly cut his hand when the detonator plunger recoiled, but emerged happy and smiling, helped out by the first US Navy Seal Harry Beal. Both the spacecraft and its pilot came through the mission in good shape.

Post-flight analysis determined that the "Segment 51" warning light problem was caused by a faulty sensor switch, meaning that the landing bag and heat shield were secure during reentry. After the return of Friendship 7, NASA announced on April 19, 1962, that the spacecraft would go on a world tour, with more than 20 stops across the globe (known as the "fourth orbit"). Glenn was, of course celebrated in many publicity events and ticker tape parades across the nation. Americans breathed a sigh of relief with this hero's flight – now we, too, had successfully orbited the Earth. I was in the first

grade in February, 1962, and my first memories of a space event came from reading about this flight in a "Weekly Reader" at school. That young girl, who really liked math and science, was hooked on all things "Space" from that day forward. For those that are interested, Friendship 7 is currently on display at the Smithsonian Udvar-Hazy Center, located near Washington Dulles Airport in Chantilly, Virginia.



**Friendship 7 on Display - Udvar Hazy Center**

Photo: Courtesy Smithsonian Institute

### **John H. Glenn, Jr. Biography**

John Herschel Glenn, Jr. was born on July 18, 1921, in Cambridge, Ohio. His father, John H. Glenn, Sr., was a plumber and his mother, Clara Teresa Glenn, was a teacher. His parents married just before John Sr. left for the western front in World War I. Shortly after John Jr. was born, the family moved to New Concord, Ohio. As a toddler, John Jr. met another toddler, Anna Margaret (Annie) Castor, who later became his wife. John Jr. also had an adopted sister, Jean.

Glenn first flew in an airplane with his father when he was eight years old and he immediately became fascinated by flight, building balsa model airplane kits. He attended New Concord High School, playing on the varsity football, basketball and tennis teams. Graduating in 1939, Glenn entered Muskingum College where he studied chemistry and played on the football team. Annie also attended the same college, majoring in music and competing in swimming and volleyball. Glenn earned a private pilot license through a Civilian Pilot Training Program in 1941.

World War II saw Glenn quit college before his senior year to enlist in the Army Air Corps. He was not called to duty, so he also enlisted as a U.S. Navy Aviation Cadet in March, 1942, making his first solo flight in a military aircraft at Naval Air Station Olathe in Kansas. He moved on to advanced flight training at Naval Air Station Corpus Christi in Texas and accepted an offer to be in the U.S. Marine Corps; he was commissioned as a second lieutenant in March, 1943. Shortly after his commissioning, he married Annie at a Presbyterian church in New Concord, Ohio. He and Annie were devout Presbyterians throughout their lives.

Glenn was assigned to Marine Squadron VMJ-353 at Camp Kearny, California, flying R4D transport ships. He was more interested in fighter flying, so he transferred to the VMO-155 squadron, which flew the Grumman F4F Wildcat. VMO-155 moved to El Centro, California and was re-equipped with the faster and upgraded F4U Corsair in September, 1943. Glenn shipped out to Hawaii in January, 1944, as a first lieutenant and then headed to the Marshall Islands where he flew 57 combat missions in the area, earning two Distinguished Flying Crosses and ten Air Medals. In February, 1945, Glenn was assigned to Marine Corps Air Station Cherry Point in North Carolina, then to the Naval Air Station Patuxent River in Maryland. He was promoted to Captain and joined another Corsair squadron; he moved again, to Marine Corps Air Station El Toro in California and volunteered for patrol missions in occupied North China.

Back to the US in December, 1948, Glenn was reposted at NAS Corpus Christi and became a flight instructor there, then joined the Amphibious Warfare School at Marine Corps Base Quantico. He was promoted to Major in July, 1952. After a short leave to move his family back to New Concord, Glenn was ordered to South Korea in October, 1952. Before leaving, he applied to fly the F-86 Sabre jet through an exchange program with the USAF. Glenn first flew 63 combat missions with the F9F Panther; during this time, his wingman on several missions was Red Sox baseball legend (and future Hall-of-Famer) Ted Williams, who said Glenn was the most fearless pilot he had ever seen. In June, 1953, Glenn reported for duty with the USAF's 25<sup>th</sup> fighter squadron and flew 27 combat missions in the F-86, patrolling MiG Alley, shooting down his first MiG on July 12, 1953. His service in Korea garnered two more Distinguished Flying Crosses and eight more Air Medals.

Glenn applied to be a test pilot at the US Naval Test Pilot School at NAS Patuxent, Maryland while he was still in Korea. He tested a variety of aircraft and on July 16, 1957, he made the first supersonic transcontinental flight in an F8U Crusader, flying from Los Alamitos, California, to Floyd Bennett Field in New York City in 3 hours, 23 minutes and 8.3 seconds, averaging supersonic speeds in spite of three mid-air refuelings. He received another Distinguished Flying Cross and was promoted to

Lieutenant Colonel on April 1, 1959. He became a minor celebrity after this flight, receiving a profile in the New York Times and appearing on the television show "Name that Tune."

On December 17, 1958, Project Mercury was announced by the new National Aeronautics and Space Administration. Glenn was very interesting in the developments in space and spent time at Langley Air Force Base making runs in a flight simulator and also being subjected to high-G forces at a centrifuge in Johnsville, Pennsylvania. Because of his participation in these simulators he was sent to the McDonnell Aircraft plant in St. Louis as a service advisor to NASA. Recruitment began for the Mercury astronauts, culling from test pilots in the various branches of service. Glenn barely made the first cut because of his age and lack of a college degree (he had more than enough college courses for completion), but his commanding officer Jake Dill at test pilot school visited NASA and called Glenn the perfect candidate. Glenn easily passed subsequent evaluations, including the grueling physical tests at Lovelace Clinic in Albuquerque, New Mexico, and was called by NASA on April 6, 1959, announcing his selection as one of the "Mercury Seven".



**The Mercury Seven Pose in Front of an F-106 – Glenn is Third from the Left**

Photo courtesy NASA Spaceflight Gallery

The Mercury Seven were publicly announced on April 9, 1959, at a press conference in Washington, D.C. They gathered at Cape Canaveral to watch a test launch of an Atlas SM-65D on May 18, 1959, and were stunned when the vehicle exploded minutes after lift-off.

Glenn remained an officer in the Marine Corps after selection and was assigned to the NASA Space Task Group at Langley, Virginia; this task force moved to Houston, Texas, in 1962. Glenn worked on cockpit layout design and control functioning for Mercury and follow-on manned programs. Glenn functioned as back-up pilot for Mercury-Redstone 3 (Alan Shepard) and Mercury-Redstone 4 (Gus Grissom) and was assigned to Mercury Atlas-6, as noted in the main article.

After MA-6, Glenn became an iconic figurehead for NASA and the decision was made that he would not fly again in the Mercury or Gemini programs. Glenn became friends with President John F. Kennedy and was awarded the NASA Distinguished Service Medal and his sixth Distinguished Flying Cross for the mission.

Glenn resigned from NASA on January 16, 1964, to run for US Senator from Ohio. He suffered a serious concussion in a fall in a hotel room and his long recovery made campaigning difficult so he dropped out of the race. He retired from the USMC, with President Johnson promoting him to full Colonel. RC Cola courted the famous astronaut and he hired on in a variety of leadership positions, including president of Royal Crown International. Glenn also made investments with business partners in several hotels in the Orlando area near the new Walt Disney World.

Glenn and his wife remained close to the Kennedy family and campaigned for Robert Kennedy in 1968. Glenn was at the hotel when RFK won the California primary and was assassinated during a victory speech. Glenn was a pallbearer at the funeral. Glenn entered and lost in the 1970 Ohio Senate primary to a well-funded Howard Metzenbaum (who lost the general election). Glenn was finally elected to the Senate in 1974, a role he held until 1999. Since I am more interested in Glenn's space contributions than his political career, here's a bullet list of his accomplishments in political office:

1. Glenn was considered for Vice-President in the 1976 campaign by Jimmy Carter, but was not impressive at a Convention Speech.
2. Glenn won by a landslide in the primary for re-election in 1980 and also beat his Republican opponent by 40% of the vote.
3. In 1984, he announced his candidacy for President, running on a centrist platform. The movie "The Right Stuff" came out in 1983 and gave him a minor boost with the heroic portrayal of Glenn by actor Ed Harris. Glenn lost at the early caucuses and on Super Tuesday and he withdrew on March 16, 1984.
4. Glenn won the Ohio Democratic Senatorial primary in 1986 by 88% of the vote and won re-election with 62% of the vote.
5. Glenn won a narrower re-election victory against Republican Mike DeWine in 1992.
6. Glenn served on and/or chaired the Governmental Affairs Committee during his various terms. He also served on Special Committees for the Aging and on the Foreign Relations Committee, moving to the Armed Services Committee in the 1980s.
7. Glenn was caught up in the Keating Five Scandal as a Senator for being involved in the Savings and Loan Crisis, after accepting a campaign contribution from Lincoln Savings and Loan (headed by Charles Keating). John McCain was another Senator investigated. Both Glenn and McCain received minor disciplinary actions.

8. Glenn announced his retirement from the Senate on February 20, 1997.

In 1995, Glenn started lobbying NASA Director Dan Goldin about sending Glenn into space to advance studies about the aging effects of space travel. On January 16, 1998, Goldin announced that Glenn would be part of the STS-95 seven-person crew. STS-95 (*Discovery*) launched on October 29, 1998, with Glenn as the oldest space traveler at that time, flying as a mission specialist on the nine-day mission that conducted a variety of experiments with the SPACEHAB module. The mission was criticized as a publicity stunt, but there was valuable research obtained using Glenn for experiments on balance and perception, immune system response, bone and muscle density metabolism, blood flow, and sleep patterns. He was awarded the NASA Space Flight Medal for STS-95. After his return, he was a popular public speaker and participated in the ceremonial transfer of Space Shuttle *Discovery* to the Smithsonian Institution in 2012.



**John Glenn Working on STS-95 in 1998**  
Photo Courtesy NASA/NBC News

Glenn was physically active and in good health most of his life. In early December, 2016, he was hospitalized in declining health and passed away on December 8, 2016, at the age of 95. He left behind his beloved wife of 73 years, Annie, two children (John and Carolyn) and two grandchildren. His body laid in state at the Ohio Statehouse and he was interred in Arlington Cemetery; he was the last of the Mercury astronauts to pass away. His legacy is undeniable as a war hero, pilot, astronaut and political figure. He had so many awards and honors that it is impossible to list them effectively in this article. John's dear Annie followed him, passing on May 19, 2020, at the age of 100. She was notable for raising awareness of speech defects and other disabilities (she was a stutterer from an early age).

I briefly met John and Annie Glenn at a book signing in 1999 at the Tattered Cover Bookstore (downtown) when they were touring promoting John's autobiography "John Glenn: A Memoir." I made her laugh when I asked about his (and her) bravery when he flew on an Atlas. She said she worried more about his Shuttle flight! She was a very gracious lady; he was quite business-like, but he smiled as he signed the book and I treasure this volume to this day.

## Resources and Links

### NASA History

<https://www.nasa.gov/feature/60-years-ago-john-glenn-the-first-american-to-orbit-the-earth-aboard-friendship-7>

### National Archives

<https://www.archives.gov/exhibits/featured-documents/friendship-7-transcript/reentry-transcript.html>

### Mercury-Atlas History

<http://www.astronautix.com/a/atlaslv-3bmercury.html>

### STS-95

[https://www.nasa.gov/mission\\_pages/shuttle/shuttlemissions/archives/sts-95.html](https://www.nasa.gov/mission_pages/shuttle/shuttlemissions/archives/sts-95.html)

“**John Glenn: A Memoir**”, John Glenn and Nick Taylor, published by Bantam Books, November, 1999. Available as a Kindle Book.

<https://www.amazon.com/John-Glenn-Memoir-ebook/dp/B00A1SDYKY>

### Biography and General Information:

[https://en.wikipedia.org/wiki/John\\_Glenn](https://en.wikipedia.org/wiki/John_Glenn)

## On This Date in History

As noted in the general note at the beginning, this section has been eliminated in the MARS STAR. I have created a daily events list for our heritage companies from a variety of sources that is posted on the MARS Associates Facebook page.

Reference websites for the Facebook daily events:

<https://nssdc.gsfc.nasa.gov/planetary/chronology.html>

[#2014](#)

[https://en.wikipedia.org/wiki/Timeline\\_of\\_spaceflight](https://en.wikipedia.org/wiki/Timeline_of_spaceflight)

<https://www.ulalaunch.com/missions>

<https://news.lockheedmartin.com/news-releases?year=2021>

<https://space.skyrocket.de>

<http://www.astronautix.com>

## Next Edition

Be sure to check out the next History Corner when I will profile the Apollo 16 mission to the moon . Coming soon: 25<sup>th</sup> Anniversary roundtable of the Titan/Centaur Cassini launch; Apollo 17. 2023 will include a series about the Apollo/Skylab missions.

Barb Sande, MARS STAR and MARS Facebook Page Historian. Contact me at [barbsande@comcast.net](mailto:barbsande@comcast.net) or 303-887-8511 or find the closed group MARS Associates page on Facebook.