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NEWS RELEASE LOG

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NUMBER	TITLE	RELEASE DATE
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(News Release 66-112 should have been entered in the 1967 News Release book since it was released on 1/3/67 - it was inadvertently given a 1966 number)		

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-1
January 6, 1966

HOUSTON, TEXAS -- Detailed evaluation of applicants for the NASA astronaut program is now underway.

A total of 351 persons applied for the program prior to the Dec. 1, 1965, deadline. Of these, 159 met basic minimum qualifications.

Up to 15 of the qualified applicants will be selected for astronaut training scheduled to start next summer. Names of successful applicants will be announced next spring, probably in May.

Fifty-nine of the qualified applicants are civilians. The 100 others are members of the military services.

Six women expressed interest in the program, but none of them met the minimum qualification requirements.

To qualify, applicants must: (1) have been a United States citizen born on or after Dec. 1, 1929; (2) have had a bachelor degree in engineering, physical or biological sciences; (3) have acquired 1,000 hours jet pilot time or have graduated from a military test pilot school. In addition, they must be able to pass a class-1 flight physical examination.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-2
January 7, 1966

HOUSTON, TEXAS -- Formal acceptance of the 65 ft. diameter vacuum chamber by the NASA Manned Spacecraft Center took place here today after the completion of acceptance tests by Industrial-Fisher-Diversified, prime contractors for the facility.

The transfer of the facility to NASA was accomplished by the U.S. Army Corps of Engineers, technical monitor for NASA facility construction. The 120 ft. high chamber will be used to conduct thermal tests of Apollo spacecraft under vacuum conditions.

The chamber systems which have been checked out and accepted by MSC include the vacuum pumping equipment, the cryogenics for the cold walls, and the repressurization system.

Solar lamps for the facility are in the process of installation by the Radio Corporation of America; and North American Aviation Co., Downey, California, is installing its support equipment for spacecraft tests.

During the next two months, personnel of MSC's Space Environment Simulation Laboratory will be performing the preliminary portions of the chamber shakedown tests.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

MSC 66-3
HU 3-5111 January 10, 1966

HOUSTON, TEXAS -- In preparation for the return of the first Apollo spacecraft from the moon in the latter part of this decade, a series of tests was conducted last week by the Manned Spacecraft Center's Landing and Recovery Division to checkout direction finding equipment for homing on Apollo spacecraft for the post-landing recovery.

The homing equipment, an AN/ARD 17 VHF/S-Band direction finding receiver, was designed and built for the Apollo missions and for installation on Air Force HC-130H Air Rescue Aircraft.

Tests were performed off Galveston Island in the Gulf of Mexico using an Apollo boilerplate spacecraft with the Apollo Recovery Beacon and Apollo Survival Radio transmitting signals.

Homing runs were made from varying altitudes of 28,000 feet down to 500 feet to determine the range of the direction finding receiver onboard the aircraft with the Apollo Recovery Beacon and Survival Radio on the spacecraft in the Gulf. The equipment performed exactly as expected with line-of-sight acquisition of Apollo boilerplate spacecraft on all homing runs by the aircraft. Acquisition was made on line-of-sight from ~~21~~ 210 nautical miles out when the aircraft was at 28,000 feet.

Several of these air rescue aircraft equipped with the homing equipment will be used to cover the landing footprint of the Apollo spacecraft returning from the moon flight.

--more--

MSC 66-3
January 10, 1966

Add 1....

This homing device, being installed on all Air Force HC-130H Air Rescue Service aircraft, will have the capability of tracking the spacecraft in earth orbit on earlier Apollo flights, as well as during the reentry phase. The installation is expected to be completed on all the aircraft in about one year.

The Apollo direction finding homing equipment is manufactured by the Cook Electric Company, Morton Grove, Ill. MSC funded the Air Force Systems Command at Wright-Patterson AFB and they handled the negotiations for the $6,232,000 contract. The contract includes development and fabrication of the original unit, spare parts, training aids, manuals, bench mockups, etc., until all the units are installed on the aircraft.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-4
January 12, 1966

LAS CRUCES, N.M. -- The fuel cell system providing electrical power to the Apollo spacecraft have begun performance verification tests this week at the NASA Manned Spacecraft Center's White Sands Test Facility.

The three-month test series will include the first firing of the Apollo service module propulsion system integrated with fuel cells and on-board cryogenics -- the super-cold liquified gases from which the cells generate electricity.

The tests also will mark the first use of the Apollo-configuration ground support equipment that initiates production of electricity within the cells.

Objective of the test series is to verify performance of the fuel cell system to be flight tested in Apollo Spacecraft 011 at Cape Kennedy this year. Spacecraft 011 -- mission AS-202 -- is the second Apollo/Saturn IB mission, the first to carry fuel cells.

The tests will be conducted for NASA by North American Aviation, Inc., prime contractor on the Apollo spacecraft. United Aircraft Corporation's Pratt and Whitney Division of East Hartford, Connecticut, is sub-contractor to North American for the fuel cell.

The three fuel cells in the electrical power system (EPS) will power the Apollo spacecraft electrically from launch to re-entry. During brief peak power periods, such as course correction maneuvers,

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Add 1....

batteries will supplement the fuel cell output.

In operation, the cells will produce electrical power -- as do those used in the Gemini Program -- through conversion of energy created by the chemical reaction of oxygen and hydrogen.

Rated power output for each of the three cells is 1.42 kilowatts at 29 volts DC. Power required to operate all spacecraft systems can be obtained from two cells if necessary. A single cell will supply up to two kilowatts for short periods and, under reduced load, will create enough electricity to permit safe termination at any point in the mission.

The final test in the programmed White Sands series will include close simulation of emergency conditions using two cells, then just one cell under conditions of maximum load.

This test phase plus simulation of the Spacecraft 011 unmanned flight will put the cells through 40 hours of continuous operation.

Initial tests will involve no on-board cryogenics. Ground support equipment will start and sustain cell operation to verify GSE and EPS performance.

Further steps will test unloaded cryogenic storage tanks against vibration and shock of the service propulsion system firing. Programmed tests also call for engine firing with the fuel cell under full load using on-board cryogenics.

Operating procedures developed at White Sands Test Facility will be used at Cape Kennedy in support of Apollo spacecraft flights.

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MSC 66-4
January 12, 1966

Add 2.....

The series is scheduled to end at White Sands Test Facility in late March or early April, with test data and any indicated modifications being applied to the Spacecraft 011 electrical power system for flight testing.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HUnter 3-5111

MSC 66-5
January 21, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration converted one of its major contracts today from a-cost-plus-fixed-fee type to a cost-plus-incentive agreement.

With the North American Aviation Space and Information Systems Division, Downey, California, the contract is for development of the Apollo spacecraft command and service modules and the adapter which houses the lunar excursion module.

The conversion covers the contract period from October 1965 to December 3, 1966. Estimated cost is $671,300,000. Additional negotiations will be held for subsequent periods.

The contract provides profit incentive for outstanding performance, cost control, and timely delivery as well as potential profit reductions when performance, cost and schedule requirements are not met.

North American was selected by NASA in November 1961 to develop the command and service modules of the spacecraft for the Apollo manned moon exploration program. The work includes manufacture of the spacecraft, LEM adapter, spare parts, ground support equipment and extensive ground testing. Cost of work, including the new agreement, is $2.2 billion.

The Apollo mission calls for three astronauts to be in the command module when the spacecraft is launched from Cape Kennedy, Florida, and when they return to earth. The service module, unmanned throughout the mission, contains the main propulsion system for operations in space, and other equipment to support the command module.

A third segment of the spacecraft, the lunar excursion module, is being developed for NASA by the Grumman Aircraft Engineering Corporation, Bethpage, New York. When the three module vehicle is orbiting the moon two astronauts will enter the LEM from the ,mmand module, detach the LEM from the mother ship and descent to the lunar surface.

The spacecraft develcpment contracts are managed by NASA's Manned Spacecraft Center, Houston.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-6
January 17, 1966

HOUSTON, TEXAS. -- Donald K. Slayton, Assistant Director for Flight Crew Operations, will receive an honorary Doctor of Engineering degree from Michigan Technological University in a ceremony at 10:30 a.m. Friday, January 21, at the Manned Spacecraft Center.

The honorary degree hood, citation, and diploma will be presented by the university's president, Dr. Raymond L. Smith. The degree was conferred upon Slayton by the university's Board of Control "in recog- r ion of high attainments in engineering."

Dr. Robert Gilruth, Director of MSC, will assist in the ceremony. He received the Doctor of Engineering degree from MTU several years ago. It is the highest recognition the university can award to an engineer.

Slayton delivered the MTU commencement address in absentia last August. William A. Fowler, the university's Director of Development, who delivered the address for Slayton, will accompany Dr. Smith to MSC.

One of the seven original Mercury astronauts, Slayton received a Bachelor of Science degree in aeronautical engineering from the University of Minnesota. As Assistant Director for Flight Crew Operations, he is responsible for directing the Astronaut Office, Aircraft Operations Office, and the Flight Crew Support Division. He holds the NASA Distinguished Service Medal for his leadership in astronaut training.

The main campus of Michigan Technological University is at Houghton. There are branches at Sault Ste. Marie and Alberta.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 66-7
Released by NASA
Hqs. January 26, 1966

HOUSTON, TEXAS -- Scientific experiments were selected today by the National Aeronautics and Space Administration to be left on the moon's surface by astronauts in Apollo manned lunar landings.

Seven geophysical instruments were chosen as primary and backup experiments to be included in three flight packages and one backup on the initial Apollo landing missions.

A package of experiments -- called Apollo Lunar Surface Experiments Package (ALSEP) -- will weigh about 150 pounds. An ALSEP will be carried in the lunar excursion module on initial Apollo flights and astronauts will deploy and activate each instrument in an effective operating location near their landing site. Experiments will be left on the moon to transmit data for six months to one year.

Selection of the experiments was made by Dr. Homer E. Newell, Associate Administrator for Space Science and Applications, upon recommendation of NASA's Space Science Steering Committee. The experiments were approved by the Office of Manned Space Flight's Experiments Board which is chaired by OMSF Associate Administrator, Dr. George E. Mueller.

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Dr. Newell noted that at NASA's 1965 Summer Conference on Lunar Exploration and Science at Falmouth, Mass., the Geophysics Subcommittee pointed out that although the ALSEP is small, "Every basic observation in geophysics could be carried out" with the scientific instruments chosen.

Since the ALSEP's are still in the design stage, the number of experiments for each package is somewhat flexible. ASLEP's will be modular in form, however, to allow for later interchange of scientific instruments.

The seven experiments are listed with their principal scientific investigator and co-investigators:

Passive Lunar Seismic Experiment -- Dr. Frank Press of Massachusetts Institute of Technology and Dr. George Sutton of Columbia University's Lamont Geological Observatory. This three-axis seismometer will measure lunar tremors or moonquakes to study the moon's interior to its center -- whether it has a crust and core and whether it is layered in structure.

Lunar Tri-Axis Magnetometer -- Dr. C. P. Sonnett of NASA's Ames Research Center, Moffett Field, Calif., and Jerry Modisette of NASA's Manned Spacecraft Center, Houston, Texas. The magnetometer, similar to ones flown in unmanned flights, will measure the moon's internal magnetic field as well as the interraction of the solar wind with the magnetic field around the moon.

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Medium Energy Solar Wind Experiment -- Dr. C. W. Snyder and Dr. M. N. Neugebauer of NASA's Jet Propulsion Laboratory, Pasadena. This plasma spectrometer will measure the velocity and direction of protons, electrons and alphas particles in the solar wind as they arrive at the moon and the interraction of these particles with the lunar surface.

Suprathermal Ion Detector -- Dr. J. W. Freeman, Jr., of Rice University and Dr. F. Curtis Michel, formerly of Rice and now a NASA scientist-astronaut. This experiment will measure the moon's ionosphere by sampling ions in a wide range of energies to determine how strongly it is affected by the solar wind.

Lunar Heat Flow Measurements -- Dr. Marcus G. Langseth of Columbia's Lamont Observatory, Dr. Sydney Clark of Yale University and Dr. M. Gene Simmons of MIT. This instrument is designed to measure the outflow of heat from the moon's interior through the surface to provide information on the distribution of radioactive elements and the thermal history of the moon, including volcanism.

Low Energy Solar Wind -- Dr. Brian J. O'Brien of Rice University. Like the JPL Experiment, this instrument will study solar wind particles, but in lower energy ranges.

Active Lunar Seismic Experiment -- Dr. Robert L. Kovach of Stanford University and Dr. Joel S. Watkins of the U. S. Geological

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Survey. This experiment will require more astronaut activity than the others. After the instrument is activated, an astronaut will hit the lunar surface with a thumping device as he walks out to 1,000 feet from the lunar excursion module. Beyond that distance, a small mortar device will be used to fire small projectiles to land on the surface and the instrument will study the resulting tremors to obtain information on physical properties of the lunar surface to a depth of about 500 feet.

Three industrial firms have competing contracts with the Manned Spacecraft Center to design the ALSEP's which will house the instruments during flight and provide common power and telemetry support for the experiments on the moon.

One firm will be selected to integrate the ALSEP payload and develop selected hardware in cooperation with the scientists involved in each of the selected investigations after mockups are delivered to NASA in February, 1966.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
HUnter 3-5111

MSC 66-8
February 2, 1966

HOUSTON, TEXAS -- Plans have been completed and a contract awarded for development of emergency medical kits to accompany U. S. Astronauts in their first flight to the moon.

Dr. Charles A. Berry, Chief of Medical Programs at NASA's Manned Spacecraft Center, said the medical kit will satisfy all in-flight and training requirements for the Apollo Command Module and the Lunar Excursion Module. The Command Module will carry three astronauts into lunar orbit. Two of the three will then transfer into the LEM for the actual lunar landing.

"The design, development and fabrication of an emergency medical kit, containing drugs and other medical supplies, is required to deal with emergency situations which may arise during flight and outside the spacecraft after landing," Berry said. It is also required for use with the LEM during lunar operations.

Under terms of the contract, awarded to Rodana Research Corporation, Bethesda, Maryland, two training units will be delivered for each flight. In addition, the contract calls for one mock-up and six prototype models. Numbers of flight and backup kits will be determined by the number of flights scheduled. The contract is for $70,000.

- more -

The kits will consist of loaded injectors, tablets, capsules, ointment, inhalers, adhesives, and compressed dressings, packed in a box about four inches square by about five and a half inches deep. Partitions will be provided to form individual compartments for each item.

Under terms of the contract, work on the medical kit will be done in three phases. Phase I will encompass design, fabrication, maintenance, support and test of the prototype kit. Phase II of the program will encompass the necessary qualification testing, redesign and fabrication of the final configuration kit. Phase III is the production phase.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 66-9
February 2, 1966

HOUSTON, TEXAS -- A tool box that can be turned inside out and carried on the surface of the moon has been delivered to the NASA's Manned Spacecraft Center by the Martin Company, Baltimore, Maryland.

The prototype unit is the container for 16 geological tools which could be used on the surface of the moon to examine and obtain samples of lunar rock. It and other prototype hardware with the same function are to be evaluated for suitability.

The two-cubic foot container is designed for storage in the LEM during flight to the moon. When the LEM lands, the tool box can be taken out and "refolded" on its hinges by the astronaut to expose the tools. The new interior of the box becomes a storage area for rock samples.

The main item in the lunar tool kit is a battery-powered drill capable of chiseling or coring any rock material from basalt to pumice. It can operate for as long as an hour and drill cores six inches into the moon's crust.

A dust scoop that can function as a spade, a hoe or a scoop has been designed to aid in picking up any loose or light material which may be found on the surface.

Since it is planned to return only 80 pounds of lunar material, a sample-weighing device has also been proposed which allows the astronaut to weigh the specimens. The beam-type can weigh rocks from 5 to 65 pounds, and insures that the baggage limit of the LEM will not be exceeded for a return flight.

Other items include a hand-held magnifier designed to be used by the astronaut through the spacesuit visor, several types of surveying instruments and rangefinders, and a sample retriever which can reach into holes and cracks and pick up small specimens of rock which a suited astronaut could not grasp.

Further refinements will probably be made in the lunar tool kit after additional tests and evaluations have been conducted. It is also expected that information from the Surveyor unmanned soft landings will help MSC engineers and geologists to develop the final tools which the astronauts will use on the lunar missions.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 66-10

February 1, 1966

NASA TO LAUNCH FIRST UNMANNED APOLLO/SATURN IB

HOUSTON, TEXAS -- The National Aeronautics and Space Administration announced plans today to launch the first unmanned Apollo/Saturn IB mission from Cape Kennedy, Fla., February 22.

The first Saturn IB launch vehicle will boost production-model Command and Service Modules of the Apollo spacecraft from Launch Complex 34.

The cone-shaped command module, 12 feet high and 13 feet in diameter at its base, is the segment of the spacecraft in which three astronauts will leave the earth and return during the Apollo manned lunar landing mission before the end of this decade.

The 22,000-pound-thrust rocket engine contained in the service module will provide propulsion enroute to the moon, braking into lunar orbit, return to the earth and other operations in space. The service module also contains the electrical power system and other equipment to support the command module.

Principal objectives of the first Apollo/Saturn IB mission are evaluation of launch vehicle performance and test of the spacecraft command module heat shield.

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The heat shield is an ablative coating on the outer surface of the spacecraft. During reentry into the Earth's atmosphere this coating ablates or burns off. This action dissipates heat and therefore prevents destructive high temperatures from reaching the metal surface of the spacecraft. The ablative material on the Apollo command module is an epoxy resin. Similar ablative heat shield materials were used on Mercury and Gemini spacecraft.

Other mission objectives include verification of spacecraft propulsion system performance, including restart capability of the service module main engine; performance of the spacecraft environmental system reaction and stabilization systems, and partial performance of the communications and power systems.

The spacecraft will be launched on a suborbital flight over the South Atlantic Ocean of about 39 minutes' duration. About halfway into the mission a peak altitude of approximately 300 statute miles is to be achieved.

During the descending flight the main rocket engine of the service module will be fired twice. After the second engine burn, the service module will be jettisoned. The command module will reenter and impact about 5,300 statute miles from the launch pad. The planned point of impact is in the Atlantic Ocean approximately 200 miles east of Ascension Island.

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Add 2
MSC 66-10

Department of Defense recovery units will recover the spacecraft for technical evaluation by NASA and North American Aviation, Inc. engineers.

The two-stage Saturn IB vehicle is an improved version of the Saturn I which was a 100% success. There were 10 launches from October 1961 to July 30, 1965. These included unmanned tests of Apollo command and service module "boilerplate" spacecraft (engineering test models) and three Pegasus meteoroid technology satellites.

The Saturn IB first stage is almost identical to that of Saturn I, employing a cluster of eight H-1 kerosene liquid oxygen propellant engines. However, the Saturn IB engines have been uprated to produce 200,000 pounds of thrust each, for a total booster thrust of 1.6 million pounds. (The Saturn I engines were 188,000 pound thrust.)

Saturn IB will utilize a new second stage (S-IVB) which is propelled by a single 200,000 pound thrust, liquid hydrogen/oxygen J-2 engine. (The S-IV, second stage of Saturn I, was powered by a cluster of six 15,000 pound thrust RL10 A3 liquid hydrogen/oxygen engines.)

Saturn IB, with a combined thrust of 1.8 million pounds in its two stages, is capable of placing more than 18 tons in earth orbit.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HUnter 3-5111

MSC 66-11
February 3, 1966

HOUSTON, TEXAS -- NASA's first Saturn IB rocket is scheduled to be launched Sunday -- on paper.

Countdown demonstrations tests -- the full dress rehearsal for the coming flight scheduled for February 22 -- are set to begin today (Thursday). They will terminate sometime Sunday when the practice count reaches T-0.

Kennedy Space Center test supervisor for the flight, Paul Donnelly, said today's part of the four-day operation will involve functional checks of the launch vehicle which will be in a "power-on" condition.

Ordnance items will be checked and access doors and hatches will be put back on for the actual flight when they are tested.

More functional checks, dry and wet run-throughs with fueling operations, will be done Friday and Saturday. Dry run will be tomorrow.

"What we'll be doing is making a time-study of the procedures" Donnelly said. "If we plan certain steps for X number of hours and we find during this practice that we can do it in two hours less, then we'll cut the clock on the real countdown by two hours.

--more--

"But, if we run into any problems, we can take the time to stop and correct them. That's the reason for this demonstration test, to iron out anything that might develop."

During the wet run-through the S-IB booster and the S-IVB second stages will be fueled. Hypergolics in the spacecraft and S-IVB stage and RP-1 in the booster will not be added because this is done prior to the beginning of the actual count.

On Sunday the terminal portion of the count will be undertaken. Following the countdown demonstration there will be a flight readiness test.

AS-201 is the first of the 1B series which explains why procedures and time allocations are being firmed up at this point.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 65-12
January 27, 1966

HOUSTON, TEXAS -- Astronaut Donn F. Eisele entered Methodist Hospital here this afternoon where he is scheduled to undergo surgical repair of his left shoulder Friday morning.

Dr. Charles A. Berry, Chief of Center Medical Programs at the Manned Spacecraft Center, said that Eisele has suffered a recurrant dislocation of his left shoulder since he first dislocated it during zero G flight training last year. He reinjured he shoulder later in the year during physical training at the Manned Spacecraft Center.

Dr. Berry said Eisele is expected to recover fully from the surgery and added that the surgery should not affect his future military or flight crew status.

The 35-year-old Air Force Major, a native of Columbus, Ohio, was selected as an astronaut in October, 1963.

The long bone in the upper arm dislocated latterly. There are several techniques involved in the surgical repair.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-13
February 11, 1966

HOUSTON, TEXAS -- The Apollo/Saturn 201 launch is now scheduled no earlier than February 23, 1966, the National Aeronautics and Space Administration announced today.

Project officials said that since this is the first launch of the up-rated Saturn I and Apollo production spacecraft involving several components never before flown, the new launch date is still tentative.

Review of the countdown demonstration test completed Wednesday indicated the need for lengthening the time allocated for space vehicle propellant loading. This extended the overall time for countdown of launch vehicle and spacecraft.

Similar adjustments of countdown procedures were necessary in early Saturn I and Gemini-Titan launches.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-14
February 15, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration announced today the conversion of its contract with Grumman Aircraft Engineering Corporation, Bethpage, New York, for development of the Lunar Excursion Module to a cost-plus-incentive agreement.

Under terms of the four-year contract, Grumman will deliver 15 flight articles, ten test articles and two mission simulators. This adds four flight articles to the contract, ending December 31, 1969, and will complete the LEM requirements for the Apollo moon landing program. Total cost is $1.019 billion.

The contract provides profit-incentive for outstanding performance, cost, control, and timely delivery as well as potential profit reduction if performance, costs and schedule requirements are not met.

Grumman was selected by NASA in November 1962, to develop the Lunar Excursion Module, the vehicle designed to carry the first American to the lunar surface. Cost of the work, added to the new agreement, is $1.42 billion.

--more--

Add 1
MSC 66-14

This conversion marks the second major Apollo contract conversion by NASA within the past two months. The agency announced January 21 that it had signed a contract conversion with North American Aviation, Inc. for development of the Apollo Command and Service Module. That contract conversion was in the amount of $671.3 million and covered a one-year period ending in December this year. Total cost of the NAA contract is $2.2 billion.

Both spacecraft development contracts are managed by NASA's Manned Spacecraft Center, Houston.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-15
February 18, 1966

HOUSTON, TEXAS ... A group of NASA Manned Spacecraft Center engineers can lay claim to being among the world's biggest noisemakers when they began test operations earlier this week in the Spacecraft Acoustic Laboratory (Building 49).

The 105-foot high tower in the facility can house a full Apollo spacecraft. The acoustic equipment inside the facility can test the spacecraft reaction to the dynamic loads created by flight through the earth's atmosphere.

The launch noise generated by the Saturn V rocket engines, which create 7.5 million pounds of thrust, can be reproduced. The more severe acoustic loading which the spacecraft receives as its velocity reaches the speed of sound can also be simulated.

The buffeting produces a noise which is estimated at 160,000 acoustic watts. As a comparison, the human voice is seven-thousandths of a watt, and a stereophonic phonograph produces 10 watts at full volume.

The sound in the Acoustic Laboratory is produced by a system of very sophisticated sirens. The air is drawn through a series of choppers which converts the energy of moving air into acoustic energy.

A battery of 16 fiberglass horns funnel the sound into a steel shroud over the spacecraft. One-third of the sound is diverted upward over the Command Module. The test of the sound flows downward over the Service Module and Lunar Excursion Module.

With small modifications, the unit can be converted to an echo chamber, with the sound waves bouncing between the spacecraft and the chamber walls.

To keep the sound from causing excessive vibration in the building, a giant muffler, 11 feet high and eight feet in diameter, is fitted to the top of the spacecraft shroud where a portion of the sound is absorbed.

Even with the muffler on, the system generates a sound like a continuous roll of thunder, a rocket engine starting, or a jet aircraft, a noise which can be heard several hundred yards away from the building.

Producing all this sound is the second largest horsepower motor on the site which runs a compressor pulling 24,000 cubic feet of air through the system every minute of operation.

For its first tests, the sound system will be run at low volume to check out the fit of the shroud over the spacecraft. Then the full volume tests will determine whether the Apollo spacecraft can withstand the stress of landing or liftoff for the moon.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-16
February 17, 1966

HOUSTON, TEXAS -- The launch of Gemini 8 from Cape Kennedy, Fla., has been scheduled for no earlier than March 15, the National Aeronautics and Space Administration announced today. Liftoff time is 11:40 a.m. EST.

Command pilot for the three-day mission is civilian astronaut Neil A. Armstrong. Pilot is Air Force Major David R. Scott. Gemini 8 will be boosted into orbit by the two stage Titan II Gemini launch vehicle generating 430,000 pounds of thrust.

The mission will include rendezvous with a Gemini Agena target vehicle (GATV) (modified Agena D), Extravehicular Activity by Scott and 11 on-board experiments.

The Agena will be launched into a 185 statute mile circular orbit by an Atlas standardized launch vehicle approximately 100 minutes before Gemini 8 liftoff.

Gemini 8 will go into a 100 by 168 statute mile elliptical orbit and rendezvous as planned during the fourth revolution, approximately five and one-half hours after liftoff.

After rendezvous the Command Pilot will perform the first of four dockings with the Agena, in which the Gemini will be physically connected to the Agena.

Several operational tests will be conducted, and the two spacecrafts will remain docked until after extravehicular activity begins.

Scott is scheduled to open the hatch at 20 hours and 25 minutes into the mission and spend one and a half revolutions, about 2 hours and 15 minutes outside the spacecraft. Total elapsed time from hatch-opening to hatch-closing will be about two hours and 51 minutes.

In the first daylight segment, he will remain on a 25-foot umbilical tether, with oxygen supplied from the spacecraft. He will retrieve a nuclear emulsion radiation experiment from the spacecraft adapter, activate a micrometeroid experiment on the Agena, and use the minimum reaction power tool to loosen and tighten on a work panel on the adapter.

At daylight, Command Pilot Armstrong will undock the spacecraft and fly formation on the Agena at distances up to 60 feet.

During the night side Scott will don a back pack contained in the spacecraft adapter. With the back pack is a 75 foot tether which he will attach to the original 25 foot tether. He will remain at the adapter section of the spacecraft until daylight before continuing the extravehicular activity.

He will use a hand held maneuvering unit which fires bursts of freon nitrogen gas to control his movements. This unit is similar to the one used by Astronaut Edward H. White during the Gemini 4 mission.

Approximately four hours after the completion of extra-vehicular activity, the Gemini 8 will maneuver into a different orbit from that of Agena and then attempt to re-rendezvous with the target vehicle.

Five scientific, five technological, and one medical experiment will be carried on Gemini 8. Technological experiments include mass determination, UHF/VHF polarization, night image intensification, powered tool evaluation and meteor observation. Scientific experiments are zodiacal light photography, frog egg growth, cloud top spectrometer, nuclear emulsion, and micrometeorite collection. The medical experiment is the bio-assays of body fluids.

Landing of the spacecraft is scheduled in the West Atlantic Recovery Zone at the beginning of the 45th revolution after approximately 71 hours of flight.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-18
March 7, 1966

HOUSTON, TEXAS -- All test objectives of the first unmanned Apollo Saturn 1B mission February 26 were achieved, according to preliminary information, the National Aeronautics and Space Administration said today.

Launch from Cape Kennedy, it was the first flight test of an Apollo spacecraft and Saturn 1B launch vehicle.

All aspects of the two stage launch vehicle performance were within the expected range.

The sequence of events scheduled for the spacecraft occurred essentially as planned. The command module was recovered with no evidence of structural damage. There was no significant damage to the ablative heat shield other than expected charring. The surface was smooth and no excessive errosion was noted. Windows were in good shape, though one was fogged and the interior was essentially dry.

Launch at 11:12 a.m. EST first stage Saturn 1B performance was normal. The four inboard engines cut off at 141.4 seconds after liftoff, about.9 second later than predicted. Outboard engine cutoff came at 142.9, about .4 second later than expected.

The second (S4B) stage ignited at 149.3 seconds, .4 second later than predicted, and cut off at 602.7, 10 seconds later than expected. This longer burning time was attributed to actual average thrust being about 5% below that predicted. However, both thrust and time deviations were within expected tolerances. The guidance system automatically compensated for the lower thrust by extending burning time to achieve the desired results.

The guidance and control system performed well; both S-IB and S-4B trajectories and end velocities were normal, and no structural problems were found in either of the stages or the instrument unit. The quality of data received at ground stations was good and very few losses occurred in the expected 1,300 measurements telemetered.

One of the two cameras carried aboard the first stage and ejected following burnout was recovered by Air Force crews. The cameras had excellent coverage of stage separation and S4B ignition. The parachutes on the cameras did not function properly, however.

The spacecraft service module main propulsion engine performed a little below normal because of an unexplained drop

in oxidizer pressure. This resulted in a reentry speed some 500 miles per hour less than 18,500 miles per hour expected but adequate to evaluate performance of the spacecraft heatshield for earth orbital missions.

Preliminary data indicates a 7% reduction in heat rate and about 10% less surface temperature on the heat shield.

The service module engine burned normally at the start of the first firing and then a slight decrease was noted. Pressures were back to normal at the end of the second firing of the engine. Engine performance was normal under the lower oxidizer pressure condition. A careful study of data is expected to provide an explanation of the pressure drop.

The earth landing system functioned properly.

After impact, however, one of the two main parachute disconnects failed to fire and the parachutes remained attached to the spacecraft until recovery personnel cut them free. The unfired parachute disconnect will be examined to find the cause of the misfire. The spacecraft uprighting system was not activated since the spacecraft landed upright in the water.

Helicopters and swimmers were at the spacecraft about 33 minutes after splashdown. It was retrieved by the USS Boxer at 2:13 p.m. EST, about 3 hours after liftoff. The ship arrived at Norfolk, Virginia, on March 6.

Add 3
MSC 66-18

The spacecraft will be flown to Downey, California for detailed inspection by NASA and North American Aviation Apollo officials.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

MSC 66-19
March 10, 1966

HU 3-5111

HOUSTON, TEXAS -- At a point in the upcoming Gemini VIII mission Astronaut Dave Scott will disconnect the restraining system on a tool in the adapter section of his spacecraft and proceed to disprove an accepted theory that for every action there must be a reaction.

The tool, the first reaction power tool to be used by an American astronaut, will actually be used outside the Gemini VIII spacecraft. Scott, while on a tether during extravehicular activity, will remove the tool from its compartment and perform a 10-minute maintenance task ... loosening nuts from bolts, removing a metal plate and re-bolting it in place.

But this is no ordinary power tool. Were it so, when Scott activated the tool's power system and the shaft began to spin, he, too, would spin. The "law" of action and reaction.

But in this tool, labeled NASA/DOD Experiment D-16, reactive forces are virtually eliminated by a combination of the controlled internal restraint system and a conventional impact mechanism, much like that contained in a garage mechanic's standard power impact wrench.

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The objective of the experiment is to evaluate man's ability to perform useful maintenance tasks in free space, and to evaluate the performance of the tool itself.

The tool has less than one inch-ounce of reactive torque, or 96 per cent less than a comparable power wrench in general use on the earth. The least reactive torque or twisting force on the operator of any impact tool developed previously was one-fiftieth (1/50th) of the output force. The Gemini VIII power tool's reactive torque is so small (1/1200th of the output) that it has virtually zero action.

An Air Force contract for the design development and manufacture of the tool was awarded more than a year ago to the Martin Company's Baltimore Division and to Black & Decker Manufacturing Company, Towson, Maryland. The contract was a follow-on to an earlier Air Force contract under which the firms produced a "proof of principle" minimum reaction tool.

Although its operating principle is basically unchanged, the new tool for the Gemini VIII mission looks considerably different. Its battery is mounted in a streamlined motor housing rather than in the handle. The motor itself is smaller and

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incorporates lightweight, stronger field magnets of barium ferrite. The handle is almost centered under the length of the tool and hinges for folding, so that the tool will fit the confined space available for the experiment aboard the Gemini adapter section. Added is a small working light located at the base of the handle.

Total weight of the tool is less than eight pounds. It measures approximately 10½ inches in length, nine inches in height and five inches across the widest point of the motor housing -- about the volumetric size of the standard impact wrench used by garage mechanics. The exterior finish of the flight tool is a dulled metal color to prevent reflection and excessive heating when used on the sunny side of the spacecraft.

An extensive test program was carried out by Martin and NASA to qualify the tool for this first extravehicular performance. The tool had to undergo the environmental conditions of the launch phase -- high humidity atmosphere tests, acceleration, vibration and shock forces.

In addition, the tool was tested for performance in a vacuum condition and under the wide range of temperatures expected, ranging from 60 degrees below zero to 160 degrees above.

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When Scott completes the 10-minute maintenance task, the tool will be replaced in its storage compartment and will be lost when the adapter section is jettisoned prior to spacecraft reentry.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

WA 3-5111

MSC 66-20
March 21, 1966

GEMINI AND APOLLO CREWS SELECTED

HOUSTON, TEXAS...Twelve astronauts were named to flight crews today - including the first manned Apollo mission - and two others assigned earlier were shifted to a different mission.

Prime crewmen for the Apollo earth-orbital mission tentatively scheduled in the first quarter of 1967 are Lt. Col. Virgil I. "Gus" Grissom, (USAF), Lt. Col. Edward H. White II, (USAF), and Lt. Roger B. Chaffee, (Navy). Their backups are Lt. Col. James A. McDivitt, (USAF), Major David R. Scott, (USAF) and Mr. Russell Schweickart, a civilian employee of NASA.

Assigned as prime crewmen for the Gemini 11 mission scheduled in the last quarter of this year are Navy Commander Charles "Pete" Conrad, Jr., command pilot, and Navy Lt. Commander Richard F. Gordon, Jr., pilot. Backups are Mr. Neil A. Armstrong, command pilot, and USAF Captain William A. Anders, pilot.

Backup crewmen for the Gemini 10 flight, Navy Captain James A. Lovell, Jr., and USAF Major Edwin E. "Buzz" Aldrin, Jr., were reassigned as backup crew for Gemini 9. The original Gemini 9 backups, USAF Lt. Col. Thomas P. Stafford and Navy Lt. Commander Eugene A. Cernan, became prime crewmen for that mission after the deaths of Mr. Elliot M. See, Jr., and USAF Major Charles A. Bassett, II, on February 28, 1966.

Replacing Lovell and Aldrin as the backup crew for Gemini 10 are Navy Lt. Commander Alan L. Bean and Marine Major Clifton C. Williams, Jr.

Add 1
C 66-20

The first manned Apollo mission could come as early as the fourth Saturn 1B flight. The first Saturn 1B flew successfully on February 26, 1966.

Duration of the first manned Apollo mission, as presently conceived, will be determined on an orbit by orbit basis for the first six orbits, then n a day-by-day basis for up to 14 days maximum. Its orbit is to carry as high as 265 miles statute with a perigee of 100 statute miles. Prime goal of the flight will be to verify spacecraft,crew and ground support compatibility.

As presently planned, Gemini 11 will be a rendezvous and docking flight of up to three days duration. Rendezvous is scheduled in the first revolution, with the flight crew using onboard systems to compute their own trajectories and maneuvers. Ground systems will be used as a backup.

Plans call for the spacecraft to rerendezvous with the Gemini 11 Agena vehicle, which procedurally will be a passive target the second time. The rerendezvous also will be accomplished with the use of onboard systems.

Extravehicular activity is planned, using a hand-held maneuvering unit similar to the one which would have been used on Gemini 8. Duration of EVA and tasks to be performed will be based on experience in Gemini 9 and Gemini 10.

Approximately 8 experiments are tentatively scheduled for Gemini 11. All of them will be repeats of experiments flown previously, but a list of specific experiments will not be available until a reevaluation is completed.

The Gemini 11 Agena will be parked in a high orbit for possible use during Gemini 12.

The launch profile and orbital parameters will be essentially the same in Gemini 11 as those in Gemini 8. The Agena will be launched into a 185 statute -le orbit, and rendezvous will be accomplished at that altitude.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HUnter 3-5111

MSC 66-21
March 30, 1966

HOUSTON, TEXAS -- Flight director assignments for the remaining four Gemini flights and for the next three Apollo flights have been made by Manned Spacecraft Center's Assistant Director for Flight Operations, Christopher C. Kraft, Jr.

Eugene F. Kranz, Glynn S. Lunney, and Clifford E. Charlesworth will direct the upcoming Gemini 9 mission.

Flight directors for Gemini 10, 11, and 12 will be Lunney and Charlesworth.

Apollo/Saturn flights 202 and 203 will be directed by John D. Hodge, with Kraft as his backup.

The first manned Apollo mission, which may be Apollo/Saturn 204, will be directed by the team that had charge of the earlier Gemini flights: Kraft, Hodge, and Kranz.

Assignment as flight directors is in addition to the regular duties of these men within the Flight Operations Directorate. Kraft is the senior operations man at MSC, and the various flight directors are responsible to him in carrying out their assignments.

Kraft, 42, was born in Phoebus, Va., and has a BS degree in aeronautical engineering from Virginia Polytechnic Institute. He began his career with the government at Langley Research Center

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in 1945. He served as flight director on all Project Mercury flights and on the first seven Gemini flights.

Hodge, 37, was born at Leigh-on-Sea, Essex, England. He has a BS degree in engineering from the University of London. In April 1959 he joined NASA and is now chief of the Flight Control Division. He was active in the Mercury program and a flight director on Mercury/Atlas 9. He also served as flight director on Gemini flights 4 through 8.

Kranz, 32, was born in Toledo, Ohio, and has a BS degree in aeronautical engineering from St. Louis University. He joined NASA in October 1960. Kranz has served as a flight director on the past five Gemini flights. His current assignment is chief of the Flight Control Operations Branch of the Flight Control Division.

Lunney, 29, was born in Old Forge, Pennsylvania. He has a BS degree in aeronautical engineering from the University of Detroit. Lunney joined NASA in 1955 as a co-op student, in the Space Task Group, MSC's predecessor, in 1959. He was flight director on the Apollo 201 flight in February of this year. His present position is chief of the Flight Dynamics Branch of the Flight Control Division.

ADD 2
MSC 66-21

Charlesworth, 34, was born in Redwing, Minnesota. He has a BS degree in physics from Mississippi College. He joined NASA in April 1962 and his current assignment is assistant chief of the Flight Dynamics Branch. During the Gemini 8 flight, he served as a flight director trainee on Hodge's shift.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-22
April 4, 1966

HOUSTON, TEXAS...Nineteen pilots will join the astronaut team early in May, the National Aeronautics and Space Administration announced today.

They will boost the total number of NASA astronauts to 50.

Average age of the group is 32.8 years. Average number of college years is 5.8, and average flight time is 2,714 hours, of which 1,925 hours is jet time. Two of the new astronauts have doctorates. Two are single.

Four civilians are among those selected. Of the remainder, 7 are Air Force officers, 6 are Navy officers, and 2 are Marine Corps officers.

They include:

Vance D. Brand, 34, an engineering test pilot for Lockheed assigned to the West German F-104G Flight Test Center at Istres, France. Brand, his wife and 4 children live at Martigues, France.

Lt. John S. Bull, USN, 31, a test pilot at the Naval Air Station, Patuxent River, Maryland. Bull, his wife and son live on the base.

Maj. Gerald P. Carr, USMC, 33, Test Directors Section, Marine Corps Air Facility, Santa Ana, California. Carr, his wife and 6 children live in Santa Ana.

Capt. Charles M. Duke, Jr., USAF, 30, instructor at Aerospace Research Pilot School, Edwards Air Force Base, California. Duke, his wife and one son live in Edwards, Calif.

Capt. ~~John~~ Joe H. Engle, USAF, 33, aerospace research flight test officer assigned as project pilot for X-15, Edwards AFB, Calif. Engle, his wife and two children live in Edwards.

- more -

Lt. Cdr. Ronald E. Evans, USN, 32, on sea duty in the Pacific. His wife and two children live in San Diego, Calif.

Maj. Edward G. Givens, Jr., USAF, 36, project officer at the NASA Manned Spacecraft Center for the Astronaut Maneuvering Unit (Gemini experiment D-12). Givens, his wife and two children live in Seabrook (El Lago), Texas.

Fred W. Haise, Jr., 32, NASA project pilot at Flight Research Center, Edwards, Calif. Haise, his wife and 3 children live in Lancaster, Calif.

Maj. James B. Irwin, USAF, 35, Chief, of the Advanced Requirements Branch at Air Defense Command Headquarters, Colorado Springs, Colorado. Irwin, his wife and 4 children live in Colorado Springs.

Dr. Don L. Lind, 35, physicist at NASA Goddard Space Flight Center, Greenbelt, Maryland. Lind, his wife and 5 children live in Silver Spring, Md.

Capt. Jack R. Lousma, USMC, 30, operational pilot at Marine Air Station, Cherry Point, North Carolina. Lousma, his wife and one son live in Newport, N.C.

Lt. Thomas K. Mattingly, USN, 30, student in Aerospace Research Pilot School, Edwards AFB, Calif. He is single and lives on base.

Lt. Bruce McCandless, II, USN, 28, working toward a doctorate in electrical engineering at Stanford University. McCandless, his wife and two children live in Mountain View, Calif.

Lt. Cdr. Edgar D. Mitchell, USN, 35, student in Aerospace Research Pilot School, Edwards AFB, Calif. He has a doctor of science degree from Massachusetts Institute of Technology. Mitchell, his wife and two daughters live in Torrance, Calif.

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MSC 66-22
Add 2

Maj. William R. Pogue, USAF, 36, instructor in Aerospace Research Pilot School, Edwards AFB, Calif. Pogue, his wife and 3 children live at Edwards.

Capt. Stuart A. Roosa, USAF, 32, experimental test pilot at Edwards AFB, Calif. Roosa, his wife and 4 children live in Edwards.

John L. Swigert, Jr. 34, engineering test pilot for North American Aviation, Inc. He is single and lives in South Gate, Calif.

Lt. Cdr. Paul J. Weitz, USN, 33, squadron operations officer. Weitz, his wife and two children live in Oak Harbor, Washington.

Capt. Alfred M. Worden, USAF, 34, instructor at Aerospace Research Pilot School, Edwards AFB, Calif. Worden, his wife and two daughters live in Edwards.

Recruiting of the new astronauts began Sept. 10, 1965. A total of 351 submitted applications, of which 159 met basic requirements. Of that number, 100 were military, 59 civilian. For consideration, applicants must have been a United States citizen; no taller than 6 feet; born on or after Dec. 1, 1929; have a bachelor degree in engineering, physical or biological sciences; and have acquired 1000 hours jet pilot time or have graduated from an armed forces test pilot school.

Comparison between astronaut groups at time of selection:

	1959	1962	1963	1965	1966
Age	34.5	32.5	30.0	31.2	32.8
College years	4.3	4.6	5.6	8.0	5.8
Flight hours	3,500	2,800	2,315	*	2,714

*Scientist-Astronaut group. No pilot experience required for selection.

# # # #

NAME: Vance D. Brand (Mr.)

BIRTH DATE AND PLACE: May 9, 1931; Longmont, Colorado

EDUCATION: Bachelor of Science in Business Administration from University of Colorado in 1953; Bachelor of Science in Aeronautical Engineering from University of Colorado in 1960; Master of Business Administration from University of California at Los Angeles in 1964.

MARITAL STATUS: Married to the former Joan Virginia Weninger of Chicago, Ill.

CHILDREN: Susan Nancy, 1954; Stephanie, 1955; Patrick Richard, 1958; Kevin Stephen, 1963.

PRESENT ASSIGNMENT: Engineering (experimental) test pilot for Lockheed, assigned to West German F-104G Flight Test Center, Istres, France.

PRESENT ADDRESS: Martigues, France

EXPERIENCE: Brand has 2,174 hours of flight time, of which 1,721 is jet time. Served with U.S. Marine Corps from 1953 to 1957. Graduated from U.S. Naval Test Pilot School in 1963.

PARENTS: Mr. and Mrs. Rudolph W. Brand, Longmont, Colo.

WIFE'S PARENTS: Mr. and Mrs. Ralph D. Weninger, Chicago, Ill.

# # # #

NAME: John S. Bull (Lieutenant, USN)

BIRTH DATE AND PLACE: Sept. 25, 1934; Memphis, Tennessee

EDUCATION: Bachelor of Science in Mechanical Engineering from Rice University in 1956; one year of study towards masters degree at Rice.

MARITAL STATUS: Married to the former Nancy Laraine Gustafson of Seattle, Wash.

CHILDREN: Jeffrey Tyler, 1965

PRESENT ASSIGNMENT: Since 1964, Bull has been a carrier suitability project test pilot at Naval Air Station, Patuxtent River, Md.

PRESENT ADDRESS: NAS Patuxtent River, Md.

EXPERIENCE: Bull has 1,634 hours of flight time, of which 1,424 is jet time. He has been a naval officer since 1957. Graduated from U.S. Naval Test Pilot School in 1964 as outstanding student in his class.

ORGANIZATIONS: Tau Beta Pi, Sigma Tau

PARENTS: Mr. and Mrs. Charles M. Bull, Memphis, Tenn.

WIFE'S PARENTS: Mr. and Mrs. Lawrence C. Gustafson, Seattle, Wash.

# # # #

NAME: Gerald P. Carr (Major, USMC)

BIRTH DATE AND PLACE: Aug. 22, 1933; Denver, Colorado

EDUCATION: Bachelor of Mechanical Engineering from University of Southern California in 1954; Bachelor of Science in Aeronautical Engineering from USN Postgraduate School, Monterrey, Calif., in 1961; Master of Science in Aeronautical Engineering from Princeton University in 1962.

MARITAL STATUS: Married to the former JoAnn Ruth Petrie of Santa Ana, Calif.

CHILDREN: Jennifer Anne, 1955; Jamee Adele, 1958; Jeffrey Ernest, 1958; John Christman, 1962; Jessica Louise, 1964; Joshua Lee, 1964.

PRESENT ASSIGNMENT: Since 1965 has been in the test directors section at the Marine station in Santa Ana, responsible for directing and supervising all testing of Marine tactical data systems.

PRESENT ADDRESS: Santa Ana, Calif.

EXPERIENCE: Carr has 1,903 hours of flight time, of which 1,368 is jet time. He has been a Marine officer since 1954.

AWARDS: Outstanding Male Student, University of Southern California, 1954.

PARENTS: Mr. Thomas E. Carr, Newport Beach, Calif.
Mrs. Freda L. Carr, Santa Ana, Calif.

WIFE'S PARENTS: Mr. and Mrs. Arthur J. Petrie, Santa Ana.

# # # #

NAME: Charles M. Duke, Jr. (Captain, USAF)

BIRTH DATE AND PLACE: Oct. 3, 1935; Charlotte, North Carolina

EDUCATION: Bachelor of Science in Naval Sciences, U.S. Naval Academy, 1957. Master of Science in Aeronautics and Astronautics, Massachusetts Institute of Technology, 1964.

MARITAL STATUS: Married to the former Dorothy Meade Claiborne of Atlanta, Georgia.

CHILDREN: Charles III, 1965.

PRESENT ASSIGNMENT: Since 1964, instructor at Aerospace Research Pilot School, Edwards AFB, Calif.

PRESENT ADDRESS: Edwards, Calif.

EXPERIENCE: Duke has 1,736 hours of flight time, of which 1,472 is jet time. He has been an Air Force officer since 1957.

PARENTS: Mr. and Mrs. Charles M. Duke, Lancaster, S.C.

WIFE'S PARENTS: Mr. and Mrs. Thomas S. Claiborne, Atlanta, Ga.

# # # #

NAME: Joe H. Engle (Captain, USAF)

BIRTH DATE AND PLACE: Aug. 26, 1932; Abilene, Kansas

EDUCATION: Bachelor of Science in Aeronautical Engineering, University of Kansas, 1955.

MARITAL STATUS: Married to the former Mary Catherine Lawrence of Mission Hills, Kans.

CHILDREN: Laurie Jo, 1959; Jon Lawrence, 1962.

PRESENT ASSIGNMENT: Since 1963, he has been an aerospace flight test officer at Edwards AFB, Calif., with principal duty assignment as X-15 project pilot.

PRESENT ADDRESS: Edwards, Calif.

EXPERIENCE: Engle has 3,867 hours of flight time, of which 2,573 is jet time. He has been an Air Force officer since 1957 and was graduated from Experimental Flight Test Pilot School in 1962 and Aerospace Research Pilot School in 1963.

AWARDS: Air Force Association, Outstanding Young Officer, 1964. U.S. Junior Chamber of Commerce, one of Ten Outstanding Young Men of America, 1964.

PARENTS: Mr. and Mrs. Abner E. Engle, Chapman, Kansas.

WIFE'S PARENTS: Mr. and Mrs. Ray E. Lawrence, Mission Hills, Kans.

# # # #

NAME: Ronald E. Evans (Lieutenant Commander, USN)

BIRTH DATE AND PLACE: Nov. 10, 1933; St. Francis, Kansas

EDUCATION: Bachelor of Science in Electrical Engineering, University of Kansas, 1956; Master of Science in Aeronautical Engineering, U.S. Naval Postgraduate School, 1964.

MARITAL STATUS: Married to the former Janet Merle Pollom of Salina, Kans.

CHILDREN: Jaime Dayle, 1959; Jon Pollom, 1961.

PRESENT ASSIGNMENT: Sea duty in Pacific

PRESENT ADDRESS: San Diego, Calif.

EXPERIENCE: Evans has 2,372 hours of flight time, of which 2,084 is jet time. He has been a naval officer since 1956.

PARENTS: Mr. Clarence E. Evans, St. Francis, Kans.

Mrs. Marie A. Evans, Vassar, Kans.

WIFE'S PARENTS: Mr. and Mrs. Harry M. Pollom, Salina, Kans.

# # # #

NAME: Edward G. Givens, Jr. (Major, USAF)

BIRTH DATE AND PLACE: Jan. 5, 1930; Quanah, Texas

EDUCATION: Bachelor of Science in Naval Sciences, U.S. Naval Academy, 1952.

MARITAL STATUS: Married to the former Ada Eva Muuss of Bedford, Mass.

CHILDREN: Catherine Helen, 1963; Edward Galen III, 1964

PRESENT ASSIGNMENT: Project officer for Astronaut Maneuvering Unit (Gemini experiment D-12).

PRESENT ADDRESS: Seabrook (El Lago), Texas

EXPERIENCE: Givens has 3,353 hours of flight time, of which 2,628 is jet time. He has been an Air Force officer since 1952. He was graduated from the Air Force Experimental Test Pilot School in 1958 and was awarded the Outstanding Graduate Certificate. He was graduated from the Aerospace Research Pilot School in 1963.

PARENTS: Mr. and Mrs. Edward G. Givens, Quanah, Texas

WIFE'S PARENTS: Deceased. Uncle and Aunt -- Dr. and Mrs. Hans Behling of Bedford, Mass.

# # # #

NAME: Fred W. Haise, Jr. (Mr.)

BIRTH DATE AND PLACE: Nov. 14, 1933; Biloxi, Mississippi

EDUCATION: Bachelor of Science in Aeronautical Engineering, University of Oklahoma, 1959.

MARITAL STATUS: Married to the former Mary Griffin Grant of Biloxi, Miss.

CHILDREN: Mary Margaret, 1956; Frederick Thomas, 1958; Stephen William, 1961

PRESENT ASSIGNMENT: Since 1963, he has been a project pilot at the NASA Flight Research Center, Edwards, Calif.

PRESENT ADDRESS: Lancaster, Calif.

EXPERIENCE: Haise has 4,760 hours of flight time, of which 2,096 is jet time. He was a Naval Aviation Cadet, 1952-54; a U.S. Marine Corps officer, 1954-56; an Air National Guard officer, 1957-63. He was graduated from the Aerospace Research Pilot School in 1965 and received the A.B. Honts Trophy as the outstanding graduate.

ORGANIZATIONS: Tau Beta Pi, Sigma Gamma Tau, Phi Theta Kappa

PARENTS: Mrs. Frederick Haise, Biloxi, Miss. Father deceased.

WIFE'S PARENTS: Mr. and Mrs. William J. Grant, Jr., Biloxi, Miss.

# # # #

NAME: James B. Irwin (Major, USAF)

BIRTH DATE AND PLACE: March 17, 1930; Pittsburgh, Pennsylvania

EDUCATION: Bachelor of Science in Naval Sciences, U.S. Naval Academy, 1951; Master of Science Engineering in Aeronautical Engineering and Master of Science Engineering in Instrumentation, University of Michigan, 1957.

MARITAL STATUS: Married to the former Mary Ellen Monroe of Santa Clara, Calif.

CHILDREN: Joy Carmel, 1959; Jill Cherie, 1961; James Benson, 1963; Jan Caron, 1964

PRESENT ASSIGNMENT: Chief, Advanced Requirements Branch, Headquarters Air Defense Command

PRESENT ADDRESS: Colorado Springs, Colo.

EXPERIENCE: Irwin has 5,463 hours of flight time, of which 3,780 is jet time. He has been an Air Force officer since 1951; was graduated from the Air Force Experimental Test Pilot School in 1961 and the Air Force Aerospace Research Pilot School in 1963.

PARENTS: Mr. and Mrs. James Irwin, San Jose, Calif.

WIFE'S PARENTS: Mr. and Mrs. Leland F. Monroe, Santa Clara, Calif.

# # # #

NAME: Don L. Lind (Dr.)

BIRTH DATE AND PLACE: May 18, 1930; Murray, Utah

EDUCATION: Bachelor of Science in Physics, University of Utah, 1953; Doctor of Philcsophy in Physics, University of California, Berkeley, 1964.

MARITAL STATUS: Married tc the former Kathleen Maughan of Logan, Utah

CHILDREN: Carol Ann, 1956; David Melvin, 1956; Dawna, 1958; Douglas Maughan, 1960; Kimberly, 1963.

PRESENT ASSIGNMENT: Since 1964, he has been at the NASA Goddard Space Flight Center as a physicist working on experiments to determine the nature and properties of low energy charged particles within planetary magnetospheres and in interplanetary space.

PRESENT ADDRESS: Silver Spring, Md.

EXPERIENCE: Lind has 1,361 hours of flight time, of which 1,044 is jet time. He was a naval officer from 1954 to 1957.

PARENTS: Mr. and Mrs. Leslie A. Lind, Midvale, Utah

WIFE'S PARENTS: Mr. and Mrs. J. Howard Maughan of Logan, Utah.

# # # #

NAME: Jack R. Lousma (Captain, USMC)

BIRTH DATE AND PLACE: Feb. 29, 1936; Grand Rapids, Michigan

EDUCATION: Bachelor of Science in Aeronautical Engineering, University of Michigan, 1959; Master of Science in Aeronautical Engineering, U.S. Naval Postgraduate School, 1965

MARITAL STATUS: Married to the former Gratia Kay Smeltzer of Ann Arbor, Mich.

CHILDREN: Timothy James, 1963

PRESENT ASSIGNMENT: Operational pilot at Marine Air Station, Cherry Point, North Carolina

PRESENT ADDRESS: Newport, North Carolina

EXPERIENCE: Lousma has 1,258 hours of flight time, of which 1,077 is jet time. He has been a Marine Corps officer since 1959.

AWARDS: Navy "E" for piloting skills, 1962

ORGANIZATIONS: Sigma Xi

PARENTS: Mr. Jacob Lousma, Ann Arbor, Mich. Mother deceased.

WIFE'S PARENTS: Mr. and Mrs. Chester H. Smeltzer, Ann Arbor, Mich.

# # # #

NAME: Thomas K. Mattingly (Lieutenant, USN)

BIRTH DATE AND PLACE: March 17, 1936; Chicago, Illinois

EDUCATION: Bachelor in Aeronautical Engineering, Auburn University, 1958

MARITAL STATUS: Single

PRESENT ASSIGNMENT: Student in Air Force Aerospace Research Pilot School. Graduates in April 1966

PRESENT ADDRESS: Edwards AFB, Calif.

EXPERIENCE: Mattingly has 2,582 hours of flight time, of which 1,036 is jet time. He has been a naval officer since 1958.

PARENTS: Mr. and Mrs. Thomas K. Mattingly, Hialeah, Florida.

# # # #

NAME: Bruce McCandless, II (Lieutenant, USN)

BIRTH DATE AND PLACE: June 8, 1937; Boston, Massachusetts

EDUCATION: Bachelor of Science in Naval Sciences, U.S. Naval Academy, 1958; Master of Science in Electrical Engineering, Stanford University, 1965; candidate for Ph. D., Stanford University.

MARITAL STATUS: Married to the former Alfreda Bernice Doyle of Roselle, N.J.

CHILDREN: Bruce III, 1961; Tracy, 1963

PRESENT ASSIGNMENT: Graduate student at Stanford University working towards Doctor of Philosophy degree in Electrical Engineering.

PRESENT ADDRESS: Mountain View, California

EXPERIENCE: McCandless has 1,435 hours of flight time, of which 1,339 is jet time. He has been a naval officer since 1958 and flew from the USS Enterprise during the Cuban Blockade.

PARENTS: Adm. and Mrs. Bruce McCandless, Annapolis, Md.

WIFE'S PARENTS: Mrs. Charles Doyle, Roselle, N.J. Father deceased.

# # # #

NAME: Edgar D. Mitchell (Lieutenant Commander, USN)

BIRTH DATE AND PLACE: Sept. 17, 1930; Hereford, Texas

EDUCATION: Bachelor of Science in Industrial Management, Carnegie Institute of Technology, 1952; Bachelor of Science in Aeronautical Engineering, U.S. Naval Postgraduate School, 1961; Doctor of Science from Massachusetts Institute of Technology, 1964.

MARITAL STATUS: Married to the former Louise Elizabeth Randall of Pittsburgh, Pa.

CHILDREN: Karlyn Louise, 1953; Elizabeth Randall, 1959.

PRESENT ASSIGNMENT: Student at Air Force Aerospace Research Pilot School. Graduates in April 1966. First in his class.

PRESENT ADDRESS: Torrance, Calif.

EXPERIENCE: Mitchell has 2,795 hours of flight time, of which 704 hours is jet time. He has been a naval officer since 1953.

AWARDS: Commendation for project pilot in air development squadron; DAR Award in 1954 for achieving highest overall marks during flight training.

PARENTS: Mr. and Mrs. Joseph T. Mitchell, Tahlequah, Okla.

WIFE'S PARENTS: Mrs. Winslow Randall, Pittsburgh, Pa. Father deceased.

# # # #

NAME: William R. Pogue (Major, USAF)

BIRTH DATE AND PLACE: Jan. 23, 1930; Okemah, Oklahoma

EDUCATION: Bachelor of Science in Mathematics, Oklahoma Baptist University, 1951; Master of Science in Mathematics, Oklahoma State University, 1960.

MARITAL STATUS: Married to the former Helen Juanita Dittmar of Cromwell, Okla.

CHILDREN: William Richard, 1953; Layna Sue, 1955; Thomas Reid, 1957.

PRESENT ASSIGNMENT: Instructor in Aerospace Research Pilot School

PRESENT ADDRESS: Edwards, Calif.

EXPERIENCE: Pogue has 3,344 hours of flight time, of which 2,509 is jet time. He has been an Air Force officer since 1952 and was graduated from Empire Test Pilot School in 1963. Pogue was a member of the USAF Thunderbirds from 1955 to 1957. He flew 43 combat missions during the Korean Conflict.

ORGANIZATIONS: Sigma Xi

PARENTS: Mr. and Mrs. Alex W. Pogue, Sand Springs, Okla.

WIFE'S PARENTS: Mr. and Mrs. Franklin L. Dittmer, Cromwell, Okla.

# # # #

NAME: Stuart A. Roosa (Captain, USAF)

BIRTH DATE AND PLACE: Aug. 16, 1933; Durango, Colorado

EDUCATION: Bachelor of Science in Aeronautical Engineering, University of Colorado, 1960.

MARITAL STATUS: Married to the former Joan Carol Barrett of Sessums, Miss.

CHILDREN: Christopher Allen, 1959; John Dewey, 1961; Stuart Allen, 1962; Rosemary DeLozier, 1963

PRESENT ASSIGNMENT: Experimental test pilot at Edwards AFB

PRESENT ADDRESS: Edwards, Calif.

EXPERIENCE: Roosa has 2,758 hours of flight time, of which 2,406 is jet time. He has been an Air Force officer since 1953 and was graduated from the Aerospace Research Pilot School in 1965.

PARENTS: Mr. and Mrs. Dewey Roosa, Tuckson, Ariz.

WIFE'S PARENTS: Mr. and Mrs. John T. Barrett, Sessums, Miss.

# # # #

NAME: John L. Swigert, Jr. (Mr.)

BIRTH DATE AND PLACE: Aug. 30, 1931; Denver, Colorado

EDUCATION: Bachelor of Science in Mechanical Engineering, University of Colorado, 1953; Master of Science in Aerospace Science, Rensselaer Polytechnic Institute, 1965; continuing course work at University of California at Los Angeles.

MARITAL STATUS: Single

PRESENT ASSIGNMENT: Engineering test pilot for North American Aviation, Inc.

PRESENT ADDRESS: South Gate, Calif.

EXPERIENCE: Swigert has 4,469 hours of flight time, of which 3,503 is jet time. He served with the Air Force from 1953 to 1956, and was a research engineering test pilot for Pratt & Whitney from 1957 to 1964.

ORGANIZATIONS: Pi Tau Sigma, Sigma Tau

PARENTS: Mr. and Mrs. John Swigert, Denver, Colo.

# # # #

NAME: Paul J. Weitz (Lieutenant Commander, USN)

BIRTH DATE AND PLACE: July 25, 1932; Erie, Pennsylvania

EDUCATION: Bachelor of Science in Aeronautical Engineering, Penn State University, 1954; Master of Science in Aeronautical Engineering, U.S. Naval Postgraduate School, 1964.

MARITAL STATUS: Married to the former Suzanne Margaret Berry of Erie, Pa.

CHILDREN: Matthew John, 1958; Cynthia Anne, 1961

PRESENT ASSIGNMENT: Operations officer of A3B squadron

PRESENT ADDRESS: Oak Harbor, Washington

EXPERIENCE: Weitz has 2,510 hours of flight time, of which 2,207 is jet time. He has been a naval officer since 1954. He recently completed service aboard the USS Independence in the Vietnamese area, where he participated in 132 combat sorties.

PARENTS: Mrs. Violet Martin, Waukegan, Ill. Father and step-father deceased.

WIFE'S PARENTS: Mr. and Mrs. John H. Berry, Erie, Pa.

# # # #

NAME: Alfred M. Worden (Captain, USAF)

BIRTH DATE AND PLACE: Feb. 7, 1932; Jackson, Michigan

EDUCATION: Bachelor in Military Science, U.S. Military Academy, 1955; Master of Science in Aeronautics/Astronautics and Instrumentation, University of Michigan, 1963.

MARITAL STATUS: Married to the former Pamela Ellen Vander Beek of Bayside, L.I., N.Y.

CHILDREN: Merrill Ellen, 1958; Alison Pamela, 1960

PRESENT ASSIGNMENT: Instructor at Aerospace Research Pilot School

PRESENT ADDRESS: Edwards, Calif.

EXPERIENCE: Worden has 1,900 hours of flight time, of which 1,308 is jet time. He has been an Air Force officer since 1955 and was graduated from the Empire Test Pilot School in February 1965, and the Aerospace Research Pilot School in September 1965.

PARENTS: Mr. and Mrs. Merrill Worden, Jackson, Mich.

WIFE'S PARENTS: Mr. and Mrs. Gordon Vander Beek, Bayside, L.I., N.Y.

# # # #

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-23
April 4, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration today announced a change in sequence of the next two Apollo/Saturn 1-B launches.

The Apollo/Saturn 1-B 202 mission has been rescheduled to follow the Apollo/Saturn 203 mission. Both launches are scheduled for the third quarter of 1966.

The Apollo/Saturn 203 mission will be launched from Complex 37 and Apollo/Saturn 202 will be flown from Complex 34.

The purpose of the sequence change is to provide additional time for checkout of the Apollo spacecraft to be flown in the Apollo/Saturn 202 mission.

Apollo/Saturn 203 is a launch vehicle development mission, and will not carry an Apollo spacecraft. It is an early test of the Saturn 5 third stage and is to verify that the orbital operations features of the liquid hydrogen propulsion system are satisfactory.

The Apollo/Saturn 202 mission will be the second flight of an unmanned Apollo spacecraft; the first one (Apollo/Saturn 201) was successfully launched on February 26, 1966.

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Add 1
MSC 66-23

The Apollo/Saturn 202 mission will verify performance of the Saturn 1-B, the Apollo spacecraft command and service systems, and the ablative heat shield.

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NEWS REFERENCE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
HUnter 3-5111
MSC 66-24
April 12, 1966

HOUSTON...Two of MSC's major non-scientific problems...traffic and parking...will be on the road tc at least partial solution before the end of this year, according to Center officials.

The Center is now planning a series of connector roads to join with a network of public roads approved by Harris County voters recently. The public road network will be concentrated north and west of the site.

At the same time, MSC has advertised for bids on construction of nine parking lots at strategic locations throughout the Center.

The on-site street expansion will provide effective utilization of the planned new county roads.

The key road in the county system is Bayshore Boulevard. It will connect with the Gulf Freeway (Interstate 45) at one terminal and with Highway 146 at the other. The state plans the addition of an interchange at each end of the boulevard.

Provisions are being made for a right-of-way so that Bayshore Boulevard can be expanded from four to six lanes at a future date. Initial planning calls for two lanes of the road, from the west end of Avenue B to Highway 3, to be completed by the fall of 1966. A two lane segment from the west end of Avenue B to Highway 146 is planned

- more -

for completion in the summer of 1967. This will offer partial relief to congested traffic in the MSC-Clear Lake area.

The schedule for completion of Bayshore Boulevard (four lanes) from the Gulf Freeway to Highway 3 and the balance from Highway 3 to Highway 146 has not been firmed. The Bayshore-Gulf Freeway interchange is included in a general state improvement of the Gulf Freeway system.

Early construction is planned for the four lane county improvement project on Red Bluff Road, from Spencer Highway to the intersection with Bayshore Boulevard. This and Kirby Road improvements were included in the county bond issue approved last month.

The connector roads to Bayshore Boulevard and some of the internal street network are planned for completion late this year... the same schedule planned for the initial two-lane segment of Bayshore Boulevard.

Bids on the new on-site parking lots are scheduled for opening April 21 with the construction contract to be awarded seven days later. All but one of the lots are scheduled for completion by the end of August. Parking lot E, near the Fire Station, with a capacity of 450 vehicles, will be deferred until other lots are completed since it is usable in its present condition.

The planned parking lots will provide parking for an additional 1,742 vehicles. These additional parking lots will eliminate the necessity for parking in unimproved areas and substantially reduce street parking.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-25
April 12, 1966

HOUSTON...Robert E. Smylie, Chief of the Apollo Support Office of Crew Systems Division at the Manned Spacecraft Center, has been selected for a 1966 Sloan Fellowship in executive development.

The 12-month fellowship, under sponsorship of the Sloan School of Management at the Massachusetts Institute of Technology, will lead to a degree of Master of Science in Industrial Management. It is designed to broaden and develop outstanding, but typically specialized, young executives for more general and senior management responsibilities.

Smylie's selection is one of about 45 Sloan Fellows selected each year by MIT from both the U.S. and abroad. Nominations come from both industry and Government. Participants in the program spend a full year studying changing theory and practice of management decisions. The program includes a number of management policy and practice discussions with corporation presidents and senior government executives. Many of the discussions take place during field trips to major cities of this country and Europe.

As Chief of the Apollo Support Office, Smylie is responsible for development of the life support and environmental control systems for NASA's Apollo program. His responsibility also covers personal crew equipment as well as development of the space suit and portable life

- more -

support system for use on the lunar surface.

Smylie is a native of Brookhaven, Mississippi, and graduated from Mississippi State University in 1952 with a B. S. in Mechnical Engineering. After graduation he spent approximately two years with the Ethyl Corporation in Pasadena, Texas, before returning to Mississippi State to teach and work towards a Masters degree. He received the advanced degree in Mechanical Engineering in 1956.

He joined Douglas Aircraft Company in Santa Monica, California, in 1956 where he assisted in the design of the air conditioning system for the DC-8 jet transport. He joined NASA in 1962 and was active in operational aspects of the Project Mercury environmental control system.

His wife is the former June Reeves of Carthage, Texas. They have three children, Steven, Susan, and Lisa. Smylie is a member of Tau Beta Pi, Kappa Mu Epsilon and Pi Tau Sigma.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-26

April 14, 1966

HOUSTON...The first production-line Apollo command module to be shipped to the Manned Spacecraft Center is scheduled to arrive this weekend to begin manned habitability demonstrations in a sea environment. The arrival date is dependant on availability of Guppy, which has had mechanical difficulties.

Testing of the module, designated Airframe 007, and its postlanding systems in the Gulf of Mexico and in an environmental tank at MSC will be the final Apollo postlanding tests prior to manned earth orbital flights.

The command module is scheduled to arrive at Ellington AFB on the "Pregnant Guppy" aircraft. It is being shipped by North American Aviation Inc., prime contractor for the Apollo spacecraft.

Airframe 007 contains all the recovery systems and equipment other than that required during actual flight. Its heat shield is cork rather than ablative material, but the total configuration is that of a flight-type command module.

A series of tests will be conducted this spring and summer to verify operational suitability of the command module and to qualify the postlanding subsystems -- egress, survival, communication and location, power, and spacecraft ventilation equipment.

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Add 1
MSC 66-26

The Apollo Postlanding Suitability Program tests will be conducted by the Landing and Recovery Division's Operational Evaluation and Test Branch. Wayne E. Koons is the program manager, with Ronald K. Blilie as project engineer on this test vehicle.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-27

April 18, 1966

HOUSTON...The Gemini 9 spacecraft and its companion Agena target vehicle will be launched from Cape Kennedy no earlier than May 17 on a three-day flight to explore new rendezvous techniques and conduct extravehicular activity, the National Aeronautics and Space Administration announced today.

Liftoff time for the Agena is 10:00 a.m. EST, and the Gemini liftoff is scheduled at 11:39:09 EST. An Atlas booster, generating 390,000 pounds of thrust, will launch the Gemini Agena Target Vehicle. Gemini 9 will be put into orbit by the two-stage Titan II Gemini Launch Vehicle, with a lift-off thrust of 430,000 pounds.

The Agena target will be inserted into a 185-statute mile circular orbit. Gemini 9 will be inserted into a 100 by 168-statute mile elliptical orbit. Initial rendezvous of the two spacecraft is scheduled in the third revolution, approximately four hours after Gemini liftoff.

Command pilot for the mission, Astronaut Thomas P. Stafford, was pilot on the Gemini 6 mission which accomplished the first rendezvous in space with the Gemini 7 spacecraft on December 15, 1965. Eugene A. Cernan is pilot for Gemini 9. James A. Lovell is back-up command pilot and Edwin E. Aldrin is back-up pilot.

Add 1
MSC 66-27

Approximately 30 minutes after rendezvous, Gemini 9 will dock with the Agena over Hawaii. A bending test with the Agena and a redocking by the pilot will be performed before the crew powers down the spacecraft for an eight-hour rest period.

The extravehicular activity by pilot Cernan will begin near the end of the thirteenth revolution and continue for one and one half revolutions. Hatch opening will occur at about 20 hours, 50 minutes into the mission. Cernan will reenter the spacecraft approximately 2 hours and 25 minutes later.

In the first daylight portion of EVA, Cernan will remain on a 25-foot umbilical tether, with oxygen supplied from the spacecraft. He will retrieve a meteorite collection experiment from the Gemini adapter and expose some new surfaces on a meteorite collection experiment on the Agena. He will evaluate tether dynamics of the 25-foot umbilical and evaluate the handrail and handholds on the adapter section.

During the night pass, he will be in the adapter section and don the Astronaut Maneuvering Unit, a backpack with a self-contained propulsion unit and oxygen supply.

At the next sunrise, Stafford will undock the Gemini from the Agena and move 120 feet out of plane from the Agena. The EVA pilot, moving to the front the spacecraft, will evaluate attitude control and translation characteristics of the maneuvering unit. Working on a 125-foot-long tether, he will translate to the undocked Agena, and then reenter the spacecraft.

Add 2
MSC 66-27

After EVA and redocking, the remainder of the flight will include three burns of the Agena primary propulsion system while docked with Gemini, two re-rendezvous at Gemini with the Agena and a burn of the Agena secondary propulsion system while docked with Gemini.

Seven experiments will be carried out on the mission. Scientific experiments include zodiacal light photography, meteorite collection experiments both on Gemini and Agena, and airglow horizon photography. Technological experiments are UHF/VHF polarization and the astronaut maneuvering unit. The medical experiment is the bioassays of body fluids.

Objectives of the Gemini 9 mission are rendezvous and docking with the Agena target vehicle and extravehicular activity by the pilot. In addition, if time permits, the mission will include maneuvers of the docked vehicles using the Agena propulsion systems, separation and docking practices, Gemini re-rendezvous from above the Agena(simulating lunar excursion module rendezvous), guidance of the spacecraft to a pre-selected landing area and maneuvering of the Agena into a parking orbit for use as a target on a later Gemini mission.

Landing of the spacecraft is scheduled in the West Atlantic Recovery Zone about 345 statute miles east of Cape Kennedy at the beginning of the forty-fifth revolution after approximately 70 hours, 50 minutes of flight.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 66-28
April 21, 1966

HOUSTON...The National Aeronautics and Space Administration this week signed contracts with three aerospace firms for definition studies of a proposed experiment using a spent Saturn S IVB stage and an experiment support module to permit manned space missions of up to 30 days.

Under terms of the three 60-day $50,000 fixed price contracts, Douglas, McDonnell and Grumman will perform definition and preliminary design and evaluate a plan to make a spent stage hydrogen tank habitable for long-duration missions.

A unit to provide an interconnecting airlock between the Apollo Command and Service Modules and the launch vehicle's spent stage would be required. Also required will be environmental, electrical power, and life support provisions for the hydrogen tank and the experiment support module. The support module also will supply expendables to the CSM for that portion of the long-duration mission that is beyond its original capabilities. The unit will be the S-IVB Spent-Stage Experiment Support Module (SSESM). Existing flight hardware and subsystems available in the manned space flight program would be used for the support module.

Add 1
MSC 66-28

One end of the SSESM will be fitted with a docking assembly identical to that used in the LEM to permit docking with the CSM. The other end of the SSESM will be fitted with a suitable assembly which will permit attachment to the top of the S-IVB hydrogen tank. A hatch in the SSESM will permit egress into free space without depressurization of the tank or the CSM. Oxygen for the S-IV pressurization and crew breathing will be stored in modules mounted external to the airlock. Once in orbit, the Apollo CSM will be separated and docked with the SSESM. The crew may then proceed to prepare the S-IVB, activate the SSESM systems, connect the SSESM to the S-IVB tank, and set up the tank for habitation.

The spent-stage experiment plans are being managed by Marshall Space Flight Center. The Manned Spacecraft Center has a technical and contractual responsibility for the SSESM portion of the overall experiment studies.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-29
April 28, 1966

HOUSTON, TEXAS...Demonstration of the ability to link physically two vehicles in space plus further refinement of reentry and landing accuracy helped compensate for lost experiments in the abbreviated Gemini 8 flight, the Manned Spacecraft Center's Gemini program manager said Thursday.

Charles W. Mathews also cited the reaction of the Gemini 8 crew during the period of uncontrolled rolling shortly after the first successful in-space docking of one vehicle with another.

He assured a Thursday morning audience of aerospace writers and photographers that a relatively minor reworking of the Gemini spacecraft electrical wiring would prevent recurrence of the grounded "hot" wiring that short-circuited the No. 8 thruster.

Mathews also had praise for the Dept. of Defense recovery forces which implemented a contingency plan "that we had programmed but never before used. In the reality of Gemini 8 the contingency plan worked perfectly."

Mathews characterized the mission as smooth and without hitch from launch of the Agena target vehicle through Gemini-Titan launch, rendezvous, and docking.

After regaining control of the spacecraft, Command Pilot Neil

---more---

Armstrong and Pilot David Scott brought Gemini 8 down safely in the Western Pacific Ocean in sight of the recovery aircraft. He pointed out that accuracy to target could not be pinpointed in terms of feet or miles because no recovery ship was in the area of splashdown.

With Gemini 8 in a docked configuration with the Agena target vehicle, Mathews said, the cause of the roll and yaw that brought about mission termination could not be isolated quickly. Based on past Gemini performance, the crew's first impression was that "the Agena's attitude controls had malfunctioned.

"Had they not been docked, the open thruster on Gemini would have been obvious almost immediately," he said.

He explained that the electrical system had been reworked to allow disengaging of the hot side of the lead activating the thruster solenoids.

Describing the Agena performance, Mathews said some 5100 commands were sent to the Agena while it still carried propellant. "The vehicle responded correctly to all 5100 commands."

The higher-than-planned orbit Agena went into during yaw maneuvers was determined to be a result of a greatly offset center of gravity in the vehicle. "Steps have been taken to reduce this offset to bring it within acceptable limits for both docked and undocked maneuvers," Mathews said. He added that no other changes in the Agena are being made.

Add 1
MSC 66-29

Of the seven first-time experiments scheduled to have been performed on Gemini 8, two are included in the Gemini 9 flight plan. They are S-10 Micrometeoroid Cratering and D-14 UHF/VHF Polarization.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-30
April 28, 1966

HOUSTON, TEXAS...The Manned Spacecraft Center announced plans today to sponsor a business conference here which could draw up to 1,600 representatives of business firms, industrial development groups and chambers of commerce.

The conference, scheduled for May 24 in the MSC auditorium, is designed to assist Houston, Clear Lake and adjacent area business firms and development groups in obtaining information about the center, its role in area development and a forecast of activities and requirements.

Specific topics to be covered include MSC's facility and construction programs, Civil Service manpower, support contractor requirements and the Center's procurement activity.

Invitations to the "reservations only" event are now being issued to the local groups. Persons or groups who are interested in attending the conference should contact the MSC Procurement Office or the Center's Industry Assistance Office, Building 100.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-5111

MSC 66-31
May 10, 1966

HOUSTON...A test subject entered a circular arena at the NASA Manned Spacecraft Center today to renew the battle with an old enemy of manned flight - the effects of changes of speed on the human body.

Howard Hunter, Assistant Chief for Centrifuge Operations, was the first man to ride the MSC centrifuge today. He was whirled at fourteen revolutions a minute around the rotunda, receiving two and one half "G's" in the first test. He was seated in a modified Gemini seat mounted upright in a swing cradle below the 50 foot arm of the centrifuge.

A pool of 17 volunteers will now begin riding the newly completed centrifuge here to train themselves for test runs to evaluate and qualify Apollo lunar spacecraft equipment for launch and re-entry.

The centrifuge can produce gravity or "G" forces which simulate the same stresses which make the astronauts feel many times their own weight at the beginning and end of a space flight.

In training, the test subjects will receive as many as six "G's" in this position, simulating the forces an aircraft pilot feels when he pulls out of a steep dive. The subjects will practice muscle-tensing and breathing methods used to withstand "G" forces during flight.

-more-

In later tests, three test subjects, lying side by side in couches inside a three-ton metal ball at the end of a 50-foot arm, will be whirled around a circular course at 24 revolutions per minute and speeds up to 88 miles per hour in mock spacecraft flights.

Before the test subjects could begin their training, the operators who control the centrifuge also had to be trained. They made more than 100 unmanned runs, representing approximately 40 hours of training time, operating the wheel in its different control modes and speeds, exercising its various safety and emergency devices, and using four methods of braking the machine to a smooth stop.

They also studied the physiology of the human body and learned how it reacted under "G" forces. They received lectures on safety, demonstrations on handling fire equipment, giving first aid, artificial respiration, and heart massage. They will get their training in manned operation as the test subjects ride the wheel in their training program.

The switch over from training to testing is expected to come this summer when test subjects will don Apollo suits and ride the wheel to qualify the suit for the first manned Apollo flight. It will be followed by a test program to qualify the Apollo restraint and support system and the biomedical sensors.

Astronaut training is another function the centrifuge will perform. e new group of nineteen pilots is scheduled to ride the wheel in typical Apollo launch and re-entry profile accelerations for familiariza-

tion with the forces produced by flight.

Although the personnel of the facility are undergoing an intensive training period now in preparation for manned testing, there is a hard core of experienced personnel here who have operated centrifuges at Navy facilities at Johnsville, Pennsylvania, and Pensacola, Florida. Some of the members of the test subject pool have also had experience in riding wheels at other locations.

Ralph Drexel is project officer for the first Apollo testing on the centrifuge. Warren Glover is in charge of operations. He has three operators; Paul Kloetzer, chief; E. K. Windler and Gene Spake, assistants. Dr. John Gordon is medical director for the facility.

The test subject pool is headed by Max Fox. It includes Paul Ferguson, James LeBlanc, Randy Hester, Clifford J. Kingsmill, Jack D. Mays, Fred R. Spross, Hank A. Rotter, Robert G. Stevenson, Robert W. Thomas, and James L. Tyler from the MSC. Brown and Root-Northrop test subjects who are expected to ride the centrifuge include A. J. Barber, R. L. Dugan, Vernon E. Dugan, Robert Petner, Philip Schneider, and Fred Wilson.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-33
May 18, 1966

HOUSTON, TEXAS...The Gemini 9 mission has been rescheduled for no earlier than May 31, the National Aeronautics and Space Administration announced today.

Preparation for the launch of Gemini 9 spacecraft was terminated yesterday (May 17) following a failure to place the Agena Target Vehicle in orbit. The Gemini 9 spacecraft was to rendezvous and dock with Agena.

In the re-scheduled Gemini 9 mission, an alternate rendezvous and docking target vehicle - the Augmented Target Docking Adapter (ATDA) - will be used. The target vehicle was developed as an alternate for the Gemini 8 mission or subsequent missions in which an Agena was not available.

Dr. George E. Mueller, Associate Administrator for Manned Space Flight, said launching of the Gemini mission on May 31 is based on a very tight work schedule.

"We are going to make a very determined effort to complete preparation and checkout of another Atlas booster and the ATDA by May 31," he said. "However, it is a very difficult task and it will not be possible to set a firm launch date until the work is well underway."

The ATDA was developed from existing qualified Gemini hardware and will be launched by a standard Atlas launch vehicle. Equipment in the ATDA vehicle includes:

1. Agena nose shroud.
2. Target Docking Adapter.
3. Gemini reentry control section (RCS).
4. Gemini orbital attitude and maneuvering electronics.
5. Gemini digital command system.
6. Gemini electrical system components.
7. Agena/Atlas adapter.

The only new equipment in the ATDA is the shell structure to house the components. The ATDA weighs about 2,400 pounds at launch and about 1700 in orbit.

However, the ATDA has no propulsion system and may not permit all of the rendezvous and docking activities planned for the original Gemini 9-Agena

mission. Substitutions of the ATDA is not expected to change the extravehicular activities planned on Gemini 9.

The ATDA will be equipped with an automatic rate stabilization system. Thrusters in the RCS will be used to control its attitude.

The ATDA was built by McDonnell Aircraft Corp. under a supplemental agreement to the Gemini contract. General Dynamics/Convair Division and Space Systems Division, USAF, will serve as integration contractors. Guidance and reference trajectories will be furnished by Thompson-Ramo Woolridge.

The re-scheduling of Gemini 9 to May 31 will not affect the currently planned launch date of Surveyor A. This soft-landing lunar spacecraft is planned for launch by an Atlas-Centaur on May 30.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-34
May 20, 1966

Outstanding graduate students from 38 universities and colleges have been offered the opportunity to study and work this summer in the MSC Aerospace Summer Intern Program. Internships have been offered 54 students majoring in science, engineering and public and business administration.

Each student must be highly recommended by their deans and department heads and must have maintained a 3.5 or B+ grade average during their college work. The group offered MSC internships represents 15 major academic disciplines, including astronautics, physiology, engineering, physics, mathematics, and public and business administration.

Engineering and science majors will have the opportunity to take part in an extensive seminar program in the engineering and design of manned spacecraft, while administrative majors will attend a graduate-level seminar program covering major administrative and management topics.

This fourth consecutive MSC Aerospace Summer Intern Program allows students to gain practical experience in areas related to their college studies. A second major objective of the

Intern Program, according to MSC Director Dr. Robert Gilruth, is that of strengthening relationships and communications between MSC and the nation's colleges and universities.

Technical Summer Internships were offered to the following students:

Stanley Gershwin, Columbia University; Harleston E. Cabaniss, Georgia Institute of Technology; John Bankovskis, University of Cincinnati, Harald Portig, University of Texas; Mark Salita, Pennsylvania State University, and Alexander W. Young, University of Delaware.

Victor K. Chan, University of California; Suzanne R. Jaax and James R. Jaax both of Kansas State University; William L. Wilson, Rice University; Benjamin W. Day, Dartmouth College; Robert C. Mers, University of Illinois; James A. Weber, Purdue University; and Milton A. Wiltse, University of Indiana.

Jo Ann C. Joselyn, University of Colorado; William L. Hogan, Cleveland State University; Emmett G. Ward, University of Houston; Rene A. DeHon, Texas Technological College; William V. Weiss, University of Toronto; Charles A. Pilcher, University of Washington; Stephen R. Miller, University of Indiana; and Edward S. Bocian, Carnegie Institute of Technology.

James V. Carrol, Massachusetts Institute of Technology; Richard E. Hunter, Columbia University; Robert D. Hellweg, Jr., University of Illinois; Dennis Luckinbill, Oklahoma State University; Michael H. Heinz, Notre Dame University; Clyde A. McMahan, Louisiana State University; and Frederic H. Howard, Notre Dame University.

Glyn K. Romrell, Utah State Univeristy; Horace V. Smith, Jr., University of Texas; Ronald J. Pogorezelski, California Institute of Technology; Ronald H. Sones and Larry A. Spitzberg, both of Rensselaer Polytechnic Institute.

Administrative Summer Internships were offered to the following students:

Lawrence Rinderknecht, New York State University; Robert D. Fluss, University of Illinois; Joseph Hildebrandt, University of Wisconsin, Robert W. Joselyn, University of Colorado; James F. Kurtz, Pennsylvania State University; and Lillian Hobson, Howard University.

Sheridan Johnson, University of Minnesota; Mary A. Sudol, Syracuse University; William K. Daugherty, University of Texas; Michael S. Weinberger, University of Michigan, Stanton Calvert, University of Texas; Maxie D. Higgs, Lamar State College of Technology; Thomas W. Vinson, University of Southern California;

MSC 66-34
Add 3

Stephen G. Welch, San Diego State College; and Robert B. Denhardt, University of Kentucky.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-35
May 20, 1966

HOUSTON, TEXAS...The First MSC Aerospace Analysis and Writing Program has offered summer positions to 25 graduate students from 20 colleges and universities across the country. Majors in engineering and the physical and information sciences, the students will work closely with MSC engineers and scientists in analyzing basic technical data and each co-authoring at least one scientific engineering report.

Students offered the positions were selected from those highly recommended by college officials and who have shown a special interest in technical reporting. All have top academic standings.

MSC Director Dr. Robert R. Gilruth said that "a great wealth of technical information has been developed at MSC which has not been put into a useable report form. This program should provide a means of formulating several excellent reports and will, at the same time, give outstanding college students an unusual opportunity to contribute to the Center's program."

MSC 66-35
Add 1

Students who have been offered MSC Aerospace Analysis and Writing Program positions are as follows:

Charlene Mason, University of Minnesota; Gary G. Gaffney, Tulane University; Raymond F. Machacek, University of Iowa; Robert A. Jacobson, Purdue University; Walter R. Koenig, University of Missouri; Walton E. Fredrick, University of Washington; and William R. Higgs, Louisiana Polytechnic Institute.

J. T. Knoles, Texas Christian University; Lloyd Pernela, Notre Dame University; Otis Byrd, Lamar State College of Technology; Carl M. Applewhite, Oklahoma State University; Joseph S. Cole, University of Houston; Daniel Goodman, Stanford University; James A. Anderson, Wayne State University; and Allen B. Rochkind, Carnegie Institute of Technology.

Charles S. Portwood, University of California; Brandford W. Southworth, University of California; Harold R. Anderson, Stanford University; Arnold G. Reinhold, Massachusetts Institute of Technology; Kenneth Duerkson, Southwestern Oklahoma State College; Geoffrey Rorth, University of Illinois; Charles E. Lear, University of Texas; Robert J. Korsan, Manhattan College, Gilberto Garza, Texas College of Arts and Industries; and Glen E. Thobe, Ohio State University.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-36
May 20, 1966

HOUSTON, TEXAS...Two major test facilities are located in or near Building 14. These facilities are (1) the Antenna and Anechoic Chamber Facility and (2) the Optical Frequency Range Facility.

The antenna range has the capability of testing full scale spacecraft under simulated free space conditions. The optical frequency range will test advanced optical communications equipment in the simulated space environment.

The Antenna Range and Anechoic Chamber will be used to substantiate the integrity of Apollo Spacecraft communications through the unique capability of testing full-scale vehicles in radiation environments simulating free space.

This facility consists of a shielded, anechoic chamber occupying approximately 8,800 square feet and an adjoining outdoor antenna range covering about 46 acres. Test vehicles may be used outdoors or inside the anechoic chamber since the chamber is equipped with a large access door on the range side.

The chamber and its associated remote control rooms and test vehicle staging and storage area are located at MSC in Building 14.

Anechoic Chamber - The anechoic chamber is built into a large room measuring 55 feet high, 55 feet wide and 150 feet long with one end permanently closed and the other having a single 55-foot by 55-foot door.

The internal to external shielding of the anechoic chamber is -100 db from 14 kc to 10,000 mc for both electric and magnetic fields. The room attenuates specular reflections of RF fields from -30 db at 200 mc to a minimum of -55 db at 3,000 mc and above.

A minimum reflection or "quiet zone" volume measuring 20 feet in diameter by 57 feet long and centered 35 feet above the floor is designed into the chamber. Single path reflections into this "quiet zone" are attenuated from -30 db to -55 db with reference to an incident fields from 220-35,000 mc. This space is used primarily for antenna systems impedance measurements and for measuring RFI susceptability levels.

An indoor transmitting antenna is used for radiation pattern measurements in a "free space" environment and, alternatively, with the chamber door open, allows pattern measurements to be made using external illumination because the chamber is, in addition to a shielded environment, an extension of the outdoor antenna range which enhances the overall capability of the range. Complete systems checkout and RFI-EMI testing of an Apollo spacecraft mock-up is a practical use of this facility.

Antenna Range - The antenna range consists of a combination ground reflection and free space type of range with an overall

length of 2,500 feet and a finished surface width (plane within 1 inch) of 1,000 feet.

An 80-foot transmitting tower with independently mounted 6-foot and 12-foot dishes illuminate the range with signals between 100 and 12,400 mc. The working aperture is 57 feet in diameter. The receiving tower is a mobile structure which can support vehicles weighing approximately 20,000 pounds at a height of 35 feet and having a length of approximately 55 feet.

The tower is equipped with two positioners which provide elevation-over-azimuth motions to permit complete spherical space coverage about the test article. The tower and positioners alone weigh approximately 30,000 pounds and move on a 20-foot wide concrete slab extending from the anechoic chamber door to within 1,000 feet of the transmitter tower.

Three prime range lengths are used: 1,000, 2,000 and 2,500 feet, the latter being inside the anechoic chamber within the "quiet zone." At each of these positions the slab is thickened and cable manholes are provided for the remote control and signal recording functions which are performed in the control room of Building 14. The antenna range centerline is disposed at a 5-degree angle with respect to the anechoic chamber to eliminate interference with range measurements due to reflection of incident waves over the chamber door.

A 40-foot "high-bay" area ajoins the anechoic chamber and is equipped with a 10-ton, 30-foot lifting capacity crane for test vehicle staging.

The length, frequency coverage, large aperture, 0.25 degree pointing accuracy, capability of mounting large test vehicles, capability of recording antenna patterns in polar or retangular form, automatic amplitude contour plotting in typed or punched tape form, all demonstrate the flexibility and growth potential of this range toward testing large future spacecraft.

Optical Frequency Range Facility - The primary function of the Optical Frequency Range is for the testing of spacecraft optical communications, optical radar and general optical instrumentation.

This facility consists of a cylindrical vacuum tube 80 meters (262.4 ft.) in length and 4 meters (13.1 ft.) in diameter.

The tube is housed in an insulated air conditioned tunnel. The ends of the tube terminate in control rooms of Building 14.

The purpose of this facility is for determination of the absolute performance of passive and active optical systems under controlled environmental conditions.

The system can be evacuated to 10-3 torr. This permits the evaluation of optical systems under test with reduced

atmosphere absorption and scattering. The tube has been designed to accommodate diffusion pumps to permit evacuation to 10^{-4} torr.

The tunnel housing the vacuum tube is air conditioned and has temperature regulation of $\pm$ 2 degrees F over the full length. The control rooms are RF shielded to permit low level electronic measurements. The tube has vacuum electrical feed through connectors which allow introduction of control voltages.

The vacuum tube has a railway track running the full length of the tube (240 ft) to accommodate a small railway car. This arrangement provides a means of varying the range in accordance with test objectives. Optical System Control is provided in one end of the tube. Rotation about the vertical and horizontal axes permits various test capabilities. The end covers of the tube have optical viewing ports and a personnel entry door. The entire end of the tube can be remcved to allow the installation of large equipment.

The requirements for this optical range are based upon evaluation of optical systems and verifications of theoretical studies for manned spacecraft vehicles. Some specific test capabilities are:

1. Reflectivity measurements of material that will be viewed or irradiated. This will permit determination of reflectivity

as a function of optical frequency.

2. Absorption, scattering and dispersion measurements will be performed in the tube containing controlled gases.

3. Resolution measurements of passive systems and angular and linear resolution measurements on active (optical radar) systems will be performed.

4. Optical system operation shall be evaluated in the presence of simulated background radiation such as solar, lunar, earth, stellar, and flame or exhaust plume spectral radiation.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-37
May 20, 1966

HOUSTON, TEX...A 365-foot tall Apollo Saturn V Lunar Rocket will be picked up from its assembly site and carried 3.5 miles to the launch pad May 25 just five years after the late President Kennedy set the goal of sending American astronauts to the moon by the end of this decade.

This test vehicle designated the Apollo Saturn 500-F will never make the journey to the moon, however. It is being used to verify unch facilities, train launch crews and develop test and checkout procedures. The first flight vehicle is scheduled to arrive later this year.

Following the procedures which will be used during preparation for the actual lunar launch, the 500-F was assembled on a mobile launcher in the Vehicle Assembly Building at NASA's John F. Kennedy Space Center. Assembly and checkout in the VAB began late in March 1966.

A 3000-ton crawler will move under the mobile launcher lifting the launcher and the assembled rocket off its support pedestals. The combined weight of the launcher and space vehicle will be almost 6000 tons. The journey to the launch pad is scheduled to begin about 9:00 a.m.

In a short ceremony before the event, Dr. George Mueller, Associate

Administrator for Manned Space Flight; Dr. Wernher von Braun, Director of Marshall Space Flight Center; Dr. Robert R. Gilruth, Director of the Manned Spacecraft Center; and Dr. Kurt H. Debus, Director of the Kennedy Space Center, will speak briefly. Master of ceremonies will be Albert F. Siepert, Deputy Director of Kennedy Space Center. Colonel Rocco A. Petrone, Director, Plans, Programs and Resources, of Kennedy Space Center will explain the functions of the 500-F vehicle.

Some 500 guests will attend the ceremony and witness the event. They will include representatives of the many companies who built the launch complex, representatives from the Department of Defense and the my Corps of Engineers, who supervised much of the construction, officials of the National Aeronautics and Space Administration, the Brevard County Commission and Brevard mayors.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-38
June 2, 1966

HOUSTON, TEXAS -- A rendezvous radar system will be used to guide the Apollo lunar module back to the command-service module orbiting the moon, the National Aeronautics and Space Administration announced today.

Parallel development of an optical tracker for Apollo lunar rendezvous will continue at a reduced rate for possible experimental tests aboard an earth-orbiting lunar module.

Radio Corp. of America is developing the rendezvous radar, a system similar to that used in the Gemini program. This system has been under development since the early stages of the Apollo program.

Hughes Aircraft Co. began work last August as a subcontractor on a NASA guidance and navigation contract to perfect the Lunar Optical Rendezvous System (LORS).

The LORS employs an optical sighting and reference system in the lunar module and a bright flashing beacon on the command module. It has been developed to a point that suitable hardware for use as a rendezvous sensor is available for testing in the lunar module.

The radar also is a two-unit system with the radar located in the lunar module and a transponder or signal receiver-transmitter in the command module.

RCA's estimated cost for a completed system, including production

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models of 22 radars and 19 transponders, is $58.5 million and estimate for the Hughes system is $29.8 million. Both systems will require $14 million to complete.

Although the optical system weighs less, the radar system provides slightly increased operational capability. The optical system has performed exceptionally well but the present lunar module weight is such that the increase in operational capability is more desirable than the weight advantage.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-39
June 10, 1966

An internal weather problem has been solved by creative use of government surplus equipment at the NASA Manned Spacecraft Center, Houston, Texas

Snowstorms and fog have been created several times inside the the two large vacuum chambers here when humid outside air was used to repressurize the big chamber in drills of emergency rescues. Supercooled nitrogen wall panels which are used to simulate space temperatures inside the chamber caused the moisture in the air to change into ice crystals resulting in snow formation and a dense fog which hampered practice rescue operations by severely limiting visibility. In addition, it also took several days to clean the chamber after the moisture condensed over all of the interior surfaces of the chamber.

The MSC engineers began looking around for a way to provide dry air to repressurize the chamber and found it in the era of the Navy dirigible.

The large tanks which supplied helium for the lighter-than-air craft at the Lakehurst Naval Air Station were discovered on the surplus list. Six of these steel tanks were obtained by MSC to play a role in ...e space program.

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After a thorough scrubbing out and rehabilitation, the slender 45-foot-long tanks were placed on line outside the vacuum chamber building to provide 400 cubic feet of compressed air each for the facility. The dry air is made from a mixture of pure, supercooled nitrogen and oxygen which is vaporized and heated to room temperature before being placed in the storage tanks.

By using the 50-ton tanks instead of buying new equipment, an economical means was found for preventing bad weather in space operations.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-40
June 10, 1966

The Manned Spacecraft Center has selected Entronix Corporation of Houston and Medley Electronic Corporation of Brownsville, Texas, for further negotiations of a contract to provide central electronic shop support services at the center.

An award fee type contract will be negotiated for a one-year period with renewal provisions for two additional years. Estimated costs for the first year of services are $425,000. Services to be provided include overhaul, repair and fabrication of electronic aerospace components. It is anticipated that approximately 50 persons will be required to provide the services.

Under an award fee type agreement, the contractor can earn additional profit by improving performance and reducing costs. Entronix Corporation and Medley Electronic Corporation are two of five firms which responded to the request for proposals issued by the center.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-41
June 10, 1966

An educational symposium and workshop aimed at determining the impact of space exploration on teacher education is scheduled at the Manned Spacecraft Center June 15-17.

Sponsored jointly by the University of Houston and the Public Affairs Office at MSC, the conference is designed to acquaint attendees with NASA programs, to explore ways of developing an exchange of information between NASA and educators, to study ways of supplying professional advisory personnel for materials selection and information organization and to develop a means of testing and evaluating the effectiveness of NASA educational programs and services.

Sponsors of the symposium hoped that by reaching the professors of teacher education, a more concrete understanding of the needs of the educational community can be obtained.

This is the first such conference directed specifically to persons responsible for science education instruction at the university level. The closing session of the conference will be devoted to an evaluation of NASA's educational programs.

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Following the conference, a panel of experts will thoroughly evaluate the ideas and recommendations of attendees.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-42
June 14, 1966

HOUSTON, TEXAS...The first docking maneuver the astronauts must make on their way to a moon landing is being studied in miniature on an air bearing surface at the NASA Manned Spacecraft Center.

Two cylindrical vehicles fitted with a one-third scale version of Apollo docking hardware in one end glide agross a level surface on large air bearing pads. They can come together and dock at different speeds and angles which can occur in Apollo Command and Service Module-Lunar Module dockings.

The one-third scale models will simulate the docking which takes place after the third stage of the Saturn rocket has launched the Apollo crew from earth orbit on a flight to the moon.

Each third scale vehicle, which weighs more than a ton, is lifted off the floor's surface by cushions of air ejected under high pressure from the pads. The air bearing reduces the friction between the vehicles to move freely.

The laboratory docking vehicles are thoroughly instrumented to gather information about the dynamics of the docking and whether the full scale hardware has been designed properly to make the hookup in space successfully.

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In the Apollo mission maneuver called Transposition and Docking, the two upper sections of the Spacecraft must separate from the total spacecraft, fly away a short distance, turn around, dock with and tow the LM away from its launch shroud, and the third stage of the Saturn.

The command module must dock with the LM to allow two crewmen to transfer to the LM before the descent to the moon's surface.

To simulate docking in the laboratory, the operator aims the command and service module vehicle toward the LM vehicle using a sighting system, like a rifleman aiming his gun on a target. Then he releases a spring-driven piston which launches the smaller vehicle toward its target. The highest forward speeds attained are approximately one-half mile an hour with the vehicle moving as fast as a quarter of a mile an hour sideways and turning up to three degrees per second.

The docking hardware on the Apollo command module is a sliding probe with a cone-shaped tip equipped with three capture latches. To complete the docking maneuver, the probe is guided into and captured by an inverted cone type of docking collar located on the LM top hatch. Behind the probe tip are three hinged arms fitted with fluid shock absorbers. The arms pivot and cushion the docking impact as the probe recoils after capture. The docking hardware can then be removed and the two-man LM crew can transfer through the docking tunnel.

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The rig for simulating the Apollo docking was designed in-house at MSC by the Mechanical Systems Branch of Structures and Mechanics Division. Charles Vibbart is project engineer for the One-Third Scale Apollo Docking Test Program.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 76-43
June 15, 1966

HOUSTON, TEXAS...The Apollo/Saturn 203 launch, previously scheduled for June 30, has been rescheduled for June 29, the National Aeronautics and Space Administration announced today.

The date was changed because of a scheduled launch of the Lunar-Anchored Interplanetary Monitoring Explorer. The spacecraft is scheduled to be launched June 30 by a thrust-augmented improved Delta rocket on a mission that will place it in an orbit around the moon to study the environment in the vicinity of the moon.

The AS 203 launch will be the second mission for the uprated Saturn 1, the Saturn 1B, to study the behaviour of liquid hydrogen fuel in the launch vehicle's second stage during three or four earth orbits. No Apollo spacecraft will be carried on the flight.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HUnter 3-4341

MSC 66-44
June 17, 1966

HOUSTON, TEXAS - Educators meeting in a 3-day Regional Educational Symposium at Manned Spacecraft Center through Friday, June 17, were advised by the keynote speaker of the opening session to integrate space science instruction with regular courses in the college curricula rather than to add new courses.

Dr. Alfred B. Garrett, vice president for research of The Ohio State University, said that most college deans are allergic to adding new courses because of the already crowded curricula. He elaborated on how courses in chemistry, astronomy, geology, physics, biology, mathematics, literature and art could be modified to include space science topics. He stated, "The objective of science is to interpret the universe," and emphasized that each particular discipline of learning offers a unique approach and contribution to this objective.

The purpose of the symposium, sponsored by the National Aeronautics and Space Administration in cooperation with the University of Houston, is to

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coordinate NASA's educational programs and services with institutions of higher learning concerned with teacher education.

Ninety-four college deans, heads of education departments and professors of science education are in attendance from throughout the 8-state area served by the Manned Spacecraft Center. They were welcomed to MSC by George M. Low, Deputy Director of the Center, who spoke on the space activities conducted by NASA and the specific mission of the Manned Spacecraft Center. A report on the Apollo program was presented by Dr. Joseph Shea, Manager of the Apollo Spacecraft Program Office. He stated that the first manned Apollo flight is scheduled for late this year or early 1967, and that unless unforeseen difficulties are encountered, the United States will land men on the moon before the end of this decade.

MSC officials who participated in the symposium's first-day panel discussion of "Man's Future Role in Space" were Mr. Low; Paul Purser, Special Assistant to the Director; Maxime A. Faget, Director for Engineering and Development; Charles W. Mathews, Manager of the Gemini Program Office; and Astronaut Scott Carpenter. The panel agreed that man's future in space is confined only by the limits of his curiosity, imagination, and spirit of adventure.

Greetings from the University of Houston was extended to conferees by Dr. John C. Allred, Vice President and Dean of Faculties, who also spoke on the role of the university in meeting the Nation's goal in space. Dr. Allred stressed the need for cooperation between NASA and educational institutions and stated that educators must act now if they are to effectively train future space engineers, scientists, and astronauts.

Other conference speakers include Dr. Aaron P. Seamster, Washington, D.C., Deputy Director of NASA Headquarters Educational Programs and Services; Dr. Harold D. Drummond, Chairman of the Department of Elementary Education at the University

of New Mexico; Dr. John W. Renner, Professor of Science Education, University of Oklahoma; Dr. James Wailes, Professor of Education, The University of Colorado; and Dr. Alvin C. Eurich, President of Aspen Institute for Humanistic Studies, Aspen, Colorado, and formerly Executive Director of the Education Division of the Ford Foundation.

The symposium coordinator, Dr. Leo G. Mahoney of the University of Houston, College of Education, who worked closely with Eugene E. Horton, Chief of MSC's Educational Programs, in organizing the conference, stated that recommendations coming out of the symposium would be evaluated by a panel of experts in a follow-up meeting to be held soon.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-45
FOR RELEASE: June 19, 1966

HOUSTON, TEXAS...The National Aeronautics and Space Administration has scheduled the launch of the Gemini 10 mission for no earlier than July 18 at Cape Kennedy, Fla.

The three-day mission will begin with the launch of the Agena target vehicle by an Atlas booster about 3:40 p.m. EST. The Gemini 10 spacecraft will be launched by a Titan II rocket about 5:30 p.m. EST. The Agena will be inserted into a 185-mile circular orbit and the Gemini into a 100 by 168-mile elliptical orbit.

Primary crew for the mission is John W. Young, command pilot, and Michael Collins, pilot. Backup crew is Alan L. Bean, command pilot, and Clifton C. Williams, pilot.

Young, a Navy Commander, was pilot on the first manned Gemini flight, Gemini 3, March 23, 1965. Collins, an Air Force Major, Bean, a Navy Lieutenant Commander, and Williams, a Marine Corps Major, have not made space flights.

Plans for the Gemini 10 mission include rendezvous, docking and extravehicular activity. The Gemini 10 spacecraft is scheduled to rendezvous and dock with its target vehicle and if possible

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to achieve a dual rendezvous with the Agena launched in the Gemini 8 mission March 16.

The first rendezvous is scheduled in the fourth revolution over South Africa with docking following a period of station keeping.

The crew will maneuver the docked vehicles, using the Agena target vehicle propulsion system, into a position to accomplish a dual rendezvous with the Gemini 8 Agena at an altitude of approximately 247 miles. The crew will undock from the Gemini 10 Agena and use the spacecraft control and propulsion systems to initiate the final phase of the dual rendezvous with the Gemini 8 Agena.

Two spacecraft extravehicular activities are planned for Gemini 10. The first is a stand-up EVA in which the pilot will be standing on his seat with his upper body extending through the open hatch of the spacecraft. During the 55 minutes of this stand-up EVA the pilot will perform the ultra-violet astronomical experiment, color patch photography experiment, synoptic terrain and synoptic weather photography.

During the umbilical EVA the pilot will evaluate the operation of the Extravehicular Life Support System (ELSS, chestpack), the Hand-Held Maneuvering Unit (HHMU), evaluate maneuvering in space and perform two micrometeoroid collection of experiments.

He will be using a 50-foot umbilical throughout this 55 minutes of EVA.

Sixteen experiments are to be performed during the Gemini 10 mission: Star Occulation Navigation (D-5), Ion Sensing Attitude Control (D-10), Tri-Axis Magnetometer (MSC-3), Lunar Ultraviolet Spectral Reflectance (MSC-5), Beta Spectrometer (MSC-6), Bremsstrahlung Spectrometer (MSC-7), Color Patch Photography (MSC-6), Landmark Contrast (MSC-12), Zodical Light Photography (S-1), Synoptic Terrain Photography (S-5), Synoptic Weather Photography (S-6), Micrometeorite Grater Collection (S-10), Micrometeorite Collection (S-12),Ultraviolet Astronomical Camera (S-13), Ion Wake Measurement (S-26), and Bioassays of Body Fluids (M-5).

Landing of Gemini 10 is planned at the beginning of the 45th revolution in the Western Atlantic recovery zone.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-46
June 17, 1966

HOUSTON, TEXAS...Astronauts James A Lovell, Jr., and Edwin E. Aldrin, Jr., will be prime crewmen for Gemini XII, the final mission in the Gemini Program, the National Aeronautics and Space Administration announced today.

Backup crewmen are L. Gordon Cooper, command pilot, and Eugene A. Cernan.

Lovell, a Navy captain, was the pilot of the Gemini VII mission. Gemini XII will be the first space flight for Aldrin, an Air Force major. Lovell and Aldrin were backup crewmen for Gemini IX. Cooper, an Air Force colonel, was pilot of the final Mercury flight and was command pilot of Gemini V. Cernan, a Navy commander, was the pilot in the Gemini IX mission.

Gemini XII is officially scheduled for the first quarter of 1967; however, the Gemini Program Office is trying to maintain a pace which permits a flight every other month.

As presently planned, Gemini XII will include an early rendezvous between the spacecraft and an Agena Target Vehicle, dual rendezvous similar to that scheduled for Gemini X, standup extravehicular activity, and EVA to evaluate the Astronaut Maneuvering Unit. The exact revolution for initial rendezvous has not been determined.

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MSC 66-46
Add 1

Gemini XII will be a three-day mission. The flight plan will include repeats of many experiments plus activites, such as the AMU evaluation, which were not completed on earlier flights.

The standup EVA will closely parallel the Gemini X activity. Aldrin will use a short oxygen and electrical umbilical to enable him to stand in the open hatch and conduct a series of photographic experiments. His EVA, using the AMU, will be similar to the plan which was set up for Cernan on Gemini IX.

A decision on whether the passive target for Gemini XII is to be the Gemini VIII Agena or the Gemini X Agena will be made after orbital figures and decay rates for both vehicles are firmly established.

A final list of experiments will be decided on later.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-47
June 24, 1966

HOUSTON, TEXAS...Open House at the Manned Spacecraft Center will be conducted on a curtailed basis this Sunday, June 26.

The auditorium lobby will be open for viewing of spaceflight displays, but the auditorium will be closed and no motion pictures will be shown.

Curtailment of the Open House is necessary because an Apollo lunar landing symposium will be conducted in the auditorium on Saturday, Sunday and Monday. Participants will include representatives from NASA Headquarters, MSC, Ames Research Center, Flight Research Center, Langley Research Center, Lewis Research Center, Marshall Space Flight Center, Goddard Space Flight Center, John F. Kennedy Space Center, and Apollo spacecraft prime and associate contractors.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-48
July 7, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration announced today establishment of new program offices at the Manned Spacecraft Center (MSC) and Marshall Space Flight Center (MSFC) to handle the increasing level of activity involving Apollo applications.

The new program offices are responsible for management of Apollo applications program activities at the respective centers.

Dr. Robert R. Gilruth, Director of MSC, named Robert F. Thompson as Assistant Program Manager, Apollo Applications Program Office at the NASA Houston field center. George M. Low, Deputy Director of MSC, will serve as Acting Program Manager in addition to his present duties. Other key personnel will be named later.

Thompson was previously Chief of the Landing and Recovery Division and directed NASA planning, development and implementation of the landing and recovery operations in the Mercury, Gemini and Apollo manned space flight programs. Jerome B. Hammack

- more -

will replace Thompson as Chief of the Landing and Recovery Division. Hammack has previously served as Deputy Manager of the Office of Vehicles and Missions in the MSC Gemini Program Office.

Dr. Wernher Von Braun, Director of MSFC, named Leland Belew as Program Manager and Stanley Reinartz as Deputy Manager, Saturn Apollo Application Program Office, at the Huntsville Center. William D. Brown replaced Belew as Manager, Engine Program Office.

The new program offices have been established at the same organizational level as other center program offices and will operate in the same manner.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

66-49
July 6, 1966

HOUSTON, TEXAS...The final test in the Apollo/Saturn 203 mission was successfully completed at the end of the vehicle's fourth orbit over Corpus Christi, Texas, at approximately 5:11 EDT yesterday afternoon. It terminated in the destruction of the second stage.

The test was an experiment to measure the rate of pressure rise in the partially filled liquid hydrogen tank. Starting at the end of the third orbit, liquid oxygen was vented and the liquid hydrogen continuous venting was stopped.

At the end of the fourth orbit, liquid hydrogen pressure was 38 pounds per square inch and liquid oxygen pressure was four pounds per square inch. It was determined later that the stage had burst as expected. The stage was in a 111-nautical mile geocentric orbit at break up, and pieces are expected to reenter within the next two weeks.

The Saturn 203 was launched from Cape Kennedy at 10:53 a.m. EDT, July 5. It comprised two rocket stages, the SIB and the SIVB. The latter stage was the one which went into orbit.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-50
July 7, 1966

The National Aeronautics and Space Administration has selected ZIA Corporation, Las Cruces, New Mexico, for negotiation of a contract covering maintenance and operation for the White Sands Test Facility.

The cost-plus-award-fee contract is for one year at an estimated cost of $5 million with a provision for two additional one year-extensions. The contract will go into effect during the fourth quarter of calendar year 1966.

Under terms of the contract, ZIA corporation will provide maintenance and repair to buildings, roads and grounds, mechanical, electrical and utility systems, equipment and test facilities. In addition to repair and operation of the altitude simulation facility and cryogenic, propellant and storage facility, the company will also provide miscellaneous services as transportation, mail, dispensary, fire protection, communications and custodial.

The ZIA Corporation was one of four firms that submitted proposals on May 9, 1966.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-51
July 11, 1966

HOUSTON, TEXAS -- The third unmanned Apollo/uprated Saturn I mission (AS 202) will be launched by the National Aeronautics and Space Administration no earlier than August 20.

The Apollo spacecraft and uprated Saturn I vehicle will undergo additional tests during an 18,000 statute mile suborbital flight to verify the systems for manned earth orbital missions. Duration of the mission will be about 94 minutes.

The space vehicle will be launched from Launch Complex 34 at Cape Kennedy, Florida. After the spacecraft and Saturn vehicle separate, the service propulsion system will boost the spacecraft to a peak altitude of about 750 miles over South Africa. A long duration reentry over the Pacific Ocean is planned to test the ablative heat shield under high heat loads of approximately 20,000 BTU/square foot. The spacecraft will be recovered about 300 miles southeast of Wake Island.

The second successful unmanned Apollo/uprated Saturn I mission (AS 203) on July 5 verifies the design and operation of

- more -

the hydrogen fueled SIVB Saturn stage for its role as the third stage of Saturn V, the launch vehicle for Apollo manned lunar landing missions. All mission objectives were achieved.

Engineering tests, which included real time observations of the fuel, proved that liquid hydrogen can be properly managed to restart the 200,000 pound thrust J2 engine during earth orbital flight.

The breakup of the stage in orbit after completion of all tests had no effect on the mission. This resulted from a planned structural test of the common bulkhead between the liquid hydrogen and liquid oxygen propellant tanks. Pressure readings proved that the structure would withstand pressure differentials more than three times greater than normal operating conditions which further verified the stage design. A similar bulkhead pressure test is planned during the next Apollo/Saturn mission after the second stage and spacecraft are separated.

The Saturn I Program has a record of 100 percent successful flight missions, ten in the basic Saturn I Program and the two uprated Saturn I missions this year (February 26 and July 5).

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

HU 3-5111

MSC 66-52
July 15, 1966

MSC CANCELS TWO CONTRACTS

HOUSTON, TEXAS...The Manned Spacecraft Center has directed termination of two contracts to supply backup propellant measuring systems for the Apollo command, service and lunar modules.

The contracts are held by Giannini Controls Corp. of Duarte, Calif., with North American Aviation Inc. and Grumman Aircraft Engineering Corp., prime contractors on the respective modules. Total expenditure to date under the contracts is $14.2 million.

The project was an attempt to develop a highly accurate system to measure reaction control system fuel and oxidizer under zero-g. The system employed fiber optics and a radiation source to measure bulk volume of the propellant.

Developmental tests have shown that the gage did not meet original requirements, which appear to be beyond the state of the art.

Operational experience in the Gemini program has shown that by using pressure and temperature data, propellant quantity can be estimated with accuracy essentially equal to that which the much more complex radiation gage was able to achieve.

The contracts with Giannini were authorized to North American on May 7, 1963, and to Grumman on October 21, 1964.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Eighteen Houston area students will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners at the Center on August 25 and 26, 1966. Those planning to attend are Gloria Aguilar, 7229 Palestine; Jose Florencio Alvarez, 5722 Val Verde; Frank Cutaia, 308 Bryan; Fred Patrick Gaines, 2005 Wentworth; John C. Garner, 4107 Portsmouth; Steve Govreau, 5611 Cheena; Ralph Hendrickson, 1220 Tidwell; Rebecca McCraw, 5301 Chenevert; David Maynard, 4306 Creekbend; Cena Millsap, 6147 Valley Forge; Cynthia Oliver, 2902 Cleburne; Eddie Osborne, 8110 Lawler; Nancy Melinda Tamburello, 7312 Orville; Vasco Walters, 5715 Belarbor; John Weintritt, 5122 Pine, Bellaire; Rebecca Greenland, 409 Wallis, Pasadena; John J. Pearce, Jr., 18346 Cape Bahamas Lane, Nassau Bay; and Ronny Wilson, 3708 Emite, Dickinson.

Attendees at this Conference are the winners of NASA awards at regional and state science fairs in Texas, Oklahoma, New Mexico, Colorado, Kansas, Nebraska, South Dakota, and North Dakota. Also attending will be the winners of NASA awards at the Houston Seminar for High School Sciences.

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The program for these outstanding students will include lecture sessions covering general aspects of manned space flight, seminars in specific technical areas, and tours of the Manned Spacecraft Center (MSC) facilities. The Conference is designed to stimulate the students' interests in aerospace sciences, and to give them a greater understanding of the manned space flight effort.

Conference speakers on Thursday August 25 will include Paul Purser, Special Assistant to the Director of MSC; Paul Haney, Public Affairs Officer; Dr. Jeannette Piccard, Consultant; Charles Mathews, Manager Gemini Program Office; Dr. Joseph Shea, Manager Apollo Spacecraft Program Office; and William E. Stoney, Chief Advanced Spacecraft Technology Division.

Seminars in areas such as aerodynamics, propulsion, and fuel cells will also be held on Thursday. While the students are attending the seminars, their parents will be conducted on a tour of the Center.

The students will tour Center facilities on Friday morning, August 26. Speakers for Friday afternoon will include John Peterson of the Astronaut Office; Dr. Charles A. Berry, Director of Medical Research and Operations; Richard Underwood of the Photographic Technology Laboratory; and Burney Goodwin of the Personnel Division.

The Conference will adjourn with a dinner at which one of the NASA astronauts is scheduled to speak.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Fifteen students from Oklahoma will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. The students from Oklahoma are Ronald Thompson, Ada; Laurie Jo Fox, Paul Lawrence, Jerry Palmer, Bette Jean Wise, and Glena Wood, all from Ardmore; Richard P. Welty and Gary T. Willis, Bartlesville; Edwin Robert Reavis, Miami; Robert Bruce Berryhill, Midwest City; Tony Ray Dill, Okeene; Kenneth Hyams and Jerry Mashburn, Oklahoma City; Carol Ann Nash, Owasso; and Ricky Jungers, Stillwater.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Six students from New Mexico will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. They are Kenneth Morris, Jr., and Leland Taylor, Albuquerque; Jim Power, Farmington; and Henry Garrett, Randy Patton, and W. Corbett Slade III, all from Roswell.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Eight students from Colorado will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. The students from Colorado are Jean Brickell, Victor M. Evans, Ted G. Lindeman, and Larry Small, all from Colorado Springs; Roger Ptolemy, Durango; Thomas A. Logue, Grand Junction; Eugene Goudeau, Rangely; and Ruth Ann Porterfield, Trinidad.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Ten students from Kansas will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. The Kansans are Pam Hixon, Atchison; Douglass Glen Barnhart and Phil Hopper, Emporia; Gordon McKinnie, Erie; Joe Stebbins, Lakin; Craig Prothe, Medicine Lodge; Fritz Farmer, Stafford; Randy Flowers, Ulysses; and Thomas Jarvis and Marshall Reed Whitlock, Wichita.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Miss Mary Stewart of South Sioux City will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Miss Janet Marie Shilling of Diamond will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Three students from South Dakota will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. The students from South Dakota are Mike Joneson and Steven Sittig, Dell Rapids; and Gary D. Sales, Sioux Falls.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Two students from North Dakota will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston, Texas, on August 25 and 26, 1966. The students from North Dakota are Dennis Howard, Dickinson; and Glennys Wittenberg, Foxholm.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-4343

MSC 66-53
July 20, 1966

CONFERENCE FOR SCIENCE FAIR WINNERS

Thirty students from Texas will be among approximately 100 young scientists attending the Manned Spacecraft Center Conference for Science Fair Winners in Houston on August 25 and 26, 1966. The Texans are Robert Grimes, Larry Johnson, and Lester Mershon, Jr., from Abilene; Frankie Allen, Tim G. Harris, and Lonnie Smith, Amarillo; Georges E. Jamieson, Austin; Larry Conlee, Clyde; Russ Gundrum, Colorado City; Edward Dickinson, Scott Harmon, Lewis Johnson, and Jerry Westlake, Dallas; Herschel H. Hicks, Jr., El Campo; Bert J. Goodrich, El Paso; Gary Earle, Fort Worth; Macon Boddy, Henrietta; David Fricks, Iowa Park; David A. Young, Killeen; Gene M. Hausmann, Port Lavaca; Mark Lang, Rockport; John Jay Stokes, San Angelo; Chuck Bowden, Douglas McBride, William T. Rollwitz, and Wayne Steadman, San Antonio; Michael Dolan, San Marcos; Jeff Andrews and Barton Havins, Temple; and Michael Roney, Waco.

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Attendees at this Conference are the winners of National Aeronautics and Space Administation (NASA) awards at regional and state science fairs in Texas, Oklahoma, New Mexico, Colorado, Kansas, Nebraska, South Dakota, and North Dakota.

The program for these outstanding students will include lecture sessions covering general aspects of manned space flight, seminars in specific technical areas, and tours of the Manned Spacecraft Center (MSC) facilities. The Conference is designed to stimulate the students' interests in aerospace sciences, and to give them a greater understanding of the manned space flight effort.

Conference speakers on Thursday August 25 will include Paul Purser, Special Assistant to the Director of MSC; Paul Haney, Public Affairs Officer; Dr. Jeannette Piccard, Consultant; Charles Mathews, Manager Gemini Program Office; Dr. Joseph Shea, Manager Apollo Spacecraft Program Office; and William E. Stoney, Chief Advanced Spacecraft Technology Division.

Seminars in areas such as aerodynamics, propulsion, and fuel cells will also be held on Thursday. While the students are attending the seminars, their parents will be conducted on a tour of the Center.

The students will tour Center facilities on Friday morning, August 26. Speakers for Friday afternoon will include John Peterson of the Astronaut Office; Dr. Charles A. Berry, Director of Medical Research and Operations; Richard Underwood of the Photographic Technology Laboratory; and Burney Goodwin of the Personnel Division.

The Conference will adjourn with a dinner at which one of the NASA astronauts is scheduled to speak.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-54
July 28, 1966

HOUSTON, TEXAS -- The first major test of a manned Apollo spacecraft here at the Manned Spacecraft Center is scheduled to begin this weekend with S/C 008 in the vacuum environment of Chamber A in the Space Environmental Simulation Laboratory.

A combined unmanned and manned test of S/C 008 Command and Service Module (CSM) in a thermo-vacuum environment is to simulate as closely as possible the environment, spacecraft, and procedures that will be used in the first Apollo manned earth orbital flight.

The unmanned portion of the test was begun late Tuesday evening and is scheduled to be completed sometime Friday. The manned portion of the test is now scheduled to begin either late Saturday evening or early Sunday.

The manned portion of the test is scheduled to last 192 hours, or eight days. Prime and backup crews to man the command module have been selected from engineers assigned to the Flight Crew Support Division.

Prime crew members for the test are Donald R. Garrett, Neil R. Anderson, and Joel M. Rosenweig. Backup crew members are Joseph A. Gagliano, William M. Anderson and Michael K. Lake.

Since the tests will be supporting the first Apollo manned orbital mission, the spacecraft systems configuration was established as close as possible to that of the actual flight spacecraft. However, S/C 008 will be used for ground testing only and is not slated for flight.

Unmanned phases of the test consist basically of a cold soak and a command module depressurization and repressurization in a vacuum environment. During these tests, measurements will be taken for temperature stresses, gap and alignment of the heat shield.

All S/C systems will be operating and a remote control capability has been built into S/C 008 to allow desired subsystem operating mode changes during the

- more -

unmanned portion of the test.

Following the unmanned testing, the crew of three engineers will enter the Apollo S/C 008 command module for the manned test. The manned portion of the test consists of a cold-soak, including evaluation of the environmental control and electrical power subsystems' radiators, and a series of phases for determining thermal response of the bays of the service module with the major components such as the fuel tanks, fuel cells, and the reaction control system. Test phases such as cabin depressurization and fuel cell loss tests are also planned to evaluate the specific conditions.

Chamber A, where the test is to be conducted, is the larger of two chambers in the Space Environmental Simulation Laboratory. Chamber A is a 65-foot diameter, stainless steel vessel having an overall height of 120-feet. It is the largest man-rated vacuum chamber in existence in the free world and is capable of achieving a vacuum equivalent to that at 87 miles above the surface of the earth.

Solar simulation in the chamber will irradiate the test vehicle from the top and side with the same intensity of the sun in space, and the chamber walls are completely lined with liquid nitrogen cold shrouds to simulate space absorbtion of thermal energy radiated from the spacecraft.

The chamber is equipped with a rotating platform allowing plus or minus 180 degrees of orientation of the CSM with respect to the side solar simulators.

Engineers in the control room will be in continuous contact with the crew via hardline communications and will be able to maintain constant visual contact with the crew and spacecraft through the use of TV cameras at various locations in the chamber and spacecraft.

Bio-medical parameters of the crew, while the spacecraft is in the simulated space environment,will be continuously monitored by medical personnel throughout the test. In the event of an emergency, the medical officer has the capability to initiate directly the emergency repressurization of the chamber to bring the test crewmen to earth conditions.

An emergency repressurization system is provided which utilizes stored dry gas (70% nitrogen and 30% oxygen) and is capable of repressurizing the chamber within 30 seconds to an atmosphere in which a man can survive, and bring the chamber to sea level conditon within 90 seconds after initiation of an emergency repressurization.

The data provided by the CSM thermo-vacuum test in the Space Environment Simulation Laboratory is of prime importance to the Apollo program and is expected to contribute significantly to the verification of the spacecraft thermal models and verify the structural adequacy and performance of spacecraft systems for many important phases of the Apollo missions.

Performance of spacecraft during manned testing with operational subsystems in a simulated space environment is expected to provide a higher degree of confidence in manned mission accomplishment.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-55
August 1, 1966

HOUSTON, TEXAS -- Three astronauts named to the manned space program a year ago have completed jet pilot training and will return to classroom and field studies at the Manned Spacecraft Center in mid-August.

Graduation ceremonies will be conducted August 6 at Williams Air Force Base, Arizona, for the 60-man Air Force class that includes the three civilian astronauts -- Dr. Owen K. Garriott, Dr. Edward G. Gibson, and Dr. Harrison Schmitt.

Main speaker for the graduation ceremony will be Undersecretary of the Treasury of the United States Joseph W. Barr.

Garriott, Gibson and Schmitt were selected in June 1965, more for their specialized science backgrounds than for their aeronautical training. Garriott and Gibson are physicists, Schmitt a geologist.

The training at Williams, begun last July, gives the three men the jet aircraft experience desired of astronaut candidates. Each logged some 210 hours of jet time during the year of training.

An additional 30 hours basic training in T-41 propellor aircraft brought the total hours logged to 240. Jet time was 90 hours in T-37 and 120 hours in T-38 aircraft.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-56
August 1, 1966

HOUSTON, TEXAS...Warrior Constructors, Inc. of Houston, Texas was selected by the National Aeronautics and Space Administration today for final negotiations of a contract to complete construction and equip a Lunar Receiving Laboratory at the NASA Manned Spacecraft Center, Houston.

The cost-plus-incentive award fee contract is estimated to be approximately $3.5 million. The contract will be executed when funds are made available to the Center.

The work, to be completed by the end of 1967, will include pouring floors; installation of interior partitioning, utilities, electrical systems, heating and air conditioning systems; installation and checkout of laboratory equipment consisting of vacuum systems, cabinets for scientific equipment to conduct physical, chemical and biological examination of materials from the lunar surface and low-level radiation counting equipment.

A separate fixed-price contract will be let very soon for the foundation, basic utilities, structural steel and exterior structural shell of the building.

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The Lunar Receiving Laboratory will provide a central complex where samples of lunar surface material collected by Project Apollo astronauts will be received, quarantined, examined and later processed for distribution to the scientific community for thorough study and analysis. It also will be equipped to quarantine the spacecraft and crew after the flight to the moon. The structure will have 84,000 square feet of floor space.

The construction contract does not include specialized scientific instrumentation and equipment which will be purchased separately. Total cost of the laboratory is estimated at $8 million.

Warrior was one of five firms which submitted proposals to the Manned Spacecraft Center in June.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-57
August 1, 1966

HOUSTON, TEXAS...Bids on a fixed-price contract to begin construction of a Lunar Receiving Laboratory were opened today at the NASA Manned Spacecraft Center at Houston.

The bidders are:

Name	Price of Bid
Warrier Constructors (apparent low bidder)	$1,690,000
C.H. Leavell & H.K. Ferguson (joint venture)	1,726,000
Blount Bros.	1,966,950

The work will consist of the foundation, basic utilities, structural steel and exterior structural shell of the building, roads, and parking space. Floor space will total 84,000 square feet.

A separate construct is being negotiated with Warrior Constructors, Inc. of Houston to complete construction and equip the laboratory complex.

Both contracts will be executed when funds are made available to the Center.

The building will have one floor of office and laboratory space, a three-story high section to accomodate vacuum chamber equipment and a radiation counting laboratory 50 feet below ground.

The laboratory will have facilities to receive and examine material brought from the moon by Project Apollo flight crews and later distribute these samples to the scientific community for thorough study and analysis. The spacecraft and astronauts also will return to the laboratory after lunar landing missions.

Special scientific equipment and instrumentation will be purchased separately.

Total cost of the facility will be about $8 million.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 5-111

MSC 66-58
August 3, 1966

APOLLO COMPLEX TO BE CONVERTED IN IBM CONTRACT

HOUSTON, TEXAS -- The National Aeronautics and Space Administration has modified its contract with the IBM Corporation for the Real Time Computer Complex (RTCC), which will support Apollo-Lunar landing missions. The contract, extended through February 1970, is valued at $107 million.

The modification provides for the work to be performed under a multiple-incentive arrangement covering cost, performance, schedule and equipment management. It also orders the RTCC converted to IBM system 360 computers which increase operational capabilities for use in the Apollo program.

The contract, with IBM Federal System Division, Gaithersburg, Maryland, includes design, development, implementation, maintenance and operation of the RTCC.

The RTCC in the Mission Control Center at NASA, Manned Spacecraft Center Houston, provides the computer capabilities required for mission monitoring, in-flight mission planning and simulation activities.

In the mission monitoring and planning functions raw data are converted and displayed in formats easily interpretable by the mission

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control team. Flight plan recommendations are computed and displayed for mission controller analysis and selection.

The RTCC also generates simulated raw data required for pre-flight readiness testing and training.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-59
August 4, 1966

HOUSTON, TEXAS...The Manned Spacecraft Center will begin a fourteen-day static firing simulation of the first manned Apollo mission Monday, August 8, at its White Sands, New Mexico, Test Facility.

The duplication of the manned mission profile will verify performance of the Apollo service propulsion system.

Eight firings of the SPS 21,900-pound-thrust engine will total from 116 to 123 seconds of burn time and will be separated by coast periods of the same duration now planned for the first manned flight.

Through the fourteen-day simulation, the liquid propulsion system will be kept pressurized to mission levels.

The first Apollo manned flight is an open-ended mission that could last as long as the fourteen days of simulation.

The service propulsion system engine is built by Aerojet General Corp. for North American Aviation Inc., prime contractor for the Apollo command and service modules.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-60

August 9, 1966

HOUSTON, TEXAS - The eight-day manned Apollo systems test in the big vacuum chamber at the Manned Spacecraft Center was terminated at 12:30 p.m. today with what test officials labeled a complete success.

The three test subjects who spent the entire period under simulated space conditions were in excellent physical condition and in very good spirits. The three, Neil R. Anderson, Joel M. Rosenweig and Donald R. Garrett, laughed and joked with supporting personnel as they left the chamber. About 600 persons were involved in the around-the-clock support of the test.

They were taken immediately to a special suit area where they were to undergo a brief physical and enjoy their first shower in more than a week.

After completing the physical, the crew will go home to rest before going into intensive debriefing.

The crew and test directors James Moore, A. L. Branscomb and Peter B. Campbell will discuss the test with members of the press at 3 p.m. Friday in the auditorium of the MSC News Center.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-61
August 10, 1966

HOUSTON, TEXAS...Launch of the third unmanned Apollo/Uprated Saturn I mission (AS-202) has been rescheduled from August 20 to August 22.

During the checkout operations it was discovered that leaks had developed in liquid hydrogen fuel line fittings leading to the three fuel cells in the spacecraft service module. The fuel cells supply electrical power to the spacecraft during the flight.

One of the fuel cells became inactive because incompatible checkout circuitry between the spacecraft and launch complex resulted in a malfunction of the heat exchanger. However, it has been decided to fly the mission with the two remaining fuel cells which will provide sufficient power for the one and a half hour sub-orbital flight.

The AS-202 flight is to be launched from Complex 34 at Cape Kennedy.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-62
August 10, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration will launch the Gemini 11 mission no earlier than September 9 from Kennedy Space Center, Florida.

The three-day mission includes a plan to rendezvous with an Agena target vehicle on the first spacecraft revolution and the use of a fully automatic controlled reentry by the Gemini onboard computer.

The flight plan calls for the use of a power tool in space, maneuvering of two spacecraft linked together by a tether and maneuvering the spacecraft to an apogee of 865 miles.

Gemini 11 command pilot is Charles (Pete) Conrad and Richard (Dick) F. Gordon is pilot. Backup command pilot is Neil A. Armstrong with William A. Anders as backup pilot.

Launch time for the Agena Target Vehicle is 8:48 a.m. EDT with liftoff of Gemini 11 scheduled 97 minutes later at 10:25 a.m. EDT.

The Agena 11 will be launched into a 185 mile circular orbit by an Atlas Standard Launch Vehicle which develops 390,000 lbs. of thrust. Gemini 11, boosted by a modified Titan II, will be launched for a direct ascent to the orbiting Agena, with dock-

- more -

ing programmed during the first pass across the United States.

Gordon is scheduled for two activities outside the spacecraft--the first on a 30-foot umbilical lasting 55 minutes, the second is a 2½-hour stand-up activity during whcih he will take photographs. During this extravehicular activity (EVA), on the 15th and 16th revolution, Gordon is to link the Gemini and Agena with a two-inch-wide, 100-foot tether stowed aboard the Agena.

On the second day the Gemini 11 crew will use the Agena's 16,000 lb. thrust Primary Propulsion System (PPS) to boost the spacecraft to an apogee of 750 nautical miles (865 statute miles). The Gemini-Agena will remain in this elliptical orbit (865 apogee by 185 mile perigee) for two revolutions until the PPS is fired for the second time and the spacecraft is returned to a 185 mile circular orbit.

After undocking, the crew will fly formation with the Agena linked to the Gemini by the tether. This exercise is designed to determine the feasibility of performing extended station-keeping to a tethered vehicle by using a Gravity Gradient Technique.

Eleven technical and scientific experiments will be performed during the 70-hour mission. They are mass determination, night image intensification, power tool evaluation, radiation & zero G on blood, synoptic terrain photography, synoptic weather photography, nuclear emulsion, airglow horizon photography, UV

astronomical camera, ion wake measurement, dim sky photograph/ orthicon.

Provisions have been made for two additional experiments that involve lunar and libration regions photography. Libration region photography will be conducted if there is no change in the launch date. Lunar UV spectral reflectance measurements, however, will be made only if a change in the launch schedule should result in more favorable lighting conditions on the moon.

Retrofire is scheduled for 70 hours, 40 minutes GET with splashdown planned for the western Atlantic Ocean (Recovery Area 45-1) about 725 miles east of Cape Kennedy.

Gemini 11 reentry will be controlled by the spacecraft on-board computer. The computer and inertial guidance system will feed reentry steering information into the thruster electronics in place of manual crew inputs. The crew will monitor the flight director indicator needles during reentry but will assume control only if the need arises.

This is Conrad's second flight. A Navy commander, he was pilot on Gemini 5, the eight-day mission of August 21-29, 1965. This is Gordon's first flight. He is a Navy lieutenant commander.

Armstrong, a civilian, was command pilot on Gemini 8, the first successful docking flight which was terminated after seven revolutions when trouble developed in one of the Gemini thrusters.

Anders, an Air Force captain, has not yet made a flight in space.

After spacecraft splashdown, the Agena will be placed in a higher parking orbit where it will be left for possible use as a passive target on future manned missions.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-63

HU3-5111

August 12, 1966

HOUSTON, TEXAS -- The nature of the first manned Apollo flight, described by Manned Spacecraft Center officials and the crew as "open ended," is best characterized in flight-oriented tests conducted by MSC.

Two tests, one just completed and one under way, both directly related to the first manned Apollo are eight days in one case, 14 in the other. Others have run for a matter of a few hours to several days.

Astronaut Virgil "Gus" Grissom termed the flight "... sort of open ended. We expect it to go until we find some reason to bring it down. At this time we haven't set a time when it should be ended." Grissom is command pilot in the three-man prime crew for the first manned Apollo mission.

He was speaking, along with Senior Pilot Ed White and Pilot Roger Chaffee, at a press conference in the Downey, California, plant of Apollo spacecraft prime contractor North American Aviation, Inc. The backup crew -- Jim McDivitt, Dave Scott and Russell Schweickart -- also participated in the conference.

- more -

Grissom carried the thought a step further. He said, "When you find a problem up there, or some interesting phase you'd like to investigate in real-time, you can change your flight plan. You can investigate and you can bring back more data."

White emphasized that, once the spacecraft achieved its planned orbit, it would continue to fly as long as its systems operated properly and the astronauts could gather useful data. "This is a new concept ... to get the most out of what you have up there," he said.

The crew's ability to work efficiently and relax comfortably in the spacious -- compared with Mercury and Gemini spacecraft -- Apollo command module has been confirmed over an eight-day period in Vacuum Chamber A in the Space Environmental Simulation Laboratory. Three MSC engineers entered the spacecraft in Chamber A on August 1 and came out Tuesday. The test was designed to verify the spacecraft and its subsystems under vacuum and thermal conditions, but the "crew" performed various tasks similar to those of the astronauts in flight.

The 14-day test, now underway at the MSC White Sands Test Facility in New Mexico, will take the Apollo service propulsion system (SPS) through a sequence of static firings paralleling what could be the system's scheduled operation in space. In

that series, engine burns totaling 116 to 123 seconds were scheduled one on the first and second days and one on every other day after the second. Coast phases applicable to the open-end Apollo flight will fill the time between engine burns. During this period, the propellant system will remain pressurized just as it will in flight.

Apollo electrical power system (EPS) fuel cells, in-flight performance of which will be a major factor in determinimg the duration of the first manned flight, have undergone 40 hours of continual-run testing at White Sands in an over-all three-month verification test series. Additional EPS testing was done at the Manned Spacecraft Center on completion of the White Sands series.

Overall spacecraft systems have been wrung out by the Apollo crews themselves right on the prime contractor's assembly lines "many times on a 24-hour basis to be sure the systems perform as we want them to," Ed White said.

Jim McDivitt amplified on that statement, saying "we participated in the tests on a 24-hour, seven-day-a-week basis when necessary. We also have some new concepts that will be put into effect down at the Cape."

He summed up the flexibility of the mission and at the same time gave a hint of things possibly to come in Apollo when he

said "I think we've streamlined our testing procedures here. We've had a lot of progress with the operational checkout procedures, and I expect that spacecraft in the future will be able to go through testing in considerably shorter periods of time.

"I think it's a sign of maturity in the program as we go through this type of testing."

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-64

HU3-5111

August 12, 1966

CAPE KENNEDY, FLORIDA -- Launch of the third unmanned Apollo uprated Saturn I mission, AS-202, has been rescheduled from August 22 to August 25.

The new launch date will permit engineers to accomplish minor reworking and additional testing of components in the spacecraft stabilization guidance and control systems.

Need for the additional work and testing became apparent during the AS-202 mission flight readiness review held at the NASA Kennedy Space Center on Thursday. Apollo Program officials decided to undertake these measures to provide greater assurance of reliable systems operation and mission success.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-65

August 15, 1966

HU3-5111

HOUSTON, TEXAS -- George A. Lemke, a senior member of NASA's manned spaceflight management organization, died this morning, while attending 7 o'clock mass at St. Dominic's Church in Washington, D. C. He was 54.

At his death, Mr. Lemke was director of Apollo Reliability and Quality in the Office of Manned Space Flight, Washington.

He was appointed to an excepted position with NASA on March 16, 1962, by the late Dr. Hugh L. Dryden. At that time he was manager of Engineering Reliability at General Dynamics-Astronautics in San Diego, having worked for General Dynamics some 20 years. Upon joining NASA, he was appointed resident manager, Apollo Spacecraft Program Office (RASPO), Downey, California, leaving there in August 1963.

From August 1963 to January 1964, Mr. Lemke was on special assignment to Dr. Robert R. Gilruth, director of the Manned Spacecraft Center. From January 1964 on, he was on temporary duty assignment to the Office of Manned Space Flight in NASA Headquarters, Washington.

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Add 1
MSC 66-65

He was born in St. Paul, Minnesota, and received a bachelor of science degree in aeronautical engineering from the University of Minnesota in 1935.

Memorial mass will be held at 10 o'clock a.m. on August 16, at St. Dominic's Church, 6th and E streets, S. W., Washington. Burial will be in Eternal Hills Cemetery, Oceanside, California.

The family has requested that no flowers be sent. Donations may be made to Monsignor John L. Storm, All Hallows Church, 6570 La Jolla Scenic Drive, La Jolla, California.

Survivors include his wife, Mrs. Eleanor Walsh Lemke, of 301 G Street, S. W., Washington, D. C.; a son, Richard G. Lemke, of La Jolla, California; a daughter, Mrs. John Evenson, Jr., of Mountain View, California; and a brother, William P. Lemke, St. Paul, Minnesota.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-66
August 19, 1966

NASA Selects Contractor for Airlock Experiments

HOUSTON, TEXAS -- The National Aeronautics and Space Administration today selected McDonnell Aircraft Corporation of St. Louis, Missouri for negotation of a fixed-price contract to produce an airlock for an experiment in which astronauts will enter the empty hydrogen tank of a spent operated Saturn I second stage. The work is estimated to cost approximately 9 million dollars.

The airlock will be used as an additional experiment on a currently planned Apollo earth orbital mission. It will provide a 65-inch diameter airlock between the Apollo spacecraft and the hydrogen tank, and environmental and life support systems to make the tank habitable. A hatch in the airlock will permit egress into space without the pressurization of the tank or the spacecraft. Overall length is about 15½ feet. Weight will be approximately 5 tons.

Existing flight hardware to be used extensively includes Gemini equipment and docking assembly identical to that on the Apollo Lunar Module. The unit also will carry additional hydrogen and oxygen to extend the capability of the spacecraft fuel cell

-more-

power system and life support system for long duration missions.

The airlock will be stacked on the space vehicle between the Saturn and Apollo spacecrafts utilizing lunar module mounts. During orbital flight the command service modules will separate, dock with airlock unit and the crew will activate systems to pressurize the spent hydrogen tank for habitation.

The objective of the airlock experiment would be to investigate the feasibility of using a launch vehicle spent stage in orbit as a large habitable space structure and to develop the capability to carry out long duration manned space flight missions in large habitable structures.

McDonnell was one of three firms which performed defination studies of the airlock unit under contract to the Manned Spacecraft Center, Houston. The overall experiment is being managed by the NASA Marshall Space Center, Huntsville, Alabama, with the Houston Center having technical and contractual responsibilities for the airlock. The contract provides for one flight article and associated support with options for additional units.

A spent stage experiment mission is to be carried out no earlier than 1968.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

66-67
August 19, 1967

HOUSTON, TEXAS -- The National Aeronautics and Space Administration has awarded Warrior Constructors, Inc. of Houston, Texas, Natkin & Co., Inc. of Kansas City, Missouri and National Electronics Corp. of Houston, Texas, as joint venturers, a contract to complete construction and equip the Lunar Receiving Laboratory at the Manned Spacecraft Center, Houston.

The cost-plus-incentive-awards-fee contract is for approximately 4.3 million dollars.

The Lunar Receiving Laboratory will provide a central complex where samples of lunar surface materials collected by Apollo astronauts will be received, quarantined, examined and later processed for distribution to the scientific community for a thorough study and analysis. It will also be equipped to quarantine the spacecraft and crew after the flight to the moon. The structure will have 84,000 square feet of floor space.

The work to be completed by the end of 1967, will include pouring floors; installation of interior partitioning; utilities, electrical systems, heating and air-conditioning systems; installation and checkout of the laboratory equipment consisting of vacuum

-more-

systems, cabinets for scientific equipment to conduct physical, chemical and biological examinations of materials from the lunar surface and low level radiation counting equipment.

The construction contract does not include specialized scientific instrumentation and equipment which will be purchased separately. Total cost of the laboratory is estimated at eight million dollars.

Warrior was one of five firms which submitted proposals to the Manned Spacecraft Center in June.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-68
August 22, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration has notified the four firms which completed design studies on the Apollo experiment pallet that there will be no hardware development and fabrication of the pallet.

The four firms are Lockheed Missiles and Space Company, Sunnyvale, California; the Martin Company, Denver, Colorado; McDonnell Aircraft Corporation, St. Louis, and Northrop Space Laboratories, Hawthorne, California.

The firms were selected in November 1965 to perform the four-month Phase C design studies of the pallet, which would carry experiments in the Apollo spacecraft service module.

The NASA decision not to proceed with Phase D (hardware development and fabrication) followed Phases A, B, and C of the phased project planning procurement process, which assured a thorough examination of all factors, both technical and budgetary.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-69
September 8, 1966

HOUSTON, TEXAS...Dr. Winston E. Kock, first director of the NASA's Electronic Research Center, Cambridge, Mass., has resigned to return to private industry.

James C. Elms, NASA's deputy associate administrator for manned space flight, has been named the director by Administrator James E. Webb.

The changes are effective Oct. 1.

Dr. Kock has been the ERC director since the Center was formally established Sept. 1, 1964 to pioneer work in space and aeronautical electronics. Previously he was vice-president-research of the Bendix Corp., Detroit. He returned to Bendix as vice-president and chief scientist and will serve as a member of the Administration Committee.

Elms joined NASA Headquarters Sept. 1, 1965 as deputy associate administrator for manned space flight.

Previous to this appointment he was vice-president and general manager of the Space and Information Systems Division, Raytheon Co., Sudbury, Mass. Before his association with Raytheon he was the deputy director of the Manned Spacecraft

-more-

Center, Houston, from February 1963 to March 1964, charged with responsibilities for general management of the Center.

He has served in key management roles at North American Aviation in the development of fire control and radar bombing systems and at the Denver Division of The Martin Co. on the Titan I missile. Later, he was executive vice-president of the Crosley Division AVCO, and after this position with AVCO, he was a director of space and electronics for the Ford Motor Co.'s Aeronutronic Division.

Elms received his BS degree in physics from the California Institute of Technology and his MA in physics from the University of California at Los Angeles, where he was a member of the faculty as a research associate in the Institute of Geophysics.

He served in the Air Force during World War II. At the time he left the Air Force he was head of the Guided Missile Unit of the Armament Laboratory,

A native of East Orange, N. J., Elms was born May 16, 1916. He is married to the former Patricia Marguerite Pafford of Phonex, Ariz. The couple has four children: Christoper Michael 21, Suzanne 18, Francesca 16, and Debora 12. He resides at 67 Maugus Ave., Wellesley Hills, Mass.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-70
September 22, 1966

HOLD FOR A.Ms MONDAY, SEPTEMBER 26, 1966

ALSO RELEASED BY:

NASA HEADQUARTERS
NATIONAL ACADEMY OF SCIENCES

SCIENTISTS INVITED TO BECOME ASTRONAUTS, DO RESEARCH IN SPACE

WASHINGTON -- The National Aeronautics and Space Administration and the National Academy of Sciences joined today in offering the nation's young scientists and engineers a new opportunity to explore space firsthand. Responding to a request from NASA Deputy Administrator Robert C. Seamans, Jr., that it recruit and nominate a second group of scientists to NASA for final selection and training as astronauts, the Academy announced that it is seeking experienced scientists of exceptional ability "to conduct scientific experiments in manned orbiting satellites and to observe and investigate the lunar surface and circumterrestrial space."

The Academy is inviting applications from U. S. citizens and persons who will be citizens on or before March 15, 1967, no taller than six feet, born after August 1, 1930, and having a doctorate in the natural sciences, medicine, or engineering. Applicants will also be required to meet physical qualifications for pilot crew members, but exceptions to any of the above requirements will be allowed in outstanding cases.

-more-

MSC 66-70

Add 1

Selection procedures will be similar to those used in choosing the first group of scientists as astronauts in 1965. Applications from candidates who meet preliminary educational and physical requirements will be ranked by an Academy selection panel on the basis of scientific qualifications. From this list, NASA will make its final selection, following thorough physical examinations of the candidates and a limited program to determine their ability to function under simulated conditions of space flight.

Of the five scientists in the first class, three recently received their wings at an Air Force flight school and have joined the two already qualified pilots in training assignments at the NASA Manned Spacecraft Center in Houston.

Deadline for applications is midnight, January 8, 1967. All applicants will be informed of their status no later than March 15, 1967, and those who continue to the final selection by NASA will be notified no later than June 30, 1967. Successful applicants will be asked to report to the Manned Spacecraft Center on July 15, 1967.

KEY QUALITY IS "PERSPICACITY"

Stressing the need for qualified persons from all fields of science, medicine, and engineering, the Academy announcement said:

> "The quality most needed by a scientist serving as an astronaut might be summed up by the single word 'perspicacity.' The task requires an exceptionally astute and imaginative observer but also one whose observations are accurate and impartial. He must, from among the thousands of items he might observe, quickly pick out those that are significant, spot the anomalies and investigate them. He must discriminate fine detail and subtle differences in unfamiliar situations, synthesize observations to gain insight into a general pattern, and select and devise key observations to test working hypotheses. He must have the good judgment to know when to stop a particular set of observations and turn to the next.
>
> The scientist as an astronaut must translate observations into verbal form and be able to generalize from observations to derive appropriate conclusions."

Applicants who are accepted for the program will spend one year in astronaut training. Where appropriate, they willin addition spend one year in flight training to qualify as pilots. Normally, flight training would begin immediately after appointment. Education in specialized fields related to the space missions will be provided as needed to supplement the astronaut's earlier scientific preparation.

As scientists, the astronauts will participate in planning the scientific programs of observation and experimentation that are under consideration. Consistent with the requirements of the space missions, they will have opportunities to engage in research at NASA or university laboratories.

"Every effort will be made," the announcement said, "to enable the astronaut not only to maintain his scientific competence but to continue his growth as a productive scientist in his field of interest."

For further information, prospective applicants are asked to write to Scientist as Astronaut, National Academy of Sciences - National Research Council, 2101 Constitution Avenue, N. W., Washington, D. C. 20418.

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A STATEMENT ON THE SCIENTIST IN SPACE

An early Apollo mission will place an astronaut on the surface of the Moon to observe firsthand both a wholly new environment and unknown phenomena. Subsequent flights may provide the opportunity to carry out long-term studies from manned orbiting laboratories above the Earth's atmosphere in astronomy, solar physics, magnetic fields and and energetic particles; or, viewing the Earth from space, in meteorology, oceanography and geology. Release from the Earth's gravity will permit biologists and physicians to conduct sophisticated experimentation on the nature and properties of fundamental biological processes. A vast scientific frontier will be thus opened to exploration by competent scientists. The observations will provide the world with new facts and hypotheses in the study of the solar system and life.

Since antiquity, the study of space, the planets, and the Moon has occupied an honored place in the minds of men. Scientific investigations from manned space platforms and direct observations on the Moon will initiate a new phase in man's quest for knowledge. While such missions call for daring and courage of a rare kind, for the scientist they will also represent a unique adventure of the mind, requiring maturity and judgment of a high order.

Utilizing the techniques of physics, astronomy, the atmospheric and earth sciences,chemistry, engineering, and the mathematical, biological, and medical sciences, a growing body of knowledge of the solar system is being accumulated. Manned space exploration will give this pursuit new impetus. Scientific inquiry constitutes a vital element of the Apollo program, and thus this vast technological capability, in becoming available to scientists, affords a new opportunity in man's continuing search for knowledge of the worlds in which he lives. It is in this continuing search that the National Aeronautics and Space Administration and the National Academy of Sciences - National Research Council seek to enlist scientists as astronauts.

Selection Panel for Scientist/Astronauts
Eugene M. Shoemaker, Chairman

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-71
September 23, 1966

HOUSTON, TEXAS -- The first Apollo flight-test lunar module (LM) has arrived at Kennedy Space Center, Fla., to undergo preparations for launch next year.

The Grumman Aircraft Engineering Corp. lunar module flew to KSC Monday aboard the Super Guppy.

The 32,500-pound spacecraft, essentially a boilerplate (dummy) of later modules to land Americans on the moon, is the largest of three segments of the Apollo spacecraft. The boilerplate spacecraft will be launched aboard NASA's first Saturn 5. It is instrumented to measure vibrations, acoustics, and structural integrity at 36 positions, and to telemeter these measurements to ground stations the first 12 minutes of the Apollo/Saturn 501 flight.

The flight is suborbital. Thus the Saturn will propel an unmanned Apollo spacecraft into space, then send the command module earthward to test its heat shield during reentry. The lunar module will remain with the last stage of the launch vehicle and will disintegrate during reentry, since it is designed to operate only in space, and has no heat shield. LM test article 10R (LTA-10R) is performing its second major test role in the Apollo Program. Earlier, as LTA-10, the structural system was used to perform static structural tests with the spacecraft-LM adapter (SLA), the enclosure which protects the module during launch and connects the Saturn launch vehicle to the Apollo spacecraft.

The lunar module has two sections: a descent stage which contains the propulsion system to carry men to the moon's surface; and an ascent stage, to carry them from the surface and back to the command module for the return trip to earth.

LTA-10R uses a flight-type descent stage, minus landing gear and most systems. It will have fuel and oxidizer tanks filled with glycol water and freon, and a used descent engine not capable of functioning. The ascent stage is a welded aluminum structure with ballast, containing no systems.

Grumman was selected by NASA in 1962 to develop the lunar module. Under the terms of a $1.4 billion contract, the firm will produce 15 flight models, 10 test articles, and two mission simulators by 1970 to fulfill NASA's needs for the lunar landing phase of the Apollo Program.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-71A
September 27, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration, in conjunction with the Department of Defense, has revised plans for Gemini 12 extravehicular activities in order to gather more information concerning the performance of basic tasks by an astronaut outside the spacecraft in orbit.

The change in plans was made to permit the Gemini 12 EVA to be conducted under conditions which would allow a better time and motion evaluation of the workloads and stresses experienced by an astronaut. This requires performance of basic and repetitive tasks in space to establish performance and learning criteria.

Officials in the Gemini program feel that although much planning and hard work has gone into EVA exercises on past Gemini flights, the problems associated with EVA have not been as yielding as have been the other technical problems in the Gemini missions.

For this reason the new EVA plans do not permit an evaluation of the Air Force's Astronaut Maneuvering Unit (AMU) which had been scheduled as an experiment on the Gemini 12 mission. NASA

- more -

and DOD will conduct feasibility studies to reschedule the experiment on a later manned space flight with the Apollo spacecraft.

NASA has conducted extravehicular activities on four previous Gemini flights. The first was on Gemini 4 when Astronaut Edward White completed 21 minutes of EVA during which he operated a Hand Held Maneuvering Unit.

In Gemini 9, Astronaut Eugene Cernan was forced to terminate EVA early before the Astronaut Maneuvering Unit evaluation could be performed. Because of a heavier than anticipated workload, Cernan's visor fogged up and impaired his vision.

In Gemini 10, Astronaut Michael Collins was successful in retrieving a micrometeorite collection experiment from the Agena Target Vehicle before the EVA was terminated early when the spacecraft propellant supply allocated for the exercise was used.

In Gemini 11, Astronaut Richard Gordon terminated an umbilical EVA exercise early because of a high level of fatigue and heavy perspiration. The standup EVA on Gemini 11 was conducted for its full duration.

MSC 66-71A
Add 2

The Astronaut Maneuvering Unit developed by Ling-Temco-Vought for the Air Force Systems Command is a man-rated 160-pound backpack with self-contained life support, communications, telemetry, propulsion and both manual and automatic stabilization systems. It is designed to permit an astronaut to operate at will around his mother spacecraft.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-72
September 29, 1966

The second manned Apollo flight crew was named today by the National Aeronautics and Space Administration.

Prime crew members are Walter M. Schirra, Jr., command pilot; Donn F. Eisele, senior pilot; and Walter Cunningham, pilot. Backup crewmen are Frank Borman, command pilot; Thomas P. Stafford, senior pilot; and Michael Collins, pilot.

The flight is scheduled for 1967. It will be the first space mission for Eisele and Cunningham.

The second manned Apollo mission is presently planned as an open-end, earth orbital mission of up to 14 days. Increased emphasis on scientific experiments as well as the repeating of some activities from the first manned flight will characterize the mission.

Schirra, 43, a Navy captain, is one of the original seven astronauts. He flew the 6-orbit Mercury-Atlas 8 mission in the "Sigma 7" spacecraft and was command pilot of the Gemini 6 spacecraft which performed the world's first rendezvous with another orbiting spacecraft.

Eisele, 36, an Air Force major, was named as one of the third group of astronauts in October 1963.

Cunningham, 34, is a civilian. He was named in the third group of astronauts.

Borman, 38, is an Air Force colonel. He was command pilot of the 14-day Gemini 7 mission.

Stafford, 36, an Air Force lieutenant colonel, was pilot of Gemini 6 and command pilot of Gemini 9.

Collins, 35, is an Air Force lieutenant colonel. He was the pilot of the Gemini 10 mission, in which he performed extravehicular activity.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-73
October 13, 1966

HOUSTON, TEXAS -- The first NASA inter-Center large-scale computer network, utilizing Government-owned computers, is operating between Massachusetts and Texas, providing solutions to complex spaceflight problems.

This first-of-a-kind data-link connects the Electronics Research Center (ERC), Cambridge, Massachusetts and the Manned Spacecraft Center (MSC), Houston, Texas. Established two months ago, this long-distance computer network is known as the NASA experimental Terminal System (NETS). It provides computer service to electronic engineers at ERC in Cambridge, using the bank of large computers located in Bldg. 12 at the MSC in Houston.

ERC is one of five input/output terminals linked into NETS. The other terminals are located within several miles of the MSC.

NETS is operated by the Computation and Analysis Division at MSC in conjunction with its several users, one of whom is the Central Computation Branch at the ERC. It is basically simple, despite the complex network of communication lines and computers which comprise the system.

When ERC's research engineers have a computer program, they read it into their input/output terminal at Cambridge. It is then transmitted over Western Union Communication land lines directly into a UNIVAC 418 communication processor, located on the second floor of MSC's Bldg. 12. The Cambridge query is processed through the 418 and immediately fed into one of the three Houston computers - a UNIVAC 1106, an IBM 7044/7094 Direct-Coupled System, or a Control Data Corporation 3800.

This electronic transaction is virtually instantaneous. Once the ERC program passes through the UNIVAC communication processor, it is a matter of minutes until one of the three computers begins processing it. The computer feeds the response back to the communication processor, which then relays the answers over the land lines to the ERC initiator in Cambridge.

NETS can handle multiple programs simultaneously. While ERC is transmitting programs to Texas, answers to previously submitted computer programs are being received. This provides extremely fast computation and decision-making capabilities to ERC researchers.

-more-

MSC 66-73
Add 1

A typical problem being solved is the determination of the best trajectory for a flight to the planet Mars. Preliminary estimates and initial computations are transmitted to the Houston computers by ERC. The machines digest this material and optimize the possible trajectory still more, then return to Cambridge a more accurate space route which is then reanalyzed and further modified. The process may be repeated many times until certain primary requirements, such as the optimum weight of rocket fuel for each stage, are met.

NETS savings are in time and dollars. Valuable research time is saved when ERC electronics people feed their computer programs into NETS and in turn receive immediate answers. Without NETS, ERC researchers would depend upon rental computer time, on a first-come, first-serve basis, at higher costs and slower response.

Commercial computer time costs approximately $600 an hour. NETS provides full-time computer service to ERC at a fraction of this cost. An official of the MSC Computation and Analysis Division estimates ERC's savings at between 25-30% of commercial rates.

Each NETS program is written in the FORTRAN (FORmula TRANslation) computer language. It is then prepared for the computers along guidelines established in procedures manuals prepared by the Theory and Analysis Office of the Computation and Analysis Division at MSC.

When NETS was initiated, Dr. Max Faget, Director for Engineering and Development, MSC, said, "This, indeed, represents a significant step in computer technology and in improving the efficiency with which NASA utilizes its equipment."

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-74

FOR RELEASE: SUNDAY, OCTOBER 9, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration plans an experiment in which two Apollo astronauts will live and work for up to 30 days in a large Saturn upper stage which places them into orbit.

Such a concept is being considered by the space agency as an economical way of getting information on man's ability to live and work effectively on long space flights.

Space agency officials are considering the addition of relatively low-cost modifications to the Uprated Saturn I's second stage (S-IVB) so it may be converted into a "space workshop" once its primary job -- that of powering the spacecraft into space -- is finished.

Engineers and technicians at the NASA-Marshall Space Flight Center are planning the changes they think need to be made to the stage to convert it into an "orbital workshop." A full size model of the proposed orbital workshop has been assembled by the Marshall Center as an aid to study equipment and other engineering aspects.

NASA points out that the orbital workshop is being considered as a back-up for a regularly scheduled manned Apollo flight. One orbital workshop flight has been authorized to establish the feasibility of using this and other large stages -- possibly the Saturn V's second stage (S-II) -- as space workshops. The space agency has ordered one flight unit.

The objective of the Apollo/Uprated Saturn I "workshop" flight is to gather information and experience in orbital docking and working in space. Another objective is to confirm that man can function in this type of space environment for longer than two weeks. This information is needed for planning longer lunar and planetary space flights.

Dr. George Mueller, NASA associate administrator in charge of manned space flight, said the use of the Saturn upper stage would give "us a large volume in which to work."

"I think it is a good example of getting a large amount of information from a relatively small investment and utilizing the flexibility and capability of basic Apollo systems for new and exciting things."

-more-

The only major new piece of equipment that is needed for the mission is a large airlock which can allow the space travelers to go in and out of the stage's pressurized hydrogen tank, which is 21.7 feet in diameter and 29 feet in length. The airlock unit will also contain all the additional equipment -- life support devices and ezperiments -- needed for the mission.

The NASA-Manned Spacecraft Center, Houston, recently selected McDonnell Aircraft Corp., St. Louis, Mo., to develop the airlock. McDonnell will receive some $9 million for developing this device. The firm will use existing Apollo and Gemini spacecraft hardware for the airlock and its equipment so there will be very little new research on this phase of the project.

The airlock, which is to be about 15-1/2 feet long and 65 inches in diameter, will lock onto the top of the upper rocket stage where the lunar module is located on certain missions. During the launch the airlock extends through the center of the launch vehicle's instrument unit. Oxygen for pressurizing the depleted liquid hydrogen tank will be carried in liquid form on the airlock structure. So will the liquid hydrogen and oxygen needed to power the fuel cell in the Apollo which will supply electricity to both the Apollo and the workshop. Tools and experimental gear to be used during the flight will also be stored on the airlock.

Basically the orbital workshop flight plan calls for launching the three-man Apollo spacecraft into an elliptical orbit some 81 by 170 nautical miles with the two-stage Uprated Saturn I. The astronauts will then disconnect their Apollo spacecraft, turn around and dock with the airlock.

A first burn of the spacecraft-s service module engine will place the Apollo S-IVB combination into a circular orbit of about 170 miles. Once the orbit becomes circular, the craft is expected to remain in orbit for up to a month.

Early in the mission, commands from the ground will disarm the S-IVB stage destruct system -- a system used only if the vehicle during launch should go astray near an inhabited area. Pre-Programmed commands from the vehicle's instrument unit will open valves so the propellants remaining in tanks will vent.

The time required to vent the propellant tanks will vary between 4-1/2 and 24 hours and will depend on the amount remaining in the vessel and the location at cutoff.

MSC 66-~~75~~ 74
Add 2

After an acceptable orbit has been achieved and most propellants have "boiled away," two astronauts will climb out into space and begin the many tasks necessary to make the S-IVB's hydrogen tank -- a container of nearly 11,000 cubic feet -- a liveable area.

One of the first jobs will be to connect a cable to activate a "passivation panel" located on the support module. Switches on this panel will allow the men to vent the cold helium storage bottles and any gases remaining in the main propellant tanks. When the pressures have been released, the astronauts will set about removing a "dollar piece" in the end of the liquid hydrogen tank, a 43-inch circular cover at the apex of the dome. While one astronaut remains in the Apollo spacecraft, the two men will work together to remove the cover.

The airlock tunnel and the tank will then be connected, allowing the huge tank to be pressurized. Outfitting the tank for living quarters will be another early task.

Extravehicular activities to be performed will include running electrical hydrogen and oxygen lines from the airlock to the Apollo's fuel cell power system.

Plans call for the astronauts to place hand holds in the liquid hydrogen tank to aid them in maneuvering about.

When the preparations have been completed the tank will be pressurized and the men will have a "shirt sleeve" environment in which to live and work without their spacesuits.

Several experiments will be performed by the astronauts to see how well man can work and move about in a pressurized, but zero-gravity atmosphere. These experiments, still under study, will be provided by the MSC, MSFC and possibly other organizations.

The 30-day stay will also give the space agency extensive information on food and water management, attitude control of large masses in orbit, and astronaut extravehicular activities equipment.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-75
October 5, 1966

HOUSTON, TEXAS -- Louis Nizer, New York City attorney, has been selected by NASA astronauts to be their personal adviser, succeeding the late Harry Batten of Philadelphia.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-76
October 13, 1966

HOUSTON, TEXAS -- Man's weirdest looking "flying machine," the Lunar Landing Research Vehicle (LLRV), will make its debut on the local scene late next month.

Apollo astronauts will begin to fly this wingless, free-flying platform on or about February to develop landing skills needed when they reach the Moon. The LLRV and its follow-on cousin the Lunar Landing Training Vehicle (LLTV), will provide Apollo crewmen the closest thing to actual lunar flight characteristics engineering can devise.

Two of the LLRVs are scheduled to arrive at the Manned Spacecraft Center late in November. They are presently at NASA's Flight Research Center, Edwards, California, where they are undergoing modifications and final checkouts before their shipment to NASA at Ellington Air Force Base.

LLRV No. 1 has been successfully flown nearly 200 times by Edwards and MSC pilots.

Fabricated of lightweight, tubular trusses, the LLRV resenbles a playground "monkey gym" or a creation of cartoonist Rube Goldberg. It is wingless, stands 10 ft. high, is approximately 22 feet long and 13 feet wide.

A vertically mounted double gimbaled fan-jet engine provides 4,200 lbs of thrust. Sixteen attitude rockets for roll, pitch, and yaw control are mounted at each corner in clusters of four.

The pilot sits forward of the frame-like vehicle, much like the early pilot-venturers of the early 1900's. The LLTV will have an enclosed cockpit which will closely resemble the cockpit of the Lunar Module.

An electronic package, weighing approximately 140 lbs is attached on the aft end of the vehicle.

The LLRV weighs less than 4,000 lbs which includes 455 lbs of jet fuel and 689 lbs of 90 per cent hydrogen-peroxide rocket fuel, similar to the fuel used on Mercury spacecraft.

-more-

MSC 66-76
Add 1

Controlled throttling of the engine removes 5/6ths of the earth's gravitational pull. The craft using its rocket engines hovers, much like a helicopter, and the pilot can set the craft down in a vertical landing at speeds of 2 to 6 feet per second.

Test pilots at Edwards and MSC agree, without a doubt, that this strange looking craft provides the best simulation for lunar landing. The LLRV duplicates the last two minutes of lunar flight and can be piloted to a "very smooth landing."

MSC chief pilot Joe Algranti, and fellow MSC pilot H. E. "Bud" Ream, who have completed checking out in the LLRV will be the instructor pilots for the Apollo astronauts.

Algranti said the LLRV provides the simulation for the most difficult portion of the lunar landing. "It will give the pilot some of the odd sensations he will feel on landing on the Moon, " the veteran NASA pilot said.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

66-77
October 5, 1966

HOUSTON, TEXAS -- A first-time test parachute drop to check out a new type of reefing cutter was conducted at the White Sands Missile Range in New Mexico today by test engineers from the Manned Spacecraft Center.

The parachute used in the test utilized special suspension lines containing wire to control electrically reefing cutters. Two cutters were used in this test to disreef the parachutes. A time programer inside the boilerplate test vehicle was used to send the electrical impulse to activate the cutters. Electrically controlled reefing could be utilized for synchronized disreefing of a cluster of parachutes.

A C-119 Aircraft from Ellington AFB was used to drop the test vehicle from 5,000 feet over the Alkali Flats in the northern part of the missile range about 45 miles north of the launch pad used for the Little Joe II Apollo flights. WSMR facilities recorded trajectory and telemetry data from the test vehicle.

The parachute used in the test was a Mercury parachute and the vehicle used was a full-scale Gemini boilerplate weighing about 3,000 pounds. The test drop took place at 2:15 p.m., MST and all indications are that the test was successful.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-78
October 10, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration will conclude its Gemini manned space flight program with the four-day Gemini 12 mission, from Cape Kennedy, Fla., no earlier than Nov. 9.

Gemini 12, the tenth manned flight in the program, will include rendezvous and docking with the Agena in the third spacecraft revolution, docking practice plus 13 experiments.

A tethered station-keeping exercise is planned for the 12th flight to gain further knowledge of methods to save spacecraft maneuvering fuel while keeping two orbiting space vehicles close together.

Evaluation of the astronaut maneuvering unit (AMU) during extravehicular operations (EVA) has been deleted from the flight plan. Program officials feel these series of repetitive EVA work tasks now scheduled for the mission will contribute more to the understanding of man's capabilities outside the spacecraft than a test of the AMU.

The Gemini 12 crew is Navy Capt. James A. Lovell Jr., command pilot, and Air Force Maj. Edwin E. "Buzz" Aldrin Jr., pilot. Backup crew members are Col. L. Gordon Cooper Jr., USAF, and Cdr. Eugene A. Cernan, USN.

Gemini 12 will be launched at about 3:23 p.m. EST with the Agena target vehicle scheduled to lift some 98 minutes earlier at 1:45 p.m. EST.

After the third revolution rendezvous at 185 miles altitude, the Agena primary propulsion system (PPS) will be fired to place the docked vehicles into a 460 by 185 mile orbit. A second PPS maneuver in the 18th revolution, after Aldrin's first extravehicular activity, will re-circularize the orbit at 185 miles.

The first EVA is planned for a two hour and 15 minute period, beginning about 20 and a half hours into the flight. Aldrin will stand in the open hatch and conduct a series of day and night photographic experiments.

The second extravehicular activity, about an hour and 45 minutes in duration, will begin about 43 hours into the mission. Aldrin will hook-up the Agena tether to the spacecraft docking bar and will carry out basic work tasks in the Agena

target docking adapter area and in the spacecraft equipment adapter section.

The tethered-vehicle station-keeping exercise will follow the second EVA and will last about six hours. Gravity gradient stabilization will be the primary techniques used during this period.

Retrofire will occur at about 94 hours into the flight. Gemini 12 will splash down in the West Atlantic some 94 hours and 30 minutes after liftoff.

Gemini 12 reentry will be controlled by the spacecraft on-board computer. The computer and inertial guidance system will feed reentry steering information into spacecraft thruster electronics in place of manual crew inputs. The crew will set up the reentry and monitor the flight director indicator during reentry periods. The crew will assume control only if the need arises.

The experiment schedule includes some Gemini standards, such as synoptic terrain and synoptic weather photography, ion sensing, the frog egg experiment, and micrometeorite collection.

New to the program is the proposed viewing of a high-altitude sodium vapor cloud formed by the French Centaure rocket launched from Hammaguir, Algeria. The experiment, designated S-51, will take place about 64 hours into the flight.

The Gemini 12 flight plan will be a change from the more liesurely but longer duration Gemini 7 mission of Command Pilot Lovell. The 38-year-old Navy captain was pilot on that 14-day flight last December. He also was backup pilot on the Gemini 4 mission and backup command pilot for Gemini 9.

Aldrin, a 36-year-old Air Force major with 66 combat missions over Korea to his credit, will be making his first space flight. He was backup pilot for Gemini 9.

The backup command pilot, Air Force Colonel Cooper, is a veteran of both Mercury and Gemini flights. He flew the MA-9 Mercury mission of May 15-16, 1963, a 34-hour 22-orbit flight concluding the Mercury program. He became the first man to make a second orbital flight when he commanded Gemini 5 during August 1965.

Cernan "space-walked" for more than two hours as the EVA pilot aboard Gemini 9, the three-day mission of June 3-6, 1966.

Lovell was named as one of the second group of NASA astronauts selected in September 1962. Aldrin and Cernan were selected with the third group in October 1963. Cooper was one of the original seven-man astronaut group of April 1959.

MSC 66-78
Add 2

Gemini began April 8, 1964, with the four-day systems test flight test of the unmanned Gemini 1. The second flight in the program, also unmanned, was a heat shield reentry test conducted Jan. 19, 1965.

The first manned Gemini mission was a three-orbit flight by Air Force Lt. Col. Virgil I. Grissom and Navy Cdr. (then a lieutenant commander) John W. Young on Mar. 23, 1965.

Since that flight the United States has logged 1,750 hours, 37 minutes and 28 seconds of man-hours in space. Including Mercury man-in-space figures, total time is more than 75 days. Eleven more astronauts have earned their flight wings in the Gemini program to date bringing the Gemini-Mercury total to seventeen.

The next program in the manned exploration of space is Apollo, designed to place two American astronauts on the moon and return them to Earth by 1970 and to gain for the United States preeminence in all aspects of manned space flight.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-79

FOR RELEASE FRIDAY MORNING, OCTOBER 28, 1966.

HOUSTON, TEXAS -- The Manned Spacecraft Center has contracted with the University of Houston for the preparation of A Chronology of Project Gemini and A History of Project Gemini, and a three-volume chronology of the development and unmanned flight phases of the Apollo program.

This research and writing effort will cover a two-and-one-half-year period, ending in December 1968. The estimated cost of the contract is $97,000.

Three professional historians have been assigned by the University of Houston to execute the terms of the contract. They are Dr. Peter J. Vorzimmer, a graduate of Cambridge University in England; Mr. Barton C. Hacker, a doctoral candidate of the University of Chicago; and Miss Mary Louise Morse, a graduate of Columbia University. Dr. Loyd S. Swenson, Jr., serves as the Institutional Representative and Coordinator.

Mr. James M. Grimwood, Chief of the Historical Office, Manned Spacecraft Center is the Technical Manager of the project.

The Manned Spacecraft Center and the University of Houston participated in a similar research and writing effort for the history of Project Mercury, the first U. S. manned space flight program, entitled, This New Ocean: A History of Project Mercury. This volume is now being printed by the Government Printing Office, with December 1966 as the anticipated publication date.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

66

MSC ~~67~~-80

October 27, 1966

HOUSTON, TEXAS -- Four high-frequency transmitters, designed and fabricated in-house by the Technical Services Division, for the Flight Operations Directorate, will play a big role in a series of world-wide communication tests beginning within the next several days.

The transmitters will be used by Landing and Recovery Division's Operational Evaluation and Test Branch starting in November. The test is part of LRD's continual investigation of improved location aids for use in pin-pointing the exact landing spot of a spacecraft after reentry. The transmitter has the capability of 20 watts peak envelope power in the voice single-side-band mode, five watts in the voice AM mode and five watts in the beacon mode.

The HF transmitter will radiate signals identical to that of an Apollo spacecraft during post-landing on a frequency of 10.006 megacycles. Transmitters will be located at Pago Pago, Samoan Islands; Lima, Peru; and Tananarive, Malagasy Republic. Voice and signal transmissions will be made from the three locations on an hourly basis and Department of Defense worldwide high frequency direction finding stations will report to the NASA on quality of the transmissions and how well they were able to make a fix on the transmission.

Dale Moore, Operational Evaluation and Test Branch, said that during recent tests readable signals were received up to 8,000 miles. Moore said the TSD transmitters are capable of sending signals around the world.

The Electronics Branch of Technical Services Division was chosen for the job when Landing and Recovery was unable to locate a transmitter with the required capabilities on the commercial market. Immediate need for the transmitter precluded requesting contractors to design and build the required equipment.

Landing and Recovery prepared their preliminary circuit design and requirements and looked to the Electronics Branch for assistance.

-more-

James C. Clarke, Electronics Branch, TSD, said his people began with a schematic and then step-by-step prepared printed circuits. The next step was mounting the numerous capacitors, coils and transistors onto the nine circuit boards which make up the transmitter.

Clarke said while the electronics people were working on the finer details of the transmitter, down on the main floor of TSD's building 10, machinists were building the chassis for the transmitter. Carved from a solid block of aluminum, the chassis makes the transmitter a rugged unit.

After assembly of the components and rigid testing the completed item was turned over to the landing and recovery people. Each unit weighs 22 pounds and is no bigger than an attache case and can be carried easily.

The four units cost approximately $5,000 each, Clarke said. This includes 2,000 manhours for the design, tooling, fabrication, assembly and testing and the cost of the electronic components.

Moore said it would have cost in excess of $10,000 each to have the transmitters designed and constructed outside. He said the savings is not just in dollars and cents.

Test people were able to work with the electronics people on a day-to-day basis without interruptions in regular daily work schedules. This close working relationship permitted real time decisions on problem areas, Moore said. "If we wanted to make modifications we could do it very simply."

The units which are 10 inches long, 5 high and 11.5 inches wide, may be used inside an Apollo test boilerplate during later evaluation tests. Their compact size permits multiple use as opposed to the limited use of heavier and bulkier transmitters, Moore said.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-81
October 28, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration will launch the first manned Apollo spacecraft in the first quarter of 1967. The earth orbital flight is planned to verify performance of spacecraft systems and crew operations.

The three-men crew will be Virgil Grissom, command pilot, Edward White, senior pilot, and Roger Chaffee, pilot. Backup crew is James McDivitt, command pilot, David Scott, senior pilot, and Russell Schweickart, pilot.

Although NASA manned space flight officials had planned to launch the mission late this year, it was decided today to modify a unit in the spacecraft environmental control system (ECS) before the flight. This will require replacement of the ECS unit in the spacecraft and repeating some of the tests previously accomplished at the NASA Kennedy Space Center, Florida.

The unit is a water boiler-type heat exchanger in the command module which operates during peak heating periods to supplement the ECS radiators, the primary cooling mechanism. It cools a water glycol solution which is circulated throughout the spacecraft.

Its evaporative cooling is accomplished by inducing a controlled flow of water through metal pressure plates into a water glycol evaporator. The unit is vented to space which permits the space environment to evaporate water and dissipate steam.

Porous nickel pressure plates in the unit will be removed and replaced by stainless steel plates which have very fine drilled holes. During recent spacecraft tests, water flow through the nickel plates was restricted, due to clogging of the porous material, and cooling efficiency was reduced. In other tests of the unit, water flow was properly maintained through the stainless steel drilled plates.

The rupture of a service module fuel tank during a pressure test at North American Aviation, Space and Information Systems Division, Downey, California, earlier this week is under study to determine any possible impact on the Apollo spacecraft. At this time, it is not known it if will affect the spacecraft for the first manned flight.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

66-82
November 2, 1966

HOUSTON, TEXAS -- The six day manned Apollo systems test of Spacecraft 008 which was conducted in the Space Environmental Simulation Laboratory's big chamber was completed yesterday afternoon. Officials described the tests as successful.

The crew which entered the spacecraft last Wednesday was reported in good physical and psychological condition after spending six days under simulated space conditions. The three, Astronauts Edward J. Givens, Jr. and Joseph P. Kerwin and aerospace technologist Joseph A. Gagliano underwent a brief physical immediately after they climbed from the spacecraft.

Test officials, together with the crew, will conduct extensive engineering and operations debriefings later this week. At the conclusion of the six day exercise, test directors reported the main objectives of the test were met and that the spacecraft systems performed satisfactorily.

Main objective of the test was to demonstrate the Block I Environmental Control System performance with spacecraft subsystems in modes representative of those planned for Apollo mission AS 204.

Approximately 550 MSC and contractor personnel were involved in the around-the-clock support of the test.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

66-83

November 2, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration has awarded an 8.6 million dollars contract to the Link Group Systems Division, General Precision, Inc., Binghamtom, N. Y., for modification equipment kits for updating Apollo mission simulators.

Under terms of the cost plus incentive award fee contract, Link will supply three sets of the modification kits for simulators located at the Manned Spacecraft Center, Houston, and the Kennedy Space Center, Fla. The contract covers the period from August 31, 1966, to May 30, 1967.

The firm had previously been awarded a maintenance and modification support contract for the simulators.

The Apollo mission simulators provide flight training for astronaut crews assigned to a specific mission. Nearly every detail of the flight, with the exception of weightlessness, can be simulated. This gives flight crews extensive -- on-the-ground -- training before the actual flight and provides them training in instant reaction to emergencies which might occur during flight.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-84
November 8, 1966

HOUSTON, TEXAS -- Analysis of the ruptured propellant tank in the Apollo service module during a pressure test at Downey, Calif., on Oct. 25, indicates a structural failure caused by interaction of methyl alcohol, used in the tank to simulate fuel, and the stressed titanium skin of the tank.

The phenomenon, apparently a form of stress corrosion, has been duplicated by placing titanium under stress up to 140,000 pounds per square inch and exposing it to methanol -- methyl alcohol.

The fuel tanks in the Apollo service module at Cape Kennedy for the Apollo/Saturn 204 manned earth orbital mission will be replaced since they have been tested under pressure with methanol.

The replacement tank verification tests are under way at the Downey plant of North American Aviation, Inc., Space and Information Systems Division, prime contractor for the Apollo spacecraft.

Replacement is expected to be completed before Dec. 1, and will not impact the A/S 204 launch scheduled for the first quarter of 1967.

The tank rupture is not expected to impact the Saturn 5 launch in early 1967. Another service module, now being built, will replace the damaged article for that first unmanned Saturn 5 launch.

The damaged module will be refurbished for the second unmanned Saturn 5 mission.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-85
November 14, 1966

HOUSTON, TEXAS -- Manned Spacecraft Center employees are finding it pays to be ingenious, inventive and original.

Harold Johnson, Flight Control Division, is the twenty-sixth MSC employee to receive a cash award for an invention he developed. Johnson's invention of the air bearing training device which provides five degrees of freedom was awarded patent number 3,281,963 by the U.S. Patent Office on November 1.

Marvin Matthews, MSC Patent Counsel, said Johnson's is the latest in a long line of inventions by MSC employees which have been awarded patents. Matthews heads up an office of five MSC lawyer-engineers which reviews all employee and contractor inventions before they are submitted to the U.S. Patent Office.

Matthews said his office receives each month approximately 80 inventions from MSC and contractor employees. At this time, 68 MSC patent applications are pending before the U.S. Patent Office in Washington, another 122 are being evaluated by the MSC office, and 53 are pending in Washington for "prior art" search from which the MSC patent attorneys will determine whether the inventions are likely to be patentable.

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It's a long and involved process before an MSC invention is submitted to the U.S. Patent Office, Matthews said. After an invention is submitted, it is reviewed by MSC patent attorneys and then forwarded to the cognizant MSC technical office for review.

After the technical review, the patent candidate is returned to the MSC patent staff, who then determine whether it is of sufficient patent interest to the government to warrant further processing. If it does, the next step is to prepare a "search abstract" of the invention.

A thorough search of patent records and other technical iterature is performed in Washington to uncover the closest "prior art." A detailed study of the invention and the prior art is made by the MSC patent attorneys to determine whether they believe the invention is patentable. A favorable determination at this point guarantees an MSC inventor that he will receive at least a minimum award of $50. The invention is then scheduled for preparation of a patent application, the most difficult and laborious task of all, Matthews said. "A lot of thought and skill go into the preparation of a good patent application," explained Matthews. "It is both a technical and a legal document, and we are trying to avoid the myriad pitfalls that an application is subject to during its three ır pendency in the U.S. Patent Office.

On the average it takes the U.S. Patent Office three years of review, search and paper work before it is ready to say that an MSC employee invention is acceptable for the granting of a patent. However, Matthews explained, MSC has had several exceptions to this rule.

Two months ago the U.S. Patent Office granted patent number 3,270,908 for the design of the Mercury "space capsule" to a team of MSC engineers headed by Dr. Max Faget, Assistant Director for Engineering and Development Directorate. The original design was filed for patent on October 17, 1959, and seven years and one month later the U.S. Patent Office awarded the patent.

On the other hand, a patent awarded the same day as the "space capsule" invention was submitted just ten months earlier. This patent concerned the invention of Harold I. Johnson, Flight Control Division, and William C. Huber, Engineering Division, for their Hand-Held Self-Maneuvering Unit used by Gemini IV astronaut Edward H. White, II, during his space walk of June 3, 1965. The HHMU application was filed on December 3, 1965.

Other patents granted to MSC inventors include patents to:

-- Richard B. Erb and Kenneth C. Weston, both of Structures and Mechanics Division, for their invention of a heat shield for use on interplanetary space vehicles;

-- Matthew I. Radnofsky and Glenn A. Shewmake, former MSC employees, for their life preserver invention, and for their inflatable life raft. Each of these inventions was used extensively in Project Mercury. Radnofsky and Shewmake also received a patent for their inflatable radar reflector;

-- Andre Meyer for an ablation structure.

While MSC inventors are entitled to a $50 minimum award when it is determined that a patent application will be filed, the actual amount is determined by the NASA Inventions and Contributions Board Washington. The average to date for MSC inventors has been $307 per invention. However, inventions are also periodically reviewed each 18 months after the initial award to determine whether a still additional award is in order. One MSC inventor recently received an additional $1000 on such a review.

The government's prime objective in encouraging Federal employees and contractor personnel to disclose their inventions is to save the taxpayers' dollars. Through the patenting of employee and contractor inventions, the U.S. then avoids liability for the payment of royalties or damages in the event similar inventions are developed independent of the NASA. A few inventions have also been selected for filing in foreign countries for the protection

of U.S. interests abroad. In addition, NASA encourages commercial exploitation of its patented inventions through its domestic and foreign licensing programs.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-85
November 14, 1966

HOUSTON, TEXAS -- Manned Spacecraft Center employees are finding it pays to be ingenious, inventive and original.

Harold Johnson, Flight Control Division, is the twenty-sixth MSC employee to receive a cash award for an invention he developed. Johnson's invention of the air bearing training device which provides five degrees of freedom was awarded patent number 3,281,963 by the U.S. Patent Office on November 1.

Marvin Matthews, MSC Patent Counsel, said Johnson's is the latest in a long line of inventions by MSC employees which have been awarded patents. Matthews heads up an office of five MSC lawyer-engineers which reviews all employee and contractor inventions before they are submitted to the U.S. Patent Office.

Matthews said his office receives each month approximately 80 inventions from MSC and contractor employees. At this time, 68 MSC patent applications are pending before the U.S. Patent Office in Washington, another 122 are being evaluated by the MSC office, and 53 are pending in Washington for "prior art" search from which the MSC patent attorneys will determine whether the inventions are likely to be patentable.

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It's a long and involved process before an MSC invention is submitted to the U.S. Patent Office, Matthews said. After an invention is submitted, it is reviewed by MSC patent attorneys and then forwarded to the cognizant MSC technical office for review.

After the technical review, the patent candidate is returned to the MSC patent staff, who then determine whether it is of sufficient patent interest to the government to warrant further processing. If it does, the next step is to prepare a "search abstract" of the invention.

A thorough search of patent records and other technical literature is performed in Washington to uncover the closest "prior art." A detailed study of the invention and the prior art is made by the MSC patent attorneys to determine whether they believe the invention is patentable. A favorable determination at this point guarantees an MSC inventor that he will receive at least a minimum award of $50. The invention is then scheduled for preparation of a patent application, the most difficult and laborious task of all, Matthews said. "A lot of thought and skill go into the preparation of a good patent application," explained Matthews. "It is both a technical and a legal document, and we are trying to avoid the myriad pitfalls that an application is subject to during its three year pendency in the U.S. Patent Office.

On the average it takes the U.S. Patent Office three years of review, search and paper work before it is ready to say that an MSC employee invention is acceptable for the granting of a patent. However, Matthews explained, MSC has had several exceptions to this rule.

Two months ago the U.S. Patent Office granted patent number 3,270,908 for the design of the Mercury "space capsule" to a team of MSC engineers headed by Dr. Max Faget, Assistant Director for Engineering and Development Directorate. The original design was filed for patent on October 17, 1959, and seven years and one month later the U.S. Patent Office awarded the patent.

On the other hand, a patent awarded the same day as the "space capsule" invention was submitted just ten months earlier. This patent concerned the invention of Harold I. Johnson, Flight Control Division, and William C. Huber, Engineering Division, for their Hand-Held Self-Maneuvering Unit used by Gemini IV astronaut Edward H. White, II, during his space walk of June 3, 1965. The HHMU application was filed on December 3, 1965.

Other patents granted to MSC inventors include patents to:

-- Richard B. Erb and Kenneth C. Weston, both of Structures and Mechanics Division, for their invention of a heat shield for use on interplanetary space vehicles;

-- Matthew I. Radnofsky and Glenn A. Shewmake, former MSC employees, for their life preserver invention, and for their inflatable life raft. Each of these inventions was used extensively in Project Mercury. Radnofsky and Shewmake also received a patent for their inflatable radar reflector;

-- Andre Meyer for an ablation structure.

While MSC inventors are entitled to a $50 minimum award when it is determined that a patent application will be filed, the actual amount is determined by the NASA Inventions and Contributions Board in Washington. The average to date for MSC inventors has been $307 per invention. However, inventions are also periodically reviewed each 18 months after the initial award to determine whether a still additional award is in order. One MSC inventor recently received an additional $1000 on such a review.

The government's prime objective in encouraging Federal employees and contractor personnel to disclose their inventions is to save the taxpayers' dollars. Through the patenting of employee and contractor inventions, the U.S. then avoids liability for the payment of royalties or damages in the event similar inventions are developed independent of the NASA. A few inventions have also been selected for filing in foreign countries for the protection

of U.S. interests abroad. In addition, NASA encourages commercial exploitation of its patented inventions through its domestic and foreign licensing programs.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-86A
November 17, 1966

HOUSTON, TEXAS -- The National Aeronautics and Space Administration today announced several Apollo-Saturn manned space flight schedule changes because of launch vehicle and spacecraft development problems.

Principal change is the rescheduling of a manned earth orbital mission, Apollo/Saturn 205 which was planned essentially as a repeat of the first manned Apollo flight - AS 204. The AS 204 mission is scheduled in the first quarter of 1967.

Under the new 1967 launch schedule, AS 204 will be followed by AS 206 which is an unmanned flight of the Apollo spacecraft lunar module.

Then will come a dual launch, (AS 205/208) in which a manned Apollo command and service module will be launched by an uprated Saturn I. About a day later an unmanned lunar module will be orbited by another uprated Saturn I. The command-service module will rendezvous with the lunar module and astronauts will transfer to the lunar module and check out its manned operation. The astronauts will return to the command module for the landing. This mission, formerly designated as AS 207/208, now will be designated AS 205/208.

The prime flight crew for the original AS 205 mission, Walter M. Schirra, Donn F. Eisele, and Walter Cunningham, now become the backup crew for the AS 204 mission. The former backup crew for 204 - James McDivitt, David Scott, and Russell Schweickart - and the former backup crew for 205 - Frank Borman, Thomas Stafford and Michael Collins, now become available for assignment to subsequent Apollo missions.

In addition to the changes in the uprated Saturn/Apollo flight schedule, development problems have also affected the Apollo/Saturn V program. The first Saturn V flight, an unmanned sub-orbital mission has moved from the first to the second quarter of 1967. The second Saturn V flight, also an unmanned mission,

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has been rescheduled from the first to the second half of 1967. Subsequent Saturn V flights remain unchanged.

Development problems which led to the scheduled changes included:

1. Failure during qualification testing of the water boiler in the Apollo 204 spacecraft environmental control system.

2. Structural failure of the AS 501 service module fuel tank with resultant complete loss of the service module itself. The cause has been identified. It will be replaced for the AS 501 flight by the service module previously planned for AS 205.

3. Additional delays in the AS 501 and 502 flights may result from structural cracks which have formed in the very large hydrogen tank in the S-II (second stage) of the Saturn V launch vehicle which must be analyzed for cause and repaired.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111 MSC 66-86

HOUSTON, TEXAS -- F. John Bailey, formerly of Washington, D. C. was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Bailey who is Chief of Flight Safety at the NASA Manned Spacecraft Center in Houston received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Bailey joined NASA at Langley Research Center in September 1934, three months after receiving his degree from MIT.

Bailey, a native of Washington, D. C., is a graduate of Middleburg College, Middlebury, Vt., and the Massachusetts Institute of Technology, Cambridge, Mass. where he received a BS in Aeronautical Engineering. Bailey was Magna Cum Laude, Phi Beta Kappa and Class Valedictorian at Middlebury.

The Superior Achievement Award cites Bailey for "his outstanding contribution in the establishment and implementation of flight safety objectives in the United States manned space flight program. His leadership role in the areas of flight safety and reliability materially added to the success of Gemini."

The Office of Reliability and Flight Safety plans, directs and conducts reliability studies and design analyses and monitors testing programs to validate the soundness of basic design; verifies emergency and escape provisions in the event of malfunction; monitors the final inspection of electrical systems and controls before each flight; and evaluates the adequacy of flight control over the ground range networks.

Bailey finished his 25 years at Langley Research Center as associate chief of the Flight Research Division. Beginning as a junior engineer, he distinguished himself in work on rotary wing aircraft (autogyros and helicopters), propellers, airplane performance measurement and improvement, and application of radar and telemetry to flight research. In 1943 he was made head of the flight performance section, Flight Research Division.

Bailey, 51, was born in Washington, D. C. He was educated in Western High School before leaving Washington.

He is married to the former Mary Frances Wiley of Newport News, Virginia. Mrs. Bailey and their 15-year-old son, Rick, are remaining at Merritt Island, Florida, for the time being. Mrs. Bailey teaches high school Latin. Sandra, their 21-year-old daughter, graduated from Randolph-Macon College, Virginia, and will enter the University of Pennsylvania this fall for graduate work on a fellowship.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-87

NOV 3 1966

HOUSTON, TEXAS -- Richard Ralph Carley, formerly of Saskatoon, Saskatchewan was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Carley, who is head of Guidance and Control Office, Gemini Spacecraft, Gemini Program Office received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Carley, a native of Saskatoon, attended Saskatoon schools and graduated from the University of Saskatchewan in 1952 where he received his BS in Electrical Engineering. Carley joined the NASA in 1959.

The Superior Achievement Award presented to Carley cited him "for his outstanding contribution to the development of the Gemini Spacecraft Guidance and Control System; for his tireless and continuous effort in assuring the flight worthiness and the achievement of mission objectives related to Guidance and Control. His extraordinary technical ability has resulted in a highly effective development program and contributed significantly to the success of the United States's manned space flights."

Carley now resides in Houston, Texas.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-88

HU 3-5111

HOUSTON, TEXAS -- Henry E. Clements, formerly of Baltimore, Md., was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Clements who is Chief of Flight Support Division of the Flight Operations Directorate, NASA Manned Spacecraft Center, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

As Chief, Flight Support Division, Clements is responsible for providing technical monitoring and managerial direction to MSC contractors involved in the maintenance and operation of the Manned Spaceflight Control Center and its integration with the Manned Space Flight Network. This division serves as the MSC single point of contact with other MSC elements, other NASA and government agencies and industry contractors for the identification, coordination, operational analysis and acceptance of all flight control ground support requirements and systems, for the implementation of these requirements within mission schedules, and for Manned Spaceflight Control Center configuration control in support of MSC space flights.

Clements was born on November 13, 1925 in Baltimore, Maryland, where he attended Baltimore Polytechnic Institute. From 1942 to 1946 he served in the U.S. Marine Corps. After graduation from West Point in 1953, he joined the U.S. Air Force and presently holds the rank of Major. In 1958 he received an M. S. in Aeronautics from the Massachusetts Institute of Technology.

Prior to his assignment to NASA, Clements served as a Range Communications Officer with the Atlantic Missile Range. From February 1960 - August 1962, he served as a Network Status Monitor for every Mercury test through MA-7. In August 1962, Clements was assigned to NASA and became Section Head of the Engineering Section of the Operations Facilities Branch. In December 1962, he became Technical Assistant to the Chief of the Flight Operations Division. He became Manager of the Integrated Mission Control Center Program Office in March 1964.

The Superior Achievement Award presented to Clements cited him "on his outstanding direction of the manned spaceflight Mission Control Center in Houston, Texas. Through his exceptional ability to resolve major problems, this center achieved mission support capability early in the Gemini flight program. The reliable operation of the Control Center, under his management, materially enhanced the success of the Gemini Missions."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Clements and his wife, Vivian, also from Baltimore, live in Houston with their two daughters, Darly and Jill, and their son, Jay.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-89

Houston, Texas -- Duncan Reid Collins, formerly of Livia, Ky was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Collins, who is manager of the Gemini Spacecraft Office of the Gemini Program Office of the NASA Manned Spacecraft Center, Houston, Texas, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Collins, a native of Livia, is a graduate of Livermore High School and the University of Kentucky where he received a BS in Mechanical Engineering.

The Superior Achievement Award presented to Collins cites him "for his outstanding contribution to the United States manned spaceflight efforts through his able leadership of the engineering team responsible for the management and direction of the design development of the Gemini spacecraft; for his special efforts in establishing a sound developmental test program; and for his continued insistence on quality in design and development."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support of its programs.

Collins, his wife, the former Mary Strong, and their two children, Bonnie and Stuart, now reside in Houston.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-90

NOV 66

Houston, Texas -- Homer W. Dotts, formerly of Chicago, Ill. was awarded the National Aeronautics and Space Administration's Superier Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Dotts, who is Deputy Manager of the Gemini Spacecraft Office of the Gemini Program Office of the NASA Manned Spacecraft Center, Houston, Texas, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Dotts, a native of Chicago, is a graduate of the Main Township High School and received his BS in Aeronautical Engineering from the University of Michigan.

Before joining the NASA in 1962, he served as a project engineer with the Curtiss-Wright Aircraft Corporation, Buffalo, New York and Columbus, Ohio and aided in the organization of Columbia Research and Development Corporation, Columbus, Ohio in 1950.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been

responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Dotts is married to the former Erma McLane of Chicago. The Dotts reside in Houston.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-91

NOV 29 1966

HOUSTON, TEXAS -- W. H. Gray, formerly of Somerville, Mass. was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Gray who has served as the NASA Representative to the McDonnell Aircraft Corporation in St. Louis, Mo., prime contractor for the Gemini spacecraft, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Gray cited him "for his outstanding contributions to this Nation's manned space flight program; his leadership and guidance in the development, production, and test of the Gemini spacecraft; and for his constant drive toward the top-quality workmanship required to produce manned spacecraft. His leadership contributed greatly to the success of the United States Gemini space flights."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the

responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

A native of Massachusetts, Gray was born in Somerville, Massachusetts, on November 15, 1918. He graduated from Somerville High School and the Massachusetts Institute of Technology in 1939.

He was initially employed by the Curtiss-Wright Corporation in St. Louis until joining the Langley Research Center of NASA in Virginia in 1939. He remained with the Research Center until 1958 after which he joined the newly organized Space Task Group, the former designation of the Manned Spacecraft Center. He has been the NASA Representative at McDonnell since 1959.

Gray lives at 22 Ramsgate Drive, Olivette, Missouri, with his wife, Gertrude, and two children, David and Douglass.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111 MSC 66-92

HOUSTON, TEXAS -- Richard S. Johnston, formerly of Keyser, West Virginia was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Johnston who is Chief of the Crew Systems Division for the NASA Houston, Texas Manned Spacecraft Center's Engineering and Development Directorate, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Johnston cited him "for his outstanding contributions to manned space flight, through the development of life support systems, space suits, extravehicular equipment, food, water, and survival gear. These systems led to the achievement of long-duration flight and extravehicular activity in the highly successful United States Gemini Program."

Johnston served as a research chemist with the Naval Research Laboratory from 1946 to 1955. During this period he worked on the development of chemicals which produce oxygen for breathing apparatus.

He also worked with the evaluation and development of submarine air purification systems.

Johnston transferred to the Bureau of Aeronautics of the Navy Department and was engineer in charge of aircraft oxygen equipment development. During his three years with the Bureau he also worked on aircraft escape systems.

He joined Manned Spacecraft Center (then Space Task Group) in November 1958, and served as Deputy Chief of the Life Systems Division. This division has responsibility for all life support systems of the spacecraft. This includes the pressure suit, the environmental control systems, and the restraint system, as well as other life support systems such as food, water and other flight crew personal necessities and equipment.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has beer responsbile for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Johnston and his wife, the former Jean Armbruster, live in Timber Cover, Texas with their two children, Ricky and Susan.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-93

NOV 29 1966

HOUSTON, TEXAS -- Eugene E. Kranz, formerly of Toledo, Ohio was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Kranz who is Chief of the Flight Control Operations Branch of the Flight Control Division of the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

A native of Toledo he attended the St. Louis Catholic High School, St. Louis, Mo., and graduated from the St. Louis University where he received a BS in Aeronautical Engineering.

The Superior Achievement Award presented to Kranz cites him for "outstanding performance as Flight Director in Gemini manned space flights and for his able leadership of the flight control teams which contributed significantly to the achievement of long-duration flight, rendezvous, docking, extravehicular activity and controlled reentry in the United States Gemini program."

Kranz joined the NASA in 1960 following six years as a jet pilot with the U.S. Air Force.

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Kranz was selected as Chief, Flight Control Operations Branch of MSC October 1960. He is responsible for integration of all flight control operations to insure that flight control is capable of attaining and/or supporting test objectives, and to insure maintenance of an adequate margin of crew safety. Specifically, the Flight Control Operations Branch is responsible for coordination of the

mission rules, flight control mission related documents and requirements utilized in the preparation for and conduct of flight control activities. This branch is responsible for the provision of command communicators and procedures flight controllers. During manned flights, he serves as the Assistant Flight Director at the Mission Control Center at Houston, Texas.

Kranz and his wife, the former Cadena of Eagle Pass, Texas, reside in Dickinson, Texas, with their five children; Carmer, 8; Lucy 7, Joan 5, Mark 3 and Brigid $2\frac{1}{2}$.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-94

Houston, Texas -- John P. Mayer, formerly of Binghamton, New York was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Mayer, who is Chief, Mission Analysis Division of the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Mayer joined the NASA Langley Research Center in Virginia in 1944 where he conducted flight testing of fighter planes for load capability and did research on supersonic aero-dynamic techniques.

The Superior Achievement Award presented to Mayer cites his work at the Manned Spacecraft Center and for "his outstanding leadership in organizing and implementing the mission planning and analysis effort for Gemini. His technical competence and managerial abilities of Gemini contributed materially to the successful achievement of operational proficiency in United States Manned space flights."

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the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support of its programs.

Mayer participated in tests for the X-1 rocket research airplane, the first plane to fly faster than the speed of sound. Mayer also contributed to the research on the D558-2 Douglas Skyrocket at Edwards AFB.

In 1957, Mayer became involved in space flight research in orbital mechanics, orbital trajectories and lunar trajectories.

When Space Task Group (MSC's Predecessor) was formed in 1958, Mayer began research on low altitude Earth orbits.

Mayer has authored some two dozen NASA reports dealing with flight research, supersonic aerodynamics, and flight tests on research airplanes. He is a member of the AIAA and the American Rocket Society. His hobbies include photography and high-fidelity phono-radio.

Born on May 10, 1922, in Binghamton, New York, Mayer graduated from Binghamton Central High School in 1940. Mayer then entered the University of Michigan where he received his BS degree in aeronautical

engineering and mathematics in 1944.

Mayer lives in Houston with his wife, the former Geraldine Couch, and their three children -- Dale, Cynthia, and Gwen Ellen.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-95

NOV 29 1966

HOUSTON, TEXAS -- Andre J. Meyer, Jr., a graduate of the University of Kentucky, Lexington, Kentucky, and formerly of Grosspoint, Michigan, was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Meyer, who is assistant to the Gemini Program Manager of the NASA Manned Spacecraft Center, Houston, Texas, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

Meyer received a BS in mechanical engineering from the University of Kentucky in 1943. He is a graduate of the Grosspoint High School, Grosspoint, Michigan.

The Superior Achievement Award presented to Meyer cites him for his "outstanding contributions to the Gemini Program; for his efforts in the design and development of major spacecraft subsystems; and for developing the basic concepts and procedures used in planning, monitoring, coordinating and controlling the Gemini industry team. His efforts have contributed significantly to the success of the United States Gemini manned space flights."

Meyer joined the NASA Langley Research Center in September 1943 where he worked for 15 years as Chief, Applied Stress Analysis Branch. When the NASA's first manned space flight project - Mercury - was formed, Meyer was requested to assist in the design of the Mercury spacecraft.

He worked as the Assistant Chief of Space Task Group's Engineering Division. Prior to being appointed to his present position, Meyer was Manager of the Program Control Office for Gemini.

Meyer has six patents to his credit - three on the Mercury spacecraft, and three pending on Gemini components - covering wide range of subjects including gears, turbine, compressor blades, ellipsographs, escape towers, parachute systems, spacecraft structure, heat shields, antenna design, and rocket engines.

He has authored approximately 30 NACA technical reports, and five papers presented at technical conference. Four of his papers have appeared in technical journals. Wrote a chapter in the book entitled "Cermets."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within

the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Meyer and his wife, the former Loraine Landrus of Winchester, Kentucky, live in Houston. They have four children, Marilyn and Carolyn Ann, Andre J. III, and Bruce.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-96

NOV 29 1966

HOUSTON, TEXAS -- Willis B. Mitchell, Jr., formerly of Tulsa, Oklahoma was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Mitchell who is Manager of the Launch Vehicle and Missions Office of the NASA's Manned Spacecraft Center's Gemini Program Office received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Mitchell cites him for his "Superior achievements in the overall management of the development of the Gemini launch vehicle and target vehicles; for his leadership in establishing basic mission plans; and for the establishment of sound configuration management procedures. His efforts have contributed to the success of the United States Gemini manned space flights."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has

the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Mitchell, a native of Oklahoma, was born September 30, 1920. He was graduated from Tulsa Central High School, Tulsa, Oklahoma, in 1938, and received his BS degree in mechanical engineering from the University of Oklahoma in 1942. With the United States Army then from 1942 until 1946, he saw action in both the Philippines and on Okinawa, reaching the rank of Captain.

After World War II, Mitchell worked for a short time in 1946 with the McDonnell Aircraft Corporation in armament design. He then worked with Convair from 1946 until 1955 as an aerodynamics engineer. Between 1955 and 1960, he was an aerophysics group engineer on the Atlas ICBM weapons system at General Dynamics/Convair. From 1960 until joining NASA, he served as Chief of Aerophysics (Atlas and Centaur Programs) with General Dynamics/Astronautics; in this position, he wrote various technical reports and papers relating to the Atlas weapon system and ballistic missile design.

Mitchell is a member of Phi Eta Sigma and Tau Beta Pi at the University of Oklahoma. His hobbies are guns, target shooting, and bowling.

He is married to the former Margie Easterwood of Midlothian, Texas, and has two sons -- Willis III, born August 30, 1947, and Gary, born August 30, 1949. Mitchell resides in Houston, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-97

HU 3-5111

NOV 1966

HOUSTON, TEXAS -- Warren J. North, formerly of Winchester, Ill., was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

North, who is Chief of the Flight Crew Support Division of the NASA's Manned Spacecraft Center, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The NASA Superior Achievement Award presented to North cites him for "His outstanding contributions to United States manned space flights through the development and operation of crew trainers and simulators; the management of astronaut training activities; and the preparation of flight plans. His efforts contributed materially to the success of the Gemini space flights."

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has

the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

A veteran of NACA-NASA service, North began his career in 1947 when he joined the NASA Lewis Research Center (then the National Advisory Council for Aeronautics Lewis Flight Laboratory) in Cleveland, Ohio.

A native of Winchester, Illinois, he had received a BS degree in aeronautical engineering from Purdue University the same year. His college career had been interrupted from 1943 to 1945, which he spent as a pilot in the Air Corps.

North spent his first five years with NASA in a dual capacity as engineer and engineering test pilot at Lewis, then transferred to the Aerodynamics Noise Branch in 1953 to conduct research on turbojet noise reduction.

In 1954, he received his MS degree in aeronautical engineering from Case Institute of Technology. The following year, he was awarded the IAS Flight Test Engineering Fellowship to Princeton University, where he furthered his academic career in aeronautical engineering and particularly in flight testing.

After receiving an MA degree from Princeton, he returned to Lewis Research Center and was appointed Assistant Chief of the Aerodynamics Noise Branch.

Two years later he was named head of the stability group of the Missile Design Panel, and served in this position until his transfer to Washington, D.C., in 1959.

North was appointed head of manned satellites in the office of Space Flight Programs October 1, 1959, and in this position assisted in the coordination of Project Mercury.

In addition to his work in selection and training of astronauts, he has been deeply involved in Project Gemini planning. He supervised the preparation of plans for Gemini and has made many significant contributions to the design and development of the Gemini spacecraft.

Among his published reports are numerous works on ramjet design and operation, aircraft dynamics stability, and turbojet noise analyses.

North is married to the former Leah Pendleton, formerly a school teacher. Mr. and Mrs. North have three children: James W., Mary Kay, and Susan Lee.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-98

Houston, Texas -- Robert O. Piland, formerly of Portsmouth, Va. was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Piland, who is Chief of the Gemini Experiments Office of the NASA Manned Spacecraft Center, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Piland cites him for his "Outstanding contributions in directing the Gemini experiments program. His management of the more than 100 scientific, technological, and medical experiments performed on the 10 manned Gemini flights has added greatly to our knowledge of space, its environment and its effects."

Prior to assuming the post of Chief of the Gemini Experiments Office Piland served as Deputy Manager of the Apollo Program Office.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility

for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support of its programs.

Piland attended secondary schools in Portsmouth, Virginia. He graduated from the College of William and Mary, Williamsburg, Virginia, with a BS degree in mathematics in 1947.

Piland joined the science staff of the NASA Langley Research Center located at Langley Field, Virginia in 1947. As a research scientist, he became engaged in the development and flight testing at Wallops Island, Virginia, of rocket-propelled research test vehicles. Under Piland's supervision, three-, four-, and five-stage test vehicles were successfully developed and used to obtain unique test data in aerodynamic heating, which substantiated theories which could be reliably used for the design of hypersonic vehicles such as ballistic missile nose cones, the X-15, the Mercury Spacecraft, etc.

During 1958, Piland served as a technical assistant to the President's Advisor in the space and missile fields. At the termination of his duty in 1959, Piland was asked to take the assignment of Assistant Chief of the Flight Systems Division, Manned Spacecraft Center. Within the

Flight Systems Division were organized approximately 150 technical and scientific personnel responsible for overseeing the proper development of the Mercury capsule and its various systems.

In early 1960 Piland was assigned to manage the early planning and study efforts which led to the present Apollo spacecraft program.

In 1962 Piland received the Institute of Aeronautical Sciences' Lawrence Sperry Award for notable contributions made for the advancement of the Aerospace Sciences.

Piland is married to the former Myra Stanton of Brooklyn, New York. They have three children and reside in Dickinson, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-99

NOV 29 1966

HOUSTON, TEXAS -- John E. Roberts, Jr., formerly of Norfolk, Virginia, was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Roberts, who is technical assistant to the Gemini Program Manager at the NASA Manned Spacecraft Center, Houston, Texas, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Roberts cites him for "his outstanding original contributions to the technical and management aspects of the Gemini program; for formulating the flight evaluation procedures which helped achieve short launch intervals; and for his pioneering effort in structuring the unique and highly effective incentive contract for the Gemini spacecraft."

Roberts, a graduate of the Maury High School, Norfolk, Virginia, attended the Virginia Polytechnic Institute, Blacksburg, Virginia. He joined NASA in 1961.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the

field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Roberts and his wife, the former Edna Lee Byrd, also of Norfolk, reside in Houston. They have two sons, John E. Roberts, III and Edward Byrd who are both in the U.S. Army.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-100

NOV 10 1966

HOUSTON, TEXAS -- John E. Roberts, Jr., formerly of Lexington Park, Maryland was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Roberts who is technical assistant to the Gemini Program Manager of the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Roberts cites him for "His outstanding original contributions to the technical and management aspects of the Gemini program; for formulating the flight evaluation procedures which helped achieve short launch intervals; and for his pioneering effort in structuring the unique and highly effective incentive contract for the Gemini spacecraft."

Roberts, a graduate of Maury High School, Norfolk, Virginia attended Virginia Polytechnic Instiute, Blacksburg, Virginia. He joined the NASA in 1961.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Roberts and his wife, the former Edna Lee Byrd, also of Norfolk reside in Houston. They have two sons -- John E., III and Edward Byrd, who are both in the U.S. Army.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-101

HU 3-5111

NOV 28 1966

HOUSTON, TEXAS -- Scott H. Simpkinson, formerly of Piqua, Ohio was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Simpkinson who is Test Operations Manager of the NASA Manned Spacecraft Center's Gemini Program Office received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Simpkinson cited him for "superior achievement in establishing, directing, and evaluating the reliability and test effort in the Gemini program; for supporting of the flight missions, and for the timely analysis and reporting of the flight results. His outstanding technical capabilities in the analysis and resolution of problem areas have contributed to the success of United States manned space flights."

Simpkinson as the Test Operations Manager serves as an advisor on technical matters to the Gemini Manager; keeps surveillance over technical efforts of Gemini elements for direction and progress;

serves as the principal quality assurance and reliability expert, advisor, and troubleshooter to the Gemini staff and to contractor management and personnel; and maintains full responsibility for the research and development of the computer-controlled digital checkout systems for the Gemini spacecraft and Gemini launch vehicle.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Simpkinson, a native of Piqua, Ohio, was born August 24, 1919. He was graduated from Piqua Central High in 1937, and received his Masters Degree in mechanical engineering from the University of Cincinnati in 1943. He joined NASA (then the National Advisory Committee for Aeronautics, NACA) on April 19, 1943, at the NASA-Lewis

Research Center. He joined the Manned Spacecraft Center (then the Space Task Group) in October 1958, with responsibilities as Chief of the Launch Operations Branch at Cape Kennedy.

During the Mercury program, he represented the Manned Spacecraft Center as a Special Assistant to the Director during Mercury-Atlas Launch Vehicle Composite Test Data Reviews and Factory Roll-out Inspections.

He was named to his present position on January 31, 1962. This position followed his 18 years of experience in missile design, checkout, and launch operations; several years of experience at Cape Kennedy as Capsule Operations Manager and Test Conductor for the early Mercury launches; and several years as a NASA representative at contractor plants.

Simpkinson is author or co-author of half a dozen technical NASA papers relating to his research field since joining NASA.

He is a member of the AIAA, a senior member of the ISA (Instrument Society of America), and ASME. As a hobby, he has played the trumpet professionally in dance bands for over 20 years. He also enjoys golf.

Simpkinson is married to the former Arleen Ann Baxa of Cleveland, Ohio. The couple has one daughter, Carol Anna, born March 12, 1952.

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-102

NOV 29 1966

Houston, Texas -- Sigurd Sjoberg, formerly of Minneapolis, Minn. was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Sjoberg who is Technical Assistant in the Flight Operation's Division at the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards for their participation in the Gemini program.

The Superior Achievement Award presented to Sjoberg cited him for "His outstanding contributions to the management of the Flight Operations Directorate. His demonstrated technical expertise and his position of leadership in the planning of spaceflight missions, in the development of operations requirements, and in the direction of flight support contributed materially to the success of the Gemini program."

Born in Minneapolis, Sjoberg graduated from Edison High School and received his BS in Aeronautical Engineering from the University of Minnesota in 1942.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the

field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry, and educational institutions for support of its programs.

Sjoberg has specialized in the fields of Airplane Stability and Control, and Automatic Stability and Control Systems, Flight Research. He is the author of approximately 30 NACA and NASA reports and the 1959 Anglo-American Conference Report.

On June 13, 1963, Sjoberg was named Test Conductor of the Little Joe II and Apollo Pad Abort Test Operations to be conducted at the White Sands Missile Range (WSMR) in New Mexico. In this capacity, he acts as representative for Walter C. Williams, MSC Deputy Director in all matters concerning the planning, coordination and execution of Apollo test operations at WSMR.

He is married to the former Elizabeth Jane Ludwig and has three sons. The Sjobergs reside in Seabrook, Texas.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-103

NOV 29 1966

HOUSTON, TEXAS -- Howard W. Tindall, Jr., formerly of Port Washington, New York, was awarded the National Aeronautics and Space Administration's Superior Achievement Award for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Tindall who is Deputy Chief, Mission Planning and Analysis Division at the NASA Manned Spacecraft Center, Houston, Texas, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards at the Manned Spacecraft Center on November 23.

The Superior Achievement Award presented to Tindall cites him "for his continued excellence in the planning and analysis of the highly-complex Gemini rendezvous missions. His position of leadership in the optimization of rendezvous mission profiles and in the development of computer programs contributed significantly to the success of the United States manned Gemini space flights."

Tindall, a native of Port Washington, graduated from the Scituate High School, Scituate, Mass. He received his BS in Mechanical Engineering from Brown University, Providence, R. I. Before joining NASA in 1948 he served three years in the U.S. Navy.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Tindall and his wife, the former Jane Smith of Hampton, Virginia, reside in Houston with their four children, Dana 12, Mark 10, Amy 8, and Claudia 5.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-104

HOUSTON, TEXAS -- James Garrepy, formerly of Worcester, Massachusetts was awarded the National Aeronautics and Space Administration's Certificate of Commendation for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Garrepy, who is a Space Flight Equipment Specialist in the Crew Systems Division at the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards at the Manned Spacecraft Center.

The Certificate of Commendation presented to Garrepy cites him for his "Oustanding service to the Manned Space Flight Program for participation in the development, test and flight activities involving the Gemini space suit and its related equpment. His proficiency in providing dedicated support so vital to the personal safety of the astronauts, has earned the respect and gratitude of all flight crew personnel.

Garrepy, a graduate of Woonsocket High School worked 12 years with the David Clarke Company of Worcester, Massachusetts, prime contractor on the Gemini pressure suit before joining the NASA 18 months ago.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Garrepy and his wife, the former Ann Griffin, live in Houston.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-105

HOUSTON, TEXAS -- Clyde W. Teague, formerly of Charlotte, N. C., was awarded the National Aeronautics and Space Administration's Certificate of Commendation for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Teague, an Air Force Tech Sergeant assigned to NASA, is a Space Flight Equipment Specialist in the Crew Systems Division at the NASA Manned Spacecraft Center, Houston, Texas. He received his citation at special award ceremonies in Houston and was among more than 50 government and industry representatives presented awards at the Manned Spacecraft Center.

The Certificate of Commendation presented to Teague cites him for his "outstanding service to the Manned Space Flight Program; for participation in the development, test and flight activities involving the Gemini space suit and its related equipment. His proficiency in providing dedicated support so vital to the personal safety of the astronauts, has earned the respect and gratitude of all flight crew personnel.

Teague, who is a graduate of Sandhill High School, Asheville, N. C., has been assigned to NASA for three years. He has been in the Air Force for almost 20 years.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the

field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Teague and his wife, the former Minda Julmanna of the Philippine Islands, live in Houston with their three children: Clyde, 12; Kenneth, 11 and Bobby, 9.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

HU 3-5111

MSC 66-106

Houston, Texas -- Alan N. Rochford, formerly of Freeport, L.I., New York was awarded the National Aeronautics and Space Administration's Certificate of Commendation for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Rochford, who is a Space Flight Equipment Specialist with Crew Systems Divisions, received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards at the Manned Spacecraft Center.

The Certificate of Commendation presented to Rochford cites him for his "Outstanding service to the Manned Space Flight Program; for participation in the development, test and flight activities involving the Gemini space suit and its related equipment. His proficiency in providing dedicated support so vital to the personal safety of the astronauts, has earned the respect and gratitude of all flight crew personnel.

Rochford, a graduate of the Chateauroux High School in Chateauroux, France, attended the University of Maryland. After service in the U. S. Navy, Rochford joined the NASA in 1960. He worked on Gemini flights 3, 5, 6, and 7.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these crafts, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support of its programs.

Rochford and his wife, the former Alice E. Thomas of Abington, Pa., live in Houston with their two children, Tommy - $3\frac{1}{2}$, and Lisa Ann - two months old.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-107

HOUSTON, TEXAS -- Joseph W. Schmitt, formerly of O'Fallan, Illinois was awarded the National Aeronautics and Space Administration's Certificate of Commendation for his contribution to the manned Gemini program which was successfully completed earlier this month with the flight of Gemini 12.

Schmitt who is a Space Flight Equipment Specialist with the Crew Systems Division of the NASA Manned Spacecraft Center, Houston, Texas received his citation at special award ceremonies in Houston. He was among more than 50 government and industry representatives presented awards at the Manned Spacecraft Center.

The Certificate of Commendation presented to Schmitt cites him for his "Outstanding service to the Manned Space Flight Program for participation in the development, test and flight activities involving the Gemini space suit and its related equipment. His proficiency in providing dedicated support so vital to the personal safety of the astronauts, has earned the respect and gratitude of all flight crew personnel.

Schmitt, a graduate of the O'Fallan Township High School, served in the U.S. Army Corps (1933-36) before joining the Langley Research Center, Langley Field, Virginia. He has worked on Gemini manned flight GT-3, 4, 6, 8, 10 and 12.

The NASA Manned Spacecraft Center -- under the direction of Dr. Robert R. Gilruth -- the Nation's experienced management agency in the field of manned space flight research and development, has been responsible for Projects Mercury, Gemini, and Apollo. MSC has the responsibility for developing manned spacecraft, for training space flight crews to man these craft, and for conducting space flight missions. The Center is presently engaged in conducting Apollo for the development of space flight technology, for the acquisition of knowledge, and for the use of man in exploring space for the generation of better understanding of the universe in which we live. The Center is one of several research and space flight Centers within the broad NASA organization and frequently calls upon other NASA facilities, government agencies, private industry and educational institutions for support in its programs.

Schmitt and his wife, the former Elizabeth Ann Rayfield of Newport News, live in Friendswood, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-108
November 30, 1966

Charles W. Mathews, Gemini Program Manager, Manned Spacecraft Center, Houston, has been named Director of Saturn Apollo Applications in the Office of Manned Space Flight, NASA, Washington, D. C.

Mathews replaces Major General David M. Jones who had been Acting Director of Saturn Apollo Applications in addition to his duties as Deputy Associate Administrator for Manned Space Flight programs. General Jones will continue in the latter position.

Mathews will direct NASA's effort to utilize manned Apollo space vehicles to extend scientific and technical exploration of space in earth orbit and at lunar distances.

Prior to the Gemini assignment in 1963, Mathews was Chief of the Spacecraft Technology Division and Deputy Assistant Director for Engineering and Development at the Manned Spacecraft Center.

Mathews joined the National Advisory Committee for Aeronautics, predecessor to NASA, in 1943 following graduation from Rensselaer Polytechnic Institute, Troy, New York, with a Bachelor of Science degree in Aeronautical Engineering.

At Langley Research Center, Hampton, Virginia, Mathews was engaged in aeronautical research and participated in early studies on reentry of orbital manned spacecraft. He served as Chairman of the group which developed detailed specifications for the Mercury spacecraft.

Mathews was awarded the NASA Distinguished Service Medal by President Johnson, November 23 for his outstanding contribution to United States manned space flight as Manager of the Gemini program. Mathews is a native of Duluth, Minnesota. He is married to the former Marietta Short of Welch, West Virginia. The Mathews have two children, Douglas Craig, 15, and Elizabeth Ann, 14.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

M SC 66-109
November 30, 1966

HOUSTON, TEXAS -- Dr. Robert R. Gilruth, Director of the NASA Manned Spacecraft Center, announced today the selection of LTV Aerospace Corporation, a subsidiary of Ling-Temco-Vought, Inc., to provide exhibit management, visitor orientation, and library services in support of MSC's Public Affairs Office.

Under the contract period, from December 1, 1966, through November 30, 1967, LTV will provide briefings, escorts, and related services to visitors, manage the scheduling of NASA exhibits in an eight state area of the Southwest and Midwest and respond to routine requests for information on the space program.

The estimated cost of the contract is $300,000 per year and a staff of 32 people will carry out the terms of the contract. LTV was selected from 11 companies submitting proposals. The contract has an option for two additional one-year renewal periods.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

HU 3-5111

MSC 66-110
December 22, 1966

The National Aeronautics and Space Administration has named crews for the second and third manned Apollo missions.

Prime flight crew for Apollo Saturn 205/208, the second manned mission, is James A. McDivitt, commander; David R. Scott, command module pilot; and Russell Schweickart, lunar module pilot. Backup crew is Thomas P. Stafford, commander; John W. Young, CM pilot; and F ene A. Cernan, LM pilot.

Prime crew for the A/S-503 mission, the third manned Apollo flight and the first manned flight using the Saturn V launch vehicle, is: Frank Borman, commander; Michael Collins, CM pilot; and William A. Anders, LM pilot. Backup crew is Charles Conrad, Jr., commander; Richard F. Gordon, Jr., CM pilot; and C. C. Williams, Jr., LM pilot.

Both missions are scheduled to be launched during 1967, but depend on the success of other Apollo missions including A/S-204, the first manned Apollo flight scheduled for the first quarter of the year.

A/S-205/208 is planned as a rendezvous and docking mission and will be the first manned operation of the Apollo Lunar Module which is the two-man spacecraft designed to land on the moon.

-more-

MSC 66-110
Add 1

The mission plan calls for the manned command and service module to be launched into earth orbit by one uprated Saturn I launch vehicle. About 24 hours later an unmanned lunar module will be launched by another uprated Saturn I. The crew in the command module will rendezvous and dock with the lunar module.

The commander and the lunar module pilot will transfer via a tunnel through the nose of the command module to the lunar module. After conducting a series of checks and maneuvers with the lunar module, they will return to the command module for reentry and landing.

A/S-503 will launch the entire Apollo spacecraft -- command and service modules and lunar module -- into earth orbit.

Plans call for the mission to be a simulation -- in earth orbit with a 4,000 mile apogee -- of the lunar landing mission. Events of the actual lunar mission will be conducted in the same sequence and at the same relative times during the mission.

McDivitt, 37, an Air Force lieutenant colonel, commanded the four-day flight of Gemini 4 and was selected for astronaut training in September 1962.

Scott, 34, is an Air Force lieutenant colonel. He flew as pilot on Gemini 8 and was one of the third group of astronauts selected in October 1963.

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Schweickart, a 31-year-old civilian, also was one of the third group of astronauts. He will be making his first space flight.

Borman is an Air Force colonel. He flew as command pilot on Gemini 7, the 14-day mission of December 1965, and was command pilot backup on Gemini 4. He is 38 years old and was one of the nine-man second group of astronauts.

Collins is 36 years old, an Air Force lieutenant colonel, and conducted EVA as pilot on Gemini 10. He was backup pilot for Gemini 7 and was selected for training in October 1963.

Anders, backup pilot on Gemini 11, is an Air Force major. He is 33 years old, is one of the third group of astronauts, and will be making his first space flight.

Stafford, 36, an Air Force lieutenant colonel, was pilot of Gemini 6, which achieved a first space rendezvous, and command pilot on Gemini 9. He is a member of the second group of astronauts.

Young, a Navy commander, is 36 years old and was pilot on Gemini 3, the first manned Gemini flight, and command pilot on Gemini 10. He is a member of the second group of astronauts.

Conrad, 36, is a Navy commander. He was pilot on the eight-day Gemini 5 mission and command pilot on Gemini 11, which achieved the first orbit rendezvous with its target vehicle. He is a member of the second group of astronauts.

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Gordon, a Navy commander, is 37 years old and was pilot on Gemini 11. He is a member of the third group of astronauts.

Williams is a major in the Marine Corps and has yet to make his first space flight. He is 34 years old and was selected in the third group of astronauts.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

MSC 66-111

HU 3-5111

December 22, 1966

Two Aerospace Technologists Thursday were awarded certificates of commendation for their role in saving the life of a suit technician who collapsed when his oxygen line let go during a high altitude test in a vacuum chamber at the Manned Spacecraft Center.

Dr. Robert R. Gilruth, Director of MSC, presented the awards to Henry A. Rotter and Clifford W. Hess, members of the Systems Test Branch, Crew Systems Division of the MSC Engineering Directorate.

Hess and Rotter were cited for their efficient and effective action on December 14 during an altitude chamber test of the Apollo space suit system.

Hess, of Columbia, Pennsylvania, was serving as test conductor outside the chamber, and Rotter was inside the airlock adjacent to the chamber serving as an observer.

The award to Rotter states "Despite personal hazards, Mr. Rotter's quick and effective action during the subsequent rescue prevented injury to the subject." Rotter, a Texas A&M graduate, is from La Grange, Texas.

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Hess's award commends him for responding "in a highly efficient manner in directing a successful rescue operation which prevented injury to the test subject."

In presenting the awards, Dr. Gilruth said, "It's one thing to do it in drill and in practice and another to do it efficiently and with calm skill under pressure. It's really a wonderful thing; I feel greatly honored in presenting these awards."

Jim Le Blanc, the suit technician who was inside the eight-foot altitude chamber, lost consciousness when his Apollo suit lost pressure when an oxygen line let go. The chamber was at approximately 150,000 feet at the time of the accident, and Hess ordered immediate repressurization to bring it back to sea level.

Dr. Maxime A. Faget, Director of Engineering and Development, said that without the quick action of Hess, Rotter and the other technicians Le Blanc could have suffered serious injury. "It was an extremely time critical operation," Faget said.

A loss of suit pressure at altitudes above 50,000 feet can result in internal injury and possible death within a few minutes, physicians at MSC explained.

The test was nearing its conclusion when the accident occurred. Richard S. Johnston, Chief of Crew Systems Division, explained a coupling, linking the oxygen lines from outside the chamber into

Le Blanc's suit, came loose. This caused an instantaneous loss of suit pressure.

The suit pressure dropped from 3.8 psi (pounds per square inch) to .1 psi within a 10-second period. As soon as Hess noticed the drop, he ordered immediate repressurization of the chamber.

Rotter, stationed in a pressurized air lock adjacent to the chamber, was observing Le Blanc's actions. Rotter heard word of the pressure drop over the intercom and immediately prepared to enter the chamber.

Repressurization began ten seconds after the failure, and 17 seconds after repressurization began, when the altitude in the chamber was at 27,000 feet, Rotter entered from the airlock to begin administering to Le Blanc.

First indication of trouble came to Le Blanc when he noticed "steam blowing off from my left side." This steam was created as the oxygen leaked out the loose fitting.

"I noticed the suit began to lose pressure, and I looked at the gauge (on his left wrist) and saw it was 2.5 (psi). My vision got fuzzy, and I stumbled backwards," he stated.

"The next thing I can remember I looked up and there he (Rotter) was. He looked awfully good to me," Le Blanc said.

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When Rotter leaped through the hatch door, he began cutting the straps off the PLSS (Portable Life Support System) pack to facilitate moving Le Blanc out of the chamber. He also loosened the gloves on the suit to permit oxygen to get to the unconscious Le Blanc.

Video-tape films dramatically capture each second of the incident from the moment the hose broke loose, as Le Blanc fell over backwards, and Rotter jumping in to aid the stricken technician.

The split-second timing -- 85 seconds from the time the suit pressure loss was noticed until doctors were inside the chamber (cking on Le Blanc -- with which Hess, Rotter and the other technicians reacted is part of their job, Crew Systems Chief Johnston said.

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