



Gemini Team Support Keys Mission Success

It takes a vast team, combining the specialized skills of experts and blending years of hard-earned experience, to ready a Gemini launch vehicle and spacecraft for flight.

Today, at Launch Complex 19, for instance, hundreds of NASA, Air Force and contractor personnel work together, readying Gemini 6 for the flight of Astronauts Walter M. Schirra and Thomas P. Stafford next month.

This integrated task force became a cohesive unit with the Project Mercury orbital flights, and has reached a high degree of maturity during the current Gemini series.

A prime example of the teamwork involves the Gemini vehicle itself. The launch vehicle is an Air Force-developed Titan II missile built by the Martin Company and modified for NASA use.

The complete space vehicle, including the McDonnell-built Gemini spacecraft, is launched by a joint NASA-Air Force team from a site originally designed and funded by the Air Force and later man-rated by NASA.

For the Gemini 6 mission, General Dynamics personnel will be added to the team (At-
(See SUPPORT, Page 2)



KENNEDY Space Center Director, Dr. Kurt H. Debus, right, has awarded Presidential citations to three employees in recognition of outstanding cost reduction ideas they have submitted. Left to right are Mrs. Fae Burd, Joe Moxley, and James Russo, who accepted for the Photographic Systems and Publications Branch.

PRESIDENTIAL CITATIONS PRESENTED AT CENTER

Dr. Kurt H. Debus, Director, has presented three Presidential citations to employees for cost reduction suggestions they submitted that have resulted in savings to the Government of more than \$10,000

a year.

They were the first such awards ever made here.

The citations, signed by President Lyndon Johnson and NASA Administrator James E. Webb, were presented to Mrs. Fae Burd, Joe Moxley, and James Russo, representing KSC's Photo Systems and Publications Branch.

Mrs. Burd was cited for her suggestion of using a letter request for procurement quotation, which resulted in a simplified procedure in handling procurement actions. The resulting savings in time and paperwork will total more than \$10,000 annually.

Moxley of KSC Communications, was recognized for his cost reduction idea resulting in a change of transmitting data from a New Orleans site to one in Cocoa, using Western Union facilities.

The estimated annual sav-
(See CITATIONS, Page 6)

Dr. Debus To Kickoff UF Campaign

Director Dr. Kurt H. Debus will officially open the Kennedy Space Center's 1965 United Fund campaign tomorrow at 2 p.m. at a kickoff meeting.

Goal for Center civil service employees this year is \$25,000, and the drive will run through October.

Following Dr. Debus' introductory remarks tomorrow, R. W. Wilson, TWA project manager at KSC and general chairman of the 1965 UF campaign will outline the overall organization and planning for this year's work.

He will introduce a 15-minute film, "The Magic Pin," describing work of the drive.

John Donovan, UF Chairman for KSC, will call the meeting to order. It will be held in the training auditorium.

About This Issue

To call attention to the integrated team effort in preparing Gemini vehicles for flight, Spaceport News this week spotlights the work of such team members as the Air Force, Martin, McDonnell, Pan Am, RCA and many others.

Inside, you'll find a variety of features, profiles and news stories describing the men behind the missions.

COMMANDER CITES AFETR ROLE

"I am particularly proud of the role which the Air Force Eastern Test Range plays in support of Project Gemini.

"The Department of Defense commits several thousand people to assist the National Aeronautics and Space Administration in the successful accomplishments of its Gemini mission.

"Our people are deployed around the world — on land, on sea and in the air — and the manner in which they handle their various assignments is highly commendable.

"It is a pleasure for me to be a member of this highly effective Department of Defense force and to work closely with NASA personnel in the achievement of their goal.

"I, in behalf of those in my command, extend warmest congratulations to the NASA team for its tremendous accomplishments."

Major General Vincent G. Huston,
Commander, Air Force Eastern Test Range

Editorial:**A MATTER OF PUBLIC RECORD**

The astronauts themselves are the first ones to say it. In recounting each mission they have never—even in the days of one-manned Mercury flights—used “I” to describe any phase of their operation. It has been “we” down the line, and the “we” invariably refers to the thousands of people who have worked on the program.

Nowhere is the need for smoothly coordinated teamwork more apparent than here—the launching site for astronauts.

When a Gemini spacecraft is physically mated to its Titan II launch vehicle it not only seals machinery, but also binds people and organizations.

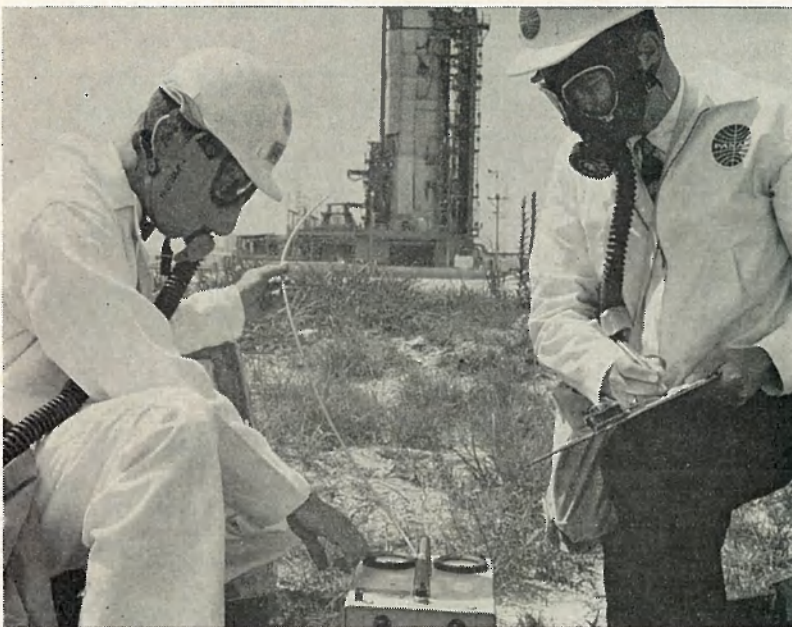
McDonnell technicians ready the spacecraft working back to back with Martin mechanics preparing the launch vehicle. Air Force and NASA personnel sit side by side in the blockhouses.

Schedules must be coordinated, plans agreed upon, meetings held, problems ironed out and work okayed. Each man, each organization strives to meet a specific job in the overall mission.

When it comes down to the safety of NASA's astronauts or the overall success of the mission, there are no real lines drawn between government agencies or industrial representatives.

Had not everyone shrugged individually and bent a little here, sacrificed a little there, the team could not have jelled, and the space program would have undoubtedly suffered.

The end results of this team effort are public record. You can't argue with success!



GAS-MASKED Pan Am industrial hygienists check Launch Complex 19 area during each Gemini mission to insure vapor in the atmosphere is at a safe level. Here, they use a special device during a recent fueling operation.

Three Veterans At Center Follow Spacecraft Progress

Three key executives at the Kennedy Space Center play all-important roles during the launch preparations of each Gemini vehicle.

They are, G. Merritt Preston, Deputy KSC Director for Launch Operations and Deputy Mission Director for each Gemini flight; John J. Williams, Assistant Center Director for Spacecraft Operations; and Wiley Williams, manager of KSC Gemini Operations.

Preston is responsible for overall coordination of such various components as the Gemini spacecraft and launch vehicle, the Agena spacecraft and launch vehicle, the Mission Control Center in Houston, including the manned space flight network, and the Air Force Eastern Test Range.

Command Post

On each Gemini launch day Preston mans a command post in the Cape's Mission Control Center, and is in contact with key Air Force, NASA and contractor people in blockhouses, at central control and other areas.

John Williams has charge of Gemini spacecraft operations at KSC. He and Wiley Williams follow each Gemini closely through its checkout and test phases at the Center.

Preston has well over two decades of experience in the aerospace field to call upon. He joined the National Advisory Committee on Aeronautics in 1939, following graduation from Rensselaer Polytechnic Institute.

He was assigned to Cape Kennedy in 1959 as NASA's Assistant Chief of Mercury Operations, and in 1963 became Manager, Manned Spacecraft Center, Florida Operations. He assumed his present job with KSC in January 1965.

John Williams has an electrical engineering degree from Louisiana State University, and has experience in this area dating back to 1951 when he began work as an electronics engineer in the Air Force Missile Test Center's Technical Systems Laboratory.

He has authored a number of reports on weapons system and subsystem evaluation. He joined NASA in 1959, and

transferred to the Kennedy Space Center, assuming his present title, in January 1965.

Wiley Williams is an electrical engineering graduate of Georgia Tech. In 1962 he was a test engineer for the Army Ballistic Missile Agency, and was involved with both ground and airborne electrical networks for the Pershing missile, before joining NASA.

SUPPORT

(Continued from Page 1)

las vehicle), as well as Lockheed employees (Agena spacecraft).

Overall mission control is directed by the Manned Spacecraft Center in Houston, and the World Wide Tracking Network is a function of the Goddard Space Flight Center. Kennedy Space Center people are involved in a number of pre-flight operations.

The Air Force, as an agency of the Department of Defense, also provides common range services for NASA programs, aids in tracking space vehicles and, along with other branches of the service, assists in the recovery of manned spacecraft.

Lending a full share of support for each Gemini flight are the Air Force Eastern Test Range's two prime contractors—Pan American's Guided Missiles Range Division and RCA's Missile Test Project.

It is a team which reaches out across the country to plants, test sites and field centers for its members.

The end products of the team work are mated at Launch Complex 19, checked out thoroughly, and okayed for flight, assuring the astronauts they have the best space vehicle possible.

Seminar Saturday

Saturday is the date for the American Institute of Industrial Engineers' management seminar, covering data processing. It will be held in Orlando. For information, call John Feist, 867-4070, or contact any AIIE member.

SPACEPORT



NEWS

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Albert Directs Pad 19's Team Of Pros

In the blockhouse during the final countdown on each manned Gemini flight, he observes an electronic maze of lights, dials, switches and buttons.

His clear-blue eyes flash from the panels to the TV monitor overhead, then around the room to the integrated, government-industry team of men he has lived with for the past few weeks.

Through the communications set strapped to his head, he is apprised of the count progress, of the range readiness—of a dozen other items, each vital to the launch.

Astronaut Friends

A little over 500 feet away, two other men sweat out the count. Both are his friends. They are the astronauts.

Should trouble develop in the final minutes before liftoff, it likely will be up to him to decide which way to go. And, there have been some tight spots on past Gemini flights.

—An oxidizer leak on Gemini 3 in an engine measurement line threatened to postpone the launch. Skilled mechanics made repairs in 20 minutes.

—A balky service structure erector nearly halted the Gemini 4 mission.

—Last minute problems

WW Network Stations Keeps Tabs on Gemini

Of the 20 land-based Gemini network stations around the world, 11 are operated by the Department of Defense, including ones at Cape Kennedy, Patrick AFB radar, Merritt Island radar, Grand Bahama Island, Grand Turk, Antigua, Ascension, Pretoria, South Africa, Point Arguello, California, Eglin AFB, and White Sands, New Mexico.

In addition, three DOD-operated ocean range vessels are deployed in ocean areas for Gemini flights to bridge vast watery gaps in the network.

Also, several instrumented aircraft operate over both the Atlantic and Pacific, recording spacecraft data and providing voice relay from the Gemini where this capability does not otherwise exist.

during the first launch attempt of the Gemini 5 vehicle were being corrected as a thunderstorm rolled in.

The man involved in these and many lesser flaps is Lt. Col. John G. (Jack) Albert, Chief of the Gemini Launch Vehicle Division for the Air Force 6555th Aerospace Test Wing.

As Launch Director at Complex 19, it's his responsibility to pull the entire launch vehicle team together; to assure that the Titan II is thoroughly checked out, so it performs with maximum in-flight reliability.

"I believe this has become the most professional team ever put together," Col. Albert reflected, from his office on Cape Kennedy, a couple of miles west of Launch Complex 19.

"We've survived our share of growing pains, but I think everyone has developed a mutual respect and confidence."

The "everyone" he refers to includes the Air Force 6555th Aerospace Test Wing, Air Force quality inspectors, Martin (prime contractor for the Titan II booster); Aerojet General, (Titan's engines); Aerospace (program management consultants); Pan American and RCA (range contractors); McDonnell (Gemini spacecraft contractor); and, of course, NASA.

"I think the important thing now is that people think in

terms of the mission rather than individual organizations," Col. Albert said. "They're dedicated."

Still, he surmises, no one is too busy to feel apprehension as the moment of liftoff nears.

"You have the feeling you've done all you possibly can. It's like training a football team. It can be the best coached team ever, but still the game must be played. If it is apprehension we feel when the vehicle lifts off, this is offset by our confidence."

A native New Yorker, Jack Albert leans upon a career full of experience in his job today. He graduated from West Point in 1949 and began his space apprenticeship at Holloman AFB, New Mexico, as project officer on the X-7 ram-jet test vehicle program, which led to the development of the Bomarc air defense missile engines.

West Point Instructor

He first came to this area 12 years ago, after getting a master's degree in aeronautical engineering at the University of Michigan. Later, as assistant professor in guided missiles and atomic weapons, he taught applied engineering to West Point cadets for three years.

Col. Albert then spent six years with the Air Force Space Systems Division in Los Angeles — a stint that quali-



Lt. Col. Jack Albert

fied him in all phases of rocketry.

His assignments there included the direction of Atlas-Agena launch vehicle configuration for the Ranger and Mariner programs.

He was also responsible for the launch vehicle and systems integration for America's first international cooperative space venture — launching of Canada's Alouette satellite.

It was this versatile background of experience that he brought to his present job in July 1963.

Between Gemini missions, he spends as much time as possible on family outings with his wife, Jean, and their nine children.

"I get pretty much out of sorts around the house during the last couple of weeks before a launch," he confesses, "but afterwards we enjoy doing things together."

As the flight of Gemini 6 Astronauts Wally Schirra and Tom Stafford nears, Jack Albert is a man on the go. He must assure them a safe, smooth ride into space.

"I sleep well the night before a launch," he says with ringing authority.

"Like I said, we all have confidence in our team, and in the launch vehicle performance."

MARINER SAILS ON

Mariner IV has covered its 400 millionth mile in space on an historic mission that continues to furnish useful scientific data.

Now nearing the 300th day of its flight, the spacecraft has exceeded its design mission lifetime by nearly 500 hours.



DESPITE his pressing schedule during Gemini missions, Jack Albert manages to find time for family activities with his wife, Jean, and their nine children: Cecilia, John, Julia, Mary, Patricia, James, Barbara, Michael and Rebecca.



MANY helping hands are extended in support of each Gemini flight, as evidenced here. McDonnell and NASA personnel aid astronaut Gordon Cooper into his spacecraft. Government-industrial teamwork for the Gemini series of flights has helped assure mission success to date.

MARTIN-CANAVERAL DIV. EXPERIENCE DATES TO '58

When Gemini 6 lifts off at Complex 19 next month, it will mark the 180th launch conducted by Martin Company's Canaveral Division since 1958.

Martin Company is integrating contractor for the Gemini launch vehicle.

Walter D. Smith, Gemini program director, is located at the Company's Baltimore Division, which builds and ground tests the Titan launch vehicle. The Air Force Systems Division provides the vehicle to NASA.

The two stages of each Titan vehicle are flown to the Cape from Baltimore about two months prior to launch at Complex 19.

The launch vehicle then becomes the responsibility of the Canaveral Division, headed by Martin Vice President O. E. Tibbs.

Gemini operations are under the direction of Joseph M. Verlander, who has some 350 of the Canaveral Division's 1,000 employees attached to the program.

Their work includes the assembly, system checkout, propellant loading, countdown and flight performance analy-

sis.

Important points of the checkout period are the combined systems testing and the Wet Mock exercise with the astronauts aboard the spacecraft and the vehicle fueled for a full-scale practice countdown, and the simulated flight a few days prior to launch.

Management of Complex 19 is under Frank X. Carey, chief test conductor. He directs the activities of 170 engineers and technicians assigned to the complex who erect, checkout and launch the Gemini booster. Mark J. Goodkind is test conductor for GT-6.

Canaveral Division is a uniquely autonomous organization established by Martin in 1958 to conduct all of the firm's developmental flight testing and launch operations of missile and space systems assigned to the Cape. The division also specializes in the activations, modifications, construction and checkout of launch complexes.

Martin experience dates back to the earliest days of the Cape, when in 1951 Martin field test crews fired the firm's first Air Force Matador tactical missile.

McDonnell's Job Extends Long Past Gemini Launch

"McDonnell's job isn't finished when the Gemini spacecraft is launched," said Ray Hill, local base manager for McDonnell. "It continues through the flight of the spacecraft as it orbits the Earth and through recovery and post-flight testing and analysis."

McDonnell's effort here begins with unloading the spacecraft at the skid strip and transporting it to the Pyrotechnic Installation Building at the Kennedy Space Center.

Pyrotechnic devices are installed, the recovery equipment is installed, the spacecraft is weighed and balanced, and the center of gravity of the spacecraft is determined.

The determination of the CG is particularly important in Gemini because the location is used to determine the re-entry flight path and landing area.

The spacecraft is then moved to the pad or to the Radar Boresight Range, depending upon whether the radar system is installed for that particular mission. The radar system is checked out and calibrated for flight.

At Pad 19, the spacecraft is hoisted to the "White Room" atop the erector. Here McDonnell personnel connect Aerospace Ground Equipment to the spacecraft for the checkout of the spacecraft prior to mating the booster. After mating, the joint checkout of spacecraft and booster is performed by McDonnell and Martin personnel under NASA direction.

During the pre-count, mid-count, and final count, McDonnell personnel, under Superintendent T. W. Turner, of Assembly and Modification, arm the pyrotechnic devices, service the oxygen systems, service the propulsion systems—OAMS and RCS—with nitrogen tetroxide and monomethydrazine, and set electrical switches.

Other McDonnell personnel, led by W. E. Mosley, Chief, Test Operations, man spacecraft racks and consoles in the blockhouse monitoring the system indicators.

After the servicing is com-

plete, the personnel in the blockhouse perform system checks of the Communications, Radar, Guidance and Control, Spacecraft Telemetry, Electrical, Environmental Control, Orbital Attitude and Maneuvering, and Re-entry Control Systems.

During the last six hours of the launch countdown and on a 24-hour basis during the orbital flight of the spacecraft around the world to splashdown, H. H. Luetjen, Engineering Manager, leads a team of 41 McDonnell engineers which closely analyses the performance of each spacecraft system.

The McDonnell recovery team led by Chick Stucka is deployed with the recovery forces, ready to safety the spacecraft when it is hoisted aboard the carrier.

This includes the installation of safety pins, such as in the ejection seats, and the deactivation of all spacecraft systems, and the assessment of the spacecraft condition.

After the spacecraft returns to KSC, post-flight testing is performed for a period of several weeks on spacecraft system performance analysis.

Only after the spacecraft has been shipped to Houston has the job of McDonnell personnel at KSC been completed.

Meteorological Data

Enhances Forecasts

Meteorological support by the Department of Defense for Gemini flights includes weather reconnaissance, special surface observations, upper air observations, special weather equipment for determining lightning probability, and records to measure weather parameters in the launch area.

Weather reconnaissance aircraft fly in broad ocean areas where other meteorological information is non-existent. Data obtained on these flights is used to aid forecasters in determining the suitability of recovery areas.

Gemini Launch System's Heart Is Sequencer

If the complex launch system required to send the Gemini vehicles and their astronauts winging into orbit were compared to the human anatomy, its heart would be the sequencer.

For it is this electronic device that monitors the output of boosters and ground system equipment, and then allows the transmission of signals that either blast the launch vehicle spaceward or effect a hold fire.

"The sequencer, of course, doesn't stand by itself in making the 'go' and 'no go' decisions. It is always under the control of the Air Force, NASA and contractor officials responsible for launching Gemini," explains Woodrow W. Rosson, firing leader with the RCA Service Company, which operates the sequencer as part of its responsibilities of handling the instrumentation on Cape Kennedy and the Air Force Eastern Test Range.

What the sequencer does, Rosson continued, is to electronically and mechanically perform two basic functions with a speed and surety beyond the capability of human beings.

Connected to the booster by land lines through the umbilical cable, it automatically permits certain components to accomplish various actions at predetermined times.

These include commands such as close relays, activate the guidance system, arm the Range Safety circuits and, finally, to ignite engines and lift-off.

Simultaneously, the sequencer monitors the level of output signals of vital components to be certain that all are in a satisfactory condition.

Should it detect a malfunction, the device interrupts the countdown and instantly identifies the trouble area to the test conductor through a display located at his console.

On Gemini, the sequencer is programmed to send 45 separate commands and to monitor 40 "hold fire" areas that cover every major component necessary to a successful launch. Both the commands and areas to be monitored are

preset by RCA according to specifications provided by the launch agencies.

In addition to instructing and monitoring the booster, the sequencer is also used to beam the countdown to the Eastern Test Range and to turn on engineering cameras located in the pad area near the rocket.

Linked to key launch personnel in the blockhouse and to Eastern Test Range officials in the Cape Kennedy Central Control, the sequencer can also be ordered to hold fire by any one of these individuals, who may detect a condition not monitored by the sequencer but which would prevent a successful or safe flight.

For example, should an aircraft or ship inadvertently wander into the firing zone, the Range Safety Officer can trigger a hold until the object is out of the danger area.

AF Generals Direct

DOD Gemini Support

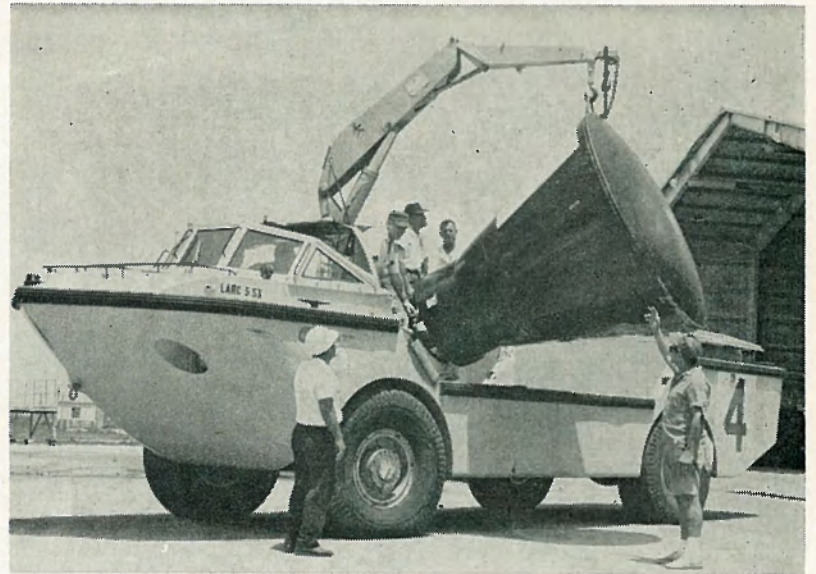
For each manned Gemini flight, the Department of Defense employs an experienced support team around the world. The Army, Navy, Air Force and Coast Guard join hands to lend a variety of services ranging from liftoff till recovery.

Heading up this talented task force is Lt. Gen. Leighton I. Davis, DOD Manager for Manned Space Flight Operations. He serves as the coordinator to bring all elements together for each Gemini mission.

Gen. Davis is Commander of the National Range Division in addition to his DOD responsibilities.

Maj. Gen. Vincent G. Huston, Commander of the Air Force Eastern Test Range, serves as deputy to General Davis in the manned space operation.

Under their leadership, combined forces of the Navy, Marines and Air Force are deployed to various world-wide locations to handle recovery operations in any planned or unplanned landing area.



LAUNCH site recovery operations under the direction of the Air Force Eastern Test Range and the prime range contractor, Pan American, are an important part of every Gemini flight. Here, a LARC amphibious vehicle practices pickups on a model spacecraft.

RECOVERY OPERATIONS BLANKET WIDE REGION

During the first minute and a half of every NASA Gemini flight, a highly specialized Launch Site Recovery Team is ready to spring into action should the flight have to be terminated.

This team, under the command of Lt. Col. William D. Baxter, Director of Range Safety for the Air Force Eastern Test Range, has people and equipment necessary to effect recovery of the astronauts if an emergency occurs at liftoff or shortly thereafter.

Included in the recovery force are four Air Rescue Service helicopters, four Army LARC amphibious vehicles, two surveillance boats, one utility landing craft, two Navy ships, and two M-113 armored personnel carriers.

Land and water units are positioned at various stations surrounding Launch Complex 19 at T-minus two hours in the countdown.

The M-113s stand close by. They are fully insulated and equipped for rescue and emergency actions in a toxic or fireball environment.

LARCs are hulled, wheeled and can travel in any of the undergrowth, swampy or surf areas around the Cape, or can proceed out to sea.

Two missile recovery ships are located about 10 miles off shore, adjacent to the normal

Gemini flight path. They are high speed motor launches and LCU (landing craft utility), equipped to pick up and return the spacecraft to shore.

By T-minus 15 minutes the four helicopters become airborne and report to assigned stations.

The Gemini astronauts ability to eject from their spacecraft, creates a more complex problem for the launch site recovery force.

Rescue units must not only be in the immediate landing area to aid astronauts in staying afloat, and to provide possible emergency medical assistance, but must be able to provide these services simultaneously and at two different locations.

WAGE SCALE SURVEY

On September 14, NASA and the Army-Air Force Wage Board ordered the beginning of a full-scale area wage survey to determine prevailing rates for crafts and trades in the Cocoa Beach-Melbourne locality.

The survey will be conducted by representatives of KSC and Patrick Air Force Base. Any new schedules for NASA Wage Board personnel resulting from this survey will be effected within 45 working days of the date the survey was ordered.



Those high-flying, sonic-booming jet planes that chase each Gemini launch vehicle perform a unique function.

They photograph the Titan II booster and Gemini spacecraft from shortly after liftoff until they reach an altitude of a little over 50,000 feet.

Such film footage is carefully analyzed by engineers to help evaluate overall flight performance of the booster.

The planes are specially modified Air Force F4C's. Camera pods mounted under their wingtips include a 35 mm research camera with a 32-inch omnitar lens, and a 16 mm camera equipped with a beam splitter to record and send images through a kental video camera to a television monitor in the aircraft.

The F4C's reach speeds from .9 Mach to 1.6 Mach (about 1,000 miles per hour maximum), and invariably break the sound barrier, accounting for the loud booms heard on the ground.

* * *

If you happen to be in the Miami area this weekend, you may be in for an unusual fireworks display.

Saturday a solid rocket motor — the largest ever built — will be test fired in Dade County as part of the nation's large solid motor technology program, conducted by NASA.

Flames from the motor are expected to shoot some 1,200 feet into the air and will be visible throughout the Miami area during the two minute test.

* * *

Dear Sir:

I am 10 years old and am making a small rocket. So far I have not encountered any problems — except my rocket will not get off the ground. Could you please send me some fuel?

David I.
Melbourne, Australia

Saturday Seminar Scheduled

The Cape Canaveral Chapter of the Society of Technical Writers and Publishers, together with the Brevard Engineering College, will present the Society's first seminar on Saturday, September 25, on the BEC campus.

Experienced engineers, managers, educators, and specialists with broad and extensive professional backgrounds in education, training, and industry will conduct the seminar workshops under the overall theme of "The Information Explosion."

The seminar program has been arranged into six workshop sessions: information retrieval, engineering proposal techniques, engineering photography, reproduction techniques and programmed learning methods.

Joel Kent of the Kennedy Space Center will be guest speaker. His topic will be the Saturn Apollo Documentation Program.

All persons interested should get in touch with Richard I. Podell, seminar committee chairman, 853-7345, for advanced registration and information. Fees are: \$5 for STWP members and members of technical and professional societies affiliated with the Canaveral Council of Technical Societies (CCTS); \$7.50 for nonmembers; and \$2 for full-time students.

The program will open at 8:00 a.m., with registration and coffee. The price of the luncheon is included in the registration fee.



Joel Kent

Credit Union Growth Reflected In Figures

Phenomenal growth of the Federal Credit Union at the Kennedy Space Center is reflected in a few comparative figures.

For June 1963, the Credit Union had a net income of seven cents! Income last month totaled \$2,765, according to Frieda Bristow, manager.

At the end of the first month of operation more than two years ago there were 220 members and total assets were \$7,326. Last month there were 1,395 members and assets had mushroomed to \$318,700.

Outstanding loans increased over this 26-month period from an initial \$4,385, to a recent \$279,882.

Mrs. Bristow said there were no limitations on membership for civil service employees or for all prime KSC mission and stage contractors.

The Credit Union is located in room 1484, first floor, west wing of the KSC Headquarters Building. Hours are from 10 a.m. to 2 p.m. daily. The phone is 867-3167.

PRESIDENTIAL CITATIONS AWARDED

(Continued from Page 1)

ings from his idea are about \$45,000.

Russo represented the Center's Photo Systems and Publications Branch. The branch received the award for numerous cost reduction ideas resulting in monetary savings of more than \$800,000.

Major contributors within the branch were Dick Murphy, Ronald Crain and Bud Mc-

Learn.

The citation read: "In special recognition of an outstanding contribution to greater economy and improvement in Government operations during the 10th anniversary year of the Federal Incentive Awards program.

The awards were presented in commemoration of this anniversary.

TEST WING PREPARES VEHICLES

The most critical phase of any NASA manned space flight is the period of time between liftoff and insertion of the spacecraft into orbit.

During this portion of the flight spectrum, the success or failure of the mission hangs entirely on the performance of the launch vehicle.

America's Gemini astronauts have time and again expressed their confidence in the launch vehicle and the record proves them out—three flights and three flawless performances.

Behind this perfect record are the accumulated skills of the Air Force's 6555th Aerospace Test Wing headquartered at Patrick AFB.

The 6555th, under the command of Col. Otto Ledford, has the responsibility for assembly, checkout and launch of the Gemini launch vehicle, a modified Titan II missile. The job requires an extensive program of "man-rating" the booster to maximize astronaut safety.

Backup Systems

Prime aspects of the program include the use of redundant components to ensure the availability of backup systems should a primary system fail for any reason. In addition, a special malfunction detection system is built into the launch vehicle to automatically inform the crew of any in-flight malfunctions.

Wherever possible, systems are simplified to increase performance reliability. Critical components are given special handling in super clean "white rooms."

Intense quality control measures are employed by an Air Force-contractor team to obtain superior performance from both parts and personnel.

Lt. Col. John Albert is launch director for the 6555th. The entire launch vehicle development and man-rating effort is directed by Col. Richard C. Dineen of the Air Force Space Systems Division. The Division is commanded by Maj. Gen. Ben I. Funk.