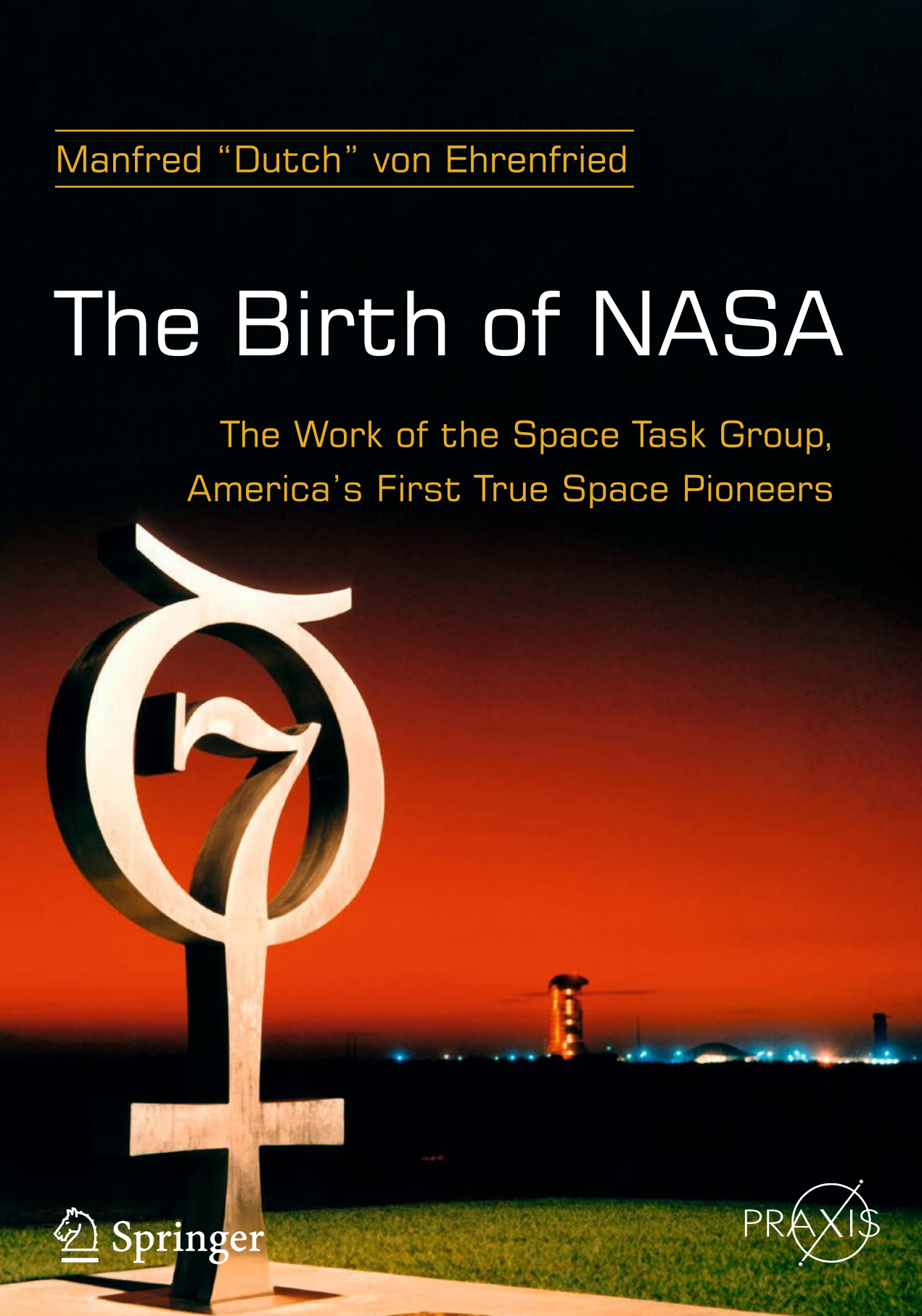
Manfred "Dutch" von Ehrenfried

The Birth of NASA

The Work of the Space Task Group, America's First True Space Pioneers



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The Work of the Space Task Group, America's First True Space Pioneers

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Manfred “Dutch” von Ehrenfried

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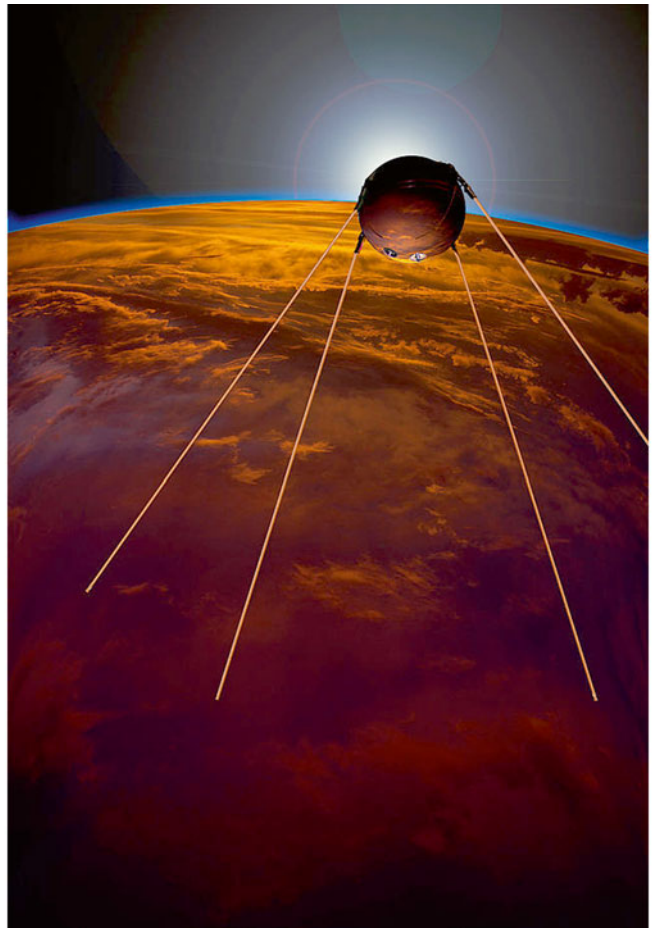

Dawn of the Space Age

Created by Gregory R. Todd to mark the 50th anniversary of the launch of Sputnik.
This is the little ball that started it all!
(Photo courtesy of Wikimedia Commons)

When I first started this book, I wanted to dedicate it to the approximately 750 people who were at the Space Task Group (STG) at the Langley Research Center between 1958 and 1961, many of whom then stayed into 1962. I also wanted to include the small group at the NACA/ NASA Headquarters who met at the Dolley Madison House to kindle the sparks of a new spaceflight organization and program. These were the people that I thought of as America's first true space pioneers. But then I realized that hundreds of Langley Research Center scientists, engineers, technicians, tradesmen, secretaries, clerks, and others had also been working hard to support the STG without formally being part of the STG organization. I also realized that many of the men and women's families were also heavily involved. Everyone supporting Project Mercury worked very long hours and took the work home to the dinner table and often burned the "midnight oil."

Then I also realized that the entire Hampton, Virginia community and surrounding towns and villages were involved as well. They provided the food, the cars, the gasoline, the schools, the shops, and the entire infrastructure to support those working at Langley Field to establish a new space program. Then there were hundreds of contractors across the Nation supporting the project and, later, thousands of civilian and military people providing launch

and recovery support. Also, there were people all around the world at tracking stations and in other support roles. How can I dedicate the book to only 750 people?

The initial effort took its toll on men, women, and children. Years later, the Project Mercury Director Robert Gilruth pined about the good old days at Langley, saying that he couldn't do it again; it was a young man's job. And many of us were young and "wet behind the ears." Many of us were just or recently out of college. In our "20-something" eyes, our managers were what we thought of as "older" men; why, we thought, they must be in their late thirties or forties! At the time, I couldn't imagine how smart, indeed brilliant if not geniuses, these men and women were. It's only now that I have the experience of old age that I realize what a unique gathering of eagles came to alight in a nest called Hampton, Virginia.

If you were part of Project Mercury in any capacity, in any location, doing any support work, then this book is dedicated to you. You are a space pioneer because you were there at the very beginning! You made it happen! That was over half a century ago. Many, probably most, are now gone. Only we "20-somethings" and a handful of the "older men" are left. So this book is also dedicated to our prodigy and the next several generations of space enthusiasts and workers. You could be the ones to be "planetary pioneers." But we "Mercurians" were the original space pioneers! Forge ahead; it's your turn!

Acknowledgments

One cannot write a history of such a unique organization as the NASA Space Task Group (STG) without a lot of help. Fortunately, some of the members of this group participated in the Oral History program at the Johnson Space Center (JSC), formerly the Manned Spacecraft Center (MSC) where most of them moved to after the STG was merged into the MSC. Unfortunately, many of the members didn't participate in this effort and their histories are lost except for the memories of others and perhaps archive files at universities or NASA History and Personnel offices.

My thanks to Rebecca Wright of the JSC History Office for her work on the history project and help in answering questions about former STG people. Thanks also to Jennifer Ross-Nazzal for her research assistance.

Similarly, Anne K. Mills of the Glenn Research Center (formerly the Lewis Research Center) provided input about their role in Project Mercury and sent me some reference books and a video disk. April D. Gage of the Ames Research Center also provided support, as did Christian Glezer and Curtis Peebles from the Armstrong Flight Research Center (formerly the High Speed Flight Station and the Dryden Flight Research Center). Thanks also to Travis Kinchen for his support.

Mary E. Gainer from the Langley Research Center was most helpful and even started another page on their website to include the STG. It now includes cross links to the JSC histories as well as photographs of some original members. She also helped me with building locations, telephone books, and the confirmation of members. The Langley Alumni Association is aware of this effort to recognize those at Langley who contributed to the success of Project Mercury.

Thanks to Bill Barry and Connie Moore of the NASA Headquarters History Office for their contribution of an early phone book that helped me to identify who was at the Dolley Madison House and at nearby offices.

Many thanks to some of the original members of the STG who provided input and comments on my drafts. In this role I must particularly thank Arnold "Arnie" Aldrich, who was one of the first persons I met at Langley. He reviewed nearly all the chapters in

the book. Arnie could not have had a more distinguished career in spaceflight. He rose to the highest levels in NASA and later in the aerospace industry. I'm grateful for his knowledge and insight.

Other STG and former NASA people who provided input are (in alphabetical order): Peter Armitage, Harold Beck, Norm Chaffee of the JSC Alumni League, Henry "Pete" Clements, Jack Cohen, Bill Davidson, Bryan Erb, Dennis Fielder, Tom Gallagher, George Harris, Clay Hicks, John Hodge, Gene Kranz, Charles Lewis, Glynn Lunney, C. Frederick Matthews, Duncan McIver of the Langley Alumni League, Harold Miller, William Pratt, John C. Stonesifer, Kenneth Suit, Robert Thompson, and Dr. Robert Voas. They supplied input into those sections about their work and/or details of their biographies. My thanks also to William H. Taylor of DB Consulting at JSC for some photos and identification of people.

While I obtained a lot of information from various NASA websites, they say very little about the STG people from nearly 60 years ago except for the key managers and the astronauts. I made good use of the internet search engines like Wikipedia, Bing and Google. The many books that I used for reference are included at the back of this volume.

My thanks to Maury Solomon and Nora Rawn of Springer in New York, Clive Horwood of Praxis Publishing in the United Kingdom and, of course, my editor extraordinaire, David M. Harland in Glasgow, Scotland. In the process of getting approval for the book, my concept and outline were reviewed by referees who provided various comments. I nominated Gene Kranz, Arnold Aldrich, Clay Hicks and John Hodge. There were others nominated by Springer-Praxis for a total of seven referees. I wasn't privy to who actually responded but I would like to thank them and acknowledge their inputs, which I definitely considered in developing the book.

Preface

This book should have been written about half a century earlier! For such a great period in space history, more can be said about the personal contributions and stories of the early space pioneers who scrambled after the surprise of Sputnik to start the American space program. While I knew many of the people in the Space Task Group (STG) at the Langley Research Center in Hampton, Virginia, there are hundreds I didn't know. Even then, as a young man, I had little knowledge of their backgrounds and experiences. I was what they now call a "newbie." In those more formal days of the 1950s and early 1960s, we might be addressed as "young man." There were many of us in our twenties. Our managers were, for the most part, in their late twenties to middle thirties.

I've learned more about the STG people in writing this book than I ever knew at the time. It is difficult even now to find some of their names, let alone their contributions. The NASA History Offices at the Johnson Space Center (then the Manned Spacecraft Center) and the Glenn Space Center (then the Lewis Research Center) have, over the years, obtained oral histories from many of the Project Mercury people. The Langley History Office recently added a Space Task Group webpage with links to the Johnson oral histories. I have read most of them. Unfortunately many people didn't participate in the Oral History Project, with the result that their contributions are essentially lost. Some of the histories aren't available online but are VHS tapes held in storage somewhere. It is sad that the contributions of some very key people are not recorded anywhere that I could find.

In many cases, when I read the oral histories the individual says very little about their early STG career, focusing more on their later contributions to major programs like Apollo and the Space Shuttle. While I find these oral histories very interesting, the average reader today might view them as rather rambling and sometimes incoherent memories. To get an overall sense of what was going on, you would have to read a lot of them. I wanted to capture what these early Mercury space pioneers accomplished.

During 2015, in researching this book, I talked with many STG people who are now in their twilight years – as indeed am I. It seems easy for them to recall special events such as the spaceflights, but not the day-to-day particulars of their work over half a century ago.

They remember only some of their co-workers. Some of them have kept in touch, but most drifted apart over the years. To my great delight, I heard from one man who is now 93 years old and is able to recall events in great detail.

The STG only existed for three years. Almost immediately after NASA was itself formed on October 1, 1958 the STG was formally organized on November 3, 1958. Only three years later on November 1, 1961, the STG staff was formally declared part of the new Manned Spacecraft Center which didn't even physically exist. Everyone's badges changed, but it had little effect on those preparing for John Glenn's flight. Over the next eight months, people relocated to the as-yet-unbuilt Manned Spacecraft Center in Houston, Texas. They were temporarily housed in a variety of rented office buildings in Houston. We all wondered why we were leaving beautiful Virginia for what we considered the "Wild West." After John Glenn's flight, I took a trip to the proposed site and found cows in a big pasture. A now-famous photo of those cows is included later just to show you how things were in those days. It was hard to believe that out of 20 cities evaluated to host the Manned Spacecraft Center, Houston was chosen, especially considering its distance from the launch site and control center at Cape Canaveral in Florida. I have included a discussion of that decision.

When NASA was first established there was great organizational upheaval, with some people transferring to NASA Headquarters, some from one Center or Laboratory to another, and some to various aerospace contractors. A new agency was being pieced together to lead the Nation's new civilian space program. This involved bringing together people from many locations and organizations to tackle an unprecedented technical challenge. To express it in the context of the title of this book, it was a rather sudden and difficult birth!

I have made an attempt to write the story about the birth of NASA and the STG in three parts. The first part, "Setting the Stage," discusses the beginning of America's space program ranging from Sputnik to the creation of NASA out of many existing organizations. Then "Creating the Space Team" begins with the creation of the STG organization, explaining where people came from and where they ended up in the organization. This part ends with the decision to disband the STG and establish the Manned Spacecraft Center, but it lists some of the key decisions and lessons learned in management, engineering, operations, science, and spaceflight medicine. The third part, "Achievements," lists the major accomplishments of the STG and the Project Mercury team. This includes the facilities that were specifically created as well as the unique and creative mission designs, operational concepts, and methodologies. The story is wrapped up with some philosophical thoughts on the impact of this experience on future spaceflights, management of complex systems, political will, and national pride. I also predict the date of the first landing of humans on Mars.

These three parts are supplemented with many appendices that give more detail, including a significant number of biographical profiles that describe where these space pioneers came from and the work that they did, both in the STG and subsequently.

I describe the Mercury missions from operational, science, and medical perspectives. The astronauts were part of the STG and many of us worked with them as part of their daily work routines. Most of their time was spent on training and a variety of engineering and operational assignments. Only two astronauts flew during the three years of the

STG. In fact, more animals than astronauts flew during this period. The lives and contributions of the astronauts of Project Mercury have been well covered by many historians. Excellent books are referenced at the end of this volume.

In summary, the intent for this book is to capture as much as possible, the roles of America's first true space pioneers. Most are now in their twilight years. Many of those that feature in the history books are long gone, having taken the ultimate spaceflight. So the intent of this book is to chronicle as much as possible the Space Task Group's contributions to history; if not for the participants themselves then for their children and grandchildren.

Lago Vista, TX, USA
Winter of 2015

Manfred "Dutch" von Ehrenfried

Part I
Setting the Stage

1

Introduction

This is the story of the men and women who were America's first true space pioneers. History books have often focused on the National Aeronautics and Space Administration (NASA) from the point of view of the early Russian space achievements and the need to organize a U.S. space capability. The Nation's response to Sputnik in 1957 and its military implications was to "Wake Up and Catch Up."

Even before Sputnik, the National Advisory Committee on Aeronautics (NACA) was already considering moving into astronautics, and it had studies of capsule design and re-entry heating underway. The Air Force was working on the Atlas intercontinental ballistic missile (ICBM) and had ideas on manned spaceflight of their own. The Army Ballistic Missile Agency had its Redstone and Jupiter ballistic missiles. And the Navy had its Naval Research Laboratory and Project Vanguard, which was a rocket designed for civilian scientific use.

A new national manned spaceflight effort would require Presidential and Administration policies and directives as well as a new Congressional Law. These efforts led to Congressional hearings and special committees to discuss a future space program, most notably the President's Scientific Advisory Committee and the Joint NASA-ARPA Panel. By July 29, 1958, President Dwight Eisenhower signed the National Aeronautics and Space Act. During that same summer, even before NASA was created, a select group of people from NACA, ARPA, and many from various laboratories, met in the Dolley Madison House near the White House to discuss how to proceed and organize a space program. These approximately two dozen people could arguable be considered the "Founding Fathers" of the space program. Some would go on to be the leading administrators, managers, and engineers of Project Mercury and even follow-on programs like Gemini and Apollo.

NASA was established on October 1, 1958, just one year after Sputnik, from three NACA research laboratories, namely the Langley Memorial Aeronautical Laboratory at Langley Field, Virginia, the Lewis Flight Propulsion Laboratory at Cleveland, Ohio, and the Ames Aeronautical Laboratory at Moffett Field, California. The Muroc Flight Test Unit at Edwards Air Force Base, the NACA Wallops Island Station in Virginia, and selected elements from the Army and Navy flight test programs were also included.

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But suddenly, and by decree, on October 1 all NACA employees across the country became NASA employees and the challenge of forming a manned spaceflight organization fell to the Space Task Group (STG) at the newly named Langley Research Center.

The history books have well documented these events and dates, and I have certainly made good use of some of them (as listed at the end of this volume). In history books, emphasis is devoted to why this group was created, and the roles of the first astronauts and key managers; less is said about the scientists, engineers, mathematicians, technicians, and administrative people who were also part of this first great and historical team. History chronicles what was accomplished by this unique group by describing the first manned space missions during this period; mostly from the perspectives of the astronauts and the Nation's role in space. In those days the national press focused its attention on the astronauts and the launches, and apart from some of the top managers, less on the many other people involved.

The STG was a relatively small group of people. It only formally existed as an organization for three years from November 3, 1958 to November 1, 1961, at which time it was folded into the Manned Spacecraft Center (MSC), even though that did not yet physically exist. The STG employees suddenly got MSC badges. The new MSC was now being built to house not only the STG, but many more organizations. The completion of the relocation of the STG from Langley Field, Virginia to MSC in Houston, Texas was completed by July 1, 1962. Many of the STG employees associated with flight operations relocated to Houston in the wake of John Glenn's historic flight in February 1962, after being temporarily based at Cape Canaveral, Florida and deployed around the world to man the remote tracking stations.

This first group, led by Robert R. Gilruth, began with 36 people (counting himself) from the now named Langley Research Center and 10 from the now named Lewis Research Center in Cleveland, Ohio. This total of 46 included 37 engineers; 27 from Langley and 10 from Lewis. It also included 8 women, some of them secretaries and others operating mechanical calculators (in those days referred to as "computers"), plus one male file clerk.

Shortly thereafter, NASA offered jobs to 32 engineers from Canada who were victims of the cancellation of the AVRO (A. V. Roe Company) CF-105 program on February 20, 1959. Seven declined but the remaining 25 joined NASA. The CF-105 was to have been Canada's first and most advanced supersonic interceptor, and the company employed Canada's best and brightest engineers.

By the end of 1959 the STG staff had grown to approximately 287 in all capacities, ranging from astronauts, doctors, and life support engineers, training people, flight systems engineers, operations people, mission planning and analysis people, mathematicians, engineers, contracts people, to mission recovery people. Now secretaries, accounting, travel people, and security personnel were also needed. The STG swelled with the need to staff up for spaceflight. As a result, by the end of 1961 the total was approaching 750; not all of whom moved to Houston. It also included military personnel and contractors assigned to the STG.

During this short three year period, the STG was also planning a world-wide tracking system capability, designing and constructing the Mercury Control Center in Florida and the Bermuda Control Center, integrating the space capsules to military missiles, setting up to use the military missile ranges, and planning for follow-on programs including Gemini and Apollo. In just three years, NACA/NASA had gone from focusing only on aeronautics to embracing aeronautics and astronautics.

This book looks more closely at the people of the Space Task Group, and is a tribute to their Herculean efforts. They were at the right place at the right time, and became the original NASA space pioneers. Many became rather famous; some are now legends in the annals of spaceflight. But most have remained in the shadows, until now. This book will list their names and provide summary details on as many as it was possible to find after more than nearly six decades. Many are long gone and most are in their seventies, eighties, and even their nineties. It is "altogether fitting and proper" that we should attempt to document their efforts before they are *all* gone, in order that the history of the STG will be more complete and later generations will know of their personal achievements and their impact on the development of spaceflight.

2

The Sputnik Reaction

There is no question that the American reaction to the launch and orbit of Sputnik on October 4, 1957 was more than unnerving; it even caused fear and foreboding in some. While the satellite was just a 23-inch diameter sphere weighing 184 lbs. that simply went "Beep Beep," it was the first satellite in orbit. More disturbing was the fact that the upper stage of the R-7 booster rocket weighing over 7 tons was also in orbit. If the Soviets could put that much mass into orbit they could clearly launch a nuclear weapon. If you didn't believe the news, you could go outside and see it (the upper stage, not the satellite) moving across the night sky; a phenomenon that no one had ever witnessed before.

While the United States was trying to digest what had just happened, the Soviets launched a second Sputnik on November 3rd in what was effectively "a slap in the face" or at least a "take that." This spacecraft weighed 1,120 lbs. and carried a dog named "Laika." That indicated the vehicle must possess a life support system; albeit just for a dog. President Eisenhower tried to "spin" the event by saying that our satellite program was not being conducted as a race against other nations. The Soviets, however, had considered it a race for at least two years. Terms like "missile gap," "arms race," and "space race" were now everywhere in the media.

To add to the Nation's embarrassment, the first attempt to launch the Vanguard rocket and a "grapefruit" size payload from Cape Canaveral on December 6 in front of a world press and on TV ended in an ignominious explosion. These three launches took on a new meaning within the Washington bureaucracy, within the Department of Defense, and within the missile contractor industry. There are books written about this period of space history. Here is what subsequently happened within NACA/NASA and the Space Task Group.

The Air Force made overtures to NACA Director Dr. Hugh L. Dryden to collaborate on their Dyna-Soar program. This seemed only natural to the Air Force, as they had worked with NACA for 40 years on aeronautical issues. But Dr. Dryden knew that NACA Langley wanted to work on a manned "capsule" of their own. He also knew that only the Air Force and the Army could provide the requisite launch vehicles. NACA wanted to add astronautics to their traditional role of aeronautics. The last "A" in NACA is "Aeronautics," but

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NACA wanted a leadership role in the new field of manned spaceflight. NACA engineers weren't waiting for approval, they had been working on aspects of aerodynamic flight that were also applicable to spaceflight.

During the last three months of 1957, there were scores of committees from all the federal agencies concerned, discussing what should be done and who should undertake it. There were meetings in the Pentagon, in Congress, at NACA Headquarters and its field laboratories, in the National Academy of Sciences, in the National Science Foundation, in universities, and within industrial corporations. Even the American Rocket Society was ready to offer input.

But, as concerns the STG, it was the NACA Lewis Flight Propulsion Laboratory, headed by Associate Director Abe Silverstein, that produced a bold plan called "A Program for Expansion of NACA Research in Space Flight Technology." The impact of this report will feature in later chapters.

3

The President

President Dwight Eisenhower was dealing with a lot of major issues even prior to the events of October 4, 1957. This was the period of the Hungarian Uprising, the Suez Crisis, the McCarthy "witch hunts," schoolchildren practicing "Duck & Cover" air raid drills, and the riots in Little Rock Central High School.

For us, nowadays, to judge Eisenhower's response to Sputnik, I think it is important that the reader have a good understanding of his position at the time, and in particular what his advisors were telling him. This will facilitate an appreciation of why first NASA and then the STG were created.

3.1 A SECRET CONFERENCE WITH THE PRESIDENT

Ever since the launch of Sputnik, the President had meetings almost every day with his advisors, sometimes many meetings. As you might expect, he selected very senior people for his staff. One was the highly decorated WW-II combat veteran Brig. Gen. Andrew Jackson Goodpaster, who also had an M.S. in engineering and a Ph.D. in international affairs from Princeton. Eisenhower had appointed him to be his Staff Secretary and Defense Liaison Officer.

Also present at a meeting on October 8, 1957 was the Assistant Secretary of Defense, Donald Aubrey Quarles. He had served as Secretary of the Air Force, President of Sandia Laboratories, and Vice President of both Western Electric and Bell Labs, as well as being assigned to NACA. In addition he had an honorary doctorate in engineering.

The meeting included many other distinguished and knowledgeable advisors to the President, all of whom were concerned about the Sputnik event.

The following SECRET memorandum (declassified 11/17/1971) provided the President with information that helped him to prepare for the press conference on October 9. This would be his opportunity to tell the concerned public what his position was concerning Sputnik and his views concerning the Nation's response.

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Although we don't know the details of the undocumented discussions, it is evident from this memorandum that the Army had ambitions in space and there was a reconnaissance program in the works that was clearly military, not part of a civilian space program. It is also clear that we weren't about to share technology with the Soviets.

~~SECRET~~

October 9, 1957

MEMORANDUM OF CONFERENCE WITH THE PRESIDENT
October 8, 1957, 8:30 AM

Others present:

Secretary Quarles
Dr. Waterman
Mr. Hagen
Mr. Holaday
Governor Adams
General Persons
Mr. Hagerty
Governor Pyle
Mr. Harlow
General Cutler
General Goodpaster

Secretary Quarles began by reviewing a memorandum prepared in Defense for the President on the subject of the earth satellite (dated October 7, 1957). He left a copy with the President. He reported that the Soviet launching on October 4th had apparently been highly successful.

The President asked Secretary Quarles about the report that had come to his attention to the effect that Redstone could have been used and could have placed a satellite in orbit many months ago. Secretary Quarles said there was no doubt that the Redstone, had it been used, could have orbited a satellite a year or more ago. The Science Advisory Committee had felt, however, that it was better to have the earth satellite proceed separately from military development. One reason was to stress the peaceful character of the effort, and a second was to avoid the inclusion of materiel, to which foreign scientists might be given access, which is used in our own military rockets. He said that the Army feels it could erect a satellite four months from now if given the order -- this would still be one month prior to the estimated date for the Vanguard. The President said that when this information reaches the Congress, they are bound to ask why this action was not taken. He recalled,

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- 2 -

however, that timing was never given too much importance in our own program, which was tied to the IGY and confirmed that, in order for all scientists to be able to look at the instrument, it had to be kept away from military secrets. Secretary Quarles pointed out that the Army plan would require some modification of the instrumentation in the missile.

He went on to add that the Russians have in fact done us a good turn, unintentionally, in establishing the concept of freedom of international space -- this seems to be generally accepted as orbital space, in which the missile is making an inoffensive passage.

The President asked what kind of information could be conveyed by the signals reaching us from the Russian satellite. Secretary Quarles said the Soviets say that it is simply a pulse to permit location of the missile through radar direction finders. Following the meeting, Dr. Waterman indicated that there is some kind of modulation on the signals, which may mean that some coding is being done, although it might conceivably be accidental.

The President asked the group to look ahead five years, and asked about a reconnaissance vehicle. Secretary Quarles said the Air Force has a research program in this area and gave a general description of the project.

Governor Adams recalled that Dr. Pusey had said that we had never thought of this as a crash program, as the Russians apparently did. We were working simply to develop and transmit scientific knowledge. The President thought that to make a sudden shift in our approach now would be to belie the attitude we have had all along. Secretary Quarles said that such a shift would create service tensions in the Pentagon. Mr. Holaday said he planned to study with the Army the back up of the Navy program with the Redstone, adapting it to the instrumentation.

There was some discussion concerning the Soviet request as to whether we would like to put instruments of ours aboard one of their satellites. He said our instruments would be ready for this. Several present pointed out that our instruments contain parts which, if made available to the Russians, would give them substantial technological information.

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A. J. Goodpaster
Brigadier General, USA

That same day, Eisenhower also met with the President of the National Academy Sciences, Dr. Detlev Wulf Bronk, and several others to review Eisenhower's proposed statement about Sputnik at the White House press conference to be held the next day. Only a few changes were made to the speech, with some emphasis added.

On October 9, White House Press Secretary James Hagerty held a press conference called a "Summary of Important Facts in the Development by the United States of an Earth Satellite" to provide background information for the Q & A that would immediately follow the President's statement.

However, what the following transcript (reproduced verbatim) suggests, in retrospect, is that the science and defense people were following the programmatic direction they were previously given by the President and the National Security Council. In particular, they weren't integrating the satellite program with the missile program. After reading the President's remarks, you will understand the reason why the Soviets beat us into orbit.

3.2 THE PRESS CONFERENCE OPENING REMARKS

It is important to quote Mr. Hagerty's introduction in order to set the stage for the President's appearance.

> The first serious discussion of an Earth satellite as a scientific experiment to be incorporated in the program for the International Geophysical Year took place at a meeting of the International Council of Scientific Unions in Rome in October 1954. At this meeting, at which Soviet scientists were present, a resolution was adopted by the scientists of the world recommending that in view of the advanced state of present rocket techniques, thought be given to the launching of small satellite vehicles.
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> Following this International Council meeting, the United States National Committee for International Geophysical Year, working under the sponsorship of the National Academy of Sciences, recommended that the United States institute a scientific satellite program. It was determined by the Administration that this program would be carried out as part of the United States' contribution to the International Geophysical Year.
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> Responsibility within the Government for scientific aspects of the program was assigned to the National Science Foundation, working in close cooperation with the United States National Committee for the International Geophysical Year. The Department of Defense was made responsible for supplying the rocketry needed to place a satellite in orbit without interfering with the top priority ballistic missile program. In line with the recommendations of a group of United States scientists advising the Department of Defense, the satellite project was assigned to the Naval Research Laboratory as Project Vanguard.
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> On July 29, 1955, at a White House press conference, participated in by representatives of the National Science Foundation and the National Academy of Sciences, it was announced that plans are going forward for the launching of small, unmanned Earth circling satellites as part of the United States participation in the International Geophysical Year, which takes place between July 1957 and December 1958.
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> At this press conference it was specifically stated that the data which will be collected from this program will be made available to all scientists throughout the world. The National Science Foundation, it was also announced, would work with

the United States National Committee for the International Geophysical Year to formulate plans for the satellite and its instrumentation as well as plans for the preparation and deployment of the ground observer equipment required for the program.

In May of 1957, those charged with the United States satellite program determined that small satellite spheres would be launched as test vehicles during 1957 to check the rocketry, instrumentation, and ground stations and that the first fully-instrumented satellite vehicle would be launched in March of 1958. The first of these test vehicles is planned to be launched in December of this year.

As to the Soviet satellite, we congratulate Soviet scientists upon putting a satellite into orbit.

The United States satellite program has been designed from its inception for maximum results in scientific research. The scheduling of this program has been described to, and closely coordinated with, the International Geophysical Year scientists of all countries. As a result of passing full information on our project to the scientists of the world, immediate tracking of the United States satellite will be possible, and the world's scientists will know at once its orbit and the appropriate time for observation.

The rocketry employed by our Naval Research Laboratory for launching our Vanguard has been deliberately separated from our ballistic missile efforts in order, first, to accent the scientific purposes of the satellite and, second, to avoid interference with top priority missile programs. Merging of this scientific effort with military programs could have produced an orbiting United States satellite before now, but to the detriment of scientific goals and military progress.

Vanguard, for the reasons indicated, has not had equal priority with that accorded our ballistic missile work. Speed of progress in the satellite project cannot be taken as an index of our progress in ballistic missile work.

Our satellite program has never been conducted as a race with other nations. Rather, it has been carefully scheduled as part of the scientific work of the International Geophysical Year.

I consider our country's satellite program well designed and properly scheduled to achieve the scientific purposes for which it was initiated. We are, therefore, carrying the program forward in keeping with our arrangements with the international scientific community.

In retrospect this statement indicates what the U.S. was focusing upon, as compared to the Soviets.

3.3 THE PRESIDENT'S REMARKS

Following Mr. Hagerty's introduction, President Eisenhower restated his position until the press (whose names have been omitted) pushed for answers.

Good morning ladies and gentlemen. Do you have any questions you would like to ask me?

(Question) Mr. President, Russia has launched an Earth satellite. They also claim to have had a successful firing of an intercontinental ballistic missile, none of which this country has done. I ask you sir, what are we going to do about it?

The President: Well, let's take, first, the Earth satellite as opposed to the missile, because they are related only indirectly in the physical sense, and in our case not at all.

The first mention that was made of an intercontinental – of an Earth satellite that I know of, was about the spring of 1955 – I mean the first mention to me – following upon a conference in Rome where plans were being laid for the working out of the things to be done in the International Geophysical Year. Our people came back and with studying a recommendation of that conference that we now undertake, the world undertake, the launching of a small Earth satellite, and somewhere in, I think May or June of 1955, it was recommended to me, through the Committee of or by the Committee for the International Geophysical Year, and through the National Science Foundation, that we undertake this project with a satellite to be launched somewhere during the Geophysical Year, which was from June 1957 until December 1958.

The sum asked for to launch a missile was $22 million and it was approved.

For the government, the National Science Foundation was made the monitor of the work, for the simple reason that from the beginning the whole American purpose and design in this effort has been to produce the maximum in scientific information. The project was sold to me on this basis.

My question was: What does mankind hope to learn? And the answer of the scientists was we don't exactly know, and that is the reason we want to do it, but we hope to learn lots of things about outer space that will be valuable to the scientific world.

They did mention such things as temperatures, radiation, ionization, pressures, I believe residual pressures, from such air as would be at the altitude where successful orbiting was possible. That is the kind of information the scientists were looking for, and which they hoped to obtain from this project.

Now, in the first instance, they thought they would merely put up a satellite, and very quickly they found they thought they could put up a satellite with a considerable instrumentation to get, even during the Geophysical Year, the kind of information to which I have just referred.

So they came back, said they needed some more money. This time they went up to $66 million and we said all right, in view of the fact we are conducting this basic research this seems logical. So we did that.

Then they came back, and I forget which one of the steps it came along, and they realized when you put this machine in the air, you had to have some very specially equipped observation stations, so the money, the sum of money, again went up to provide for these observation stations; and so the final sum approved, I think about a year ago, something of that kind, was $110 million, with notice that they might have to go up even still more.

There never has been one nickel asked for accelerating the program. Never has it been considered as a race; merely an engagement on our part to put up a vehicle of this kind during the period that I have already mentioned.

Again emphasizing the non-military character of the effort, we have kept the Geophysical Year Committees of other nations fully informed all the time – as, for example, the frequencies we would use when we put this in the air so that everybody, all nations, could from the beginning track it exactly – know exactly where it was. And I believe it was 108 megacycles we were to use, and that was agreed throughout the world.

We are still going ahead on this program to make certain that before the end of the calendar year 1958, we have put a vehicle in the air with the maximum ability that we can devise for obtaining the kind of scientific information that I have stated.

Now, every scientist that I have talked to since this occurred – I recalled some of them and asked them – every one of them has spoken in most congratulatory terms about the capabilities of the Russian scientists in putting this in the air. They expressed themselves as pleased rather than chagrined, because at least the Soviets have proved the first part of it, that this thing will successfully orbit. But there are a lot of other things in the scientific inquiry that are not yet answered, and which we are pushing ahead to answer. Now that is the story on the satellite. It is supplemented by a statement that we prepared this morning that has some of the basic facts to include the sequence of events.

As to their firing of an intercontinental missile, we have not been told anything about the details of that firing.

They have proved again and, indeed, this launching of the satellite proves, that they can hurl an object a considerable distance.

They also said, as I recall that announcement, that it landed in the target area, which could be anywhere, because you can make a target area the size you please, and they also said it was a successful re-entry into the – to the atmosphere, and landing at or near the target.

Now that is a great accomplishment, if done. I have talked to you in the past about our own development in this regard as far as security considerations permit, and I can say this: It – the ICBM, the IRBM – we call them, we are still going ahead on those projects on top priority within the government, but incidentally a priority which was never accorded to the satellite program. The satellite program, having an entirely different purpose, even the scientists did not even think of it as a defense – or security instrument, and the only way that the Defense Department is in it at all is because one of them, the Navy, was called upon as the agency to have the sites and the mechanisms for putting it in the air.

(Question): Mr. President, Khrushchev claims we are now entering a period when conventional planes, bombers, and fighters, will be confined to museums because they are outmoded by the missiles which Russia claims she has now perfected; and Khrushchev's remarks would seem to indicate he wants us to believe that our Strategic Air Command is now outmoded. Do you think that SAC is outmoded?

The President: No, I believe it would be dangerous to predict what science is going to do in the next twenty years, but it is going to be a very considerable time in this realm, just as in any other, before the old is completely replaced by the new, and even then it will be a question of comparative costs and accuracy of methods of delivery.

It is going to be a long-term. It is not revolutionary, a revolutionary process that will take place in the re-equipping of defense forces, it will be an evolutionary.

(Question): Mr. President, do you think our scientists made a mistake in not recognizing that we were, in effect, with Russia – in a race with Russia in launching this satellite, and not asking you for top priority and more money to speed up the program?

The President: Well, no I don't, because as – even yet, let's remember this: The value of that satellite around the Earth, going around the Earth, is still problematical, and you must remember the evolution that our people went through and the evolution that the others went through.

From 1945, when the Russians captured all of the German scientists in Peenemünde, which was their great laboratory and experimental grounds for the

production of the ballistic missiles they used in WW-II, they have centered their attention on the ballistic missile.

Originally, our people seemed to be more interested in the aerodynamic missile, and we have a history of – going back for quite a ways – in modest research in the intercontinental ballistic missile, but until there were very great developments in the atomic bomb, it did not look profitable and economical to pursue that course very much, and our people did not go into it very earnestly until somewhere along about 1953, I think.

Now, so far as this satellite itself is concerned, if we were doing it for science and not for security, which we were doing, I don't know of any reasons why the scientists should have come in and urged that we do this before anybody else could.

Now, quite naturally, you will say, "Well, the Soviets gained a great psychological advantage throughout the world," and I think in the political sense that is possibly true. But in the scientific sense it is not true, except for the proof of the one thing, that they have got the propellants and the projectors that will put these things in the air.

(Question): Mr. President, could you give the public any assurance that our own satellite program will be brought up to par with Russia, or possibly improve on it?

The President: Well now, let's get this straight: I am not a scientist. I go to such men as Dr. Waterman, Dr. Bronk, Dr. Lawrence, all of the great scientists of this country, and they assured me back in the spring, I think it was, of 1955, this could be done, and they asked for a very modest sum of money compared to the sums we were spending on other research. So, in view of the fact that, as I said before, this was basic research, I approved it.

Now, the satellite that we are planning to put in the air will certainly provide much more information, if it operates successfully throughout, according to plan, it will provide much more information than this one can.

(Question): Mr. President, you have spoken of the scientific aspects of the satellite. Do you think that it has immense significance, the satellite, immense significance in surveillance of other countries, and leading to space platforms which could be used for rockets?

The President: Not at this time, No, there is no – there is – suddenly all America seems to become scientists, and I am hearing many, many ideas. (Laughter) And I think that within time, given time, satellites will be able to transmit to the Earth some kind of information with respect to what they see on the Earth or what they find on the Earth. But I think that that period is a long ways off when you stop to consider that even now, and apparently they have, the Russians, under a dictatorial society, where they had some of the finest scientists in the world, who have for many years been working on it, apparently from what they say, they have put one small ball in the air.

I don't – I wouldn't believe that at this moment you have to fear the intelligence aspects of this.

(Question): Mr. President, considering what we know of Russia's progress in the missile field—

The President: Yes?