Space News

NASA ROUNDUP!

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# President Asks $5.7 Billion For NASA In FY '64

## Ground Broken For O. And C. Building At Cape

Several key space officials participated as ground was broken January 28 for the first of 40 buildings in an industrial complex which will be an important part of Project Apollo.

Dirt was turned in formal opening ceremonies to kick off construction of the Operations and Checkout Building, primary headquarters for Apollo at the Cape.

Among those who weilded gold shovels to start construction were MSC Deputy Director Walter C. Williams; G. Merritt Preston, director of MSC operations at the Cape; D. Brainerd Holmes, director of the Office of Manned Space Flight, Washington; Dr. Kurt Debus, director of Launch Operations Center; Dr. Werhner Von Braun, director of Marshall Space Flight Center; Col. E. Richardson, USAF; and Col. H. R. Parfitt, district engineer, U. S. Army.

Groundbreaking came less than two weeks after the $7.4 million construction contract was awarded to Paul Hardeman, Inc. of Stanton, Calif. and Morrison-Knudsen, Inc. of Southgate, Calif.

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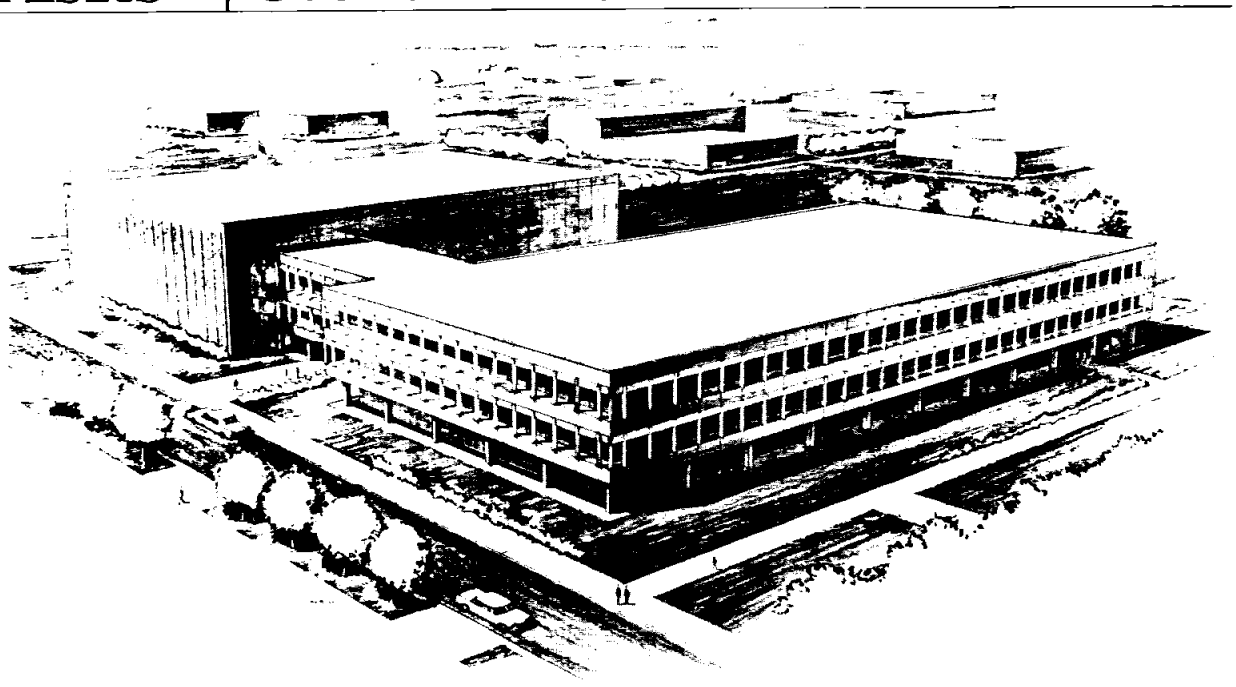

**GEMINI RENDEZVOUS and Apollo flights will be directed from this mission control center at the MSC site at Clear Lake just as Project Mercury's flights have been run from Mercury Control Center at Cape Canaveral. The $50 million building, its foundations already being laid, will go into operation in mid-1964.**

## 65 Per Cent Of R-D Budget For Manned Flight

President Kennedy's budget proposal to the Congress asked for an appropriation of $5.712 billion for the National Aeronautics and Space Administration for fiscal year 1964. This figure included $4.912 billion for research, development and operation, and $800 million for construction of facilities.

Of the total requested for research, development and operation $3.193 billion or 65 per cent, was earmarked for the manned space flight programs. This figure was further broken down by allotting $1.647 billion for spacecraft development and operations, $1.319 billion for launch vehicle development $21.840 million for aerospace medicine, $157.378 million for integration and checkout, and $47.528 million for systems engineering.

The other 35 per cent was asked for as follows: $136.559 million for space applications, $745.765 million for unmanned investigations in space, $463.-863 million for space research and technology, $45.126 million for aircraft technology, and

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# NASA Names Philco For Contract Negotiations On Control Center

NASA will negotiate with the Philco Corporation for a $30 million contract to develop and equip the Integrated Mission Control Center at Clear Lake, the agency announced last week.

Total cost of the control center, which will direct Gemini rendezvous and Apollo flights, is expected to exceed $50 million.

When it goes into operation in mid 1964, the center will be the focal point of the entire ground operational support system, from which the spacecraft and the world-wide tracking network will be directed during rendezvous-in-orbit and moon flights.

Early flights of the two-man Gemini spacecraft will be directed by the present Mercury Control Center at Cape Canaveral, which has directed Project Mercury flights to date.

Philco's Western Development Laboratories at Palo Alto, Calif., was one of seven companies which competed for the mission control center contract.

The Philco contribution, estimated at $30 million, will not include the mission control center's computer complex, which will be provided by International Business Machines Corp.

NASA selected IBM last October to study and plan the computer "brains" for the mission control center.

Philco's contract would include, however, some $18 million worth of other electronic equipment to be installed, and one year of maintenance and operation following completion of the center.

The facility will consist of several major electronic subsystems – communications, displays, simulation and training, and computers. Philco would design and develop much of this equipment and tie the entire complex together into a highly integrated operational system.

Containing two mission control rooms, the center will be housed in a 200-foot-square,

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# Johnson Urges Continued Open Information Policy

Vice President Lyndon B. Johnson cited the "openess of our space program" as "particularly important" in a speech before Congress January 28, and urged that the policy be continued.

His remarks followed those of President John F. Kennedy, who called 1962 "the most successful year in our brief successful year in our brief but active space history," and blueprinted our future space plans.

"The world has become increasingly aware of U. S. Space achievements and our international prestige has been increased due to the mounting number of our space successes, our positive efforts to cooperate

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with other nations, and our constructive sharing of information developed from space experiments.

"It seems particularly important that we strengthen and then maintain both the policy and the practice of making public all information regarding our space program which will not adversely affect our national security," Johnson said.

## Net Couch Dropped For Use On MA-9

Use of the Somyk net couch during the flight of MA-9 Pilot L. Gordon Cooper has been officially ruled out, Mercury Project Office said last week.

Technical difficulties of a minor nature which have held up delivery of the hardware are considered the cause.

There are also some failures in material structure.

Although the problems can be surmounted, a delay in decision would cause delay in the preparations schedule, the Project Office said.

It is possible that the net couch will be used in Spacecraft 15, in the event of another Mercury flight following MA-9.

# Air Force Will Contribute Funds, Effort Toward Gemini

The National Aeronautics and Space Administration and the U. S. Air Force will join forces in working on the Gemini two-man space flight program, NASA and Department of Defense officials announced January 22. NASA is to retain management of the project.

Defense officials said the Air Force may spend as much as $30 million on the project during FY 1964, in addition to the $306 million NASA is planning to spend on Gemini during the same period.

Defense Secretary Robert McNamara and NASA Administrator James E. Webb announced that a planning board has been appointed to monitor the program, headed by Dr. Robert C. Seamans, Jr. associate administrator of NASA, and Dr. Brockway McMillan, assistant secretary of the Air Force for research and development.

The board will insure that Gemini experiments are most effectively utilized for the benefit of both NASA and the

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## Grumman Names LEM Subcontracts

The Grumman Aircraft Engineering Corp. has announced that the following firms have been selected for pre-negotiation discussions of the Project Apollo lunar excursion module propulsion, reaction control and environment control systems with MSC approval:

Rocketdyne Division of NAA, Inc., Canoga Park, Calif., for throttlable engine using a gas injection scheme for control of the LEM during descent to the lunar surface. A parallel descent-engine development program will be conducted with another yet to be selected contractor developing a variable area engine.

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**IT'S NOT BEAUTIFUL, but it can do the job, at least until the permanent facility for space power systems testing is completed at Clear Lake. This temporary facility opened for business recently at Ellington AFB.**

# Chemical Test Facility Is In Operation At Ellington

Among the massive, sophisticated test facilities going up at MSC's Clear Lake site, the flight acceleration facility or "centrifuge" is probably the best known.

Less well known but fully as important, however, will be the thermochemical test area, a complex of five facilities plus a lab-and-office building. Two of the functions to be carried out in this area are, however, already in operation, or nearly so, at recently-built temporary facilities at Ellington AFB.

The reaction control systems test facility will test reaction control thrusters for Gemini and Apollo programs. The present building at Ellington has two test cells, one for tests under sea level conditions and the other for monitoring performance under simulated altitudes of up to 150,000 feet.

"Our present object is to develop fast, accurate responses to a 'light touch,' a very short pulse on the order of 10 milliseconds," explained thermochemical test area section chief Jesse C. Jones.

"Later we will be doing impact and landing studies, electro-explosive device testing, and other support work in this facility."

The present layout consists of a large control room with windows overlooking both cells, from which all valves and other equipment can be controlled once the test run is set up. In the same building are an office and supporting shop.

The permanent reaction control test facility at Clear Lake will be able to handle larger engines firing under full duration runs at altitude conditions. It will also include a subsystem sphere on which can be mounted four thrusters at once, fired together or in sequence from a programmed computer on a continuous basis. Data acquisition will be far more sophisticated than the present setup, as well.

A second facility, also being temporarily set up at Ellington, is the space power systems test building. Primary effort of this facility is the testing of fuel cells which generate electrical power aboard spacecraft. Now under test, for instance, is a 10-watt General Electric fuel cell which might be considered an early prototype of the one to be used in Gemini.

Later this month, testing will start on a 250-watt Pratt and Whitney cell very similar to that to be used in the Apollo spacecraft.

In conjunction, the facility will test the supercritical storage system for hydrogen and oxygen used for the fuel cells during the several-days-long trip to the moon.

The present facility includes two test cells, since these tests often last several days and one cell can be used for a test while the other is being set up. Also included are an office and a small calibration shop.

The permanent facility at Clear Lake will have the same basic task, but will be able to simulate a space environment for such tests and will be equipped with far more sophisticated instrumentation.

Added to the two facilities mentioned at Clear Lake will be an attitude control test facility, components test facility and pyrotechnic test facility.

The first will incorporate a three-axis air bearing table as a test bed for reaction control, guiding and sensing components and associated equipment, providing a capability for performing hold limit cycle tests, maneuver mode studies and rate studies.

The components test facility will be used in testing all spacecraft fluid systems components, including the main propulsion system, reaction control system, space power system, environmental support system, heat rejection system, etc. Initially, it will incorporate capabilities for testing with nitrogen tetroxide, hydrazene blends, demineralized water, gaseous nitrogen and helium. The facility will include a "white" or "clean room" for component assembly, inspection, cleaning and reassembly.

The pyrotechnics test facility will accomplish qualification and development testing on pyrotechnic devices under the extreme conditions encountered in space. It will artificially create vacuum, shock, acoustic vibration, temperature extremes and other necessary conditions for test purposes.

The thermochemical systems laboratory will serve as the control office building for the test area and will include a well equipped shop and mechanical, electrical and general laboratory to support test area activities. A small meteorological lab will also be provided to monitor weather conditions for test scheduling.

**Each NASA employee is responsible for adequate security safeguards of classified material in his possession, custody, or control, as well as reporting to his supervisor existing practices which do not afford adequate safeguards for classified material.**

# Air Force Joins Gemini

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Department of Defense, and will recommend the amount of money which the Air Force will contribute.

The Air Force will be responsible for scheduling and frequency of flights, sea surveillance, recovery of vehicles and operation of down-range stations.

The agreement supplements the NASA/Air Force Gemini management agreement in effect since the spring of 1962, and incorporates several new features. DOD will continue as manager of the Atlantic Missile range, extending from Cape Canaveral into the Indian Ocean, but NASA will manage and serve as host agency at the new 87,000-acre Merritt Island Launch area north and west of present Cape facilities.

Launch complexes such as the present Saturn pads will thus be retained under Air Force supervision, with later launch complexes related to the lunar effort and other programs under supervision of NASA in such matters as housekeeping and maintenance.

The Air Force will continue to exercise overall control of range operations but scheduling on the range will be a joint function of both DOD and NASA.

Total cost of the NASA portion of Gemini has been estimated at $800 million. Additional military funding may be added under the new agreement as the Air Force deems necessary.

The Air Force hopes to use Gemini experiments to complete testing under conditions of human judgement on components and experiments leading to automated, unmanned military space devices.

The department noted the "possibility" that if the joint effort proves successful, a similar agreement relating to the later Apollo program may also be negotiated.

The Air Force may want to use passive or evasive vehicles in space as the target craft in the contemplated Gemini rendezvous operations. Another military interest is related to testing equipment for photographing the earth's surface from manned vehicles.

# Gilruth Speaks

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moon landing in this decade our national goal, Gilruth added:

"The result of this pace is that one scientist or engineer is needed in the space effort for every five mechanics. The ratio used to be one scientist for every 25 mechanics."

Dr. Gilruth mentioned the recently established training grants set up by NASA in 88 colleges and universities across the country. As many as 800 qualified students will graduate from these institutions in the next three years.

Five Texas schools are included in the program—University of Houston, Rice University, Texas A and M. University of Texas and Texas Tech.

# IMCC Contract

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three-story building, the foundation of which is now under construction.

The computer complex and communications center will be on the first floor. Identical mission control rooms will be on the second and third floors. Two mission control rooms are required because of the detailed control preparations that will go into Gemini and Apollo missions, frequency and length of the missions, and the extensive training programs that are essentail to mission success.

Fewer than twenty controllers will be in the mission control room during a flight, but upward of 250 technical and administrative people will be involved in carrying on supporting functions in adjacent rooms. These include recovery control, recovery communications, meteorology, trajectory data, network support, simulation equipment and monitor devices for life support and vehicle systems.

Computer driven data displays, providing vast quantities of a real-time data which can be plotted and presented literally thousands of ways, will be employed in the mission control center. The displays will utilize television and back lighted projection techniques extensively.

Philco's Western Development Laboratories said last week it will move 200 electronic and space systems specialists to the Clear Lake site within two weeks. Fully-staffed, the work force will require between 350 and 400 scientists and technicians, the firm said.

# NASA Confirms Delay In MA-9

The delay in the orbital flight of Astronaut L. Gordon Cooper, scheduled for early April, was confirmed yesterday by NASA.

This delay was caused by electrical wiring problems in the launch vehicle control systems which are peculiar to Atlas 130-D, the booster to be used for the MA-9 mission.

A NASA spokesman said further information would not be available until a complete evaluation has been made by General Dynamics/Astronautics, San Diego, Calif., prime contractor for the Atlas, and the Space Systems Division of the Air Force, procurement agency for the vehicle.

# Information Is Big Job

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ordination. During the two-week period mentioned, News Media participated in over 200 such actions; for example, a discussion with Gemini Project Office covering a proposed news release containing technital information.

While News Media struggles with the outside world, the three-man Internal Communications Branch attempts to keep MSC's own personnel informed of what is going on not only in Houston but within NASA as a whole. In addition to gathering material, writing, editing layout and proofreading the bi-weekly newspaper you are now reading, Internal Communications is responsible for weekly activity reports; a clip-sheet of press reports from all over the country which circulates daily to MSC staff heads; and the preparation of a number of brochures, among which are the after-flight pictorial booklets distributed to the public by other branches. In addition the branch handles requests from other NASA installations for information about the activities of MSC.

Industrial Communications furnishes a central contact point for advertising and public relations activities among MSC's prime contractors, and through them the hundreds of subcontractors. All press releases and advertising having to do with MSC programs put out by the Center's contractors must first clear through this office, to insure that they are technically accurate and do not violate security. The branch averages 50 clearance actions a month and handles an average ot 10 to 12 calls a day from contractor public relations personnel.

In addition, the three-man branch services requests daily from the 79 or more aerospace firms which now have local offices in Houston, prepares articles on MSC for contractor magazines, and is now working on a "milestone" book on Projects Mercury, Gemini and Apollo.

Community Relations services a flood of requests for speakers from civic, professional and social groups in its Speakers Bureau. The shop also keeps up an outgoing program to show the public the visible results of our progress in space exploration—for instance, the week-long educational program at Houston schools last fall; the MSC portion of the display at the World's Fair in Seattle; a series of one-day display-and-lecture programs in the nation's colleges and universities; and the current essay contest in Houston schools designed to encourage the interest of young students in space science and engineering.

Exhibits set up and maintained by the branch are already booked solid for 1963; it is estimated they will log more than 20,000 miles back and forth across the country during the year. The branch will fly an exhibit to Puerto Rico in the spring and is planning another at a trade fair in Rio de Janario, Brazil in June. They go to everything from Boy Scout Camporees to scientific conferences, to be seen by more than two million people a year. Not a small part of the job of educating the public is keeping the citizens of Houston itself aware of just what MSC is and what it does.

Largest single branch in Public Affairs is the Audio-Visual group, which is currently handling 27 different motion picture films on MSC programs, with a total of 1,425 prints in day-to-day circulation. The branch estimates these films are shown to about two million persons a year and are available to industrial, civic, church, social and club groups without charge.

Complete photographic documentation of all MSC activities is the job of Audio-Visual, and with the Center still an infant in point of time the branch already has three million feet of motion picture film catalogued and cross-referenced in a single storage area.

The branch supports the motion picture survice with maintenance of a still photo library to serve the other branches of Public Affairs, maintenance of a projection slide library for the MSC staff, and preparation of photos for all MSC visual displays and such Public Affairs publications as this newspaper.

Audio work is also becoming a signaficant part of the unit's performance with requirements for press conference, symposium and report meeting support as well as day-to-day sound recording for broadcast and film production work.

Various staff members are drawn from all branches from time to time to travel about the country with groups such as the astronaut trainees on their recent industrial orientation tour. These men serve as "portable public affairs offices," answering queries and monitoring interviews from press media who gather around.

During the week before a manned spaceflight mission, when some 600 news media descend en masse on the launch and recovery areas to provide the world with full, live coverage of our U. S. space attempts, the entire Public Affairs Office turns to with the operation of news centers at the Cape, in Houston and at the prime recovery area. The lines of demarkation between the branches all but disappear at flight time, and the office staff joins public affairs personnel from other centers in issuing hour-by-hour bulletins, keeping lines of communication between the recovery forces and the launch site open, providing photographic coverage, issuing credentials to bona fide news media representatives, overseeing preflight interviews and handling requests for information.

Mercury News Centers at flight time have given new meaning to old cliches like "madhouse" and one staff member described it as a "mass nervous breakdown in the making."

The work load on the PAO staff has increased steadily with the sharp rise of public interest in space exploration. Already the staff averages close to 1,000 overtime manhours per pay period, with no letup in sight.

Concerning the job at hand, however, another staff member summed up the general feeling this way:

"We may not solder the hardware together, or push the button that fires the booster, but we tell the public when someone else does it—and who and where and how. Since our audience is paying the bill, we think it's a pretty important job."


**OPENING OF CONSTRUCTION on the new Operations and Checkout Building at Cape Canaveral was celebrated January 28. The "groundbreaking crew," using gold shovels, included (left to right) MSC Deputy Director Walter C. Williams; MSC Director of Cape Operations G. Merritt Preston; LOC Director Dr. Kurt Debus; Office of Manned Space Flight Director D. Brainerd Holmes; Marshall Space Flight Center Director Werhner Von Braun; Col. E. Richardson, USAF; and Col. H. R. Parfitt, District Engineer, U. S. Army.**

## Elms Speech

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program.

He pointed out that the NASA effort is without precedent because of its magnitude and complexity, and requires the combined managerial and engineering talents of both government and industry. He stated that the basic managerial concepts in a small industrial firm are valid in the tremendous NASA management responsibility.

Ed Wood and Douglas Broome, of MSC's Apollo Project Office were unamimously elected chairman and vice-chairman, respectively, of the group.

A panel discussion on a controversial management subject is planned for the PGEM Meeting in late February.

## Astro Assignments

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the development.

The various specialty areas are as follows.

Neil A. Armstrong will monitor the development, design and use of trainers and simulators, including new training requirements not associated with specific mission simulators.

Frank Borman will concentrate on the booster design and development program, especially booster-abort systems and development of abort-preventing procedures for mission success.

Charles Conrad, Jr., will specialize in cockpit layouts, instrument displays and pilot controls to insure that systems "displays" are appropriately integrated into cockpit panels.

James A. Lovell, Jr., will monitor design and development of all recovery systems, such as paraglider, parachute, and LEM landing system, including resolving operational problems in the reentry and recovery part of the mission.

James A. McDivitt will specialize in design and development of guidance and navigation systems and aids for operational requirements.

Elliott M. See, Jr., will monitor the design and development of electrical and sequential systems. In addition, he will aid in the coordination for mission planning.

Thomas E. Stafford will monitor the design and development of communications and instrumentation systems, insuring that onboard systems are compatible with pilot needs and properly integrated with the IMCC (Integrated Mission Control System), GOSS (Ground Operational Support System) and other communication links.

Edward H. White II will monitor the design and development of flight control systems and related equipment.

## O & C Building

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It's 350,000 square feet of floor space will contain administrative Offices, extensive laboratory facilties, astronaut quarters, an auditorium, a cafeteria and a 104-foot high bay area for checkout and assembly of spacecraft.

Several days earlier Preston received a colorful perspective drawing of the project from C. Wesley Kent, general engineer for Burns and Roe, the New York Engineering and Construction firm that designed the building.

First structure to go up in the new Merritt Island industrial area, the building will provide work areas for some 1,800 employees. It will be completely air conditioned with movable partitions and modular utilities installations to provide maximum flexibility of work areas.

John W. Young will monitor design and development of environmental control systems, survival gear, pressure suits, couches, and other personal equipment.

The astronauts will attend all major meetings and conferences on design and mock-up reviews, and staff meetings, and have the option to request any specialists from other areas for consultation.

Specialty assignments given to individual astronauts will change somewhat during the training program as required. These assignments do not imply crew selection for future manned space missions. Mission crews will be selected prior to each flight.

**The loss or misplacement of NASA identification cards or badges should be reported immediately in writing to the MSC Security Office, indicating circumstances of the loss and efforts expended in relocation.**

# MA-8 Spacecraft, Booster Performed 'Extremely Well'

"The Mercury spacecraft and Atlas launch vehicle used in the orbital flight of Astronaut Walter M. Schirra, Jr. performed extremely well in every respect. All objectives . . . were accomplished and no malfunctions occurred which compromised the success of the mission."

This was the beginning of the report by John H. Boynton and Lewis R. Fisher of Mercury Project Office on the MA-8 "spacecraft and launch vehicle performance."

Noting that the flight provided twice the period of observation in space for both the astronaut and the spacecraft systems that previous missions did, Boynton and Fisher called it "another key milestone in the Mercury program."

"The only anomaly which caused concern during the flight was an elevated suit temperature experienced in the first two hours after launch," they said.

"This condition was later found to have resulted from a foreign substance in the control valve, but the flight control tasks was further aggravated by a difference between the suit-inlet temperature readings telemetered to the ground stations and those indicated to the astronaut by the instrument panel gauges."

Schirra's careful system monitoring and methodical control-valve manipulation remedied the condition.

"The scientific experiments included in the mission provided valuable information regarding physiographic features of the earth, the selection of filters for weather photography, nuclear radiation in terrestrial space and the effectiveness of advanced ablation materials during and orbital reentry." the report said.

The heat protection system of the spacecraft was satisfactory. With respect to the eight types of ablation material in nine different configurations which were bonded to the exterior of the spacecraft as an experiment, the report said each of the panels appear to have sustained reentry heating in "excellent fashion" including the intentional repairs in most of them made to test restoration techniques. Analysis of the samples is continuing.

All separation devices performed effectively, as did the landing system. The drogue parachute was deployed manually as planned at 39,400 feet and the main 'chute sequence initiated automatically at 10,600 feet. The only incident reported was a slight tearing of the main parachute deployment bag.

Usage of hydrogen peroxide control fuel was less than had been predicted for the mission, the report said, a result which was "especially satisfying when the fuel usage of the two previous flights is compared with that of the MA-8 mission."

A number of minor changes in equipment contributed to this, said the report, but "it must be emphasized that (these factors) were complementary to the pilot's discreet management of control system operations, for which he alone was responsible."

One of the changes was the addition of a switch to disable the high thrusters when they were not needed, allowing the pilot greater freedom in stick motion since he was not required to restrain his hand movement within a fixed range to activate only the low thrusters. The switch thus eliminated the possibility of using the high thrusters inadvertently when he was distracted.

The flight plan also intentionally excluded control manuevers which would have caused large quantities of fuel to be consumed.

The discrepancy between the suit-inlet temperature indications displayed to Schirra and those transmitted to the ground by telemetry has been attributed to improper calibration and interpretation of the temperature pickup, the report said. The ground readout was as much as eight degrees F. higher than Schirra's reading at certain times.

A launch setting of 4.0 for the coolant control valve, established in preflight tests, proved insufficient for proper cooling, and the setting was gradually increased to 7.5 where it remained for the rest of the flight. "Postflight tests revealed that dried lubricant had partially blocked the valve orifice and reduced the flow."

Discussing the experiments conducted during the flight, the report noted that the attempt to have the astronaut observe high-intensity light sources on the ground while in flight were unsuccessful because of extreme cloud cover. Schirra was able, however, to see lightning in a storm over Woomera and the lights of a city near Durban, South Africa in spite of cloud formations prevalent around the entire ground track of the orbit.

A U. S. Weather Bureau-sponsored photographic exercise yielded a total of 15 frames taken through a special filter mosaic. Preliminary data indicated that the yellow and red filters yielded a higher contrast than the other filters.

A series of terrestrial color photographs taken by Schirra over the western U. S. and Mexico during the third pass, and over South America during the sixth pass, are still under study with respect to cloud patterns and various physiographic features of the earth.

Two packages of radiation-sensistive emulsions were provided by Goddard Space Flight Center to study the flux and composition of galactic cosmic radiation outside the atmosphere. Two sets of radiation-sensitive films were also provided by the U. S. Naval School of Aviation Medicine. All are still under study and promise to yield valuable data.

Modification of the Atlas launch vehicle for the flight included new baffled fuel injectors which improved the combustion characteristics, and hypergolic igniters installed instead of the pyrotechnic devices previously used. The Atlas performed "exceptionally well," said the report.

# Doctors Find No Blocks To Longer Flights

In over nine hours of weightlessness, Astronaut Walter M. Schirra incurred "no detectable physiologic decrement," notes an aeromedical analysis by Doctors Charles A. Berry, Howard A. Minners, Ernest P. McCutcheon and Richard A. Pollard, all of the Aerospace Medical Operations Office.

"His body functions since the flight have remained normal and unchanged from their healthy preflight condition," said the physicians. "Inflight ionizing-radiation monitoring showed that the astronaut sustained no significant exposure."

Preflight clinical examinations of the astronaut included aeromedical histories, physical examinations, clinical laboratory tests, X-rays, an electrocardiogram and an electroencephalogram, and an audiogram.

Schirra spent most of the time from June, 1962 to the launch date at Cape Canaveral in preparation for the mission, and chose swimming and water skiing for preflight physical conditioning. He did not undertake direct physical conditioning in the several days just before the flight.

A controlled diet was begun September 21, and the low-residue diet was followed for three days before the flight. Breakfast on flight day consisted of orange juice, scrambled eggs, fish, steak, toast, butter, jelly and coffee. Schirra had five hours of sleep before the flight.

Two slight instrument failures were reported. The blood pressure measuring system automatic timer failed, requiring manual operation, and the body-temperature instrumentation failed six minutes before launch. A nominal value reappeared at about the middle of the second orbit, but the signal was somewhat intermittent thereafter.

Schirra did not become nauseated during the flight, nor did he suffer any disorientation when moving his head as required by scheduled tasks. He did not become hungry, although he ate the contents of two tubes, one of peaches and the other beef with vegatables, as planned. He drank about 500 cc of water during the flight.

Schirra reported he was warm and perspired moderately during the first orbital pass when he was subjected to an elevated suit inlet temperature, but said he was not uncomfortably hot during this period.

Performing a specific test of orientation, he closed his eyes at three different times during the flight and attempted to touch each of three instruments with his index finger. In nine attempts he made five direct hits and four near misses of two inches or less. Schirra concluded he was improving with practice and that he performed equally as well during flight as he had done in the procedures trainer.

The complete post-flight physical exam, conducted aboard the Kearsarge only 40 minutes after Schirra landed, "revealed only one finding which is thought to be significant.

"It was noted that Astronaut Schirra had an increased lability of blood pressure and pulse which changes in body position. When supine, the heart rate averaged about 70 beats per minute but this value immediately increased to 100 or greater when he stood erect. Blood pressure showed a less dramatic but still significant drop in systolic pressure when changing from the supine to the upright position. The reverse was true when he changed positions from standing to supine. There was no apparent change in the diastolic pressure.

"In addition, it was noted immediately after the flight that all dependent leg veins were engorged. The feet and legs rapidly took on a dusky, reddish-purple color following standing. Astronaut Schirra commented that these color changes were more noticeable than any he had previously observed.

"All these findings persisted up to the time the astronaut retired for the night. The next morning, about 21 hours after landing, examinations revealed no orthostatic changes.

"It is impossible," concludes the report, "with presently available data to isolate the true effect of human exposure to nine hours of weightlessness as it relates to hemodynamics. This phenomenon will be closely studied in future orbital flights.

"Such a hemodynamic phenomenon may have more serious implications for longer flight missions. A prescribed inflight exercise program may be necessary to preclude symptoms in case of the need for an emergency egress soon after landing."

However, the report concluded, "there are no medical contraindications to embarking on a longer mission."

# Rendezvous Not Difficult If Unhurried, Says Schirra

MA-8 Pilot Walter M. Schirra, Jr. saw a haze-like layer different in character and size from those seen by Astronauts Glenn and Carpenter. He saw the expended sustainer stage of the launch vehicle as black, rather than silver. And he saw both types of space particles observed by Glenn and Carpenter.

These facts were revealed in Schirra's "Pilot's Flight Report" released in January as part of the MA-8 results report.

Introducing his account, Schirra said, "The camaraderie of everyone concerned . . . meant a great deal to me. For example it was certainly a thrill while entering the spacecraft on launch day to see a dummy 'igmition key' on the control stick safety pin."

Schirra called the boosted portion of the flight "disappointingly short," but said he "never felt rushed" and had more then the anticipated time . . . to make my system checks."

Schirra said he knew immediately when the launch vehicle staged, and saw a flashback of smoke from the booster engines as they parted. He also saw the escape tower when it jettisoned, the blast leaving a light film on the window.

At turnaround, the pilot said he "resisted every impulse to look out of the window" since he wanted to make it a fuel-minimum turnaround by strictly monitoring the gyro instruments. He got exactly the turnaroumd he wanted, he commented.

After turnaround, he took a look at the sustainer stage and was surprised to see it pointing toward him; "it had managed to make a 180 degree turnaround during the time I had made mine." Schirra said he was also surprised to find it "almost black in appearance," rather than the shiny silvery vehicle that Astronauts Glenn and Carpenter had seen.

"As I proceeded on to the Canary Islands, the flight was textbook already," Schirra comments. ". . . It was a thrill

**The MA-8 "Blue Book" summarizing the results of Astronaut Walter M. Schirra's six-orbit mission last October was released in late January.**

**Although no formal "results conference" was held after MA-8, as in the case of MA-6 and MA-7, the blue book follows much the same format as the other two such volumes made public at the time of the MA-6 and 7 conferences.**

**There are five reports — Spacecraft and Launch-Vehicle Performance, Mission Operations, Aeromedical Analysis, Pilot Performance and Pilot's Flight Report.**

**Summaries of four of the five reports appear on this and the following page. A summary of the Pilot Performance Report will appear in the February 20 issue of the Roundup, since space in this issue did not permit its inclusion.**

# WOO Services West Coast Industrial Complex

NASA will spend more than $3.7 billion during fiscal 1963. Nearly half of that will be spent in California where the space age has become the bread and butter of many thousands of its citizens.

Knowing this, the National Aeronautics and Space Administration established its Western Operations Office in Santa Monica in 1959. And here, at 150 Pico Boulevard, a handful of dedicated engineers, scientists and administrators control expenditures totaling more than $1 billion annually.

NASA named a 20-year veteran aeronautical engineer to head up the Western Operations Office. He is Robert W. Kamm, whose service to NASA began 18 years before the space agency was established. Kamm, a youthful 45-year-old, joined NASA's federal predecessor, the National Advisory Committee on Aeronautics, in 1940. Except for a two post-war years as senior aerodynamicist with the Glenn L. Martin Company of Baltimore, Kamm has devoted most of his adult life to technical management in NASA and NACA.

Kamm's office, dubbed WOO to miniaturize Western Operations Office, employs 232 persons, 71 of whom are in residence at the North American Aviation facility in Downey. Others on his staff work hand-in-hand, day to day, with their counterparts at Douglas, Hughes Aircraft, Rocketdyne and a host of contractors, large and small, who share NASA's mission.

Who are these people?

Well, they are engineers and scientists representing nearly

**Robert W. Kamm**
**Director**
**Western Operations Office**

every phase of their professions; they're management and contract specialists who make sure the government is getting its dollar value; they are quality assurance inspectors, lawyers, financial management officers, security officers and public information and education specialists. And of course they're clerks, stenographers and personnel representatives.

They support most of NASA's programs involving West Coast facilities and represent all the NASA research centers and NASA headquarters in dealing with members of the government-industry space team in the West.

The major share of the money spent by Western Operations is to support research, development and operations associated with unmanned space exploration — such as the Mariner program — at Caltech's Jet Propulsion Laboratory in Pasadena.

WOO is frequently called upon to oversee reliability and inspection concerning a contract here. Or a NASA center in Ohio, Alabama or Texas may require continuous technical liaison with an on-the-spot project engineer. In other cases, the business office of NASA headquarters — or a center — may ask WOO to pay its bills, provide security services, legal or patent services, or to flash a news release to West Coast news media.

A major example is the contract service provided by WOO for NASA's Marshall Space Flight Center in Huntsville, Alabama. This Center is concerned with the development of the Saturn S-IV and S-IVB stages of the giant Saturn rocket which will propel three men to the moon. This work is being done for Marshall by Douglas Aircraft in Santa Monica, and entails millions of dollars. Another multi-million dollar program is the F-1 engine at Rocketdyne in Canoga Park. This 1.5 million pound thrust engine will be clustered to give Saturn's first

**D. R. Mulholland**
**Deputy Director**
**Western Operations Office**

stage a 7.5 million pound boost. And of course there's the Apollo spacecraft itself, the three-man space ship which will deliver America's lunar astronauts to the moon and disgorge two of them in a smaller craft to the moon's surface.

But not all NASA's contracts involve huge sums. The WOO small business branch awards and manages a host of contracts for lesser components, and for research and technology on a small scale.

Because of President Kennedy's decision to put an American on the moon in this decade, NASA has had to devise a timetable. This means widely dispersed NASA and industrial teams, from Cape Canaveral to Los Angeles, must function smoothly and in accord, like so many converging lines destined to meet at the same place at the same time.

WOO — the Western Operations Office — exists for that purpose: to see that progress in technology, the sciences and in the production of engines, airframes, life-support systems, instruments, diodes, transistors and the many components which make up the final Saturn-Apollo space vehicle, converge on schedule — on the moon.

And beyond.

**Editor's Note: this is the ninth in a series of feature articles about the activities of other NASA installations. The information concerning Western Operations Office and its program was supplied by the Western Operations Office Public Information Office.**

# Fuel Conservation During MA-8 'Excellent,' Says Flight Operations

John D. Hodge, assistant chief for flight control, Eugene F. Kranz, and John Stonesifer, all of Flight Operations Division, co-authored a report on "Mission Operations" for the MA-8 mission results book released late last month.

Describing in detail the operational support provided during the mission, they noted that the launch phase of MA-8 proceeded "almost perfectly, except for a brief hold of 15 minutes which occurred at T-45, for repairs to the Canary Islands radar."

The only flight discrepancy which caused concern during the mission was the suit-cooling problem during the first orbital pass, which was later corrected, the report said.

The astronaut used the automatic stabilization and control system to perform successfully the retrofire and reentry maneuvers.

Initial computations from flight data at retrofire indicated that the landing point would be very close to the recovery carrier, the U. S. S. Kearsarge, as indeed it was. Personnel aboard the Kearsarge actually saw the spacecraft during descent on the main parachute. Landing about four nautical miles from the carrier, the spacecraft was placed aboard ship with Schirra aboard in about 40 minutes.

Lift-off occurred at 11 seconds after 7:15 a.m. EST, October 3. "The quality of air-ground communications was reduced somewhat by increased background noise near staging; however, it improved rapidly and was satisfactory during the remainder of powered flight."

The spacecraft was controlled by ASCS in orbit mode throughout the first orbit, except for brief periods when Schirra used fly-by-wire with low thrusters only.

"Fuel management," states the report, "was exceptionally good. In the majority of cases where maneuvers were conducted over network stations, the fuel usage was so slight that it was difficult to determine if fuel was being consumed at all."

A blood-pressure instrument, which automatically timed and concluded the measurement cycle, failed, so that Schirra was required to use the manual stop button to terminate each measuring cycle.

Other points noted in the report:

"The communications relayed from the spacecraft by aircraft in the primary recovery area to the Hawaii station (during reentry) were extremely effective and provided communications with the astronaut almost continuously from the end of the (ionization) blackout until landing."

"The operations conducted during the entire MA-8 mission made maximum use of experience gained in previous missions and as a result was the best coordinated effort of the Mercury program to date."

"The U. S. S. Kearsarge . . . established radar contact with the spacecraft at a slant range of about 175 nautical miles and maintained this contact until the spacecraft had descended to an altitude of approximately 1,200 feet. Lookouts aboard the U. S. S. Renshaw, the destroyer positioned at 80 nautical miles uprange from the center of the area, reported that they had heard the noise caused by the shockwave of the spacecraft during reentry.

"A few minutes after the 'sonic boom' occurred, lookouts using optical aids on the recovery carrier reported having first sighted a contrail and then the spacecraft after drogue parachute deployment.'

"In addition to visual sightings of the descending spacecraft by ship personnel, the search aircraft reported contact with the spacecraft recovery beacons at ranges of 60 to 280 nautical miles."

to realize the delicate touch that it is possible to have with fly-by-wire, low. This touch is an art that a pilot hopes to acquire in air-to-air gunnery for getting hits. . . . I could point the spacecraft at anything I wanted to. I could see the sustainer and track it, but I do not believe the relative motion problem would be so easy to solve that I would be able to steam along and join up with it. These problems would be difficult to solve by one's own inherent trajectory analysis, since there were no systems aboard to aid the pilot in solving the problem.

"I think that when we build up to the rendezvous technique, one will need more time than that just at the point of insertion to effect this rendezvous, even with proper training . . . if a rendezvous is not hurried the task should be relatively simple."

Becoming aware of the suit-temperature problem, Schirra then devoted his whole attention to a methodical solution, which he achieved by gradually moving the setting to 7.5 at the rate of a half-mark every 10 minutes. At that point, the temperature rise was arrested.

Schirra says he then concentrated on fuel and electrical power conservation. He noticed a "tremendous quantity of cloud coverage" about the earth. On the fourth pass, while in drifting flight on the night side, he saw a smog-like layer at about 32 degrees south latitude covering a quarter of the field of view out of the window. "I thought I was looking at clouds all the time until I saw stars down at the bottom or underneath the glowing layer . . . probably the biggest surprise I had during the flight. I expect future flight may help to clarify the nature of this band of light, which appeared to be thicker than that reported by Scott Carpenter.

"I saw the particles that John Glenn reported, and I also saw what Scott Carpenter reported as having seen. I believe that both phenomena are varied in appearance because of lighting conditions at sunrise and during bright daylight."

Retrosequence went quite well, Schirra states, and he felt very comfortable with reentry attitude. "Accelerations during reentry were not severe in the sense of bothering me, but it seemed to take much longer than I had anticipated."

Schirra said he missed the hissing that Glenn and Carpenter described, but did see the green glow from the cylindrical section of the spacecraft." On landing, "Sigma 7 seemed to sink way down in the water," but righted itself in less than a minute.

Closing his report, Schirra says, "Aviators are known to acquire an affection for their aircraft when it performs well . . . I definitely fell in love with Sigma 7, and is is the first vehicle in my history of flight that finally replaced the F8F, a Navy propeller-type fighter, as the one on the top of the list."

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

**Director . . . . . Robert R. Gilruth**
**Public Affairs Officer . . . . . John A. Powers**
**Chief, Internal Communications . Ivan D. Ertel**
**Editor . . . . . Anne T. Corey**

# On The Lighter Side

**"Jet splint is right! Who's the wise guy that filled this thing with helium?"**

Medical supplies are keeping up with the space-age, it seems.

The Health and Safety Office, which is presently busy setting up a dispensary for employees, tossed in a purchase request recently for several "jet splints."

While the Roundup Staff envisioned a wheelchair shooting backward, powered by a jet spurting from the leg of its occupant, and Grant Lathe of Graphics got his drawing board with a speculative look, the Health and Safety Office hastily informed us that a jet splint is only a new wrinkle in emergency medical aids.

"You put it on a broken limb at the scene of the accident, then blow it up, to a rigid position," explained S & HO Chief John M. Kanak, "until you can get the victim to a hospital where the limb can be set and put in a cast."

This explanation sounded dull enough to us, which just goes to prove we lack Lathe's imagination.

He just tore up his original drawing and started another. See above.

* * *

Speaking of purchase requests, Computation and Data Reduction recently ordered rental of some "Reading Boards" from IBM. We have not inquired as to what these might be. But having long been of the opinion that engineers speak a language which is intelligible only among themselves and which in no way resembles English, we wonder if possibly there might be a course underway to help them? If so, it is a sign of progress. As any language expert knows, what one can read, one can learn to speak.

* * *

We are in receipt of an interesting piece of correspondence from Mrs. W. L. Hjornevik, who submits the name "Delos" for the soon-to-be-christened boat which the Center is acquiring. According to Greek mythology, Neptune raised the island of Delos from the bottom of the sea to serve as the birthplace of Apollo.

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*Gemini Project Office, St. Louis:* Leroy H. Underwood, and Calvin D. Howard.

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*Public Affairs Office:* Don J. Green.

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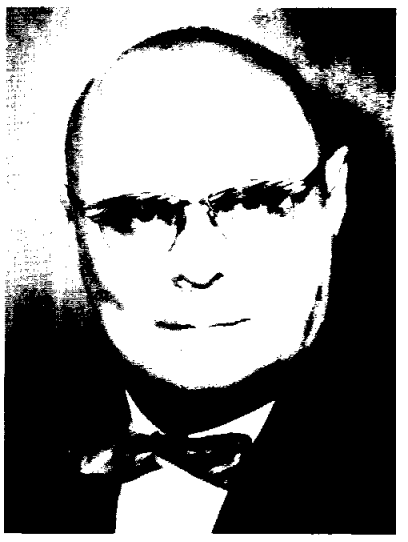
## MSC PERSONALITY

# Facilities' Leo T. Zbanek Began As Architect-Engineer

A native of Cedar Rapids, Iowa, Leo T. Zbanek heads MSC's Facilities Division, responsible for the design, construction and servicing support of the Center's physical facilities, both temporary and permanent.

Zbanek's qualifications include over 20 years of experience in organizing and directing high level technical and engineering teams, and in guiding them to reasonable conclusions within the limitations imposed by budgets and schedules.

He received a B. S. Degree in Architectural Engineering from Iowa State College in 1928, then joined his father's construction firm where he spent four years before joining



**Leo T. Zbanek**

Howard R. Green Company, consulting engineers, as an architect and engineer.

Later, Zbanek became a partner in the firm, directing design and supervising engineering on projects such as the $65 million Des Moines Ordnance Plant, and air fields at Lincoln, Neb., Lewistown, Cutbank and Glasgow, Mont.

In 1944 he joined the Army's Corps of Engineers and was assigned to the Electromagnitic Process Branch of the Manhatten Project, with responsibility for supervising technical teams engaged in procurement of critical materials or manufacturing and engineering activities at Oak Ridge, Tenn.

Leaving the Army in 1947, he helped found the firm of Engineering Consultants, Inc. in Montgomery, Ala. and became its president. The following year he joined the Bechtel Corporation as chief civil engineer of the newly-formed Power Division in charge of 45 engineers responsible for the preparation of plans, reports, and investigations covering all phases of utilities.

In 1952, Zbanek accepted a position with the Atomic Energy Commission as deputy assistant director for construction and engineering, Division of Construction and Supply, directing a staff group of engineers in establishing standards, procedures controls and policies regulating a multi-billion dollar construction program.

He left the AEC in 1954 to accept an assignment as director of the operations group for Taconite Contracting Corporation. In this position he had responsibility for the generation of controls and administrative actions involved in the construction of a $400-million processing facility built in northern Minnesota.

In 1956, after completing the basic organizational aspects of the task, Zbanek accepted from Holmes and Narver Engineers of Los Angeles the responsibility of forming and managing an Autonomous Engineering Division to engage in the development of fixed facility designs on various ballistic missile systems.

In 1960, Zbanek left Holmes and Narver to form the team of Leo T. Zbanek and Associates, Engineering and Construction Consultants. The firm offered services to industry and engineering such as systems development, master planning, analytical studies, proposal preparation, staff evaluation and provision of supplemental forces.

In October of 1961, Zbanek accepted an assignment as special consultant to NASA for facilities construction and design. After a short period of time he was named chief of the Facilities Division of MSC in Houston.

Zbanek is married to the former Celia Ann Armstrong, and the couple has one adult child, Sally.

# Budget Before Congress

*(Continued from page 1)*

$318.046 million for supporting operations. The latter item included tracking and data acquisition, and facility, training and research grants.

In the item covering construction of facilities $564.538 million, or 70 per cent, was asked for manned space flight. The balance was asked for as follows: $4.103 million for space applications, $25.509 million for unmanned investigations in space, $74.979 million for space research and technology, $3.271 million for aircraft technology, and $127.600 million for supporting operations.

The proposed breakdown of funds requested for manned space flight for spacecraft development and operations included $306.3 million for Project Gemini, $1.207 billion for Apollo, $42.9 million for other research and development, and $90.841 million for installation support. The Gemini Project Office indicated the money would provide for the delivery of the first few Gemini spacecraft and Titan II launch vehicles and their subsequent launches, continued contractor work on the Atlas-Agena, delivery of some paragliders, recovery forces, weather surveys, trajectory analysis by Space Technology Laboratory, supporting development, and support of tests at various installations.

A breakdown of the Apollo budget was discussed at a Washington press briefing which included Administrator James E. Webb, Deputy Administrator Dr. Hugh L. Dryden, Associate Administrator Dr. Robert C. Seamans Jr., D. D. Wyatt, Director of the Office of Programs; Dr. Raymond L. Bisplinghoff, Director of the Office of Advanced Research and Technology; and D. Brainerd Holmes, Director of the Office of Manned Space Flight. Mr. Holmes said that, in rough figures, something between "$600 million and $650 million would go for the Apollo command service module, something over $200 million for the lunar excursion module, around $150 million for guidance and navigation . . ." and the remainder for procurement of Saturns, incremental procurement for flight operation rather than development vehicles and supporting technology.

The proposal carried the following figures as pertains to the launch vehicle development programs for manned space flight: $131.6 million for Saturn, $68.6 million for Saturn B, $48.2 million for the J-2 engine, $733 million for the advanced Saturn, $54.1 million for the F-1 engine, $45 million for the M-1 engine, $88 million for other research and development, and $150.954 million for installation support.

Following are the proposed allocations for the operation of installations and the number of permanent positions to be authorized at the end of fiscal year 1964.

NASA Headquarters, $65.494,000, 2,300; Ames Research Center, $31,289,000, 2,309; Flight Research Center, $10,385,000, 593; Goddard Space Flight Center, $67,926,000, 3,700; Langley Research Center, $54,015,000, 4,296; Launch Operations Center, $37,188,000, 1,200; Lewis Research Center, $65,757,000, 5,128; Manned Spacecraft Center, $71,261,000, 3,980; Marshall Space Flight Center, $132,329,000, 7,492; North Eastern Office, $643,000, 40; Pacific Launch Operations Office, $830,000, 22; Space Nuclear Propulsion Office, $2,276,000, 160; Wallops Station, $10,460,000, 530; Western Operations Office, $6,922,000, 530; and Electronics Research Center, $3,525,000, 250.

Included in the summary of construction of facilities proposals by location: Ames Research Center, $13,076,000; Flight Research Center, $4,081,000; Goddard Space Flight Center, $20,932,000; Jet Propulsion Laboratory, $7,000,000; Langley Research Center, $9,768,000; Launch Operations Center, $312,855,000; Lewis Research Center, $25,835,000; Manned Spacecraft Center, $37,736,000; Marshall Space Flight Center, $38,496,000; Michoud Plant, $10,003,000; Mississippi Test Facility, $111,690,000; Nuclear Rocket Development Station, $20,490,000; and Wallops Station, $2,000,000.

In summarizing the contents of the '64 budget request at the Washington briefing, Dr. Seamans pointed out that the request represented an increase of a little more than $2 billion over the '63 budget and added that this increase is almost entirely related to projects that are on-going and approved. The request for manned space flight represented the major portion of this increase with the proposal jumping from a $1.7 billion figure for FY '63 to $3.2 billion for FY '64.

The Apollo program alone was increased approximately $750,000,000 and the advanced Saturn about $400,000,000. Dr. Seamans pointed out that this vehicle can give the United States pre-eminence in space from the standpoint of very large payloads, providing a capability of placing well over 200,000 pounds in Earth orbit as well as the capability for lunar exploration. He said that "we are now well along with the design and are getting into very heavy major developments with all three contractors responsible for this effort."

In answer to a query as to whether the United States is on schedule with the manned lunar landing program, Dr. Seamans said "we are on a schedule that permits us to satisfy the President's request to us to carry out the manned lunar landing in this decade."

When asked the effect if NASA were restricted to a $5.2 billion proposal, Mr. Webb said, "I don't think I can go into great detail . . . we would certainly have to slip the schedules in the manned lunar landing program, as well as a good many other important projects, and it would have been doubtful in my opinion as to whether we could accomplish the landing within this decade at a $5.2 billion level." He later said in response to another question that NASA would be hurt if a nickel would be taken away.

Mr. Webb said, in answer to a question as to what the leveling-off point on the space program and when it will be reached:

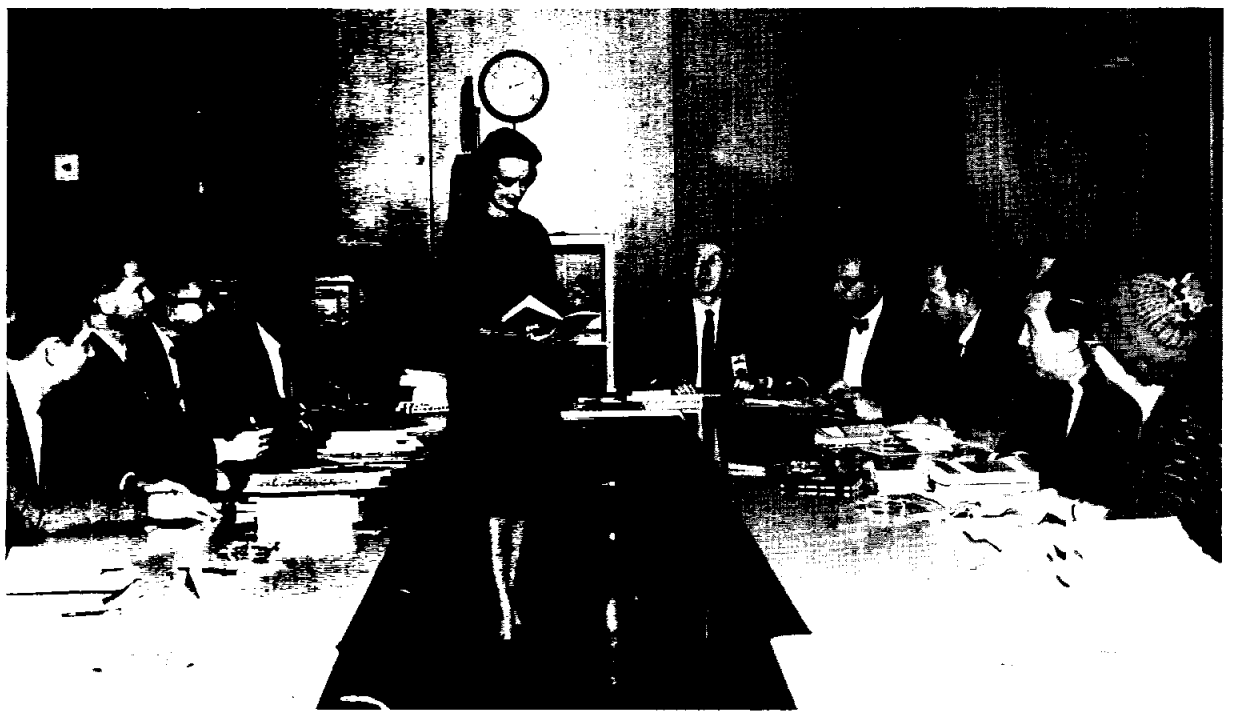
"I think you have to ask yourself, what does it take to attain pre-eminence and maintain it in these various technologies that the nation has decided is so very essential to it.

"I can't forecast the rate at which the Russians will advance. I think that at the level recommended by the President, we can do the work necessary to protect the nation's interest. We are building a very large rocket that has about 80 times the capacity of the Atlas, and much beyond the capacity of anything the Russians have shown.

"I would like to think that unless they show some rocket of the general characteristics or a combination of smaller rockets which could do the same kind of work, we could level out between $5.5 billion and $6 billion. I think the interests of the country would be better served at the level of about $6 billion. I think then this will begin to decline perhaps after 1967 if we don't have new requirements, or if we do not begin to institute work leading to post-lunar operations, either work on the moon or manned exploration of Mars and Venus, things of this kind.

"I think the great decision before the country is in two directions, (1) to support this program at a rate adequate to do the job we started out to do, which requires the expenditures recommended by the President, and (2) then at what time do you begin to insert additional things. If you don't insert them the level will go down; if you do insert them, the main level will go up."

**JULIAN CRITCHLEY, second from right, a Conservative member of England's Parliament since 1959, visited MSC January 25 as part of a tour of defense, political, educational and scienfific institutions in the U. S. In addition to his representation of Rochester and Chatham in Parliament, the 32-year-old Critchley is defense correspondent of the Glasgow Herald, director of The Spectator, director of a public relations consultant firm and a member of the Council of the Bow Group. Critchley talked with MSC Director Robert R. Gilruth (far right), Special Assistant Paul E. Purser (far left) and Assistant for Congressional Relations O. G. Lindquist during his visit.**



**LEARNING TO READ all over again, this time with a faster technique, this first class of 30 students from MSC began instruction January 7 at the East End State Bank Building classroom. Instructor for the 12-to-15 week course is Miss Ree Walker (standing) of the Reading Institute of Texas. The course has been taught to members of the Air Force Academy, the White House staff, and in various agencies of Government.**

# Grumman

*(Continued from page 1)*

Early in the development program, one of the two technical approaches will be selected for completion of development.

The Bell Aerosystems Co., division of Bell Aerospace Corp., Texstron Company, Buffalo, N. Y., for development of the engine used in the ascent from the moon and rendezvous with the Apollo command and service modules.

The Marquardt Corp., Van Nuys, California, for development of components of the reaction control system which orients and stabilizes the LEM.

The Hamilton Standard Division of United Aircraft, Windsor Lock, Connecticut, for development of the LEM environmental control system.

Grumman was recently awarded the contract for development of the Apollo lunar excursion module.

**OFFICERS FOR THE SECOND YEAR of operation of the MSC Federal Credit Union were elected January 29 at the annual members' meeting, when three guests were present. Left to right are (standing) Al Morewitz, chairman of the Education Committee; Paul Mitchell, local representative of the Texas Credit Union League and speaker for the evening; Roy C. Aldrige, president; Harvey Howard, local CUNA Mutual Insurance representative; Ed Campagna, chairman of the Nominating Committee; and Luther J. Bishop, member of the Nominating Committee; seated are, left to right, Bob Bailey, vice president, Lydia May, recorder; Mrs. Arline McAfee, assistant manager of the Houston Police Credit Union and a guest; and Joseph P. Murray, manager.**

# Consuls From Nineteen Nations Attend Special Program At MSC

The Consuls of 19 foreign nations were the guests of the Manned Spacecraft Center Friday at a special program arranged to familiarize them with the Center's activities and goals in Space.

The foreign visitors, led by Allen Price of Great Britain, Dean of the Houston Consuls, included: Dr. Armando Bulacia, Argentina; Robert Turner, Belgium; Jose A. Ribeiro, Brazil; Weiliang Yin, China; Carl G. Stearns, Costa Rica; Benhard Daugbjerg, Denmark; Col Jose Suarez, Ecuador; Jose Trabinino, El Salvador; Yves Rodrigues, France; Dr. Ludwig A. Fabel, Germany; Dr. John Reuben Sheeler, Haiti; Mrs. Carmenza Calix, Honduras; Avshalon Caspi, Israel; Yasaharu Aoki, Japan; Jan P. Engels, Neitherlands; Thorleif B. Jorgensen, Norway; Karl Andersson, Sweden; and Luia A. Padron, Venezuela.

Welcomed at the auditorium of the World Trade Center by Albert Chop, deputy public affairs officer, the consuls were briefed on Project Mercury, by John Boynton and viewed the documentary film, "Sigma 7" of Astronaut Walter Schirra's orbital flight. After a discussion of Project Gemini by Andre Meyer, the group was escorted on a tour of the Center's facilities at the Lane-Wells building where they saw the Aurora 7 Spacecraft, mock-ups of the lunar excursion module, the control chamber, pressure suits and related equipment worn by the astronauts.

Later the consuls visited the Center's facilities at Ellington AFB and were addressed at a luncheon at the Officer's Club by Paul E. Purser, special assistant to the director.

## Two Major Apollo Contracts Given

Two major contracts for the lunar-bound Apollo project, totaling $254,966, were awarded recently by NASA's Manned Spacecraft Center.

A fixed price of $165,000 for a lunar charting service sent to the United States Air Force Aeronautical Chart and Information Center, in St. Louis, Missouri.

Chance Vought Astronautics Division of Ling-Temco-Vought, Inc., of Dallas, Texas, received $89,966 to present an exploratory study of guidance system techniques in emergency abort operation of the Apollo lunar excursion module (LEM) during lunar landings.

## Gilruth Speaks Before Houston Rotary Group

The study of space science has advanced so fast that college curricula does not cover the field, MSC Director Robert R. Gilruth told 500 members and guests of the Houston Rotary Club January 24.

Speaking on "The Challenge of Space to Our Educational System" Dr. Gilruth said highly-trained and highly-motivated scientists and engineers are needed in ever-increasing numbers if this country is to advance in its effort to conquer space.

The meeting was held in the Rice Hotel.

"Very few of our space failures could not have been avoided if someone along the line had been more careful, more highly motivated," Gilruth said.

"Dedication, skill and knowledge, all are part of the formula of space success. We need people who will never overlook the slightest sign of trouble, who will give that bit of extra effort."

Directors of the space effort tend to become immersed in rapidly changing, increasingly complex problems at hand, Dr. Gilruth said, forgetting the broader aspects of education and training.

Citing the rapid development of space technology from the first breaking of the sound barrier by the X-1 rocket plane through the decision to make a

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Space News NASA ROUNDUP!

SECOND FRONT PAGE

# Astronaut-Trainees Get Specialized Assignments

The latest assignments in various areas of specialization for the flight crew personnel of the Manned Spacecraft Center were announced last week by Dr. Robert R. Gilruth, Center Director.

The assignments are designed to insure pilot input into the design and development of spacecraft and flight-control systems and to provide part of the broad training which the pilots will undergo.

Donald K. Slayton, one of the original seven astronauts, who was named last September as coordinator for astronaut activities, will maintain overall supervision of astronaut duties.

The current assignments of the other six original astronauts will be as follows.

L. Gordon Cooper, Jr., MA-9 pilot, and Commander Alan B. Shepard, Jr., MA-9 back-up pilot, are responsible for the pilot phases of Project Mercury. Virgil I. "Gus" Grissom's particular area will be Project Gemini. John H. Glenn will concentrate on Project Apollo. M. Scott Carpenter's duties will cover the lunar excursion module (LEM) of the Apollo project. Walter M. Schirra will specialize in overall operations and training.

The remaining responsibility areas to be handled by nine new flight-crew personnel, are designed to provide for pilot input "across the board," covering the major manned space projects, as well as operations and training, to assure thorough consideration of pilot requirements and to provide training in all parts of

*(Continued on page 3)*

## Elms Speaks At Formation Of New PGEM Chapter

The initial meeting of the newly chartered Houston chapter of the Professional Group for Engineering Management was held January 31 with J. C. Elms, newly appointed MSC deputy director for development engineering as speaker.

Elms spoke to an enthusiastic group of 40 engineer-managers on the complexities of managing a large national

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**J. C. Elms**

# Demands of News-Hungry Nation Keep Public Affairs Office Busy

Two nations lead the world today in the exploration of space. Their immediate goals are the same, but the difference in their approaches to that goal is the difference between a locked closet and the medium of space itself.

Vice President Lyndon B. Johnson called it "the openness of our program . . . the policy of making public all the information regarding our space program which would not adversely effect our national security." It has been referred to in general terms as "freedom of the press." News media have called it "keeping an eye on public spending."

Whatever you call it, it is a field in which the United States had led, hands down, since the inception of the space program—and it is a big job.

Just how big becomes apparent with no more than a quick look at the activities of people responsible for public information at Manned Spacecraft Center. The Public Affairs Office, with a present staff of 45, handles the demands of a world hungry for information about manned space flight. This includes everything from a third-grader who wants to know what the astronauts eat for breakfast to an experienced science writer doing a highly technical article on the spacecraft guidance system.

The wide range of queries and requests for information requires a special form of organization. The Public Affairs Office is broken up into five branches, based largely on the type of information which each handles: News Media Communications, Internal Communications, Industrial Communications, Community Relations, and Audio-Visual.

The eight-man News Media unit handles news for the public press, radio, TV and magazine outlets. This includes preparing news releases, biographies and fact sheets, answering hundreds of queries, setting up and monitoring interviews between press representatives and Center personnel, putting together press kits for distribution before each mission and at other special events, handling press conferences, escorting tours and the like.

During an average two week period last month, for instance, News Media received some 70 telephone calls and 10 visitors per day; set up and monitored 70 interviews; wrote, edited and processed six releases and 13 biographies and fact sheets; and serviced a mailing list of over 400 media representatives.

The preparation of technically accurate and up-to-date news releases concerning a highly technical program such at that of MSC requires working closely with the technical elements of the Center. Answering press queries often requires the same kind of co-

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