



From the Chief Historian



This issue of *News and Notes* focuses on our latest book, *Rockets and People, Volume IV: The Moon Race*.

As you will see inside, this fourth and final volume of our translation of Academician Boris Chertok's memoir has been over a decade in the making. It is a project that has been near and dear to me for much longer than my time as Chief Historian. It was a real, personal pleasure to join the Project Chertok team in time for the publication of the final volume. But it is a bittersweet pleasure because the remarkable Academician Chertok did not live to see the final volume in print. He passed away in December at the age of 99.

For those of you needing to catch up on the *Rockets and People* series, you can find free downloadable copies of all four volumes on our Web site (<http://history.nasa.gov/series95.html>). Volume IV is even available in e-book format (http://www.nasa.gov/connect/ebooks/rockets_people_vol4_detail.html) (as will be all of our future books). If you'd prefer to read your books on paper, the Government Printing Office bookstore still has copies of both volumes III and IV for sale (as of March 2012) (search at <http://bookstore.gpo.gov/advsearch.jsp>). You might also want to visit the National Technical Information Service (NTIS) (<http://www.ntis.gov/products/nasa.aspx>). Late last year, we signed an agreement with NTIS to carry our books in an effort to make sure you can find copies and get

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Project Chertok: The Final Rollout

By Bill Barry

In the fall of 2011, as we came closer to sending *Rockets and People, Volume IV*, to the printer, we began to review our plans for the final steps in releasing the book to the public. Typically, our books are released without much fanfare, but for important works like *Exploring the Unknown* and a few other publications, we've held special "rollout" events. The *Rockets and People* set has been one of those exceptional publications. In March 2005, when the first volume in the set was published, NASA History Program Office held ceremonial rollout events in both Washington and Moscow. The events were designed to both publicize this unusual collaboration and to honor the amazing team that had made the translation project a reality. With the decade-long "Project Chertok" coming to an end, we looked carefully at our options (and our budget) and made plans to have a single ceremonial rollout event in Moscow. As part of those preparations, we sent the question over to Moscow: "When would Academician Chertok prefer to have a ceremonial release of the final volume?" We wanted to make sure that our plans were in accord with the wishes of our hardy, but aging, author. We thought, perhaps, that Chertok might like to see this event on his 100th birthday (1 March 2012). As it turned out, what he really wanted was to have a presentation made at the annual Korolev Readings at the end of January 2012.

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them at a reasonable price. NTIS will have all four volumes of *Rockets and People* while supplies last.

We've got some more great books in the pipeline for this year. These include an overview of the National Aeronautics and Space Administration's (NASA's) aeronautics programs, case studies on the societal impact of space exploration, and a collection of oral histories. Stand by for some great reading!

Godspeed,



William P. Barry
Chief Historian

Project Chertok: The Final Rollout (continued)

The Korolev Readings, more properly the Academic Readings on Cosmonautics in Honor of Academician S. P. Korolev, is a major national conference sponsored by the Russian Academy of Sciences, the Russian Federal Space Agency, and the Bauman Moscow State Technical University (among others). With some 22 sectional meetings on a variety of technical and historical topics spread over two days, the Korolev Readings are somewhat similar to large Western professional association conferences, like the annual American Institute of Aeronautics and Astronautics (AIAA) SPACE Conference. Academician Chertok had been the chair of the organizing committee for the Readings for a number of years. He had arranged for our colleague and Project Chertok advocate extraordinaire, Jesco von Puttkamer, to speak at the Readings in January 2010 about volumes II and III. We agreed that the 2012 Readings would be a tremendous venue for the rollout of the final volume. Series editor Asif Siddiqi and I were granted a place of honor on the Korolev Readings schedule. We were to be the concluding speakers at the plenary session on the first day of the Readings, 24 January 2012.

Sadly, Academician Chertok passed away on 14 December 2011. The remaining members of the Korolev Readings organizing committee decided to honor Chertok at the Readings in several ways, including the presentation of volume IV as originally planned. While I was glad to have the opportunity to honor our author, I was also now in a bit of a bind. In the last couple of months of 2011, it had become clear that the travel funding situation at Headquarters had become especially tight. A trip to Moscow would not be cheap, and the History Program had already expended more than was retroactively desired on the Annual Program Review and Training at Glenn Research Center in November. Fortunately, Deputy Associate Administrator Alan Ladwig and our Associate Administrator, David Weaver, were quick to recognize the importance of the occasion and somehow found the funding for the trip. However, we had to be good stewards and make the best possible use of the trip for outreach and attempt to establish stronger

relations with our Russian partners. All of this led to a busy and exciting four days in Moscow.

After arriving late Sunday evening, 22 January, to the warm hospitality of our NASA Moscow Liaison Office (NMLO) staff, I awoke Monday to the dark and dreary skies of January in Moscow. (Part of the darkness was a result of the fact that the Russian Federation stayed on daylight time last fall. So, sunrise in January came pretty late in the morning.) The first stop for the day was on the north side of the city at the Anglo-American School of Moscow (AAS). After a meeting with AAS Deputy Director Ian Forster and school board members, some Q&A time with a student working on his senior thesis (on space history), and lunch, it was time for my presentation. Taking an hour off from their midterm exams, most of the middle and high school students joined me in their auditorium (appropriately named the Bolshoi Theater) for a discussion entitled “NASA Today and Tomorrow.” (The amazing AAS video production people put together a very nice montage from some NASA video and a taped conversation with me. You can see it at <http://vimeo.com/35524607>.)

My NMLO colleagues and I then took a trip to the south side of Moscow, to the Headquarters of the Russian Academy of Sciences for a meeting with the Director of the S. I. Vavilov Institute of the History of Science and Technology. The Institute has been a home for Russia’s space historians for at least the last 50 years. Professor Asif Siddiqi had flown in to Moscow late Monday morning and, with impeccable timing, arrived at the Academy of Sciences just as my NMLO friends and I did. We were met in the parking lot by Institute Director Dr. Yuri Baturin, a man with a remarkable number of successful careers, including cosmonaut. Dr. Baturin and his staff proved to be especially gracious hosts. We had an extended discussion of historical topics of mutual interest and outlined possible collaborative efforts in the future. We also were treated to a preview of some impressive 3D computer-generated animations of Russian air- and spacecraft. In a practice that would be repeated several times a day all week, we indulged in the Russian tradition of drinking tea and exchanging small gifts (mostly books—much to my delight). The conversation turned several times to *Rockets and People*. Asif and I were both gratified by the warm reception of the set among Russian space historians. As the Sun faded out on a cold and windy evening (again in the Academy of Sciences parking lot), we said some warm goodbyes and left with the promise of further discussions.

Tuesday was, of course, the main event—the plenary session of the Korolev Readings. The NASA delegation included Asif Siddiqi, Jesco von Puttkamer, Tom Plumb as the NASA Russia Representative, several members of his staff, and other NASA personnel based in Moscow. Tom’s Aerospace Affairs Specialist, Elena Maroko, was particularly important to us that morning since she had the job of translating our speeches into Russian. But, before the festivities began, there was a short break for tea with the organizing committee and the plenary speakers. It was an incredible treat to sit around a big table with many of the luminaries of the Russian space program and fellow historians to share reminiscences of Boris Chertok and the history of the Space Age. It was also a tad bit embarrassing

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Project Chertok: The Final Rollout (continued)

for me personally to be the one to receive the praises for all of the great work done by all of the longstanding members of the Project Chertok team. Yet all too soon, we moved out to our seats in the front row of the Great Hall of the Bauman Moscow State Technical University. We all observed a minute of silence in honor of Academician Chertok and heard a moving tribute to him by the organizing committee. A number of amazing talks followed—including a remarkably frank discussion of planetary probe development and future plans by the head of the organization (Lavochkin Research and Production Association) that had built the recently lost Phobos-Grunt probe. By early afternoon, the other plenary talks were complete and it was time to honor Chertok once again. I took just a few minutes to comment on connections, both personal and professional, with Project Chertok, and then I turned the stage over to our series editor, Asif Siddiqi, for the main speech on this decade-long labor of love. You can read the text of both of our speeches elsewhere in this newsletter.

Although our main job for the day was done by the middle of the afternoon, the day was far from over. The NASA delegation had been invited to tea by the daughter of the legendary Chief Designer Sergei Pavlovich Korolev. Natalia Koroleva, a brilliant surgeon and professor in her own right, had known Chertok since their first encounter in postwar Germany. However, this was more than another chance to sip tea together, for she has turned part of her apartment into a museum of all things Korolev. Most of our group had been there before, but for me this was a first-time pleasure. I had spent much of the 1990s studying Soviet space history with a focus on the role of Sergei Korolev. A chance to touch many of the artifacts of his incredible life, like the giant leather mittens that kept his hands warm on the windswept steppe at Baikonur, or the tin cup that he used in the Gulag, was an amazing experience. Dr. Koroleva's hospitality is legendary, and she and her family welcomed us all like old friends. We had an incredible guided tour of her family museum, lengthy discussions about various episodes and personalities in Russian space history (with a special focus on Boris Chertok), and an exchange of gifts (more books) and stories.

The next day, my job was to return to the Bauman Moscow State Technical University to participate in one of the smaller Korolev Readings breakout sessions as the guest speaker. But before doing that, Asif and I had an amazing treat—a chance to visit the workshop of the Space Faculty at the Moscow Aviation Institute (MAI). Why would I be so excited about this? Because tucked into this nondescript workshop at MAI is one of the few surviving Soviet Lunar Ships (the Soviet counterpart to the Lunar Module). I had been attempting to see one of these in person since they were first revealed in the early 1990s, but I had kept missing opportunities. Thanks to our friends at NMLO (thank you again, Elena!), Asif and I got a guided tour of the MAI “workshop” by one of the MAI faculty, Sergei Firsyuk. After this delightful start to the day, we continued on to Bauman for Korolev Readings, day two. Asif went off to some panels and meetings of his own, while I found my way to the room where I was to speak to a group of 30 students as part of the education track of the Korolev Readings. (This was arranged by another member of the NMLO staff, Lena Mole.) Much to my happy surprise, the room

was packed with both students and adults. With Elena Maroko's translation help, once again I made a presentation on NASA very similar to the one I delivered Monday at the Anglo-American School. In the much more intimate environment of a Bauman classroom, we had a very lively discussion about NASA's past, present, and future. The discussion wandered from *Rockets and People* to aeronautics to UFOs and bounced between various attempts to speak each other's language. (On the whole, their English was much better than my Russian—thank goodness Elena was there.)

In the middle of the afternoon, Asif and I met up and caught our ride back to the south side of Moscow for a visit with the editorial team of the Russian space journal *Novosti Kosmonavtiki* (*News of Space*). This magazine is one of the best space magazines in the world, and I was very happy that Asif had invited me along with him for this meeting. Once again, over tea and cookies, we had a wide-ranging chat about current activities and future plans among space historians and journalists. The production of *Rockets and People* again got a very warm reception. We exchanged some books and, I hope, opened the door for future discussions.

My last day in Moscow was museum day. Thursday morning, we rejoined our friend Jesco von Puttkamer (he'd been busy on Wednesday making his own presentation at a Korolev Readings session) for a trip to the Memorial Museum of Cosmonautics. When I had first visited this museum (in 1994), it was a small and dusty one-room display tucked under the rocket spire just outside of what was known in Soviet times as the All-Union Exhibition of Economic Achievements (VDNKh). The Memorial Museum was closed in 2006 for a major renovation and reopened in 2009. What a change in those three years! They not only added a huge new entryway, but did major excavations that have dramatically increased the size of the museum. The expansive new underground galleries include full-scale mockups of the *Mir* core module, as well as a Soyuz spacecraft and a myriad of other displays of both Russian and international space activities. We had a very interesting discussion about future plans for the museum with its newly promoted director, cosmonaut Aleksandr Lazutkin. We also had a delicious lunch together, presented a complete set of all four volumes of *Rockets and People* for the museum's library, and were presented in turn with books from the museum.

When our too-short visit at the Memorial Museum was over, we traveled a few blocks to the Academician S. P. Korolev Memorial House Museum. In Russia, it is a bit of a tradition to turn former residences of notables into museums. This particular one is unlike any other I've ever seen. The remarkable house where Chief Designer Korolev and his second wife, Nina, lived from 1959 until his death in 1966 is as unique as its former resident. Strangely, in a city full of huge apartment blocks, there sits this one wooded lot with an almost orange-colored single-family home that looks like something dropped in, *Wizard of Oz*-like, from a 1950s issue of *Better Homes and Gardens*. While the basement has been converted into offices, displays, and a small theater, the two main floors of the house have been maintained as they were the day that Korolev left for the hospital in January 1966—down to his coat and hat hanging in the entryway closet and the books on his desk. While there were many notable aspects of the house (including a

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Project Chertok: The Final Rollout (continued)

movie projector in the living room—Korolev enjoyed watching movies, we were told), I could not help but notice the huge, hand-drawn map of the lunar surface that covers the wall outside his upstairs office. Once again, we got to have some useful discussions with the museum director, Larisa Filina, and an opportunity to learn a bit more about Boris Chertok and his relationship with the legendary Chief Designer.

The next morning (Friday), I made the trip back out to Sheremetevo airport for the flight home. Asif and Jesco were able to stay a few more days, but I needed to head back to Washington. Thanks to the great support from Tom Plumb and his NMLO team, along with Joel Montalbano, NASA's Director of Human Spaceflight Programs—Russia, we all had a successful trip. (I should also mention my thanks for their help in keeping my trip under budget.)

While I had long been aware that the completion of Project Chertok was eagerly anticipated in Russia, I was still struck by the outpouring of appreciation from all the people that we met during those four days in Moscow. Our Russian friends were all impressed by the fact that NASA would expend the time and energy to translate a memoir of Russian space history. Moreover, they were pleased with the quality and attention to detail in the final products. For my part, I was delighted to be able to sing the praises of the team behind the work—from Chertok himself; to the amazing translators from TTI; to our fantastic series editor, Asif Siddiqi; to the printing and design staff at NASA Headquarters; to the leaders at NASA who have supported the project in many ways. Project Chertok has been a remarkable success by any measure. Will it change the world? I think not. But I am sure that the project has won us many friends and admirers in Russia and will broaden our mutual understanding of one another. It may be difficult to measure that impact, but it is at least a step forward in our relationship. In the long run, I'm convinced that this will make a difference.



NASA Chief Historian Bill Barry speaks to middle and high school students at the Anglo-American School of Moscow.



Professor Asif Siddiqi, Dr. Yuri Baturin, and Bill Barry admire *Rockets and People, Volume IV*.



NASA visitors to the Academician S. P. Korolev Memorial Apartment Museum. Standing (left to right): Asif Siddiqi, Tom Plumb, and Bill Barry. Seated: Natalia Koroleva, Jesco von Puttkamer, and Maria Koroleva.



Rockets and People series editor Professor Asif Siddiqi speaks during the Korolev Readings.



Asif Siddiqi inscribes a copy of *Rockets and People, Volume IV*, to Natalia Koroleva.



Moscow Aviation Institute staff member Sergei Firsyuk points out the features of the Soviet Lunar Ship.



The Soviet Lunar Ship at the Moscow Aviation Institute.

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Project Chertok: The Final Rollout (continued)



The NASA delegation meets with Aleksandr Lazutkin (third from left), Director of the Memorial Museum of Cosmonautics.



The Korolev House Museum. This museum, run by a close friend of Korolev's late second wife, is separate from the Academician S. P. Korolev Memorial Apartment Museum.



Map of the Moon outside Chief Designer Korolev's home office.

Rockets and People, Volume IV: The Moon Race

Introduction

**Speech Given by NASA Chief Historian Bill Barry
at the Korolev Readings, 24 January 2012**

Honored Organizing Committee members—Academician Legostaev, Rector of MGTU imeni Bauman Aleksandrov, and Coordinator Alla Medvedeva—honored guests, ladies and gentlemen:

On behalf of NASA Administrator Charles Bolden and all the men and women of NASA, I would like to repeat to you our sincerest condolences on the death of cochairman of the organizing committee, academician and pioneer of the opening of the cosmos, Boris Yevseyevich Chertok. It had been our sincere hope to present the fourth and final volume of the English translation of *Rockets and People* to Academician Chertok in person here, at his request, at the 36th Korolev Readings. Nonetheless, I would like to formally present to the Organizing Committee a complete set of all four volumes of the English translation of *Rockets and People*.

Before I leave the podium to Dr. Siddiqi for his discussion on this project, I would like to say a few words about the NASA History Program—and my very small part in “Project Chertok.” Let’s begin in 1958, when NASA was being created in response to the challenge thrust upon the U.S. by the incredible burst of Soviet space successes. Within a year of NASA’s creation, the Agency hired our first Chief Historian, Dr. Eugene Emme.

While doing some research for this event, I was surprised to find out that by 1962, Dr. Emme had begun a correspondence with the late Viktor Nikolaevich Sokolskii—a name that I am sure is familiar to many of you in this room—and one that I know as well. Within a couple of years, these two historians found themselves as the founding cochairs of the International Academy of Astronautics History Committee. While relations between our history efforts were not close, I find it very interesting that contacts between our respective historians date back to the earliest days some 50 years ago. This is a legacy worth preserving.

Of course, while the early pioneers were making, and recording, space history, I was a young boy enthralled by it all. In fact, the very first thing that I can remember is sitting in front of our family television set watching the live coverage of John Glenn’s flight. That was 50 years ago, and I still remember worrying about whether Glenn’s heat shield had actually come loose (as the indicator showed) or if he would make it safely home. At the age of four, I was hooked. But I also remember being extremely curious about the Soviet space program—and being frustrated at not being able to watch it live on TV—or to even find out very much about it.

Several years later, when I was 12 years old, I had a chance to switch from foreign language classes in French to Russian. While I’ll admit that part of the reason I wanted to switch was that I really didn’t like my French teacher, my main motivation

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for changing was the belief that knowing the language of the other space power would come in handy in the future. Little did I know that the future would be more than 20 years away, when the Cold War was over and the U.S. Air Force decided to send me back to school for a doctorate.

In 1992, as I began my doctoral studies, I realized that a door had opened that made it possible to study early Soviet space history. I had the good fortune of meeting many helpful people during my research—one of whom introduced me to none other than Viktor Nikolaevich Sokolskii. I'm still amazed at his hospitality and that I was able to spend most of the month of July 1994 working in Moscow at the Institute on Staropanskii pereulok. Another person I was fortunate to meet was a brilliant young scholar working on his own history of the Soviet space program—Asif Siddiqi. As I was finishing my dissertation in 1995, Asif brought to my attention an amazing new memoir—*Rakety i Lyudi*, by Boris Chertok. I was astounded—here was a detailed and incisive work of analysis—and it was a great read.

A couple of years later, I was talking with my friend, the then-fourth NASA Chief Historian, Roger Launius, who was considering the idea of whether or not to translate any of the new space history material from Russia. Like a number of other people, I told Roger that if he had funding for only one translation project, that *Rakety i Lyudi* should be the one.

Meanwhile, I retired from the U.S. Air Force and, much to my surprise and delight, wound up working for the NASA Headquarters international office in Washington. In the intervening years, my new colleague Jesco von Puttkamer had miraculously initiated “Project Chertok” and, perhaps even more miraculously, brokered an arrangement that put the outstanding translators of TTI to work on the book. I was delighted to provide then-acting Chief Historian Steve Garber, and later NASA's fifth Chief Historian, Steve Dick, some moral support—and in 2004 assisted with drafting General Tom Stafford's foreword to the first English volume.

In those days, all of us, Academician Chertok included, expected that the project would be completed well before the end of the decade. So, when I was hired as NASA's sixth Chief Historian in September of 2010, I felt a special urgency to push “Project Chertok” to a quick conclusion.

I am humbled to be here with you today to help honor Academician Chertok and to introduce the fourth and final volume of the English translation of *Rockets and People*. I am also very pleased to introduce my friend, colleague, and our incredibly talented and energetic series editor for “Project Chertok”—Professor Asif Siddiqi.

Presentation on the Book *Rockets and People, Volume IV*, by Boris Chertok

Speech Given by Professor Asif Siddiqi at the Korolev Readings, 24 January 2012

Ladies and gentlemen, distinguished guests,

Let me begin by saying how honored I am to speak at this auspicious occasion. My hope was that Boris Yevseyevich would be here with us, but alas, this was not

to be. This is an event tinged with celebration but also sadness. I am here today representing the team at NASA who prepared Academician Chertok's memoirs, *Rockets and People*, for publication in the United States.

Academician Boris Yevseyevich Chertok lived an extraordinary life. He witnessed and participated in many important technological milestones of the 20th century, and in his memoirs he remembers these events with clarity, humanity, and humility.

These memoirs, forged from experience in the Cold War, provide a compelling perspective into a past that is indispensable to understand the present relationship between the American and Russian space programs. From the end of the Great Patriotic War¹ to the present day, the missile and space efforts of the United States and the Soviet Union (and now Russia) have been inextricably linked, initially as adversaries and then as compatriots. Boris Yevseyevich's work focuses on the Soviet program, but it has also prompted us in the United States to reconsider our own history of space exploration. Academician Chertok's participation in the most important Soviet space achievements, his capacity to lucidly communicate them to the reader, and his skill in providing a broader social context make his memoir, *Rockets and People*, in my opinion, one of the most important memoirs written by a veteran of the Soviet space program.

Today, very briefly, I would like to describe the challenges of bringing *Rockets and People* to an English-speaking audience. The project began in 2002 when Jesco von Puttkamer at NASA brought the original Russian version to the attention of the Chief Historian of NASA at the time, Roger Launius. I had worked with Roger on a number of other projects, and I was overjoyed and honored when he invited me to serve as "chief editor" of the project to translate, edit, and publish *Rockets and People* in the English language.

We had a number of discussions during the year on our approach to the translation. We wanted to use the most recent and revised version of his manuscript. We also wanted to ensure the absolute highest quality in translation. At the same time, we wanted to make sure that the text was appropriate for American readers, especially those unfamiliar with Soviet history or Russian culture. A very able team of native Russian speakers as well as Americans fluent in Russian, including Laurel Nolen, Lydia Bryan, and Cynthia Reiser, assisted us on the project. I tried to make the translation as faithful as possible to the original Russian, maintaining idiomatic expressions native to Russian, but also provided many footnotes to explain terms or events unfamiliar to most Americans. During this period, I was helped by new NASA Chief Historians Steven Dick and Bill Barry as well as senior historian Steve Garber.

The reaction among American readers has been effusive. Almost every week, I receive an e-mail from an unknown reader about their "discovery" of this series of volumes. Many former veterans of the American space program, including astronauts, managers, [and] NASA officials, have expressed their admiration for the memoirs. During the Cold War, the Western understanding of the Soviet space

1. Familiar to Russian audiences, the term "Great Patriotic War" refers to the Soviet front of World War II.

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program was of very poor quality. There were a few important works published in English in the 1990s, but there were many others that included inaccuracies or historiographical misperceptions. Academician Chertok's English-language memoirs provide a much-needed and expertly researched account directly from the pen of a Russian. Of course, Boris Yevseyevich's memoirs are not the last word on the history of Soviet space exploration. There are many other memoirs from other perspectives. And I hope that these may also be introduced to English-speaking audiences in the future. But the value of *Rockets and People* is that these four books combine vast amounts factual data with a humanistic approach to the history of Soviet space exploration, a very powerful combination.

I met with Boris Yevseyevich several times in Moscow over the years. We discussed various aspects of the translation process. He expressed a keen interest in all details of the project, from the quality of the translation [to] the editing, the images, even the cover. His advice was invaluable for our team as we published the first three volumes in 2005, 2006, and 2009. Let me quote Boris Yevseyevich's own words in the introduction he wrote specially for the English-language edition in 2005:

In 2001, I accepted NASA's offer to translate my four-volume memoir, *Rockets and People*, into English for publication in the United States. By then I had accumulated a large number of critical remarks and requests from the readers of the Russian edition. In addition, after three Russian editions had come out, I myself came to the conclusion that in the new edition I must make additions and changes that make it easier for the American reader to understand the history of Soviet cosmonautics. As a result, this new English-language edition is far from being a word-for-word translation of the Russian edition. I changed the total number of chapters and their arrangement among the volumes (to more strictly adhere to chronology) and took into consideration some of my readers' criticisms as far as the need to add information and make clarifications to make it easier to understand complex events.

...

Making additions, changes, and revisions to the text proved to be much more difficult for me than doing a rewrite. By the way, this is true not only of printed works. The history of aerospace technology abounds with cases where more effort went into modifying and changing rockets or spacecraft after they had been put into service than on the development of the prototypes.

To begin creating an improved four-volume edition at my age is a risky undertaking. Throughout 2003 and 2004, the texts of the first two volumes of the new edition were handed over to NASA. I still hope to finish working on the new edition of volumes three and four in 2005. Huntsville veteran Jesco von Puttkamer has rendered me great moral support.

Over the course of e-mail correspondence and personal meetings, he has convinced me that the work on “Project Chertok” has been met with enthusiasm in NASA’s historical research department.

I express my sincere gratitude to all those at NASA Headquarters who are assisting in the publication of my memoirs.

I am particularly grateful to Asif A. Siddiqi, who has agreed to be my editor. His erudition, command of the Russian language, and profound knowledge of the history of Soviet aviation and cosmonautics are a guarantee against possible errors.

Mikhail Turchin has rendered invaluable assistance to “Project Chertok.” He transcribes my manuscript notes into electronic copy, keeps a list of the individuals mentioned in each chapter, scans photographs, and handles the transmission of all the information to NASA. He also edits all the material and gives valuable advice on the structure of the books.

I am sincerely grateful to the veterans of cosmonautics whose valuable comments have provided a very strong stimulus for working on the new edition of my memoirs.²

It is with sadness that I stand here and note the completion of this massive project to translate, edit, and publish his four-volume memoirs, *Rockets and People*. This project took us a decade to finish, but Boris Yevseyevich passed away just one month before we published the fourth volume. His passing was an immeasurable loss to the legacy of the Russian space program. But I have every confidence that, as with his scientific and technical contributions to the Soviet space program, his literary and historiographical contributions will stand the test of time and endure as a lasting legacy of his extraordinary life.

News from Headquarters and the Centers

Headquarters

Historical Reference Collection

By Jane H. Odom

In the Headquarters archives, the staff continued to stay busy with reference services and with processing and preservation projects. During the last quarter, we hosted an average of a dozen people per month who came in person to the

2. Boris Chertok, “Preface to the English Language Edition,” in *Rockets and People*, vol. 1, ed. Asif A. Siddiqi (Washington, DC: NASA SP-2005-4110), pp. xxiii–xxiv.

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History Program Office to conduct research. We had research visits by NASA staff as well as visitors from the Naval Research Laboratory, the National Air and Space Museum, the National Academy of Sciences, the Massachusetts Institute of Technology, the University of Cincinnati, and Princeton University, in addition to the X-34 contract historian.

With the Headquarters building renovation in full swing, Jane Odom has been contacted by nearly a dozen different offices to evaluate historical materials for possible donation to the archives. Most notably, she collected chronological correspondence files from the Administrator's Office, 2005–10, and materials on Teacher in Space and Educator in Space from the Education Office.

A number of archive projects either are under way or have been completed recently that researchers will find of interest. Processing (arrangement and description) continues on a large audiovisual collection, 1960–2011. The audio portion contains over 300 reels, 50 of which have been digitized by an outside vendor with plans under way to digitize more as funding permits. A hard-copy collection of NASA Program Reviews and General Management Reviews, 1961–92, and a set of Administrators' Calendars, 1961–93, are being digitized by our staff and will soon be completed. The review of boxes on loan from the Federal Records Center continues unabated, with material currently being added to the Historical Reference Collection (HRC) from Office of Space Station subject files, 1981–86, and from the reusable launch vehicles files.

Colin Fries represented the office at the spring Mid-Atlantic Regional Archives Conference (MARAC) held in Cape May, New Jersey, in April. Proudly, he was the recipient of a MARAC \$250 travel assistance scholarship to attend the meeting. He attended sessions on preserving digital materials, fundamentals of preservation, and basics of electronic records, among others.

Linnea Nelson, a field study student from the University of Maryland, joined our office in February. Linnea is from Pullman, Washington, and is completing a 120-hour requirement as part of the Master of Library Science curriculum within the iSchool (College of Information Studies). Jane has her working on a variety of archive tasks and is pleased to have her assistance and serve as a mentor. Linnea will graduate with her M.L.S. in May.

Ames Research Center (ARC)

By Glenn Bugos

NASA Ames marked the 50th anniversary of *Friendship 7* with a Web feature on Ames contributions toward the Mercury capsule concept and its model-testing program. Jack Boyd, Senior Advisor to the Center Director, was featured in a story about the Mercury program in the San Jose Mercury News. Ames also issued a Web feature on the 40th anniversary of the launch of the Pioneer 10 spacecraft, the first spacecraft to endure the hazards of the outer solar system and explore the gas giants.

Glenn Bugos has embarked on an update of his history of NASA Ames, *Atmosphere of Freedom*, with attention to Ames's recent missions as well as the rich visual history of the Center. This pictorial history will be available in electronic and print format by the end of 2012. In addition to his many presentations on the history of NASA Ames, Jack Boyd authored a major presentation on Ames work in the exploration of Mars.



To mark the 50th anniversary of *Friendship 7*, Jack Boyd holds a plaque given to Harvey Allen in November 1968 by the Manned Spacecraft Center for pioneering the technology that allowed astronauts to return safely to Earth. Included are study plugs taken from the heat shields of Mercury, Gemini, and Apollo capsules. (Source: Karen T. Borchers, San Jose *Mercury News*)

In history news around the Center, Hank Cole, an Ames retiree who worked in the structural dynamics branch in the 1960s, is completing a manuscript on the technical history of Randomdec, a computer program he authored in the early 1970s that is still widely used to find a signature in seemingly random vibrations. Jack Glazer, former Center counsel, donated some interesting materials on how he helped expand Space Act authority in the 1960s to include joint enterprises with nonfederal organizations. The Air Wing of the Moffett Field Historical Society is refurbishing a wind tunnel model of a Vertical Attitude Takeoff and Landing (VATOL) jet fighter tested at Ames in the 1990s.

In book news, former Ames Center Director Scott Hubbard's account of his years as NASA's Mars czar, titled *Exploring Mars: Chronicles of a Decade of Discovery*, has been published by the University of Arizona Press. It provides a unique inside perspective on how he reconfigured NASA's Mars program in the early 2000s, following some high-profile mission failures, and set it on a path to the successful

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News from Headquarters and the Centers (continued)

Mars landers of the past decade. (See the “Recent Publications” section later in this newsletter for publication details.)

In archival news, all of the NASA Ames finding aids are now available on the publicly accessible portion of ArchiveGrid at the WorldCat Web site (<http://beta.worldcat.org/archivegrid/>). April Gage welcomes a new intern, Susan Edwards, who is a master’s student at the San Jose State University School of Library and Information Science. Susan is physically located at NASA Dryden Flight Research Center while processing a collection of papers donated by her father, a NASA expert in aeroelastics.

The Lunar CRater Observation and Sensing Satellite (LCROSS) impacted the Moon in October 2009, generating data that confirmed the presence of water ice and many other useful materials in the permanently frozen regions at the lunar south pole. Now processed and available for research is the public outreach archive of the mission, including digital video and photographs, booklets, technical papers, presentations, social media campaign records, awards, ephemera, and memorabilia. It was the first time the Ames archive processed a collection that was mostly “born” digital. It contains 1,145 digital objects, totaling 40.9 gigabytes, as well as 7.6 cubic feet of analog material. It was compiled by LCROSS team members and donated by Dan Andrews, the LCROSS project manager.

We also helped engineers at Goddard find detailed engineering records of the Galileo descent probe. Working with former project manager Charlie Sobeck, we identified a complete set of drawings for the Galileo spacecraft and had an outside vendor digitize a subset of the 1,500 aperture cards. We are delighted our archives have become central to making past work on the entry, descent, and landing of planetary probes so relevant to future missions.

Dryden Flight Research Center (DFRC)

By Christian Gelzer

Peter Merlin approved final edits and layout proofs of his book *Breaking the Mishap Chain: Human Factors Lessons Learned from Aerospace Accidents and Incidents in Research, Flight Test, and Development* (SP-2011-594). It will be published in May as an e-book and in hard copy. One of his other books, a collection of lessons-learned case studies of mishaps involving remotely piloted vehicles, has recently passed peer review and is being prepared for export control review. He is also working on a manuscript for a programmatic history of the X-53 Advanced Aeroelastic Wing test bed. All three books were sponsored by Tony Springer for the Aeronautics Research Mission Directorate. Merlin recently delivered a paper at a local chapter meeting of the AIAA titled “Echoes of Thunder: Aerospace Archeology in the High Desert.” The AIAA hosts the annual meeting at Antelope Valley College to inspire students with presentations on local aerospace history.

Curtis Peebles submitted an article for publication titled “NACA/NASA Research Aircraft and the Birth of Spaceflight.” The article details the procedures used on the 1940s and 1950s rocket-powered research aircraft tested by the National

Advisory Committee for Aeronautics (NACA). These include the research aircraft checkout procedures that began with individual components, then moved on to individual systems, and finally encompassed the complete vehicle. Also described are the meetings at which problems from earlier flights are reviewed, solutions are proposed to correct them, and decisions are made about whether the aircraft is ready for the next flight. Another area involved mission rules, or what to do if specific problems appeared. In some cases, the flight would abort before launch from the mother ship; in others, the flight would be made; and in still other situations, an emergency landing would be made on the lakebed. Another change was in data processing. With the early X-planes, most of the data collected was recorded on film; some was transmitted to a receiver on the ground and recorded. Other than the pilot's radio transmissions, none of the data were analyzed in real time. This changed with the X-15, whose data were transmitted to the High Range tracking stations and then on to the control room at Dryden, where the information was then displayed on strip charts. If the engineers saw a problem, they would notify the flight director, who would relay the information to the pilot. When NASA began to make the Mercury flights, these procedures would become familiar to television viewers around the world. However, they did not originate at the Cape, but in the high desert of California.

Christian Gelzer has been editing the transcriptions of the Shuttle oral histories recorded for the pair of books he is working on that are due out in the fall; he is also cleaning up and finishing chapters for the sister book on Dryden's contributions to the Shuttle program. He has also had the good fortune to work with April Gage at Ames while supervising the part-time work of Susan Edwards, who is cataloging her father's papers for inclusion in Dryden's archival collection. Her father, John Edwards, began his career at Dryden, earned his Ph.D. at Stanford, and then returned to Dryden, where he specialized in aeroelasticity. Before that, however, he played a central role in solving the software issues that caused the Shuttle *Enterprise* to experience a pilot-induced oscillation on its last landing at Edwards during the Approach and Landing Tests. This was a critical problem to resolve for the spacebound orbiters. Dr. Edwards left Dryden for Langley Research Center, where he spent the remainder of his career gaining renown for his accomplishments and experience in his field. Susan works full time at the J. Paul Getty Museum and is pursuing a second master's degree, this one in library sciences. April is serving as the course administrator because of her training and degree. Dryden will, of course, be the beneficiary of this collaboration.

The sad news is twofold. First, budget cuts at Dryden in the fall of last year led to the loss of four members of our code, or 33 percent of our contract staff. In addition to causing us to say goodbye to longtime friends, this had an impact on what we can and cannot do. On the list of things Dryden no longer currently offers because of those cuts are tours and, most damning in the area relevant to us, access to the archives for anyone outside of Dryden. We simply cannot support such requests.

Second, Betty Love is reducing her workload and cutting back on her travels to and from the Center; we can't blame her since she did come to work here in 1952. Jack Boyd is perhaps the only one who has the jump on her in that category and

News from Headquarters and the Centers (continued)

who still comes to work. Fortunately, we still get to see her now and again, and there are a few projects she plans on spending time with that are invaluable to us.

Glenn Research Center (GRC)

By Anne Mills

John H. Glenn Research Center is proud to be celebrating our namesake on the occasion of the 50th anniversary of John Glenn's *Friendship 7* flight. On 23 February, Glenn History Officer Anne Mills hosted a lunch-and-learn event, in partnership with the Science and Engineering Library, on John Glenn and the mission.

Glenn Research Center and Cleveland State University hosted a public anniversary celebration event on 2 March. A crowd of 3,000 NASA Glenn employees, students, and the general public gathered to honor John Glenn not only for his *Friendship 7* flight, but also for his contributions as a pilot, astronaut, and statesman, as well as for his enduring inspiration. The event included video and musical tributes and many standing ovations. Administrator Charles Bolden, Glenn Research Center Director Ray Lugo, Cleveland State University President Ronald Berkman, and pilot Steven Lindsey (pilot of STS-95, Glenn's Shuttle mission) made remarks before John Glenn took the podium. Glenn spoke of the importance of marking anniversaries, not necessarily to acclaim the person involved, but so that we can be reminded of the stepping-stones that have brought us to where we are today—and learn from them. He emphasized the importance of curiosity. Curious minds are what drive us to be leaders in science, industry, and exploration. He hoped that we would continue to explore, not just to do it, but to increase our knowledge and satisfy our curiosity.

Also included in the John Glenn 50th anniversary celebration event was NASA Glenn's first-ever "Tweet-Up." Over 300 "Tweeters" applied for 100 spots. Participants were treated to a tour of GRC's historic Hangar and Zero G Facility, as well the newer Exercise Countermeasures Lab. There was also time to explore GRC's new visitor center at the Great Lakes Science Center in downtown Cleveland before heading to the John Glenn event. After the formal event, the Tweet-Up moved to the press coverage area and had an opportunity to ask Senator Glenn questions. Following Glenn, they then had an opportunity to do a Q&A session with four astronauts: Michael Foreman, Michael Good, Greg Johnson, and Steven Lindsey.

Jet Propulsion Laboratory (JPL)

By Erik Conway

Last fall saw the debut of the third installment of our documentary history of JPL, *Destination Moon*. This examined the Ranger and Surveyor lunar missions that NASA and JPL pursued during the 1960s with mixed success. It aired on the local Los Angeles-area public television station KCET, received showings in JPL's Von Kármán Auditorium, and was given to the Laboratory staff in a DVD "three pack" with *The American Rocketeer* and *Explorer One* as a Christmas gift. We have also begun to work on the fourth episode, which will focus on the Mariner missions to Mars.

Erik Conway's upcoming history, tentatively named *JPL and the Exploration of Mars*, is complete (again) and back in internal review. This first step of what he anticipates will be three stages of review is being carried out by a dozen scientists and engineers from JPL. Once he has revised in accordance with their comments, it will go through the formal document review and release process at the Lab so that it can then be sent to an outside press to be considered for publication.

Erik presented a paper on the development of the Viking lander's entry, descent, and landing system at last October's Society for the History of Technology meeting in Cleveland. He hopes to submit it for publication later this year.

Johnson Space Center (JSC)

By Jennifer Ross-Nazzal

The Society for History in Federal Government presented the Charles Thomson Prize to Dr. Jennifer Ross-Nazzal at its annual meeting 21 March at the National Archives, College Park, Maryland. The award-winning essay, "The Accidents: A Nation's Tragedy, NASA's Challenge," appeared in *Wings in Orbit: Scientific and Engineering Legacies of the Space Shuttle* in 2011. This short chapter provides a unique look at both the *Challenger* and *Columbia* accidents through the words and experiences of NASA engineers, technicians, Administrators, and astronauts involved in the tragedies and recovery efforts. Coauthor Randy Stone was the lead flight director for STS-51L, which was lost in 1986, and he later was heavily involved in the *Columbia* response and recovery. He is a former JSC Deputy Director. While historians and sociologists have documented the accidents, this essay provides a different perspective. The authors explore just how the loss of the vehicles and their crews impacted NASA and how this community overcame this tremendous loss and returned the nation to spaceflight.

The Charles Thomson Prize is awarded annually by the Society of History in Federal Government for excellence in an article or essay that deals with any aspect of the federal government's history written in or for a federal history program. Entries are judged for value in furthering the understanding and history of the federal government; quality and thoroughness of research; style and appropriateness of presentation; suitability and rigor of methodology; and use of original and primary materials. The article or essay must have been published in the calendar year immediately preceding the organization's spring meeting. The Thomson Prize commemorates the secretary of Congress from 1774 to 1789, America's first archivist.

Langley Research Center (LaRC)

NASA Langley Honors Its History in a Series of Events

By Gail Langevin

NASA Langley Research Center turns 95 on 17 July 2012. On that day in 1917, J. G. White Engineering Corporation of New York, New York, broke ground to begin construction of the National Advisory Committee for Aeronautics Administration

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News from Headquarters and the Centers (continued)

Building. Later in the year, the NACA was authorized to prepare plans for a 5-foot wind tunnel and funding was approved for the construction of a laboratory building.

Langley is planning an open house to celebrate the anniversary on 22 September 2012.

On 8 May 2012, two Virginia Department of Historical Highway markers will be installed and dedicated near the Badge and Pass Office at the Commander Shepard Boulevard entrance. The signs are the result of efforts by Mary Gainer, Historic Preservation Officer, and Caroline Diehl, CRM support contractor, Science Applications International Corporation (SAIC). One marker commemorates the National Advisory Committee for Aeronautics. The second marker recognizes Chesterville Plantation, birthplace of George Wythe (1726–1806), signer of the Declaration of Independence and a noted Virginia attorney. Wythe also taught law to Thomas Jefferson and future Chief Justice John Marshall. The NACA purchased Chesterville in 1950 and constructed the Aircraft Landing Dynamics Facility and the Lunar Landing (now Landing and Impact Research) Facility on the site. The foundation of the home site was left undisturbed and has a historical marker.

Langley participated in the city of Hampton's Hunt for Hampton History on 24 March 2012. The theme of the exhibit was "Working at NACA/NASA" in line with the event's theme. A history timeline interactive educational activity made its debut at the event. A wind tunnel fan blade was on display, as well as historic posters.

A historical photo display is under development for the new Langley Headquarters building. The Center Director's Office requested the display, which will be installed near a conference room under the repurposed 16-foot-tunnel fan blades that are installed as an architectural element just below the ceiling in the hallway outside the conference room.

The Langley Colloquium Committee invited F. Gary Powers, Jr., to be the 5 May Colloquium speaker. Mr. Powers will speak to employees at the afternoon colloquium at the Center and speak to the public at the evening Sigma Series talk at the Virginia Air & Space Center in Hampton. Powers is the son the late pilot whose aircraft was shot down over the former Soviet Union during the Cold War and will share his father's experiences.

Historic Preservation News at LaRC

By Mary Gainer

Joe Chambers has completed the draft of his new book, *Cave of the Winds*. The book provides a comprehensive history of NASA Langley's Full-Scale Tunnel. The tunnel design team included NACA/NASA notables Smith J. DeFrance, Abe Silverstein, Russell Robinson, and Clinton H. Dearborn. Built at the onset of the Depression, the tunnel became operational in May 1931. Once complete, it was the largest wind tunnel in the world. Early versions of virtually every high-performance fighter aircraft were evaluated in the Full-Scale Tunnel during World War II. After the war, the tunnel was used to explore new aircraft concepts as well

as a remarkable variety of other subjects such as submarines and parachutes. With the creation of NASA and the transfer of key personnel to the new Space Task Group (STG), the opportunity opened to begin testing remotely controlled free-flying models. This unique testing technique was used for research on civil and military aircraft and space vehicles for over 50 years. As space exploration took a prominent role in NASA activities, the tunnel was used to evaluate the characteristics of such concepts as the parawing/capsule combination, lifting-body configurations, and the Lunar Landing Training Vehicle. The tunnel was decommissioned by NASA in October 1995, but it continued to operate until September 2009 under an agreement with Old Dominion University. Demolition began at the end of 2010 and was completed in May 2011—almost 80 years to the day after it went into operation. The historical significance of the Full-Scale Tunnel was formally recognized when it was designated a National Historic Landmark in 1985.

Chambers joined the staff of the Full-Scale Tunnel in 1962 and later managed the facility as well as the Langley Spin Tunnel, the Langley 12-Foot Tunnel, and Langley's aircraft flight research activities. He retired from NASA in 1998 as manager of a group responsible for conducting systems analysis of advanced aircraft concepts. He is the author of over 50 NASA technical publications, including several NASA Special Publications on the contributions of Langley to the nation's aeronautics and space programs. He has served on international committees and is the recipient of several of NASA's highest awards.

Two collections were recently donated to the Historic Preservation Office and, after scanning, were given to the Center's archives. Jim A. Penland was an aeronautical engineer whose career at NACA/NASA spanned nearly 60 years from the late 1940s until his death in 2010. His career focused on hypersonic aerodynamics and wind tunnel testing and included such projects as the X-15, the Hyper-X program, the National Aero-Space Plane (NASP), and the X-24C. His family's donation included 23 boxes of reports, engineering drawings, related photographs and viewgraphs, and working notes. The collection has been organized by project with the folders placed in ascending chronological order based on the first date found within each folder. The collection was reviewed and organized by intern Robert Moyer and added 16 linear feet to our physical archives collections. The digital collection is available at http://crgis.ndc.nasa.gov/historic/Jim_Penland.

The family of John W. "Jack" Paulson donated his collection of early Langley newsletters. Jack had collected and bound all issues of the internal newsletter from the first issues of 30 November 1942 through 1956. These issues ran as the *LMAL Bulletin* (Langley Memorial Aeronautical Laboratory) until December 1944, when the name was changed to the *Air Scoop*, and it continues as the *Researcher News*. The newsletter was very different from what is published today. The Langley family was kept abreast of all the technical advances, new construction, social events, intramural athletic competitions, and cartoons based on Langley activities and people. These papers provide a wonderful insight into the weekly life at our Center. The newsletters have all been scanned and are available online at http://crgis.ndc.nasa.gov/historic/Air_Scoop_and_Researcher_News. The original bound copies have been donated to the Center's archives.

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News from Headquarters and the Centers (continued)

Sarah McLennan has recently been working on a project to document the work of the women who served as “computers” at NACA/NASA Langley from 1935 to 1970. Sarah received her undergraduate degree from Michigan State University and is currently working on her doctorate in U.S. history at the College of William and Mary. She is a member of the Phi Beta Kappa Honor Society and the American Historical Association. Her dissertation project has been supported by a Mellon Research Fellowship and grants from the school. She previously worked on an exhibit and oral history project at Michigan’s Women’s Historical Center, served as a research assistant for the “Historical Voices” Digital Library, and has taught courses in U.S. history, U.S. women’s history, and early Virginia history.

Sarah’s internship at NASA Langley included researching any documentation on women working as computers before the use of electronic computers. Her research led her to the chance to interview women who served in this capacity, as well as Beverly Golemba, who had researched this topic in the 1970s but never published her paper. Although Sarah’s research has finished, she continues to volunteer time as additional women contact our office and want to participate in the project. Sarah’s paper, photographs, and biographies are available at http://crgis.ndc.nasa.gov/historic/Human_Computers. You can read Sarah’s article “When the Computer Wore a Skirt” later in this issue.

Marshall Space Flight Center (MSFC)

Von Braun Exhibit at United States Space & Rocket Center

By Mike Wright

Historians and exhibit specialists at the NASA Marshall Space Flight Center in Huntsville, Alabama, are among those supporting an exhibit at the United States Space & Rocket Center showcasing the life of Wernher von Braun, in honor of his 100th birthday on 23 March 2012.

The exhibit is titled “100 Years of Von Braun: His American Journey.” Von Braun served as the first Director of the Marshall Space Flight Center from its founding in 1960 until his transfer to NASA Headquarters in 1970. The exhibit will run through May 2012. In May, the exhibit is expected to begin an extensive traveling schedule, possibly starting in Peenemünde, Germany, site of von Braun’s early rocket development efforts.

The exhibit covers von Braun’s American experience, beginning with his surrender to U.S. forces after World War II and continuing on through his passing in 1977. It also includes information about his many technical achievements, not only with NASA, but with the Army and private industry as well. Visitors can explore his vision through artifacts, models of various spacecraft (both real and conceptual), photographs and artwork, and multimedia displays featuring his speeches as well as interviews with and about him.

In 1960, von Braun’s rocket development team transferred from the U.S. Army to a newly established NASA facility in Huntsville and received a mandate to build the giant Saturn rockets. Accordingly, von Braun became Director of Marshall and the

chief architect of the Saturn V launch vehicle, the super booster that would propel Americans to the Moon.

Von Braun also became one of the most prominent spokesmen of space exploration in the United States during the 1950s. In 1970, NASA leadership asked von Braun to move to Washington, DC, to head the strategic planning effort for the Agency. He left his home in Huntsville, but in 1972, he decided to retire from NASA and work for Fairchild Industries of Germantown, Maryland. He died in Alexandria, Virginia, on 16 June 1977.

The first stop in the exhibit features a wall covered with excerpts about von Braun: milestones in his life, a list of his publications, even a map of Huntsville showing locations named for him.

The exhibit also includes V-2 and Redstone rocket engines, as well as a life-size photograph of about 100 members of "Operation Paperclip," the effort to bring more than 100 German scientists, engineers, and technicians to the United States. Display cases hold smaller artifacts like von Braun's personal flight log and his ID cards while at Fort Bliss, Texas, where the German team first arrived in the United States before moving on to Huntsville in 1950.

There are artifacts from his career, including a shovel from the dedication ceremony on 8 September 1960 at Marshall Space Flight Center and a desk calendar marking the date of the Apollo 11 lunar landing in July 1969.

In addition to covering the history of von Braun's time in the United States, the exhibit also features a unique look at some of the more personal aspects of his life, including his hobbies, his family, his celebrity status, and his daring visions of the future.

There is a bicycle on display believed to be the same one ridden by von Braun's younger brother, Magnus, as he searched for American troops to arrange the German rocket team's surrender.

The more personal effects include a wedding photograph of von Braun and his wife, Maria, taken in 1947; some trophies from his hunting trips; and copies of musical compositions created by von Braun, who played the piano and cello. A living room is set up with von Braun's recliner and other furniture that came from a couple of the family's homes in Huntsville.

Scattered throughout the exhibit are multimedia displays showing von Braun's speeches and interviews.

On Friday, 23 March, the Space & Rocket Center hosted a dinner honoring von Braun. Dr. Margrit von Braun, Wernher von Braun's daughter, spoke beneath a Saturn V rocket, her father's crowning achievement in landing the United States on the Moon. Members of von Braun's family toured the Marshall Space Flight Center that day to see some of the legacy buildings and laboratories built by von Braun that today still stand as a testimony to his vision and leadership.

Other Aerospace History News

National Air and Space Museum (NASM)

By Michael Neufeld

The National Air and Space Museum is preparing for the arrival of the Space Shuttle *Discovery* at the Steven F. Udvar-Hazy Center by Dulles International Airport, currently scheduled for 17 April (weather permitting).¹ After the NASA 747 Shuttle Carrier Aircraft carrying *Discovery* from NASA Kennedy Space Center lands at the airport, it will taxi to a de-icing ramp area at some distance to the terminal, where cranes and equipment will demate the orbiter over the next two days. On 19 April (again depending on weather and the timely delivery of the Shuttle), *Discovery* will be towed to a spot behind the Udvar-Hazy Center and will meet the Shuttle *Enterprise* nose-to-nose in a photo opportunity. The formal transfer of ownership from NASA to the Smithsonian will take place at that time in a special ceremony. *Discovery* will be put inside the McDonnell Space Hangar later in the day. *Enterprise* will be towed to the 747 and, after mating, will be flown to John F. Kennedy Airport in New York for ultimate delivery to the Intrepid Sea, Air & Space Museum in Manhattan. The NASM Space History Division, led by Chair Paul Ceruzzi and Shuttle curator Valerie Neal, are extensively involved in the preparations for this special event. Further details on the arrival events can be found at <http://airandspace.si.edu/collections/discovery/>.

Roger Launius, Space History, received the Charles Thomson Prize from the Society for History in the Federal Government (SHFG) for the article "Climate Change and the Space Age: An Historiographical Review," *Wiley Interdisciplinary Reviews: Climate Change* 2 (May/June 2011): 412–227. The prize was awarded at the SHFG annual meeting on 21 March at the National Archives II, College Park, Maryland. Roger and Jennifer Ross-Nazzal were cowinners of the Thomson Prize this year.

The Space History Division worked closely with the Lemelson Center for the Study of Invention and Innovation to cosponsor the symposium "Moving Beyond Earth: Innovations in Space" on 18–19 November 2011 at the National Air and Space Museum. More than 200 people participated in the symposium, and the speakers included several members of Space History and a broad range of outside scholars. A book is being prepared based on the presentations made at the symposium.

Michael Neufeld, Space History, and Stephen Garber, NASA History, are coediting a volume on the images of astronauts and cosmonauts in the media, popular culture, and state propaganda, derived from some of the papers at the "1961/1981" conference held at NASA Headquarters in April 2011. Publication is expected in 2013. Michael Neufeld has given several talks on the history of the National Air and Space Museum and the history of its V-2 missile as well. He recently published, with

1. This article was submitted prior to these events, which occurred as scheduled. Our newsletters will continue to follow the placement of the Shuttles.

David H. DeVorkin, "Space Artifact or Nazi Weapon? Displaying the Smithsonian's V-2 Missile, 1976–2011," *Endeavour* 34 (2011): 187–195.

James David, also of Space History, gave a speech on 28 February 2012 at NASM called "Can We Use This Telescope To Look at the Stars? The U.S. Intelligence Community and NASA's Astronomy Program." This talk is based on some of the research he is doing for a book on NASA and the intelligence community during the Cold War.

Society for History in the Federal Government Directory

SHFG has published a new edition of the *Directory of Federal History Programs and Activities, 2012*, available online at <http://shfg.org/shfg/publications/directory-of-history-offices/>. It provides information on offices in all branches of government that perform history-related work. Sections include the following:

- Part I, Historical Programs and Activities in the Executive Branch
- Part II, Historical Programs and Activities in the Judicial Branch
- Part III, Historical Programs and Activities in the Legislative Branch
- Part IV, Federal Historical Resources
- Part V, Documentary Projects Related to Federal History

When the Computer Wore a Skirt: Langley's Computers, 1935–1970

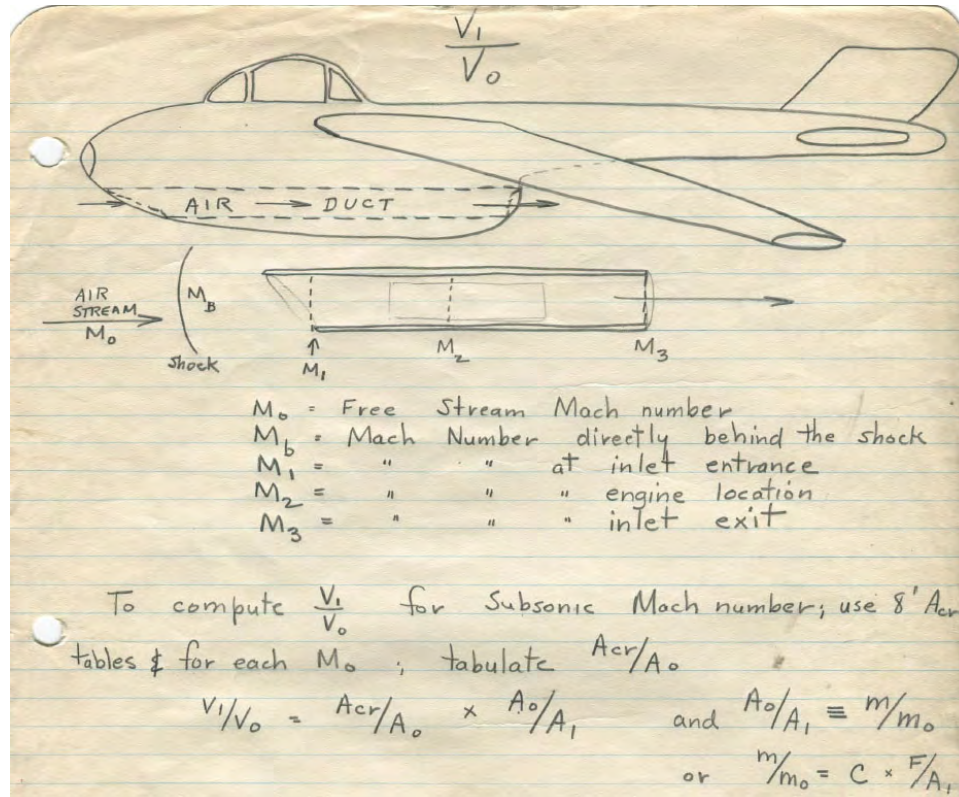
Contributors: Sarah McLennan (Cultural Resources Intern) and Mary Gainer (LaRC Historic Preservation Officer)

Virginia Tucker first received notice of her appointment to Langley Memorial Aeronautical Laboratory (LMAL) while vacationing in California. A former high school teacher with a college degree in mathematics, she arrived the day after Labor Day 1935 to join four other women in Langley's first "computer pool." Before the development of electronic computers, the term "computer" referred to people, not machines. It was a job title, designating someone who performed mathematical equations and calculations by hand. Over the next 30 years, hundreds of women, most with degrees in math or other sciences, would join those first five computers at Langley. Tucker herself helped recruit many of them, traveling to universities and women's colleges across the South. By 1946, as the overall supervisor for Computing, Tucker presided over a vastly expanded department that had trained about 400 women and placed them in sections across the facility.

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When the Computer Wore a Skirt: Langley's Computers, 1935–1970 (continued)

Reading, calculating, and plotting data from tests in Langley's wind tunnels and research divisions, human computers played an integral role in both aeronautical and aerospace research at the lab from the mid-1930s into the 1970s, helping it keep pace with the high output demanded by World War II and the early space race. Along with their contribution to the field, Langley's computers also stood out for another reason: they were all women.



Portion of an equation from the notes of Betty Stafford Malone. (Source: Donated by family)

At the time Tucker was hired, Langley Memorial Aeronautical Laboratory was the main research center for the National Advisory Committee for Aeronautics (NACA). Computing, as profession, dated back to the late 19th century, and typically both men and women were employed as human computers in astronomy, the social sciences, statistical research, and ballistics testing. The first computers at Langley, organized into a central office in the Administration Building, took on calculating work that had originally been done by the engineers themselves. According to a 1942 report, computing sections were designed to process test data more efficiently, relieving engineers of this essential but time-consuming work. A 1942 document on the organization and practice of computing groups at LMAL explained that engineers were free to devote their attention to other aspects of research projects, while the computers received praise for calculating data "more rapidly and accurately," doing more in a morning than an engineer alone

could finish in a day. While the initial computer pool at Langley proved a success, what really drove the expansion of computing (and the expansion of Langley overall) was the United States' involvement in World War II.



The Administration Building as it appeared in 1930. The computer pool was housed in this building. (Source: LMAL 8289)

Between 1941 and 1945, employee numbers at LMAL climbed dramatically from 940 to 3,220, and with the construction of the West Area, the lab itself doubled in size. In addition to the central pool, computing sections were established in the main wind tunnels and research divisions. To meet the increasing demand of the war effort and offset the loss of manpower as men were recruited to military service, Langley began actively recruiting female workers. Computing jobs were advertised in trade journals and pamphlets sent to colleges and universities. Recruiters, including Virginia Tucker and some engineers, visited campuses. Other women heard about jobs at Langley via word of mouth. Elizabeth Kitrell Taylor, for example, applied with a friend of hers who had attended a recruitment meeting at their teaching college and figured she would work for the duration of the war. Vera Huckel and Helen Willey, two of the earliest computers, filled out applications simply because they had driven friends out to LMAL for interviews. Perhaps ironically, these women's friends all either backed out or were not hired, while all three of them went on to careers with NACA/NASA that spanned decades.

During this time, housing became a serious issue for not only the women, but all new employees of the LMAL. The *Langley Bulletin*, the Center's newspaper,

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When the Computer Wore a Skirt: Langley's Computers, 1935–1970 (continued)

reported several new housing opportunities in 1942 and 1943. Besides a new subdivision that was to be an “ideal situation because it is possible to establish a new community made up entirely of NACA employees,”¹ and several rooms and apartment complexes available for the men, a new dorm was opened exclusively for women. Anne Wythe Hall was a temporary federal housing complex for female government workers. The first 372 units were opened in the summer of 1943. Rent included access to the laundry room and large bathroom on the first floor, as well as three warm blankets per resident. The residents were welcome to entertain their callers in the large lounge in the Community Building. Although there was not a curfew, the house mother locked the doors at 11 p.m. as “protection against prowlers.”



NACA women moved into Anne Wythe Hall in December 1943. The temporary dormitory complex provided housing to single, female government workers. (Source: *Langley Bulletin*, vol. 2, no. 32, November/December 1943)

The qualifications required of women who applied to be computers varied, but everyone had to take the Civil Service Examination. In the 1940s, computers were classed as “subprofessionals,” SP-3 (Junior Computer, \$1,440 per year) through SP-8 (Chief Computer, \$3,200 per year). Most hired at Langley had at least a bachelor’s degree, and many former computers noted in interviews that men with similar qualifications were frequently hired as “Junior Engineers,” a “professional” classification with a starting salary of \$2,600 per year.

Working as a computer, despite its subprofessional status, paid much better than the majority of jobs available to women in the 1940s and 1950s. It also provided an entry for women into the field of aeronautical research at a time when most simply were not being hired as engineers; additionally, it offered another career option besides teaching for those with degrees in the sciences. Teaching in North

1. “NASA HOUSING PROJECT STARTED 128 Unit Development Begun on Langley Field Road,” *Langley Bulletin* 1, no. 2 (11 December 1942): 1.

Carolina, Rowena Becker made \$550 per year before joining the LMAL computers in 1942, and Marilyn Heyson, hired in 1951, felt that a job at the NACA offered interesting and exciting opportunities, providing an alternative to starting out as a beginning teacher in South Carolina.

A 1942 report supplied further statistics on the 75 female computers LMAL had then:

A good number of the computers are former high school teachers. Their ages may average near 21, but there are a surprising number nearer 30 years old. There is no restriction because of marriage; in fact, some of the computers are wives of the engineers of various classifications here at NACA.²

Indeed, Langley's hiring practices for computers, which allowed women to continue employment once married and even while raising a family, were fairly unusual in comparison to the conditions of many jobs available to women at the time. That this practice continued even after World War II and its labor shortages ended suggests that trained computers were employees viewed as worth holding on to.

To help retain women with young children, a proposal was made in September 1943 to provide a child nursery for LMAL working mothers. The desired location was near Cavalier Court, the new housing development outside the gate. Arrangements were made to open the nursery on 1 December. Two nurses, one a former LMAL nurse, purchased a house in downtown Hampton for the purpose of turning it into a 24-hour service facility. Two nurses would be on duty during the day and one at night. Children could be enrolled during the day or boarded for the week.

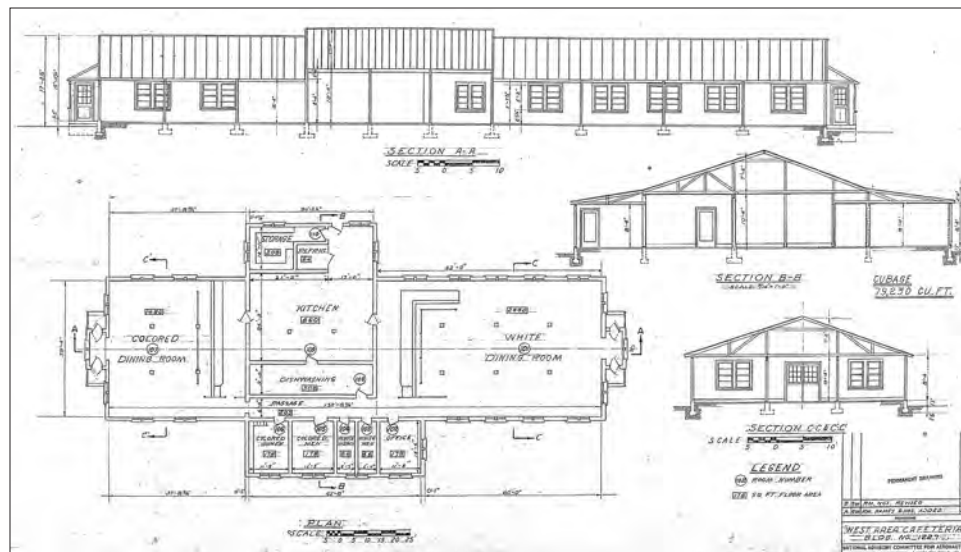
During the 1940s, Langley began recruiting African-American women with college degrees to work as computers. Initially grouped in a segregated section, the "West Area Computers" (or West Computers) processed data sent to the pool and also joined sections on a temporary basis when additional help was needed. Miriam Mann's daughter wrote that her parents moved from Georgia when her father was hired as a professor at Hampton Institute. Miriam had been teaching but applied for a computer position at the NACA in 1943. Although she already had a degree in chemistry, all "colored" computers were required to take a course in chemistry at Hampton Institute before starting their new job. All calculations were completed with the aid of a slide rule and results recorded in logs and plotted on graphs. Shifts ran around the clock during the war, a drastic change in households where previously the mother had stayed at home.

According to Beverly Golemba's unpublished study of early computers at Langley, many women were not aware of the West Computers, although both the black and white women she interviewed reported that when computers did do a project

2. R. H. Cramer to R. A. Darby, "Computing Groups Organization and Practice at NACA," 27 April 1942.

When the Computer Wore a Skirt: Langley's Computers, 1935–1970 (continued)

with each other, “everyone worked well together.”³ The first African-American computers did the same work as their white counterparts, but in a period when segregation was policy across the South and in the U.S. armed services, they also encountered segregated dining and bathroom facilities, along with barriers to other professional jobs. Miriam Mann found a “colored” sign on tables in the rear of the cafeteria and restrooms designated “colored girls.” Another woman recounted being hired to work in the chemistry division but ending up reassigned to the West Computers because African-Americans were not employed for her original position. Computing sections became more integrated after the first several years. Katherine Johnson, who joined the West Computers in 1953, only spent a few weeks there. Then assigned to work with Henry Pearson in the Flight Research Division, Johnson went on to join the Space Task Force in 1958, where she calculated trajectories for Alan Shepard’s and John Glenn’s spaceflights.



Floor plan of West Area Cafeteria in 1944 with segregated facilities. (Source: NASA Langley Engineering Drawing Files)

While the specific tasks a computer did varied according to need and her department, the majority of computing work involved three components: reading film, running calculations, and plotting data. During wind tunnel tests, manometer boards measured pressure changes using liquid-filled tubes. Computers “read” photographic films of the manometer readings and recorded the data on worksheets. Working individually for an engineer, or collectively in a computing section, computers then ran different types of calculations to analyze the data and plotted the results on graph paper. All of this work was done by hand, using slide rules, curves, magnifying glasses, and basic calculating machines, like the Marchant or the more popular Friden, which could multiply *and* calculate square roots. Once completed, the calculations, graphs, and other information were checked for

3. Beverly Golemba, “Human Computers: The Women in Aeronautical Research,” unpublished study ca. 1995. Available online at <http://crgis.ndc.nasa.gov/historic/File:Golemba.pdf>.

accuracy and sent back to the engineers to design the next tests. In interviews, computers recalled a feeling of camaraderie among section employees in this period, as engineers, model builders, and computers worked together as a team. Margaret Hurt, whose career at the 16-foot tunnel spanned 30 years, remembered everyone at the tunnel addressing each other by their first names and frequently gathering for social activities outside of work.



Computer at her work with microscope and the Friden calculating machine. (Source: NASA GPN-2000-001932)

A tremendous variety of research was done at Langley during the era of human computing, with computers playing a role in major projects ranging from World War II aircraft testing to transonic and supersonic flight research and the early space program. This work required specialized knowledge, and Langley's computers devised computing methods and techniques specific to aeronautics and aerospace research. Some literally wrote a book on the subject. Helen Willey, for example, edited a *Handbook for Data Reduction in the Eight Foot Transonic Tunnel*, while several Langley computers consulted on *Monroe Methods for Algebra*, a guide to using calculating machines in aeronautical research. A number of computers also collaborated with engineers and coauthored research reports. With the introduction of the first electronic computers, human computers took on programming duties as well. The Bell Electronic Computer, a huge machine acquired by the NACA in 1947, had its own computing group headed by Sara Bullock. They were in charge of programming the machine, which used punch tapes of data to run calculations for transonic aerodynamic equations. When Christine Darden was hired as a computer in 1967, she had already studied programming in college. Frustrated

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When the Computer Wore a Skirt: Langley's Computers, 1935–1970 (continued)

by her lack of promotion after five years of computing and programming, she transferred to sonic boom research, eventually earning a Ph.D. in engineering and becoming an engineer in supersonic aerodynamics.

Women working as computers at Langley found that the job offered both challenges and opportunities. Starting out with a subprofessional classification in a section with limited options for promotion, computers had to prove that women could successfully do the work and had to seek out their own opportunities for advancement. Many ended up making a long-term career out of what they had thought would be a temporary job, while others, like Christine Darden, Pat West, and Marilyn Heyson, moved from computing into other careers at Langley. While acknowledging the challenges, former computers also took pride in their work, enjoying the challenge it offered and feeling engaged in the research process they contributed to. Often overlooked in histories of technology, and even in histories of human computing, these women nevertheless played a critical role in research at Langley, back when the computers wore skirts.

For more on the computers at Langley Research Center, see http://crgis.ndc.nasa.gov/historic/Human_Computers.

Recent Publications and Online Resources

NASA Publications

Rockets and People, Volume IV: The Moon Race, by Boris Chertok (NASA SP-2011-4110). In this last volume of his four-volume set of memoirs, Boris Chertok continues his fascinating narrative on the history of the Soviet space program covering 1968 to 1974, the peak years of the Soviet human lunar program. The e-book is available online at http://www.nasa.gov/connect/ebooks/rockets_people_vol4_detail.html. Hard copies can be purchased for \$25 from the NASA Technical Information Service at <http://www.ntis.gov/> and for \$79 from the Government Printing Office.

Fairing Well: From Shoebox to Bat Truck and Beyond, Aerodynamic Truck Research at NASA's Dryden Flight Research Center, Monographs in Aerospace History, No. 46, by Christian Gelzer (NASA SP-2011-4546). NASA History Monographs may be obtained at no cost by sending a self-addressed and stamped 10- by 13-inch padded envelope to the NASA Information Center, NASA Headquarters, 300 E Street SW, Suite 1N24, Washington, DC 20546-0001.

NASA Publications Reprinted by Dover Publications

Before This Decade Is Out: Personal Reflections on the Apollo Program, edited by Glen E. Swanson (Dover Publications, February 2012). On 24 July 1969, the

astronauts of Apollo 11 splashed down in the Pacific Ocean, having triumphantly answered John F. Kennedy's 1961 challenge to land an American on the Moon "before this decade is out." Behind their success lay the cooperative efforts of political leaders, engineers, scientists, administrators, and other astronauts. These fascinating oral histories recount the inside story of the lunar landing project, recapturing the excitement, daring, and idealism of the Apollo program. The book was originally published as NASA SP-4223 in 1999.

Electronic Publications

History of Space Shuttle Rendezvous, by John L. Goodman (JSC-63400, Revision 3). This technical history provides an overview of rendezvous and proximity operations missions flown by the Space Shuttle from 1983 to 2011. This revised edition provides additional information on Mercury, Gemini, Apollo, *Skylab*, and the Apollo-Soyuz Test Project, as well as additional new chapters focusing on 1) the STS-39 deploy/retrieve mission, 2) the Hubble Space Telescope repair missions, 3) the STS-130 mission to the International Space Station, and 4) the level of automation in U.S. spacecraft. The e-book is available for download by searching the NASA Technical Reports Server (NTRS), available online at <http://ntrs.nasa.gov/>.

Commercially Published Works

Compiled by Chris Gamble

New Horizons, by Robert Godwin (Apogee Prime, December 2011). In 1999, author, editor, and publisher Robert Godwin created the first-ever seamless digital panoramas of the Apollo lunar surface photography. *New Horizons* expands on that early work and takes the reader on a unique guided tour of the Apollo landing sites, combining still and video screen captures to create dozens of new, previously unseen pictures of the lunar surface.

Stress Challenges and Immunity in Space—From Diagnosis to Preventive and Therapeutic Strategies, edited by Alexander Chouker (Springer, February 2012). During spaceflight, human physiology and health are challenged by complex environmental stressors (confinement, gravitation, oxygen tension, radiation) which might be at their most pronounced during lunar or interplanetary missions. This book adopts an interdisciplinary approach in seeking to identify the impact of living conditions in space on the adaptation of the immune system. The analysis of the consequences of stress for the immune system may help in preventing, diagnosing, and counteracting immune-related alterations in health on Earth as well as in space.

The Lights of Mankind: The Earth at Night As Seen from Space, by L. Douglas Keeney (Lyons Press, December 2011). Earth at night, as the photos and essays of this book showcase, is an electric planet, glittering with billions of lights for all the solar system to see.

Asia's Space Race: National Motivations, Regional Rivalries, and International Risks, by James Clay Moltz (Columbia University Press, December 2011). To

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better understand the emerging dynamics of space activity in Asia, the author conducts the first in-depth policy analysis of Asia's 14 leading space programs, with a special focus on developments in China, Japan, India, and South Korea.

Deep Space Propulsion: A Roadmap to Interstellar Flight, by Kelvin Long (Springer, November 2011). This book looks at the reasons for exploring our stellar neighbors and at the technologies we are developing to build space probes that can traverse the enormous distances between the stars.

NASA: Space Flight Research and Pioneering Developments, by Hans Jürgen Becker (Schiffer Publishing, February 2012). This book covers NASA's spaceflight research from the Agency's beginnings as the NACA in 1915 to the present-day NASA. The emphasis of the book is in the realm of aerospace research, but the boundaries between air and space research are often fluid, so the development of the Space Shuttle and its testing have been included in this book.

Satellite Communications, by Joseph N. Pelton (Springer, December 2011). The field of satellite communications represents the world's largest space industry. This book explains all of the fundamentals of satellite communications, including the field's technology, operation, business, economic, and regulatory aspects.

Solar Power Satellites, by Don M. Flournoy (Springer, December 2011). This book shows why and how the space satellite industry will soon begin expanding its market from relaying signals to Earth to generating energy in space and delivering it to the ground as electricity.

A Smile As Big As the Moon: A Special Education Teacher, His Class, and Their Inspiring Journey Through U.S. Space Camp, by Mike Kersjes (St. Martin's Griffin, January 2012). Mike Kersjes always believed that his students could do anything—even attend the prestigious Space Camp in Huntsville, Alabama. The challenge was convincing everyone else that the kids in his special education class, with disabilities including Tourette's syndrome, Down's syndrome, dyslexia, eating disorders, and a variety of emotional problems, would benefit from the experience and succeed. In this book, Kersjes explains how, with remarkable persistence, he broke down one barrier after another until Space Camp finally opened its doors. After nine months of rigorous preparation, Kersjes's class arrived at Space Camp, where they turned in a performance beyond everyone's expectations.

Space Chronicles: Facing the Ultimate Frontier, by Neil deGrasse Tyson and edited by Avis Lang (W. W. Norton & Company, February 2012). Neil deGrasse Tyson is a rare breed of astrophysicist, one who can speak as easily and brilliantly with popular audiences as with professional scientists. This book represents the best of Tyson's commentary, including a candid new introductory essay on NASA and partisan politics, giving us an eye-opening manifesto on the importance of space exploration for America's economy, security, and morale.

Interplanetary Outpost: The Human and Technological Challenges of Exploring the Outer Planets, by Erik Seedhouse (Springer-Praxis, February 2012). How will a crewed mission to the outer planets be designed; what propulsion system will

be used; and what hazards will the crewmembers face? The book describes step-by-step how the mission architecture will evolve, how crews will be selected and trained, and what the mission will entail from launch to landing. It addresses the effects that extended duration, radiation, communication, and isolation will have on the human body and how not only performance but behavior might be affected.

Exploring the Solar System, by Peter Bond (Wiley-Blackwell, February 2012). Drawing upon the latest results from the second golden age of solar system exploration, author Peter Bond provides an authoritative and up-to-date account of the planets, satellites, and smaller debris that orbit the Sun.

Exploring Mars: Chronicles from a Decade of Discovery, by Scott Hubbard (University of Arizona Press, February 2012). In the wake of the very public failures of the Mars Polar Lander and the Mars Climate Orbiter in 1999, NASA embarked on a complete reassessment of the Mars Program. Scott Hubbard was asked to lead this restructuring in 2000. His team's efforts resulted in a very successful decade-long series of missions. Hubbard's work created the Mars Odyssey mission, the twin rovers Spirit and Opportunity, the Mars Reconnaissance Orbiter, the Phoenix mission, and most recently the planned launch of the Mars Science Laboratory. Scott Hubbard tells the complete story of how he fashioned this program, describing both the technical and political forces involved and bringing to life the national and international cast of characters engaged in this monumental endeavor.

Social Foundations of Human Space Exploration, by James A. Dator (Springer, February 2012). This book examines the quest to explore space and to understand the universe through the lens of the arts, humanities, and social sciences. It considers early stories about the universe in various cultures, recent space fiction, the origins and cultural rationale for the Space Age, experiences of humans in space and their emerging interactions with robots and artificial intelligence, how humans should treat environments and alien life, and the alternative futures of space exploration and settlement.

History of Rocketry and Astronautics, vol. 36, edited by Emily D. Springer, American Astronautical Society (AAS) History Series, vol. 36, International Academy of Astronautics (IAA) History Symposia, vol. 25 (AAS/Univelt, Inc., 2011). These are the proceedings of the 39th History Symposium of the International Academy of Astronautics, Fukuoka, Japan, 2005.

Hitler's Rocket Soldiers: Firing the V-2s Against England, by Murray Barber and Michael Keuer (Tattered Flag, October 2011). For the first time, this book tells the story of the V-2 through the eyes and experiences not only of the men who fired the missiles but also of some of the military scientists and technicians involved in its development. Using never-before-tapped sources, this book will be a valuable resource to all military historians and those with an interest in rocket development.

Astronauts for Hire: The Emergence of the Commercial Astronaut Corps, by Erik Seedhouse (Springer-Praxis, March 2012). As private companies are being encouraged to build and operate launch vehicles and even spacecraft that can be hired on a contract basis, a new breed of astronauts is coming into being. The

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Recent Publications and Online Resources (continued)

book describes how this commercial astronaut corps will be selected and trained. It provides a unique insight into the kinds of missions and tasks that the astronauts will be involved in, from suborbital science missions to commercial trips to low-Earth orbit. The book also describes the new fleet of commercial spaceships being developed.

The Final Journey of the Saturn V, by Andrew R. Thomas and Paul N. Thomarios (University of Akron Press, August 2011). The Saturn V can be considered one of humankind's greatest achievements. Unfortunately, the demise of the Apollo program left the unused Saturn launch vehicles to rot outside, where they became home to flora and fauna. Hoping not only to resurrect the physical rocket, but also to bring the complete Moon adventure back to life, the Smithsonian Institution and other prominent partners laid out plans to create a total "mission experience" destination at Kennedy Space Center. A key component of the plan was the complete restoration of the Saturn V. After much bidding and decision-making, Paul Thomarios, owner of a painting and coating company in Akron, Ohio, was selected for the job. Fittingly, the same ethics of hard work and innovation that drove the race to the Moon were exhibited by Thomarios and his crew as they worked to bring one of America's greatest achievements back to prominence.

Michael L. Ciancone, History Committee Chairman, American Astronautical Society, and Chris Gamble also compile an annual book list covering various aspects of spaceflight in a variety of disciplines and for many different audiences. This list and prior years' are available online at <http://astronautical.org/committees/history>.

The History Program Office gives sincere thanks to 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 Global Space Exploration Conference will be held **22–24 May 2012** in Washington, DC. Please see <http://www.glex2012.org/> for more details.

The International Space Development Conference (ISDC) 2012 will be held **24–28 May 2012** in Washington, DC. Please see <http://isdc.nss.org/2012> for more details.

The Jet Propulsion Laboratory will hold an open house on **9–10 June 2012** in Pasadena, California. Please see <http://www.jpl.nasa.gov/events/open-house.cfm> for more details.

The 220th meeting for the American Astronomical Society will be held **10–14 June 2012** in Anchorage, Alaska. Please see <http://aas.org/meetings> for more details.

The annual conference for the American Libraries Association will be held **21–26 June 2012** in Anaheim, California. Please see <http://www.alaannual.org/> for more details.

The 2012 3-Society Meeting will bring together the History of Science Society, the British Society for the History of Science, and the Canadian Society for the History and Philosophy of Science from **11 to 14 July 2012** in Philadelphia, Pennsylvania. Please see http://www.hssonline.org/Meeting/3_Society.html for more details.

The annual conference for the Special Libraries Association will be held **15–18 July 2012** in Chicago, Illinois. Please see <http://www.sla.org/content/events/index.cfm> for more details.

The 76th annual meeting for the Society of American Archivists will be held **6–11 August 2012** in San Diego, California. Please see <http://www2.archivists.org/conference> for more details.

The Langley Research Center will hold an open house in honor of the 95th anniversary of its founding on **22 September 2012** in Hampton, Virginia. Please see <http://www.nasa.gov/centers/langley/home/index.html> for more details.

The 63rd International Astronautical Congress will be held **1–5 October 2012** in Naples, Italy. Please see <http://www.iac2012.org/> for more details.

The Society for the History of Technology will hold its annual meeting **4–7 October 2012** in Copenhagen, Denmark. Please see http://www.historyoftechnology.org/copenhagen/copenhagen_video.html for more details.

The annual meeting of the Oral History Association will be held **10–14 October 2012** in Cleveland, Ohio. Please see <http://www.oralhistory.org/annual-meeting/> for more details.

The NASA History Program Office, the National Air and Space Museum Space History Division, the NASA Science Mission Directorate, and the Jet Propulsion Laboratory will sponsor a symposium entitled “Solar System Exploration @ 50” on **25–26 October 2012** in Washington, DC. Please see http://history.nasa.gov/Solar_System_Exploration_@_50_Call_for_Papers.pdf for more details.

Image in Aerospace History



On 5 May 1961, Alan B. Shepard, Jr., flew successfully in space for 15 ½ minutes and returned safely. Although Yuri Gagarin had already made his orbital spaceflight on 12 April 1961, Shepard became the first American in space. This image shows a U.S. Marine helicopter recovering the *Freedom 7* capsule from the Atlantic Ocean.

The NASA History Program Office, under the Office of Communications, NASA Headquarters, Washington, DC 20546, publishes *News and Notes* quarterly.

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