



# NEWS & NOTES

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## FROM THE CHIEF HISTORIAN



The transition from 2016 to 2017 has been full of highs and lows (and I'm not being political here).

On top of having a productive 2016, we saw a part of NASA's history go from "hidden" to an international sensation. Isn't it great to see a book about our past hit the top of the *New York Times* bestseller list and then become a multiple-Oscar-nominated movie? (I'm also struck by how many "space" movies there were over this last holiday season. Doesn't that strike you as promising?) In both book and dramatized movie formats, *Hidden Figures* has not only shed light on our history but has touched the hearts and minds of people around the world. I've seen the inspiration it provides our kids and the lessons it reinforces for those of us who are a bit older. It is our incredible good fortune to have such skilled authors and moviemakers leverage the work of NASA historians and archivists, both past and present. How lucky can we get?

But over the last few months, there have also been the many (sometimes it felt like far too many) sobering moments. I think, for example, of the recent deaths of childhood heroes like John Glenn and Gene Cernan—and of the passing of people whom I've come to know and love during my time at NASA, like Harriett Jenkins and Piers Sellers. At the end

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## THE LANGLEY CENTENNIAL: A READING LIST

By Bill Barry

To kick off the centennial year for Langley Research Center, our last edition of *News & Notes* featured an appreciation of Langley's broad impact on NASA. If you haven't had a chance to read about the Langley diaspora at Ames Research Center, Glenn Research Center, and most of the rest of what we know as NASA, I urge you to take another look at our previous edition. This edition, we are going to feature some historical resources that will help you appreciate the history of Langley Research Center itself.

The incredible contributions of Langley to NASA history are suggested by the number of NASA history publications devoted to the Center—there are eight specifically about Langley and many more that touch on the Center and its contributions. At the very top of your Langley history reading list should be the seminal two-volume history of the Center by Professor Jim Hansen. Jim is now director of the Honors College at Auburn University and is renowned for his award-winning biography of Neil Armstrong, *First Man*. But he got his professional start in life as the Langley Center historian and made his prodigious skills apparent early on. *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917–1958* (PDF version: <https://history.nasa.gov/SP-4305.pdf>), published in 1987, was met with tremendous critical acclaim. Not only is it

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*From the Chief Historian (continued)*



NASA Acting Administrator Robert Lightfoot stands with June Scobee Rogers, widow of Challenger commander Dick Scobee, and Sergeant Ruth Hanks, along with other participants in NASA's 2017 Day of Remembrance at Arlington National Cemetery. (Photo credit: NASA)

of this January, we also marked the 50th anniversary of the loss of Gus Grissom, Ed White, and Roger Chaffee in the Apollo 1 fire. Nadine Andreassen and I had the honor of serving as the family escorts for the Chaffee family at the ceremony we held marking NASA's Day of Remembrance at Arlington National Cemetery on 31 January. The solemn ceremonies at Arlington are always powerful, but they were particularly poignant this year. This time, as we escorted the Chaffee family, it was particularly clear that the costs we pay for our mistakes in space exploration go far beyond the individual lives lost—they ripple through the generations that follow. Yet I was both humbled and buoyed by Mrs. Chaffee's strength and graciousness. Although it has been a winter full of reminders of our mortality and our fallibility, it also carries the useful reminders of lessons we should never forget and the joy of lives lived to the full with purpose.

This year is certainly shaping up to be full in many ways. We've got a number of publications reaching the end of the production pipeline in 2017. About the

time that this newsletter is published, the "NASA and the 'Long' Civil Rights Movement" symposium will be taking place in Huntsville, Alabama. In May, historians and archivists from across NASA will gather at the Jet Propulsion Laboratory for our annual History Program Review. Throughout the spring and summer, we'll be making plans for the upcoming 60th anniversary of the establishment of NASA (in 2018) as well as the 50th anniversary of the Apollo missions (in 2018, 2019, and beyond). And, of course, this year we will continue to mark the centennial of Langley Research Center. The team at Langley has a long list of activities for the year, including a centennial symposium in the middle of July. If you are a fan of NASA history, you have lots to look forward to this year.

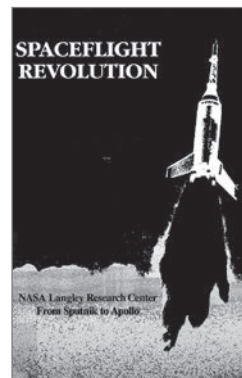
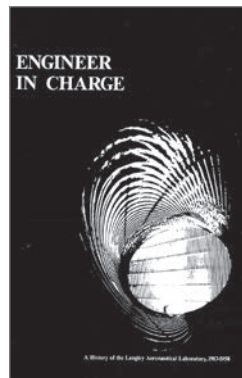
Until next quarter, Godspeed,

**William P. Barry**  
Chief Historian

*The Langley Centennial: A Reading List (continued)*

a highly readable and insightful history of Langley during the era of the National Advisory Committee for Aeronautics (NACA), but it includes an invaluable set of appendices chock full of important (and fascinating) data about the personnel, facilities, aircraft, and organization of Langley during that period. *Spaceflight Revolution: NASA Langley Research Center From Sputnik to Apollo* (PDF version: <https://history.nasa.gov/SP-4308.pdf>) was released in 1995 and won that year's American Astronautical Society Emme Astronautical Literature Award. Recounting Langley's history from 1958 through 1975, *Spaceflight Revolution* set the standard for Center histories. During this Langley centennial year, I urge you to read both of these excellent books—not only will you learn a lot and gain incredible insights into NASA history, but you'll enjoy the ride.

For a look at more specific topics within Langley's 100 years of history, there are a number of other books in the NASA history series that you may enjoy. For a look at Langley's contributions to the science of flight, see *Crafting Flight* by Jim Schultz (PDF version: <https://history.nasa.gov/SP-4316.pdf>). Published in 2003 to mark the centennial of flight, this richly illustrated volume provides a capsule view of aeronautics history and the critical role of Langley (and its staff) in advancing that field. For an in-depth look at one specific flight program at Langley, check out *Airborne Trailblazer: Two Decades with NASA Langley's 737 Flying Laboratory*, by Lane Wallace (PDF version: <https://history.nasa.gov/SP-4216.pdf>). Lane is one of my favorite living aviation writers, and she puts her talents to excellent use in this book. We have also published a pair of autobiographical monographs about the life of a researcher at Langley.



Pictured are the covers for *Engineer in Charge* and *Spaceflight Revolution: NASA Langley Research Center from Sputnik to Apollo*.

*Journey in Aeronautical Research: A Career at NASA Langley Research Center* (PDF version: <https://history.nasa.gov/monograph12.pdf>) and *Journey into Space Research: Continuation of a Career at NASA Langley Research Center* (PDF version: [https://history.nasa.gov/SP-4540/sp4540\\_1.pdf](https://history.nasa.gov/SP-4540/sp4540_1.pdf)) provide the fascinating personal insights of W. Hewitt Phillips into what it was like to work at Langley during the heady days of high-speed aeronautics research and the transition to spaceflight. Finally, the inimitable Joe Chambers has written three books for us on Langley history: *Partners in Freedom: Contributions of the Langley Research Center to U.S. Military Aircraft in the 1990s* (PDF version: <https://history.nasa.gov/monograph19.pdf>), *Concept to Reality: Contributions of the NASA Langley Research Center to U.S. Civil Aircraft in the 1990s* (PDF version: <https://history.nasa.gov/monograph29.pdf>), and *Innovation in Flight: Research of the NASA Langley Research Center on Revolutionary Advanced Concepts for Aeronautics* (PDF version: [https://history.nasa.gov/monograph39/mon39\\_a.pdf](https://history.nasa.gov/monograph39/mon39_a.pdf)). Joe has also written

a number of other books in the NASA Aeronautics Book Series, including one on the Langley Full-Scale Wind Tunnel: *Cave of the Winds*, available at [https://www.nasa.gov/connect/ebooks/cave\\_of\\_the\\_winds\\_detail.html](https://www.nasa.gov/connect/ebooks/cave_of_the_winds_detail.html).

Sadly, most of these books are now out of print. If you prefer the old-school pleasures of having a hard-copy book in your hands, you can find copies of most of these books from online book retailers.

I've actually come across copies of Jim Hansen's books in a local used book shop, but we've made it even easier for you. The links above will take you to free PDF copies of each of these works, so you have no excuse not to indulge in some reading about the history of our oldest NASA Center. Enjoy!

## NEWS FROM HEADQUARTERS AND THE CENTERS

### NASA HEADQUARTERS

Washington, DC

#### History Division and Historical Reference Collection (HRC)

By Bill Barry

As usually happens after a presidential election, NASA Headquarters continues business as usual until the new team of political appointees arrives. Although President Kennedy nominated Jim Webb to be NASA Administrator just 10 days after his inauguration in 1961 (and even that was criticized by some as overly late), the process has become considerably slower in recent decades. For example, in 2009, President Obama nominated Charlie Bolden to be NASA Administrator on 23 May, over four months after his inauguration. So we have come to expect that the transition, and any changes in personnel and policy that may come with it, may take several months. In the meantime, NASA continues to make history—so we have lots to do.

One of the most important things we've started since the December *News & Notes* was kicking off the hiring process for a new chief archivist. Headquarters personnel budget issues had prevented us from backfilling Jane Odom immediately after she retired in May 2016. In late December, we finally got the go-ahead to fill that position, and we put out an advertisement on USAJobs.gov with a very short turnaround time for applications. I was concerned that the timing of the advertisement over the holidays would reduce the number of applicants and the quality of the pool. I was, thankfully, wrong. We had a great pool of applicants, and narrowing the field was quite a challenge. Unfortunately, the day before we began interviews, President Donald Trump announced a government-wide hiring freeze. We completed the interviews but had to wait for clarification on whether the freeze applied to this position. There is a time limit on the freeze, so even in the worst case, I hope that

we'll be able to have a chief archivist in place by the time of our next quarterly newsletter.

The success of the movie *Hidden Figures* has been a delight and a continuing source of work. Not only has the movie done well in the box office, but it won three Oscar nominations (Best Picture, Best Adapted Screenplay, and Best Supporting Actor—for Octavia Spencer as Dorothy Vaughan). As of this writing, it's the highest-grossing Best Picture nominee. Many people at NASA, most notably our colleagues at Langley Research Center, made considerable contributions to the movie. Some of those people were recognized by name in the credits of the movie, but there were many more who dug up pictures, artifacts, and obscure facts throughout 2016 that contributed to the movie. With all of the financial success, the Oscar buzz, and premieres in other parts of the world, we have also had a stream of followup questions and requests for information from the media regarding our involvement in the movie. This has given us yet another opportunity to tell the stories of our past and also reflect on the successes and challenges of more recent times. As I've mentioned in a number of press interviews, having someone like Margot Lee Shetterly use our archival collections to write an insightful and original book is a government historian's dream. Having that book turned into a major motion picture is simply an incredible stroke of luck. (By the way, did you know that screenplay writer Allison Schroeder's parents and grandparents worked at NASA? That's keeping it in the family.)

Our next major planning challenge this year will be working on NASA's 60th anniversary and various Apollo missions' 50th anniversaries. Typically, we celebrate NASA's "birthday" on 1 October—the day in 1958 when NASA formally came into existence. Next year, that date will come just 11 days prior to the 50th anniversary of the launch of Apollo 7. That will be followed by a series of Apollo mission anniversaries in quick succession through the next year. Such



In the Press Site auditorium at Kennedy Space Center in Florida, members of the media participate in a news conference with key individuals from the motion picture *Hidden Figures*. From the left are John Zarrella, former CNN space correspondent, serving as moderator; Ted Melfi, director and one of the writers of *Hidden Figures*; Octavia Spencer, who portrays Dorothy Vaughan; Taraji P. Henson, who portrays Katherine Johnson; Janelle Monáe, who portrays Mary Jackson; Pharrell Williams, musician and producer of *Hidden Figures*; and Bill Barry, NASA Chief Historian.

anniversaries present a great opportunity to reflect on what we have accomplished and learned and to consider our trajectory for the future. At present, we are reviewing the calendar and considering options.

This spring, we have Hannah Hotovy interning with us. Hannah is a senior at Nebraska Wesleyan University and comes to us directly from a fall semester abroad in the Czech Republic. She'll be here from the end of January until the start of May. We'd like to keep her longer, but she does have her graduation ceremony to attend in mid-May, so I guess that we'll have to let her go. One thing that Hannah will miss is the annual History Program Review, which will take place 9–11 May at the Jet Propulsion Laboratory (JPL). Thanks to our colleagues at JPL for hosting historians and archivists from across the Agency! We will have much to do, and it seems fitting to be doing our history work in such a historic location.

## AMES RESEARCH CENTER (ARC)

Moffett Field, California

### Reference Collection

By April Gage and Danielle Lopez

The History Office Archives would like to extend a hearty thanks to Ames engineer, amateur videographer, and aerospace history enthusiast Michael F. Wright for donating to us a collection of his personal footage of our Center. We like to think of Mike as a citizen historian: just as citizen scientists gather raw data to support the endeavors of scientific research organizations, Mike has collected raw footage that enriches our historical collections and supplements the Center's official media productions. For nearly a decade, Mike has been toting his camera equipment to various activities around Ames and unselfconsciously capturing slices of Center life. The result has been an assortment of moving pictures that provide a unique and eclectic view of the Center. Spanning



Michael F. Wright films himself hefting a new electronic news-gathering camera in his home studio. (Photo credit: Michael F. Wright)

from 2008 to the present, with durations ranging from 13 minutes to 3 hours, the bulk of this usually raw footage captures annual celebrations such as Halloween costume and pumpkin-carving contests in the cafeteria, as well as the chili cook-off and the car show that typically stretches down DeFrance Avenue from the National Full-Scale Aerodynamics Complex to the History Office. In these movies, you will see employees from all stations, from food service workers to astronauts, reveling in festivities and sometimes answering Mike's questions about their roles at Ames. Other films capture some of the spirit and flavor of special events involving the public, such as Moonfest in 2009 or the NASA Ames Science Night featuring the Lunar Atmosphere and Dust Environment Explorer (LADEE) mission in 2013.

In some videos, one can see an occasion from various perspectives, including a view of the stage during an Ames Jazz Band performance or during a speech by Senior Historian Jack Boyd. In others, Mike is actively engaged with event participants, catching people's attention and conducting impromptu interviews with them. You never know who might be caught by Mike's camera. While reviewing and cataloging this footage over the years, April was occasionally startled to find herself in Mike's footage as a ceremony attendee or, in one mildly mortifying case, decked out in a lavender wig at a Yuri's Night celebration.

## GLENN RESEARCH CENTER (GRC)

Cleveland, Ohio

By Anne Mills

On 5 October 2016, the NASA Glenn Research Center was designated a historic district in the state of Ohio. The "Lewis Field Historic District" recognizes GRC's accomplishments in aircraft propulsion, spaceflight propulsion, aircraft and spaceflight safety, and aerospace materials research. In addition to the historical importance of the research performed at the Center over the past 75 years, the district acknowledges the architectural significance of the lab as an intact example of a federally planned, funded, and designed research facility. The original 1941 campus footprint that was built within the outline of the Cleveland National Air Races parking lot is considered the area of significance. A historic district marker from the Ohio History Connection was placed in front of the Administration Building and dedicated in a ceremony on 5 October. Historic district tours have been held for local historians and historic preservation experts. The tours include a video with an in-depth historical interpretation of the lab's development and a stop at our National Historic Landmark (NHL), the Zero Gravity Research Facility.

It was with tremendous sadness that we bade farewell to our namesake, John H. Glenn. Long before the Center was named in his honor, he trained there with his fellow Mercury 7 astronauts in the Multi-Axis Space Test Inertia Facility (MASTIF)—one of the most dramatic of the early astronaut tests—in which they were spun simultaneously on the pitch, roll, and yaw axes at up to 50 revolutions per minute. As a U.S. Senator, he visited GRC many times and was an advocate for the value of the research performed here. In May 1999, the Center was renamed the NASA John H. Glenn Research Center at Lewis Field in honor of his many contributions to the space program and his civic leadership, as well as his connection to his home state of Ohio. He and his wife, Annie Glenn, continued to make stops at the Center, especially for events aimed at inspiring students. As with all of the trailblazers who have gone before him, the loss of John



Pictured is the new historic district marker installed by the nonprofit organization Ohio History Connection. It was placed in front of the Administration Building at NASA's Glenn Research Center and dedicated in a ceremony on 5 October 2016. (Photo credit: NASA/Marvin Smith)

Glenn leaves a tremendous hole. We are honored to bear his name and carry on his legacy through the deep spirit of service he inspired in us all.

## JOHNSON SPACE CENTER (JSC)

Houston, Texas

By John Uri

As hoped, the new year is bringing some positive changes to the JSC History Office. Construction is rapidly wrapping up on our new offices in JSC's Building 1, the Center's main administration building, and we moved in during January. The new digs provide ample office and meeting space, as well as storage for books, files, and electronic equipment. Organizationally, we are well integrated into the Knowledge and Quality Systems Management Office and the overall Safety and Mission Assurance Directorate. We even had an official JSC History Office photo taken. I also want to personally thank everyone at the various NASA Centers who took the time to talk to me about their history and archival programs—I certainly learned a lot!

As we noted in the previous quarter's newsletter, the National Trust for Historic Preservation held its annual meeting in Houston, Texas, on 15–18 November. Dr. Jennifer Ross-Nazzal and Sandra Tetley, the JSC Center Historic Preservation Officer, presented two workshops on the plans for the restoration of the Apollo Mission Operations Control Room (MOCR), a National Historic Landmark, to how it looked in July 1969 during the Apollo 11 mission; workshop participants toured the MOCR, learned about the restoration plans, and heard from former NASA Flight Directors Gene Kranz and Glynn Lunney. Jennifer and Sandra also held a brief breakout session at the George R. Brown Convention

Center in downtown Houston. The 30-minute session was open to all conference attendees and summarized the restoration efforts thus far. Jennifer was interviewed by the *New York Times* regarding the MOCR restoration, and her comments appeared in an article in the 17 November 2016 issue. You can read the article here: <http://go.nasa.gov/2iLlyOZ>.



JSC History Office staff, from left to right: Jennifer Ross-Nazzal, John Uri, and Sandra Johnson, thrilled with the positive changes at JSC, give the upcoming year a thumbs-up. (Photo credit: NASA)



Participants enjoyed meeting Gene Kranz and Glynn Lunney, pictured on the right of each photograph. (Photo credit: NASA)

This fall, the NASA Headquarters Science Mission Directorate (SMD) requested that the JSC History Office conduct oral history interviews with past and present employees who worked on various SMD projects or held key SMD management positions. Approximately 20 individuals from NASA Headquarters, Ames Research Center, Goddard Space Flight Center, and the Jet Propulsion Laboratory have been identified, and planning is under way to complete the interviews in fiscal year (FY) 2017. Once the interviews are finished and the transcripts are released, they will be found on the JSC History Portal (<http://www.jsc.nasa.gov/history>), along with transcripts from all oral history projects.

Finally, the JSC History Office provided support for the Apollo 1 Lessons and Legacies event held at JSC's Teague Auditorium on 24 January, JSC's Day of Remembrance. The knowledge-sharing event, part of the ongoing Lessons and Legacies series, was moderated by astronaut Nicole Mann. Panelists Apollo 1 Project Engineer Gary Johnson, Apollo 1 backup crewmember Walt Cunningham, former Flight Director Glynn

Lunney, and former astronaut Frank Borman (who appeared on videotape) presented lessons learned from the accident and how those lessons can be applied to current and future spaceflight programs. The JSC History Office provided oral history transcripts with comments about the Apollo 1 fire, the recovery from the disaster, and lessons learned from the accident, as well as other relevant historical research.

## LANGLEY RESEARCH CENTER (LARC)

### Hampton, Virginia

By Gail Langevin

#### NASA Langley Begins Centennial Year

The excitement at Langley is building as we begin our centennial year.

On 1 December 2016, Langley's visitor center at the nearby Virginia Air & Space Center hosted an advanced screening of the film *Hidden Figures*, the Oscar-nominated movie based on Margot Lee Shetterly's book about the African American female mathematicians who worked at Langley's West Area Computing Unit. Actress Octavia Spencer, who portrayed Dorothy Vaughan, viewed the film, along with Katherine Johnson and Ms. Johnson's daughters and grandchildren. Mary Jackson's family and Dorothy Vaughan's family also attended, as well as Pharrell



Katherine Johnson, her daughter Joylette Hylick, and actress Octavia Spencer enjoy a few minutes of conversation prior to the viewing of *Hidden Figures*. (Photo credit: NASA Langley/Dave Bowman)





Former NASA Administrator Charlie Bolden stands with former computer honorees Christine Richie (red sweater) and Katherine Johnson, along with Johnson, Jackson, and Vaughan family members. Langley Center Director Dave Bowles is in the back row. (Photo credit: NASA Langley/Dave Bowman)

Williams's parents. Williams wrote music for the film's score and was one of the film's producers. Then—NASA Administrator Charles Bolden recognized Johnson, Jackson, and Vaughan, as well as former West Area

Computing Unit employee Christine Richie, in a special ceremony prior to the film.

The Hampton History Museum in Hampton, Virginia, opened a new exhibit featuring the careers of computer-turned-programmer Dorothy Vaughan, computer-turned-engineer Mary Jackson, and computer-turned-aerospace-technologist Katherine Johnson. The exhibit also features a 1957 Friden calculating machine, similar to that used by Langley's computers. Of special note is a 5 May 1958 memo from Associate Director Floyd Thompson that dissolved the West Area Computers. This historic memo was loaned by Dorothy Vaughan's daughter, Ann Vaughan Hammond, for the exhibit.



A display case at left contains a 1957 Friden STW-10 mechanical calculator, the type used by NASA human computers, including Katherine Johnson. "If you were doing complicated computations during that time, this is what you used," said Hampton History Museum Curator Allen Hoilman. The machine weighs 40 pounds. More photos of the exhibit and more details are available at <https://www.nasa.gov/feature/langley/museum-exhibit-highlights-nasa-langleys-human-computers-from-hidden-figures>. (Credit: NASA/Dave Bowman)

Recently, a photograph was found in the NACA/ NASA Langley collection that shows the building where the West Area Computers worked. As mentioned in Margot Lee Shetterly's book, the West Area Computers reported to work at building 1195. Although that building number is the same building number as a current NASA Langley building's, the buildings are not the same. The historical building 1195 sat partly on the site of the current 1195 and was



In this photo, the historical building 1195 is in the center of the photo. It is a long, light building with two rows of windows facing a parking lot that still exists. The streets that run along two sides of the building are currently pedestrian walkways. A partial view of the Langley racetrack is visible in the foreground, as is the 16-Foot Transonic Tunnel, which has since been demolished. Across the street from the 16-Foot Transonic Tunnel is building 1148, the Structures and Materials Lab, which is still standing. (Photo credit: NASA)

sited perpendicular to the current building. See the photo above.

The historical building 1195 was then called a warehouse, but it also had offices for Accounting, the *Air Scoop* (precursor to *Researcher News*), the Cost Office, the Fiscal Officer, Insurance Hospital Claims, Insurance Collection, Insurance Information, the Personnel Officer, Personnel Records, the Procurement Officer, Purchase Files, the Purchase Office, and the Security Officer, as well as the West Area Computers. To the right of the 16-Foot Transonic Tunnel in the photo, the 4-Foot by 4-Foot Supersonic Pressure Tunnel is visible at the edge of the NACA Langley property line. This is the tunnel where Mary Jackson was working when she met Kazimierz “Kaz” Czarnecki, who encouraged her to pursue her groundbreaking career in engineering. The 4-Foot by 4-Foot Supersonic Pressure Tunnel has since been demolished. The National Transonic Facility currently sits on this site.

Langley’s centennial celebration traveling trailer exhibit arrived at the Center in mid-January. After

a few touch-ups, it will head out for a series of public events. The trailer features photos and hands-on exhibits about Langley’s past, present, and future.

A centennial symposium is being planned for 12–14 July 2017. The event will feature panel discussions and speakers in areas of the past, present, and future of Langley’s research. Invitations are expected to be extended to the entire NASA family, as well as to members of the public.

An open house is also planned for 21 October 2017.

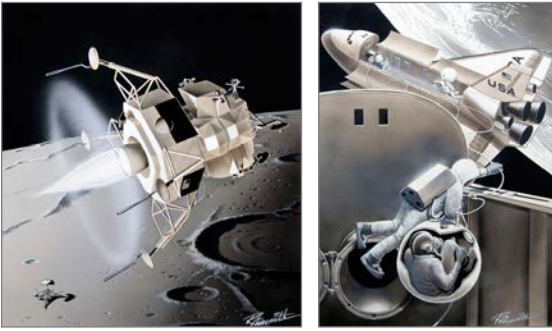
## MARSHALL SPACE FLIGHT CENTER (MSFC)

Huntsville, Alabama

By Brian Odom and Jordan Whetstone

The Marshall Space Flight Center History Office and Archives has remained busy over the past few months processing archival collections, answering reference queries, and conducting oral history interviews. An exciting recent development was the creation of a paid summer internship position in the office. Over the summer term, the intern will assist in the collection and processing of oral histories and archival materials while also developing historical content for Web, podcasts, and social media. Throughout the term, the student will engage with the relevant professional literature as applicable to assigned historical and archival duties. The position is for an 8- to 10-week term beginning in late May or early June and concluding in early August and is open to both undergraduate and graduate students. The deadline for submission of the application was 1 March 2017. Additional information on student opportunities can be found on the NASA One Stop Shopping Initiative (OSSSI) page at <https://intern.nasa.gov>.

In November, the office was asked by the MSFC exhibits coordinator to research those commissioned artists who created works of art to help invigorate public interest in space exploration. Some of the pieces are signed; others are not—making the task



Pictured is original artwork by Russ Arasmith. (Photo credit: NASA/Russ Arasmith)



Shown here is *Final Approach* by Renato Moncini. (Photo credit: NASA/Renato Moncini)

of finding information about the artists particularly difficult. At present, around 49 pieces from the exhibit's warehouse are being cleaned up and arranged for display in the Wernher von Braun Civic Center in downtown Huntsville. This exhibit, which is hosted by the group Arts Huntsville, opened to the public on 18 January 2017. The exhibit, along with some added pieces, will then be displayed at Lowe Mill ARTS & Entertainment, which houses over 200 artists in the United States' largest privately owned arts facility.

Pictured above are some of the pieces on display at the Von Braun Center.

On 16–17 March 2017, the MSFC History Office, together with the University of Alabama in Huntsville (UAH) History Department, will host the “NASA in the ‘Long’ Civil Rights Movement Conference” at the United States Space and Rocket Center in Huntsville to address the role/relationship of NASA to the “long” civil rights movement. No registration is required. The History Office is currently engaged in developing both a print and a digital exhibit to supplement the conference. The Web page will include a number of oral history interviews, biographies, primary sources,

and additional resources on the topic. The goal is to continue the discussion beyond the conference.

For a schedule of the conference, visit <https://www.nasa.gov/centers/marshall/history/nasa-in-the-long-civil-rights-movement-conference.html>.

## STENNIS SPACE CENTER (SSC)

### Stennis Space Center, Mississippi

By Jessica Herr

On 25 October 1961, NASA announced that a rocket test site would be established in Hancock County, Mississippi. The site, then known as Mississippi Test Operations, would be the designated facility to test the Saturn rockets that would launch the Apollo missions to the Moon. For the last 55 years, every single rocket engine that has put humans in space has been tested at what is now known as Stennis Space Center. It started in August 1961 with an ad hoc committee made of members from NASA Headquarters and Marshall Space Flight Center. They were tasked with finding the perfect place to test rockets that would send humans to the Moon. Because the rockets would be assembled at the Michoud Assembly Facility located outside of New Orleans, Louisiana, and then launched from Cape Canaveral, Florida, there were several variables to consider. NASA needed a facility



To build the Mississippi Test Operations, now Stennis Space Center, many trees were cut down beginning on 17 May 1963. (Photo credit: NASA)

that, ideally, would be between these two places, be away from a densely populated area because of the noise testing the rockets would make, have access to both waterways and high-ways, have a mild climate so that rocket testing could conceivably be done year-round, and have supporting communities nearby. Several already-existing facilities were in the running, but the committee kept coming back to a marshy, pine tree-covered area along the Pearl River in Mississippi. Eventually, the Pearl River site was selected over the final six sites, and construction would begin as soon as possible. But first, residents living along the Pearl River would need convincing to leave their homes in preparation for the building of the test site. Senator John C. Stennis of Mississippi was a proponent of the site from the beginning, using his contacts in Washington, DC, to plant the seed of having NASA operations in Mississippi. Senator Stennis himself visited residents of the Pearl River communities and appealed to their patriotism, asking them to give up their land and their homes “as a sacrifice in America’s crusade against the Soviets.” By this time, the Soviet Union had already put humans in space,

“**THE SACRIFICES OF THE RESIDENTS OF THE PEARL RIVER COMMUNITIES DO NOT GO UNNOTICED.**”

and America was aiming to win the space race to get a person on the Moon. Senator Stennis made a promise to the residents of the Pearl River communities that he would make sure their sacrifice was not in vain, that they would be compensated for their property, and that they would never be forgotten for “taking part in greatness.”<sup>1</sup>

The sacrifices of the residents of the Pearl River communities do not go unnoticed. Over the last 55 years, Stennis Space Center has tested the rockets for the Apollo missions, the engines for the Space Shuttle missions, and now the engines that will take humans farther than they have ever been in space. Our next goal: Mars. From the speech Senator Stennis gave to the residents of the Pearl River communities to NASA’s current plans to send humans to Mars, the sacrifices of these small lumber communities are not forgotten.

<sup>1</sup> Quoted in chapter 2 of Mack R. Herring, *Way Station to Space: A History of the John C. Stennis Space Center* (Washington, DC: NASA SP-4310, 1997), available online at <https://history.nasa.gov/SP-4310.pdf>.

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## OTHER AEROSPACE HISTORY NEWS

### CALL FOR PROPOSALS

The Society for the History of Technology (SHOT) is accepting proposals for open sessions for its annual meeting, which will be held **26–30 October 2017** in Philadelphia.

#### Submitting an Open-Session Proposal

Open-session proposals are limited to two pages total. The first page should include a title, session organizer name, and contact information at the top, followed by a paragraph or two clearly describing the proposed session topic or theme and its significance in the broader study of the history of technology.

Submit open-session proposals in a single PDF or Word file to the secretary's office ([SHOT.Secretariat@tue.nl](mailto:SHOT.Secretariat@tue.nl)). The secretary's office will post the proposals on the SHOT Web site as soon as possible.

#### Joining a Proposed Panel

To join a proposed panel from the open-session list, contact the organizer for that panel, not the Program Committee. Open-session organizers will then assemble full panel sessions and submit them to SHOT by the end of the regular call for papers on 31 March 2017. The Program Committee will review the resulting fully formed session proposals, whether traditional or unconventional, for quality and adherence to SHOT standards of gender, geographic, and institutional diversity.

For more information, visit [http://www.historyoftechnology.org/media/Philadelphia\\_2017\\_open\\_panel/Open\\_Sessions\\_Call\\_for\\_Proposals.pdf](http://www.historyoftechnology.org/media/Philadelphia_2017_open_panel/Open_Sessions_Call_for_Proposals.pdf).

### TRACEE HAUPT WINS 2016 SACKNOFF PRIZE FOR SPACE HISTORY

University of Maryland graduate student Tracee Haupt has won the 2016 Sacknoff Prize for Space History for her paper titled “The NASA Art Program: Technology, Art, and Conflicting Visions of Progress, 1962–1973.”

The winning paper from Ms. Haupt examines the NASA Art Program from 1962 to 1973 in the context of cultural debates on the societal impact of science and technology. Art seemed capable of responding to the public's doubts in a unique way, and it was one of the strategies that NASA used to “humanize” its technology and boost the space program's waning popularity. Most of what has been written about the art program tends to be celebratory, emphasizing positive depictions of NASA, but this paper analyzes the artwork and written accounts of the participants to demonstrate that there was more ambivalence toward NASA within the art program than has been previously suggested, and some of the artists used their work to caution against the potential dangers of a society blindly driven by technology.

Established in 2011, the annual prize is designed to encourage students to perform original research and submit papers with history-of-spaceflight themes. The winner receives a cash prize, trophy, and publication in the peer-reviewed journal *Quest: The History of Spaceflight*, along with an invitation to present at the annual meeting of SHOT.

Chosen from entries representing students at universities throughout the world, papers submitted over the years have covered a wide range of topics, including early animal research, the Korean space program, public diplomacy behind astronaut world tours, a history of space debris, and a military space visionary.

This year's jury consisted of four professional Ph.D. historians and members of the Society for the History of Technology–Albatross Committee (aerospace).

More information about the prize and the journal can be found at <http://www.spacehistory101.com/prize>.

For more information, contact Scott Sacknoff at 703-524-2766 or [scott@spacehistory101.com](mailto:scott@spacehistory101.com).

## RECENT PUBLICATIONS

### COMMERCIALY PUBLISHED WORKS

By Chris Gamble

*Russian Aviation, Space Flight, and Visual Culture* (Routledge Contemporary Russia and Eastern Europe Series), edited by Vlad Strukov and Helena Goscilo (Routledge, October 2016). This book explores how the themes of spaceflight and aviation were depicted in Soviet films, art, architecture, and literature. Incorporating many illustrations, the book covers the representation of Soviet heroes, the building of myths, and the relationship between this visual art form and wider Soviet culture and society. The book also relates the subject to contemporary cultural theory.

*The Politics and Perils of Space Exploration: Who Will Compete, Who Will Dominate?* by Linda Dawson (Springer, December 2016). Written by a former aerodynamics officer in the Space Shuttle Program, this book provides a look at how NASA coordinates and provides funding for commercial enterprises, as well as what is planned for space tourism and deep space exploration. In order to tell this story, it is important to understand the dangers of deep space and why it is a challenge to explore and utilize the resources found in deep space. The science of exploring space is explained, including types of rockets and current technologies. To illustrate the risks associated with space exploration, the specifics of some recent and long-ago failures will be discussed.

*British Secret Projects 5: Britain's Space Shuttle*, by Daniel Sharp (Crecy Publishing, September 2016). As the United States and Russia stepped up their efforts during the early 1960s to design ever-faster bombers and put humans and equipment into space, Britain quietly set to work devising its own hypersonic aircraft and crewed space vehicles. This book tells the story of how, from 1963 to 1966, English Electric/BAC's (Preston, England) works secretly led the world in reusable spacecraft design. A huge variety of designs formed the P42 project, and the end result was the Multi-Unit Space Transport And Recovery Device (MUSTARD),

which predated the Space Shuttle Program by six years. Based on access to the original project drawings, photographs, archives, and interviews with surviving members of the design team, the book offers insight into this chapter in U.K. space science history.

*Spaceships: An Illustrated History of the Real and the Imagined*, by Ron Miller (Smithsonian Books, October 2016). How have actual spaceships influenced the design of fictional ones like the Millennium Falcon and the Starship Enterprise? Did a fiction series in *Collier's* magazine really inspire us to create real-life space stations like Mir and the International Space Station? How have our depictions of space travel developed as the reality of space travel changed? In his new book, the author shows that when it comes to spacecraft, art can imitate life—and, bizarrely, life can imitate art. In fact, astronautics has roots in art. Long before engineers and scientists took the possibility of spaceflight seriously, virtually all of its aspects had been explored in art and literature. Miller takes readers on a visual journey through the history of the spaceship both in our collective imagination and in reality.

*Overview: Unexpected Images of the World We've Shaped*, by Benjamin Grant (Amphoto Books, October 2016). This book offers breathtaking photographs that showcase how humans have shaped Earth's landscape. Through more than 250 photographs—which highlight extraordinary patterns while also revealing a deeper story about humanity and our inextricable ties to the environment—and accompanying captions, readers are given an opportunity to appreciate our home in its entirety, to reflect on its beauty and fragility all at once.

*Mars: The Story of Our Future on Mars*, by Leonard David (National Geographic, October 2016). The National Geographic Channel looks years into the future with *Mars*, a six-part series documenting and dramatizing the next 25 years and showing how humans may one day land on and learn to live on Mars. This companion book to the series explores

the science behind the mission and the challenges awaiting those brave individuals.

*Space Mining and Its Regulation*, by Joseph Pelton, Ram Jakhu, and Yaw Otu Mankata Nyampong (Springer-Praxis, August 2016). This book reviews the current and possible future regulatory oversight of the state and nonstate actors now engaged in or planning to become engaged in the exploration and possible exploitation of space-related natural resources, whether they be liquid, gaseous, or mineral.

*US Spy Satellite Owners' Workshop Manual—1959 Onwards*, by David Baker (Haynes Publishing, December 2016). This book takes a look at the programs that resulted from the clandestine decision in the United States to build highly secret spy satellites in parallel with civilian space activities, showing details of the design and layout of photographic reconnaissance (spy) satellites including the Manned Orbiting Laboratory (MOL), America's once-planned military space station. This book focuses on the development of the spy satellites themselves and on the political arena in which their successes, and failures, were played out.

*Making Jet Engines in World War II: Britain, Germany, and the United States*, by Hermione Giffard (University of Chicago Press, October 2016). With this book, Hermione Giffard uses the case of the development of jet engines during World War II to offer a different way of understanding technological innovation, revealing the complicated mix of factors that go into any decision to pursue an innovative (and therefore risky) technology. Giffard compares the approaches of Germany, Britain, and the United States, showing that each approached jet engines in different ways because of its own particular war aims and industrial expertise.

*Rocket Propulsion Elements*, by George P. Sutton and Oscar Biblarz (9th edition, Wiley, January 2017). This guide for students and professionals combines fundamental concepts with industry applications to provide a practical introduction to rocket propulsion principles, mechanisms, and design as applied to guided missiles, spaceflight, satellite flight, and more. This

new ninth edition has been updated to cover new technologies in systems design, materials, propellants, applications, and manufacturing, with an emphasis on system types commonly used around the world today.

*Star Ark: A Living, Self-Sustaining Spaceship*, edited by Rachel Armstrong (Springer, November 2016). As space ventures have become more numerous, leading scientists and theorists have offered ways of building a living habitat in a hostile environment, taking an "ecosystems" view of space colonization. This book challenges prevailing ideas about sustainability and proposes a new approach to resource austerity and conservation. Readers will learn the details of the plans for Persephone, a project that is part of the company Icarus Interstellar's plans for the design and engineering of a living interior on a future multigenerational space station.

*A Space Traveler's Guide to the Solar System*, by Mark Thompson (Pegasus, November 2016). From preparations for takeoff and the experience of leaving Earth's atmosphere to the reality of living in the confines of a spaceship, astronomer Mark Thompson takes readers on a tour of the solar system.

*Controlling Risk: Thirty Techniques for Operating Excellence*, by Jim Wetherbee (Morgan James Publishing, November 2016). Since the beginning of the space program, astronauts have been developing techniques based on principles of operations to help flightcrews execute successful missions in the unforgiving environment of space. Astronauts, like operators in every hazardous profession, have learned that these techniques can create better performance, helping them accomplish more missions with higher quality. *Controlling Risk* discusses how these 30 techniques can enable operators to work together, improve performance in high-risk businesses, and accomplish much more in challenging environments.

*Incredible Stories from Space: A Behind-the-Scenes Look at the Missions Changing Our View of the Cosmos*, by Nancy Atkinson (Page Street Publishing, December 2016). In this book, the author takes readers beyond the surface of what some of the most

sophisticated space rovers, satellites, and telescopes are discovering. This guide provides information on these missions and the science surrounding them, as well as inside interviews with the scientists and engineers who devise mission concepts, build the spacecraft, study the data, and care for the spacecraft.

*Beyond Earth: Our Path to a New Home in the Planets*, by Charles Wohlforth and Amanda R. Hendrix (Pantheon, November 2016). In this book, the authors use research to argue that Titan—a moon of Saturn with a nitrogen atmosphere, a weather cycle, and a vast supply of cheap energy—offers the prospect of life without support from Earth.

*Deep Life: The Hunt for the Hidden Biology of Earth, Mars, and Beyond*, by Tullis C. Onstott (Princeton University Press, November 2016). This book takes readers to regions deep beneath Earth's crust in search of life in extreme environments, and it reveals how new discoveries by geomicrobiologists are helping in the quest to find life in the solar system.

*Space Warfare in the 21st Century: Arming the Heavens*, by Joan Johnson-Freese (Routledge, November 2016). This volume explores the issues arising from evolving space capabilities across the world and the security challenges these pose. The book subsequently discusses the complexity of the space environment and argues how tools of national power can be used, with some degree of balance, toward addressing space challenges and achieving space goals.

*Saturn V Rocket (Images of Modern America)*, by Alan Lawrie (Arcadia Publishing, November 2016). In 1961, President John F. Kennedy set the challenge of landing a human on the Moon by the end of the decade. To achieve that goal, NASA partnered with U.S. industry to build the largest rocket ever produced, the Saturn V. The rocket was designed and tested in record time; its first flight was in 1967. This book tells the story of the Saturn V.

*Eisenhower at the Dawn of the Space Age: Sputnik, Rockets, and Helping Hands*, by Mark Shanahan (Lexington Books, November 2016). This book

presents an alternative view of the development of space policy during Eisenhower's administration, assessing the hypothesis that his space policy was not a reaction to the heavily propagandized Soviet satellite launches, or even the effect they caused in the U.S. political and military elites, but the continuation of a strategic journey. This study engages with three distinct but converging strands of literature and proposes a revised interpretation of Eisenhower's actions in relation to rockets, missiles, and satellites. In reassessing the United States' first space policy, the book adds to the revisionism under way in relation to the Eisenhower presidency, focusing on the "helping hands" that enabled him to wage peace.

*Space Race Archaeologies: Photographs, Biographies and Design*, edited by Pedro Alonso (DOM Publishers, December 2016). By bringing together the work of photographer Petr Antonov, architect Philipp Meuser, designer Hugo Palmarola, and historian of science Asif Siddiqi, this book comes from a conference held at the Princeton University School of Architecture in March 2016 on technology and the Cold War, contesting the historiographical status of space race objects like rockets, launch pads, and satellite tracking stations.

*Seeing Our Planet Whole: A Cultural and Ethical View of Earth Observation*, by Harry Eyres (Springer, September 2016). This book shows how our newfound ability to observe Earth has wide and profound cultural and ethical implications. The 1968 Earthrise photograph helped spark a worldwide environmental movement; now the comprehensive coverage of global climate change provided by satellites has the potential to convince humanity that Earth's altering landscape is a product of Earth's changing climate system.

*Earth in Human Hands: The Rise of Terra Sapiens and Hope for Our Planet*, by David Grinspoon (Grand Central Publishing, December 2016). Without minimizing the challenges of the next century, Dr. David Grinspoon discusses how the 10,000-year view could be both essential and hopeful. In contrasting Earth's story with those of other planets, he illustrates that the present moment is not only one of peril, but also one of great potential. This book aims to reveal how



our geological, biological, technological, and moral histories have now converged to present us with a doorway into a new era, one where we can shape our planet for the better.

*The Projects of Skunk Works: 75 Years of Lockheed Martin's Advanced Development Programs*, by Steve Pace (Voyageur Press, December 2016). This book tells the stories behind more than 50 secret projects undertaken by the Lockheed Martin Skunk Works on behalf of the U.S. Armed Forces, the Defense Advanced Research Projects Agency (DARPA), and the Central Intelligence Agency (CIA)—all illustrated with official Skunk Works photography and commissioned artworks. This illustrated history tackles Skunk Works programs ranging from jet fighters and jet engines to missiles and rockets, as well as helicopters, research aircraft, airships, unmanned aerial vehicles and recon drones, and even the seagoing stealth ship Sea Shadow.

*Apollo Pilot: The Memoir of Astronaut Donn Eisele*, edited by Francis French (University of Nebraska Press, January 2017). In October 1968, Donn Eisele flew with fellow astronauts Walt Cunningham and Wally Schirra into Earth orbit on Apollo 7. The first crewed mission in the Apollo program and the first crewed flight after a fire during a launch pad test killed Gus Grissom, Roger Chaffee, and Ed White in early 1967, Apollo 7 helped restart NASA's human spaceflight program. Known to many as a lighthearted prankster, Eisele worked his way from the U.S. Naval Academy to test pilot school and then into the select ranks of America's prestigious astronaut corps. Unbeknownst to everyone, after his retirement as a technical assistant for human spaceflight at NASA's Langley Research Center in 1972, Eisele wrote in detail about his years in the Air Force and his time in the Apollo program. Long after his death, author Francis French discovered Eisele's unpublished memoir, and Susie Eisele Black (Eisele's widow) allowed the author access to her late husband's NASA files and personal effects.

*Faith 7: L. Gordon Cooper, Jr., and the Final Mercury Mission*, by Colin Burgess (Springer Praxis, July 2016). This book celebrates the final spaceflight in the Mercury series, flown by NASA astronaut Gordon

Cooper, who led an adventurous life in the cockpit of airplanes and spacecraft alike. On his Mercury mission, he became the last American ever (to date) to rocket into space alone. He flew in the Mercury and Gemini programs and served as head of flightcrew operations in both the Apollo and Skylab programs.

*The New Gold Rush: The Riches of Space Beckon!* by Joseph N. Pelton (Copernicus, November 2016). This book captures the advances being made in the harnessing of space as a global resource. The author tracks the growing number of space businesses and opportunities for investors, along with the possible benefits of spaceplanes, space stations, and even space colonies. The author also argues for more regulatory reform. This book is based on a study of international experts commissioned ahead of the UNISPACE+50 meeting; it distilled the results of this comprehensive fact-finding process into a compact form.

*Apollo 11 PAO Mission Commentary Transcript, July 16–24, 1969*, presented by Philip R. Wolfe (Lulu.com, November 2016). This book contains all 633 pages of the Apollo 11 Public Affairs Office (PAO) Spacecraft Commentary transcripts, documenting the events during the historic mission to the lunar surface.

*Large-Scale NASA Programs: 2015 in Review*, edited by Lucas Fletcher (Nova Science Publishers, Inc., December 2016). This book assesses the performance to date of NASA's portfolio of major projects; NASA's progress in developing and maturing critical technologies and stabilizing design; and NASA's initiatives to reduce acquisition risk and work that remains to strengthen the management of the Agency's largest, most complex projects. It also provides data on past and current NASA appropriations as well as proposed NASA appropriations for FY 2015 and proposed authorizations of NASA appropriations for FY 2015 and FY 2016.

*Konstantin Eduardovich Tsiolkovsky: The Pioneering Rocket Scientist and His Cosmic Philosophy*, by Daniel H. Shubin (Algora Publishing, August 2016). Konstantin Eduardovich Tsiolkovsky is considered to be the founder of Russian astrophysics and

cosmonautics. He was a self-taught scientist, inventor, philosopher, and science fiction writer despite having lost his hearing at age 10. Historian and biographer Dan Shubin presents Tsiolkovsky's life story and a selection of his compositions, including autobiographical notes, his cosmic and political philosophy, and his science fiction writings.

*Bossart: America's Forgotten Rocket Scientist*, by Don Mitchell (Mental Landscape, LLC, November 2016). Born in Belgium, Karel Jan Bossart moved to the United States and worked with skilled aircraft designers in the 1930s. After the Second World War, he developed the first American intercontinental ballistic missile, the Atlas.

*TIME Special Edition: John Glenn*, by the editors of *TIME* (*TIME*, December 2016). On 20 February 1962, astronaut John Glenn spent 4 hours and 56 minutes in space, orbiting Earth three times in one of the most highly anticipated events in American history. The historic mission propelled the United States in the space race, and Glenn became a national hero. He followed that feat with an extraordinarily rich and productive life, serving four terms as a Senator from Ohio and, remarkably, returning to space at age 77 in 1998. This 100-page special edition of *TIME* showcases Glenn and his signature achievements.

*Skylab 4: The NASA Mission Reports*, by Dwight Steven Boniecki (CGP/Apogee Books, December 2016). The Skylab Orbital Workshop had already successfully carried two crews in low-Earth orbit when Apollo astronauts Jerry Carr, Bill Pogue, and Ed Gibson strapped themselves atop one of the remaining Saturn IB boosters in 1973. In *Skylab 4: The NASA Mission Reports*, you will find details of NASA's final Skylab experiment through the documents published at the time of the mission, including the mission debriefing that tells the story in the crew's own words. Included with this book is a DVD featuring launch video of the Skylab 4 mission, audio of the reentry of Skylab, a Skylab slideshow, a Skylab 4 status report, a Skylab 4 in-flight press conference, and more.

*Space Launch Complex 10: Vandenberg's Cold War National Landmark*, by Joseph T. Page II (The

History Press, November 2016). Situated in the sand dunes of California's Central Coast, Space Launch Complex Ten, often called SLC-10 or "Slick Ten," is a National Historic Landmark that commemorates a Cold War legacy. Home to Vandenberg's Space and Missile Technology Center (SAMTEC), the facility contains the rich technological heritage of the U.S. Air Force's space and missile launch systems. As the only remaining Thor intermediate-range ballistic missile launch site in the world, SLC-10's noteworthy achievements span the globe. The complex trained British Royal Air Force missileers for Project EMILY, assisted during nuclear atmospheric tests in the Pacific, and launched military weather satellites in support of the covert National Reconnaissance Program.

*The Father of Canadian Astronautics: The Life of Dr. Philip A. Lapp, O.C.*, edited by Robert Godwin (Apogee Prime, November 2016). Using Dr. Philip Lapp's own words, Robert Godwin explains how Canada became a respected force in the world of astronautics. Topics covered include the Avro Arrow, the Alouette satellites, the birth of DirecTV, the Space Shuttle's Canadarm, and Radarsat.

*The Quest for Speed: Air Racing and the Influence of the Schneider Trophy Contests, 1913–31*, by Mike Roussel (The History Press, November 2016). This book charts the impact of the Schneider Trophy on aircraft design and discusses how air racing placed emphasis on both flying skills and aircraft capability.

*The Flying Man: Hugo Junkers and the Dream of Aviation*, by Richard Byers (Texas A&M University Press, November 2016). Hugo Junkers (1859–1935) was a German engineer and aircraft designer generally credited as the pioneer of all-metal airplanes. Although his company's humble beginnings included producing boilers and radiators, by World War II it was producing some of the most successful Luftwaffe planes, including the Ju-88, the primary bomber of the German air force. Hugo Junkers himself, however, was a socialist pacifist who saw aviation as a way to unify the world. Soon after the Nazi Party came to power in 1933, Junkers was forced to surrender his patents, found his holdings seized by the state, and was placed under house arrest. He died in 1935, a tortured genius exiled from his life's

work—but, perhaps fortunately, he was spared from seeing his inventions destructively unleashed across Europe. The book not only contributes to the history of aviation but also adds to humankind's understanding of the consolidation of power in Germany's march toward World War II.

*Disclaimer: The History Division wishes to thank volunteer Chris Gamble, who compiles this section for us every quarter. Please note that the descriptions have been derived by Chris from promotional material and do not represent an endorsement by NASA.*

## UPCOMING MEETINGS

The “NASA in the ‘Long’ Civil Rights Movement Conference” will be held **16–17 March 2017** at the University of Alabama in Huntsville. Visit <https://www.nasa.gov/centers/marshall/history/nasa-in-the-long-civil-rights-movement-conference.html> for details.

The International Astronautical Federation (IAF) Spring Meetings will be held **21–23 March 2017** in Paris, France. Visit <http://www.iafastro.org/events/iaf-spring-meetings/spring-meetings-2017> for details.

The annual meeting of the Organization of American Historians (OAH) will be held **6–9 April 2017** in New Orleans, Louisiana. Visit <http://www.oah.org/meetings-events/2017/> for details.

The annual meeting of the Society for History in the Federal Government (SHFG) will be held **13 April 2017** at the National Archives Building in Washington, DC. Visit <http://shfg.org/shfg/events/annual-meeting> for details.

The annual meeting of the National Council on Public History (NCPH) will be held **19–22 April 2017** in Indianapolis, Indiana. Visit <http://ncph.org/conference/2017-annual-meeting> for details.

The American Institute of Aeronautics and Astronautics (AIAA) Aviation and Aeronautics Forum and Exposition (AIAA Aviation 2017) will be held **5–9 June 2017** in Denver, Colorado. Visit <http://www.aiaa-aviation.org> for details.

The Kenneth E. Behring National History Day will be held **11–15 June 2017** in College Park, Maryland. Visit <https://www.nhd.org> for details.

The annual meeting for the Society for Historians of American Foreign Relations (SHAFR) will be held **22–24 June 2017** in Arlington, Virginia. Visit <http://shafr.org/conferences/annual/2017-annual-meeting> for details.

The NASA Langley Centennial Symposium will be held **12–14 July 2017** in Hampton, Virginia. Visit <https://www.nasa.gov/langley/100/events> for details.

ARCHIVES 2017, the annual meeting of the Society of American Archivists, will be held **23–29 July 2017** in Portland, Oregon. Visit <http://www2.archivists.org/am2017> for details.

The Experimental Aircraft Association (EAA) AirVenture Oshkosh will be held **24–30 July 2017** in Oshkosh, Wisconsin. Visit <https://www.eaa.org/en/airventure> for details.

The annual meeting of the Society for the Social Studies of Science (4S) will be held **30 August–2 September 2017** in Boston, Massachusetts. Visit <http://www.4sonline.org/meeting> for details.

AIAA Space 2017 will be held **12–14 September 2017** in Orlando, Florida. Visit <http://www.aiaa-space.org> for details.

The International Astronautical Congress will be held **25–29 September 2017** in Adelaide, Australia. Visit <http://www.iafastro.org/events/iaa/iaa-2017> for details.

## OBITUARIES

### JOHN GLENN, 1921–2016

*Portions of this piece are excerpted from our John Glenn tribute Web page, found at <https://www.nasa.gov/johnglenn>.*

**F**ormer astronaut and U.S. Senator John H. Glenn died on 8 December 2016 at the Ohio State University Wexner Medical Center in Columbus, Ohio.

Glenn, who served four terms as a U.S. Senator from Ohio, was one of the original Mercury Seven astronauts. His history-making flight aboard Friendship 7 on 20 February 1962 made him the first American to orbit Earth, showing the world that the United States was a formidable force in the space race.

John Herschel Glenn, Jr., was born 18 July 1921 in Cambridge, Ohio. He received a bachelor of science degree in engineering from Muskingum College in New Concord, Ohio.

Glenn entered the Naval Aviation Cadet Program in March 1942. Following graduation, he was commissioned in the Marine Corps in 1943, where he joined Marine Fighter Squadron 155 and spent a year flying F-4U fighters in the Marshall Islands. He flew 59 combat missions in the Pacific theater during World War II.

After the war, he was a member of Marine Fighter Squadron 218 on the North China patrol and served in Guam. From June 1948 to December 1950, he served as an instructor in advanced flight training in Corpus Christi, Texas. He then attended Amphibious Warfare Training in Quantico, Virginia.

During the Korean War, he flew 63 missions with Marine Fighter Squadron 311. As an exchange pilot with the Air Force, Glenn flew 27 missions in the F-86 Sabre.

Glenn attended Test Pilot School at the Naval Air Test Center, Patuxent River, Maryland. After graduation, he was the project officer on a number of aircraft. He



John Glenn is shown in his Mercury flight suit.

was assigned to the Fighter Design Branch of the Navy Bureau of Aeronautics (now the Bureau of Naval Weapons) in Washington from November 1956 to April 1959. During that time, he also attended the University of Maryland.

In July 1957, while he was the project officer of the F-8U Crusader, he set a transcontinental speed record from Los Angeles to New York—3 hours and 23 minutes. It was the first transcontinental flight to average supersonic speed.

Glenn accumulated nearly 9,000 hours of flying time, about 3,000 of it in jets.

After his selection as a Mercury astronaut, Glenn was assigned to the NASA Space Task Group at Langley, Virginia, in April 1959. The Space Task Group was moved to Houston and became part of the NASA Manned Spacecraft Center (now Johnson Space Center) in 1962.

Glenn was awarded the Distinguished Flying Cross on six occasions and held the Air Medal with 18 Clusters for his service during World War II and Korea. Glenn also received the Navy Unit Commendation for service in Korea, the Asiatic-Pacific Campaign Medal, the American Campaign Medal, the World War II Victory Medal, the China Service Medal, the National Defense Service Medal, the Korean Service Medal, the United Nations Service Medal, the Korean Presidential Unit Citation, the Navy's Astronaut Wings, the Marine Corps' Astronaut Medal, the NASA Distinguished Service Medal, and the Congressional Space Medal of Honor.



John Glenn climbs inside the Mercury capsule he dubbed Friendship 7 on 20 February 1962 before launching on the mission that would make him the first American to orbit Earth.

On 16 January 1964, Glenn resigned from the astronaut corps. The Marine Corps promoted him to colonel in October 1964, and he retired from the Corps on 1 January 1965.

He soon found another calling—in politics. Glenn won his U.S. Senate seat in 1974, carrying all 88 Ohio counties. He was reelected in 1980 with the largest margin in Ohio history.

Ohio returned him to the Senate for a third term in 1986, again with a substantial majority. In 1992, he was elected yet again, becoming the first popularly elected senator from his state to win four consecutive terms.

During his last term, he was the ranking member of both the Governmental Affairs Committee and the Subcommittee on Air/Land Forces in the Senate Armed Services Committee. He also served on the Select Committee on Intelligence and the Special Committee on Aging.



John Glenn and his wife, Annie, ride a float in a parade at NASA's Glenn Research Center. In 1999, NASA Lewis Research Center was renamed NASA John H. Glenn Research Center at Lewis Field in Glenn's honor.



Then-President Barack Obama presented former United States Marine Corps pilot, astronaut, and United States Senator John Glenn with the Presidential Medal of Freedom, the nation's highest civilian honor, on Tuesday, 29 May 2012, during a ceremony at the White House in Washington, DC.

Glenn was considered one of the Senate's leading experts on technical and scientific matters, and he won wide respect for his work to prevent the spread of weapons of mass destruction. He took pride in using his position on the Governmental Affairs Committee to root out waste in government and to clean up the nation's nuclear material production plants.

On 29 October 1998, at the age of 77, Glenn made history yet again when he became the oldest human ever to venture into space. As a payload specialist aboard the nine-day STS-95 mission, he and the other crewmembers supported a variety of research tasks, including Glenn's own investigations on spaceflight and the aging process, as well as the deployment of the Spartan solar-observing spacecraft and the Hubble Space Telescope Orbital Systems Test Platform.

Katherine G. Johnson, the "human computer" who verified the mathematics behind Glenn's flight on Friendship 7, an event portrayed in the film *Hidden Figures*, honored him after learning of his passing:

A good man has left Earth for the last time. John Glenn's life will long be remembered for his time in space, his courage, and his service to all Americans.



**A GOOD MAN HAS LEFT EARTH FOR THE LAST TIME. JOHN GLENN'S LIFE WILL LONG BE REMEMBERED FOR HIS TIME IN SPACE, HIS COURAGE, AND HIS SERVICE TO ALL AMERICANS.**

—Katherine G. Johnson



## GENE CERNAN, 1934–2017

*Portions of this piece are excerpted from our Gene Cernan tribute Web page, found at <https://www.nasa.gov/astrophotoprofiles/cernan>.*

Eugene Cernan, the last Apollo astronaut to walk on the Moon, died on 16 January 2017, surrounded by his family. Cernan, a U.S. Navy captain, holds the distinction of being the second American to walk in space and the last human (to date) to leave his footprints on the lunar surface.

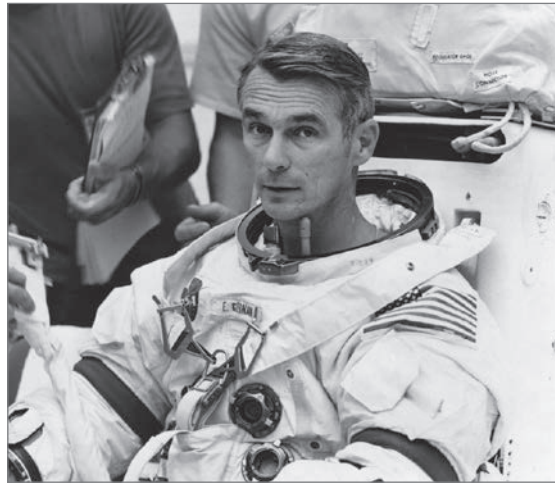
Former NASA Administrator Charles Bolden said in a statement shortly after Cernan's death, "Truly, America has lost a patriot and pioneer who helped shape our country's bold ambitions to do things that humankind had never before achieved."

Cernan was one of 14 astronauts selected by NASA in October 1963. He piloted the Gemini IX mission with commander Thomas P. Stafford on a three-day flight in June 1966. On that mission, Cernan logged more than 2 hours outside the orbiting capsule.

In May 1969, he was the Lunar Module pilot for Apollo 10, the first comprehensive lunar orbital qualification



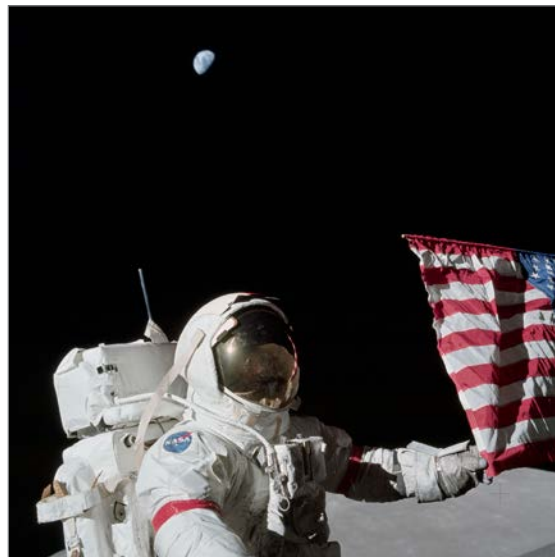
Apollo 17 commander Gene Cernan was photographed by fellow astronaut Harrison H. Schmitt inside the Lunar Module following an extravehicular activity. Note the lunar dust on Cernan's suit.



Gene Cernan prepares for a mission simulation in 1970 at NASA's Kennedy Space Center.

and verification test of the lunar lander. The mission confirmed the performance, stability, and reliability of the Apollo Command, Service, and Lunar Modules; it also included a descent to within 8 nautical miles of the Moon's surface.

Cernan concluded his historic space exploration career as commander of the Apollo program's last human mission to the Moon, Apollo 17, in December 1972.



Apollo 17 commander Eugene A. Cernan holds the lower corner of the American flag during the mission's first extravehicular activity on 12 December 1972. (Photo credit: Harrison H. "Jack" Schmitt)

On their way to the Moon, the Apollo 17 crew took one of the most iconic photographs in space-program history: the full view of the Earth dubbed the “Blue Marble.” The image shows Africa, the Arabian Peninsula, and the south polar ice cap. Despite its fame, the photograph has not really been appreciated, Cernan said in 2007:

What is the real meaning of seeing this picture? I’ve always said, I’ve said for a long time, I still believe it, it’s going to be—well, it’s almost 50 now, but 50 or a hundred years in the history of mankind before we look back and really understand the meaning of Apollo. Really understand what humankind had done when we left, when we truly left this planet, we’re



This classic photograph of Earth was taken on 7 December 1972 during Gene Cernan's Apollo 17 mission.





Gene Cernan celebrates the 25th anniversary of Apollo 17 at Space Center Houston, the visitor center of Johnson Space Center.

able to call another body in this universe our home. We did it way too early considering what we're doing now in space. It's almost as if JFK reached out into the 21st century where we are today, grabbed hold of a decade of time, slipped it neatly into the [nineteen] sixties and seventies [and] called it Apollo.

Apollo 17 established several new records for human spaceflight, including the longest lunar landing flight (301 hours, 51 minutes), longest lunar surface extra-vehicular activities (22 hours, 6 minutes), largest lunar sample return (nearly 249 pounds), and longest time in lunar orbit (147 hours, 48 minutes).

Cernan and crewmate Harrison H. "Jack" Schmitt completed three highly successful excursions to the nearby craters and the Taurus-Littrow Mountains, making the Moon their home for more than three days. As he left the lunar surface, Cernan said, "America's challenge of today has forged man's destiny of tomorrow. As we leave the Moon and Taurus-Littrow, we leave as we came, and, God willing, we shall return, with peace and hope for all mankind."

On 1 July 1976, Cernan retired from the Navy after 20 years and ended his NASA career. He went into private business and served as a television commentator for early flights of the Space Shuttle.

Cernan was born in Chicago on 14 March 1934. He graduated from Proviso Township High School in Maywood, Illinois, and received a bachelor of science in electrical engineering from Purdue University in 1956. He earned a master of science in aeronautical engineering from the U.S. Naval Postgraduate School in Monterey, California.

Cernan had this to say about human ambition and capability:

We truly are in an age of challenge. With that challenge comes opportunity. The sky is no longer the limit. The word "impossible" no longer belongs in our vocabulary. We have proved that we can do whatever we have the resolve to do. The limit to our reach is our own complacency.

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—Gene Cernan

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## DR. HARRIETT JENKINS: EDUCATOR AND EQUAL OPPORTUNITY ADVOCATE

By Andres Almeida

Dr. Harriett Jenkins passed away on 21 December 2016 at the age of 90. From 1974 until 1992, Jenkins served as NASA's Assistant Administrator for Equal Opportunity Programs, advancing workforce diversity in technical and administrative areas as well as the astronaut corps, where her leadership led to the recruitment of the first African American astronauts.

Prior to NASA, Jenkins served for 19 years as a public school educator in Berkeley, California, where she became the city's first African American female vice-principal. She later became principal and then assistant superintendent of schools. In 1974, she moved to Washington, DC, to be with her husband; shortly thereafter, she began working at NASA. Jenkins chaired the Agency's Task Force on Equal Opportunity and Affirmative Action, one of nine task forces of the Personnel Management Project, which led to the landmark Civil Service Reform Act of 1978. Her work earned her the Civil Service Commissioners' Award for Distinguished Service.

Jenkins was recognized with NASA's highest award, the Distinguished Service Medal, as well as the President's Meritorious Executive Award, NASA's Outstanding Leadership Medal, and the President's Distinguished Executive Award.



Dr. Harriett Jenkins is sworn in by NASA Administrator James Fletcher in 1974 as the Agency's Assistant Administrator for Equal Opportunity Programs. (Photo credit: NASA)

In 2000, she was honored by NASA with a graduate fellowship program bearing her name: the NASA Harriett G. Jenkins Pre-doctoral Fellowship. This fellowship provided funding for students to pursue graduate degrees in science, technology, engineering, and mathematics (STEM) fields. Even after her retirement from the federal government in 1996, Jenkins personally attended the annual meetings of the fellows to share her legacy, inspiring the next generation of scholars.

In an Agency-wide e-mail sent shortly after her passing, former Administrator Charles Bolden expressed his gratitude for Jenkins:

Dr. Jenkins' many professional accomplishments and the tremendous contributions she made in furthering civil rights efforts at NASA and throughout the country will never be forgotten.... I owe her a great debt of gratitude, as she helped recruit the agency's first African American astronauts in the late 1970s, which enabled me to have the life-changing



**DR. JENKINS' MANY PROFESSIONAL ACCOMPLISHMENTS AND THE TREMENDOUS CONTRIBUTIONS SHE MADE IN FURTHERING CIVIL RIGHTS EFFORTS AT NASA AND THROUGHOUT THE COUNTRY WILL NEVER BE FORGOTTEN....**

—Former Administrator Charles Bolden



experience of traveling to space in furtherance of our nation's journey of discovery.

As we celebrate Katherine Johnson and the Hidden Figures of the past who helped integrate our agency and advance NASA's goals even in a segregated society, I also want us all to celebrate the life of this iconic figure here at NASA without whom we may have had no Modern Figures—the women of color advancing all aspects of our work today. Much of our progress would not have been possible without Dr. Jenkins' dedicated work helping to ensure that all who wish to participate in science and space exploration have the opportunity to do so and to succeed beyond their wildest dreams.

For more information, read Jenkins's oral history, part of the NASA Johnson Space Center Oral History Project, at [https://www.jsc.nasa.gov/history/oral\\_histories/NASA\\_HQ/Administrators/JenkinsHG/JenkinsHG\\_8-5-11.htm](https://www.jsc.nasa.gov/history/oral_histories/NASA_HQ/Administrators/JenkinsHG/JenkinsHG_8-5-11.htm).

## PIERS SELLERS: SCIENTIST AND ASTRONAUT

By Andres Almeida

Dr. Piers Sellers left a legacy of stewardship when he died of pancreatic cancer on 23 December 2016 in Houston, Texas. He was 61.

A renowned climate scientist and veteran of three spaceflights from 2002 to 2010, Sellers would go on to become a speaker on the challenges of confronting global climate change.

Born in Sussex, England, on 11 April 1955, Piers John Sellers arrived at NASA's Goddard Space Flight Center in 1982 as a climate research scientist. From 1982 to 1996, he was involved in constructing and analyzing computer models of the global climate system and conducting large-scale field experiments in the United States, Canada, Brazil, and parts of Africa. In the 1990s, Sellers served as the first project scientist for the Terra mission, the first satellite in NASA's



Piers J. Sellers, STS-112 mission specialist, works on the Starboard One (S1) Truss, newly installed on the ISS.



Astronaut Piers J. Sellers is pictured on the aft flight deck of Space Shuttle Atlantis during the STS-112 mission in 2002.

Earth Observing System and a flagship of the Agency's Earth-observing fleet.

With 70 papers under his name, 30 of them as first author, Sellers was undoubtedly a prime candidate when he was selected to join the NASA astronaut corps in 1996. From 2002 to 2010, Sellers flew to the International Space Station (ISS) three times (STS-112, -121, and -132), contributing to research projects and assisting in Space Station assembly.

After being diagnosed with stage 4 pancreatic cancer in 2015, Sellers's optimism appeared to only strengthen. He leveraged his 35 total days in space and decades of science research to empower people around the world to confront Earth's changing climate. He gave dozens of interviews sharing his hopeful perspective, and he even appeared in Leonardo DiCaprio's documentary *Before the Flood*.

Goddard Center Director Chris Scolese remarked on Sellers's ability to energize those around him. "We remember Piers as an exceptional scientist and leader, but most importantly as an inspiring human being," Scolese said. "He could make you think anything was

possible, was always up for the adventure, and would remind you along the way how lucky we are to do the work we do here at Goddard."

Sellers offered this optimistic outlook in a *New York Times* op-ed in January 2016:

As for me, I've no complaints. I'm very grateful for the experiences I've had on this planet. As an astronaut I spacewalked 220 miles above the Earth. Floating alongside the International Space Station, I watched hurricanes cartwheel across oceans, the Amazon snake its way to the sea through a brilliant green carpet of forest, and gigantic nighttime thunderstorms flash and flare for hundreds of miles along the Equator. From this God's-eye[ ]view, I saw how fragile and infinitely precious the Earth is. I'm hopeful for its future. And so, I'm going to work tomorrow.

## DR. NEIL GEHRELS: GODDARD ASTROPARTICLE PHYSICS LABORATORY CHIEF

By Hannah Hotovy, NASA History Division Intern



Pictured is the official NASA portrait of Dr. Neil Gehrels as the chief of Goddard's Astroparticle Physics Laboratory.

NASA and the space community lost an innovator in the field of astronomy with the passing of Dr. Neil Gehrels on 6 February 2017 at the age of 64.

Gehrels began his work at NASA's Goddard Space Flight Center in 1982 after earning his doctorate from the California

Institute of Technology. Over a career spanning more than 30 years, Gehrels established himself as a global



Gehrels smiles and points at the Swift Gamma-Ray Burst Explorer spacecraft in the clean room at Goddard Space Flight Center. The mission, for which Gehrels was Principal Investigator, launched in 2004 and is now managed by Pennsylvania State University. (Photo credit: NASA)

figure in the study of gamma-ray bursts and the larger gamma-ray universe. As chief of the Goddard Astroparticle Physics Laboratory from 1995 until his death, Gehrels served as a project scientist and Principal Investigator for a number of notable missions, including the Fermi Gamma-ray Space Telescope, the Swift Gamma-Ray Burst Explorer, the Wide Field Infrared Survey Telescope, and the Compton Gamma Ray Observatory.

Gehrels's work has been broadly documented throughout the scientific community, having been published in a wide range of science journals and popular scientific magazines. He was recognized with many

high-profile accolades, including the NASA Exceptional Scientific Achievement Medal, the NASA Outstanding Leadership Medal, and Goddard's own John C. Lindsay Memorial Award. Additionally, he was recognized by the American Astronomical Society, the American Association for the Advancement of Science, the National Academy of Sciences, and other renowned scientific organizations. Most recently, in 2016, he was elected an honorary fellow to the Royal Astronomical Society in London.

Apart from his contributions to Goddard, Gehrels often offered up his time and talents to improve the lives of others. Following in his parents' legacy of service and advocacy, Gehrels was passionate about community outreach and volunteering. He and his family were active volunteers in underserved communities near Goddard. In 2005, he helped develop an internship program that allowed local disadvantaged high school students to work in his labs. You can read about his family tradition in this Goddard article: <https://www.nasa.gov/content/neil-gehrels-a-family-tradition>.

Gehrels's passion for his work, both inside Goddard and outside in the community, has built a legacy of achievement that will long be remembered.

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**DR. GEHRELS'S PASSION FOR HIS WORK, BOTH INSIDE GODDARD AND OUTSIDE IN THE COMMUNITY, HAS BUILT A LEGACY OF ACHIEVEMENT THAT WILL LONG BE REMEMBERED.**

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## ADELBERT O. TISCHLER: EARLY DEVELOPER OF LIQUID ROCKET ENGINES

By Andres Almeida

Adelbert O. “Del” Tischler, best known for initiating and directing the early development of liquid rocket engines for the nation’s space program, died on 12 January 2017 in Bethesda, Maryland. He was 98.

Tischler, known to most as Del, held numerous posts at NASA during the course of his career. He worked as a chemical engineer for the National Advisory Committee for Aeronautics (NACA) at the Aircraft Engine Research Laboratory, later known as Lewis Research Center and now Glenn Research Center.

Tischler was born on 9 October 1918 in Cleveland, Ohio. In 1958, Tischler was recruited to work with a group of scientists and engineers led by Abe Silverstein, Associate Director of Lewis Research Center, to help lay out a plan for space exploration to be pursued by a new agency—NASA. The ad hoc working group was composed primarily of scientists and engineers from the NACA’s Langley and Lewis research laboratories, with representation from the Jet Propulsion Laboratory and participation by the Air Force, Navy, and Army. Almost everything that was done in the first decade of the space program flowed from their vision, including sending humans to the Moon. Upon



Pictured is Del Tischler. (Photo courtesy of Marc Tischler)

NASA’s establishment in 1958, Tischler was named NASA’s Chief of Liquid Rocket Engines. Tischler later worked in the Office of Manned Space Flight, where he helped to develop the F-1, RL-10, and J-2—the engines used on the Saturn launch vehicles. He went on to serve as the Director of the Chemical Propulsion Division, within the Office of Advanced Research and Technology, from 1964 to 1969. Tischler then served as the Director of the Shuttle Technology Office (1970–72) and also worked on several task forces aimed at finding more cost-effective methods for space operations prior to his retirement in 1973.

Del Tischler was a fellow of the American Institute of Aeronautics and Astronautics. In 1967, he received the James Wyld Propulsion Award for his outstanding contributions to the research and development of liquid rocket propulsion systems. He also received the NASA Exceptional Service Award for his contributions to the Shuttle Technologies program. He has published over 60 reports and journal publications.



**TISCHLER LATER WORKED IN THE OFFICE OF MANNED SPACE FLIGHT, WHERE HE HELPED TO DEVELOP THE F-1, RL-10, AND J-2—THE ENGINES USED ON THE SATURN LAUNCH VEHICLES.**



## IMAGE IN NASA HISTORY



This official astronaut candidate portrait of Major General Charles F. Bolden was taken on 15 December 1980. A veteran of four spaceflights, he would remain a member of the NASA astronaut corps until 1998, when he returned for duty to the Marine Corps. Bolden would later be appointed by President Obama to serve as NASA Administrator from 2009 to 2017.

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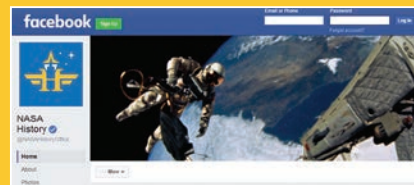
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