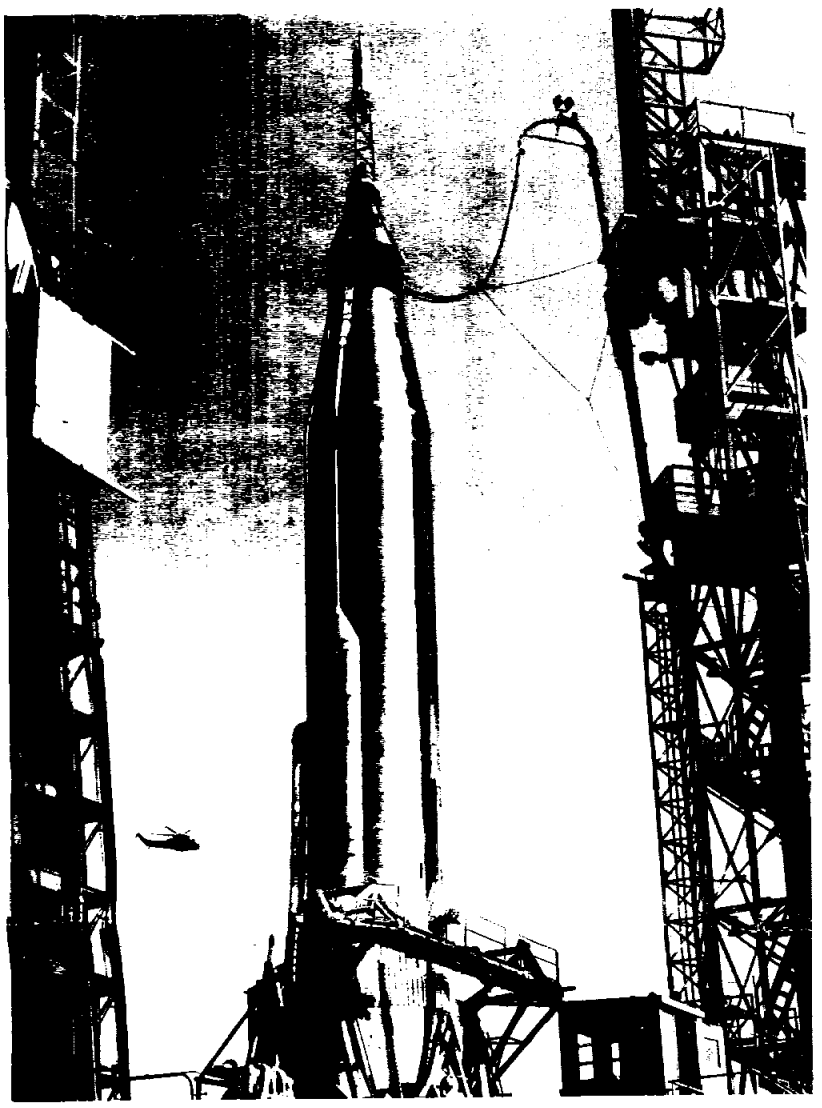
Space News NASA ROUNDUP!

VOL. 1, NO. 8 MANNED SPACECRAFT CENTER, LANGLEY AFB, VA. FEBRUARY 7, 1962



A LOW ANGLE VIEW of the Atlas and "Friendship 7" spacecraft at Launch Pad 14 between gantry equipment during pre-launch preparations.

'We'll Go When All The Tests Are Completed Satisfactorily'

"Sure, I'm disappointed—but this is a complicated business. I don't think we should fly until all elements of the mission are ready. When we have completed all of our tests satisfactorily, then we'll go." These words were uttered by Astronaut John H. Glenn, Jr., accompanied by a shrug, when the decision was made to re-schedule the Mercury-Atlas 6 manned orbital flight for not earlier than Tuesday, February 13. The decision was made by Manned Spacecraft Center's Associate Director Walter C. Williams after he was appraised of technical difficulties encountered in the launch vehicle during flight preparations on January 30.

Just three days previously Glenn hand said "Well, there'll be another day," upon arriving back at Hangar "S" after spending more than five hours in his "Friendship 7" spacecraft while waiting for what seemed at times to be the actual launch date for his long-waited orbital mission. That flight was eventually "scrubbed" at 9:10 a.m. due to weather conditions.

These statements are typcial of those made by Glenn, who has been physically, mentally, and emotionally in a "go" condition since the time when it appeared that the MA-6 mission might be come a reality in December.

During the interim period Glenn and his back-up pilot, M. Scott Carpenter, are continuing with normal pre-launch activities and NASA scientists and engineers and technicians from General Dynamics and McDonnell Aircraft Corporation continued to work on and check out both the launch vehicle and the spacecraft. It was anticipated that the launch vehicle would have to be replaced or that the spacecraft would have to be removed from the top of the launch vehicle while the technical difficulties were being corrected.

It was announced on February 1 that a leak in the Atlas MA-6 booster fuel tank was discovered during the pre-flight preparations for the first manned orbital flight. After fueling operations which involved loading the Atlas with the kerosene-like RP-1 fuel, an inspection revealed residual fuel in the insulation material in the upper portion of the fuel tank. No other elements of either the Atals or the Mercury spacecraft were affected by the leak.

With the announcement of the delay most of the remaining several hundred news media representatives who had remained after January 27, hoping for an early launch date, packed their bags and departed from Cocoa Beach for their widely scattered homes. It is anticipated that they will return for the hoped-for mid-February flight.

To revert to January 27 and John Glenn's activities—he was awakened at 2 a.m. by Dr. William Douglas and at 2:25 had breakfast consisting of filet, poached eggs, toast, jelly, orange juice and coffee. Present at breakfast were Manned Spacecraft Center Director Robert R. Gilruth, Associate Director Williams, MSC Cape Operations Chief G. Merritt Preston, Astronaut Donald K. "Deke" Slayton, and a surprise visitor—General David M. Shoup, Commandant of the U.S. Marine Corps.

Carpenter had gone to Launch Pad 14 at 12:30 for checkout work on the spacecraft.

(*Continued to page* 2)

NASA Selects Aeroject Corp. To Build NOVA M-1 Engine

The National Aeronautics and Space Administration will negotiate with Aerojet-General Corp. for design and development of the most powerful liquid - hydrogen fuel engine undertaken for the United States space program. Known as the M-1, the new 1,200,000 pound thrust engine will power a stage of the NOVA launch vehicle which NASA will develop for sending heavy payloads to the moon and beyond.

In making the announcement of the contractor selection, James E. Webb, NASA Administrator said the decision is a step of major importance in our accelerated program for manned lunar landing. "The M-1 engine, designed to power the second stage of the NOVA launch vehicle, is a significant component of our plan for putting an American Astronaut on the moon before 1970," he said.

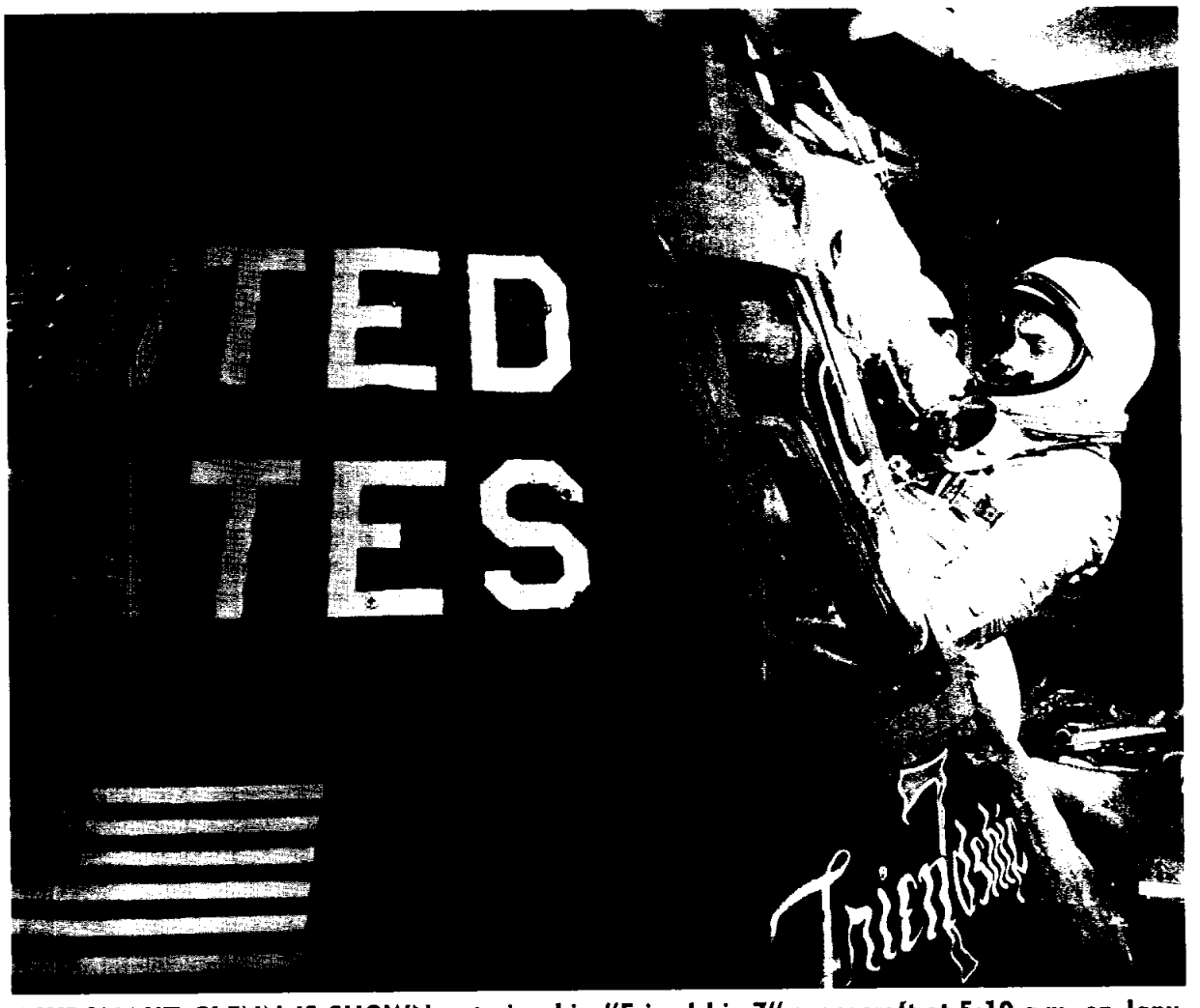
Negotiations on the contract will begin within a few days so that work on the engine can be pushed as soon as possible. The goal of the M-1 development project is to have the engine ready for operational use in 1965. Total cost of the contract is expected to be approximately $90,000,000.

The M-1 engine will stand 23 feet high and measure 15 feet across the nozzle exit. It will consume 85 tons of liquid hydrogen and liquid propellant in one minute. Four such engines will be clustered in the second stage, for a total thrust of 4,800,000 pounds.

First stage of the NOVA will be composed of 8 liquid oxygen-kerosene fuel F-1 engines of 1,500,000 pounds of thrust each, while the third stage will be powered by a single liquid oxygen-liquid hydrogen fuel J-2 engine of 200,000 pounds of thrust. Development work on these engines by the Rocketdyne Division of the North American Aviation, Inc. is underway. Development of the NOVA vehicle itself is expected to start later this year.

Aerojet General was selected by NASA following detailed discussion with aerospace companies having considerable experience in large liquid fuel engine work.

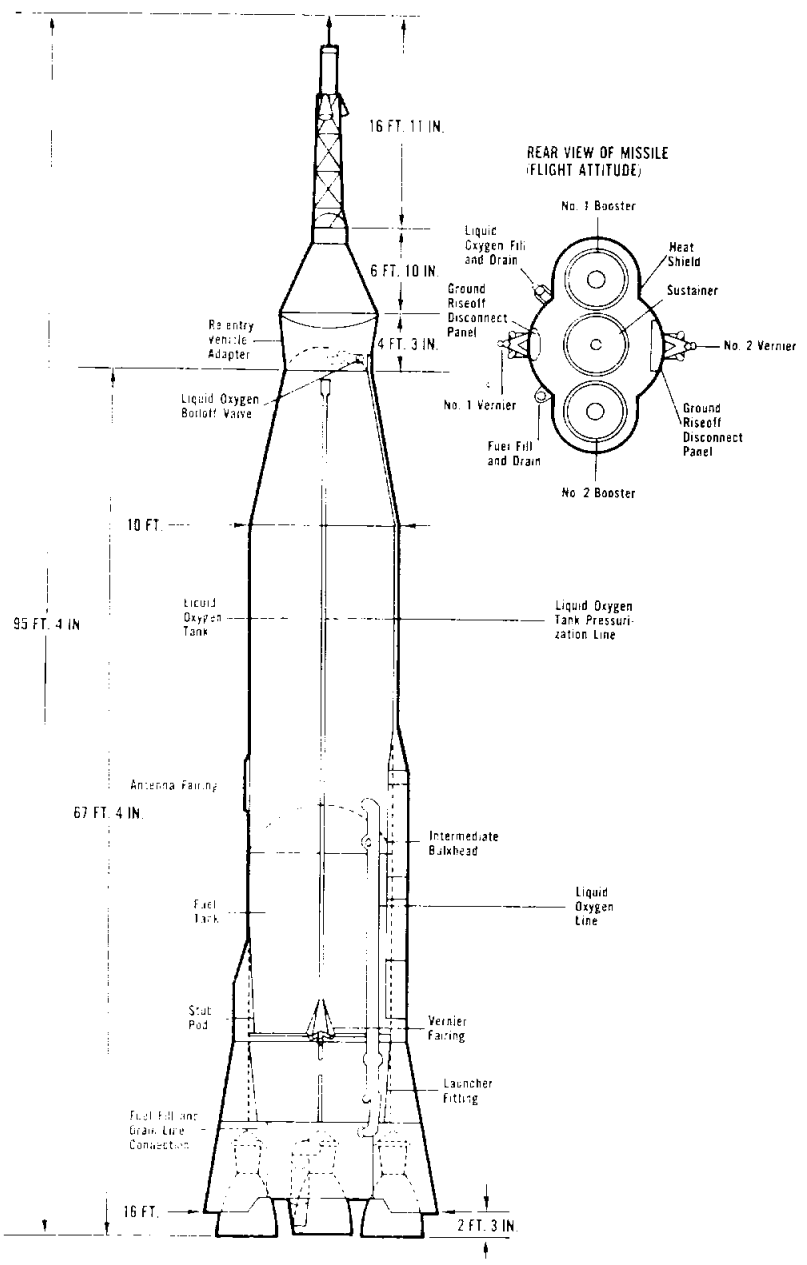
NASA's George C. Marshall Space Flight Center, Huntsville, Alabama, will conduct the negotiations for the contract and will be responsible for its administration. The work will be performed at Aerojet General's liquid rocket plant, Sacramento, California.



ASTRONAUT GLENN IS SHOWN entering his "Friendship 7" spacecraft at 5:10 a.m. on January 27. At that time he and others fully expected that he would orbit the earth from one to three times before leaving the spacecraft with which he is so well acquainted.

PICTURED ABOVE is the instrument panel of the "Friendship 7" spacecraft which gives an indication of how many different systems, etc, the astronaut must keep a constant check on.

Below is a line drawing of the Mercury-Atlas spacecraft launch vehicle in launch position and a rear view of the missile.



Launch Vehicle For MA-6 Test Is Described

The launch vehicle to be used for the Mercury-Atlas 6 test is an Atlas D model, one of several Atlases especially modified for use in the Mercury flight test program. This vehicle develops 360,000 pounds of thrust and burns Rp-1, a kerosene-like fuel, and liquid oxygen.

Principle differences in the Mercury-Atlas and the military version of the vehicle include: (1) modification of the payload adapter section to accomodate the Project Mercury spacecraft, (2) structural strengthening of the upper neck of the Atlas to provide for the increase in aerodynamics stress imposed on the Atlas when used for Mercury missions, and (3) inclusion of an automatic Abort Sensing and Implementation System (ASIS) designed to sense deviation in the performance of the Atlas and trigger the Mercury Escape System before an impending catastrophic failure.

The Atlas is constructed of thin-gage metal and maintains structural rigidity through pressurization of its fuel tanks. For this flight, the Atlas will have a heavier gage skin at the forward end of the liquid oxygen tank, the same as that used in other launches of Atlas space systems.

All five engines are ignited at the time of launch—the sustainer (60,000 pounds of thrust), the two booster engines (150,000 pounds thrust each) which are outboard of the sustainer at the base of the vehicle and two small vernier engines which are used for minor course corrections during powered flight. During the first minute of flight, it consumes more fuel than a commercial jet airliner during a transcontinental run.

'We'll Go When Ready'

(*Continued from page* 1)

At 4:46 a.m., Glenn walked out of Hangar "S" and took the 17 paces required for him to reach the transfer van. Before leaving the crew quarters he gave the thumbs-up signal and said, "Tell 'em I'm go."

The four-mile trip to Pad 14 required 11 minutes and arrived there at 5:01. He was accompanied to the eleventh level of the gantry by Douglas and Slayton and a few minutes later disposed of his anti-dust galoshes and climbed into his spacecraft. His right arm gave what seemed to be a small farewell as suit technician Joe Schmitt strapped him to his form-fitting couch.

At the same time—a monotone voice echoed over the firing area—"T minus 110 minutes and counting."

One hour and 50 minutes until the earliest time that John Glenn, a Marine veteran of two conflicts, could start on his history-making trip into space—five hours before the decision was made to "scrub" the mission—almost six hours before the time he would be removed from the spacecraft, be transported back to Hangar "S", undergo another physical examination, get a shower and some relaxation, and look forward with eagerness to another day—a day in which Glenn, all systems, and the weather would all register "GO."

WELCOME ABOARD

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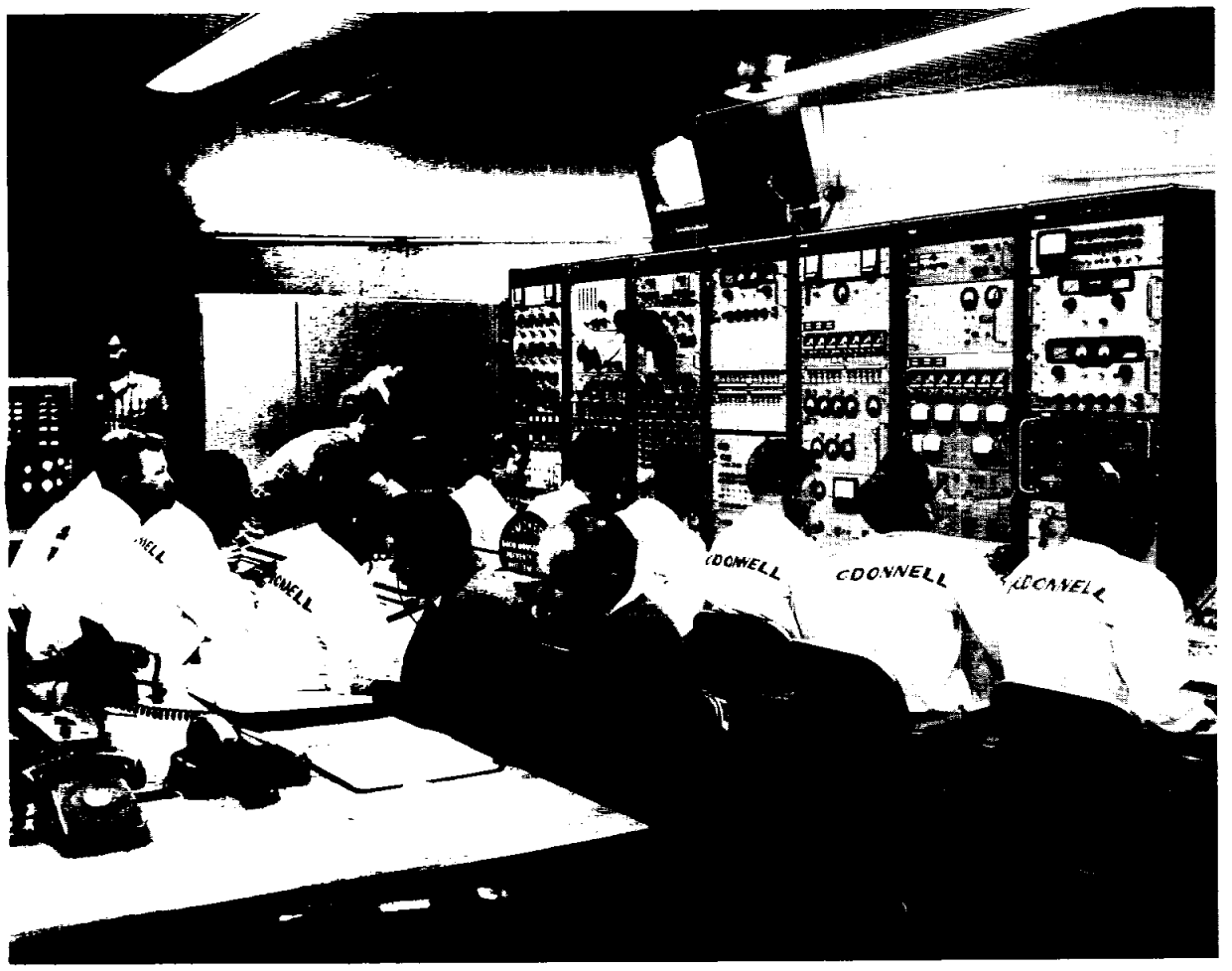
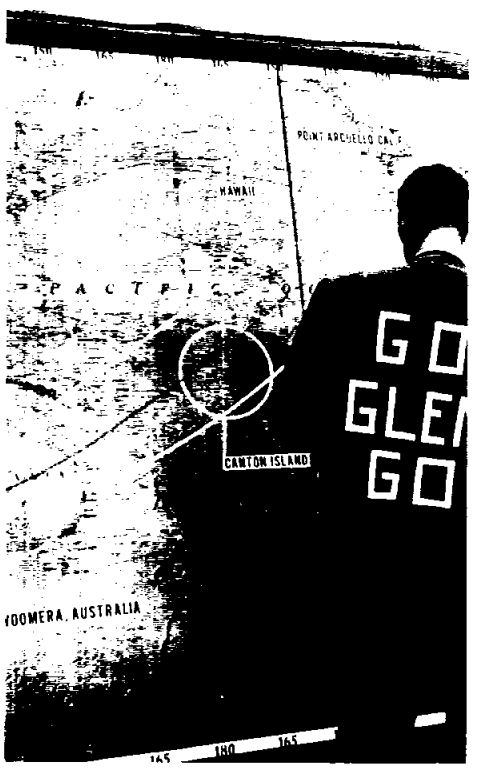


Pre-launch activities place many requirements on Astronaut John H. Glenn, Jr., and his time is programmed almost to a split-second as the preparations for his orbital misison nears completion. Some of his many activities are indicated on this page. At top left, Glenn winks broadly as he sits by while artist Cecilia Bibby puts the finishing touches to her art work as she painted the name "Friendship 7" on the spacecraft. At upper right, three vital members of the Mercury-Atlas 6 team are pictured beside the "Friendship 7" spacecraft. Left to right are T. J. O'Malley, chief test conductor for General Dynamics: Glenn: and Paul Donnelly, NASA spacecraft test conductor. At left center blockhouse technicians at Launch Pad 14 monitor a test prior to the launch. These tests were run constantly to insure that all systems in the "Friendship 7" spacecraft were "GO". Above, Glenn is shown eating breakfast in the crew quarters in Hangar "S" with General D. M. Shoup, Commandant of the U. S. Marine Corps, who dropped in unexpectedly to wish the Marine Astronaut well in his history making venture. At bottom left, Glenn is shown taking his regular daily exercise—a run on the beach. At the left, Glenn is shown as he leaves Sunday church services at Cocoa Beach. Glenn attends services regularly at the church when he is at Cape Canaveral.

THE NEWS CORPS WAS TRANSPORTED to the press site at Cape Canaveral hours before the scheduled launch of the Mercury-Atlas 6 flight on January 27. While waiting for daybreak and the anticipated activities they whiled away the time by getting background material for stories, getting refreshments from a nearby snack bar, and watching the activities at the launch pad on three television sets at the site.



THE SPIRIT OF THE NEWS CORPS standing before the world map at th his back indicating the feelings of

THE MERCURY NEWS CENTER was located at the Starlite Motel. Many of the handout releases are shown on the table. In the foreground Paul Haney, John Peterson, John Powers and Ralph Shankle discuss current problems.

A LIVE TV SHOW from the press site utilizes and ingenious deviation from the commonly used teleprompter.

Problems of Handlin For Manned Orbito

The United States' first manned orbital flight may go down in history as one of the most widely publicized events of the 20th century. Prior to the launch date, representatives of the newspaper, radio, television and newsreel industries from all parts of the United States and from 12 foreign countries descended on Cocoa Beach to cover the event for the free world.

In all more than 600 media representatives were on the scene to record the activity. This coverage posed a complex problem for NASA officials who, while desiring to give every possible assistance to all these people, were still faced with the larger and more important problem of insuring that the Mercury program continue as planned, following established guidelines.

The variety and depth of the coverage of the orbital mission are a tribute to the efforts put forth by a comparatively small group of Information-type personnel who started planning for the activity long before the scheduled time. This planning was completed under the direction of O. B. Lloyd, Jr., Director of NASA's Office of Public Information; Paul Haney, Project Information Manager; and John A. Powers, MA-6 Information Project Officer.

Among the more technical details which had to be "ironed out" prior to the Mercury-Atlas 6 mission were definite plans to have ample coverage on board ship in each of the three orbit landing areas; plans whereby an information team would be taken to the destroyer (if a destroyer made the pick-up) to accompany the astronaut to port; plans for a film flight to depart from the recovery carrier 30 to 45 minutes after the arrival of the astronaut on board; plans to have C-130's standing by at both Bermuda and Grand Turk Island to pick up the film from the courier and deliver it to Patrick AFB; plans to transport advance teams of news pool technicians from Cape Canaveral to both Grand Turk and Bermuda at T-24 hours to set up equipment to cover the arrival of the astronaut at the medical facility and the subsequent periodic debriefing status reports; and plans for a Manned Spacecraft Center Information team to be moved to the port to join the astronaut there and accompany him to his port of re-entry.

The bulk of the personnel to man the operation of the Mercury News Center and its related activities was furnished by NASA OPI, Manned Spacecraft Center Public Affairs Office, and Launch Operations Directorate, Atlantic Missile Range; supported by personnel from NASA's Western Operations Office, Ames Research Center, Goddard Space Flight Center, Marshall Space Flight Center, Jet Propulsion Laboratory, and Langley Research Center.

The Mercury News Center was set up in the Convention Room of the Starlite Motel in Cocoa Beach and this location served as a base of operation for the news corps. This center was directed by John Peterson.

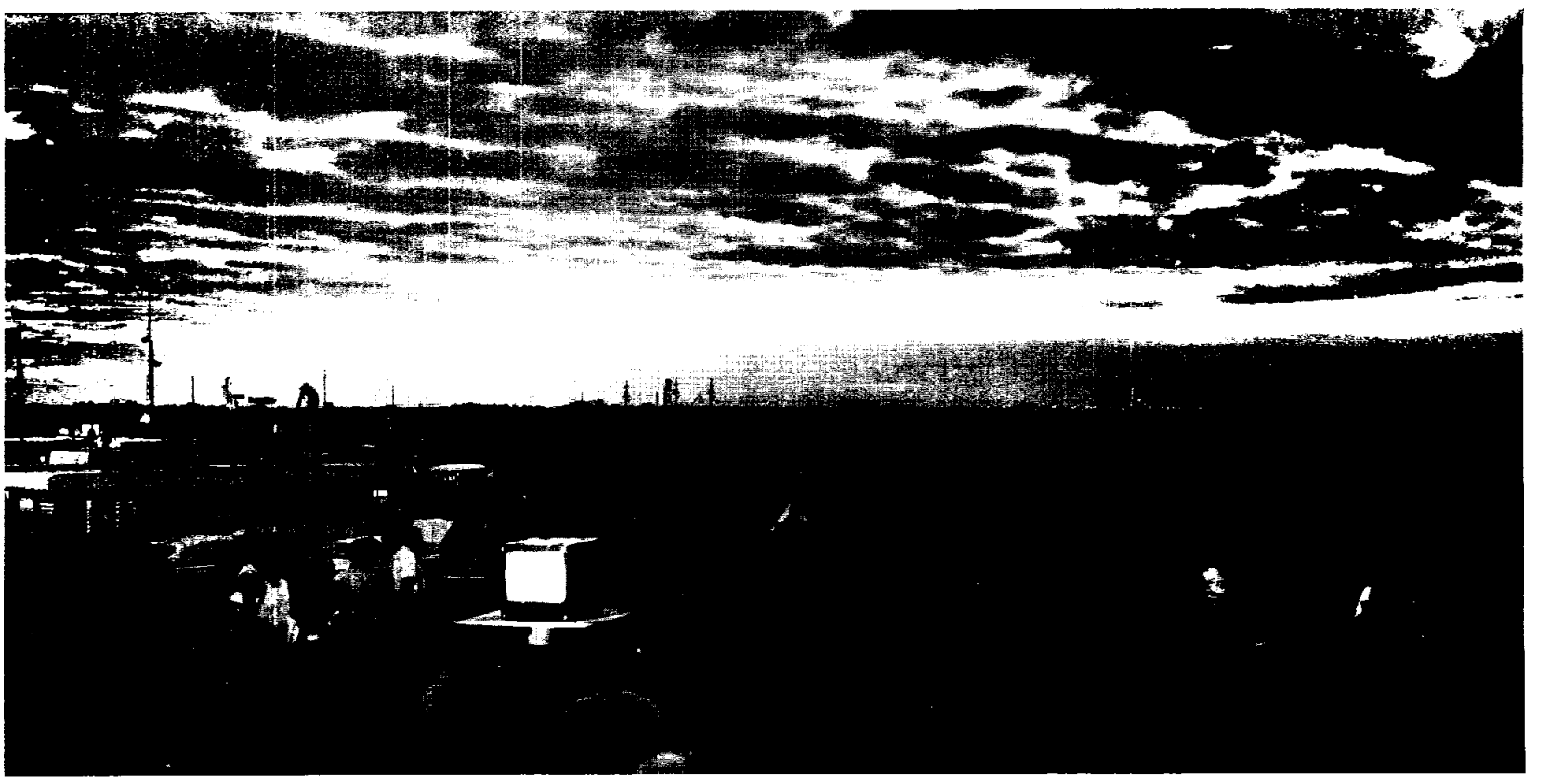
Due to the large number of news representatives present, additional problems were posed, especially as pertains to security and safety regulations.

A brief run-down of the overall Information plan offers a hint as to the work involved in providing the media people with needed material.

It was determined early that the only way in which complete coverage could be offered would be through the activation of news media pools to be placed at several vantage points.

In general the pools consisted of 10 to 15 persons including a periodical writer, newspaper writer, Associated Press writer, United Press International writer, tele-

S SYMBOLIZED by this reporter ss site with a message taped on



AN UNUSUAL PICTURE AS DAY WAS BREAKING over Cape Canaveral. The gantry at Launch Pad 14 can be seen at the right in the background, while in the foreground is a view of part of the activities at the press site (about a mile-and-a-half away) as the large crowd of news media representatives patiently waited for the expected launch. The cloud covering which eventually caused the postponement of the mission is apparent in this photo.

News Media Corps Missions Are Told

vision cameraman, television-radio sound engineer, radio engineer, radio-television voice commentator, newsreel cameraman, newsreel sound engineer, black and white still photographer, and a color still photographer.

These teams were positioned at Hangar "S", the launch area, Roadblock area, forward rescue site, on each one of the three carriers to cover activities if the flight should terminate after one, two, or three orbits. Bermuda and Grand Turk Island. An additional team was to go to Mercury Control Center for a news briefing to be conducted by key MCC personnel shortly after the mission but prior to the press conference.

The remainder of the news corps was stationed at the Press Site, less than two miles from the Pad 14 launch site where they had an unobstructed view of the launch. Also set up at this site were vans of the major radio and television networks, a Voice of America van and 90 telephone lines which had been allocated to the various representatives prior to the launch. Live reporting was authorized over these phones starting at 7 a.m. on the morning of the launch.

Shipboard press traffic from the Orbit one and Orbit two ships was transmitted to the Orbit three ship which in turn radioed it to the San Juan Naval Facility. From there it was placed on a direct cable to the Cape press site.

Two printers in a communications van set up at the press site 24 hours prior to launch-time enabled this traffic to be received at a rate of 60 words per minute on chemically treated paper capable of quick reproduction service. The releases over these wires were reproduced in sufficient copies to provide them to all media representatives present.

About seven hours after lift-off the communications van was to be closed and further news releases from down range were to go to the Mercury News Center where similar reproduction facilities were set-up and releases made available to the news corps.

At the News Center a variety of innocuous sounding activities were handled including registration, accreditation, answering telephone queries, coordinating transportation, and "assisting newsmen." This latter function, assigned by the use of just two words, entailed almost endless hours of work on the part of the staff as they answered individual queries, arranged interviews, and performed a myriad of other services for the visitors.

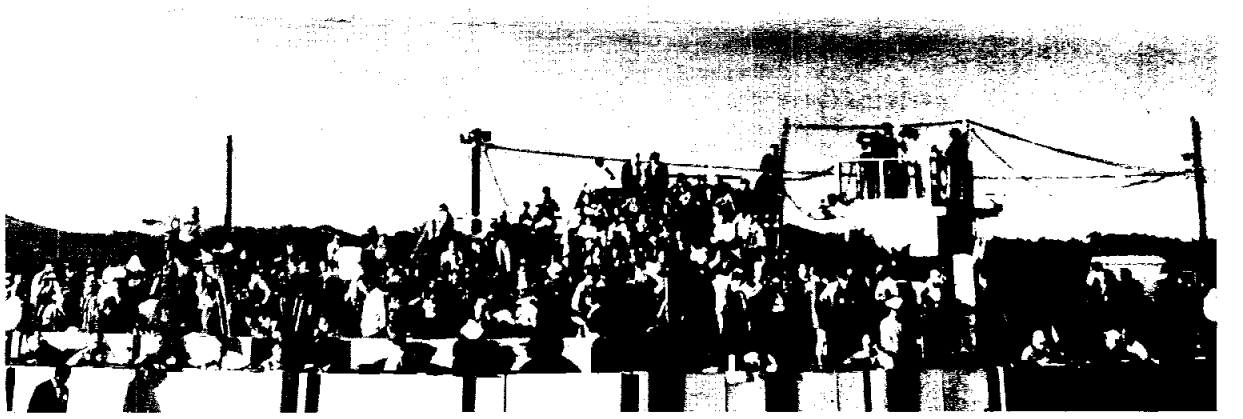
During the period of the operation of the News Center press kits were distributed concerning Mercury Atlas 6 and Ranger 3, and 500 copies of 87 different news releases and fact sheets, and about 10,000 still photos were released.

An audio line was installed between the Mercury Control Center Information Officer's position and the public address system at the press site to relay information to the news corps concerning the progress of the flight and the status of the astronaut as he participated in the history-making event. This running commentary started long before lift-off and was to last until after the landing of the spacecraft and recovery of the pilot.

The media representatives used this information as they called in news stories or radio reports in an effort to keep their individual audiences as up-to-date as possible on the status of the United States' first manned orbital effort.

Many key personnel of Manned Spacecraft Center gave unstintingly of their time as they crowded interview after interview into their already busy schedules.

Logistical support for this vast information effort was furnished by the Commander of the Atlantic Missile Range. This support included the requirement for escort officers, escort drivers and transportation as and where needed.



PART OF THE NEWS CORPS at the press site are shown as they awaited the scheduled launch.

A BATTERY OF CAMERAS, set up and focused in on Launch Pad 14, stand ready to be put into action in the event the launch of the Mercury-Atlas 6 is accomplished.

Editorial

Project Mercury is designed to place an American astronaut into earth-orbit—to determine man's ability to perform in space —to gain scientific knowledge which is currently being used and which will eventually place a man on the moon during this decade.

The Latin word Mercurius from which Mercury is derived refers to both the mythical god and the planet. In Roman religion it identifies him with the Greek god Hermes.

According to mythology, Hermes was an Olympian God who was the herald and messenger of the gods—further, he was guardian of the boundaries and of roads and their commerce. He was also god of science and invention.

All of this information would seem to tie in well with the upcoming orbital flight of John H. Glenn, Jr., and the part he is playing in the planned program of Project Mercury.

About 308 B.C., more than 22 centuries ago, a school of philosophy was founded by Zeno in Athens called the Stoics. The Stoics taught that the wise man should be free from passion, unsubdued by joy or grief, willingly submissive to natural law.

One would hardly refer to Glenn as a Stoic, yet there can be little doubt that he, after his great disappointment on January 27 possessed many of the stoic attributes when he emerged from his "Friendship 7" spacecraft after a seemingly interminable wait of almost six hours and said, "There'll be another day." He was the John Glenn of a few hours before—he was remarkably calm for a man who had worked so long and so hard for a much desired goal—only to be faced by a bitter disappointment. He was submissive to the natural law—in this case the clouds which hovered over Cape Canaveral and precluded his launch into space on a history-making mission.

Several days later, Glenn was faced with another similar disappointment when technical difficulties made it advisable to launch him and his spacecraft into space not earlier than February 13—another delay of two weeks. His typical reaction—"When all phases of the mission are ready we'll go."

Glenn like the other six astronauts of the Mercury team has repeatedly insisted that all astronaut activities are a team effort. Like Shepard and Grissom before him, who made sub-orbital space flights last year, he has insisted that not enough credit has been given to the back-up pilot as well as to the literally thousands of others who have participated in the program who have made important contributions to the success of Project Mercury to date.

In the face of all this—the reference to Mercurius, to Hermes, to the Stoics—it would seem that the name chosen for the program, was a wise one; that those most closely connected with the Project are well acquainted with both ancient mythology and teachings, as well as with the highly advanced technologies they deal with daily as they press onward to the ultimate goal.

On The Lighter Side

Even with the disappointments which accompanied the original postponement of the MA-6 flight from January 27 to February 1 and eventually to not earlier than February 13, there were still a few lighter moments which helped to ease the tension.

Like—during one of the interim days when John Powers gave an MA-6 advisory to a group of "hungry" news representatives and concluded with an off-the-cuff remark, "And while the news corps slept this morning, John Glenn left the Cape, went to Cocoa Beach and got a haircut, then went back to the crew quarters." He then explained that the specially fitted helmets worn by the Astronauts were fitted to a three-day haircut. This cause a flurry of questions as to whether this might cause another hold in some cases amid a lot of laughter.

Like—Dr. Stanley White, waiting patiently to be interviewed by a radio representative and relaxing while waiting. Finally the radio man pulled a real switch and offered to conduct the interview with the doctor "on the couch."

EDITORIAL EXCERPTS

NASA'S CANDOR
WASHINGTON POST
Jan. 23, 1962

The people of the United States, whose taxes pay for the costly experiments of the National Aeronautics and Space Administration, and whose survival may turn on American achievements in the space age, finally are being treated as though space ventures are of some concern to them.

They are being told what NASA is trying to do, when it is trying to do it, and why, upon occasion is is necessary to revise its plans and intentions when unexpected difficulty in encountered. It may be possible for a totalitarian regime to conceal such vast plans and preparations and such a regime may succeed in making it appear that every experiment in this field is successful. Concealment is not possible in this country and even if it were possible no American would be gulled into believing that chancy undertakings of this kind can be uniformly successful.

As space ventures proceed and the risk becomes even greater, it is inevitable that the exploration of the remote region of outer space will involve mishaps and disasters. The public mind must be prepared for this. These undertakings are not child's play. No amount of preparation and foresight can eliminate dangers inherent in such unprecedented experiments. Citizens of a democratic society, made aware of these dangers, possess the maturity and fortitude to bear them. Candor is a compliment to that maturity; secrecy would be both insulting and futile.

56 Transferred to Houston

During the period January 15-29 there were 56 Manned Spacecraft Center employees who completed their permanent change of station to Houston.

SPACECRAFT RESEARCH DIVISION: Archie L. Fitzkee, Amelia J. Gray, Stephen Jacobs, Joseph A. Muller, Robert L. O'Neal, James E. Pavlosky, Robert C. Ried, Jr., Robert H. Rollins II, Emily W. Stephens, H. Kurt Strauss, Jefferson H. Walker, Jr., Norman R. Bailey, Thomas L. Blackmore, Jr., Victor R. Bond, George P. Burrill, Donald C. Cheatham, Carlton L. Creech, Thomas F. Gibson, David H. Greenshields, Robert T. Gunderson, William C. Long, Edward E. Mayo, May T. Meadows, C. Thomas Moldin, Aaron B. Olsen, Ralph S. Sawyer, Milton A. Silveira, Jack B. Slight, Quwatha S. Townsend, Carl W. L. Watkins, Walter M. West, David L. Winterhalter, George Zupp, Jr.

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Director . . . . . **Robert R. Gilruth**
Public Affairs Officer . . . . . **John A. Powers**
Editor . . . . . **Ivan D. Ertel**
Staff Photographer . . . . . **Bill Taub**

MSC PERSONALITY

Mercury Project Officer Is Kenneth S. Kleinknecht

Kenneth S. Kleinknecht, who was recently named Mercury Project Officer for Manned Spacecraft Center is a native of Washington, D.C. He joined the NACA staff at Lewis Research Center in December 1942 upon graduation from Purdue University with a bachelor of science degree in mechanical engineering.

He stayed with the Lewis Center until January 1951, at which time he was transferred to the Flight Research Center at Edwards AFB. He was transferred to Space Task Group in December 1959.

While at Lewis he was extremely active in the National Air Races. He was a member of the Technical Committee in 1948 and 1949 and an official timer in 1946, 1947, and 1948. He also served as engineer for a P-63 flown in the Air Races in 1946, 1947, and 1948.

While at Lewis he was project engineer on the following flight test programs:

- Flight performance of P-63 airplane
- Carburetor tests of a Ceco Carburetor on an R-3350 engine
- Flame damping tests on a P-63 airplane
- Exhaust ejector tests on a B-26 airplane
- Windshield icing tests on a B-24 airplane
- Performance tests on two fuels in a turbo-jet engine
- Icing tests on a turbo-jet engine

At the High-Speed Flight Station he served successively as a Flight Operations Engineer and an Aeronautical Research Scientist. During his period of service there among other outstanding achievements, he was Advanced Projects Management Officer on the extensive modification of the X-1E airplane. This plane was flown in its new configuration in December 1955. Kleinknecht's duties in connection with this project required that he apply most all the engineering skills employed in a complete aircraft manufacturing engineering department.

KENNETH S. KLEINKNECHT

He later did extensive design and development work on the X-15 and DS-1 projects.

Prior to his recent assignment as Mercury Project Officer, he served as Technical Assistant to the Director of Project Mercury. In this capacity, he was responsible for development of the detail functioning of Operational Flight Safety Program; providing guidance and detailed direction in the development of the organizational and functional planning for the Project Mercury launch operations at Cape Canaveral. He also reviewed reports, schedules and proposed operating procedures for such vital areas as launch preparations for both the spacecraft and the launch vehicle.

Kleinknecht has been author or co-author of a number of National Advisory Committee for Aeronautics technical reports including:

- Improved Carburetion from a Modified Ceco 58-CPB-H Carburetor and Its Effects on the Temperature of a Wright R-3350 Engine, Part III
- Ground Tests of Flame Damping Shrouds on a Bell P-63 Airplane
- Flight Comparison of Performance and Coding Characteristics of Exhaust-ejectors and Exhaust Collector-ring Installation
- Flight Investigation of the Heat requirements for Ice Prevention on Aircraft Windshields
- Effects of Inlet Icing on Performance of Aerial-Flow Turbo-jet Engine in Natural Icing Conditions

Kleinknecht is married to the former Patricia Jean Todd of Cleveland, Ohio, and the couple have three children—Linda May, 12; Patricia Ann, 10; and Frederick William, 7.

Project Mercury MA-6 Support By Defense Department Listed

(*Continued from page* 8)

by various military agencies. They are:

Atlantic Missile Range (AFMTC), commanded by General Davis: Cape Canaveral, Grand Bahama, and Grand Turk. All three are existing Air Force stations. The Atlantic and Indian Ocean tracking ships are AFMTC ocean range vessels, seagoing stations of the Atlantic Missile Range.

Pacific Missile Range, commanded by Rear Admiral John E. Clark, USN: Canton Island (established by NASA) and Hawaii and Point Arguello (existing Navy bases).

White Sands Missile Range, commanded Maj. Gen. John C. Shinkle, USA: White Sands (existing Army base), and Corpus Christi, Texas (established by NASA).

Air Proving Ground Center, commanded by Maj. Gen. Robert H. Warren, USAF: Eglin AFB (existing Air Force base).

At each of the Defense Department-operated stations, DOD provides range operations and maintenance duties and NASA exercises flight control. DOD is also responsible for on-site communications, although NASA maintains overall network communications.

The Chief, Mercury Support Planning Office, Col. C. W. Abbitt, USAF, is Network Commander. Located in the Mercury Control Center during an operation, he is responsible to NASA for operational control of the complete network.

The AFMTC provides trajectory data presentations during launch to NASA at the Mercury Control Center, and also provides booster instrumentation and data reduction services (NASA reduces capsule telemetry data.)

BIOASTRONAUTICS

An Operational Bioastronautic Task Force has been set up by the Department of Defense for the MA-6 flight. These highly-selected professionals provide the needed medical support in such mission phases as launch site operations, tracking stations, recovery operations, and advanced medical units at Cape Canaveral and certain downrange locations on the Atlantic Missile Range. The people assigned to this task force are provided from the three services as follows: 90 from the Air Force, 36 from the Navy, 33 from the Army. Two each of the aeromedical monitors are provided by the U.S. Public Health Service and the Royal Australian Air Force.

The medical support specialists are deployed as follows: 67 recovery physicians, 26 areomedical monitors, eight nurses, two laboratory officers, one dietitian, six pararescue technicians, 47 medical technicians, and six administrative officers.

Col. Raymond E. Yerg, USAF, the Assistant for Bioastronautics to the DOD Representative is responsible for overall direction and control of DOD medical resources used in support of Project Mercury.

For economical reasons, 90 percent of the medical material used in Project Mercury support was obtained through normal military channels and loaned to NASA; NASA reimburses DOD for the material actually consumed in the project. The total cost to DOD was a total of $251,297 for medical supplies used in Project Mercury.

Emergency capsule specialists and medical technicians are carried aboard the three Army LARC amphibious vehicles used in the launch site recovery force. Medically-trained pararescue technicians are aboard point team helicopters in the record force at Cape Canaveral. The Forward Medical Station, a fully equipped and staffed surgical unit for use in the event of a launch site emergency, has been converted from two existing blockhouses at the tip of the Cape.

Also at Cape Canaveral, an Operational Bioastronautic Support Unit has been set up as a medical command post. A Professional Specialty Team is located here to meet any local emergencies or for airlift to any selected location for care of an astronaut. The Professional Specialty Team is made of qualified military physicians in the major clinical specialties. Part or all of the team may be airlifted anywhere in the world to treat an astronaut. Its equipment is set up ahead of the mission on a standby aircraft at Cape Canaveral.

Other Defense Department-provided medical facilities at Cape Canaveral are a Medical Communications Center. Astronaut Diet Kitchen and Dining Room, and the Bioastronautic Ready Room for the medical specialist team.

The 6550th USAF Hospital at Patrick Air Force Base is the primary definitive care backup facility in support of Project Mercury. It is a 50-bed hospital augmented as required for the project.

Other existing military hospitals augmented for support of Mercury are the USAF Hospitals at Kindley AFB, Bermuda, and Lajes AFB in the Azores.

Portable emergency surgical hospitals and medical debriefing units have been set up at Grand Bahama and Grand Turk Islands. These prefabricated, airconditioned units are equipped to provide general hospital care to an astronaut. Initial medical debriefing—to determine the space pilot's physical condition, mental ability, emotional status, and ability to perform tasks—is performed by the first medical unit on the scene of recovery.

Emergency surgical units are stationed aboard certain recovery vessels, capable of sustaining an injured astronaut until he can be provided definitive medical care.

A team of two aeromedical monitors is stationed at each tracking site of the global Mercury Netwrok. They receive and process critical medical telemetry data, evaluate the medical situation of the astronaut, and keep the NASA Flight Director advised of the astronaut's condition.

CONTINGENCY RECOVERY

Most of Project Mercury's recovery planning is based on a landing in 1 of 9 areas in the Atlantic. There the Recovery Task Force uses a combination of ships, airplanes and helicopters to pick up the astronaut and capsule.

Because of the remote possibility that a landing may occur outside the planned areas, small Department of Defense teams are stationed along the orbital track throughout the world to locate the astronaut within 18 hours and recover him should a "contingency" landing occur. These units consist of Rescue Control Centers, rescue planes and crews capable of homing on electronic beacons housed in the capsule and pararescue men who can jump from the planes and care for the astronaut until a surface vessel arrives. Frogmen equipment and special rafts permit these specialists to "float" the astronaut and capsule for several days. Should it be necessary, these units can call upon any military or civil ship and aircraft for assistance under the international Search and Rescue Plan.

The Contingency Recovery mission is assigned to theater commanders and Air Rescue Service. In the Atlantic Ocean, Admiral Chew has added to his Task Force special rescue units at Bermuda, Azores, Puerto Rico and Maritius.

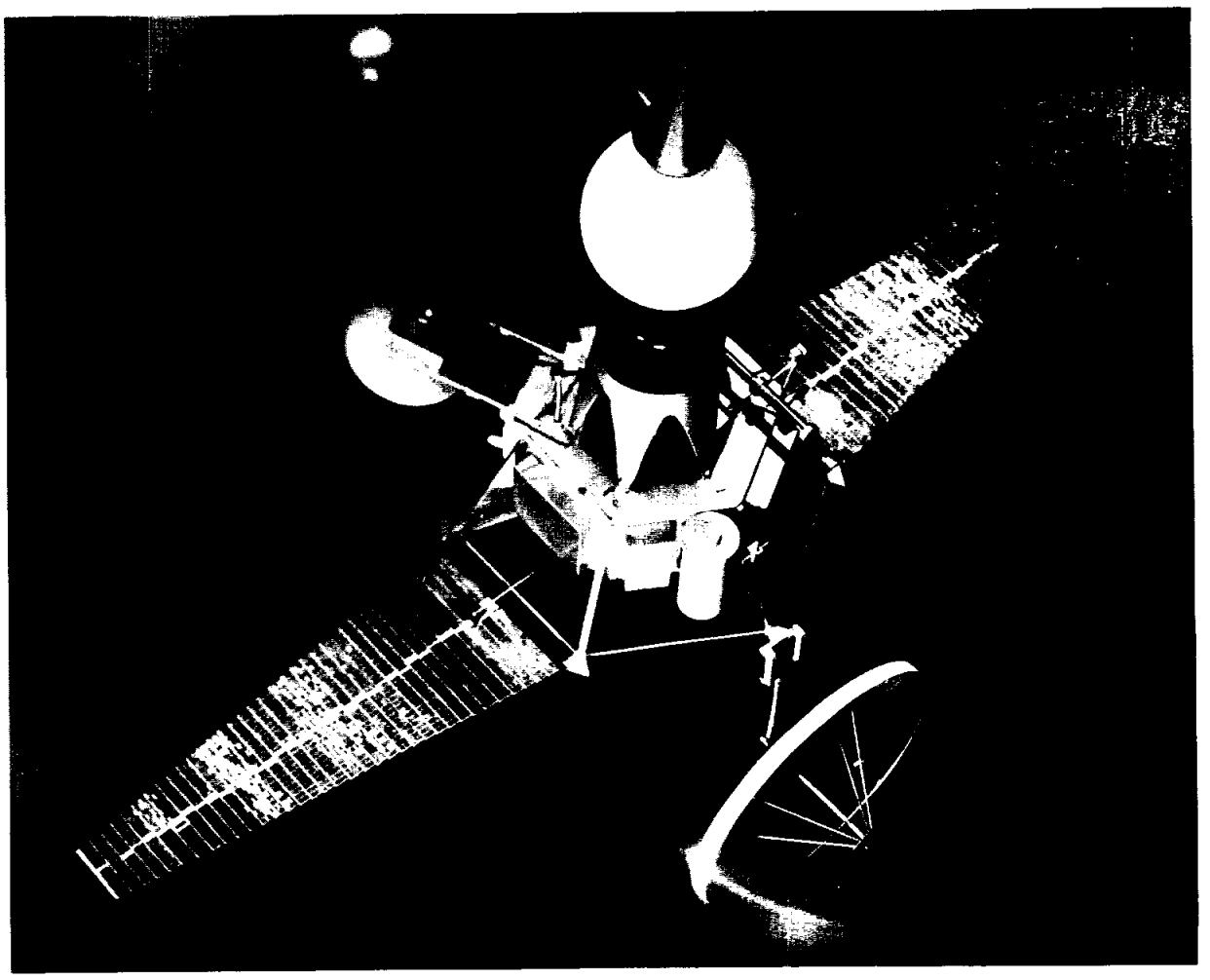
The U.S. European Command, using airplanes, helicopters and crews of the U.S. Air Force in Europe, Air Rescue Service and Army units, are deployed to four bases in Africa—Ben Guerir Air Base, Morocco; Kano, Nigeria; Nairobi, Kenya; and Salisbury, S. Rhodesia—to cover a contingency landing anywhere on that continent. Col. H. C. Wilder, Commander of Atlantic Air Rescue Center at Ramstein AFB, Germany, is in command of these deployed teams.

In the Indian Ocean, the AFMTC's 6560th Operations Group (Range Support), from Patrick AFB, Florida, make up a part of the Mauritius Contingency Recovery Area team. The 6560th, commanded by Col. George F. Cranston, will furnish two C-130 and two C-54 aircraft to provide recovery support from the east coast of Africa to the 90th meridian record telemetry data from the spacecraft.

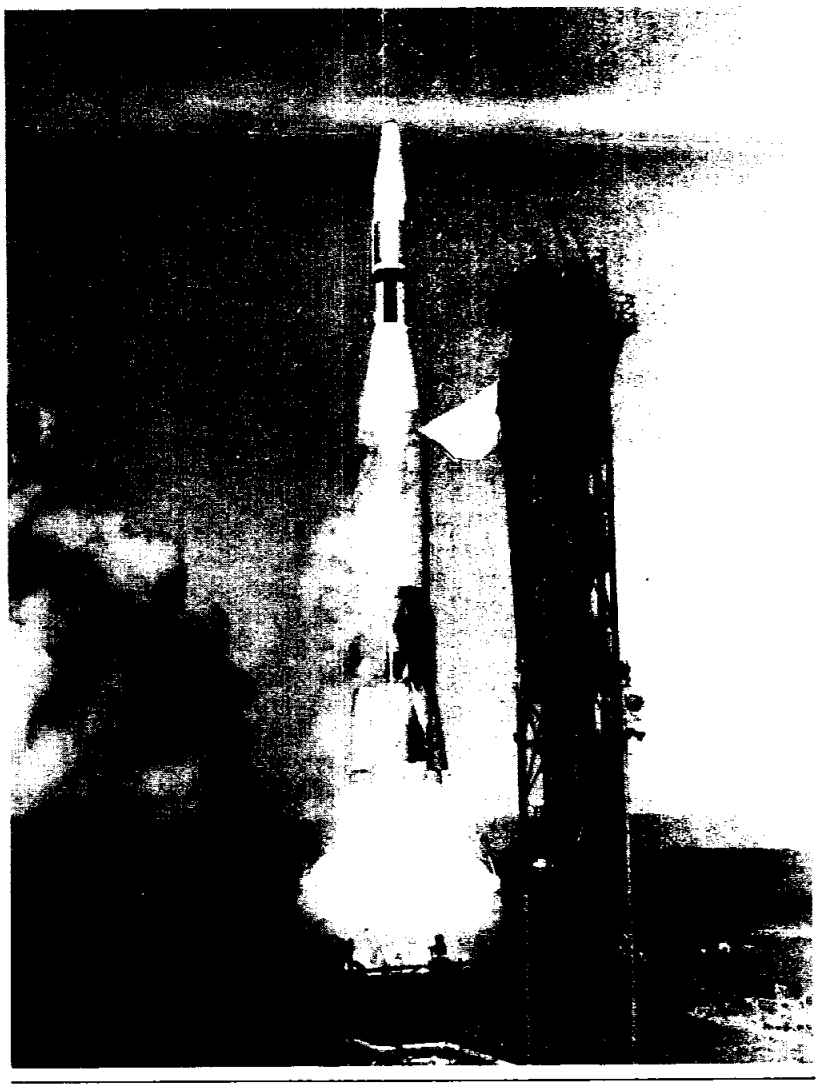
The U.S. Pacific Command, using teams from the Pacific Fleet, Australia, Air Rescue Service, Pacific Air Forces and Coast Guard, covers the vast area from the middle of the Indian Ocean to the west coast of America. Units are deployed at Perth and Townsville, Australia, Canton Island, Kwajalein, Hawaii, and Fiji Islands and come under the overall control of Commander Max Thompson, located at the Pacific Mercury Control Center in Kauai, Hawaii. This operation includes a cross section of civil organizations and armed forces of both the United States and Australia covering a large portion of the globe—over 10,000 miles along the Mercury capsule ground link.

Brig. Gen. J. A. Cunningham, whose Air Rescue Service furnishes pararescue teams and rescue airplanes to all theaters, is also responsible for recovery of the astronaut and capsule should they land on North America. Units based at San Diego (NAS North Island) and Eglin AFB standby for this contingency.

A total of sixteen of these teams deployed around the globe, and connected to the Mercury Control Center at Cape Canaveral by a series of Department of Defense communications' circuits and portable equipment at each remote base operated by the Air Force Communication Service provide an assurance that all precautions have been taken to insure safety of the Mercury Astronaut.



A SCALE MODEL OF RANGER 3 spacecraft launched by an Atlas-Agena B rocket from Cape Canaveral at 3:30 p.m. January 26 is shown above. Since it was injected at a speed in excess of that necessary for a lunar transfer, the 727-pound spacecraft missed the moon by 22,862 miles passing in front and slightly below its target at 6:23 p.m. January 28. It is now in orbit around the sun, along with two other United States solar satellites, Pioneer IV and Pioneer V. Below the Ranger 3 spacecraft perched atop its launch vehicle seconds after lift-off.



Space News ROUNDUP!

SECOND FRONT PAGE

Weather Has Important Role In Manned Orbital Flights

Before the end of this month, the National Aeronautics and Space Administration expects to launch Astronaut John H. Glenn, Jr., or M. Scott Carpenter, on an orbital flight about the earth aboard a Project Mercury spacecraft. Weather conditions, either at the launch site or at any one of a dozen or so locations around the world, may necessitate delays in the flight. Last year's brief suborbital flights by Astronauts Shepard and Grissom were both delayed because of weather conditions, although only a small part of the earth's surface was involved. This flight will cover over 250 times more territory, compounding the weather problems many times over.

Weather guidance for Mercury flights is provided by the Department of Weather Bureau through its project Mercury Weather Support Group. Using information gathered from many areas of the world, the Mercury weatherman forecast the winds, the state of the sea, cloudiness and visibility for Cape Canaveral and all areas beneath the orbit.

Wind and sea conditions at Cape Canaveral must be calm enough to permit an emergency rescue by helicopter or small craft, if a malfunction should occur before or immediately after launch. Visibility and sky conditions should enable special cameras around the Canaveral area to track the vehicle during the launch phase.

In addition to the planned landing area near Puerto Rico, a number of other points have been selected as possible landing areas. U.S. Navy recovery ships will be stationed near most points where a landing might occur. In these areas, ceiling and visibility must be adequate to permit air search for the spacecraft.

Although a landing outside the Atlantic Ocean is unlikely, several spots in the Indian and Pacific Oceans have been designated as emergency landing areas because they are most accessible to recovery forces.

Before the initial suborbital flights, the Weather Bureau established special facilities at Washington, D.C., Miami, and Cape Canaveral to provide weather information for Project Mercury operations.

The headquarters office in the National Meterological Center near Washington, D.C., forecasts for all areas beneath the orbital path outside of the Atlantic. In preparing the forecasts, the Mercury weatherman can draw upon weather observations regularly received at the National Meteorological Center from much of the world. These observations include Navy analyses of sea conditions. Special arrangements have been made to gather data from areas that do not ordinarily send weather observations to the National Meterological Center. As the day of the launch approaches, the latest weather information from Nigeria, the Union of South Africa, New Zealand, and Australia is sped to Washington through the Project Mercury Tracking Network.

The Australian Meteorological Service will prepare special forecasts of winds and sea conditions beneath the Mercury track in the Indian Ocean and the western Pacific.

The most important forecasts are those for the launch area and for the planned and emergency landing areas in the Atlantic Ocean. These forecasts are prepared by the Miami office of Project Mercury Weather Suport Group. Weather Bureau stations at Tampa and Daytona Beach, Fla., photograph Weather radarscopes and transmit the pictures to Miami where they are merged with the Miami radarscope picture to form a composite image. The composite pictures aid in short range forecasting for the launch area.

At Cape Canaveral representatives of Project Mercury Weather Support Group keep officials informed of weather developments and provide last-minute forecasts as the time of launch approaches. During the week preceding launch, forecasters will prepare daily weather maps for the entire three-orbit track. Before entering the spacecraft, the pilot will be briefed on the weather affecting the launch and recovery operations and on the weather systems which he may see during flight. The astronaut will carry a weather map with him for reference purposes.

The weathermen at Cape Canaveral receive observations from several sources to supplement the forecasts prepared at Washington and Miami. Air Force reconnaissance aircraft make special weather flights over the Atlantic prior to the Mercury operation. Navy ships in the recovery areas send frequent special reports to Cape Canaveral on wind, clouds, and sea conditions. The group maintains close cooperation with the Air Force Air Weather Service detachment at Patrick Air Force Base.

During his orbital flight the astronaut will observe weather phenomena around the world to aid Weather Bureau meterologists in subsequent research.

The three TIROS weather satellites have produced many thousands of photographs of weather systems from far above the earth. Photographs taken from inside the spacecraft during previous Mercury flights have already provided detailed information on the nature of some cloud patterns. Weather Bureau meterologists are hoping that the astronaut's observations may add much additional information to what is being learned about the nature of weather systems by observing them from above the earth.

Bureau meterologists are eager to learn whether the orbiting astronaut will be able to distinguish cloud layers and cloud types. Can he estimate relative heights of the cloud layers? Can he observe the positions and types of clouds associated with the jet stream? At night does reflected moonlight make is possible to see clouds, land, and water with the human eye? Can lightning be seen from above? Is is spaced over a large area or confined to a narrow band?

Shortly after leaving the launch pad, the astronaut may be able to locate the Gulf Stream by its color. Over the Atlantic he may observe a variety of weather systems ranging from winter storms and frontal clouds tothe fair weathclouds of the high pressure areas.

On the first orbit, the Mercury spacecraft will pass over the Sahara Desert region of Africa. He may see dust storms and an extensive haze, but few clouds.

Over Central Africa, a moderate amount of cloud may be visible, but his second crossing of that continent will parallel an area of extensive and heavy thunderstorm activity. Near the southeast coast of Africa and the Mozambique Channel, and also along the northern coast of Madagascar moderate thunderstorm activity may prevail.

Much of the Indian Ocean that might be visible from the spacecraft will be cloudy, but the stormy areas of the Southern Hemisphere are ordinarily well south of the Mercury track at this time of the year.

Except for costal and mountain regions, few clouds are likely over Australia. The astronaut might see displays of the Aurora Australis as he passes along the southern portions of the orbit near Australia. From northern Australia across the equatorial Pacific there will be an extensive band of cloudiness and showers.

Over the eastern Pacific, which will be having daylight, the pilot will see a variety of cloud systems, including cumulus clouds in the tradewind regions, clouds from winter storms mostly to the north of his track, and fog or status clouds off the coast of North America.

Passing over the North American continent, he will view the various features of our winter weather, including snow in many areas.

ONE OF AMERICA'S Top Ten Outstanding Men of the Year, Astronaut Virgil I. "Gus" Grissom, shows the trophy presented to him by the U. S. Junior Chamber of Commerce at Santa Monica, Calif., January 20.

Project Mercury MA-6 Support By Defense Department Listed

The extensive talent, resources, and facilities of all three armed services will be used to support the MA-6 manned orbital flight in those aspects where the National Aeronautics and Space Administration believes a Defense Department agency can perform a certain function to avoid duplication.

The DOD provides extensive support to Project Mercury, the only restriction being that such support does not compromise National Defense objectives.

The Department of Defense Representative for Project Mercury Support Operations, by order of the Secretary of Defense, is Major General Leighton I. Davis, who also commands the Air Force Missile Test Center. The forces of the DOD called upon for support of Mercury fall generally into four clasifications: launch, network (range), recovery, and bioastronautics (medical assistance).

As some decentralization is necessary to accomplish the misison, the DOD Reperesentative is not responsible for other items of assistance NASA obtains through regular channels from the military services, such as Atlas development, manufacture, assembly and engineering support; military laboratories and other facilities used to develop capsule systems and to select and train the astronauts, and military personnel assigned directly to NASA. (The astronauts program, for example, although manned by military test pilots, is directed and controlled solely by NASA).

It should not be construed to imply DOD repsonsibility or authority for conduct of the Mercury project which is strictly the province of the National Aeronautics and Space Administration.

LAUNCH OPERATIONS

The 6555th Aerospace Test Wing, commanded by Col. Paul R. Wignall, is responsible for checkout and launch of the Atlas "D" missile used for the orbital missions. The Air Force Space Division of the Air Force Systems Command provides the booster, launch complex, and guidance system.

AFMTC provides the standard launch and instrumentation support needed to complete the launch and evaluate the performance of the booster itself. These functions include Pad Safety, Range Safety, and other items of range support at Cape Canaveral and along the Atlantic Missile Range.

The Atlas was developed for use as an ICBM by the U.S. Air Force. The D series, used for Project Mercury flights, has been an operational weapon with the Strategic Air Command since late 1959. Testing is continuing on advanced all-inertially-guided versions of the missile at Cape Canaveral. The first use of the Atlas as a satellite vehicle was on December 18, 1958, when missile No. 10-B carried a SCORE communications payload plus the entire tank section of the missile into a low earth orbit.

NETWORK OPERATIONS

The NASA global tracking network set up for Project Mercury consists of 16 stations comprising combinations of telemetry receivers, radars, command transmitters, data handling equipment and communications facilities to furnish data to the Mercury Flight Controllers. Nine of these stations are operated

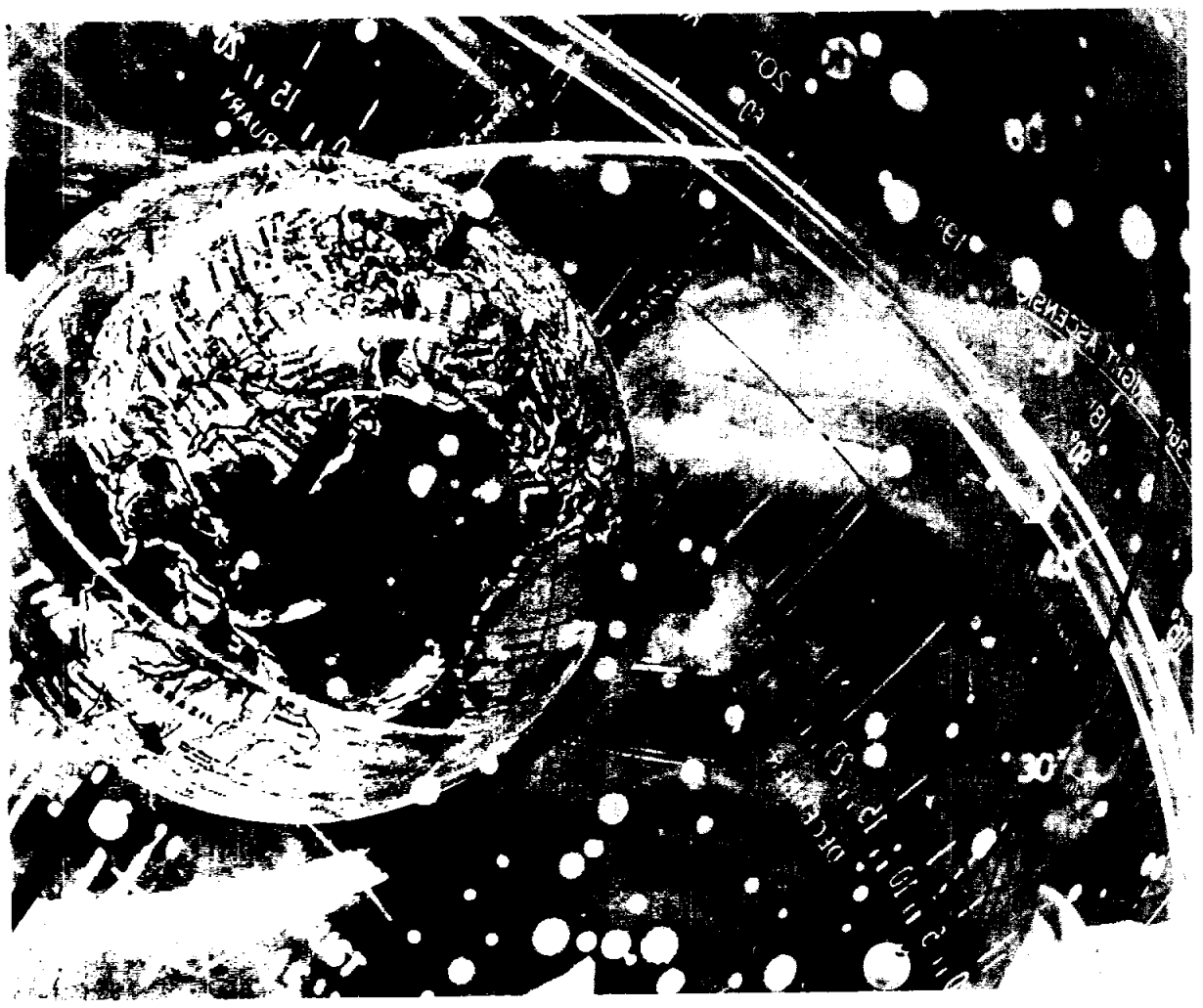
(*Continued to page 7*)

Space News

NASA ROUNDUP!

VOL. 1, NO. 7 MANNED SPACECRAFT CENTER, LANGLEY AFB, VA. JANUARY 24, 1962

MSC Personnel Prepare For MA-6 Flight



ASTRONAUT JOHN H. GLENN, JR. looks to the future in the Aeromedical Laboratory, located in Hangar S at Cape Canaveral, as he continues his training program for the MA-6 mission.

Glenn and Carpenter Continue Intensive Training Program

Preparations for the scheduled Mercury-Atlas 6 manned orbital flight are continuing at Cape Canaveral following a delay caused by technical problems detected during pre-launch checkout.

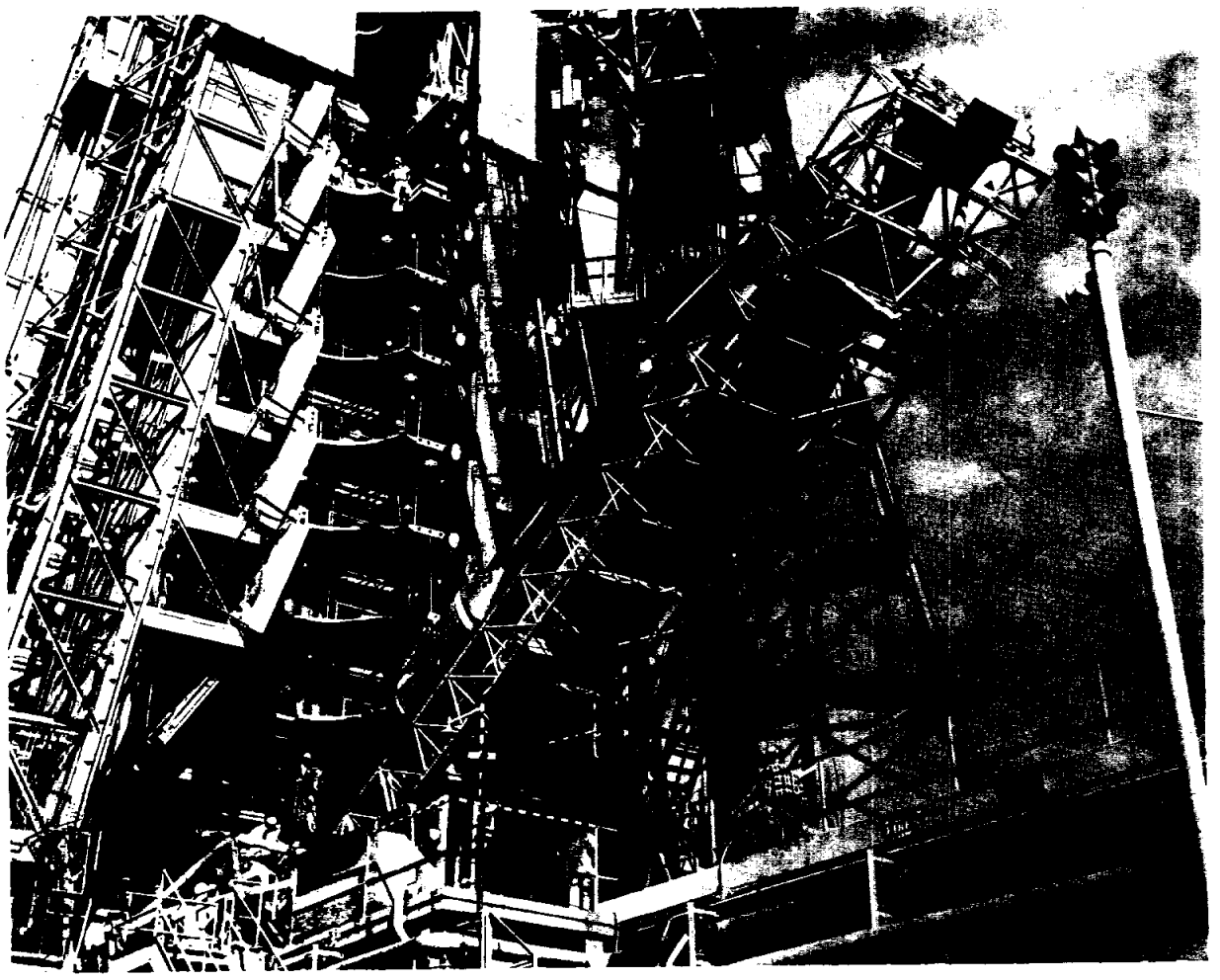
MSC scientists and engineers of the Pre-Flight Operations Division, under the direction of G. Merritt Preston, are working closely with industrial teams from McDonnell Aircraft Corporation and General Dynamics Astronautics; personnel from Flight Operations Division and other MSC personnel are engaged in full-scale simulated missions at the Mercury Control Center; Astronauts John H. Glenn, Jr., and M. Scott Carpenter continue their intensive pre-flight training; and a large group of personnel are scattered over the world to far-flung sites to man the Mercury Network.

Walter C. Williams, Associate Director of Manned Spacecraft Center, who will direct the MA-6 flight said that "this first manned orbital flight is the end of the beginning of our man in space program. It is the most important step we have made yet, the greatest achievement . . ."

The primary purposes of the MA-6 flight are to investigate the capability of man to function during a prolonged period of weightlessness and to further qualify the Mercury spacecraft and all its systems during insertion into orbit, in orbit, and re-entry from orbit.

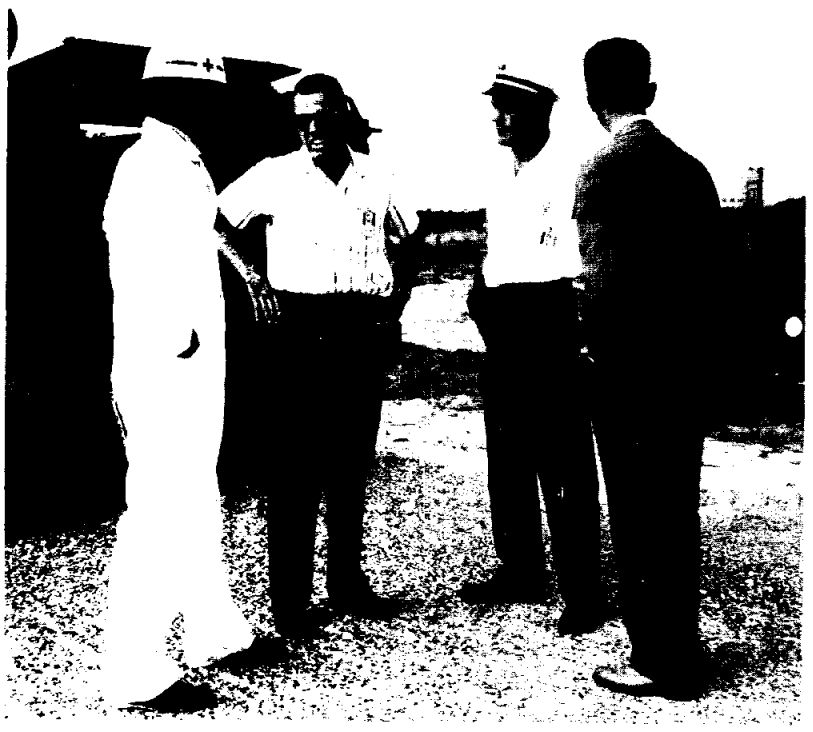
The basic functions to be performed during the flight by the astronaut include systems management (monitoring the environmental control, electrical, attitude control and communications systems), navigation, research observations to evaluate man's capability to perform in space, communications to receive navigational and other information, and control of vehicle attitude.

Actual timing of the launch and circumstances of the flight will determine whether one, two, or three orbits will be flown. In any event the retro-rockets will be fired as the spacecraft approaches the West Coast of the United States to initiate re-entry, following its 17,400 mph trip into space.



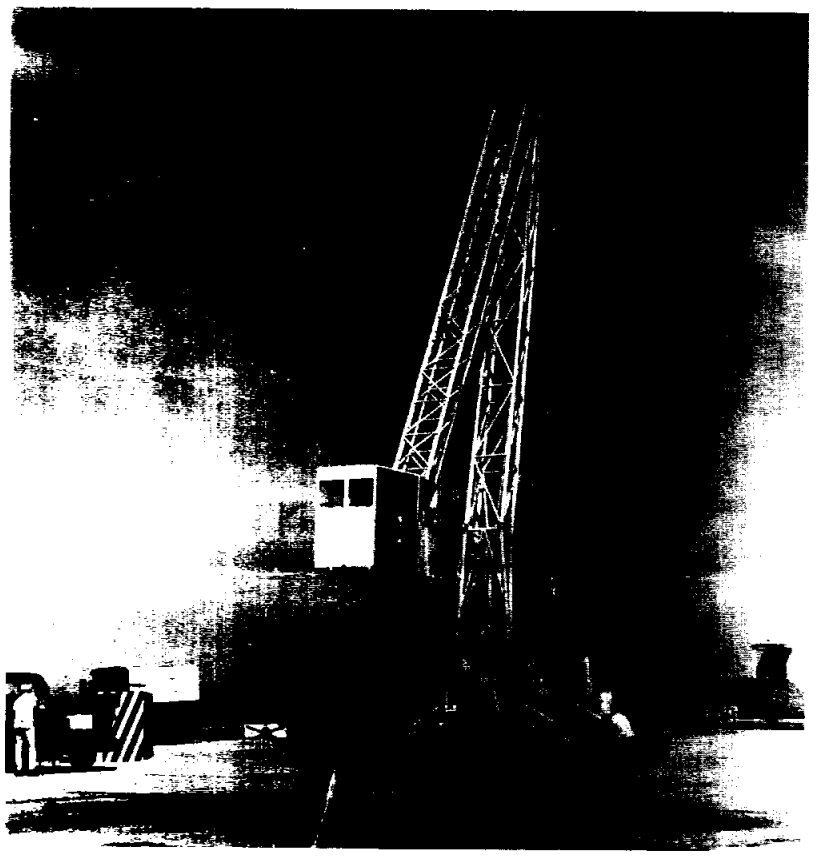
THE ATLAS LAUNCH VEHICLE to be used in the MA-6 flight is pictured as it was raised into position at launch pad 14 at Cape Canaveral last month. This photo also presents an unusual view of the gantry.

TWO VITALLY INTERESTED SPECTATORS at the erection of the launch vehicle were Astronauts M. Scott Carpenter and John H. Glenn, Jr., scheduled to be respectively, back-up pilot and pilot of the United States' first manned orbital flight.

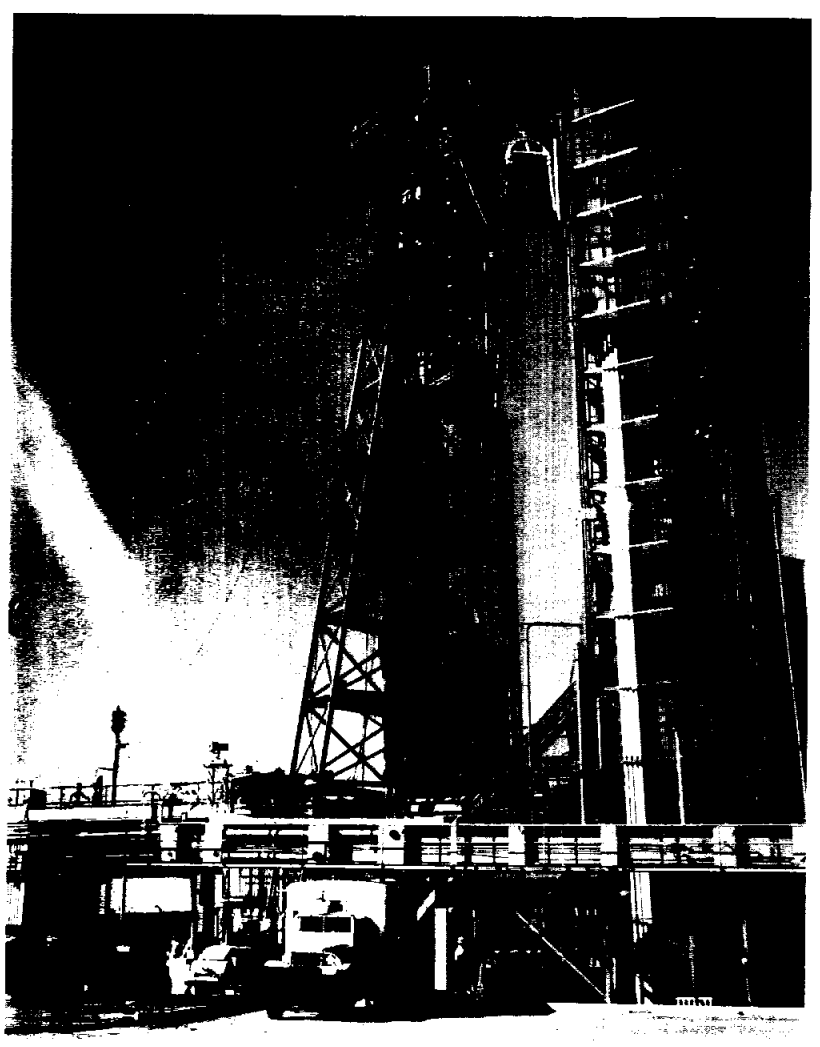


ASTRONAUT GORDON COOPER, second from left, and members of the Mercury Emergency Egress Committee discuss training procedures and test results.

A HELICOPTER IS SHOWN hovering over Complex 14 as the aerial responsibilities and control of emergency egress training are checked prior to a flight.



THE CHERRY PICKER is shown above, just after being placed in position during egress training. Below, at the left, is the egress tower at Pad 14.



Mercury Emergency Egress Committee Plans, Trains Personnel To Insure Astronauts' Safety

Astronaut safety during launch phases of manned space flight is foremost in Project Mercury planning. Emergency egress on the Cape Canaveral launch pad, first step in advance preparation for every conceivable emergency through spacecraft recovery, is planed by an Emergency Egress Committee headed by Astronaut L. Gordon Cooper.

Cooper's committee was named more than two years ago to formulate emergency rescue plans in order to insure maximum safety for the astronaut as well as minimum danger for launch personnel and those available for rescue operations.

The well - trained Mercury Emergency Egress Team, which has the responsibility for the possible launch pad rescue of the astronaut, is composed of representatives from NASA, McDonnell Aircraft Corporation, the U.S. Army, the U.S. Air Force, and Pan American.

Detailed egress procedures covering every foreseen malfunction possibility are published in handbook form prior to each launch. However, since remote possibilities always exist, successful rescue operations largely depend on response, skills, and adaptability of the rescue personnel involved.

For weeks prior to scheduled launches, rescue team members spend every possible minute in training for their roles in the launch operation. Practice, both individually and as teams, is held continuously—such as handling the cherry picker around a dummy spacecraft.

Approximately one week prior to launch—right after a simulated countdown—all launch pad rescue vehicles and crews participate in rescue practice. A dress rehearsal is held at this time for the rescue team to practice with the astronaut until the entire operation is considered ready.

At T minus 120 minutes the astronaut is inserted into the spacecraft and "sealed" in by T minus 65. The gantry serves as an egress vehicle until retracted at T minus 52. A stationary escape tower, 25 feet from the launch stand, then serves egress purposes. The tower, a modified umbilical tower for the Midas program, includes an elevator which can be lowered to the ground within 60 seconds, and an automatic or manually operated catwalk that can be lowered within 30 seconds to the spacecraft hatch. Prime backup for this tower is a cherry picker, positioned at the blockhouse to be moved forward by a blockhouse-stationed operator.

The basic philosophy of Cooper's Emergency Egress Committee is that the astronaut is safest inside the spacecraft—with its ability to abort—under most emergency conditions. However, possibility of fire in the spacecraft or development of some condition endangering the life of the astronaut while inside the spacecraft has been recognized and prepared for.

The astronaut is capable of aborting his mission at any time, using the spacecraft escape tower rockets to carry his craft several hundred feet out of danger within one minute. Prior to use of the escape rockets, he can blow the side egress hatch, climb onto the egress tower, ride the elevator to the ground and be picked up by rescue vehicles and removed from the danger area within a matter of minutes.

Alerted armored personnel carrier (M-113's) will be stationed beyond a high fence about 300 yards from the launch pad. An open gate will permit their immediate access to the pad. One vehicle, equipped with dry chemical firefighting materials, will be manned by a Pan American fireman, commanded by Pan American Assistant Fire Chief Lee Hipp.

The second Army vehicle will carry a five-man rescue squad. The vehicle commander will be a Pan American pad safety man, chosen for his knowledge of explosives and safety requirements at pad areas under critical conditions.

A second member of the team will be a NASA medical doctor, permanently stationed at Cape Canaveral on the astronauts' aeromedical team. In cases of astronaut injury, this doctor will assume command of rescue operations.

A third member will be a McDonnell spacecraft technician, chosen because of his knowledge of spacecraft systems, ability to disarm explosives, and to get into the spacecraft in the least possible time without endangering the pilot.

The other members of the team will be Pan American employees, one to drive the vehicle and the other a fireman who can assist in fighting spacecraft fires if necessary or, because of his first aid knowledge, to aid the doctor if needed.

In the event of fire aboard the spacecraft during pad abort, the two Army vehicles will be rushed to the pad and subdue the flames with firefighting materials used through remote controlled nozzles to enable the rescue squad to reach the craft.

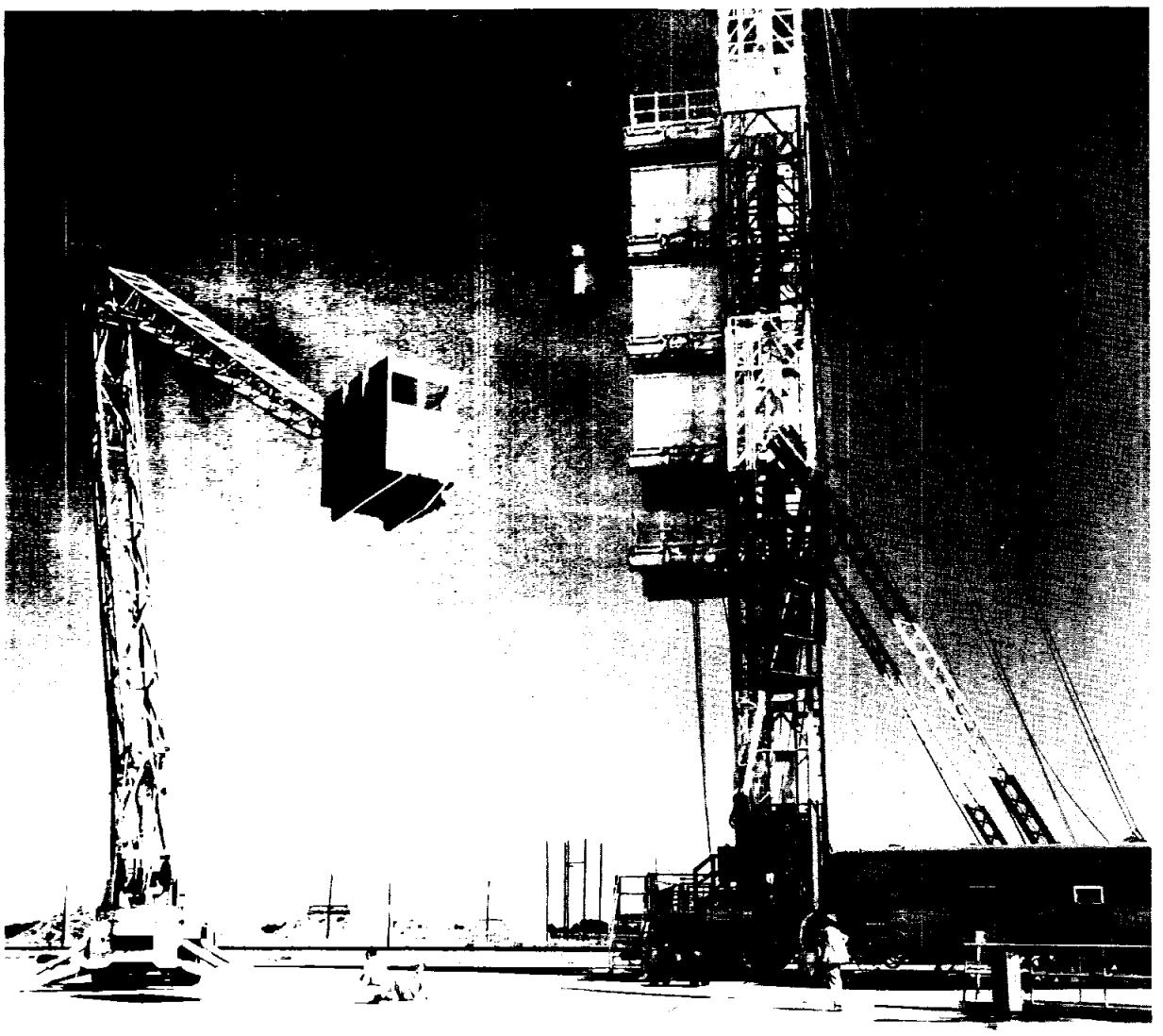
Astronaut self-egress from the spacecraft is considered most desirable; it is faster and endangers fewer lives. However, since all eventualities must be considered, the rescue team must be prepared to remove him from the spacecraft. The method of entering the spacecraft from the outside depends upon the amount of time available.

If the astronaut is incapacitated and must be removed immediately, the hatch will be blown from the outside. The hatch can be removed manually by the spacecraft technician if the mission is scrubbed. However, if the mission is called off after the umbilical cable drops away, the time factor become quite critical due to loss of spacecraft cooling; thus, the hatch may be blown off by the astronaut or technicians before members of the rescue team ascend to the spacecraft to assist or to remove the astronaut.

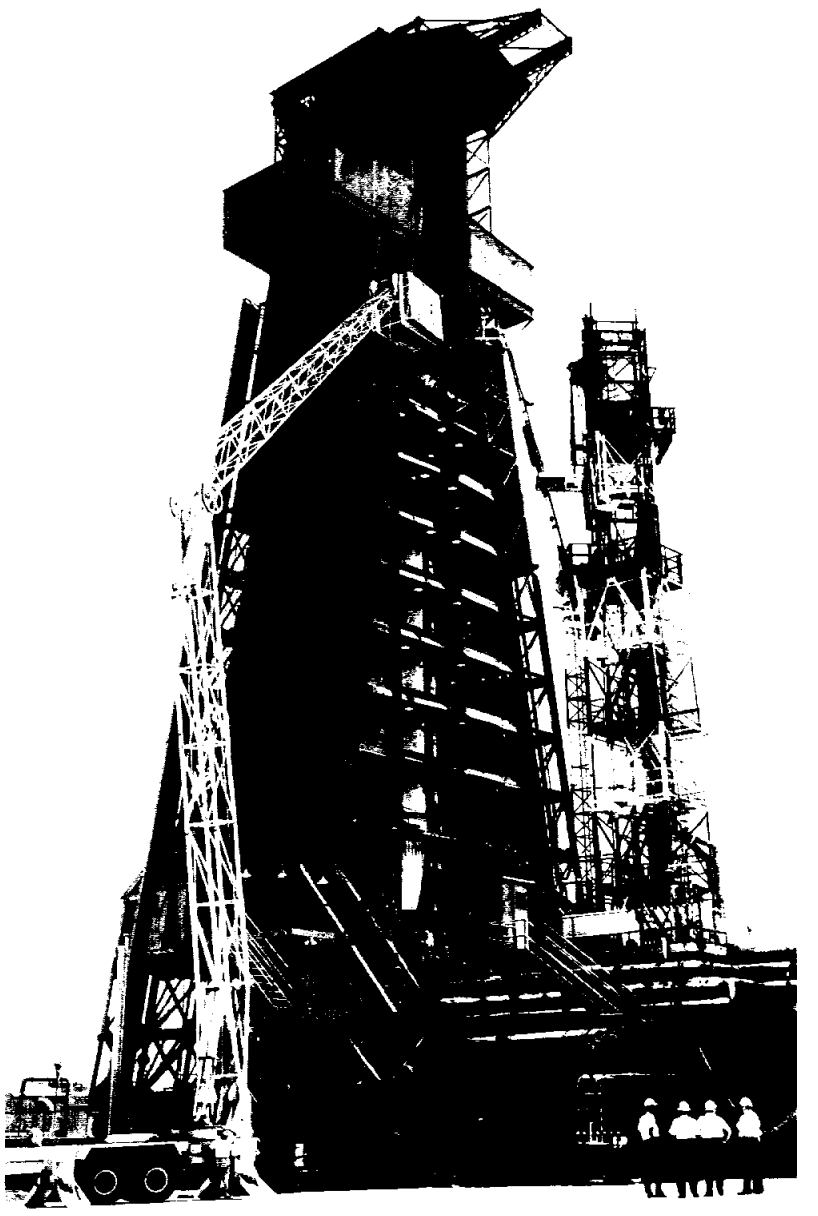
The rescue team is in constant radio contact with the blockhouse and with helicopters deployed in and around the launch area. Therefore, their operation can be directed from either the blockhouse by the General Dynamics/Astronautics Test Conductor or by Lt. Col. Harry S. Cannon, Cape Recovery Commander, from his helicopter.

Even if the spacecraft should land outside the [illegible] the pad rescue team may be called upon to assist the cape recovery team in places which might be inaccessible to other recovery equipment.

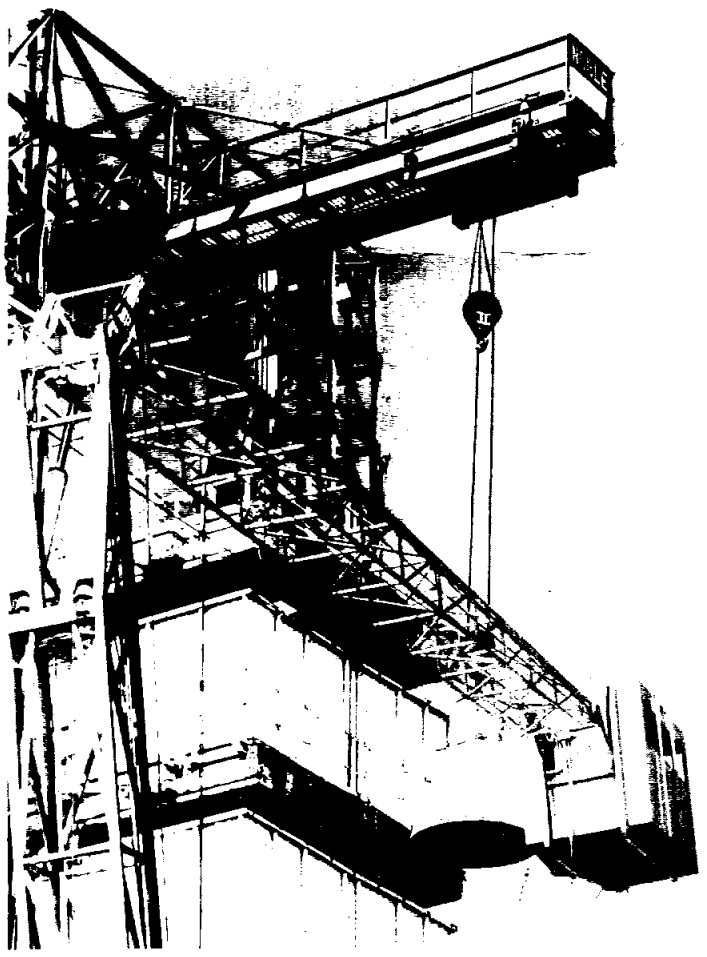
Cooper's Emergency Egress Committee, co-chairmanned by Hugh S. Herring, Atlas coordinator for Manned Spacecraft Center at the Atlantic Missile Range, constantly seeks to improve techniques and equipment and has incorporated into the rescue plans all known methods to meet any emergency.



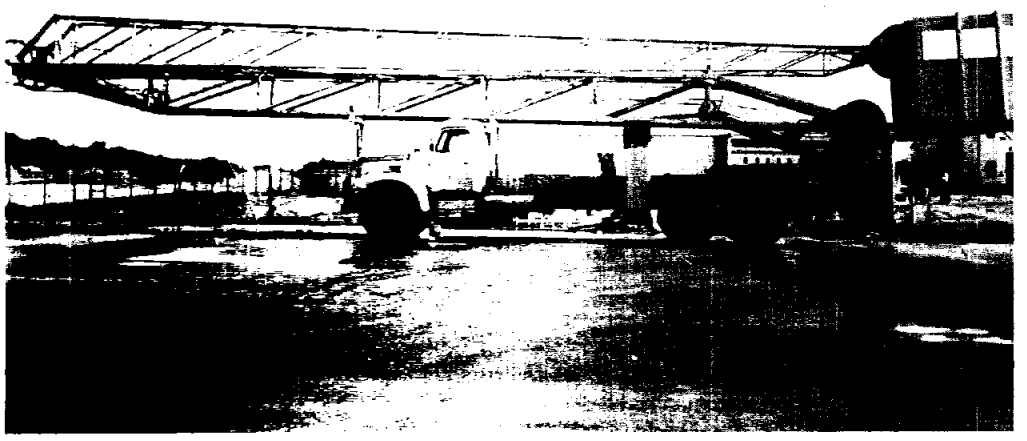
THE CHERRY PICKER is shown above during emergency egress practice with a boiler plate spacecraft as it is maneuvered into position. At the left, it is shown as it reaches a position where the pilot could perform a side hatch egress.



THE CHERRY PICKER is shown in position to serve as a backup for the egress tower shown on the right during egress practice at Pad 14.



A U. S. ARMY LARC recovery vehicle shows its ability to perform over rough terrain during an egress practice session.



ONE OF THE PRIME RECOVERY VEHICLES, the cherry picker, is shown as a mobile piece of equipment, ready to be moved into position at moments notice.

AN ARMORED VEHICLE proves its capability of overcoming obstacles in its path as it breaks through a barricade on a recovery mission.

Operations at Houston Sites Increasing Rapidly

MARTIN BYRNES, Houston Site Manager, is shown at his desk, above. At the left is the Manned Spacecraft Center Headquarters in the Houston area, located in the Farnsworth-Chambers Building at 3201 Brock.

VIP VISITORS TO MSC's Houston area offices are shown in the conference room at the Farnsworth-Chambers Building. Left to right, seated, Congressman Olin E. Teague, Congressman George P. Miller, Chairman of the House Committee on Science and Astronautics; and Charles F. Ducander, Executive Director and Chief Counsel of the House Committee on Science and Astronautics. Standing, left to right, Congressman Robert R. Casey, D. Brainerd Holmes, NASA Director of Manned Space Flight; and Robert R. Gilruth, Director of Manned Spacecraft Center.

THE RECEPTIONIST for the Farnsworth-Chambers Building is Laverne Brazil, pictured above at her place of business.

STENOGRAPHIC SERVICES personnel at work. Left to right: Ruby Podlewski, Mamie Hall, Myra Shimak, and Verby Balinas.

THE LANE-WELLS Building receptionist is Amie Chandler, shown chatting with an applicant for employment as she gives him needed information.

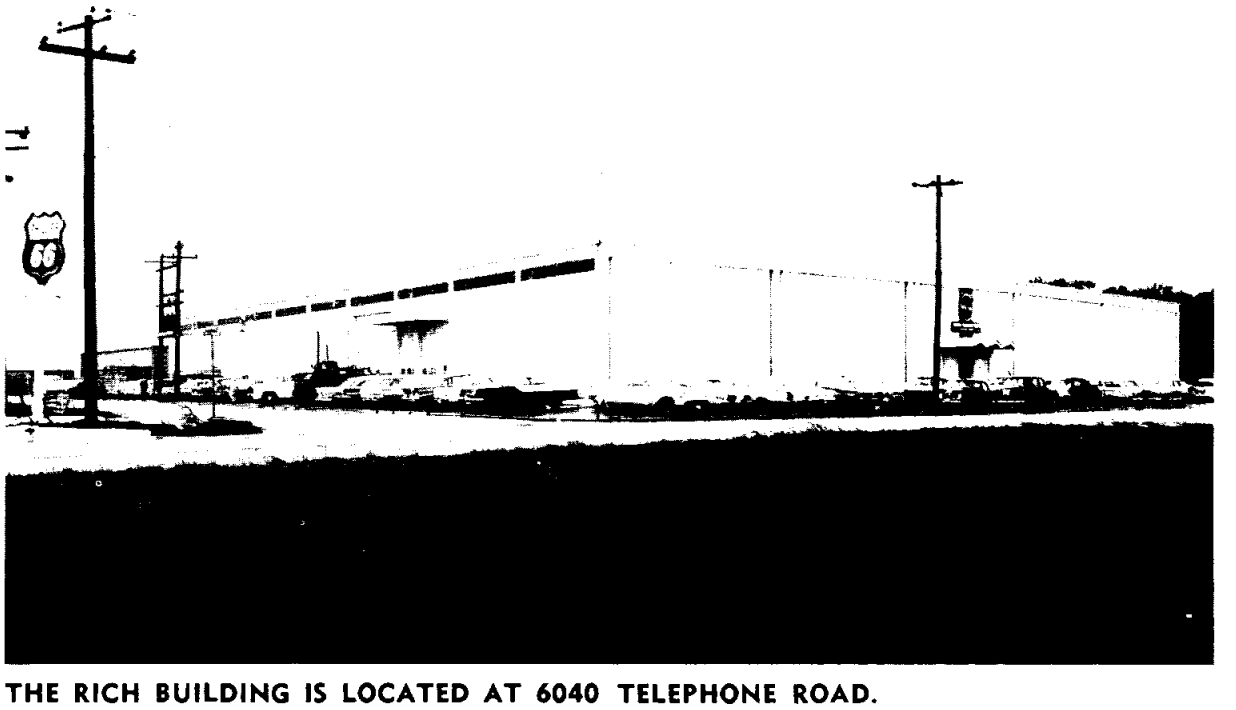
THE LANE-WELLS BUILDING, LOCATED AT 2002 SOUTH WAYSIDE.

TWO MEMBERS OF THE LIFE SYSTEMS DIVISION staff, Bob Devine, left and Bill Kincaide discuss a problem.

IONA KENT, receptionist at the Rich Building, takes a message as Frank Glynn of Technical Services gives smiling approval.

A GROUP OF CO-OP STUDENTS, newly arrived at Houston, are shown in the conference room of the training office during their orientation.

DAVID HAMMOCK and Janet Potchernik of the Flight Vehicle Integration Branch seem to be obviously pleased over the progress of a project.



THE RICH BUILDING IS LOCATED AT 6040 TELEPHONE ROAD.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Langley AFB, Va., is published for MSC personnel by the Public Affairs Office.

Director . . . . . **Robert R. Gilruth**
Public Affairs Officer . . . . . **John A. Powers**
Editor . . . . . **Ivan D. Ertel**
Staff Photographer . . . . . **Bill Taub**

On The Lighter Side

Personnel in government service really have it made!

Consider for example, a civil servant who works for Manned Spacecraft Center and has been around a number of years.

This happens not to be a leap year so it has 365 days. There are still 52 Saturdays and 52 Sundays in the year—normal days off so that only leaves 261 days to work.

There are seven legal holidays which brings the work-year down to 254 days. One must consider that there is a normal 15-minute coffee break each morning and afternoon which amounts to 16 days during the year and lowers the work-year to 238 days.

Then, too, consideration must be given to the fact that there are 24 hours in each day and the normal work day is only eight hours, thus leaving two-thirds of each day for the pleasure of the employee. Now two-thirds of the aforementioned 254 work-days is 170 and that 170 subtracted from 238 brings the total of work-days down to 68.

Assuming as above, that the case is of one who has been around for some time is being judged, he gets 26 days a year annual leave so there are 42 days remaining. Then, the 13 days sick leave should be subtracted which leaves 29 days.

It seems, that due to the fact that MSC's operations are so far-flung, it would be only fair to figure that this employee spends at least 15 days each year in travel to and from TDY stations. This subtracted cuts our hero's work-year to 14 days.

Since he is with MSC, he is faced with a relocation problem. Let us assume, conservatively, that his permanent change of station move will entail four days, it will take him one day to clear out his desk at Langely, another day to put this conglomeration acquired through the years back into order at Houston, he spends one day at the Relocation Center gaining information so he can weigh the advantages of such a move against the disadvantages, it takes one day to process through personnel, travel, finance, etc., before leaving Langley and the same amount of time processing in at Houston. This is a total of nine days, which subtracted from the 14, leaves a total of five.

This good civil servant is concerned about the welfare of others, so he contributes a pint of his rich blood to the cause every three months —thus being entitled, normally, to a half-day off each time, or a total of two days.

Now there are other things which might be taken into consideration like time off to vote, administrative leave due to extreme weather and the like, but if these things were subtracted he might think someone was watching him too closely. So we'll give him credit for working the three remaining days.

Yep, personnel in government service really have it made!

A RECENTLY NATURALIZED CITIZEN OF THE UNITED STATES, Terry Brummer, 7, adopted son of CWO R. C. Brunner of Hq., CONARC, said that he was happy to be a U. S. citizen for he would be able to vote. When asked who he would vote for for president, the young German-born lad replied, "One of the Astronauts." He was thrilled a short time later at meeting M. Scott Carpenter, and the two are shown above as they check out a spot on the globe. —Photo by Coler

25 Transferred To Houston Site

A total of 25 Manned Spacecraft Center personnel accomplished permanent change of station to Houston during the period January 3 through January 8.

TRANSPORTATION OFFICE: Edward S. Johnson.

LIFE SYSTEMS DIVISION: Edward L. Hays.

SUPPLY OFFICE: Donald Alcorns, Cecil J. Raines.

PERSONNEL OFFICE: Raymond L. Schrunk, Bernice P. Slaughter.

FLIGHT OPEATIONS DIVISION: Emory F. Harris, Jeremy B. Jones.

PROCUREMENT AND SUPPLY OFFICE: Nancy P. Gray, George J. Mehailescu, Charlie T. Slaughter.

APOLLO PROJECT OFFICE: Thomas F. Baker, Edward H. Oiling, M. Carolyn Schrunk, Edward L. Tribble, Jr.

TECHNICAL SERVICES: John H. Allen, Sr., LaMarr D. Beatty, Claude J. Bird, Elbert Prine.

FLIGHT SYSTEMS DIVISION: Robert G. Brock, Ervin L. Chicoine, Herbert G. Patterson, Milton Peyronel, William R. Scott, Kenneth C. Weston.

D. Kuettner Named To Apollo Post

Dr. J. P. Kuettner, former chief of the Mercury-Redstone program at the NASA Marshall Space Flight Center, will be assigned to the Center's Saturn Systems Office where he will be in charge of the Saturn-Apollo program.

Dr. Kuettner's job will be to manage the systems integration of the manned Apollo spacecraft with the Saturn C-1 and advanced Saturn launch vehicles. He will represent the Saturn office in contacts with the NASA Manned Spacecraft Center and its contrators in the systems integration area.

The Manned Spacecraft Center is responsible for developing the three-man Apollo spacecraft and training astronauts, whereas the Marshall Center is in charge of developing and launching the vehicles used in the manned lunar exploration program.

11 Co-op Students Join MSC Staff

Eleven co-op students have gone to work for Manned Spacecraft Center since the first of the year. Eight of the group are assigned to duty at Houston and three at Cape Canaveral.

Those at Houston are William E. Berry, Harry G. Clauss, David H. Perel, Daniel B. Potochniak, Howard J. Strauss, and Harold A. Vang, all of Drexel Institute of Technology; Frank A. Burgett of Fenn College, Cleveland, Ohio; and Herbert W. Rahm, Jr., of University of Louisville.

At Cape Canaveral are Stanley L. Adams and James F. Krider, both of Drexel; and Thomas W. Wright of Auburn.

The students are assigned to the Flight Systems, Life Systems, and Pre-Flight Operations Divisions.

Additional co-op students are expected to report in February from Georgia Tech, University of Florida, Louisiana State University, and the University of Houston.

WELCOME ABOARD

During the period January 3-11 there were 78 additions to the Manned Spacecraft Center rolls.

STENOGRAPHIC SERVICES: Shirley S. Holloman, Flora Mae Cox, Marion I. Loveless, Nola S. Caminade, Mildred M. Crenshaw, Nancy W. Lehmberg, Bobbie N. Kerzee, Elaine B. Kleiman, Cecelia A. Swindell, Gloria McDonald, Joan M. Pesek, Ruby N. Podlewski, Carol W. Hicks, Paula M. Fyffe, Mary A. Goodwin, Louise D. Brown, Iona G. Kent, Myra L. Shimak, Sandra J. Hull, Lettie M. Duesing, Verby Lee Balinas, Carolyn L. Sage, Barbara G. Wright.

LIFE SYSTEMS DIVISION: Lewis H. Lee, John H. Reed, Jr., David H. Perel, Frank A. Burgett, William E. Berry, Daniel B. Potochniak, Paul R. Penrod.

FINANCIAL MANAGEMENT OFFICE: Doren E. Schnell, Margaret Harrison, Irwin D. Stanford, Robert P. Lineberger.

PROCUREMENT AND SUPPLY: Winlon B. Pelham, Naomi E. Davis.

TECHNICAL SERVICES: James E. Adkins, Walter D. Salyer, James C. Clarke.

PRE-FLIGHT OPERATIONS DIVISION: James F. Krider, Stanley L. Adams.

ADMINISTRATIVE SERVICES: Agnes M. Palmer, Eligha O'Quinn, Clarence Myers, William Parker, Frances E. Reid.

SUPPLY OFFICE: Jessie L. Rollins, Manly C. Breaker, Sylvester Barrett, James D. Jenkins, Martin D. Davis, James B. Busby, Jesse L. Welder, Lester L. Lackey, George J. Mallios.

DIGITAL COMPUTER GROUP: Minnie A. Schnell, Mary P. Segota.

MANAGEMENT ANALYSIS OFFICE: Clarence M. Presswood.

FLIGHT SYSTEMS DIVISION: Herbert W. Rahm, Jr., Hoyt E. Maples, Harry G. Clauss, Jr., Conrad C. Boette, Jr., Frederick E. Ritchie, Harold A. Vang, Howard J. Strauss.

MANAGEMENT SERVICES: Charles M. Grant, Jr., Dexter W. Haven.

FLIGHT OPERATIONS DIVISION: Alyce M. Dillinger, Kenneth J. Allen, Lucia N. Gurley, John C. Stonesifer, Frank S. Coe III, Barbara A. Schiller.

ENGINEERING DIVISION: Thomas J. Grace, Jr., L. Faye Wilkes, Homer W. Dotts.

PERSONNEL OFFICE: Kenneth I. Jefferies.

POWERS SPEAKS

John A. Powers, MSC Public Affairs Officer, was the principal speaker at the Corpus Christi, Tex., Chamber of Commerce annual banquet.

The more than 900 persons present heard Powers tell them that it is up to the American people to decide how soon a man can be put on the moon. He emphasized that the ultimate goal of the space program must have the complete backing of all citizens.

MSC PERSONALITY

Engineering Chief James Chamberlin

James A. Chamberlin, Chief of the Engineering Division, entered NASA employ early in April 1959 as a Space and Aeronautical Scientist, Technical Assistant. He was promoted to his present duties in October of that year.

Chamberlin was born in Kamloops, Canada, and was graduated from the University of Toronto with a bachelor of arts degree in Mechanical Engineering. He also attended the Imperial College of Science and Technology in London, England.

From February 1940 until September 1941, Chamberlin was with Federal Aircraft Ltd., of Montreal, Quebec, and worked on technical aspects of design and stress in connection with the modification of the Avro-Anson aircraft.

JAMES A. CHAMBERLIN

From September 1941 until June 1942, he served as Chief Engineer for Clark Ruse Aircraft Ltd., at Dartmouth, Nova Scotia. In this position he was in charge of engineering and overhaul of service aircraft used on the East Coast of Canada for training and anti-submarine work.

In June 1942 he accepted employment as Research Engineer for Noorduyn Aviation Ltd., Montreal, Quebec. In this position he headed project work on trainer and light cargo aircraft and did design studies on other projects for the Royal Canadian Air Force.

From February 1946 through March 1959 he was with AVRO Aircraft Ltd., Toronto. His last position with that organization was Chief of Design. During his service there he was responsible for the aerodynamic design of a jet fighter and a jet transport. He was also responsible for the overall design of the CF-105 "Arrow", an advanced interceptor aircraft.

Other responsibilities Chamberlin had while there included complete design—areodynamics, structures, powerplant installation, armament, fire-control, automatic control and stabilization, navigation, tactics, mission analysis, research and development testing, and flight testing of completed aircraft.

Chamberlin is a Professional Engineer of the Province of Ontario, a member of the Institute of Aeronautical Scientists, and is an Associate Fellow of the Canadian Aeronautical Institute.

SOME OF MSC'S SCUBA DIVER CANDIDATES receive instructions from Sgt. Joe Garino on the use and handling of equipment. Left to right are Lyman Lee, Paul Folwell, Bill Lee, Jack Vohringer, Garino, and LaMarr Beatty.

MSC's Technical Services Expanded By Scuba Training

A training program, started last September, has resulted in Manned Spacecraft Center's having its own team of scuba divers. The team, composed of employees of Technical Services, was formed in order that the men chosen might be trained to assist in hardware inspection during water testing and other in-water assistance, other than life saving.

At the outset of the program the team members were required to prove their basic swimming abilities on and below the surface of the water as well as to become acquainted with equipment used in scuba diving.

Instruction manuals on underwater safety and diving equipment were studied before the team members entered the water with any scuba equipment.

Following familiarization with equipment basic tests were taken, followed by more advanced tests such as two divers using one air supply, ditching equipment underwater, and the panic test (underwater malfunction of equipment).

A written test was taken by the team membes in December to qualify for certificates indicating satisfactory completion of the course. The instructor was Sgt. Joe Garino of Langley Air Force Base Special Services. The course was given under the direction of Jack Kinzler, Technical Services Chief.

Those completing the course were Bill Lee, Lyman Lee, LaMarr Beatty, Jack Vohringer, Bud Carpenter, Billy Drummond, and Paul Folwell.

A TEAM EFFORT as Paul Folwell gives Jack Vohringer a hand with his equipment. LaMarr Beatty, far left, observes, and Bill Lee, far right, prepares to don his equipment.

NASA Regulations For Employment

For the benefit of all MSC employees—as a refresher for those who have been government employees for a period of time and as a matter of information for new employees—NASA policy and procedures regarding outside employment of NASA employees are specified below.

As defined in general management instructions, "outside employment is construed to mean any work or services performed by an employee other than in the performance of his official duties. This includes, but is not limited to writing and editing, publishing, teaching and lecturing, consultative services, self-employment, and work or services performed with or without compensation.

As a general policy NASA employees may not engage in any outside activity which might result in an actual or apparent conflict of interest betweeen the private and official government duties and responsibilities.

However, in the absence of such conflict, NASA employees are entitled to the same rights and privileges as other citizens, and so there is no general prohibition against NASA employees engaging outside employment if:

(1) The employee's normal job performance is not adversely affected by the outside work, and

(2) The employee's outside employment does not reflect discredit on the government or NASA.

NASA employees may not accept outside employment which violates federal, state, or local ordinances, Executive Orders, or regulations to which the employee is subject; work which identifies NASA or its employees in their official capacities with any organization manufacturing, distributing, or advertising a product relating to work conducted by NASA, or work performed under such circumstances as to create the false impression that it is an official action of NASA, or represents an official point of view.

Employees also may not accept work that requires their time during official duty hours; work in connection with which the employee makes use of official facilities such as space, office machines or supplies, or the services of other employees during duty hours; or work obtained by the employee through the use of information from official sources not freely available to the general public, and work which enables the employee or his employer to derive an unfair advantage from the use of such official information.

Permissible outside employment includes work contributing to an employee's technical or professional development and participation in the affairs of charitable, religious, nonprofit educational, public service or civic organizations, or in the activities of national or state political parties provided such activities are not prohibited by law.

Employees having questions concerning outside employment should contact their personnel office.

Dr. L. R. Daniel Is Consultant On Graduate Study

Dr. Lawrence R. Daniel, Jr., has been named as Consultant to the Director of Manned Spacecraft Center in establishing a graduate program. During the week of January 8-12, Dr. Daniel was at Langley AFB, working with the training office and the graduate committee in determining policies and procedures in conducting the program.

Dr. Daniel is in charge of graduate offerings in the Mechanical Engineering Department at Louisana State University. He is also Chairman of the Committee which prepares the licensing examination for Mechanical Engineers in the State of Louisana.

He received a bachelor of science degree in mechanical engineering from Louisiana State in 1943, a master of science degree in aeronautical engineering from Chrysler Institute, Detroit, in 1948; a bachelor of science degree in civil engineering from Louisiana Tech in 1954, and his doctor of philosophy degree from Michigan State in 1959.

Dr. Daniel has taught 14 years at Louisiana Polytechnic Institute and Louisiana State as an instructor, assistant professor, associate professor, and full profesor.

Industry Assistance Program Planned In Houston Area

An Industry Assistance Program will be held at the Shamrock Hotel in Houston February 7. The purpose of the program is to acquaint business representatives in the area with the type of purchases which are made direct in order that they might evaluate their capabilities to produce the needed articles.

It is anticipated that more than 1,000 representatives of firms from within a 125 mile radius of Houston will attend.

Large NASA contractors such as North American Aviation, McDonnell Aircraft, Collins Radio, AVCO, and Philco will have representatives present to furnish information as to what "gadgets" they normally contract for.

Forums will be conducted and counselors will give what assistance they can to the attending representatives. In addition to the aforementioned MSC and GSA representatives will be present to discuss the items normally purchased locally on a direct basis.

The program is being coordinated by H. T. Christman, Contractor Relations Officer in Procurement.

Space News NASA ROUNDUP!

SECOND FRONT PAGE

Dr. Dryden Explains The Need For A Manned Lunar Program

The following letter to Sen. Robert S. Kerr, Chairman of the Senate Committee on Aeronautical and Space Sciences, by Dr. Hugh L. Dryden, NASA deputy administrator, is a summary of the reasons why America should pursue a program of manned lunar exploration:

"My Dear Senator Kerr,

"As you suggested during my recent discusion before the Committee, I will attempt to put in writing the remarks I made as to the significance of the program recommended by the President for landing a man on the moon and his safe return by the end of the decade to the present and future welfare of this nation.

"The attainment of the goal stated by the President requires extensive research and development in almost every branch of science and technology at the frontiers of knowledge in these various fields. New materials and components must be developed to function in the extreme cold and the extremely low pressures of outer space, at the extreme speeds, and at the extreme temperatures attained in rocket combustion chambers and on outer surface of bodies reentering the atmosphere at high speed.

"New developments in propulsion, in electronics, in comunications, in guidance and control techniques, in computer techniques, are necessary in order to accomplish the task. New information in the life sciences, including the effects of the radiations encountered in outer space; the effects of long periods of weightlessness, and long exposure to a completely closed environment—all these are required and will provide new basic information about the performance of the human body under adverse conditions.

"This new knowledge and experience in the space sciences and technologies will provide the sound basis for applying our new-found knowledge to the design of space vehicles for a variety of purposes, some now foreseen, other unthought of at present. These applications include not only space vehicles for scientific research, for communications systems, for meterological observation, and presently unforseen civil uses, but also space vehicles for potential applications in the national defense.

"Space technology, like areonautical technology, can be applied to military systems, and we must be well advanced in this technology to avoid its possible exploration against us.

"Equally important is the fact that these developments in science and technology are transferable to other applications in our industrial society. We have had repeated evidence in the history of the development of the automobile, the airplane, and the nuclear reactor of the transferability of developments in these fields to other industrial applications.

"The development of space science and technologies strengthens our whole industrial base and serves as insurance against technological obsolescence. Education will profit. The discipline of cooperation in a great national effort may well be the instrument of great social gain. Many hope that space may be an area where all nations of the world may learn to work together for the benefit of all men.

"The setting of the difficult goal of landing a man on the moon and return to earth has the highly important role of accelerating the development of space science and technology, motivating the scientists and engineers who are engaged in this effort to move forward with urgency, and integrating their efforts in a way that cannot be accomplished by a disconnected series of research investigations in the several fields.

"It is important to realize, however, that the real values and purposes are not in the mere accomplishment of man setting foot on the moon but rather in the great cooperative national effort in the development of science and technology which is stimulated by this goal.

"The billions of dollars required in this effort are not spent on the the moon; they are spent in the factories, workshops, and laboratories of our people for salaries, for new materials, and supplies, which in turn represent income to others.

"It is unfortunate that space exploration is still so new that journeys of man to the moon are synonymous with foolish or visionary enterprises as described in science fiction.

"Fifty years ago flying through the air had the same connotations—risky, expensive, uselful only as a sport. Our lack of appreciation of the potentialities of aeronautics extended through the early years, forced the Wright Brothers to go abroad.

"We entered the first World War with no design capability and no manufacturing experience, dependent completely on foreign designs. Only after the war did we begin to devore effort to research in the new areonautical technology. We must not undergo the same experience in space science and technology.

"The national enterprise involved in the goal of manned Lunar landing and return within the decade is a activity of critical impact on the future of this nation as an industrial and military power, and as a leader of a free world."

A SMILING CONGRESSMAN Victor Anfuso, Chairman of the House Space Committee, gets a briefing on the operation of a Mercury procedures trainer from Astronaut John H. Glenn, Jr., pilot-elect of the United States' first manned orbital flight. Congressman Anfuso recently visited Cape Canaveral to get a comprehensive lock at the space activities underway there.

MSC Reorganization Plans Released; Many Changes

Manned Spacecraft Center Director, Robert R. Gilruth, has approved a planned reorganization designed to further streamline the group and facilitate operation in its rapidly expanding roll. Major changes made include the establishment of the Office of Assistant Director for Research and Development a Mercury Project Office, Gemini Project Office, and Apollo Project Office, and the abolishment of the Flight Systems Division.

Maxime A. Faget has been named Assistant Director for Research and Development, and, in this position, he is charged with the responsibility for the conception and implementation of a program of research and development in the areas of space research, space physics, life systems, and test and evaluation to support and advance manned spacecraft development. In the accomplishment of these duties he will supervise the Spacecraft Research Division, Life Systems Divisions, Systems Evaluation and Development Division, and Space Physics Division.

Assigned to his office will be Jack C. Heberlig, Advance Study Project Control; John B. Lee, Apollo Support Liaison; and B. M. Wilson, Program Coordination Office.

Charles W. Mathews will be Chief of the Spacecraft Research Division with Norman F. Smith as Special Assistant.

Dr. Stanley C. White will be Chief of the Life Systems Division with Richard S. Johnston serving as Special Assistant.

Alec C. Bond will be Chief of the Systems Evaluation and Development Division, assisted by Joseph N. Kotanchik. Space Physics Division will not be organized until a later date.

James A. Chamberlin will head the Gemini Project Office; Kenneth S. Kleinknecht will head the Mercury Project Office; and Charles W. Frick will head the Apollo Office.

Walter C. Williams will continue, in an acting capacity, as Assistant Director for Operations in addition to his duties as Associate Director of Manned Spacecraft Center. G. Merritt Preston will continue as Chief of the Preflight Operations Division. Christopher C. Kraft, Jr. will be Chief of the Flight Operations Division. Chief of Astronauts and Training Division to be appointed, and Dr. Stanley C. White will act as head of the Aerospace Medical Operations Office in addition to his duties with the Life Systems Division.

Special Assistant to the Director is Paul E. Purser and Donald T. Gregory is Technical Assistant.

Other special staff members are John A. Powers, Public Affairs Office; J. Wallace Ould, Legal Office; Thomas W. Briggs, Program Analysis and Evaluation Office; Frederick J. Bailey, Jr., Reliability and Flight Safety Office.

MSC Credit Union Formed At Houston

An organization committee for the formation of a Manned Spacecraft Center Federal Credit Union at Houston has been formed. This group, headed temporarily by Bill Parker, has obtained the charter for the Credit Union.

The organization will become operative as soon as a seven-member Board of Directors and a three-member Credit Committee are elected and installed.

Ballots for the election of these people are being prepared and sent to all MSC personnel. All who certify that they plan to join the Credit Union will be eligible to vote.

Military personnel and technical representatives of industrial firms who are assigned to MSC Projects will be eligible to participate in the Credit Union activities.

MA-6 MAY GO JANUARY 27TH

An attempt to launch the National Aeronautics and Space Administration's Manned Mercury-Atlas 6 is scheduled for no earlier than Saturday, Jan. 27th.

This timing will give engineers and technicians time to correct technical difficulties encountered in the spacecraft's environmental control system during prelaunch preparations.

DR. RUDOLPH NAMED

Dr. Arthur Rudolph, former director of Research and Development Operations for the Army Ballistic Missile Agency, has been named assistant director of systems engineering for NASA's Office of Manned Space Flight. His appointment was announced by D. Brainerd Holmes, director of the Office of Manned Space Flight.