The Earth Below, the Stars Above

"Houston. Tranquility Base here. The Eagle has landed."

Those first words from the surface of the Moon to Mission Control in Houston announced the dawn of a new age, the culmination of decades of research in aeronautics, medicine, environmental control, information processing, electronics and dozens of other areas for which Johnson Space Center has become a symbol.

Long before Sputnik I signalled man's transcendence of the limits of earth and its atmosphere, forces driving toward the Johnson Space Center and the Age of Space found their first expression in the wooded Tidewater region of southern Virginia.

Samuel Pierpont Langley, Secretary of the Smithsonian Institution and a sponsor of aviation research before the Wright brother's first flight, was honored there in 1917 by the construction of the Langley Memorial Aeronautical Laboratory just north of Hampton. Two years earlier the first government organization charged with flight research and experimentation, the National Advisory Committee on Aeronautics (NACA), had been created under the administration of Woodrow Wilson.

On October 1, 1958, NACA gave birth to a larger civilian agency, the National Aeronautics and Space Administration (NASA), which swallowed the renamed Langley Research Center and all of the expanded aeronautics organization.

A month later NASA Headquarters created the Space Task Group —a team of thirty-six scientists, administrators, and clerical personnel from Langley given responsibility for preparing the first cautious attempts to launch man beyond the atmosphere.

Led by Robert R. Gilruth, Langley's Assistant Director, the Space Task Group seemed a fragile device in a program with an uncertain future.

In May 1959, STG was removed from the protective umbrella of NASA Headquarters in Washington and administrative responsibility was transferred to the newly created Goddard Space Flight Center in Greenbelt, Maryland.

Though Gilruth became Assistant Director of Goddard, a series of Soviet successes in launching spacecraft into earth orbits and in first exploration of the Moon and planets accelerated the American space program so quickly that a planned move to Goddard was discarded and a new location—expected to employ 3,000 people—was sought.

In the summer of 1961, more than two dozen candidate sites from Jacksonville, Florida to St. Louis, Missouri were explored by NASA officials. With the same quick but careful planning and assessment that marked most of the early space program, NASA listed the requirements for the new Manned Spacecraft Center and evaluated each candidate site.

Only three locations—two near San Francisco and one southeast of Houston—provided all these essentials: a climate mild enough for year-around outdoor work, ice-free barge access, a convenient military base, an established university specializing in science and space-related research, a commercial jet airport, long-distance telephone trunk lines, a thousand acres of land with adjacent acreage, adequate water and energy supplies, a strong industrial base, and a good labor market.

On September 19, 1961, NASA Administrator James Webb announced that the new Manned Spacecraft Center would be built on prairie land immediately north of Clear Lake—an inlet of Galveston Bay with access to the Gulf of Mexico.

Two days after the official announcement in Washington, Robert Gilruth took a long look at the new location picked for his growing Space Task Group. On September 21, less than a week after Hurricane Carla devastated the Gulf Coast, NASA's representatives gazed on debris-filled ditches, a country road, a dilapidated windmill, and a handful of livestock. This was to be the home of the multi-million-dollar space complex.

Houston business and civic leaders quickly prepared the welcome mat for nearly a thousand NASA employees expected to move into temporary quarters scattered across the southern half of the city.

In December of 1961, the design for the new Center was underway as the move from Virginia began. During the following six months, 1.8 million pounds of freight crossed the United States —some in sealed and guarded vans.

MSC Director Gilruth moved to Houston in February, and the first U.S. orbital flight, after repeated delays, was finally launched. Following countless difficulties—the day MSC received its name was marked by a rocket failure—John Glenn's three revolutions in a Mercury capsule signalled a brighter future for the new Center.

Though construction began with ground-breaking ceremonies on April 2, 1962, not until late the following year did MSC employees begin their move to the new site. By April of 1964, the first major buildings of the Manned Spacecraft Center were finally complete.

For the second manned Gemini mission, the Mission Control Center in Houston was ready for operation, and from that day in June 1965, the Center's fame grew steadily.

The Apollo program drew hundreds of newsmen to Houston to cover the first landing on the Moon, the safe return of the endangered Apollo 13, and the conclusion of the lunar flights just before Christmas 1972. By then, some 27 manned flights had been completed.

In the 1970's, as NASA directs more of its energy toward applying space technology to improving conditions on Earth, the Houston Center—officially renamed for Lyndon Johnson in February of 1973—continues to take a leading role.

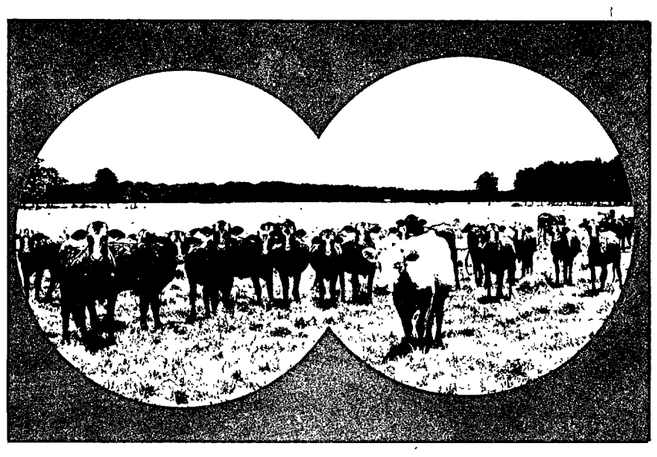
The giant Skylab space station, launched in mid-May, is controlled from Johnson Space Center. Numerous scientific projects to evaluate manufacturing methods in space, explore changes in the human body, study energy radiating from the Sun, and monitor the environment and resources of Earth are conducted by crews aboard the space station, which is expected to continue operating throughout 1973. In the coming years, Skylab research data will be intensively analyzed by hundreds of scientists here and overseas.

A medical applications program to test methods for providing specialized health care to patients in remote areas, and an engineering study to design an integrated urban complex able to reduce both energy consumption and damage to the environment—these, too, are new JSC programs.

International cooperation, highlighted by the joint U.S.-U.S.S.R. flight scheduled for 1975, is of increasing importance to the space program. Soviet scientists and cosmonauts have made frequent trips to the Johnson Space Center in preparation for the mission of Apollo and Soyuz.

At the end of this decade, a new Space Shuttle being developed under the leadership of JSC engineers and administrators will begin regular flights to carry men and satellites into space with far greater reliability and at far lower cost than is now possible. With the Space Shuttle, Americans will be able for the first time to return to Earth and land their space vehicle on an aircraft runway.

Though splashdowns into a rolling ocean may be gone by the 1980's, the Johnson Space Center will continue to meet the challenges at the frontier of man's exploration in the Shuttle era and beyond.



1961 to 1973

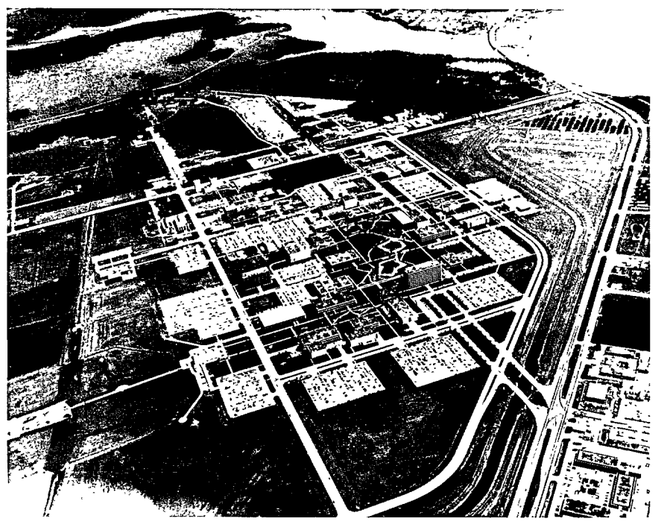
Johnson Space Center, built on a 1620-acre site selected in 1961 (photo above), now includes 75 primary buildings and an extensive road system (below).

In addition to buildings at Ellington Air Force Base north of the Center, other JSC facilities include the Earth Resources Laboratory at Bay St. Louis, Mississippi, and the 140-square-mile White Sands Test Facility at Las Cruces, New Mexico.

The total value of Houston, White Sands, and contractor-held facilities of the Johnson Space Center is more than $875 million. The Johnson Space Center is one of 10 NASA centers.

Some 9600 employees work at JSC: 3700 for NASA, 470 for other government agencies, and more than 5400 for companies under contract to the Center. This year's expenditure for salaries and related items will exceed $200 million.

The Johnson Space Center is responsible for the design, development and fabrication of manned spacecraft, the selection and training of astronauts, the operational control of space flights, the development and integration of scientific experiments for manned flights, and the application of NASA technology to uses that will benefit the general public.



An Interview With JSC Director Christopher C. Kraft, Jr.

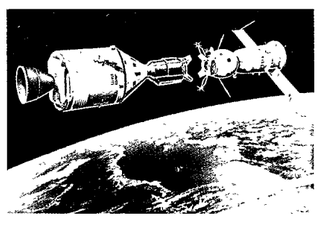
SPACE CENTER FACES THE 1980'S

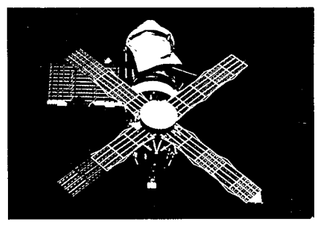
Q. Dr. Kraft, as one of the original members of the Space Task Group, what sort of future did you anticipate for man in space back in 1958?

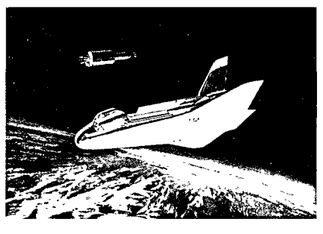
DR. KRAFT: In 1958, the size and scope of the Mercury project were almost more than most of us could conceive. Getting all of the things that had to be done to make that flight possible was just a tremendous task.

There were so many imposing tasks that I don't think many of us could do much more than imagine the science fiction aspects of space flight, which I think all of us felt were quite a few years off.

After we got into the program we realized the impact that space flight was bound to have on the future of the world.







Artists' conceptions of the Apollo-Soyuz rendezvous (left) and the Space Shuttle deploying a satellite (below), reveal future JSC projects. Photograph of Skylab space station (lower left) was taken in June as first crew departed.

The emotional impact of Alan Shepard's flight on the nation brought this vividly into focus. That was followed very shortly by President Kennedy's announcement that we were going to land on the moon by the end of the decade.

I was just overcome by the President saying that was our objective. And although I didn't have any objections to trying to do it, I had some doubts in my mind whether it was at all possible at that point. Now, I'd like to say though, that that was what you'd expect from any novice— as all of us were—in space flight.

Q. Over the past several years, the space budget has been cut rather sharply—has this reduced the effectiveness of the Johnson Space Center.

DR. KRAFT: I think our initial challenges at the Manned Spacecraft Center, now the Johnson Space Center, to build facilities and to accomplish the lunar landing—indeed the Gemini flights before the lunar landing—were mostly technical or related to technical tasks.

Since that time, since we landed on the Moon, the challenge has been more administrative, financial, and budgetary—how to do the job for less money. I think that the challenges are equal and both are rewarding.

It's true that we have less money to do our job today, but I think that we've managed, even under those reduced budgets, to produce a good space program—as evidenced by the success of Skylab.

The smaller budgets have been difficult because of the reductions in personnel that we've had to go through. That, for me, has been a very distasteful thing, because you end up losing a lot of very good people. I haven't liked that part of it, but we've just had to face up to it, and do the best we could.

Q. Has there been any change in attitude, direction, or emphasis at JSC since the landing on the Moon?

DR. KRAFT: Yes, I would say that there has been a change in attitude. I think that people are more confident that they can accomplish a goal. That's a good foundation for the Shuttle. People here do realize the tightness of the budget and are more cost-conscious, but they are still a very proud group, and I'm glad they are. I think that our attitude now is "let's take advantage of our accomplishments in space and see what we can do to help solve our problems here on Earth," before we take another large step into the pioneering effort of exploring space.

Q. What new major program will occupy JSC personnel in the coming years?

DR. KRAFT: Unquestionably, in the near term it's the Shuttle. That's a tremendous technical challenge.

The Shuttle's going to change the way that all of us think about space. In the past, space has meant science and exploration. With the use of the Shuttle, I think it'll be more—"how does space fit the requirements of everyday problems?" So it's going to be a very different kind of world for us in the space program and for the United States.

As a result of the Shuttle, I think we'll see all kinds of new applications satellites—not only in earth resources and weather and communications—but in other special realms like agriculture, pollution and water resources, too. And I look forward to having many different space vehicles that take industry into space. That's where the real payoff will be. Johnson Space Center will be involved not only in conducting the operations of the Shuttle, but in many of the payloads that are taken up on it.

Q What is your reaction to naming the Center for late President Lyndon Johnson?

DR. KRAFT: I thought that naming this Center after Johnson was very appropriate. Mr. Johnson was one of the country's leaders in bringing about the success of space flight. He had enough vision to see its importance to the country, and we're very proud that this center is named after one of the country's great leaders. We feel very humble that our Center was chosen to be named for him, and we think that it will benefit us and that the name Johnson will become even greater as a result of the relationship.

From Virginia To Texas: The Westward Journey

The radio announcer had just reported that within the hour, Hurricane Carla would hit Galveston, Texas. Hardly pausing for a breath following this devastating news, the commentator announced the rumored relocation of the Space Task Group from Langley Research Center in Hampton, Virginia to a Houston site not far north of Galveston.

This is the way JSC's Doris Kreske remembers that day in September of 1961. Nearly 1,000 Langley personnel finally chose to make the "big move" and many of them work today at Johnson Space Center.

In the weeks after Hurricane Carla, Texas Governor Price Daniel sent an official letter of welcome to the employees at Langley, and the hustle and bustle of transferring was underway.

Doris Kreske, who trained Johnson Space Center's first secretaries, says she was somewhat reluctant to transfer because she was leaving behind some of her closest friends. Houston came as a pleasant surprise.

"The people were so friendly and helpful," Doris said, "that I adjusted quite easily. Still I was glad when Scottie and Phoncille told me they had also been transferred from Langley to Houston."

The announcement of the transfer came just in time for Phoncille Devore. Originally from Sweetwater in West Texas, Phoncille had gone to Langley with her husband who was stationed at the Air Force Base there. Since he had just received orders to go overseas, Phoncille was elated that she could return to Texas.

Phoncille, now an Awards Program Specialist, was the first secretary in the office set up to run the Apollo program.

Another member of the Space Task Group, Iva Scott, said she, too, had mixed emotions about the move. Still, the lure of the space program influenced her decision to transfer and "Scottie" came to MSC as secretary to the first Center director, Robert R. Gilruth.

"Working for the Center director was very exciting," Scottie said, "I met so many interesting and important people."

Scottie said she had always heard that Texas was lovely.

"I found that what I heard about Texas is true. It's a beautiful state full of beautiful people."

Rita Rapp, Physiologist in the Biomedical Research Division, had a totally different image of Texas. She laughingly admits that Texas was the last place she expected to live. The trip from Langley to Houston didn't improve her disposition.

"Uppermost in my mind about the transfer," Rita reminisced, "was the trip to Houston in an unairconditioned car. It must have been about 104° outside. It was so hot that I was tempted to turn around and go back."

Rita's devotion to the space program gave her the incentive to continue her journey. She says she has learned to love Texas and never regretted not turning back.

Betty Ensley of the Engineering and Development Directorate, remembers the hard work that went into getting settled into a temporary office site in the Gulfgate area.

"It was a busy time, but I remember being impressed with the smoothness of the transition. Everything was so well organized."

MSC personnel operated from buildings scattered across Houston until the first construction was completed near Clear Lake.

"I used to drive out to the present site every Sunday afternoon." Virginia Hughes, another Langley transferee related, "at the time, NASA Road 1 was a two-way back road."

Virginia, employed in the Life Sciences Division, said she was glad when the present Center was completed. Getting to and from the scattered buildings in the old location, she said, had been a little inconvenient. But she was not prepared for the new wind-swept prairie site.

"The wind was so strong, that you literally had to hold on to someone to walk from building to building," Virginia said.

The employees of Johnson Space Center have come a long way since moving from Virginia. Their memories of the Space Task Group and the pioneering role each played in man's first exploration of space are part of the strength of NASA's Houston Center.

Iva "Scottie" Scott summed up the memories of many JSC employees: "It was a unique time, one which we can never again experience. There'll never be anything else like it."

Roundup

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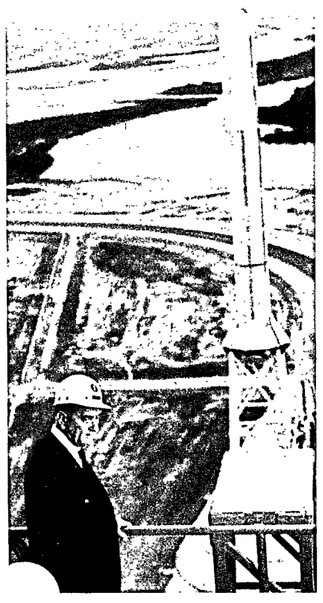
Houston, Texas 77058

Round up

JSC Dedication Issue

Johnson Space Center Dedication August 27



IN 1966—LBJ visited Kennedy Space Center to review progress on the Apollo program. Three years later Neil Armstrong was the first man to set foot on the moon, July 20, 1969.

Official dedication ceremonies for the Lyndon B. Johnson Space Center will be held August 27 at the NASA site southeast of Houston.

The former Manned Spacecraft Center was renamed in honor of the late President on February 17 of this year. Dedication ceremonies have been scheduled to coincide with the 65th anniversary of Johnson's birth.

A number of local, state, and national dignitaries are expected to attend the dedication, which will begin at 3:00 p.m. in the main auditorium of the Visitors' Center.

The program includes brief addresses by Johnson Space Center (JSC) Director Christopher Kraft, NASA Administrator James C. Fletcher, Texas Governor Dolph Briscoe, and Mrs. Lyndon Johnson. Music will be provided by the U. S. Air Force Band of the West.

Ceremonies will include the unveiling of a bust of LBJ carved by noted sculptress Jimilu Mason. The bust, donated by Houston's Chamber of Commerce and Albert Thomas Space Hall of Fame, will be prominently displayed at JSC.

Following the main ceremonies, a special "Johnson Room" will be opened to the public in the Visitors' Center. The room will contain memorabilia collected from Johnson's years in Washington.

On prominent display in the Johnson Room will be a desk used by the President for signing bills, a chair from the Cabinet Room, photographs of Johnson as Vice-President, original editorial cartoons about the space program, and the original U.S. copy of the Outer Space Treaty signed in 1967 by the United States, the Soviet Union and many other nations.

The Johnson Room will contain a portrait of the late President by Boris Chaliapin. The life-like painting was donated by Time magazine.

The resolution to rename the Manned Spacecraft Center in honor of Johnson, who was a strong advocate of space exploration and the application of space technology to life on Earth, was introduced in Congress shortly after his death.

NASA officials and employees of the Manned Spacecraft Center supported the renaming. NASA Administrator James C. Fletcher wrote in a letter to the Senate Committee on Aeronautical and Space Sciences that " . . . former President Lyndon B. Johnson is recognized as a principal architect of this Nation's space program."

Listing Johnson's role as Chairman of Senate space committees, Vice-President and Chairman of the National Aeronautics and Space Council, and as President, Fletcher concluded: "The renaming of the Manned Spacecraft Center in President Johnson's home state of Texas would, in our view, be an appropriate recognition of the role he played in establishing our space program."

The joint resolution to rename the Center was introduced by Senators Lloyd Bentsen of Texas and Robert Byrd of West Virginia. Calling LBJ "the father of the space program in the United States," Bentsen concluded his statement to the Senate Committee on Aeronautical and Space Sciences with these words: "I think Lyndon Johnson deserves this honor more than any other individual. Just as the Houston facility is a physical center of the space program, Lyndon Johnson was, perhaps, the spiritual center of it. What better way to honor him, to reflect the new mood of the space effort, than to rename the Manned Spacecraft Center in Houston the Lyndon B. Johnson Space Center.

After signing the joint resolution of Congress in February, President Nixon, too, called attention to Johnson's leading role in the history of man's conquest of space.

"Few men in our time have better understood the value of space exploration than Lyndon Johnson.

"It was he, as a Senator, who wrote, introduced, and helped to enact the legislation which created the National Aeronautics and Space Administration. He called it the proudest legislative achievement of his years in the Congress."

Nixon concluded, "By his vision and his work and his support, Lyndon Johnson drew America up closer to the stars and before he died he saw us reach the moon—the first great plateau along the way."

The Johnson Space Center is at the present time the center of operations and control for the Skylab space station. The second Skylab crew, launched July 28, is expected to surpass the 28-day record flight of the first crew just two days before the dedication ceremony in Houston.

1962

With President John F. Kennedy, Vice-President Lyndon Johnson visited Houston and the Manned Spacecraft Center in 1962—just after NASA personnel had moved into temporary quarters in the city. During his visit, President Kennedy spoke to an estimated 35,000 people at Rice University.

1965

President and Mrs. Johnson greet Mrs. James McDivitt (left), wife of the commander of Gemini IV—the first flight to be controlled from the Manned Spacecraft Center. The Johnson's are shown in the mall of the Visitors' Orientation Center.

1968

Speaking at the Manned Spacecraft Center, Lyndon Johnson is applauded by James E. Webb, the first NASA Administrator (center), and Robert R. Gilruth, MSC's first Director (right). A special room in the Visitors' Center, behind the President, will be set aside in his honor.

Lyndon Baines Johnson: Future is Space

Lyndon Baines Johnson, (1908-1973), the 36th President of the United States, had a long and distinguished career as a U. S. Representative, Senator, Vice-President, and President. His achievements in improving health care for the aged, relieving poverty, aiding education, and promoting equality are so excellent that by themselves they assure his place in history.

But the efforts of Lyndon Johnson were never more vigorous, never more constant, than in his support of the U. S. space program.

Born near Johnson City in Southwest Texas, Johnson was a successful New Deal politician. Beginning as an aide to Texas Congressman Richard M. Kleberg in the early 1930's, by 1955 he had become Senate Majority Leader.

Johnson's active role in the space program began with a concern for military preparedness in the Second World War. When the Soviet Union succeeded in launching the 184-pound Sputnik I satellite on October 4, 1957, Johnson chaired hearings in the Senate Armed Services Preparedness Investigating Subcommittee to learn why America had been surpassed in space research.

When the Subcommittee reported that the space effort lacked organization, a new Special Senate Committee on Space and Aeronautics, with Johnson as chairman, was established in early 1958. In a matter of months, the Majority Leader's blue-ribbon committee had drafted legislation to organize an effective space program.

The National Aeronautics and Space Act, which formulated policies for the space program and created the National Aeronautics and Space Administration (NASA) to carry them out, has been called Johnson's most important legislative achievement. NASA will celebrate its 15th Anniversary on October 1.

When the Senate created a permanent Committee on Aeronautical and Space Sciences, Johnson was named its first Chairman. In this role, he guided the early growth and development of the new space agency.

In 1961, following his election as Vice-President, Johnson relinquished his Senate seat and his Committee Chairmanship. But shortly thereafter, President Kennedy named LBJ Chairman of his National Aeronautics and Space Council. From this advisory post, Johnson strongly recommended that the United States land men on the Moon—a goal that many thought beyond reach.

Johnson's constant support for space exploration was a reflection of his belief that the program would provide the American people not only the technological growth necessary to a healthy economy, but also the belief in the future essential to a great pioneering nation.

The substantial space budgets authorized under the Johnson Administration helped to sustain the longest period of U.S. economic growth in decades. At the same time, Johnson used his vision of the future to expand educational opportunities and foster international cooperation.

With the space program as a banner, Johnson believed the American people could surpass even the greatest dreams of earlier generations. Restoring the pioneering spirit and promoting American inventiveness, Johnson worked diligently to renew the vigor of American life.

As the present chairman of the Committee on Aeronautical and Space Sciences, Sen. Frank E. Moss, said earlier this year:

"Lyndon Johnson understood the importance of space exploration to the people of the United States and its ultimate benefit to all of mankind. He understood the necessity of this advanced technology to our security. He understood the stimulation this new field would create in our educational systems. He understood the palpable gains to the average citizen from our weather, communications and other applications satellites. He understood the challenge to excellence and achievement it posed to our scientists, engineers, and technicians. But most of all, he understood the needs of the spirit—the need of man to explore, to reach out and to seek new ways to bend science and technology to our use."

The six plaques left by American astronauts on the face of the Moon are a memorial not only to mankind, but also to the dreams and energies of Lyndon Baines Johnson.

Statements Reflect LBJ's Early Vision

More than thirty years elapsed before the airplane reached its potentialities as a decisive weapon of war and a basic instrument of commerce. Times have changed. Anybody who believes that it will take 30 years for Sputnik to reach its potentialities is not even reading the newspapers.

—October 19, 1957 in Austin

The secrets of the future will yield to the united efforts of determined men. The pace of modern technology has brought us to our most difficult hour and as Americans we must prove that it is our finest hour indeed.

—November 29, 1957 in Dallas

Rockets to the moon are just over the horizon. Space ships are only a few years away and most of us will live to see them. We have very little idea of what we will find (in space), but our ancestors had very little idea of what they would find when they crossed the oceans, the mountains and the prairies. All they knew was that they were challenged by the unknown. The challenge was irresistible. As a result a mighty nation was founded—a nation which today is the great fortress of freedom.

—December 4, 1957 in Houston

Within the short weeks since October 4, man has become master of horizons far beyond our imagination. We must respect this mastery, and from that respect we must, more than ever, seek to bring all men together in cooperative effort.

—January 7, 1958 to U. S. Congress Democratic Caucus

Our greatest need in this hour is to unleash the pioneering spirit and the daring and brilliance of our people and set this nation's course on the pursuit of peace.

—January 14, 1958 in Washington, D. C.

Space affects all of us and all that we do, in our private lives, in our business, in our education, and in our Government. We shall succeed or fail in relation to our national success at incorporating the exploration and utilization of space into all aspects of our society and the enrichment of all phases of our life on this earth.

—May 6, 1958 to Senate Committee

We must look upon outer space as a challenge to the creative impulse of mankind. And if we meet that challenge properly we may find the road to lasting peace truly lies in the stars. The challenge is so great that it dwarfs the animosities and the hatred that divides humanity today. We must be big enough to meet that challenge, and I have confidence that we will be.

—July 16, 1958 to U. S. Senate

As we found our national character in the frontiers of the American West, so, I believe, can we recapture our confidence and fulfill our greatness in the frontiers of the universe beyond the atmosphere.

Our research dollars must yield research dividends . . . . Certainly we must find, at the government level, a way to reconcile the necessary prudence at handling the taxpayer's money with the necessary pioneering of pure research.

—November 11, 1958 in San Antonio

Outer Space is in fact the New World of perhaps the next 500 to 1000 years. What we do will have profound effect upon the earth for many years thereafter—maybe forever.

—April 18, 1960 in Austin

I confidently believe that the developments of the Space Age will bring the beginning of the longest and greatest boom of abundance and prosperity in the history of man.

—May 82, 1961 in San Marcos

The space program is a wise investment. If the returns from the space program will be worth many times the cost—and I believe they will—then it would be fiscal irresponsibility to refrain from the investment.

—September 1963 in Aerospace Magazine

We do not build rockets and spacecraft to fly our flag in space or to plant our banner on the surface of the moon. Instead, we work and we build and we create to give all mankind its last great heritage. We are truly reaching for the stars.

—March 1, 1968 at the Manned Spacecraft Center in Houston