SPACEPORT NEWS

Volume 2, Number 38 | NASA Launch Operations Center, Cape Canaveral, Florida | September 19, 1963

Contractor Employees To Be Cited

Employees other than those in the Federal Government may now be rewarded for outstanding contributions to NASA's mission.

The NASA Public Service Award will be based on meritorious contributions producing tangible results which measurably improve, expedite, or larify administrative procedures, scientific progress, work methods, manufacturing techniques, personnel problems, public information services, and other factors bearing on the accomplishment of NASA's mission.

The award requires final approval by the NASA Incentive Awards Board, and is presented by the Administrator or his designee at an appropriate ceremony.

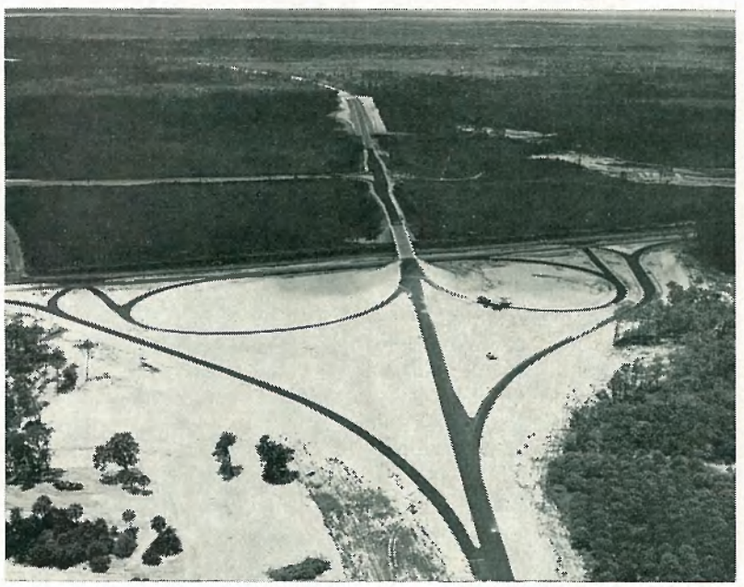
Nomination procedures will be incorporated in a directive covering the Incentive Awards Program.

NASA Awards Board

The NASA Awards Board has announced that the annual Headquarters Honor Awards Ceremony will be held on October 1, 1963, at 2:30 p.m., in the auditorium, Museum of Natural History, Smithsonian Institution, Constitution Avenue at 10th Street, N. W., Washington D. C.

Personnel who have other official business in the Washington area on the 1st are cordially invited to attend the ceremonies.

Congressional dignitaries, as well as other key Government officials, are expected to attend.



CAPE CANAVERAL Causeway cloverleaf at U.S. 1 intersection shows how north and south bound traffic will feed into main flow. The Causeway is expected to open next month.

CANAVERAL CAUSEWAY TO OPEN IN TWO WEEKS

The long and anxiously-awaited opening of the Cape Canaveral Causeway is expected within two weeks.

State Road Department officials have set October 1 as the target date for allowing traffic on the 13.5-mile, $4 million, toll causeway.

Only minor repair work on the Banana River bridge, some work on the toll plazas, and a few other "finishing touches" remain to be done.

The two-lane causeway will be officially dedicated October 10th, when Governor Farris Bryant and many other dignitaries will be in the area for ribbon-cutting ceremonies.

Toll officials estimate 4,000 vehicles a day will use the causeway, which runs west from Port Canaveral's "Horseshoe Curve" across the Banana River, Merritt Island, and the Indian River, then crosses U. S. 1 and merges with highway 520 west of Cocoa.

Toll charges will be 15 cents for pasenger cars, and 25 cents and 30 cents for trucks.

Toll on the feeder lanes for A1A traffic will be 15 cents, and pedestrian traffic will be prohibited.

Bennett Memorial

The new Cape Canaveral Causeway will be officially dedicated October 10th as the Emory L. Bennett Memorial Causeway.

The name is in memory of a Cocoa soldier who was killed in action 12 years ago while defending a Korean hill so his company could fall back with a minimum of casualties.

Bennett killed approximately 50 enemy soldiers before he died, was awarded the Congressional Medal of Honor for his heroic action.

PAD A, VAB CONTRACTS SCHEDULED

Bids are scheduled to be opened within the next two months on an estimated $84 million worth of construction work in LOC's Merritt Island Launch Area.

The bids will be on such projects as Pad A, Launch Complex 39; construction of the huge Vertical Assembly Building where Saturn V/ Apollo rockets will be assembled; a headquarters building for Launch Operations Center; and bridge cranes for rocket assembly work within the VAB.

November Opening

Proposals for general work on the VAB are scheduled to be opened in Jacksonville, Nov. 19. Estimated cost of putting up the walls, doors, and roof of the 52-story building is about $55 million.

Bids for construction of Pad A, Complex 39, are scheduled for opening on Oct. 23, also in Jacksonville. Construction of the concrete and steel, one- quarter - square - mile launch pad is expected to cost about $20 million.

Launch Operations Center headquarters building proposals are scheduled to be opened Oct. 6 in Jacksonville. The building will be three stories tall and will contain about 420,000 square feet of space. The space will be used for administrative offices, a cafeteria, mail unit, reproduction, and engineering facilities. Estimated cost is $7 million.

Bids for three bridge cranes will be opened Sept. 19. Proposals are being sought on two cranes of 250-ton capacity and one of 175 tons. They are expected to cost about $2 million.

SPOTLIGHT

COLONEL BIDGOOD

For the past two years, Colonel Clarence Bidgood has headed the Facilities Office at the Launch Operations Center. Next month, he will retire from LOC and from more than 30 years of public service.

Through his career has been distinguished in many ways, Bidgood is known best by NASA for his activities in connection with America's space program. When he began his assignment here in 1961, Merritt Island was a marshland dotted with chicken farms and orange groves. Since then, under his guidance, the Free World's most advanced launching facilities have begun rapidly rising from the swampy island.

The massive MILA construction project has been nurtured by Colonel Bidgood since its conception, and on completion will bear his mark. His job has been to transform the abstractions of science into the concrete and steel reality of the civil engineer.

Before joining the Launch Operations Center, Colonel Bidgood served in war and peace in many parts of the world with the U. S. Army Corps of Engineers. He has managed projects ranging from airport construction in Europe to flood control programs in the States.

Next month, when he leaves public life, Colonel Bidgood will not leave the public view. When the first Saturn V is launched from Merritt Island, many will recall that he had a large part in making the flight possible.

A WORTHWHILE PROGRAM

A top priority program is being launched at the Marshall Space Flight Center to impress upon each employee the fact that the success of a moon landing and space exploration depends on the quality of his work.

Dr. Preston T. Farish of the Saturn System Office said special decals, tags, or stamps will be placed on all components of rockets to be flown by astronauts, as a constant quality reminder to all employees.

Dr. Wernher von Braun, Director of MSFC, said the "risk of human error is a recognized pitfall." He said the "first step is to realize the importance of the program and then minimize the risk by getting every employee to concentrate on doing his best possible job."

Commenting on the program, Dr. Farish said "the success of the program lies in making each space worker aware of the importance of his efforts in the overall task, regardless of whether it seems important to the final filght. With an astronaut's life at stake there can be no near successes," Dr. Farish added, " We must take every step to insure a complete success."

This manned space flight awareness program will bring about a "super" quality control, stimulated by the awareness of each individual that he controls the destiny of each space flight.

SPACEPORT NEWS

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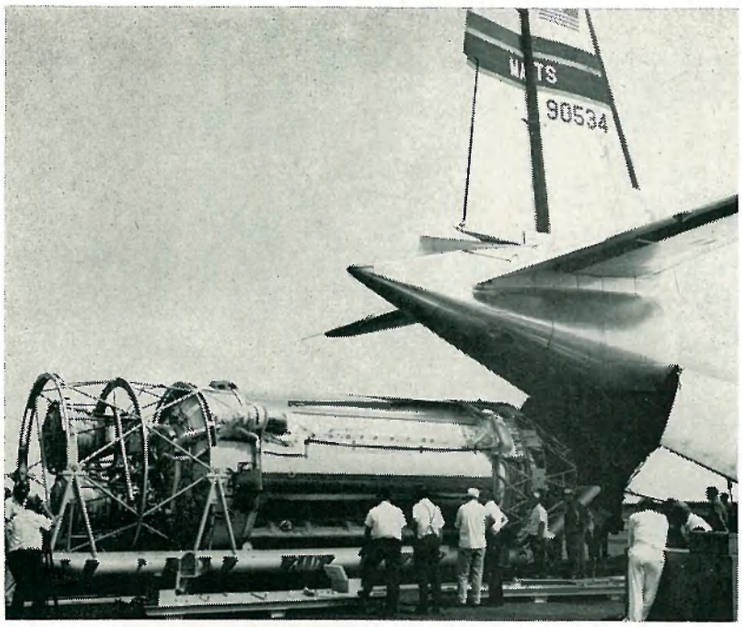


A MATS aircraft disgorged its cargo, a Centaur booster, at the Cape skid strip last week. The Centaur is scheduled for launch from Complex 36 later this year.

SPACE ALMANAC

A CHRONOLOGY OF EVENTS IN SPACE EXPLORATION AND RESEARCH.

5 Years Ago

September 25 — First launching of an Exos sounding rocket in USAF-NASA joint effort took place at Wallops Island, Va.

3 Years Ago

September 19 — ATLAS ICBM was fired 9,000 miles from Cape Canaveral to the Indian Ocean in 50 minutes, the second record-distance flight.

1 Year Ago

September 17 - NASA's nine new astronauts were named in Houston by Dr. Gilruth, Director of MSC.

September 21 — Astronaut John H. Glenn, Jr. (Lt. Col.) was chosen as Marine Aviator of the Year for 1962-63. This was the first annual award of the Alfred A. Cunningham Trophy.

September 21 — Dr. Kurt H. Debus, Director of NASA Launch Operations Center, was voted an honorary member of the German Rocket Society.

NASA RESERVATION CLOSED TO HUNTERS

The NASA Mississippi Test Operations has closed its 13,500-acre "fee" area to hunters this season.

"We regret to have to close the reservation to hunters this year," William C. Fortune, manager, said, "but we have been advised by officials of the Mississippi Game and Fish Commission that it would be extremely dangerous to allow any hunting in the fee area."

Fortune said workers are spread out all over the site —engaged in all types of construction work.

"We hope that our neighbors in the MTO area will understand why we are having to do this and cooperate with us on the matter," he said.

NASA NEWCOMERS

Sixteen new employees have joined NASA in the past two weeks.

John F. Rebello, Charles Hogg, Ivan Placko, Albert Kimbrough, Jr., William J. Lewis, Margie Thomas, Jack D. Smith, Patrick Ray, Jean L. Myers, John D. Ouellette, David St. John, Fred Loopman, Billy E. Galloway, Emma J. Glasser, Joanne Doyle, and Myrtle R. Cook.

EVELYN HAMMOND, left, of LOC's Public Information Office, and Sue Pegram of the Chrysler Space Division were two of the many visitors this week to the Atlantic Missile Range Public Relations Association's space exhibit at Schrafft's Carriage House in Cocoa Beach. The display will be open to the public for another two weeks.

NASA NEGOTIATIONS WITH GE COMPLETED

NASA has announced it has completed negotiations with GE to provide support services at Mississippi Test Operations for one year (July 1, 1963 - June 30, 1964) at a cost of $2,393,500.

GE was selected by NASA in February, 1962, to support NASA's Manned Lunar Landing Program in the systems integration, checkout, and reliability areas.

The support effort provided by GE will include: (1) plant support, such things as utility, personnel transportation, plant security, fire protection, medical facilities, plant maintenance, reproduction, and graphic arts, and (2) test support, such things as control and command systems, support service for data acquisition and handling, and engineering services.

MTO, now under construction on a 13,500-acre tract in Hancock County, Miss., will be used for static firing launch vehicle stages and engines.

Dear Sir:

"I am a girl of 11. I don't like to intrude on your business, but I'd like to know how you can get your missiles up in space.

I was going to send some kid up into outer space, but I just can't figure out how. You see, you have a place called Cape Canaveral, and we have a yard called Kid Canaveral.

But the only way I know to get him off the ground is to stick him on a fan. So just send any information you might have that would help me."

Lynn D.
Marion, Ind.

Loose Talk Can Be Fatal.

NASA Steps Up Research On Advanced V-STOL Craft

With an eye on commercial and military applications, NASA has stepped up its research work in V/STOL aircraft — planes capable of vertical or short take off and landing.

Much work in this field had already been done by the National Advisory Committee on Aeronautics, predecessor of NASA. Research has continued at an increased pace in the last five years.

Much remains to be done to bring the V/STOL and advanced STOL aircraft into truly operational status. Although the helicopter is the best VTOL plane to appear so far, it has definite limitations with respect to speed and range.

However, a promising avenue for helicopters lies in use of the hingeless rotor which can achieve large improvements in stability and control. This, in turn, may improve the helicopter's capability for instrument flight once some of the technical problems are overcome.

Development of the turbine power plant paved the way for practical VTOL aircraft other than helicopters. It led NASA to begin a V/STOL research program using free flight models and wind tunnel tests to cheaply and quickly explore a wide range of designs.

Many V/STOL concepts are being tested, including tilt-rotor, deflected slipstream, tilt-wing, tilt-duct, and fan-in-wing aircraft. At the present state of the art, the propeller driven types have the best payload potential, especially with the tilt-wing.

Commercially, the VTOL and STOL transports hold promise for short-haul cargo movements and airport-to-city commuting. The military could use such aircraft for cargo and troop movements, reconnaissance, and close-support missions.

The Bell X-14 was the first vectored-thrust jet VTOL to fly and is being used for research by NASA. The aircraft is used to simulate flight characteristics of a variety of other V/STOL vehicles. Five such test-bed aircraft are operated by NASA, along with a large tandem research helicopter.

WINGLESS VEHICLE FLIGHT TESTS BEGIN

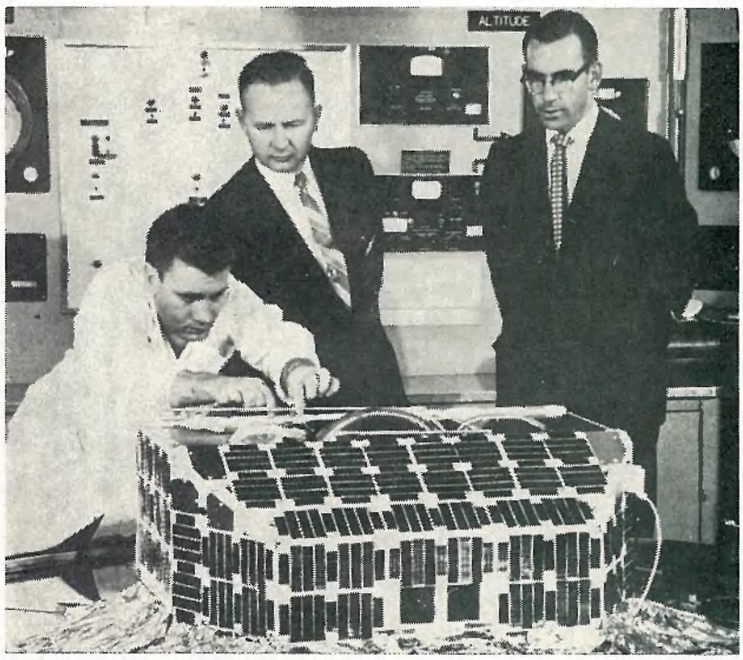
Flight testing of a wingless vehicle, referred to as a lifting body, has begun at NASA's Flight Research Center at Edwards, California, to study the low speed flight characteristic of the vehicle.

The flight test program is designed to investigate man's ability to control the vehicle during low speed operations, particularly during the landing phase.

Such areas as performance inflight stability, control effectiveness, handling qualities, and pilot visibility requirements will be studied. The program will be conducted in a manner similar to the NASA Paresey (paraglider research vehicle) flight program that began at the Flight Research Center in early 1962.

After completion of wind tunnel tests of the flight vehicle this spring at the Ames Research Center, flight testing began with a series of ground runs. Later these ground tows developed sufficient speed to enable the vehicle to fly off the ground and attain heights up to 20 feet.

DICK Dutton of LOC's Saturn V Office will speak tonight to the General Dynamics - Astronautics Management Club at the Patrick AFB Officers Club. He will discuss Saturn launches from Merritt Island.



DESIGNED TO TRAVEL at more than 18,000 miles per hour, this "1963 Model Compact" will cut the cost per mile and per experiment to a fraction of that of any other satellite in space. It is the self-powered, simple, research satellite called "Hitchhiker."

Space Trip Cost Lowered Via Small Satillites Use

The cost of a trip into space is coming down.

That is, for scientific payloads which may weigh only a few ounces, but enable scientists to learn more about the strange and limitless region outside the earth's atmosphere.

The price of the trip is being reduced through the development of a small satellite which gets its first boost while hitched to an Agena D space vehicle.

The piggy-back satellite came into being as scientists and engineers worked to devise a low cost spacecraft system to put into orbit, on each launch, a variety of small payloads.

"Hitchhiker" is the result.

It is a self-powered, simple research satellite which fits onto the aft rack of the Agena vehicle. To date, the Agena — using an Atlas or Thor ICBM as a booster—has placed in orbit more than 88 percent of all payloads put up by this country.

Agena is currently in use in a wide variety of programs for NASA and the U. S. Air Force, and the use of "Hitchhiker" will make possible a bonus of scientific data. "Hitchhiker" is about three feet in diameter and one foot thick.

After the Agena is placed in orbit, the "Hitchhiker", on command, is separated from the parent Agena as it circles the earth at more than 18,000 mph.

As it separates, spin rockets on the "Hitchhiker" stabilize it, and then its own solid fuel rocket motor is fired.

Solar cells, which cover most of the exterior of the little space vehicle, provide power for an extended active life of up to six months. Two tape recorders store the data acquired. On command, transmitters send the information to receiving stations on earth.

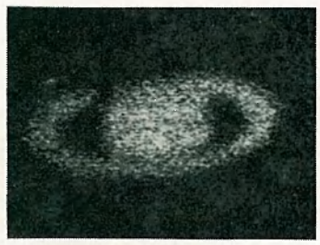
The new little satellite will permit investigations to be made in many areas, including: mapping of the inner Van Allen radiation belt, materials testing, spacecraft component testing, and others vital to the design of vehicles for long space voyages.

MARS, JUPITER, SATURN EXPLORATION AGENDA

EDITOR'S NOTE: Homer E. Newell, Director of NASA's Office of Space Sciences, made some provocative remarks about interplanetary exploration and the possibility of life in space at a recent conference at the Virginia Polytechnic Institute.

These are excerpts from his timely speech:

"As the most likely planet to harbor extraterrestrial life, Mars' atmosphere is of especial interest. As in the case of Venus, the composition of the atmosphere is an important question to resolve. The white caps observed on the poles are presumed to be very thin layers of frost. If this assumption is correct, then there is water on Mars.



Saturn

"A haze that inhibits observation of Mars at the blue end of the spectrum is generally present. Occasionally this haze lifts briefly in what is referred to as the "blue clearing." What causes this haze is certainly intriguing, and may be important, in the study of the red planet.

Jupiter

"In the more distant future of the space program lies the possibility of investigating the major planets, such as Jupiter and Saturn. Jupiter is likely to be the first to receive attention, because it is the nearest. But it is also probably the most interesting.

Unlike Others

"Totally unlike Venus, Earth, and Mars, Jupiter consists largely of hydrogen, helium, ammonia, and methane. Temperatures below the outer atmosphere are presumed to be very cold, so that the main constituents, although normally gaseous, are solid.

"Yet some of the radiations from the Jupiter atmosphere which include thermal, lightning burst, and synchrotron types, appear to correspond to high temperatures of thousands or tens of thousands of degrees.

"A perennial source of interest and puzzlement is the giant red spot, varying in size, but roughly 15 thousand kilometers across. What is its origin, and nature?

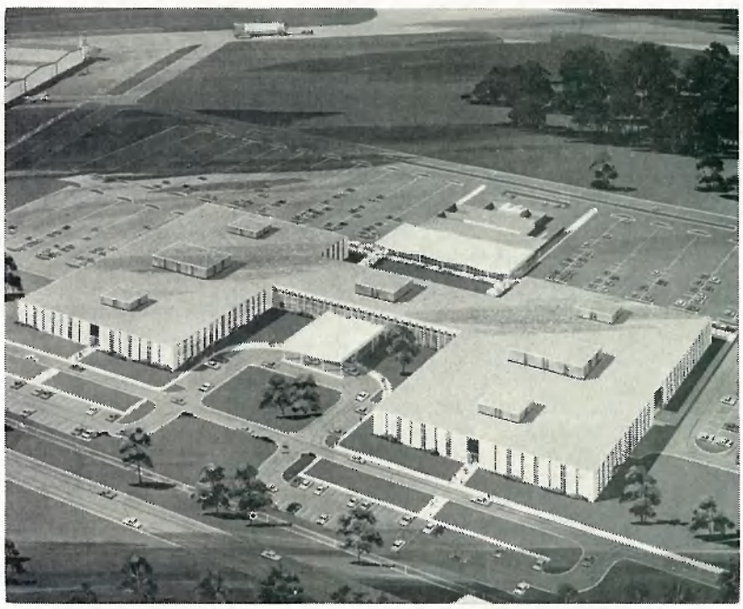
"The very different nature of the Jupiter atmosphere may well require quite different techniques for study from those used in investigating the Earth, Venus, and Mars. Even if the same techniques prove fruitful, the answers are certainly going to be quite different.

"Certainly one of the most exciting possibilities in space exploration is that indigenous life may be found there. Mars is the most likely candidate.

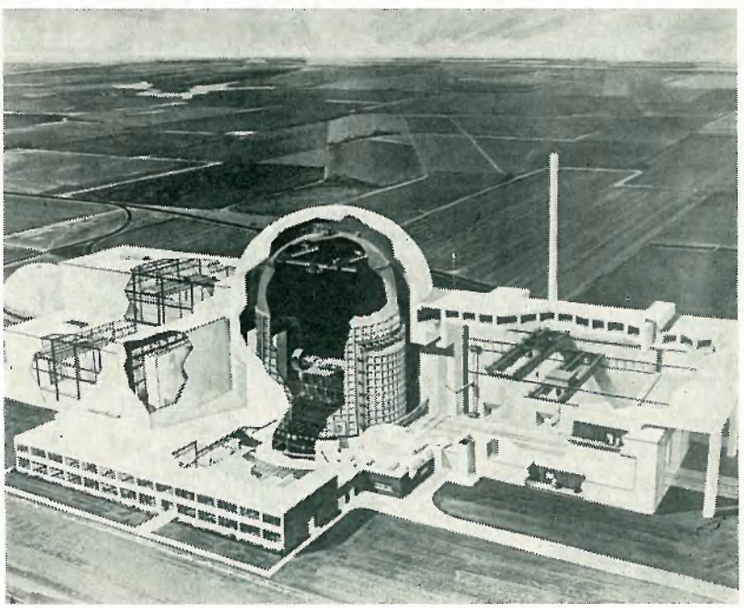
"Balloon observations in the infrared have detected emission bands characteristic of the carbon-hydrogen bond. Such emissions, of course, come from non-living materials. On the other hand, they may come from biological molecules, which is a highly provocative thought.

"The possibility of finding life elsewhere in the solar system is so important to the study of biology that we must be very careful about the course of our exploration of Mars."

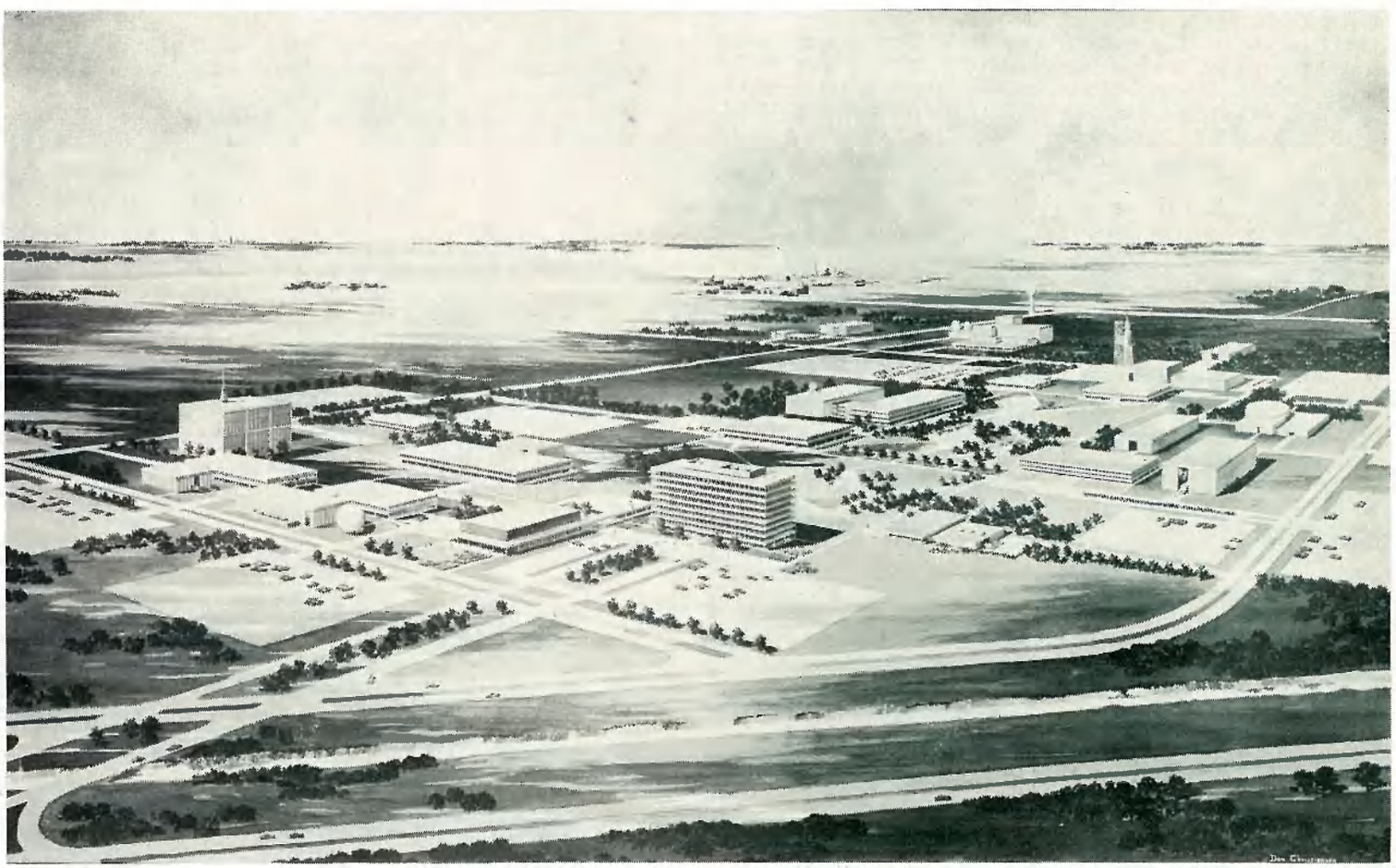
Building Boom At NASA Centers Rivals MILA



THE ORLEANS Material and Equipment Co., Inc. of New Orleans has received a $1,012,350 contract to construct the superstructure of an egineering and office building at the NASA Marshall Space Flight Center's Michoud Operations, depicted in the artist's concept, above. Expected to be completed in the latter half of 1964, the building will house engineering and administrative personnel.



THIS 25-MILLION-DOLLAR Space Propulsion Facility will be constructed at NASA's Plum Brook Station near Sandusky, Ohio. It will test space nuclear power generation systems under approximately the same conditions as will be encountered in space. The cutaway area shows the vacuum chamber, which is a 100-foot diameter cylinder capped by a hemispherical dome.



THIS IS HOW the Manned Spacecraft Center at Houston will look when completed. The tall structure at the left is the Systems Evaluation Building. In the center is the Project Management Building, and just behind it is the Central Data Office and the Integrated Mission Control Building. In the right foreground is the Flight Control Building.

NATALIE Spielman, Technical Information Office secretary, smiles after receiving an award for 20 years' government service.

MILITARY ENGINEERS TO INSTALL OFFICERS

Col. G. A. Finley, Canaveral District Engineer of the U. S. Army Corps of Engineers, will be installed as president of the Canaveral Post, Society of American Military Engineers, tonight at the group's annual meeting at the Patrick Air Force Base Officers' Club.

Officers to be installed, in addition to Col. Finley, are Navy Cmdr. Jerome W. Roloff, first vice president; Ralph Quattlebaum, Air Force civilian, second vice president; Bert Trytko, Air Force civilian, secretary; and D. H. Carter, Corps, treasurer.

The installation will be preceded by a social hour at 6:30 and dinner at 7:30. p.m.

Col. Finley has been a commissioned officer in the U. S. Army Corps of Engineers for 27 years and has been District Engineer of the Canaveral District since its creation on May 1, 1963.

Safety Suggestions

A suggestion has been turned in to the LOC Safety Office to encourage all drivers to drive with their lights on to indicate the direction of their vehicle to oncoming motorists, particularly at the north gate.

With some modern-day foreign and domestic automobiles it is sometimes difficult to distinguish the front from the rear. It was suggested that when visibility is poor, "lights on" is desirable.

NASA-DOD SIGN AGENA AGREEMENT

The Department of Defense and NASA have signed a new agreement for NASA use of U.S. Air Force-developed Agena launch vehicles.

It replaces an agreement of February, 1961, under which Atlas-Agenas and Thor-Agenas were launched for NASA on Ranger lunar missions, Mariner Venus probes, and the Canadian Alouette Earth satellite missions.

The agreement includes these major provisions:

—USAF will have design, engineering, and acceptance testing responsibilities for the basic Atlas and Thor vehicles and Agena D stages. NASA will procure these basic vehicles from USAF.

—NASA will be responsible for all mission modifications to the basic vehicles, including shroud and adapter, trajectory calculations, and spacecraft-launch vehicle integration, for which NASA will make direct procurement arrangements.

—NASA will conduct launch operations for all of its vehicles from Atlas-Agena Complex 12 at Cape Canaveral, while USAF will continue to operate Complexes 13 and 14.

—Technical and administrative control of the contract for eleven remaining NASA Agena B stages is transferred from USAF to NASA.

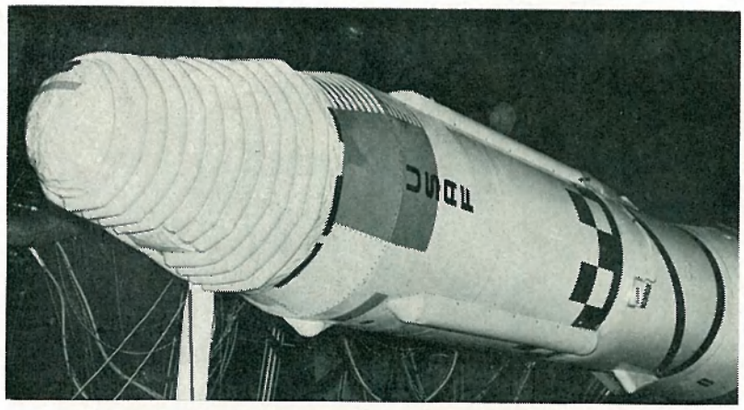
—The agreement does not cover Atlas-Agena vehicles to be used in the Gemini program, which are covered by a separate USAF-NASA agreement.

Insurance Deadline

September 30 is the deadline to sign up for the new group travel accident insurance now available to all NASA personnel.

Costs of this all-risk coverage, offering portal to portal protection, are $25 per year for the $50,000 policy and $50 per year for the $100,000 policy.

The group plan becomes effective October 1.



VISIBLE BELOW the thermal blanket of an Agena space vehicle is the mosaic of thermal paints that maintain proper temperatures within the satellite in ascent through the atmosphere and orbit.

AGENA AS DEMANDING AS MOST MOVIE STARS

When it comes to cosmetics, NASA's Agena Space Vehicle is as demanding as a movie star.

The versatile craft would never think of being launched at noon with a cocktail hour paint job. Being feminine, it even changes its make-up to please the variety of instruments it carries in its nose cone and equipment racks.

Most people think the designs painted on rockets and satellites are just for effect, but closely controlled temperature ranges for each day of the many instruments of the vehicle are the factors that determine the various colors and designs that are used on the bird.

To reflect the solar heat, a special white paint, so much whiter than most people ever see that it appears yellowish to our yellow-red sensitive eyes, is used to cover precisely designated areas of the outside surface.

On other areas, where higher internal temperatures are needed, scientists use black paint. To obtain temperatures in-between those produced by the jet black and pure white, they use mosaic patterns of aluminum paints.

Protective Shields

Inside the vehicle, shields protecting the individual instruments can be plated brilliant gold, shining aluminum, or dull black to further control the temperature by retaining the internally generated heat or radiating it away.

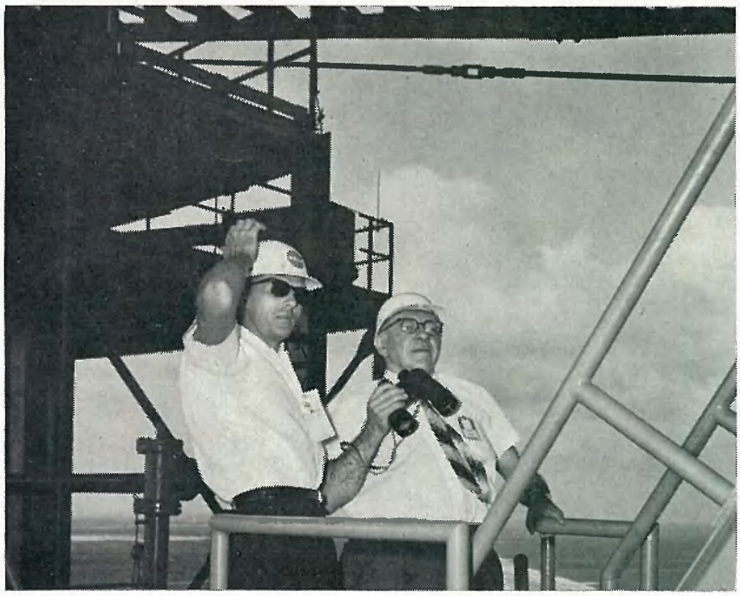
Ultra-violet is a prime source of concern because in the vacuum of outer space it rapidly ruins the white surface by yellowing or charring, which in turn affects the surface reflectivity and destroys the thermal characteristics of the coating during flights of more than a month.

The normally simple act of applying paint has developed problems of its own. Frequently the effectiveness of a coating is diluted by uneven distribution of the individual particles of pigment throughout the paint film, or by the bulk of the pigment settling to the bottom of the film to lie directly against the metal skin, or conversely, by lying too near the outside surface of the paint. Some of the finishes are sprayed on and air dried, others are baked on.

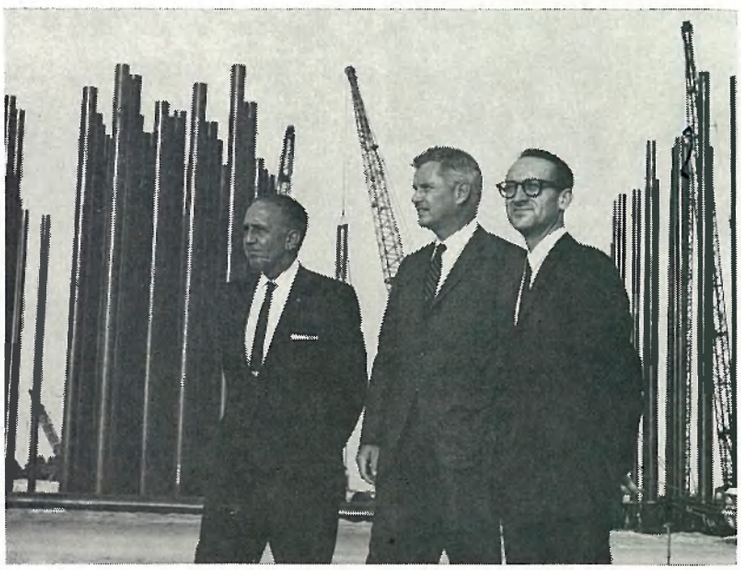
The paints used range from high grade commercially available coatings to special formulations that would cost $200 per gallon if sold in retail stores.

The most recent innovation in the satellite painting business is the development of a tape-on paint job. This invention is a precisely controlled paint film applied to self adhering tape.

U. S. AND WORLD FIGURES VISIT CAPE

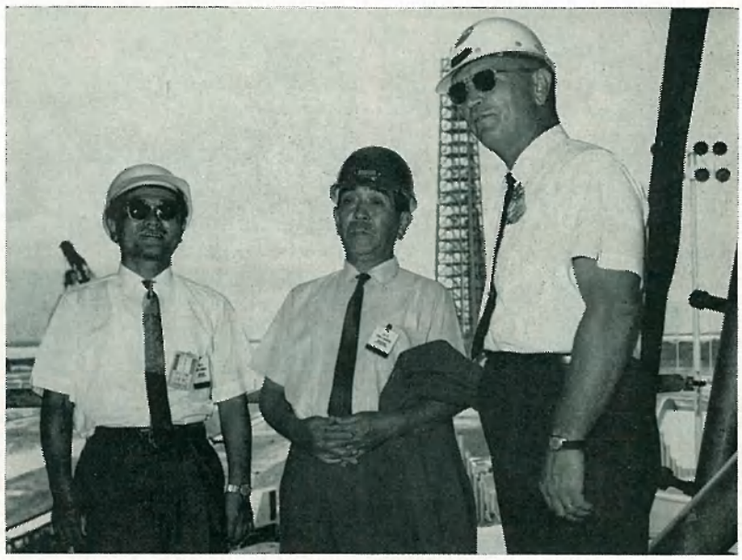


FAMED ROCKETRY expert Willy Ley, right, toured NASA-Cape facilities last week while in the area to speak to the Pan Am Management Club. He also visited LOC Director, Dr. Kurt H. Debus, and viewed Canaveral from Complex 37's service structure, above, with C. M. Cope.



VISITING NASA VIPs, Dr. Robert C. Seamans, center, Associate Administrator, and Dr. George Mueller, right, head of the Office of Manned Space Flight, are briefed on MILA progress by LOC Director, Dr. Kurt H. Debus.

GENERAL Chiang, right, son of Chiang Kai-shek, is briefed on Saturn operations during a visit to the Cape by NASA's Ed Mathews.



JAPANESE Congressman Ryoichi Oka, center, and M. Yakio, scientific attache of the Japanese Embassy, are briefed on the Saturn at Complex 37 by Ed Johnson of Protocol. Congressman Oka is on Japan's space committee.

NEW JERSEY high school essay winners Larry D'Addario, left, Sylvia Smith, and Richard Heinrichs, second from right, along with Dr. H. F. Dean, second from left, took turns viewing Complex 37's pad area from a blockhouse periscope. Jay Viehman, right, of Protocol, briefed the students on NASA-Canaveral operations.

CONTEST WINNERS RECEIVE CAPE TRIP

Three New Jersey high school students were given a tour of NASA-Canaveral facilities last week as part of their prize for winning a state-wide essay contest sponsored by the American Astronautical Society.

A total of 131 essays relating to the space age were submitted, and the winners and their titles were: Larry D'Addario, Seaton Hall Preparatory School, "Nuclear Rocket Propulsion for Space Exploration;" Richard Heinrichs, Moorestown High School, "The Lesser Light;" and Sylvia Smith, Florence Memorial Township High School, "Opinions, Hypotheses, and Theories Concerning the Planet Mars."

MOON SHOWERS EARTH WITH DUST

The moon is showering the earth with significant amounts of lunar material each day, according to scientist Donald E. Gault, of NASA's Research Center.

In a paper presented this week to the General Assembly of the International Union of Geodsey and Geophysics, meeting at the University of California, Gault estimates that from one to ten tons of lunar material is lost from the moon's surface each day and is ejected into space.

Approximately 85 to 90 per cent of the material goes into an orbit around the sun, while 10 to 15 per cent is placed in ellipitical orbits around the earth. Of the total mass that escapes the gravitational field of the moon, about one-half of one per cent goes into a direct trajectory and is intercepted by the earth.

Depending on the rate that the material is caught by the earth's gravitational field, the concentration of lunar material could produce an appreciable dust cloud around the earth.

Preliminary estimates have placed the concentration of lunar soil around the earth at 10 to 100 times greater than the amount of interplanetary debris of comets and asteroids which rain continually upon the earth.

Steel Industry To Use Nimbus Horizon Sensor

An infrared horizon sensor developed for NASA's Nimbus weather satellite has found application in the steel industry.

The sensor can measure the thickness to .002 of an inch of plates and rods in steel rolling mills as the hot steel speeds by at 70 miles per hour. Previously the sheet or rod had to be stopped, cooled, and hand measured.

Each NASA center has an industrial application officer to see that private industry receives full benefit of the innovations, inventions, and new applications that result from research and development by the space agency or its contractors.

COLONEL Clarence Bidgood, retiring Chief of LOC Facilities, was presented a portrait of himself by artist Don Mackey and autographed by many of his co-workers during his farewell party Saturday night.

M-2 LIFTING BODY PLANNED FOR FUTURE

Future spacecraft of the M-2 lifting-body type could satisfy the requirements for maneuvering entry vehicles both on missions from near-earth orbit and on return from manned Mars trips, a NASA scientist has said.

Entry vehicles with lift-drag ratios (a standard measure of aerodynamic performance) of one would provide sufficient lateral range to allow return to the continental United States twice daily from near-earth orbit, according to Clarence A. Syvertson of NASA's Ames Research Center.

This same performance would also provide sufficient entry corridor depth for a vehicle returning from Mars at up to 70,000 feet per second, Syvertson said.

He outlined his findings in a paper presented at the Space Rendezvous, Rescue and Recovery Symposium, being held this week at the Air Force Flight Test Center, Edwards, California.

The M-2 lifting body, which does have a lift-drag ratio of over one, allows the use of a maneuvering technique for handling the critical heating problem which would save considerable spacecraft weight. The technique consists of maintaining a low angle of attack during the peak heating phase of re-entry and then pulling up to the angle of attack which provides maximum lift-drag ratio.

Since temperatures on the major portion of the surface of the vehicle are reduced as angle of attack gets lower, insulated metal skin, rather than heavy ablative material, will provide the required protection.

Who Said That?

"Man's opportunities for scientific exploration of the Moon are practically unlimited."

Space Science Board
National Academy of Science

An interesting manual crossed the Spaceport News desk this week, entitled "Apollo Terminology."

The 109-page book lists terms, many with double entendres — from ablation to zero gravity — commonly used in space work. Here's a sampling culled alphabetically from its pages:

Backout, for example, doesn't mean an astronaut-step-by-step reversal of procedures from a specific point during a countdown.

Beast is simply a colloquial term for a large rocket.

Blowoff refers not to a loud mouth, but describes the separation of a missile part by explosive force for recovery purposes.

Bubble Colony, which conjures all sorts of wild thoughts, is a colony of persons placed on the moon or other spatial bodies provided with individual or group environmental capsules.

Doghouse, with which many of us are all too familiar, has a completely different space definition. It is a blister that houses an instrument on an otherwise smooth skin of a rocket.

The acceleration stress that an astronaut experiences in the back-to-chest direction, is called **eyeballs out.**

Garbage is colloquial for miscellaneous objects in orbit, usually material ejected or broken away from a launch vehicle or satellite.

Ivory Tower, is colloquial for vertical test stand.

Jerk is a vector that specifies the time rate of change of an acceleration.

But no matter how often these terms are used, it's doubtful if one like **pericynthion** will catch on as a household word anytime soon. It means the point in an elliptical orbit about the moon at which an orbiting vehicle is closest to the moon.