Space News

NASA ROUNDUP!

VOL. 1, NO. 4 MANNED SPACECRAFT CENTER, LANGLEY AFB, VA. DECEMBER 13, 1961

MA-5 Flight Termed Success

THE LIFT-OFF as the MA-5 flight began at Cape Canaveral November 29. The powerful Atlas vehicle placed the Mercury spacecraft into orbit.

Project Mercury Announces Plans For Two-Man Spacecraft

National Aeronautics and Space Administration's Manned Spacecraft Center is extending its Project Mercury effort to develop manned space flight rendezvous techniques by producing a two-man spacecraft. The new craft will be capable of docking with another vehicle while in Earth orbit.

Orbital rendezvous is one consideration for carrying out later Project Apollo manned lunar landing misisons. Another possibility is the direct flight approach using a multi-million pound thrust Nova booster. Both methods will be explored in order to meet the national goal of manned lunar landing by 1970.

NASA will negotiate with McDonnell Aircraft Corporation of St. Louis, Mo., as prime contractor of the new spacecraft. Based on the

(*Continued to page 7*)

THE WEST COAST of Mexico is viewed from the Mercury spacecraft during its first orbit, one hour and 21 minutes after lift-off.

Glenn, Slayton Are Named For Orbital Missions

Manned Spacecraft Center officials expressed pleasure with the successful two-orbit flight of the Mercury-Atlas 5 spacecraft which was launched at Cape Canaveral at 10:07 am November 29. The spacecraft was brought back to earth after two orbits when difficulties with the control system were noted.

The retro-rockets were fired by Arnold Aldrich of MSC's Flight Operations Division, on command of Chris Kraft, Flight Director. Aldrich was serving as Chief Flight Controller at the Point Arguello, Calif., tracking station.

At a press conference held at the press site being used at the Cape following the recovery of the spacecraft by the USS Stormes about 264 statute miles south of Bermuda, MSC Robert R. Gilruth said " . . . I would say we had superb performance exhibited today on the part of all the various teams and on the part of the equipment. This includes the Atlas boost to orbit, the Atlantic Missile Range support, the network and the network teams, the spacecraft, the check-out teams, the manufacturing teams and the Navy Recovery Forces. I would also like to say that the fact that we decided to terminate the flight at the end of the second orbit lost very little of the spacecraft and other scientific data that we were after."

Walter C. Williams, Associate Director of MSC and Operations Director for Project Mercury, speaking a little later about the launch said "the boost was about as near perfect as you would expect to see."

Others participating in the press conference were D. Brainerd Holmes, NASA's Director of Manned Space Flight; Maj. Gen. Leighton I. Davis, Commander, Air Force Missile Test Center; Maj. Gen. O. J. Ritland, Commander, Space Systems Division, Air Force Systems Command; Rear Admiral John L. Chew, Commander, Destroyer Flotilla 4, and Commander of the Mercury Recovery Forces; Dr. James P. Henry, Assistant Chief of MSC's Life Systems Division; and Project Mercury Astronauts John H. Glenn, Jr., and M. Scott Carpenter.

Near the end of the conference Gilruth announced that two pilot teams had been selected for Project Mercury's initial manned orbital space flights. He named Glenn as pilot for the first flight, with Carpenter serving as backup. Alan B.

(*Continued to page 7*)

USC Developed Special Equipment For MA-5 Flight

The equipment used to record the blood pressure of Enos during his orbital flight was developed by the Department of Physiology of the University of Southern California under the direction of Dr. John P. Meehan.

Dr. Neehan announced that the small instrument shop of the department started work on the basic designs for the sensor units and the recorder used in the flight about a year ago, and since March produced a prototype in addition to a number of models which underwent extensive tests at the McDonnell plant in St. Louis, Mo., before the equipment which was used in Wednesday's flight was manufactured.

The sensor units, mounted on a water bottle between the chimpanzee's legs in the couch, measured the arterial and venous pressures by means of very small tubes injected into the animal's legs.

The recorder, a galvanometer oscillograph, recorded the arterial and venous pressure on 16 mm film which was activated when Enos was placed in the spacecraft and had the capability of operating 16 hours continually.

This equipment is the first known to record blood pressure during an orbital space flight and was developed especially for the Mercury-Atlas 5 mission. Additional information concerning the effect of prolonged weightlessness on blood pressure will be available after a study of the film has been made.

Next Mercury Orbital Flight Will Be Manned - Gilruth

MSC Director Robert R. Gilruth has announced that the next Project Mercury orbital flight will be manned. The announcement was made last Wednesday at NASA Headquarters. He said that based on all available data, including preliminary analysis of MA-5 information, it appears that no further animal or unmanned flights are needed before attempting the specifiication Mercury mission manned orbital flight.

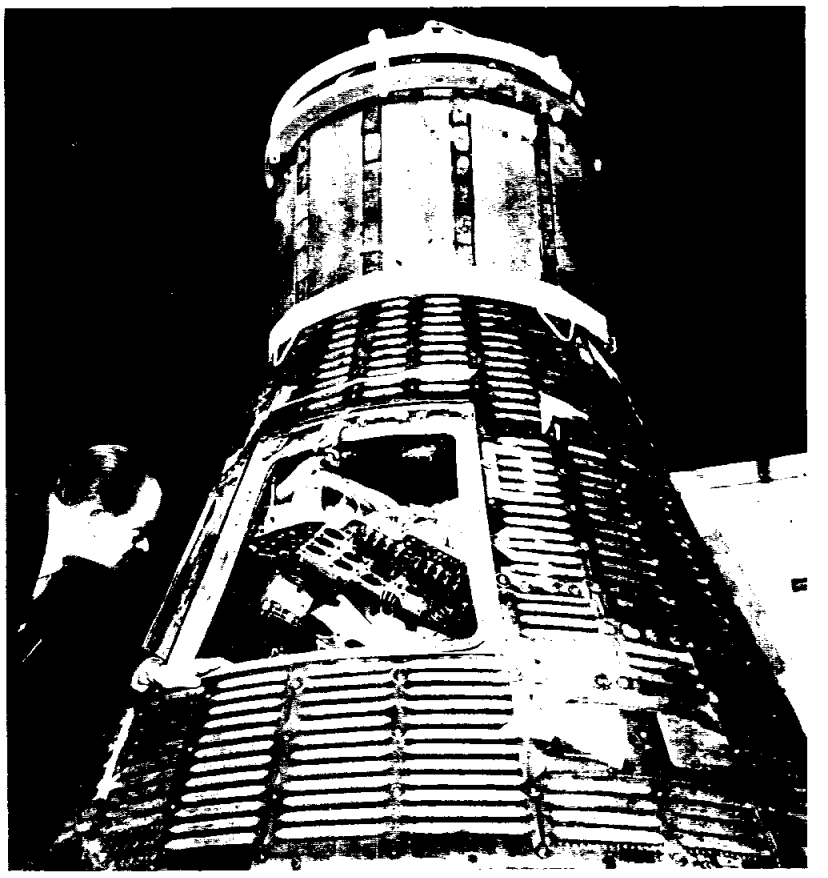
Analysis of MA-5 chimpanzee flight performance and post-flight physical condition of Enos, together with detailed study of spacecraft, booster and tracking network operations, confirm that the Mercury-Atlas system is ready for the next orbital flight.

Final preparations for MA-6 are progressing satisfactorily for a launch attempt early next year.

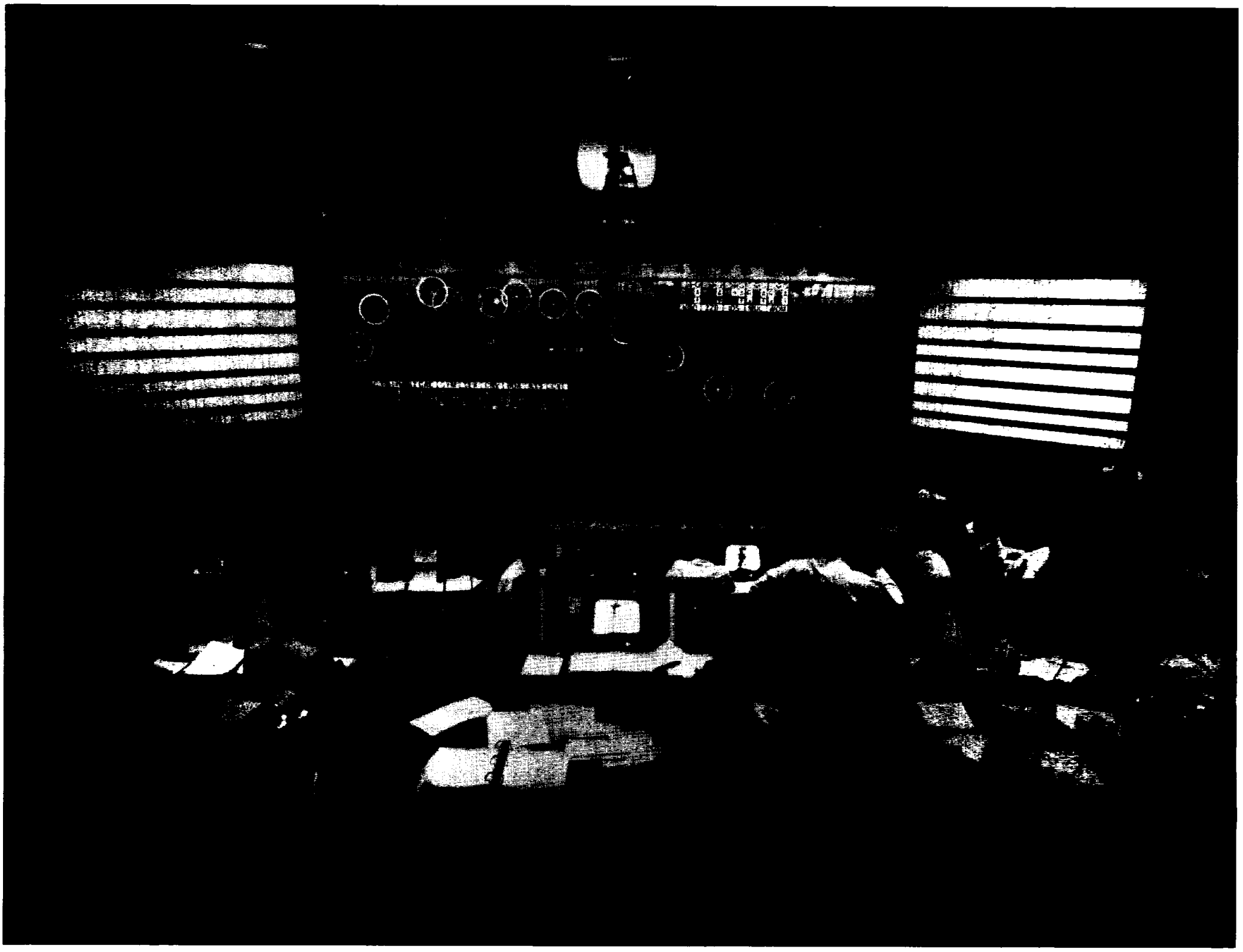
TRANSFERS TO HOUSTON

A total of 10 more MSC personnel have recently effected permanent change of station to Houston.

They are: James McBride, Jr., Flight Systems Division; Abner M. Askew and June A. Giles, Budget and Finance Office; Patricia N. Kincaide, Transportation; William C. Kincaide, Douglas J. Geier and Lt. Robert G. Devine, Life Systems Division; Douglas R. Broome, Jr., and William W. Petynia, Apollo Projects Office; and Thomas D. Conger, Construction Office.



THE MERCURY-ATLAS 5 SPACECRAFT is shown just after its return to Cape Canaveral after its orbital mission was completed and recovery effected. Public Affairs Officer John A Powers is shown looking at the inside of the capsule.



MCC Operations Prove Complex and Exciting

The Mercury Control Center, located at Cape Canaveral, is the nerve center of all Mercury flights. It houses the operations room, recovery room, communications room, and many other facilities including a procedures trainer and the observation room at the rear of the operations room.

Activity in all these areas starts many hours prior to the actual launch time with the hub of all the action in the operations room.

In this room is the Recovery Commander (USN), the Operations Director, the Network Commander (USAF), two Procedures Monitors, the Flight Director, Network Status Monitor, Missile Telemetry Monitor, four Strip Chart Recorders, Support Control Coordinator, and the Flight Surgeon.

Also the Capsule Environment Monitor, Capsule Communicator, Capsule System Monitor, Retrofire Controller, Flight Dynamics Officer, three Television monitors, four X-Y Recorders, 16 Trend Charts, an Operations Summary Display and Alphanumeric Indicators, a Signal Distribution Panel, Teletype Printers, and a Data Entry Console.

The Mercury Control Center has the responsibility for the entire mission from the time the missile lifts off through the time of the Spacecraft recovery.

During the period of a Mercury mission personnel at the center serve in three major capacities.

1. They monitor the launching of each booster and control or command the abort of a mission if such action is required.

2. They man the center as one of the world-wide sites for tracking, telemetry receiving, command, and voice communications during orbital passes of the capsule.

3. They monitor normal re-entry of a spacecraft into the earth's atmosphere and direct the recovery operations.

Mercury Control Center has direct contact with the capsule, the launch pad, and its associated blockhouse through its telemetry and communications facilities.

In addition, it is connected to computing and communications facilities of the Goddard Space Flight Center at Greenbelt, Md., via high speed data circuits, and teletypewriters and voice circuits.

Goddard, in turn, is linked by teletypewriter and voice circuits to 16 remote tracking and voice-communications stations located in strategic positions around the world.

During the pre-launch phases Mercury Control Center, in addition to being in constant contact with the activities at the launch pad, makes contact with all the stations of the Mercury Tracking Network in order to determine the ability and readiness of these stations to support the requirements of the mission.

A large animated world map at the front of the operations room indicates all the stations on the network, encircled, and in addition, there are lines from the stations, themselves, to Alphanumeric Indicators which list the stations at Cape Canaveral, Bermuda, Atlantic Ocean Ship, Canary Islands, Kano, Nigeria; Zanzibar, Indian Ocean Ship, Muchea, Australia; Woomera, Australia, Canton Island, Kuai, Hawaii; Pt. Arguello, Calif.; Guaymas, Mexico; and Corpus Christi, Tex. Additional tracking stations of the Mercury network which are not displayed are White Sands Missile Range, N. Mex.; Air Proving Ground Center, and Goddard Space Flight Center. Various symbols are listed under each station to indicate whether the station is equipped to furnish information on command control, telemetry, capsule —voice-air-to-ground, radar, report received if green, acquisition, voice line to station, computer related equipment, and teletype communications. These symbols are lit with green lights to indicate if the station's instrumentation is ready to support the mission, red lights if not.

If the instrumentation is red those in both the operations room and the observation room may observe the station's ring color, and determine its status as follows:

(1) If red, the instrumentation is mandatory or highly desirable for the mission and either it cannot be repaired or there is no estimated time of repair.

(2) If yellow, the instrumentation is mandatory or highly desirable for the mission, and it is expected to be repaired prior to launch.

(3) If green, the instrumentation is desired for the mission but will not delay count progress.

The observation room at the rear of the operations room has a glass front which permits those inside to view the activities of the pad by one of the three television receivers; and after the launch they can observe the progress of the spacecraft by watching the electronically controlled spacecraft model as it follows the orbit path on the world map, through voice reports, and through watching the information on the trend charts, located on either side of the world map.

The trend charts reveal such information as heart rate, respiration rate, body temperature, cabin air temperature, inverter temperature, suit pressure, cabin pressure, and a number of other items. These items are posted as information concerning them is received as they pass each of the tracking stations on each orbit.

Additionally there are a limited number of head-sets with outlets in the observation room which permits those persons to hear all the voice traffic. The observation room can accommodate about 50 persons and this room is normally used by MSC Director R. R. Gilruth, representatives of NASA Headquarters and other VIPs.

The communications division plays a vital role in the operation of Mercury Control Center and in this division there is an almost unbelievable amount of traffic moved, both incoming and outgoing ,during the period of a Mercury mission.

The recovery rooms are manned by both Navy and NASA personnel. Here again there are a number of teletypewriters as well as other communications equipment receiving reports both through the Mercury Control Center channels as well as ship-to-shore teletype reports on the position of the various ships of the rcovery forces, direct reports on the recovery, and the condition of the spacecraft and its occupant.

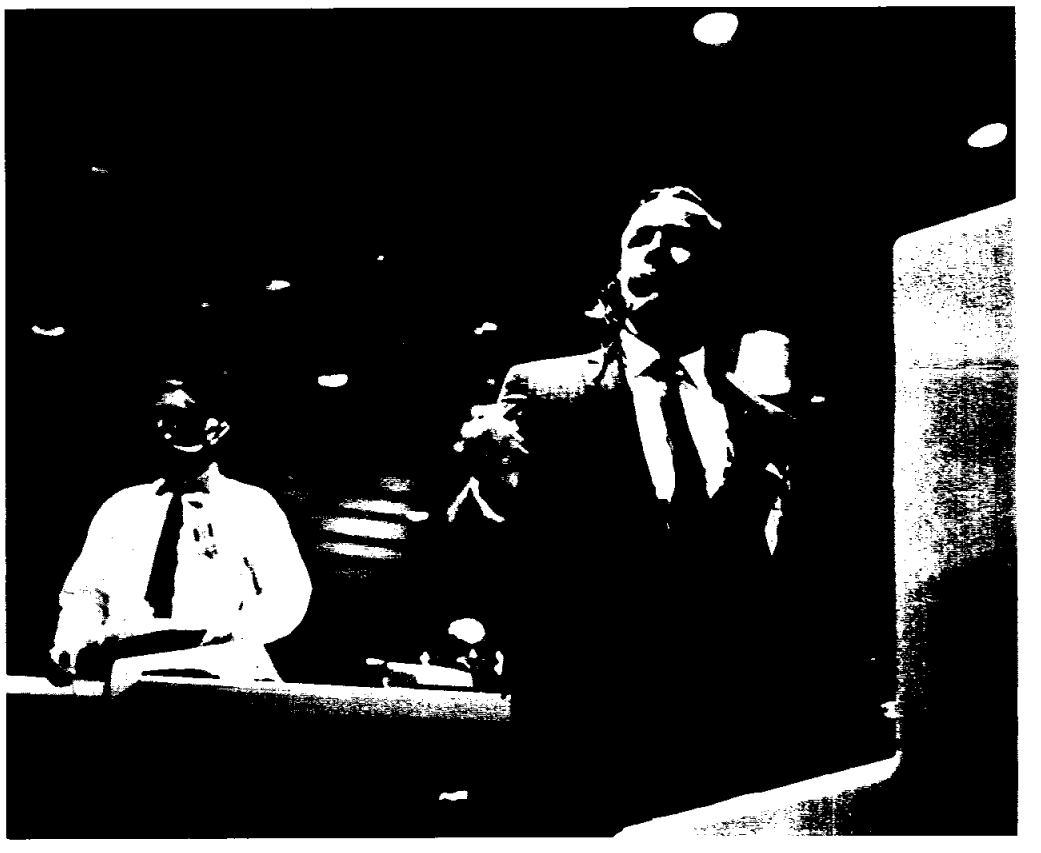
Due to the fact that a large number of personnel are needed for the operation and that an even larger number of persons desire to observe the operation, security personnel are faced with a difficult task and special badges are prepared for all personnel and visitors. Security guards are zealous in their duties to assure that persons only enter the areas indicated by their passes.

Tension During MA-5 Lift-off Is Revealed In Faces of Operations Director and Flight Director

1. Walt Williams and Chris Kraft at T minus 19 seconds and hold . . .

2. T minus 10 seconds . . .

3. Lift-off . . .



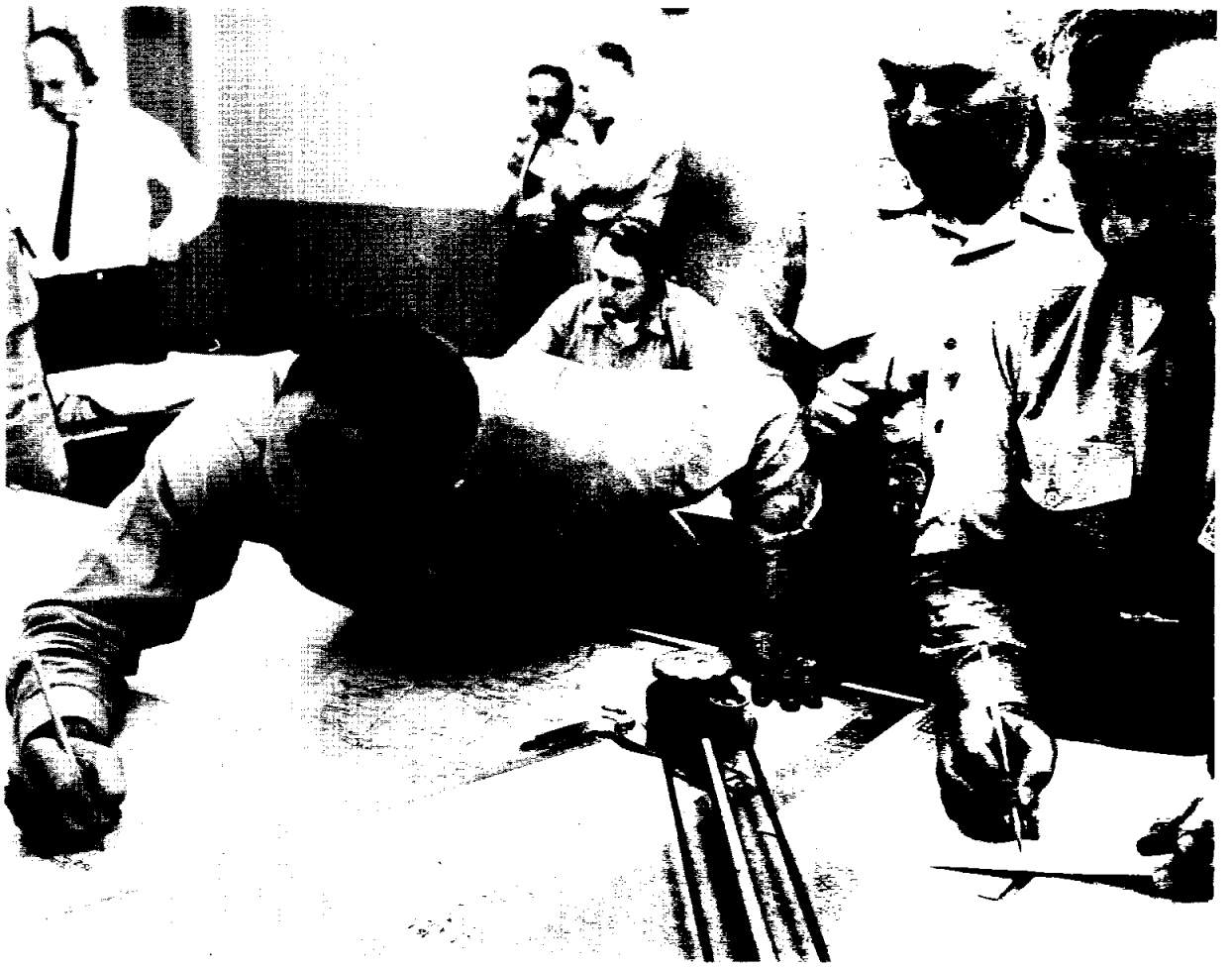
4. T plus 10 seconds . . .

5. T plus 20 seconds—all systems go . . .

6. T plus 45 seconds—trajectory good . . .

Mercury Control Center Operations Are

THE "BIG DISH" above Mercury Control Center played an important role in recording the success of the mission.

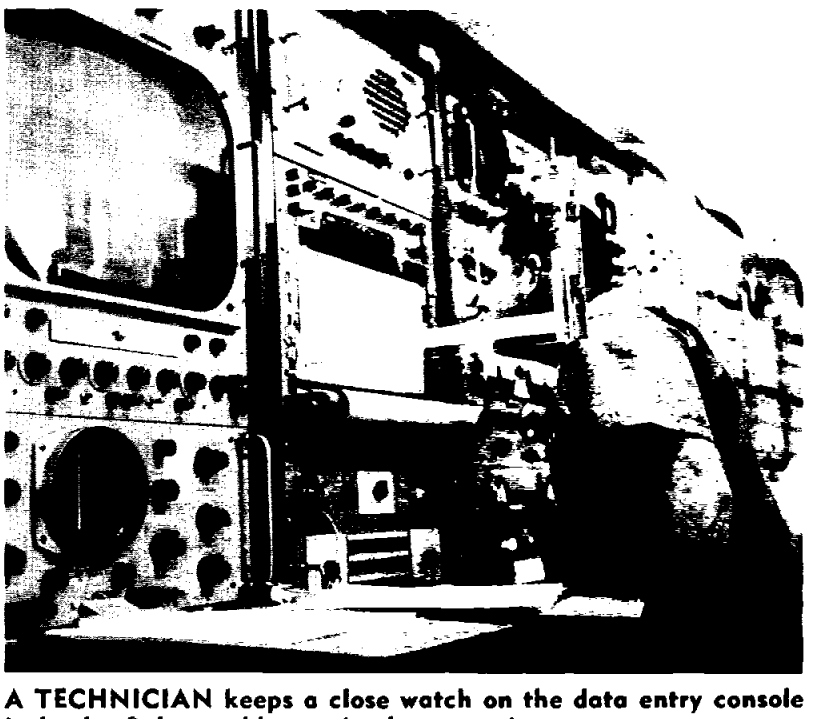


A NAVAL LIEUTENANT plots the anticipated touchdown spot on a chart as Admiral Chew watches. Cmdr. John Nevins is at the right.

SATISFACTION OVER THE SUCCESS OF THE MISSION is evident on the faces of (l to r) NASA Manned Space Flight Director, D. Brainerd Holmes, Manned Spacecraft Center Director R. R. Giruth, Flight Director Chris Kraft, and MSC's Associate Director, Walter C. Williams.

THREE HAPPY MEN are pictured as the word is received that the MA-5 spacecraft has been recovered. Left to right, Robert F. Thompson, MSC's recovry operations chief; John Glenn, and Rear Admiral John L. Chew, Commander of the Recovery Forces.

AN INDICATION OF THE amount of traffic handled by the communications division is shown by the tapes at the right of the machine and operator.

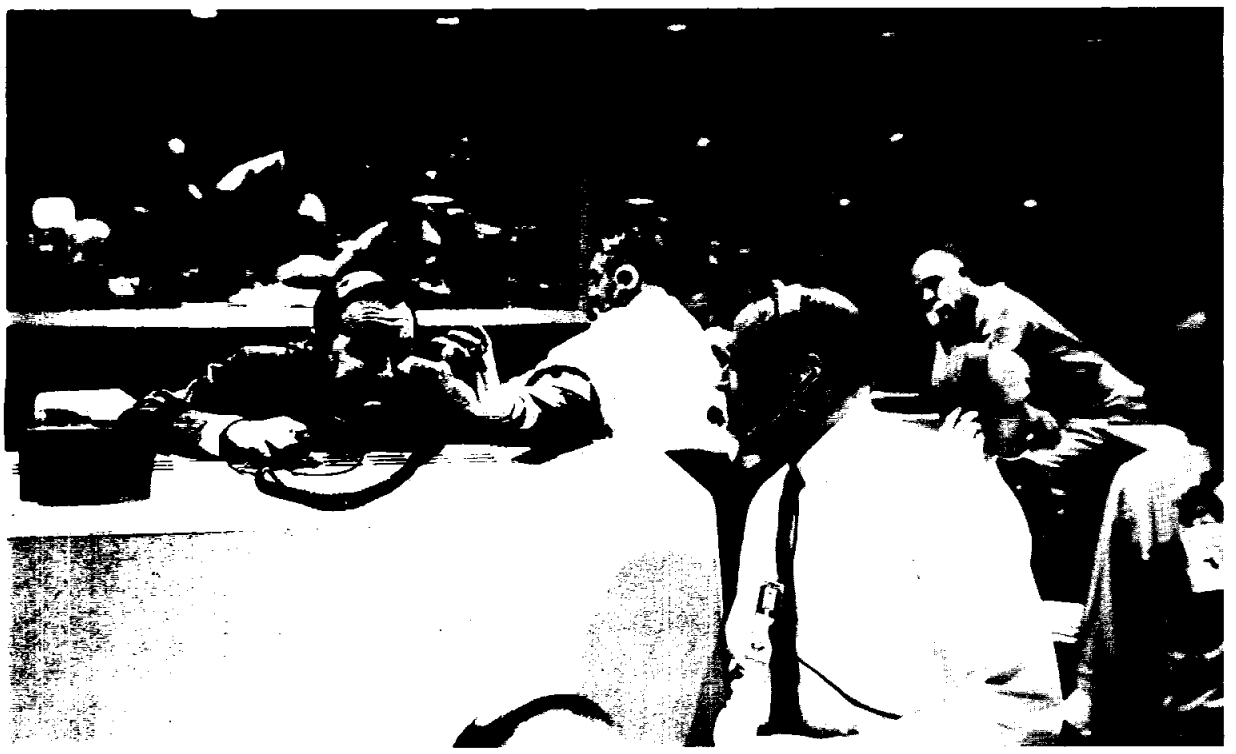


A TECHNICIAN keeps a close watch on the data entry console in back of the world map in the operations room.

Pictorially Depicted To Show Activities

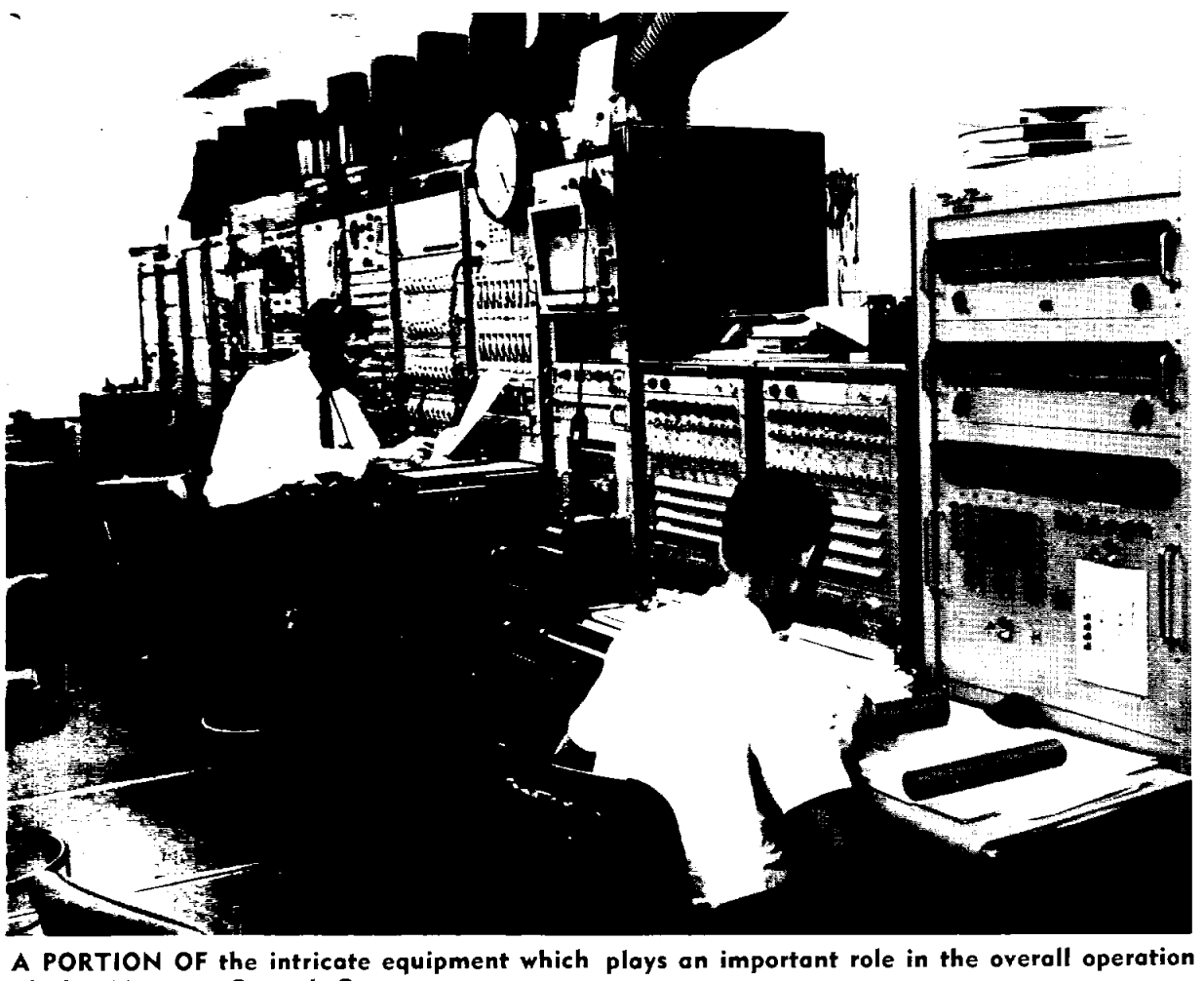
JOYFUL CELEBRATION—John Glenn and Col. Keith Lindell, former director of astronaut training, celebrate both a reunion and the success of the flight.

AN OVERALL VIEW of the observation room shows the intentness of the gallery as they watch the model capsule on the board.



FLIGHT DIRECTOR Chris Kraft indicates to Life Systems Division Chief Dr. Stan White that everything is A-OK with Enos.

CAPSULE COMMUNICATOR for the MA-5 flight was Virgil I. "Gus" Grissom.



A PORTION OF the intricate equipment which plays an important role in the overall operation of the Mercury Control Center.

THE POINT ARGUELLO tracking station—location where Arnold Aldrich pushed the retrofire button during MA-5 mission.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Langley Field, 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**

Congratulatory Telegrams

A number of congratulatory messages were received at Cape Canaveral November 29 following the successful MA-5 mission, including the following:

* * *

Houston, Tex., Nov. 29, 9:38 a.m. CST

Director
Mercury Control Center
Cape Canaveral, Fla.

To all who took part in space program our heartfelt thanks and God's blessings. Let's have more of this. We are all proud of you.

Average Housewife Mrs. D. L. Sorelle, Jr.
1422 Nashua

* * *

Houston, Tex., Nov. 29, 2:36 p.m. CST

NASA MSC Director
Cape Canaveral, Fla.

Congratulations from the smallest segment of the MSC to the widest. We were able to follow almost every step and want to add the Houston Office Staff's voice to the national happiness over todays test.

Martin A. Byrnes
Site Manager

* * *

Houston, Tex., Nov. 29, 4:26 p.m. CST

Robert R. Gilruth, NASA
Cape Canaveral, Fla.

Heartiest congratulations to you and all of your associates from your friends and future neighbors in Houston. We are thrilled beyond words to express by today's accomplishments.

P. H. Robinson
Pres. Houston Chamber of Commerce

On The Lighter Side

Additional congratulatory messages were received which contained at least a twinge of humor.

* * *

Omaha, Nebr., Nov. 29, 2:48 p.m. CST

Enos
The Chimpanzee Astronaut
Cape Canaveral, Fla.

Congratulations on paving the way for the future successful flight of our astronaut. Your monkeyshines should put you in the upper banana bracket.

Impy, Tamba and Pedro
Chimpanzees
Riverview Park Zoo

* * *

Houston, Tex., Nov. 29, 4:30 p.m. CST

John A Powers, NASA
Cape Canaveral, Fla.

Congratulations. You were in excellent voice and did a superb narrative. Bring Enos to our annual meeting. We'll give him a real banana.

Gordon H. Turrentine
General Manager
Houston Chamber of Commerce

* * *

Atlanta, Ga., Nov. 29, 4:39 p.m. EST

Enos The Chimpanzee
c/o National Aeronautics and Space Administration
Cape Canaveral, Fla.

You are a credit to the whole primate world, and without a question America's number one chimpanzee. In behalf of all of us in the Atlanta zoo we pay homage to you as champ of the chimps.

Charlie
Number 1 Chimp
Atlanta Zoo

EDITORIAL EXCERPTS

Miami, Fla., *Herald*, Nov. 30, 1961

TWICE AROUND,
ONE STEP UP

The most renowned creature in the country today is a chimpanzee named Enos. He didn't orbit the earth three times, as was intended, but he proved a chimp can do what two Russians had done before and no American yet has done.

It was not a perfect performance. But it was a giant step forward in our push toward the moon and the planets. Though the machines may have developed some malfunction, Enos did not. He carried out his mission.

Coming closely after last month's successful flight of the Saturn, with its 1.3 million pounds of thrust, yesterday's chimp shoot demonstrated the U.S. is pulling even with the Russians in the mass and power of its rockets while remaining ahead in its versatile rocketry.

The launching was another in a long string. Since the Soviet Union jumped off with its first Sputnik on Oct. 4, 1957, the U.S. has placed 53 earth satellites in orbit, launched two deep space probes and two solar satellites.

Enos' abbreviated flight showed that we have much work to do. His safe return proved how far we have travelled. In our race for space it was a good day that could have been better.

* * *

The Houston, Tex., *Press*, Dec. 1, 1961

ENOS' DOUBLE CIRCLE

Enos, the chimpanzee, made two flashing circuits around the earth. And thus achieved a distinction exceedingly rare in the animal kingdom.

As the trip had been planned, Enos got home too soon, through no fault of his own. Some of the jiggers in his space ship malfunctioned and Enos' bosses on the ground brought him down before he could make the third orbit on the original itinerary.

This was a disappointment. But the astro-chimp's flight still was a stunning performance. Enos did his job perfectly by all accounts, and that in itself required some weird contriving.

Despite the misbehavior of some of the intricate equipment, the space capsule was under complete control, and was safely brought down on target.

This was another experiment in the tortuous process of feeling our way into space. It was a "failure" in the sense that it didn't come off as hoped. But it was a success in the sense that the mishap is another major lesson, which will be learned promptly and profitably.

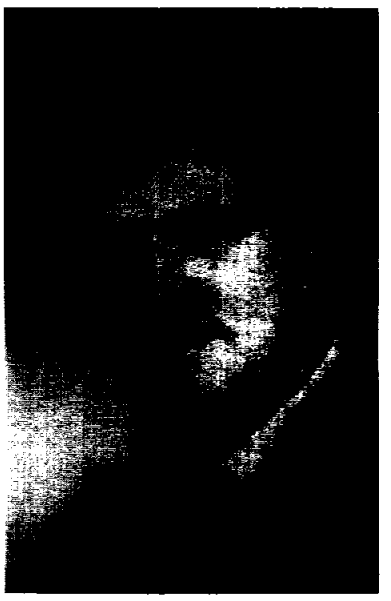
It is only through such lessons that ultimate success is achieved. The Soviets don't mention their errors or accidents—although they certainly have them. We do.

Just getting there isn't the whole purpose—our scientists are intent not only on getting there but doing it with precision and with a maximum of safety and assurance to the man who takes the first ride.

Hail to Enos!

MSC PERSONALITY

Charles W. Mathews Is Chief Of Flight Operations Division



CHARLES W. MATHEWS

Charles W. Mathews, Chief of Flight Operations Division, Manned Spacecraft Center, is a native of Duluth, Minn. He was graduated from Rensselaer Polytechnic Institute in 1942 with a bachelor of science degree in Aeronautical Engineering.

In his present position, he is responsible for (1) operations analysis, planning, and requirements associated with the Mercury and Apollo flight programs; (2) direct operations support in the area of monitoring and control of the flight and in conduct of spacecraft and astronaut recovery; and (3) coordination of the support from the Department of Defense and other agencies in these areas.

Mathews joined the Langley Research Center of NACA early in 1943 and has had continuous government service since that time.

During his earlier years at Langley he was engaged in airplane flight research and was project engineer in the free-fall test program. This program was exploratory research to determine airplane configurations suitable for use at supersonic speeds, and through it, the first verification in this country of the performance capabilities of sweptback wings was achieved.

Later, Mathews' concentration shifted to flight research in the areas of automatic control of airplanes. These activities included the improvement of airplane flying qualities through automatic control devices and the development of automatic systems for use in interception of enemy bombers.

Mathews became involved with spacecraft studies at the time of the first Sputnik flights. He conducted early studies on reentry from orbit as applicable to manned spacecraft.

He served as chairman for the group which developed the specifications for the Mercury spacecraft and was transferred to Space Task Group when Mercury became an official national program. His early work in this program involved directing the team which established the operating concepts for this new type of mission and directing the early flight tests.

Other activities involved in this work included the concept and requirements for the worldwide network of tracking stations and the mission control center. Planning of facilities and procedures for flight preparation of the spacecraft were also developed under his direction. All of these facilities and activities have been implemented and are now on an operationally ready status.

The Flight Operations Division has contributed to the early phases of Project Apollo by injecting experience gained from the Mercury flight operations into the planning for the Apollo spacecraft and its mission.

Mathews has authored and coauthored a number of papers concerning the fields in which he has been actively engaged.

He is married to the former Marietta Short of Welch, W. Va., and they have two children: Douglas C., 10, and Elizabeth A., 9.

Mathews' hobbies include water skiing, gardening, and fishing.

WELCOME ABOARD

A total of 46 new personnel have entered the employ of Manned Spacecraft Center during the past two weeks. They are:

PUBLIC AFFAIRS OFFICE: Linda J. Sealey and Ralph O. Shankle.

TECHNICAL SERVICES: Thomas J. Richards, Claude J. Bird, Louise M. Smith, James F. Axley, John P. Voros, John H. Allen, Sr., Lawrence M. Christman, Bertus E. Matthews, Jr.

PROCUREMENT AND SUPPLY: Helen M. Balzer, Billy D. Bennett, Alma Martin, Robert C. Brubaker, Daryl W. Chilcutt, James Stroup, Billy F. Chappel, Carl D. Sword, Charles H. McCormick.

BUDGET AND FINANCE: Margaret M. Nagle, Frances O. Routten.

DIGITAL COMPUTING: John A. Roth.

CONSTRUCTION OFFICE: Roger B. Hale, Oscar V. Cedarstrom.

MANAGEMENT ANALYSIS: Jakey D. Wood, Robert B. Merrifield.

SECURITY OFFICE: Joe M. Pirtle.

SUPPLY OFFICE: Garland R. Crabtree, Jr.

TRANSPORTATION OFFICE: Luther J. Bishop.

ADMINISTRATIVE SERVICES OFFICE: Sarah W. Lopez, Isaiah D. Durham.

FLIGHT SYSTEMS DIVISION: Curtis K. Riddick, Gerald H. Launey, Richard H. Ott, Jr., Harold B. Wilkstrom, Thomas J. Dunn, Daniel L. Knight, Arlie E. Fisher, Earl W. Hicks, Jr.

APOLLO PROJECTS OFFICE: Chester E. McCollough, Jr.

LIFE SYSTEMS DIVISION: Delores A. Monfalcone.

ENGINEERING DIVISION: John W. Goad, Jr.

FLIGHT OPERATIONS DIVISION: Linda A. Kitchens, James M. Ruthland, Vernon M. Dauphin, Jr., John E. Gerstle, Jr.

Contract Awarded To North American For Project Apollo

(*Continued from page* 8)

North American will be joined in this effort by a large team of subcontractors.

A separate contract for the third Apollo spacecraft unit, the lunar landing system, is expected to be awarded within six months.

NASA previously selected MIT Instrumentation Laboratory as an associate contractor for development of the Apollo guidance and control system.

North American was selected by NASA Administrator James E. Webb following a comprehensive evaluation of five industry proposals.

Other companies submitting proposals were:

General Dynamics Corporation, Astronautics Division, in conjunction with Avco Corporation.

General Electric Company, Missile and Space Vehicle Department, in conjunction with Douglas Aircraft Company, Gruman Aircraft Engineering Corporation, and Space Technology Laboratories, Inc.

McDonnell Aircraft Corporation, in conjunction with Lockheed Aircraft Corporation, Hughes Aircraft Company, and the Vought Astronautics Division of Ling-Temco-Vought Corp.

The Martin Company.

In July of this year, 16 firms were invited to submit proposals on the Apollo spacecraft project. Five proposals representing individual or combined efforts of 10 of the 16 firms were submitted early in October.

Each of these proposals was evaluated by a team of nearly 200 engineers and scientists representing both NASA and Department of Defense.

All phases of Project Apollo, embracing both the spacecraft and the launch vehicle, will be under the overall direction of D. Brainerd Holmes, NASA's newly appointed Director of Manned Space Flight.

NUMBER 1,000 — Lawrence M. Christman last Monday became the 1,000th employee to join the MSC staff. He is assigned to the Technical Services Division.

Houston Offices Move To New Location

Recent acquisition of leased space in Houston has resulted in Manned Spacecraft Center's operations in that city being located in three buildings.

The Flight Systems is located in the Rich Building at 6040 Telephone Road. The Lane-Wells Building at 2002 South Wayside is the site of operations for Life Systems Division, Security, Personnel, and the Relocation Center.

The Public Affairs Office, Procurement, Facilities Division, Administration Services, Transportation and Management are in the Farnsworth-Chambers Building at 3201 Brock.

Additional information concerning the move to the Houston site will be carried in SPACE NEWS ROUNDUP when available.

Project Mercury Announces Plans For Two-Man Rendezvous Spacecraft

(*Continued from page* 1)

current Mercury configuration, the planned vehicle will be slightly larger and will will weigh about two tons—about twice the weight of the Mercury capsule.

The new craft is programmed to be launched by the Titan II booster, constructed by the Martin-Marietta Corporation.

Rendezvous target for the spacecraft will be an Agena stage—similar to vehicles used in Ranger and Discoverer Projects—produced by Lockheed Aircraft Corporation. In carrying out rendezvous operations, the Agena stage will be launched into Earth orbit by an Atlas booster.

Ground tracking stations will determine optimum launch time for the Titan-boosted spacecraft.

After launch—with both vehicles in orbit position—the Agena and the two-man spacecraft can be used to perform rendezvous and docking maneuvers.

Preliminary cost estimates for the program, including about a dozen spacecraft, Atlas-Agena and Titan II vehicles, run about $500 million.

Two-man flights should begin in 1963-64, starting with several unmanned ballistic flights from Cape Canaveral for tests of overall booster-spacecraft compatibility and systems engineering. Several manned orbital flights will follow. Rendezvous fly-bys and actual docking missions will be attemped in final phases of the program.

This program provides the earliest means of experimenting with manned rendezvous techniques. At the same time, the two-man craft will be capable of Earth orbital flights of a week or more, thereby providing pilot training for future, long-duration circular and lunar landing flights.

NASA's current seven astronauts will serve as pilots for this program. Additional crew members may be phased in during later stages.

Glenn, Slayton Are Named As Orbital Mission Pilots

Shepard will act as pilot technical adviser for this team, and Gordon Cooper will head up the pad emergency escape and launch area recovery team.

JOHN H. GLENN, JR.

Donald K. "Deke" Slayton was designated pilot for the second manned orbital flight with Walter Schirra acting as backup. Virgil I. "Gus" Grissom will act as technical

DONALD K. SLAYTON

adviser for this team.

Gilruth prefaced his announcement by saying "this statement does not mean that we are necessarily not going to make other flights before a manned flight, nor that we are necessarily going with another flight this year."

Glenn indicated his pleasure over his selection and in answer to a press query said that he is set to go between now and the end of the year if the rocket is ready to go and the word is given.

Following is an unofficial record of events of the flight of MA-5, as logged from reports at the Mercury Control Center.

1007:00 Lift-off.

1007:20 All systems go.

1007:45 Trajectory looks good.

1011:00 Advise Bermuda of go condition.

1012:00 Engine cutoff and spacecraft separation.

1012:20 Spacecraft turned around and facing upward.

1014:30 Good signal from spacecraft, awaiting confirmation of orbit.

1015:20 Good signal from Bermuda. Chimp working as planned.

1016:20 Atlantic tracking ship picks up first signals from spacecraft.

1021:15 The craft is in flight—all indications of satisfactory orbit. In touch with Atlantic ship. Hope to have altitudes and speed momentarily.

1023:30 Received confirmation that Canary Island made contact at 1022 and now in contact. Good clean signals.

1027:30 Spacecraft in orbit. 17,500 miles per hour. Apogee 127.

1031:40 Kano tracking station contacted at 10:29.

1035:15 Status of chimp—performed exactly as programmed and on schedule.

1042:15 Zanzibar initial contact at 10:38. All systems appear to be functioning normally at at this time.

1046:30 Data so far: In orbit, high point 146, low point 99, attempt land after three orbits, orbital time 88 minutes, landing 800 miles SE of Cape Canaveral.

1052:00 Indian Ocean ship makes initial contact at 10:48. All data indicates systems working ing properly. USS Randolph receiving tape recorded story at 10:15.

1101:15 Muchea, Australia, made contact at 10:58.

1103:45 Woomera, Australia made contact at 11:03.

1120:45 Canton Island initial contact at 11:17. Chimp data tells status thru Woomera: Heart beat 105-120 per minute; peak 150 at maximum g; respiration 20-25 breaths per minute; pulse 30 at maximum g; body temperature 98; temperature control 61-68; spacecraft 105-125; control personnel over Indian Ocean say he got 10 pellets over Asia.

1135:45 Guaymas, Mexico, initial contact at 11:34. Also Point Arguello at 11:36.

1146:50 Committed one more orbit. Reset retro-rockets by 16 seconds, added 16 seconds, fire rockets at end of third orbit.

1154:00 Initial contact at 11:41 at Cape Canaveral, contact 11:44 at Bermuda, 11:48 at Atlantic Tracking ship.

1157:30 Canary Island 11:55.

1206:00 Kano makes contact at 12:03.

1213:30 Zanzibar contact at 12:11.

1227:50 Indian Ocean ship contact at 12:21. Chimp status—(from Woomera) heart beat 120-150; breaths per minute 18-30; temperature 98-99; suit temperature 64-68; cabin 93-110. Proceeded through 10 of his work programs, had water and pellets. All systems green.

1237:25 Muchea contacted at 12:31. Woomera at 12:37.

1252:00 Canton Island contacts at 12:50.

1257:45 Hawaii contacts at 12:57.

106:00 Point Arguello contacts at 1:05.

111:00 Contact with Corpus Christi, Tex.

120:00 Cape Canaveral made contact at 1:16. Chimp in good condition at this time.

132:30 Touchdown at 1:28. Indications are that animal is in good condition.

302:30 Report from recovery forces. On deck of USS Stormes at 2:53. In process of opening now.

309:45 Hatch opened — animal live and appears normal.

MA-5!

November two-nine was the date
The spacecraft and its Atlas mate,
With chimp aboard, began its flight
In seconds it was out of sight.

The booster's rockets really roared
As up and up the spacecraft soared.
As the orbital flight began
It went according to the plan.

And it went winging into space
To prove that we're still in the race
With others who think less of men—
We do this first, and send men then.

At M C C, a busy place
There was a smile on every face
As all systems registered go
They brought good cheer to those below.

Enos, meanwhile, was busy too
He had an awful lot to do
In order to get his reward
He had to earn his room and board.

The tracking stations came in fine
And gave reports straight down the line
Which indicated that up high
Enos, in good shape, still could try

To carry out his assigned chore.
He cheered the watchers to the core
As he performed both fast and well
And helped the space program to jell.

As it was proven to the best
That weightlessness could pass the test.
And so another problem solved
Proves that we are not too involved
To do the job and do it well
And yet the whole wide world tell
Exactly what we plan to do
And with the chips all down come through.
And then—not written in the plot—
The spacecraft started to get hot
And men on Earth way down below
Decided then that they should show
That they maintained complete control,
Then quickly acted in their role
And ordered the spacecraft returned
To insure it would not be burned.
Through tracking station reports they
Determined that it would not pay
To circle the Earth just once more
To complete the intended score.
In seconds—the decision made
Was then effected and it paid
As back to Earth the spacecraft came
With Enos—now a chimp of fame.

And now to add a word of praise
To those who spent so many days
To make certain of this success
The secret's knowledge, not just guess.

Another chapter's now complete
The whole world knows of this fine feat
And prob'ly wonders just how soon
We'll land a spacecraft on the moon.

-IDE-

Space News NASA ROUNDUP!

SECOND FRONT PAGE

Mercury Satellite Clock Performs Variety Of Functions During Mercury Orbital Missions

Like airline pilots, astronauts have more than a casual interest in time. Many critical events occur during space flights—and it is vital to the mission that they happen in the proper sequence and at the proper time. The Mercury spacecraft has dozens of timing devices tucked away in its maze of electrical wiring which are designed to insure proper 'sequencing.'

An important time reference provided him is the Orbital Timing Device, or satellite clock, designed by Kenneth Hubner of McDonnell Aircraft Company. Actually, the satellite clock is four clocks in one; two run forward—one backward, and one does not run at all. Greenwich time is displayed on one of the forward-running clocks. The second begins to operate at the instant the flight is begun and provides elapsed time from launch. The backward-running clock also starts at the moment of launch and is set to operate for about five hours. When zero is reached, this clock provides an electrical signal for firing the retro, or 'braking' rockets, which slow the spacecraft for its descent to earth. The fourth, or non-running clock, indicates the precise moment the retrorockets are to be fired and can be reset in flight either by the astronaut or by flight controllers on the ground.

The Mercury satellite clock is one of the most rugged precision timing devices ever built—and the testing conducted to insure its reliability would put commercial watchmakers to shame. Each unit is frozen, cooked, mercilessly shaken, tumbled and dropped and exposed for long periods to corrosive salt sea atmosphere. The thorough environmental testing places greater stresses on the clock than would normally occur during a space mission.

During the first orbital Mercury flight, MA-4, the clock performed well, initiating retrorocket firing on schedule.

Seconds before retrofire, the ASCS, or autopilot, damps out almost all axial motions of the spacecraft, insuring that it is properly aligned to insure maximum efficiency from the forward-firing retrorockets.

Finally, when the backward-running clocks reaches zero, an elecrical pulse triggers the rockets. At the same instant, a retrofire signal is received from the Mercury range —and the astronaut, by pressing a button, provides added assurance that retrofire will be accomplished.

Group Insurance Deadline Is Dec. 31

The deadline for filing applications to participate in the NASA Group Life Insurance Plan is drawing near and those employees who are eligible to participate and desire to do so must enroll prior to January 1, 1962, in order to be covered during the next quarter. A check or money order to cover the first premium should accompany the application.

MSC employees at Langley Field who desire assistance in filing the application may contact Louise Morewitz in the Personnel Office. Cape Canaveral employees may contact Mary Driver, and employees stationed at Houston, John Vincent.

CORRECTION

The November 29 issue of Space News Roundup carried photos and liftoff data on Project Mercury Launch Vehicles. The Little Joe vehicle was incorrectly shown as having 50,000 pounds of thrust. The correct figure is 250,000.

HUMAN RIGHTS WEEK — DECEMBER 10-16, 1961

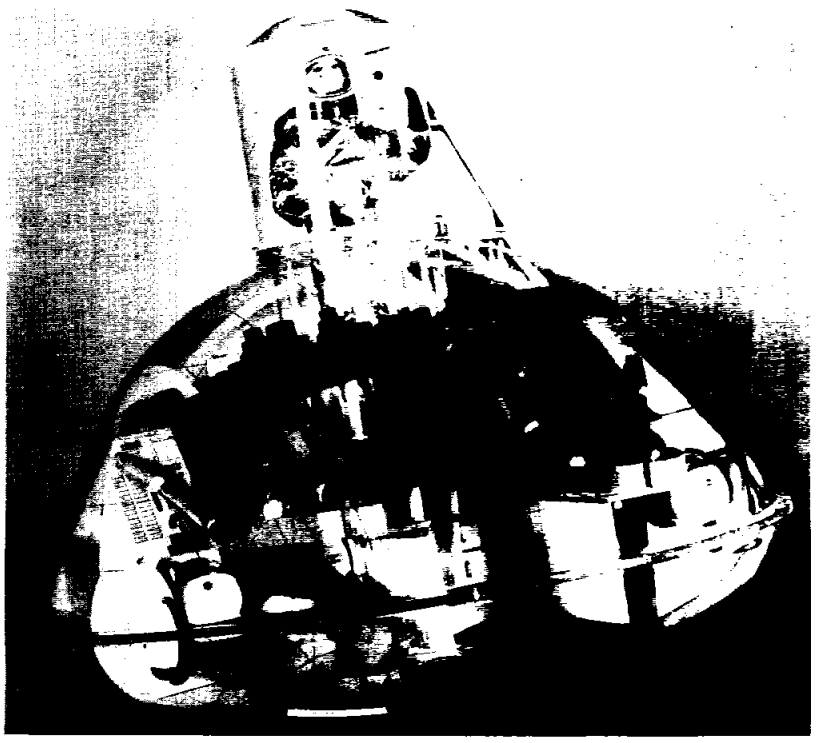
December 10, 1961 marks the thirteenth anniversary of the adoption of the universal declaration of human rights by the United Nations General Assembly.

The following week has been designated by the President as "Human Rights Week." During that time, it is my strong personal wish that we who serve this Nation's space program will rededicate ourselves to the full achievement of the objectives set forth in our own Bill of Rights and in the United Nations declaration—individual dignity, equal protection of law, freedom from arbitrary detention, freedom of movement, conscience, opinion, and assembly, the right to own property, free election—all without distinction or discrimination of any kind.

The brotherhood of men and cooperation between people which underlie the human rights are of particular significance to us in NASA because of our responsibility for a national program and one which incorporates the goal of partnership with all nations in a great human adventure, the exploration of space.

We must constantly remind ourselves that the goals we seeks are important only as they relate to the ultimate benefit of those on earth. With this in mind, let us each as individuals direct our action so as to encourage the concept of decency, dignity, and peace.

James E. Webb
Administrator



A SUGGESTED CONFIGURATION of the command module of the Apollo spacecraft is shown above.

Apollo Contract Is Awarded To North American Aviation

The National Aeronautics and Space Administration announced the selection of North American Aviation, Inc., to design and build a three-man Apollo spacecraft, leading toward eventual lunar landings and exploration of the moon. The announcement was made November 29 following the successful MA-5 mission.

The initial phase of the Apollo program, as it involves North American, is expected to exceed $400 million. Contractual negotiations are currently being worked out by NASA and officials of North American.

The Apollo project will be divided into three basic missions.

1. Earth orbital flights—of testing of spacecraft components and systems, space-crew training and development of operational techniques.

2. Circumlunar flights—in which the spacecraft crew will perform many of the guidance and control tasks needed on the later lunar landing missions.

3. Manned landing and exploration of the moon—the final goal of Project Apollo.

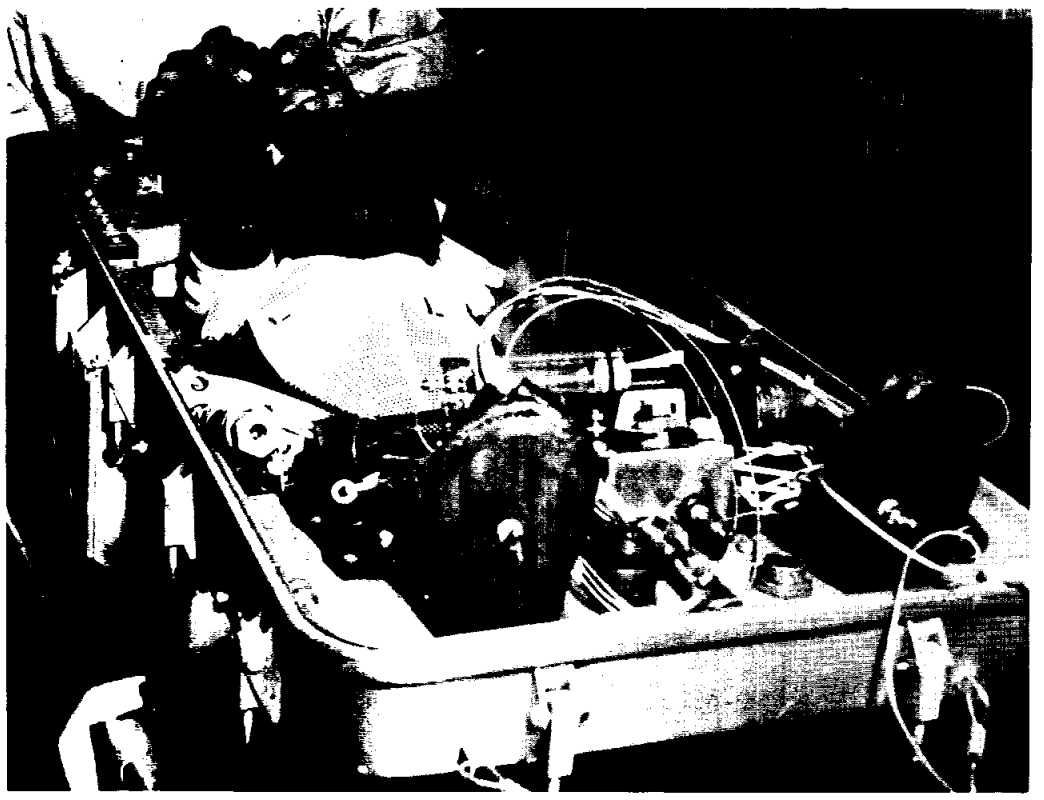
Present scheduling calls for earth orbital flights during the 1964-65 period and circumlunar flights and manned exploration of the moon before the end of the decade.

Design of the Apollo spacecraft will be based on the "building block" or modular concept. There will be three "building blocks" or components in the spacecraft.

One will be the "command center" which will house the three-man crew. The second component will house fuel, electrical power supplies and propulsion units needed for a lunar takeoff. The third component will contain decelerating rockets intended to gently lower the spacecraft onto the surface of the moon.

North American will be responsible for design and development of two of these three components—the command center and the unit housing fuel, electrical power supplies and propulsion units.

(Continued to page 7)



ENOS IS SHOWN just after being fitted into his pressure couch before his orbital flight—apparently calm and relaxed.

ENOS, after his orbital flight, is shown as he arrived at Patrick Air Force Base.