

Historian Corner

By Barb Sande

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Program Profile

This issue profiles the Apollo 17 mission, the third "J" extended mission to the moon and the last lunar landing of the Apollo era.

ANNOUNCEMENT: In 2023, I will be exploring the Skylab missions for their 50th anniversary. I am calling all retired folks who worked on Skylab to consider writing a short story, anecdote, or technical problem that they were involved with during the development of Skylab (include short biographical details). Please submit these written stories to me by July 31, 2023 through email (see above). They can be an email text or a short-attached document (MS Word or Pages is fine) and pictures are also welcome if you have some. These stories will be included in a write-up later in 2023 that summarizes the Skylab initiative. Written stories only, please! I have no plans to do a roundtable or accept oral stories on a phone call.

Errata: In the last Program Profile for the Titan/Cassini mission, the Titan Centaur upper stage was misidentified as TC-20. The Centaur vehicle was TC-21.

Apollo 17 Mission Overview

Launched: 12/07/1972 05:33:00 UTC LC-39A, KSC
Splashdown: 12/19/1972 19:24:59 UTC, South Pacific, USS *Ticonderoga* recovery ship
Saturn V AS-511 Launch Vehicle
CSM (Command/Service Module) Call Sign: *America* (CSM-114)
LM (Lunar Module) Call Sign: *Challenger* (LM-12)
Crew: Commander Eugene A. "Gene" Cernan, LM Pilot Harrison H. "Jack" Schmitt, CM Pilot Ronald E. Evans
75 total lunar orbits
Landing site: Taurus-Littrow – 20.1908 Degrees North, 30.7717 Degrees E Lunar coordinates
Third and final "J" mission (expanded science operations, use of a lunar rover, extended lunar stay, expanded CM science operations)
Connection to Lockheed Martin/ULA: The contributions of our heritage companies to the Apollo program were listed in the MARS STAR article about Apollo 11 in 2019.



Apollo 17 Crew: Harrison Schmitt, LM Pilot; Ron Evans, CM Pilot; Gene Cernan (seated) Commander
Photo Credit: NASA

Preparations Begin for the Final Lunar Mission

In a tentative schedule set forth in 1969, Apollo 17 was planned for September 1971. The near-disaster of Apollo 13 led to delays and a maximum of two missions a year. Following the cancellations of Apollo 19 and 20 in early 1970 and Apollo 18 in September 1970, Apollo 17 was moved to a December, 1972 launch. Funding for the mission was threatened by the White House until this date was selected; President Nixon wanted Apollo 17 to occur after the 1972 election after the near-disaster of Apollo 13. The cancellation of Apollo 18 also led to changes to the designated crew by removing Joe Engle as LM Pilot and substituting a geologist in that role, leading to the assignment of Harrison Schmitt to Apollo 17 (not a popular decision initially with Commander Cernan). Schmitt joined commander Gene Cernan and CM Ron Evans and the crew complement was announced to the public on August 13, 1971. The backup crews at this point were seasoned veterans of previous missions so that astronauts who had not flown could move on to new programs. The original backup crew announced in August, 1971, was the crew of Apollo 15 (Dave Scott, Jim Irwin and Al Worden). After the postal cover incident was revealed, the backup crew became John Young, Charlie Duke and Stuart Roosa. Roosa flew on Apollo 14, while Young and Duke were on the Apollo 16 mission (Ken Mattingly, Apollo 16 CM pilot, asked to move on to support of the Space Shuttle program).

Apollo 17 was the third "J" mission and the final opportunity to explore another geological region on the Moon. Several locations were discussed, including the massive Tycho crater and a possible site on the far side of the moon before the scientists and engineers

unanimously agreed on the Taurus-Littrow valley. It was anticipated that old highland material could be found in this area, along with evidence of a younger explosive volcano event. The location was announced to the public in February, 1972. The crew did extensive geology field trips, now aided by the expertise of crew member Schmitt, who had advised previous Apollo crews on how to describe geological formations after his selection as a scientist-astronaut in 1965.

Components began arriving for the mission in October, 1970 and testing and mating processes were underway shortly thereafter. The vehicle stages were erected in the Vehicle Assembly Building starting on May 15, 1972 and Apollo 17 was rolled out to pad LC-39A on August 28. Countdown demonstration tests were accomplished on November 20 and 21 and the countdown for launch was initiated on December 5, 1972.

Launch of Apollo 17, Translunar Trajectory

The launch was initially planned for 9:53 pm EST on December 6, the only nighttime launch of an Apollo mission. A delay occurred due to an automatic cut-off in the launch sequencer at the T-30 second mark. The cause was quickly determined to be the launch sequencer's failure to automatically pressure the LOX tank on the third stage. The pressurization was done manually by launch control, but the sequencer did not recognize the fix. The clock was reset and held at the T-22 minute-mark while workarounds were incorporated in the sequencer. The countdown then resumed and liftoff occurred at 12:33 EST on December 7, 1972. I remember this countdown and launch quite vividly. It was a school night - I was in my senior year of high school and planning to go into Engineering school at CU Boulder in September, 1973 - but I was not about to go to bed before Apollo 17 lifted off and I anxiously waited for them to resume the countdown. Apparently, there were over 500,000 people lining the beaches and rivers near the Cape to see this spectacle and it was visible as far away as 800 miles from KSC; I was reminded of that beautiful launch when seeing the late-night launch of Artemis 1 in November, 2022.

At 3:46 EST, after a smooth ascent and insertion into Earth orbit, the S-IVB third stage was reignited for the 351-second trans-lunar trajectory burn; the trajectory was modified to allow Apollo 17 to reach the moon at the original planned mission elapsed time, despite the nearly three-hour launch delay. The LM was extracted from the S-IVB stage with no difficulties. On the third day enroute to the moon, the crew executed a mid-course correction and checked out equipment in the LM. Mission clocks were moved ahead by 2 hours and 40 minutes to make up the time of the launch delay. During

this outbound trip, the crew took the famous "Blue Marble" photograph of Earth.



Launch of Apollo 17 Photo Credit: NASA



The Blue Marble Earth Photo Credit: NASA

Lunar Orbit, Descent to the Surface

At 2:47 pm EST on December 10, the Service Propulsion Engine on the Command/Service Module fired, inserting Apollo 17 into lunar orbit. A second burn on the third orbit lowered their orbit to only 14.9 nautical miles above the surface. Preparations began for the landing on December 11, approximately 24 hours later. LM *Challenger* separated from CM *America* and the two spacecraft flew in formation for some time, checking for

any damage or other concerns. The LM began its descent burn at 112:49:56 elapsed mission time. Evans, remaining behind in the CM, circularized the orbit and waited on confirmation. Touchdown occurred at 113:04:58 mission elapsed time (2:55 EST), about 656 feet (200 meters) east of the planned landing point. An interesting commentary in the Apollo Surface Journal talks about what Gene Cernan experienced in that moment:

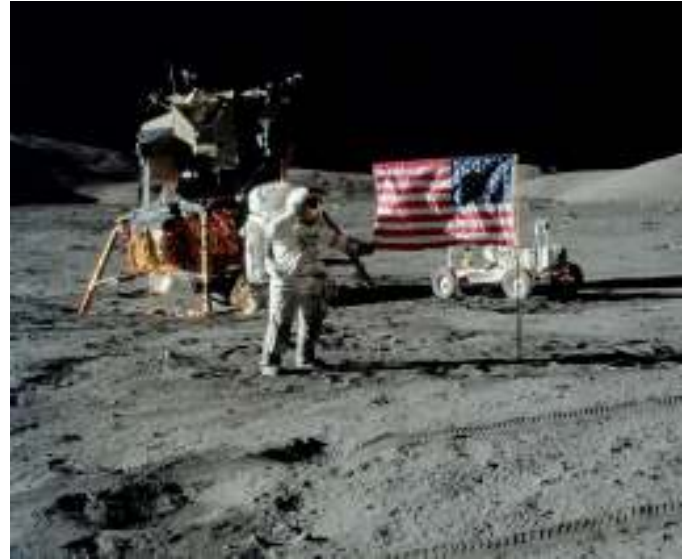
Journal Contributor Jim Scotti writes, "I once asked Gene Cernan what sort of sounds he had heard as he landed on the Moon, hoping to get answers to these kinds of questions - how loud the thrusters were, could he hear the descent engine, what about pumps and switches and anything else. What he said was rather different than what I was expecting. He said that what he heard in the moments after landing was... silence! You see, before landing, he was so engrossed in the activity that he heard Jack calling out numbers and the occasional call from Houston and everything else blended into the background because he was so focused on the task of landing. At touchdown, however, the spacecraft fell silent and mission control was staying quiet to try not to interfere with what they expected was the final moments of touchdown. And Gene added: 'And the guy standing next to me [Schmitt] was struck silent staring out the window looking at the surface and he sure wasn't saying anything!' So, Gene noticed the silence. Cool perspective!

The crew began preparations for the first EVA, planned for four hours after landing. Although all three crew members had a very long day with the activities so far, Cernan and Schmitt did not want to waste any time on rest until after they had an opportunity for surface operations.

EVA-1

Cernan descended the ladder and was on the footpad at 6:45 pm EST. His words were: "I'm on the footpad. And Houston, as I step off at the surface at Taurus-Littrow, we'd like to dedicate the first step of Apollo 17 to all those who made it possible". His first step on the surface was nearly a disaster, as the surface next to the footpad sloped and had slick tiny pebbles that cause him to lose his footing (he was still hanging on to the LM steps). Schmitt followed right behind him and deployment of the Lunar Roving Vehicle (LRV) was the first major task. While working near the LRV, Cernan caught his hammer under the right-rear fender extension and accidentally broke it off. This wasn't a critical issue, but it did result in both astronauts being covered in layers of dust during the first drive. The LRV contained two new scientific instruments, the Traverse

Gravimeter Experiment (TGE) and the Surface Electrical Properties (SEP) experiment. The TGE experiment was quite successful, with 26 measurements taken during the three EVAs. The SEP measurements of the lunar regolith (top layers of soil) found that there is almost no water in that region of the moon, down to a depth of 1.2 miles.



Gene Cernan salutes the flag with Challenger and the LRV in the background Photo Credit: NASA

The TV camera was set up on the rover, and was test-driven, then the crew deployed the ALSEP (Apollo Lunar Surface Experiment Package) just west of the landing site.

They had difficulties drilling the core holes, shortening the time they had to drive around the site. They drove to Steno crater, south of the landing and obtained subsurface samples and deployed explosive packages for later remote detonation to record results on the growing network of lunar seismometers. One thing that was interesting was that the Earth in this location and timeframe on the moon was seen much lower on the horizon and was quite prominent in front of the two men when they were landing and on the surface. As they worked during the first EVA, Cernan told Schmitt to take a few minutes and just look at the Earth. Schmitt bantered around, saying "Ah, You seen one Earth, you've seen them all". Cernan later made these intriguing comments for the Apollo Surface Journal interviewers:

Obviously, Jack [Schmitt] and I have looked at the Earth differently. I think we had very different subconscious views of what we saw. That's always been true and it's probably true in all twelve guys. To me, the Earth was a very dominant part of our mission. It certainly made a statement. You could hardly not notice that it was

visible. It was a dominant presence in our valley, without question. For Jim Irwin [Apollo 15 LM pilot], going to the Moon was a religious experience and, for me, it was a spiritual experience in terms of being there and looking back at the Earth, realizing the significance of what was going on. ...But the mission did bring home to me, very clearly, that Science has a long way to go yet to find an answer for the creation of the small part of the Universe that I was privileged to see. It doesn't make any difference who your God is or how you address him; the Earth was just too beautiful to have happened by accident. There has to be somebody bigger than me who put it together. And when I say spiritual, that's what I mean.

The first EVA ended after seven hours and twelve minutes and the tired astronauts spent the next 17 hours in the LM.

EVA-2

The first task performed by Cernan and Schmitt was to find a fix for the fender problem on the LRV. They taped together four stiff paper maps, making a replacement fender extension that seems to work fairly well until near the end of the third EVA. They then departed for Station 2, the Nansen Crater at the foot of the South Massif Mountain. The distance to this location was 4.7 miles away from the LM, the furthest distance traveled to date by any spacefarers from the safe harbor of their spacecraft. They started a trajectory back, stopping at various stations on the way and collecting samples and taking photographs.

At Station 3, a small crater, Schmitt fell to the ground while working, looking quite awkward. Mission Control joked about phone calls coming in asking for Schmitt to join the Houston Ballet, so this small crater was renamed Ballet Crater in 2019 in honor of this minor incident. Cernan collected some samples in a vacuum tube at this site that he recommended keeping in storage until better analytical techniques were developed; this was one of the lunar samples opened this year (2022), looking for any residual gases trapped in the sample. The analysis is still in work.

The next station (4) yielded one of the more interesting finds of the mission. Schmitt spotted orange soil at this station (Shorty Crater), which led to extensive discussions and sample-digging, along with directions to Ron Evans in the CM to observe the area with the Apollo Lunar Sounder Experiment (ALSE). The ALSE used radar equipment to map lunar topography and variations in subsurface electrical conductivity. Evans was able to see orange coloration in various areas from orbit using this instrument and visual observations. The orange

color of the soil got everything thinking about oxidation of the material, which implies water. Schmitt, in his eagerness to gather samples, fell or lost his balance a couple of times during this stop, easily bouncing back up in the 1/6 gravity of the moon. The material turned out to be ancient volcanic glass, as noted in these comments by Schmitt in the Apollo Surface Journal:

It was volcanic material, but it was volcanic glass that had been spewed out of some fire-fountain-like eruptions 3.5 billion years ago that somehow had been protected from mixing with anything else, even though it was now at the surface. It had almost certainly been covered almost immediately by a lava flow, so that it was protected from meteor disruption and stirring. And then, when Shorty formed, somehow the pyroclastic ended up in the rim and a few other places in nearly pure form.



Shorty Crater Orange Soil, EVA-2 Photo Credit NASA

The last stop on the EVA was at Station 5 at a site called Camelot Crater. The pair of explorers had collected 75 pounds of samples, took seven gravimeter measurements, and deployed three more explosive packages. They concluded the EVA after seven hours and thirty-seven minutes, traveling further away from home base and covering more ground than any other human spacefarers to date. The fender repair worked and earned Schmitt and Cernan honorary Autobody Association of America lifetime memberships. The astronauts rested, glad to have the gloves off their hands for a few hours (they had issues with lifting of fingernails and blisters on their knuckles, which could be quite painful).

EVA-3

The third and last EVA and last moonwalk of the Apollo program began at 5:25 pm EST on December 13. They headed out on the LRV to Station 6, a huge boulder dubbed Tracy's Rock (after Cernan's daughter). Additional stops were made at Stations 7 and 8 (located at the base of a feature known as the Sculptured Hills). The final stop at Station 9 was at a feature called Van Serg crater. During these three stops, the increasingly fatigued astronauts collected 146 pounds of samples and did another nine gravimeter measurements. At Station 9, Schmitt an unusual-looking fine-grains rock that weighed over 17 pounds (the largest single sample from the Apollo 17 mission). A small piece of this sample 70215 is on display at the Smithsonian Institution as a "touch sample" for visitors. Another sample from Station 6 was identified as the oldest known "unshocked" lunar rock (it had not been affected by any high-impact events). This sample of troctolite (sample 76535) is considered one of the most interesting samples returned from the moon and has been used to substantiate the geological timeline of the moon and the theory of a metallic core dynamo in the interior of the moon, creating a magnetic field. It likely would have been overlooked without geologist Schmitt's presence.



Troctolite Sample 76535 EVA-3 Photo Credit: NASA

The crew returned to the LM, closing out the final EVA by collecting a breccia rock (common lunar material) for a project for students from 70 countries who were touring the Mission Control Center and observing the activities. This rock became known as the Friendship Rock and tiny samples were distributed to those 70

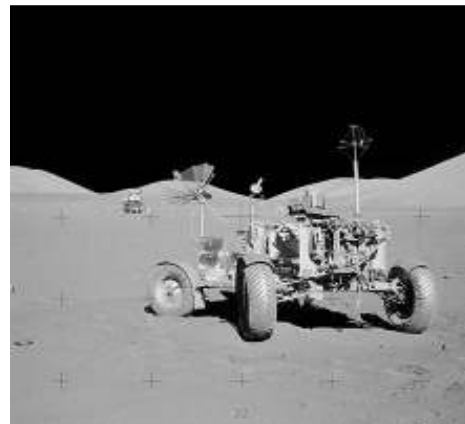
nations. The crew also put out a plaque commemorating the mission. Cernan had these words to say, from the Apollo Lunar Surface Journal:

And I'll read what that plaque says to you. First of all, it has a picture of the world. Two pictures. One of the North America and one of South America. The other covers the other half of the world including Africa, Asia, Europe, Australia, covers the North Pole and the South Pole. In between these two hemispheres, we have a pictorial view of the Moon, a pictorial view of where all the Apollo landings have been made; so that when this plaque is seen again by others who come, they will know where it all started. The words are, "Here man completed his first exploration of the Moon, December 1972 A.D. May the spirit of peace in which we came be reflected in the lives of all mankind." It's signed, "Eugene A. Cernan, Ronald E. Evans, Harrison H. Schmitt, and most prominently, Richard M. Nixon, President of the United States of America." This is our commemoration that will be here until someone like us, until some of you who are out there, who are the promise of the future, come back to read it again and to further the exploration and the meaning of Apollo.

As Cernan concluded the EVA (over seven hours again), he also made this statement:

I'm on the surface; and, as I take man's last step from the surface, back home for some time to come – but we believe not too long into the future – I'd like to just [say] what I believe history will record. That America's challenge of today has forged man's destiny of tomorrow. And, as we leave the Moon at Taurus-Littrow, we leave as we came and, God willing, as we shall return, with peace and hope for all mankind. "Godspeed the crew of Apollo 17.

It is particularly touching, but also thrilling to read these words spoken 50 years ago as Project Artemis and Orion are finally underway and many contracts are in work for lunar orbital and surface operations again!



A Last Look at Apollo 17 Site Photo Credit: NASA

***America* in Orbit; Rendezvous and Docking**

While *Challenger* was on the surface, CM Pilot Ron Evans was kept busy with a variety of scientific and observational tasks. He circularized the orbit of the CSM so that he could observe features at the same distance. The Service Module housed a scientific instrument module (SIM) with three new experiments on-board: A lunar sounder, an infrared scanning radiometer, and a far-ultraviolet spectrometer. The SIM also had the same instruments as previous flights, including a mapping camera, a panoramic camera, and a laser altimeter. The CM also had a biological cosmic ray experiment (BIOCORE) with five pocket mice, who were dubbed Fe, Fi, Fo, Fum and Phooey by the crew. Four of the five mice survived the flight and had some health issues upon return that were not related to cosmic rays.

The lunar sounder beamed electromagnetic impulses toward the lunar surface to help develop a geological model of the interior. The radiometer created a temperature map of the surface, and the far-ultraviolet spectrometer was used to obtain information on the thin lunar atmosphere. Evans operated these instruments and did many observations and photographs, confirming the orange-colored material and seeing other colors on the surface.

Cernan and Schmitt successfully lifted off from the lunar service at 5:54 pm EST on December 14. Rendezvous and docking with *America* took place about two hours later. All of the samples were transferred, along with equipment and the ascent stage was jettisoned at 11:51 pm EST. The ascent stage impact on the lunar surface was recorded by the seismometers left by the various missions.

***Challenger* Returns to Earth**

At 6:35 pm EST on December 16, the CSM's SPS engine ignited for just over two minutes to propel the spacecraft away from lunar orbit and on a trajectory back to Earth. Evans performed a 65-minute EVA to retrieve the film cassettes from the SIM bay in the service module. He did this at 160,000 nautical miles from Earth, with assistance from Schmitt standing in the CM's hatch. Only three deep-space EVAs have been performed so far and this was the last EVA of the Apollo lunar program.

The crew performed more experiments with the infrared radiometer and the ultraviolet spectrometer. Only one minor course correction was required and on December 19, the SM was jettisoned, leaving only the CM for re-

entry. *America* reentered Earth's atmosphere and splashed down safely in the Pacific Ocean at 2:25 pm EST, only 6.4 miles from the recovery ship USS *Ticonderoga*. Mission Control in Houston was packed with many former flight controllers and astronauts celebrating the end of the last Apollo mission.

None of the three astronauts flew again in space. Short biographies are included below. *America* is on display at the Johnson Space Center in Houston, Texas and Gene Cernan's spacesuit is in the collection of the Smithsonian Institute. The last Apollo mission was a resounding success and we all hope and pray for a revitalization of lunar exploration with the Artemis program and some of the commercial entities now involved in space activities.

Eugene A. (Andrew) Cernan Biography

Gene Cernan was born on March 14, 1934 in Chicago, Illinois, the son of Andrew and Rose Cernan (she lived to see him walk on the moon). After high school he studied at Purdue University and accepted a partial ROTC scholarship in the Navy that required that he serve on the USS *Roanoke* between his junior and senior years. He graduated with a BS in Electrical Engineering in 1956.

He was commissioned as a Navy Ensign through the Naval Reserve, then changed to active duty and attended flying training at various Naval Air Stations. He was certified as a naval aviator, flying the FJ-4 Fury and A-4 Skyhawk jets. He obtained a Master Degree in aeronautical engineering from the Naval Postgraduate School. During his naval career, Cernan logged more than 5,000 hours of flying time and performed more than 200 successful carrier landings.

Cernan applied for and was selected for the third group of astronauts by NASA in October, 1963. Cernan and Thomas Stafford were selected as the backup crew for Gemini IX. The primary crew, Elliot See and Charles Bassett, were killed in a crash of their T-38A at Lambert Field in Missouri on February 28, 1966. Stafford and Cernan moved up to primary crew. The target Agena upper stage for their mission was destroyed in an explosion during the Atlas launch. An augmented targeting adapter was hurriedly assembled and launched on another Atlas and the Gemini mission was renamed Gemini IX-A. The mission finally launched on June 3, 1966 and the crew was unsuccessful in docking with the targeting adapter but Cernan did have a two-hour EVA that was only partially successful using a balky maneuvering unit.

Cernan was selected as the backup LM pilot for Apollo 7 (no LM carried on that mission) and then became the primary LM Pilot for Apollo 10, the final dress rehearsal

for the Apollo 11 mission. Cernan was teamed with Tom Stafford again and John Young on this mission; he and Stafford flew to within 8.5 nautical miles of the lunar surface. This mission was profiled in a MARS STAR in 2019.

Cernan turned down the LM Pilot position on Apollo 16 to be Commander of Apollo 17, the mission profiled in this History Corner. After Apollo, Cernan retired from the Navy in 1976 with the rank of Captain and went into private business. He was an expert commentator on the ABC network for the first three shuttle missions. He also contributed content to ABC News and *Good Morning, America*. He published his memoir in 1999 ([The Last Man on the Moon](#)). Cernan and Armstrong testified against cancellation of the Constellation program and he was a skeptic of companies like SpaceX until he saw their continued successes. He was married twice and had one daughter Tracy with his first wife Barbara Jean Atchley. He traced Tracy's name into the lunar dust during the last EVA. His second wife, Janis Ellen Jones, whom he married in 1987, had two daughters from a previous marriage and she survived him at his death. Cernan passed away from various health issues on January 16, 2017 at the age of 82. Cernan garnered many service honors and medals during his life and is in the Astronaut Hall of Fame. The Cygnus CRS OA-8E Cargo Delivery Spacecraft launched on November 12, 2017 was named in his honor.

Harrison H. "Jack" Schmitt, Jr. Biography

Schmitt was born on July 3, 1935 in Santa Rita, New Mexico and grew up in Silver City. He received a BS degree in geology from the California Institute of Technology in 1957, was Fulbright Scholar in Norway and earned a PH. D in geology from Harvard in 1964.

Before joining NASA as a member of the first group of astronaut-scientists selected in June 1965, Schmitt worked at the US Geological Survey's astrogeology center in Flagstaff, Arizona. After selection, he learned to become a jet pilot and spent time at Houston training Apollo crews on what they could observe on the lunar surface. He was selected for the backup crew for Apollo 15 with Vance Brand and Richard Gordon, having become proficient in CM and LM systems. He was assigned to Apollo 17 after the cancellation of Apollo 18 and 19, replacing Joe Engle.

After returning from the moon, Schmitt resigned from NASA in 1975 and was the Republican nominee for US Senator from the State of New Mexico in 1976. He defeated the incumbent, Joseph Montoya (a Democrat). He only served one term and was the chairman of the Science, Technology and Space Subcommittee. He was

defeated in 1982. Since that short political career, Schmitt has worked as a professor of Engineering Physics at the University of Wisconsin and also consulted and worked in public policy. He was the chair of the NASA Advisory Council from 2005-2008. He is an enthusiastic advocate of lunar exploration and mining and currently lives in Silver City, New Mexico. (He is 87 as of this writing in December, 2022). Schmitt never married. We saw a great lecture by him at the Apolopalooza event at Wings over the Rockies in 2019 for the 50th anniversary of the Apollo 11 landing. Schmitt has had numerous honors and awards and is in the Astronaut Hall of Fame.

Ronald E. (Ellwin) Evans, Jr. Biography

Evans was born on November 10, 1933 in St. Francis, Kansas. His family moved to Topeka during his high school days because one of his brothers had liver cancer (passed away in 1951). Another brother of Evans played football for the Denver Broncos (Jay Evans). Ron Evans decided to attend the University of Kansas to major in Electrical Engineering, securing a NROTC scholarship from the Navy. He graduated with that degree in June, 1956.

Evans wanted to pursue a career in naval aviation and was commissioned as an ensign. He was assigned to several Naval Air Stations, learning various flight systems. He became a fighter pilot based at NAS Miramar, flying FJ-3 Furies and the new F8U Crusader. He married Janet Pollom from Topeka in December, 1957; they had two children and were married until his death. Returning to his flying duties, he became a flight instructor.

Evans first applied to NASA in 1963, along with fellow classmate at the Naval Postgraduate School Gene Cernan. He passed several obstacles, but was informed that he was turned down in October, 1963. He continued his studies and graduated with a Master of Science degree in aeronautical engineering. Evans moved on to sea duty on the USS *Ticonderoga* (ironically, the recovery ship for the Apollo 17 mission). He flew combat missions over Vietnam during this time. In 1965, NASA announced the opportunity for more pilot astronauts and Evans re-applied. He was accepted in the class that was announced in April, 1966, but before he reported for duty, he was awarded the Navy Commendation Medal for attacks on Viet Cong units and flew more sorties in support of that war.

After reporting to NASA, Evans became a CSM specialist. He was on the support crew for the Apollo 1 mission and worked inside the Apollo 1 spacecraft for a few hours before the fatal fire. Evans also served on the support

crews for Apollo 7 and was a CAPCOM for Apollo 7, Apollo 11 and Apollo 14. Through a series of events and reassignments, he was chosen by Cernan as the backup CMP for the Apollo 14, leading ultimately to the prime crew assignment for Apollo 17.

After Apollo 17, Evans was promoted to Captain in the Navy and served as the backup CMP for the Apollo-Soyuz Test Project. He retired from NASA in 1977 and he and his wife moved to Scottsdale, Arizona to be near her parents. He worked for various companies and as a consultant. He died unexpectedly in his sleep from a heart attack on April 7, 1990. Evans received numerous commendations and awards for his naval and NASA service and is in the Astronaut Hall of Fame.

Resources and Links

Apollo Flight Journal: <https://history.nasa.gov/afj/>

Apollo Lunar Surface Journal:
<https://www.hq.nasa.gov/alsj/a17/a17.html>

Apollo 17 Mission Summary:
<https://solarsystem.nasa.gov/missions/apollo-17/in-depth/>

Wikipedia: Astronaut Biographies, general overviews of the mission:
https://en.wikipedia.org/wiki/Apollo_17

Next Edition

In the next MARS STAR, I will begin a series on Skylab, looking at the design and deployment of the lab itself (Skylab launch on the last Saturn V) and the first crew (Skylab 2). See my announcement for how you can participate in the stories of Skylab later in 2023.

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