



FROM THE CHIEF HISTORIAN



It is such an honor and a delight to be joining the National Aeronautics and Space Administration (NASA) History Program Office. I have had a passion (some might say an obsession) with NASA and with history for as long as I can remember. In fact, the first thing I can remember is sitting in front of our black-and-white TV set and worrying about whether the heat shield would stay in place on John Glenn's Mercury capsule during reentry. From that day, I was hooked on all things aerospace. Much as I tried to convince myself to become an engineer, it became apparent early on that my inclinations and gifts lay elsewhere. I am very much looking forward to putting those skills and my breadth of experience to work with you and everyone else who shares an interest in the history of aerospace.

I am particularly pleased to be inheriting the post of Chief Historian from such a distinguished line of predecessors. The NASA history program is in great shape, and I am committed to maintaining its long-standing commitment to integrity and creativity in pursuing our task of collecting, preserving, and disseminating information about NASA and its role in our world. I would particularly like to thank Steve Garber, who has (for the second time) taken the helm for an extended period as Acting Director. Steve has done a remarkable job of juggling two full-time jobs, while simultaneously keeping a steady hand on the wheel as the History Program Office moved from the Office of International and Interagency Relations (formerly External Relations) to the Office of Communications. Thanks, Steve!

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Discussion of a forthcoming book:

WHEN BIOSPHERES COLLIDE: A HISTORY OF NASA'S PLANETARY PROTECTION PROGRAMS

By Michael Meltzer

We humans have always wanted to understand our place in the cosmos. Our inquiries have been reexamined and reformulated through the centuries as our knowledge of space science progressed and our technology for observing celestial bodies and making measurements improved. A basic question that we ask, and have asked for over two millennia, is, are we alone in the universe?

Scientists, philosophers, and politicians have recognized that exploration of new frontiers is a human imperative. At times, the very health and vibrancy of our civilization may depend on it. But breaking new ground in the quest for human knowledge carries with it certain risks. As explorers, we have a responsibility to understand those risks and address them intelligently. Planetary protection concerns itself with the quest to investigate space responsibly under conditions of extreme uncertainty. This is no trivial matter, since the possible biospheres we may encounter, and the impacts that we may visit upon them, are extremely difficult to forecast.

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From the Chief Historian (continued)

As we get to know one another in the months ahead, I invite you to share your thoughts, ideas, and suggestions about the NASA history program. You can always reach me at bill.barry@nasa.gov, pick up the telephone and call me at 202-358-0383, or drop by room 5N17 at NASA Headquarters. I am looking forward to hearing from you.

Until then, Godspeed.

Bill

William P. Barry

Chief Historian

When Biospheres Collide: A History of NASA's Planetary Protection Programs (continued)

NASA's planetary protection program is driven by our desire to know about extra-terrestrial life-forms and their characteristics. But to conduct a scientifically valid search for such organisms, we need to make sure that we do not confuse them with Earth life that has managed to hitchhike aboard our spacecraft. From the time that humans first began sending spacecraft out from Earth, the possibility has existed of forever changing the extraterrestrial environments that we visit. If we irrevocably alter the nature of other celestial bodies by seeding them with terrestrial forms of life, we compromise all future scientific experimentation on these bodies and may also damage any extant organisms happening to reside there. Furthermore, by inadvertently carrying exotic organisms back to Earth on our spaceships, we risk the release of biohazardous materials into our own ecology.

When Biospheres Collide examines the growth of the planetary protection field, beginning with concerns expressed before the 1957 launch of Sputnik by such scientists as Nobel Laureate Josh Lederberg. The book analyzes the growth and diversification of the field in dealing with planetary protection issues on missions to the Moon, Mars, Venus, Jupiter, Saturn, and the many smaller bodies of our solar system. The book relates the extensive efforts put forth by NASA to plan operations and prepare space vehicles that return exemplary science without contaminating the biospheres of other worlds or our own.

Special attention is given to the Apollo missions of the 1960s that brought lunar samples back to Earth. The mission required the design and construction of a large receiving laboratory that protected samples against contamination by Terran microbes, which would have damaged the scientific value of the effort, as well as protecting Earth from being infected with potentially hazardous Moon germs. This receiving laboratory also quarantined the Apollo crew and their spacecraft. Only when a large team of scientists and medical professionals were convinced that neither the astronauts, the spacecraft, nor the rocks and dust brought back from the Moon posed any threat did the doors of the Lunar Receiving Laboratory open.

Also analyzed in great detail were the design and sterilization of what were perhaps the cleanest spacecraft ever built—NASA's Viking 1 and 2 Mars landers of the 1970s. From the selection of parts suppliers to the final baking out of the entire



President Richard Nixon smiles at the Apollo astronauts in quarantine after returning from the Moon.

spacecraft, the book traces the methods for drastically reducing microbe counts. *When Biospheres Collide* returns to the subject of Mars exploration later in the book, recounting how missions of the 1990s and 2000s handled their planetary protection challenges. These missions were launched as a mélange of different extremophile organisms were being discovered in the most hostile places of Earth, such as in volcanic vents and deep under Antarctic ice. These discoveries demonstrated that life could find ways of surviving even the most hostile conditions on our planet and maybe even the environments of other planets as well.

Certain satellites in our solar system, such as Jupiter's Europa and Saturn's Enceladus, are suspected of harboring liquid water oceans under their icy shells. Microorganisms could conceivably live within such oceans, drawing nutrients from surrounding organic materials. *When Biospheres Collide* examines how such satellites must be explored to satisfy the requirements of planetary protection, and it also takes a look at new information on our own Moon that indicates the likely presence of frozen water in its polar regions.

While potential extraterrestrial life is generally associated with planetary or satellite environments, the possibility also exists that it may be found within small bodies such as asteroids or comets. The precursors to life may even exist within interplanetary

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When Biospheres Collide: A History of NASA's Planetary Protection Programs (continued)

dust particles. The book discusses the precautions that must be taken in exploring such bodies.

Planetary protection is a field concerned with keeping actual or possible “zones of life” pure and unspoiled. To accomplish this, we must protect extraterrestrial environments that may harbor undiscovered life-forms, at least until we have thoroughly examined those environments and analyzed any life that exists within them. In trying to envision possible forms of life, or environments that could eventually lead to life, we are limited by a lack of perspective. So far, humans have only been able to study Earth life. Although Terran organisms can exist in wildly different environments, all of Earth life appears to be related, making use of the same biochemistry. In contrast, we have no data whatsoever on alternative chemistries that may also prove feasible for supporting life not as we know it, but of an entirely exotic form. J. B. S. Haldane, the British geneticist, biologist, and popularizer of science, expressed the difficulty of envisioning another biosphere's nature when he said, “Now my own suspicion is that the Universe is not only queerer than we suppose, but queerer than we can suppose.” And yet we still have to act as best we can. John Rummel, NASA's former planetary protection officer, stated the problem of responsible interplanetary exploration like this: “Ignorance is not bliss. We don't know what we're doing, so let's not do things that we can't account for.”

Editor's Note:

Michael Meltzer's book, When Biospheres Collide, is forthcoming in the NASA History Series.

1961/1981: KEY MOMENTS IN HUMAN SPACEFLIGHT

The NASA History Program Office and the National Air and Space Museum's Division of Space History will hold joint symposium, “1961/1981: Key Moments in Human Spaceflight,” at NASA Headquarters in Washington, DC, on 26–27 April 2011. This symposium reflects on 50 years of human spaceflight using these two key dates in time as an entrée for broader investigation and insight. The symposium coincides with four significant anniversaries in the history of human spaceflight: Soviet cosmonaut Yuri Gagarin's inaugural human orbit of Earth on 12 April 1961, the United States' first human spaceflight with American astronaut Alan Shepard on 5 May 1961, the announcement on 25 May 1961 of the U.S. decision to go to the Moon by the end of the decade, and the Space Shuttle's first flight into orbit on 12 April 1981. All four events resulted from a unique set of ideas, circumstances, and geopolitics that established a trajectory for future human operations in space. Although there will be a few invited speakers, most presentations will result from responses to the call for papers.

Key questions of special interest to the symposium's organizers include the following:

- What were the political, economic, social, and cultural factors that help explain the situation concerning human spaceflight in 1961? In 1981? What did it mean to be an astronaut or a cosmonaut in 1961? In 1981? And how has this changed over time from social, cultural, transnational, and institutional perspectives?

- What geopolitical factors have affected the manner in which various nations have approached the issue of human spaceflight? What does it mean for nations to be part of an elite “club” of human spacefarers? What goals in human spaceflight existed at various moments in the history of the Space Age? Have these changed over time and why?
- How might transnational historical themes, rather than nationalist perspectives, be deployed to understand these moments in time? What cultural influences (such as fiction, advertising, literature, art, music, labor movements, and globalism) help to explain these experiences?
- What technological developments drove the seizing of the two moments in 1961 and 1981 to take human spaceflight in directions not achievable before?
- How have national approaches been different from each other in terms of their treatment of launch vehicles, human factors in space, selection and training of astronauts, cultural treatment of astronauts, and the like? What are the social, cultural, and political ramifications of these 1961/1981 moments in the 50 years of human spaceflight?
- What is the legacy of human spaceflight? What new insights might we explore about the different approaches that the United States, the USSR/Russia, and China have taken to human spaceflight? What have we learned about national space agencies versus transnational consortia such as the European Space Agency versus private-sector investment in human spaceflight capabilities?

Please watch for updates in our next issue or visit <http://history.nasa.gov> for additional information about the symposium.

NEWS FROM HEADQUARTERS AND THE CENTERS

Headquarters

Jane Odom continues to evaluate and acquire new material for the Historical Reference Collection (HRC). In addition, she appraises items for historical value, directs the subsequent processing of collections, and answers reference requests. Over the last several months, Jane worked with the information technology (IT) staff to publish speeches of key officials in NASA's history to the Internet. Please see the Online Resources section in this newsletter for additional details. She and Colin Fries attended the Annual History Program Review at Kennedy Space Center (KSC) and were pleased to view a Shuttle launch. During the annual meeting, Jane gave a presentation on management of the HRC, and Colin, along with Elaine Liston and Julie Cooper, the KSC and Jet Propulsion Laboratory (JPL) archivists respectively, spoke on digitization efforts at their facilities. And finally, Jane dealt with a Mandatory Declassification Review of a document needed for litigation.

Collectively, Colin Fries, John Hargenrader, and Liz Suckow share reference duties, answering inquiries received by e-mail, assisting researchers who visit in person,

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News from Headquarters and the Centers (continued)

and helping Jane with Freedom of Information Act (FOIA) requests. They recently began processing a collection of press materials on Space Shuttle missions acquired from the Office of Communications. Colin, John, and Liz also continue their preservation activities in our hard-copy collection by photocopying deteriorating news clippings, replacing worn folders, and updating abstracts of folder contents. Their preservation work is currently focusing on files in the following areas: Earth and space sciences, satellites and space probes, and journalist Robert Sherrod's Apollo Program collection.

Colin recently began processing two distinct collections of the SETI material received from former Chief Historian Steven Dick. Also, he continues to assist in maintaining and updating the History Web pages. John is processing a small collection of Goddard Space Flight Center (GSFC) scientist James Acker's source files for his forthcoming book on ocean color. He continues to verify photo dates in the Great Images in NASA (GRIN) database to make sure they conform as closely as possible to the dates the photos were taken after some errors were discovered in GRIN.

Liz continues the appraisal of a 66-box collection borrowed from the Federal Records Center. This collection contains Office of Manned Space Flight correspondence and papers of Surveyor program manager Benjamin Milwitzky. She recently completed the processing of a collection of source material for the book *The Space Shuttle Decision* by Tom Heppenheimer. Liz continues to update the Headquarters oral history inventory available at <http://history.nasa.gov/oralhistory/ohcatalog.htm> and enter descriptive information about our oral histories into the internal database.



Nadine Andreassen (right) and Tayler Lofquist (left) exhibiting NASA History books and e-books at NASA Headquarters's first IT Summit in July 2010.



Emil de Cou poses next to a duplicate of the gold-plated copper phonographic record, carried on the Voyager spacecraft in case of an extraterrestrial encounter, displayed in the NASA History Program Office.



Colin Fries, Nadine Andreassen, John Hargenrader, Liz Suckow, and Emil de Cou (from left to right) in the NASA History Program Office.

Emil de Cou, musical consultant and former conductor at the National Symphony Orchestra, recently visited the NASA Headquarters Archives. Mr. de Cou conducted the “Salute to Apollo, the Kennedy Legacy” at the Kennedy Center on the 40th anniversary of the Moon landing in 2009. He also worked with NASA on a unique program at Wolf Trap titled “Fantastic Planet: A Symphonic Video Spectacular” in 2007.

Ames Research Center (ARC)

Glenn Bugos completed a revision of his overview history of the Center, *Atmosphere of Freedom: 70 Years at the NASA Ames Research Center* (NASA SP-2010-4314). The text was reorganized and updated on the history of the Center over the past decade. It will be available soon in print and e-book editions.

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News from Headquarters and the Centers (continued)

Megan Prelinger discussed commercial space from 1957 to 1962 to a packed audience on 15 July, reading from her book *Another Science Fiction: Advertising the Space Race* (Blast Books, 2010).

The people of the Ames SimLab celebrated the 30th anniversary of the Vertical Motion Simulator (VMS). The VMS is America's most capable flight research simulator, with five interchangeable cabs able to simulate the cockpits of helicopters, vertical or short takeoff and landing (V/STOL) vehicles, large transport aircraft, and spacecraft—either existing and under design. All astronauts who landed the Space Shuttle trained on the VMS. Tom Alderete of the Aviation Systems Division organized the celebration. In historical discussions at the Ames conference center on 21 August, Center Director Pete Worden welcomed the group; Hans Mark recalled the adventures of funding the simulator; John Dusterberry recounted the relationship of the VMS to Ames's other research simulators; and key researchers told how the VMS enabled their aerospace engineering. The VMS's future as

a “national treasure” was outlined by Richard Spivey of the Army Aeroflightdynamics Directorate and NASA astronaut Marsha Ivins. Tours and demonstrations on 22 August helped satisfy the public's interest in the VMS and served as a reunion spot for the many scientists and engineers who worked on the VMS.

The 7- by 10-foot wind tunnel no. 2 (building N216), one of the “workhorse” tunnels opened at Ames in 1941, has been slated for demolition in the coming year. We are collecting artifacts, and it will be documented with a Historic American Engineering Record. Tunnel no. 1 remains in active use supporting rotorcraft research for the U.S. Army. Renovation of Hangar One began with artifacts being identified and removed for safekeeping.



Richard Spivey and Hans Mark at the celebrations marking the 30th anniversary of the Ames VMS.



An esteemed panel discusses the history of the Ames VMS. From left to right are Jack Franklin, Dennis O'Donoghue, Eric Mueller, Bo Bobko, Chris Blanken, Nick Lappos, and Bill Decker.

Nicholas Veronico, public affairs officer for science operations of the Stratospheric Observatory for Infrared Astronomy (SOFIA) airborne telescope and author of many books on aviation history, has begun work on a history of SOFIA. David L. Peterson, former chief of the Ames Earth Science Division, began work on a history of Earth observation research at NASA. British Broadcasting Corporation (BBC) Four visited Ames to gather materials to produce a documentary on the mathematics of the Pioneer plaque. The Computer History Museum is producing a display on supercomputing, highlighting the Ames Cray-2 and Beowulf clusters.

We welcome Sally Tateno, who is providing administrative support to Jack Boyd and the Ames History Office.

April Gage constructed interactive and downloadable building locator maps of the Ames campus for the Historic Preservation Office Web site (now online at http://historicproperties.arc.nasa.gov/map_bldglocator/bldglocator.html). She processed and cleaned several Pioneer-era scientific instruments and reinstalled them in a permanent exhibit in the Ames Instrumentation Laboratory (N240) in time for the Ames Instrumentation Workshop. San Jose State University library science students Ratana Ngaotheppitak and Stephanie Pierce completed their internships on archival preservation and digitization procedures by digitizing portions of the Alvin Seiff Papers (PP05.22) for the NASA Entry, Descent and Landing database. Stephanie fully processed a small collection, entitled Human Systems Integration



Ames Center Director Pete Worden at a ceremony on the installation of an exhibit on SOFIA at the Hiller Aviation Museum in San Carlos, California, on 30 March. The exhibit resides in the museum's Boeing 747-136 cockpit.

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News from Headquarters and the Centers (continued)

Division Virtual Environment Documentation and Equipment, 1986–1993 (AFS8078, 3.70 cubic feet).

Onizuka Air Force Station (AFS) was formally closed on 28 July 2010, 50 years after its founding. In July 1960, Bernard Schriever dedicated the satellite test center adjacent to Ames and to the Sunnyvale plant of the Lockheed Missiles and Space Company. Its most famous building, the windowless Blue Cube, opened in 1968; in 1986, the complex was renamed to honor Colonel Ellison Onizuka, a NASA astronaut who perished aboard the Space Shuttle *Challenger*. It occupies a secretive, yet storied, place in the history of Silicon Valley computing. As the sole communication interface between NASA and the Air Force Satellite Control Network, Onizuka AFS supported every launch of the Space Shuttle. It played a major role in the launches of the Hubble Space Telescope and Chandra X-ray Observatory, as well as the Ulysses, Galileo, and Magellan interplanetary exploration missions. The operational elements of the Station are relocating to Vandenberg AFB in southern California. Ames contributed a historical display for the closure ceremony.



At the closure ceremony for Onizuka AFS, Lieutenant General Tom Sheridan, Commander of the United States Air Force (USAF) Space and Missile Center, told stories of mainframe computers of yore to knowing chuckles from an audience filled with many of those who had served there over the past 50 years.

Dryden Flight Research Center (DFRC)

Curtis Peebles's *11 Seconds Into the Unknown: The Story of the Hyper-X* will be released by the American Institute of Aeronautics and Astronautics (AIAA) in the spring of 2011. His *Spoken Word Vol. 2* is finally in page layout, and we hope to see it back before the year is out. His current book, *The Forgotten X-Planes*, will be done by then and headed for peer review.

Pete Merlin's *Human Factors* book is nearing its conclusion, accelerated by the renewed involvement of Dwight Holland, an Air Force flight surgeon and USAF Test Pilot School instructor who has been working on his portion of the book when he finds time.

Christian Gelzer is wrestling with two new possible projects for the coming year involving the Shuttle, now that the *Truck Fairing* monograph is currently undergoing peer review before being vetted by export control. We expect the process to allow us to have a publication in hand before Christmas.

In close coordination with the Shuttle office at Dryden, Christian is currently planning two books related to Dryden's role in the Shuttle missions. The first is an oral history collection similar to Dryden's Spoken Word series. He will conduct and edit the interviews for the monograph, capturing the memories of people who worked various jobs related to Shuttle operations at Dryden from the start. The second book will be more technical in nature, comprising chapters on different roles the Center played in making the Shuttle program possible. These would include the Approach and Landing Tests, the F-8 Digital Fly-By-Wire's centrality to the Shuttle's own fly-by-wire control system, the Air Force's participation in landings at Edwards AFB, operations to return the orbiter to Florida, the Convair 990 Systems Research Aircraft's role in extending the crosswind landing capability of the orbiter, and more. Chapters will be penned by individuals directly involved in particular projects, with Christian writing some chapters himself and editing the overall manuscript. The objective is to have both publications released in the same year as the Shuttle's retirement.

And Betty Love, who successfully worked her way through the byzantine processes to enable her to use her home computer to access the history database at Dryden, is tackling an enormous backlog of reports from the Center that need culling, cataloging, and entering. To our perpetual joy, she keeps coming out to see us so she can pick up new material to sort and drop off boxes of sorted and cataloged documents. Betty does, in fact, make a lot more people smile than just the people in than the History Office when she shows up.

Glenn Research Center (GRC)

Revolutionary Atmosphere: The Story of the Altitude Wind Tunnel and the Space Power Chambers (NASA SP-2010-4319), by Glenn archivist Bob Arrighi, is now available! This scholarly look at the Altitude Wind Tunnel covers the transformations the wind tunnel made in its long history from a wind tunnel doing full-scale testing for wartime applications to a vacuum chamber supporting the Vision for Space Exploration, and even a brief period as home to Mercury astronaut training. The book contains a large quantity of rare photographs and drawings as well. *Revolutionary Atmosphere* is available from the Government Printing Office

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News from Headquarters and the Centers (continued)

bookstore. An accompanying documentary DVD, *A Tunnel Through Time*, is also being finalized and will be available soon. In celebration of the release of the book and DVD, a book-signing event was held on 15 September 2010.

Johnson Space Center (JSC)

The Johnson History Office began a digitization project this past summer to capture the historical information from materials housed at the JSC History Collection at the University of Houston, Clear Lake (UHCL). The scanning effort represents historical documents on loan from the National Archives and Records Administration (NARA) from the following collections: Apollo, Skylab, Apollo/Soyuz Test Project, and MSC/JSC (Manned Spacecraft Center) General Series.

The NARA materials have been kept in Houston, Texas, due to a Memorandum of Understanding signed on 8 February 2001 by the three entities (JSC, NARA, and UHCL) that would provide space for archival materials and documents gathered over the years by the JSC History Office. Earlier this year, NARA decided that the documents should be moved to its regional facility in Fort Worth, Texas, by February 2012. These collections comprise approximately 25–30 percent of the JSC History Collection at the UHCL Archives.

JSC agreed to digitize these materials as reference copies prior to sending the documents to NARA. The materials reflect more than 800 Hollinger boxes of printed materials. This past summer, the JSC History Office facilitated the project with three student interns who tirelessly completed the tedious preparation involved for each box. The students ensured each page was carefully prepared then returned to its original file and box. They accurately entered data in the tracking software and provided necessary information for the data conversion area. Adrienne Cain and Lia Banks from the University of North Texas and Jefferson Bailey from the University of Pittsburgh worked on the project as archivist students.

The NARA materials have been and continue to be used extensively by the JSC History Office in providing answers to reference inquiries for internal and external customers. These materials also serve as a source for valuable research materials used for outreach and educational events, publications, and presentations. Numerous external researchers also rely on these materials.

Currently, the documents are being digitized, and the scans will be filed at the JSC History Office, the JSC Scientific and Information Center, and the UHCL Archives.

Marshall Space Flight Center (MSFC)

History is in full swing at Marshall in 2010. It is the Center's 50th anniversary.

On 8 September 1960, President Dwight D. Eisenhower came to Huntsville, Alabama, to dedicate the new NASA Field Center. Eisenhower named the Center after his World War II colleague, General George C. Marshall. On 8 September 2010, the Center commemorated its half century of work in space exploration and science with two special programs.

“History is in demand,” says Mike Wright, the Center's historian.

At 9 a.m. on 8 September, Marshall and local community leaders unveiled an Alabama historic marker honoring the formation of the NASA Center. The marker

was erected outside the Redstone Arsenal Visitor's Center at Gate 9, the main entrance to Redstone and Marshall. Center Director Robert Lightfoot and elected officials representing the state of Alabama, Huntsville, and Madison county were scheduled to speak.

The marker is part of the Alabama Department of Tourism's "Year of Small Towns and Downtowns" program, which will place approximately 215 markers across the state this year to celebrate the communities, institutions, and events that helped shape the state's culture and heritage.

A commemorative event for Marshall team members, themed "The Work of Generations," took place from 12:30 to 3:30 p.m. Civil service employees, retirees, and badged contractors assembled in a large field, forming a giant human "50" for an aerial photo shoot. Then, in Marshall's Activities Building, they enjoyed refreshments, listened to speakers, and browsed exhibits celebrating Marshall's past, present, and future missions in space.

Wright, along with history staffers Roena Love and Molly Porter, worked on plans for those exhibits. During the marker ceremony and the employee event, they displayed documents, photos, and ephemera associated with the early history of Marshall.

"We were very fortunate, for example, to discover a hardcover copy of a photo album that included approximately 25 photographs taken on the day the Center was dedicated," Wright said. The photographs showed the crowd that gathered to hear Eisenhower speak, as well as his discussions with dignitaries such as Wernher von Braun, then-Governor John Patterson, and Mrs. George C. Marshall. "Some of the photos were ones that I had not seen before, and we are excited to display them and add them to our collection," Wright said.

For more information about Marshall's history, please visit <http://www.nasa.gov/centers/marshall/history/index.html>.

Stennis Space Center (SSC)

Stennis cut the ribbon 24 August on a new, storm-resistant Records Retention Facility that consolidates and protects records storage at the nation's premier rocket engine test facility. This facility will also house History Office operations.

"The opening of this dedicated records storage facility emphasizes the importance of record retention and data management," said Dinna Cottrell, Chief Information Officer at Stennis. "This facility ensures the required federal records are preserved, managed, and accessible to all interested personnel."

The new storage facility will house and protect the history and the historical documents related to Stennis and its rocket engine test work. It was designed to meet all specifications and storage criteria set forth by NARA. With completion of the new building in May, Stennis became the first NASA Center to open a NARA-compliant storage facility.

Stennis leaders used Hurricane Katrina mitigation funds to renovate an existing building to meet the new codes. The 2005 storm damaged several Stennis facilities that previously housed records, highlighting the need for a more protective storage environment.

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News from Headquarters and the Centers (continued)

NASA officials at Stennis cut the ribbon on 24 August on a new Records Retention Facility that consolidates and protects records storage at the nation's premier rocket engine test facility. Participants in the ribbon-cutting event included (from left to right) Gay Irby, Center Operations Deputy Director at Stennis; Linda Cureton, NASA Chief Information Officer; Patrick Scheuermann, Stennis Director; Jane Odom, NASA Chief Archivist; Dinna Cottrell, Stennis Chief Information Officer; and James Cluff, Stennis Records Manager.

The Records Retention Facility now serves as a central location for all NASA records at Stennis. It allows for maximum efficiency by combining records and records management personnel in the same location. The facility can accommodate 20,000 cubic feet of records storage and offers storm-resistant protection. It provides for storage and life-cycle management of inactive records of all media types; digitizing and scanning of various records and documents; nontextual/digital/electronic records media storage, migration, and transfer; and remediation of old records.

Stennis has been involved in the American space program since the early 1960s, when NASA selected the south Mississippi location as its primary rocket engine test site. Stennis tested all of the engines and rocket stages used in the manned Apollo program that traveled to the Moon. It also tested all of the engines used on more than 130 Space Shuttle missions.

THE SOCIETY OF AMERICAN ARCHIVISTS ANNUAL MEETING HELD IN WASHINGTON, DC

By Jane H. Odom and April D. Gage

Over 2,000 archivists from around the country converged in Washington, DC, during the second week of August to attend the joint meeting of the Society of American Archivists (SAA), the Council of State Archivists (CoSA), and the National Association of Government Archives and Records Administrators (NAGARA). The meeting featured something for everyone. There were over 60 education sessions, special interest group meetings, 4 plenary sessions, dozens of vendors in a sold-out exhibit hall, and 2 evening receptions. Archivists and librarians from Headquarters, Ames Research Center, the Jet Propulsion Laboratory, and Johnson Space Center (University of Houston, Clear Lake) represented NASA.

On Tuesday afternoon, SAA sponsored tours of nearly a dozen local repositories to attendees. Headquarters hosted a small but enthusiastic group of nearly 10 visitors to the History Program Office and archives.

On Wednesday afternoon, Jane Odom, Headquarters Archivist, and April Gage, Ames Archivist, gave a well-received program on NASA reference services at the Science, Technology, and Health Care Roundtable meeting. Jane began by talking about the Agency-wide History program, and then she and April described their respective archive collections. They discussed their policies and procedures, user groups, frequency and types of requests, and digitization efforts. They concluded with examples of interesting, colorful, and challenging types of reference requests.



April Gage (standing) and Jane Odom (sitting) at the 2010 Society of American Archivists meeting.

During the conference, Jane attended sessions on archival training, digital guidelines for federal agencies, and electronic records. In one session that drew a very large crowd, Public Broadcasting Service (PBS) producers from *History Detectives* focused on one episode and described how they worked with historians, librarians, and archivists to bring it to fruition. In another especially interesting session, the panelists discussed their efforts at making digital archives a pleasure to use. Participating were representatives from the WGBH Educational Foundation Library and Archives in Boston, Massachusetts; the National Archives Social Media Team; and the Smithsonian's Archives of American Art, each describing their efforts to make portions of their collections available online with ease of access.

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The Society of American Archivists Annual Meeting Held in Washington, DC (continued)

April attended sessions focusing on the state of archives and records management in the digital age, digitization and metadata strategies, intellectual property legislation and litigation, professional ethics, issues related to Freedom of Information Act demand and response, Web 2.0 and archives, preserving public television footage, and emerging standards for bibliographic control of archival collections. She found accounts of the challenges involved in ingesting, storing, describing, and providing access to staggering amounts of electronic records of particular interest. Reports from representatives of NARA were particularly awe-inspiring. NARA archivists discussed the implementation of the new Electronic Records Archives (ERA) developed by Lockheed Martin for preserving presidential records within the context of NARA's recent receipt of the largest cache of records in its history. The 329 tons of material the George W. Bush administration transferred to NARA included a whopping 70 terabytes of unclassified files, as well as another cache of classified digital assets. For perspective, that first unclassified chunk, which was successfully ingested into the ERA system, included 200 million e-mails (the quantity of e-mails from the Clinton presidency, by comparison, was 20 million). Archivists outlined the mechanics of extracting the files out of the various systems and getting them into ERA, involving processing in very large sets with batch-level metadata assigned during ingest. They discussed their emerging strategies for searching the body of records and the challenges in providing access to them, including requirements for review and approval on the item level before release.

Between sessions, Jane and April visited with vendors in the exhibit hall and networked with colleagues from around the country. One of the plenary sessions featured the Archivist of the United States, David Ferriero, who spoke on the highlights and challenges of his first 300 days in office and then took questions from the audience. Networking and the chance to meet new friends continued into the evening with the two receptions offered to attendees—one at the National Archives on Wednesday and the other at the National Museum of American History on Friday. All in all, it was a great annual meeting, with the August heat wave lasting only part of the week, as compared with the 2006 SAA meeting in Washington, DC, when temperatures hovered near 100 degrees every day!

HISTORIC PRESERVATION NEWS

A Critical Look at Langley's History: The Arrival of the Pressure Tank of the Variable Density Tunnel at Langley

By Joseph R. Chambers

Langley Research Center is currently undergoing a large number of facility changes as wind tunnels, laboratories, and other buildings are being closed and demolished and the New Town concept is being implemented. In the interest of preserving the legacy of Langley, a concerted effort is under way under the leadership of the Center Operations Directorate (COD) to acquire important historic information on demolished and targeted facilities, including documentation of the history and research activities conducted within each building during its lifetime. This process

includes on-site inspection of files and material left behind within abandoned facilities, electronic scanning of appropriate photographs and documents, digitizing of motion picture film, and conducting of video interviews of individuals who worked within the facilities of interest. The ultimate objective of the effort is to post all the information on a Web site that is easily accessible by the public, aerospace enthusiasts, historians, and NASA's stakeholders.

The acquisition of relevant historical material has, at times, been very challenging because original photographic negatives have strayed from Langley's archival collection. For example, virtually all of the negatives covering piston-engine research by Langley in the 1920s and 1930s were sent to the National Advisory Committee for Aeronautics (NACA) Lewis Laboratory in Cleveland, Ohio, during the early 1940s. In many cases, the private collections of retirees and obsolete organizations have proven to be invaluable. The task has been made even more complicated because of incomplete, poorly documented, or inaccurate descriptions of historic photographs. Unfortunately, recent data-gathering exercises have revealed erroneous photo captions and conclusions that have become ingrained in Langley lore for many years.

This situation has occurred relative to one of the most important Langley wind tunnel facilities, known initially as Wind Tunnel No. 2 and subsequently as the internationally famous Variable Density Tunnel (VDT). A photograph of the tunnel during research operations in 1929 is shown in figure 1. The development and technical impact of this remarkable pressurized wind tunnel facility have been thoroughly documented, and it is widely recognized as the facility that leapfrogged the state of the art in wind tunnel technology and "put the NACA and Langley on the map" within the international aeronautical community. The unique design concept of the VDT consisted of a wooden 5-foot-diameter wind tunnel contained within a 34.5-foot-long, 15-foot-diameter steel pressure tank capable of being filled with air at pressures of up to 20 atmospheres. Today, the outer VDT pressure tank is on display as a National Historic Landmark adjacent to the Langley Reid Conference Center.

The fact that the 85-ton pressure shell was fabricated at the Newport News Shipbuilding and Drydock Company during 1921 and 1922 is well known; however, the description of how the shell was transported to Langley for installation in what is currently NASA Building 582 (then NACA Building 60A) in the NASA East Area has been erroneously reported by NASA for over 30 years. The following



Figure 1. The VDT during a research study in 1929.

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information clarifies the actual events and identifies the misleading information that has resulted in wrong conclusions.

Fabrication at the Newport News Shipbuilding and Drydock Company

While the NACA began in-house design and construction efforts on the wooden tunnel insert for the VDT as well as its building site in 1921, the challenging task of fabricating the heavy steel pressure tank was contracted to the Newport News Shipbuilding and Drydock Company (now Northrop Grumman Shipbuilding). Early in 1922, the fabrication of the tank had been completed, and it was photographed atop a railroad car at the shipyard as shown in figure 2. This photograph, taken by the shipyard, has been the source of incorrect information on the journey of the tank to its ultimate destination at Langley.

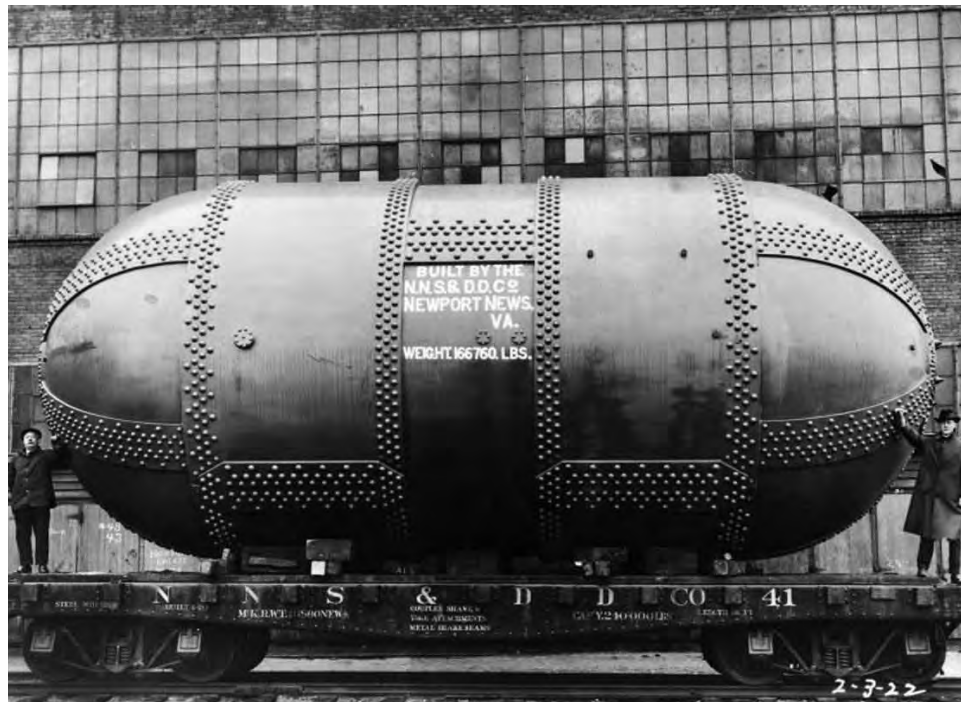


Figure 2. Photograph of the pressure tank of the VDT at the Newport News Shipbuilding and Drydock Company on 3 February 1922. (Photo courtesy of Northrop Grumman Shipbuilding, Newport News)

The NASA electronic version of this photograph (EL-2000-00529) contains the following description: “The Variable Density Tunnel arrives by rail in 1922 from the Newport News Shipbuilding and Drydock Company. Photograph published in *Winds of Change*, 75th Anniversary NASA publication (page 72). Also published in *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917–1958*, by James R. Hansen (page 77). The tank for the Variable-Density Tunnel arrived at Langley by railway from its Manufacturer, the Newport News Shipbuilding and Drydock Company, Newport News, Va., on February 3, 1922.” (Author’s note: The photograph also appears on page 36 in *Crafting Flight* by James Schultz as well as numerous NASA multimedia Internet sites.)

Several major errors appear in this description. As previously mentioned, the photograph was taken at the shipyard and not upon arrival at Langley. In the early 1920s, the NACA at Langley Field had no large buildings of the size shown in the background. As the shipyard marking on the photograph indicates, it was taken on 3 February 1922—but the tank was not shipped to Langley on that day as stated in the caption. In fact, the tank was not delivered until June 1922. More importantly, it was not shipped by railway at all, but via water transportation by a barge from the shipyard, down the James River, around Fort Monroe, and to Langley.

Michael Dillard, the current photo library editor of Northrop Grumman Shipbuilding, recognized the shipyard building in the background and has provided valuable support for this study with several photographs from the files of the shipyard. Figure 3



Figure 3. View of the massive 120-year-old machine shop buildings at Northrop Grumman Shipbuilding in Newport News. (Photo courtesy of Northrop Grumman Shipbuilding, Newport News)

shows the current machine shop buildings at the yard that have been in existence since 1890. The viewpoint for the picture is looking southward toward the James River. The building in the background of figure 2 is one of these shops, which included the boiler shop where the tank was fabricated (brick building on the right).

Another view of the shop buildings in 1920 is shown in figure 4 (taken by a U.S. Army Signal Corps photographer based at Langley Field). The shops are located at the middle right of the photograph, adjacent to Drydock No. 1 and the yard's outfitting piers (shipping docks) on the James River. Railways extended through the machine shop buildings and from the buildings to the piers for ship loading.

Delivering the Tank to Langley

During a recent collection of historic documents from the uninhabited VDT building, an unexpected treasure was found in the form of the grainy photograph shown as figure 5. On the photo cover was the note "Tank on Barge June 1922." The tank is

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Figure 4. Aerial view of the shipyard taken in March 1920. The machine shops are located at the middle right of the photograph. (Photo courtesy of Northrop Grumman Shipbuilding, Newport News)



Figure 5. Arrival of the pressure tank of the VDT at Langley via barge in June 1922.



Figure 6. The tank barge docks at Langley.

clearly identifiable on a shipping barge in the Back River adjacent to Langley Field with a view toward the southeast. In the background is the shoreline of Hampton, Virginia, and the bank of Langley Field is in the foreground. The tank rests on large shipping timbers atop the barge. This photograph is one of the earliest photographs taken at Langley (L-132).

Another photograph of the tank on the barge in June 1922 was found in current Langley electronic files (EL-1999-00256) as shown in figure 6. In this picture, the barge has parked at a dock, and the tank is in the process of being unloaded. The landing site is believed to be near the original Langley Field Officer's Club (later a boathouse and yacht club). Note that the caption of the electronic file is in error, giving the date as 22 June 1921—before the tank was completed at the shipyard. A review of the official NACA photographic logbook indicated that the picture was taken in June 1922 (no day given).

Later that day, the tank was unloaded and inspected before being moved to Building 582. Figure 7 shows the NACA photograph of that inspection (EL-1997-00136). The man on the left is Harold J. Turner, longtime Safety Engineer of Langley, and the man on the right is Art Gardner. Note the location of the tank relative to the old Langley water tower and various buildings. In addition, huge timbers similar to those seen on the barge are being used to support the tank. Once again, the date given in the caption is wrong.

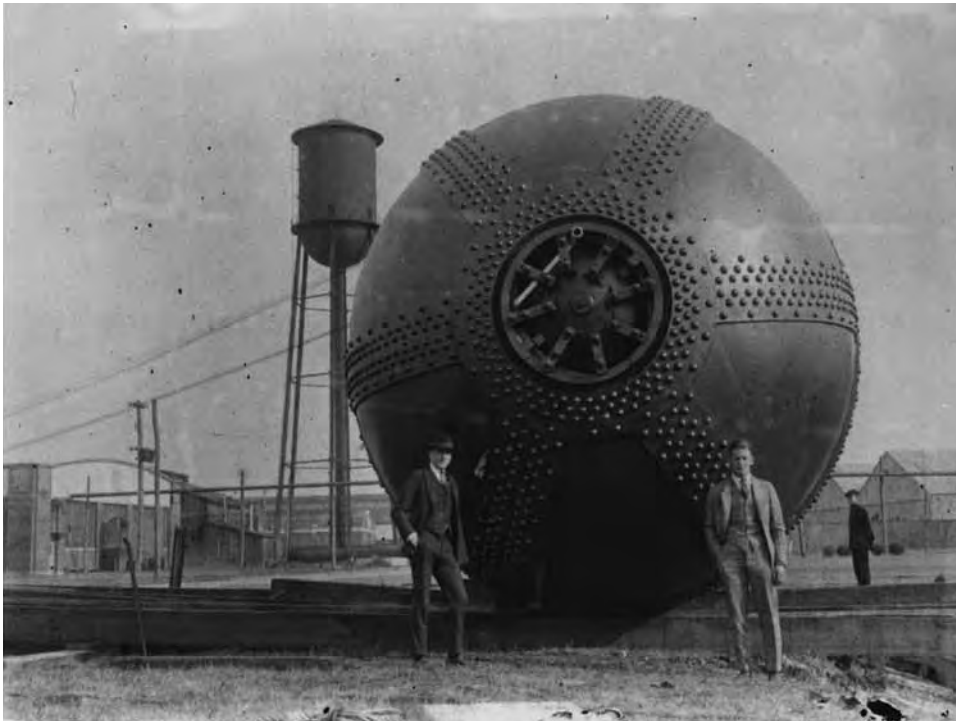


Figure 7. Inspection of the VDT tank after arrival.

A later aerial view of Langley Field shown in figure 8 was taken in April 1928 after the VDT was installed and operational in Building 582, but it is helpful to establish the location of several key NACA facilities and the probable site of the previous

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photograph near the water tower. Shown are 1) the NACA Administration Building, 2) the NACA Service Building, 3) Wind Tunnel No. 1, 4) VDT Building 582, 5) the NACA aircraft engine research buildings, 6) the Propeller Research Tunnel, and 7) the Langley Officers Club. The “X” denotes the probable site of the previous photograph. How the tank was transported from its arrival site to Building 582 is not known.



Figure 8. Aerial view of Langley Field in 1928 showing location of major NACA facilities and the probable location of the tank in figure 7.



Figure 9. Dr. Max Munk, the famed inventor of the VDT concept, inspects the tank after it was mounted on concrete pads in Building 582. Dr. Munk has turned toward the front of the building facing the Back River. The photograph was probably taken in the summer of 1922, but the specific date indicated (6/1/1922) is questionable.

Note the clearly visible railroad track between the Services Building (2) and the VDT Building (4). Trains crossed a bridge over the Back River several times daily bringing supplies from Hampton to Langley Field; however, the train was not used for the delivery of the VDT tank from the shipyard. The front of the VDT building facing the water had a large opening during its construction in 1922 to permit installation of the tank.

Finally, the foregoing explanation of the delivery of the VDT tank to Langley was independently verified in a videotaped interview with P. Kenneth Pierpont, a noted NACA and NASA aerodynamicist who entered duty at Langley in early 1942. Mr. Pierpont was interviewed by Mary Gainer of the Center Operations Directorate (COD) and the author at Langley on 13 April 2010 (video will soon be available online at http://lrgis.ndc.nasa.gov/historic/Variable_Density_Tunnel). Mr. Pierpont was a friend of Eastman N. Jacobs, the brilliant NACA researcher who led the work in the VDT and appears at the far left in the photograph shown in figure 1 during a testing session. Mr. Jacobs described the delivery of the VDT tank by barge during discussions of the history of the facility with Mr. Pierpont.

Concluding Remarks

This brief review of the delivery of the pressure tank of the Langley VDT has been prepared to correct misleading information presented in current NASA documents, Web sites, and other works on the history of the facility. The misconceptions arose because of poorly documented photographs and the lack of documented personal accounts of the activity. In addition to providing new information on the VDT, this case study hopefully emphasizes the necessity and importance of historical archiving and documentation during the current era of change at Langley.

RECENT PUBLICATIONS

NASA Publications

Revolutionary Atmosphere: The Story of the Altitude Wind Tunnel and the Space Power Chambers (NASA SP-2010-4319), by Robert S. Arrighi. This book tells the story of a massive but little-known facility in Cleveland, Ohio, that played a vital role in the U.S. development of jets, in the training of NASA's first astronauts, and in NASA's first missions beyond Earth's orbit. This volume can be purchased for \$25 from the NASA Center for Aerospace Information (CASI) at <http://ntrs.nasa.gov/search.jsp>, purchased for \$44 from the Government Printing Office, or purchased from private vendors.

NASA's First 50 Years: Historical Perspectives (NASA SP-2010-4704), edited by Steven J. Dick. In this volume, a wide array of scholars examine NASA's first 50 years, probing an institution widely seen as the premier agency for exploration in the world, carrying on a long tradition of exploration by the United States and the human species in general. Fifty years after its founding, NASA finds itself at a crossroads that historical perspectives can only help to illuminate. This volume can be purchased for \$35 from CASI at <http://ntrs.nasa.gov/search.jsp>, purchased for \$79 from the Government Printing Office, or purchased from private vendors.

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*Recent Publications (continued)***NASA E-Books**

These books have been converted for download and use on digital reading devices such as the Kindle, SONY Reader, and others. Please visit <http://history.nasa.gov/series95.html#ebooks> to download the file to your computer and then transfer onto your reading device.

Cosmos & Culture: Cultural Evolution in a Cosmic Context (NASA SP-2009-4802, 2009), edited by Steven J. Dick and Mark L. Lupisella, is now available in an e-book format for use on digital reading devices (as .mobi, .prc, .pdf, and .epub files for download).

X-15 Research Results With a Selected Bibliography (NASA SP-60, 1965) is now available in an e-book format for use on digital reading devices. This book has been reformatted and made available thanks to Nathaniel Hoffelder.

Unmanned Space Project Management: Surveyor and Lunar Orbiter (NASA SP-4901, 1972), by Erasmus H. Kloman, is now available in an e-book format for use on digital reading devices. This book has been reformatted and made available thanks to Nathaniel Hoffelder.

New NASA Aeronautics Books

By Tony Springer

NASA's Aeronautics Research Mission Directorate has a number of new volumes available in both electronic and hard copies. Mark Bowles's award-winning *Apollo of Aeronautics: NASA's Aircraft Energy Efficiency Program, 1973–1987* is now available in both hard-copy and electronic formats. Joseph Chambers's *Modeling Flight: The Role of Dynamically Scaled Free-Flight Models in Support of NASA's Aerospace Programs*, on the role of dynamically scaled free-flight models in support of NASA's aerospace programs, was released electronically in July and in hard copy in September. The much-anticipated two-volume set of *NASA's Contributions to Aeronautics*, edited by Richard Hallion, was released online in late August and early September and will be available in hard copy in early November. These volumes feature a series of essays on the key contributions NASA has made to aeronautics over the last half century. All Aeronautics books published by NASA are made available in both electronic and hard-copy formats. Electronic books in multiple formats suitable for most computers and e-readers are available free of charge from NASA at <http://www.aeronautics.nasa.gov/books/index.htm>.

Other History Publications

Space Exploration and Humanity—A Historical Encyclopedia (ABC-CLIO, August 2010), general editor Stephen B. Johnson, section editors Timothy M. Chamberlin, Michael L. Ciancone, Katherine Scott Sturdevant, and Rick W. Sturdevant. This extensive two-volume work covers all aspects of spaceflight across the spacefaring nations of the world, including political, social, cultural, and economic issues; it also covers commercial, civilian, and military applications. For more information, please visit <http://www.abc-clio.com/products/overview.aspx?productid=109018&viewid=1>.

Commercially Published Works

Compiled by Chris Gamble

Exploring the Final Frontier: Issues, Plans and Funding for NASA, edited by Dillon S. Maguire (Nova Science Publishers, January 2010). With the ending of the Space Shuttle program, NASA is at a critical juncture. This book explores and assesses the Agency's future through public documents that have been combined, reformatted, and enhanced.

Journey to Space: A Memoir of Malaysia's First Angkasawan, by Sheikh Muszaphar Shukor (MPH Group Publishing Sdn Bhd, March 2010). This is the memoir of Dr. Sheikh Muszaphar Shukor, the first Malaysian to go into space.

Eyes in the Sky: Eisenhower, the CIA and Cold War Aerial Espionage, by Dino A. Brugioni (Naval Institute Press, March 2010). This book is the inside story of President Dwight D. Eisenhower's efforts to use spy planes (the U-2) and satellites (CORONA and others) to gather intelligence.

Something Funny Happened on the Way to the Moon, by Sara Howard (Strategic Book Publishing, April 2010). Sara Howard, one of only two women who worked on the Saturn V rocket, tells the story of the Apollo program from the perspective of the 400,000 people on the ground who built the largest and most powerful rocket in history.

Moon Men Return: USS Hornet and the Recovery of the Apollo 11 Astronauts, by Scott W. Carmichael (U.S. Naval Institute Press, May 2010). This book tells the dramatic story of the USS *Hornet*'s recovery of the Apollo 11 astronauts after the splashdown of their Command Module.

Come Up and Get Me: An Autobiography of Colonel Joseph Kittinger, by Joseph W. Kittinger and Craig Ryan (University of New Mexico Press, May 2010). This book retraces the astonishing career of Joseph Kittinger, who is most famously known for his balloon jump from 102,800 feet during which he achieved a speed of 614 miles per hour.

Space Flight: History, Technology, and Operations, by Lance K. Erickson (Government Institutes, August 2010). This book offers a comprehensive look at the history of space exploration, the technology that makes it possible, and the continued efforts that promise to carry us into the future.

On the Frontier, by Richard P. Hallion and Michael H. Gorn (softcover, 2010 reprint; Smithsonian Books, June 2010). Edwards Air Force Base in the Mojave Desert is the setting for the exciting, dangerous, and sometimes deadly job of testing the world's most exotic aircraft. This book focuses on the unique relationship between test pilots and their machines, including a completely updated and reinterpreted text with three new chapters, dozens of rare photographs, and the complete statistical record of nearly six decades of testing.

History of the Space Shuttle, Volume Two, by T. A. Heppenheimer (softcover, 2010 reprint; Smithsonian Books, July 2010). This book's focus is on the engineering challenges—propulsion, thermal protection, electronics, and onboard systems—and in-depth coverage of the alternative vehicles developed by the U.S. Air Force and European countries. The first launch of the Space Shuttle entailed a monumental amount of planning and preparation that the author explains in detail.

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Recent Publications (continued)

Icy Bodies of the Solar System, proceedings of the International Astronomical Union Symposia and Colloquia (IAU S263), edited by Julio A. Fernandez, Daniela Lazzaro, Dina Prialnik, and Rita Schulz (Cambridge University Press, June 2010). IAU S263 provides a state-of-the-art review of icy bodies in the solar system, a topic crucial to understanding processes involved in the solar system's formation, the consequences for water on planets, and, ultimately, the habitable zones around other stars.

From Props to Jets: Commercial Aviation's Transition to the Jet Age 1952–1962, by Craig Kodera, Mike Machat, and Jon Proctor (Specialty Press, May 2010). Although the years from 1952 to 1962 saw the rise and dominance of luxurious piston-powered airliners, revolutionary new jet airliners soon rendered them obsolete. This book celebrates that exciting time with an in-depth look at all the aircraft that made commercial jet flight possible, comparing these radical new jetliners with the classic propeller-driven aircraft that preceded them.

Sublime Invention: Ballooning in Europe, 1783–1820, by Michael R. Lynn (Pickering & Chatto Ltd., May 2010). By the end of the 18th century, scientific matters had come to occupy a significant place in people's lives at almost every level of society. Using balloons as a case study, Lynn traces the dissemination and appropriation of this new science up and down the social and economic scale, exploring the cultural importance of ballooning at the birth of large-scale, mass consumption of science. Rather than simply narrate a chronology of discovery, this book offers a cultural and social analysis of ballooning over the first quarter century after its invention.

Carnarvon and Apollo: One Giant Leap for a Small Australian Town, by Paul Dench and Alison Gregg (Rosenberg Publishing, May 2010). This is the true story of a town, the people, the challenges, the missions, the tensions, and the creativity that took place in Carnarvon, in northwestern Australia, home of the largest NASA space tracking station outside the mainland United States.

The Fair and Responsible Use of Space: An International Perspective, edited by Wolfgang Rathgeber, Kai-Uwe Schrogl, and Ray A. Williamson (Springer, March 2010). As more and more entities become involved in space activities, strategies to establish the coordinated, ethically justifiable, and sustainable conduct of such activities have to be found. Such an endeavor requires addressing current questions regarding the use of space, dealing with fair rules in orbit, and discussing the way to achieve truly global engagement on space security issues. The book outlines the current situation and identifies key challenges from the policy perspective.

Full Circle, by David Cisco (D L C Enterprises, May 2010). This is the memoir of an Apollo Lunar Module spacecraft technician at NASA and all the stories along the way.

History of Rocketry and Astronautics, vol. 32, edited by Christophe Rothmund, AAS History Series, Volume 32, IAA History Symposia, Volume 21 (AAS/Univelt, Inc., 2010). These are the proceedings of the 35th History Symposium of the International Academy of Astronautics, Toulouse, France, 2001.

Wernher von Braun—The Rocket Man, by Ed Buckbee (Ed Buckbee & Associates, Inc., December 2009). Ed Buckbee, a former NASA public affairs official, spokesman, and colleague of the famous rocket scientist, takes you behind the scenes with a close-up look at the father of America's Moon landing program with photography,

interviews, and personal notes never before seen and experiences that only he can relate because he was there.

Live TV from the Moon, by Dwight Steven-Boniecki (Collector's Guide Publishing, Inc., July 2010). The book covers the earliest known proposals of TV coverage on lunar missions and the constant battle internal politics placed upon the inclusion of the TV system on Apollo missions. Closely related subjects such as the slow scan conversion and later color conversion are discussed, and overviews for each piloted Apollo mission and the role TV played in covering the flight are included.

Outer Space: Weapons, Diplomacy, and Security, edited by Alexei Arbatov and Vladimir Dvorkin (Carnegie Endowment for International Peace, June 2010). *Outer Space* is a collection of essays by leading Russian experts analyzing the current military use of outer space and describing the space-weapons programs of various countries. The book also details the history of negotiations to prevent, or at least control, the weaponization of space.

An Enabling Foundation for NASA's Space and Earth Science Missions, by the Committee on the Role and Scope of Mission-Enabling Activities in NASA's Space and Earth Science Missions and National Research Council (National Academies Press, June 2010). NASA's space and Earth science program is composed of two principal components: spaceflight projects and mission-enabling activities. Defining and articulating appropriate scales for mission-enabling activities have posed challenges throughout NASA's history. This volume identifies the appropriate roles for mission-enabling activities and metrics for assessing their effectiveness.

The Human Archaeology of Space: Lunar, Planetary and Interstellar Relics of Exploration, by P. J. Capelotti (McFarland, July 2010). The book covers the distinct but interconnected issues of lunar, planetary, and interstellar archaeology by establishing a catalog of archaeological artifacts that have been left behind in space as a result of human exploration, from the remnants of lost satellites to discarded lunar rovers, depleted rockets, and various abandoned spacecraft.

How NASA Learned to Fly in Space, by David M. Harland (Collector's Guide Publishing, Inc.; 2nd edition, April 2010). This book tells the story of Project Gemini, which made the Apollo Moon landings possible.

Space Science & Technology in China: A Roadmap to 2050, edited by Huadong Guo and Ji Wu (Science Press–Springer, June 2010; original Chinese edition published by Science Press, 2009). This report addresses long-range planning for developing science and technology in the field of space science, crafting a roadmap of development to 2050.

The Apollo Guidance Computer: Architecture and Operation, by Frank O'Brien (Springer-Praxis, July 2010). The technological marvel that facilitated the Apollo missions to the Moon was the on-board computer. This book describes the Apollo guidance computer's architecture, the instruction format, and the programs used by the astronauts.

Yearbook on Space Policy 2008/2009: Setting New Trends, edited by Kai-Uwe Schrogl, Blandina Baranes, Christophe Venet, and Wolfgang Rathgeber (European Space Policy Institute–Springer, August 2010). The *Yearbook on Space Policy* aims to be the reference publication analyzing space policy developments. Each year, it

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Recent Publications (continued)

presents issues and trends in space policy and the space sector as a whole. Its scope is global, and its perspective is European.

Stepping Stones to the Stars: The Story of Manned Spaceflight, by Terry C. Treadwell (The History Press, September 2010). *Stepping Stones to the Stars* is a nontechnical history of human spaceflight that tells the exciting and dramatic story of how we took our early steps toward the stars.

Packing for Mars: The Curious Science of Life in the Void, by Mary Roach (W. W. Norton & Company, August 2010). In this book, the author describes how by conducting space simulations on the ground, it is possible to preview what it is like to live in space without ever leaving Earth.

Soaring on the Wings of a Dream: The Untold Story of America's First Black Astronaut, by Ed Dwight (Third World Press, September 2009). This is the story of America's first black astronaut candidate, including the trials, tribulations, and experiences of that life's journey that led up to and included the intense training process and its aftermath.

American X&Y Planes: Volume 2: Experimental Aircraft Since 1945, by Kev Darling (Crowood Press, September 2010). This second volume of Kev Darling's history of American prototype and experimental aircraft tells the full story of the primitive jets of the immediate postwar period to the F-22 and F-35 stealth fighters that represent the pinnacle of modern warplane design.

ONLINE RESOURCES

NASA History

Newly scanned electronic documents are periodically added to the Headquarters Historical Reference Collection Web page at <https://mira.hq.nasa.gov/history/>. The latest addition includes over 450 speeches of key officials in NASA's history. Researchers will find remarks by Headquarters Associate Administrators and Center Directors as well as a number of program directors beginning in 1958. Key individuals include Wernher von Braun, Sam Phillips, and George Mueller, among others. In addition, press releases from 1963 to 1976 were recently added to this Web site as well, filling a 14-year gap in the online press release collection.

The NASA History Program Office—Now on Twitter!

Get short, timely messages and stay updated on a wide variety of topics. We have almost 3,000 followers and tweet things like "Today in Space History" and interesting historical photos. We also take questions from people on aerospace history topics. Join today and follow @NASAhistory!



Other Sites of Interest

Nine recently declassified Project Research and Development (RAND) Satellite Vehicle follow-on reports issued in 1947, as well as three difficult-to-obtain historic reports, have been made available in one convenient location online at <http://www.governmentattic.org/RAND-Follow-on.html>.

OTHER AEROSPACE HISTORY NEWS

National Air and Space Museum (NASM)

Compiled by Michael Neufeld

Five Space History Division curators participated in the Society for the History of Technology Annual Meeting in Tacoma, Washington, from 30 September to 3 October 2010. Valerie Neal presented a paper, “From ‘Going to Work’ to ‘Out of Work’ in Space: Perspectives on the Career of the Space Shuttle”; Cathleen Lewis presented “The Propeller, the Convolute and the Bladder: How Technology Changed Corporate Identities in the Space Industry”; Michael Neufeld gave a talk on “The Transfer of German Military Technology After World War II: Global Impact, Successes, and Failures”; Martin Collins chaired and commented in the session “Air Powers: National, Colonial, and Global”; and Roger Launius commented in “Challenges to NASA, Old and New.” In addition, former NASM Fellows John Krige, David Whalen, Philip Scranton, James R. Hansen, and Matthew Hersch, among others, participated in the meeting.

Michael Neufeld also presented “The Nazi Aerospace Exodus: Towards a Global, Transnational History” at the Artefacts XV conference in Ottawa, Ontario, 19–21 September. Martin Collins played a leading role in organizing the meeting.

Smithsonian National Air and Space Museum: An Autobiography, edited by Michael Neufeld, Space History, and Alex Spencer, Aeronautics Division (National Geographic Books) has now been published. This richly illustrated history of NASM includes chapters by Aeronautics curators Tom Crouch, Bob van der Linden, Dominick Pisano, Dik Daso, and Center for Earth and Planetary Studies scientist Ted Maxwell.

Roger Launius has published “An Unintended Consequence of the IGY: Eisenhower, Sputnik, and the Founding of NASA,” *Acta Astronautica* 67 (July–August 2010): 254–63; “Writing the History of Space’s Extreme Environment,” *Environmental History* 15 (June 2010): 1–6; and “Guest Blog: Human Spaceflight on the Brink of Extinction? What Might We Learn from the 1967 Planetary Science Crisis,” *Space News* (21 July 2010), available online at <http://www.spacenews.com/commentaries/100721-blog-human-spaceflight-brink-extinction.html>. He also participated with Smithsonian Journeys in a two-week Baltic cruise, where he gave five historical presentations on spaceflight, 10–24 July 2010.

On Tuesday, 27 July 2010, NASM hosted an educational program in the museum’s new “Moving Beyond Earth” exhibit featuring the crew of STS-132, the NASA mission to the International Space Station that flew in May 2010. Before the general

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Other Aerospace History News (continued)

crew presentation, the museum hosted a special ceremony in which NASA astronaut Dr. Piers Sellers returned to the museum an artifact that he had borrowed to take on the flight: a replica of Dr. John Mather's Nobel Prize medal for Physics (2006). After Dr. Mather spoke about his research using the COsmic Background Explorer (COBE) satellite to map cosmic background radiation in support and confirmation of the theory of the Big Bang, Dr. Sellers handed the space-flown medal first to Dr. Mather, who returned it to General Jack Dailey, Director of NASM. The STS-132 crew's film about their mission was followed by a question-and-answer session that featured students visiting that morning from all over the United States as well as Japan, the Netherlands, and Wales.

Also in attendance, by special invitation, were students participating in the NASA Summer of Innovation program from the University of the District of Columbia.



NASA Astronaut Piers Sellers returns the flown Nobel Prize replica, a NASM artifact, to Dr. John Mather, who won the prize, as General John R. "Jack" Dailey stands ready to receive it back into the Smithsonian Institution's National Collection.

American Astronautical Society (AAS) History Committee

By Michael Ciancone

Newsletter and Distribution List

Explorer, the periodic newsletter of the AAS History Committee, is available on the AAS Web site at <http://www.astronautical.org/committees/history>. Number 10 was published in March 2010. If you would like to electronically receive each issue, as well as an occasional bit of information related to spaceflight history, send an e-mail with your request to the Chair of the History Committee, Michael Ciancone, at michael.l.ciancone@nasa.gov.

Emme Award for Astronautical Literature

2009 Emme Award—The Emme Committee has completed its deliberations and is pleased to announce the results. The following recipient of the 2009 Emme Award for

Astronautical Literature will be officially announced during the Awards Ceremony at the AAS National Meeting in Port Canaveral, Florida, in November 2010:

- **Jay Gallentine**, *Ambassadors From Earth: Pioneering Explorations with Unmanned Spacecraft* (University of Nebraska Press)

The following titles are recognized as finalists for the 2009 Emme Award:

- **Ben Evans**, *Escaping the Bonds of the Earth: The Fifties and Sixties* (Springer-Praxis)
- **H. Helvajian and S. Janson**, *Small Satellites: Past, Present, and Future* (The Aerospace Press)
- **Francis F. Lyall and Paul B. Larsen**, *Space Law: A Treatise* (Ashgate Publishing Company)
- **Allan J. McDonald with James R. Hansen**, *Truth, Lies, and O-Rings: Inside the Space Shuttle Challenger Disaster* (University Press of Florida)

2009 Emme Junior Award—A review panel from the AAS, comprising members of the Education and History Committees, as well as an education specialist and a high school educator, has completed its review of the titles submitted for consideration. As you may recall, the Emme Award for Astronautical Literature (Youth), or Emme Junior, as it has affectionately been dubbed, is a new AAS award that will recognize authors who inspire and educate K–12 students through books that effectively communicate the concept and possibilities of astronautics. Entries were judged on originality (format, style, and subject), ability to inspire, educational content, accuracy of material, and effectiveness in reaching the intended audience. The recipients of the first Emme Junior Award, who will be officially recognized during the AAS National Conference at Cape Canaveral, Florida, in November, are as follows:

The recipient of the 2009 Emme Junior Award for Astronautical Literature (Children's Category) is **Eric Braun**, *If I Were An Astronaut (Dream Big!)* (Picture Window Books).

The recipient of the 2009 Emme Junior Award for Astronautical Literature (Young Adult Category) is **Brian Fies**, *Whatever Happened to the World of Tomorrow* (Abrams ComicArts).

The following titles are recognized as finalists for the 2009 Emme Junior Award:

- **Alan Dyer**, *Mission to the Moon* (Simon & Schuster Children's Publishing)
- **Patrick O'Brien**, *You Are the First Kid on Mars* (Putnam Juvenile)
- **Jim Ottavani, Zander Cannon, and Kevin Cannon**, *T-Minus* (Aladdin, an imprint of Simon & Schuster Children's Publishing)
- **Alexandra Siy**, *Cars on Mars: Roving the Red Planet* (Charlesbridge Publishing)

Space History Encyclopedia

The long-awaited *Space Exploration and Humanity—A Historical Encyclopedia* was released by ABC-CLIO in August 2010. The AAS History Committee provided sustained editorial support under the patient guidance of general editor Stephen Johnson. Our hope is that you will find the wait has been worth it. Additional information can be found at <http://www.abc-clio.com/products/overview.aspx?productid=109018&viewid=1>.

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*Other Aerospace History News (continued)***AAS History Series**

Volume 33 in the AAS History Series (Houston, 2002), edited by Michael L. Ciancone, was released in August 2010. This volume on the history of rocketry and astronautics comprises the papers presented at the International Academy of Astronautics (IAA) History Symposium during the 2002 World Space Congress in Houston, Texas. More information on this and other volumes in the series can be found on the Univelt Web site at <http://www.univelt.com>.

New Members

The AAS History Committee welcomes its newest members, Robert Pearlman and Dr. Asif Siddiqi.

Norman Mailer's *MoonFire* Lunar Rock Edition

Taschen has released a limited lunar rock edition, designed by Marc Newson, of Norman Mailer's *MoonFire: The Epic Journey of Apollo* that also includes an actual specimen. Working for *LIFE* magazine, Mailer covered the race to the Moon and lunar landing in 1969. The book includes his insights into these events, along with hundreds of photographs and maps. For more information, please visit the publisher's Web site at <http://www.taschen.com/>.

UPCOMING MEETINGS

The annual meeting for the American Historical Association will be held **6–9 January 2011** in Boston, Massachusetts. Please see <http://www.historians.org/annual2011/index.cfm> for more details.

The annual meeting for the American Library Association (midwinter meeting) will be held **7–12 January 2011** in San Diego, California. Please see <http://www.ala.org/lal/conferencesevents/upcoming/midwinter/index.cfm> for more details.

The 217th meeting for the American Astronomical Society will be held **9–13 January 2010** in Seattle, Washington. Please see <http://aas.org/meetings/aas217> for more details.

The 17th Annual Space Exploration Educators Conference will take place on **3–5 February 2011** at the Space Center Houston in Houston, Texas. Please see <http://www.spacecenter.org/TeachersSEEC.html> for more details.

The 42nd Lunar and Planetary Science Conference (LPSC 2011) will be held **7–11 March 2011** at The Woodlands, Texas. Please see <http://www.lpi.usra.edu/meetings/lpsc2011/> for more details.

The annual meeting for the Organization of American Historians will be held **17–20 March 2011** in Houston, Texas. Please see <http://www.oah.org/meetings/index.html> for more details.

The International Academy of Astronautics will host the 18th Humans in Space Symposium on **11–15 April 2011** in Houston, Texas. Please see <http://www.dsls.usra.edu/meetings/IAA/> for more details.

The 27th National Space Symposium will be held **11–14 April 2011** in Colorado Springs, Colorado. Please see <http://www.nationalspacesymposium.org/> for more details.

The NASA History Program Office and the National Air and Space Museum's Division of Space History will hold a joint symposium, "1961/1981: Key Moments in Human Spaceflight," on **26–27 April 2011** at NASA Headquarters in Washington, DC. Please see <http://history.nasa.gov/1961-1981callforpapers6.pdf> for more details.

OBITUARIES

Roy Estess

Former Stennis Space Center Director Roy Estess, 71, passed away on 25 June at his home in Tylertown, Mississippi. The History Office at Stennis was created in January 1990 during Mr. Estess's tenure.

Mr. Estess assigned veteran public affairs officer Mack Herring to design a program to preserve the "rich history of the Stennis Space Center." As the Center's first historian, Mr. Herring authored *Way Station to Space: A History of the John C. Stennis Space Center* during the 10 years he served in this capacity.

"We mourn the loss of this great leader, mentor, and friend," said current Center Director Patrick Scheuermann. "The NASA family has lost a pioneer of space exploration and a true hero."



Roy Estess

A native of Tylertown, Mr. Estess earned degrees from Mississippi State University and Harvard University before beginning a 37-year career with NASA as a test engineer on the Saturn V second-stage test project at Stennis.

Mr. Estess later served as head of the Applications Engineering Office, deputy of the Earth Resources Laboratory, and director of the Regional Applications Program (RAP) at Stennis. RAP was an innovative effort to assist 17 Sun Belt states in the application of remote sensing technology to resource planning and management.

In the 1970s, Mr. Estess played a key role in helping build Stennis into a federal city, working under then-Director Jackson Balch to attract compatible federal and state agencies to set up operations at the south Mississippi site.

From 1980 to 1988, Mr. Estess served as Stennis's Deputy Director. He was named the Center's fourth Director in 1989 and remained in that post until he retired in 2002. In 1992, he was temporarily assigned to NASA Headquarters in Washington, DC, as a special assistant to the Administrator; he served two consecutive NASA Administrators. From February 2001 to April 2002, Mr. Estess was assigned as acting Director of NASA's Johnson Space Center in Houston, Texas.

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Obituaries (continued)

Upon his retirement in 2002, Mr. Estess was praised as a steadying influence, a no-nonsense manager and a straight-shooter focused on finding solutions to problems.

Clarence Syvertson

Clarence “Sy” Syvertson, a former Director of the NASA Ames Research Center, died on 13 September 2010. In 1948, he began his career at Ames with hypersonic airflow research and advanced aircraft designs, including lifting bodies and reentry vehicles, which ultimately contributed to the design of the Space Shuttle.



Clarence Syvertson

Mr. Syvertson served as the Center Deputy Director from 1969 to 1977 and Director from 1977 to 1984. Under his directorship, Ames completed groundbreaking research in advanced vertical lift and tilt rotor aircraft, flight simulation and testing, human factors, the search for extraterrestrial intelligence, and many other fields. During this time, Ames also built the world’s largest wind tunnel, flew the Kuiper Airborne Observatory, and prepared the Galileo Probe for its journey to Jupiter.

Mr. Syvertson received his bachelor’s and master’s degrees in aeronautical engineering from the University of Minnesota. He was elected into the NASA Ames Hall of Fame and the National Academy of Engineering, as well as receiving NASA’s Distinguished Service Medal and becoming a Fellow of the American Institute of Aeronautics and Astronautics.

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Do you have more questions about NASA history in general? Please check out our NASA History Program Office Home Page at <http://history.nasa.gov> on the Web. For information about doing research in the NASA History Program Office, please e-mail us at histinfo@hq.nasa.gov or call 202-358-0384.

We also welcome comments about the content and format of this newsletter. Please send comments to Giny Cheong, newsletter editor, at giny.cheong@nasa.gov.

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