

SPACEPORT



NEWS

Volume 4, Number 30

Kennedy Space Center, Florida

July 29, 1965

FINAL SATURN I READY TO GO



IT TAKES many skilled hands of a combined NASA-industrial team to ready a Saturn launch vehicle for flight. Here, Kennedy Space Center engineer Ken Rys, center, and W. A. Trerice and Weldon Harbaugh of Chrysler, check the SA-10 vehicle's short cable mast. The final countdown for launch of the SA-10 is on today. For more photos on pad activities turn to Page 4.

Program Highly Successful

The SA-10 vehicle scheduled for launch Friday will close out one of the nation's most successful programs—the Saturn I series.

The nine previous vehicles have all performed flawlessly.

The development program for Saturn I began late in 1958, with an initial objective of proving the feasibility of achieving more than 1,000,000 pounds of thrust using a cluster of available rocket engines.

The first four flights of the 162-foot-tall Saturn I, Block I vehicle carried inert upper stages in tests of the boosters, each of which generated 1.3 million pounds of thrust. Launch dates for the Block I series were October 27, 1961, April 25 and No-

vember 16, 1962, and March 28, 1963.

On January 29, 1964, the fifth Saturn I, and the first of the finned Block II configuration, was launched from the Cape. It consisted of the S-I booster running at full power (1.5 million pounds thrust), a 90,000-pound S-IV second stage, and an inert payload.

SA-6 and SA-7, the second and third Block II vehicles, each 190 feet tall, were launched May 28 and September 18, 1964. SA-5, 6 and 7 each placed more than 36,000 pounds into Earth orbit.

The last two Saturn I vehicles, SA-9 and SA-8, launched February 16 and May 25, 1965, placed 3,000- (See Program, Page 6)

The final Saturn I vehicle, SA-10, is undergoing last-minute checkout tests at Launch Complex 37 today in preparation for its flight, scheduled for 8 a.m. tomorrow.

Purpose of the mission is to orbit a 3,000-pound Pegasus satellite to add information on the frequency of meteoroids to be encountered in near-Earth environment, for use in the design of future manned and unmanned spacecraft.

Such information is vitally needed with the increased emphasis on larger, long-life spacecraft, and the mission of the three-flight Pegasus program is to provide data necessary to determine the magnitude of the meteoroid hazard.

The large spacecraft is identical to the Pegasus II which has been orbiting Earth since last May 25. Pegasus I was sent into orbit February 16, 1965.

The Saturn I vehicle's outward appearance matches that of the last four Saturns. Atop the launch vehicle is the Apollo spacecraft (boilerplate) command and service modules plus the launch escape system tower.

The Pegasus is folded inside the specially-adapted service module. After injection into orbit, the command and service modules will be jettisoned and the Pegasus satellite will be free to deploy

(See FINAL, Page 5)

IB Launch Scheduled Next Year

First launch of a Saturn IB, the vehicle which will succeed the Saturn I, is now planned for early 1966.

The middle member of the Saturn family, IB will be the largest space vehicle yet developed—until the parent Saturn V is ready.

IB will stand 225 feet tall, weigh 640 tons when fueled, and have a liftoff thrust of 1.6 million pounds—100,000 more than Saturn I. Its second stage will generate 200,000 pounds thrust, or over twice that of the Saturn I's second stage.

Earth orbital missions necessary for Apollo spacecraft development and astronaut training required payloads beyond Saturn I capability. Thus the S-IB program was planned, and NASA decided to

(See IB, Page 6)

Launch Sequence—What To Look For

Here's what to look for on tomorrow's SA-10 flight:

Nine seconds after liftoff, the vehicle will begin a roll into the flight azimuth of 95 degrees. The pitch program will begin at the same time. Roll maneuver ends 14 seconds after liftoff.

After less than a minute of flight, at T plus 55 seconds, the Saturn I will reach a speed of Mach 1—or about 720 mph. At T plus 144 seconds, the vehicle's inboard engines cutoff, and the outboard engines shut down six seconds later.

Booster cutoff occurs at an altitude of 55 miles, 50 miles downrange from the launch site, while the vehicle is moving at better than 6,000 mph.

The Pegasus satellite is placed into orbit with a velocity of about 16,000 mph. Insertion occurs some 1,200 miles downrange.



Fire Demonstration

The Kennedy Space Center's Fire Department ran a series of tests last week to see how close firemen could safely approach an electrical fire without endangering themselves.

In photos above and right, firemen train streams of water on a conductor frame, charged with electricity.

Below, L. P. Hoffman, of the Florida Power and Light Company, instructs personnel on various fire hazards that may be encountered in a typical city.



Centaur's Gossett Discusses Operations

One of the key local people in the Centaur program is John D. Gossett of the Goddard Space Flight Center's Launch Operations Division.

As Centaur Operations Manager, it is basically his job to direct the technical aspects of launch activities for NASA while working closely with the vehicle's prime contractor, General Dynamics.

"Our engineers are specifically involved in the evaluation of the Centaur's airborne systems," Gossett explained, "to verify for NASA the vehicle's flight readiness."

This includes the testing and checkout of such systems as propulsion, power, radio frequency, guidance, autopilot and air frame, among others.

"We pick up the bird when it arrives at the Cape," Gossett said. "The pre-flight work usually runs from six to 10 weeks while it is on the pad."

During the actual countdown, the Goddard crew, under the overall direction of Launch Operations Manager Robert H. Gray, is in the blockhouse, serving in a consultation capacity.

A native Tarheel, Gossett graduated with a bachelor's degree in physics from the University of North Carolina in 1950, following service with the Navy.

He was involved in dynamic analysis work on such nuclear powered submarines as the Nautilus while with the Naval Research Laboratory in Washington.

He then phased into the Navy's Vanguard program and made the first of many trips to the Cape in 1957, meeting Gray and other members of the basic team that has emerged as Goddard's Launch Operations Division.

A year later Gossett transferred to NASA and began work in the Delta project office. He served as assistant to the Delta project manager at Greenbelt, and continued his commuting to the Cape for the frequent launches.

Finally, in 1963, he joined Gray's team as chief engineer for Centaur. He now lives in Cocoa Beach with his wife,

Vera.

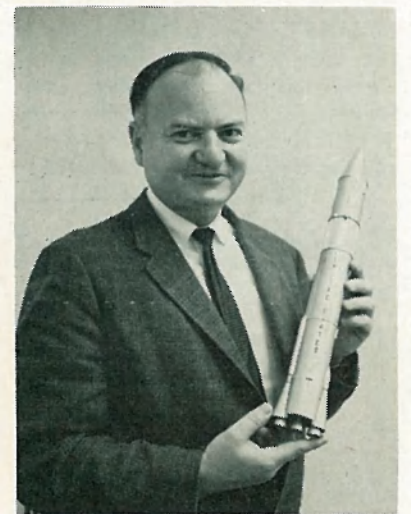
"I think the major milestone I remember best, Gossett said, "was the first successful flight of a Centaur in November 1963. There was a lot of work on that one, and certainly the pressure was on.

As for the future of the program, he believes the Centaur will have wide applications for payloads in its weight class.

"As you know," Gossett pointed out, "the Centaur is relatively complex because of its mechanical design and the propellants it uses. We hope to simplify it in the future.

"This is a fascinating and serious business," he added. In launch operations our work is the end product of so many people's efforts; our success or failure effects so many people.

"We try to keep this in mind, and spare no effort in accepting the responsibility for all those involved in a program. Thus, we can only be satisfied with a complete mission success."



John Gossett
... With A Centaur Model

CONFERENCE ROOMS

Scheduling of conference rooms in the KSC Headquarters Building, E & L Building, and Training Auditorium may be arranged by telephoning Mrs. Peggy Beaver, Audio-Visual Support, 867-7060.

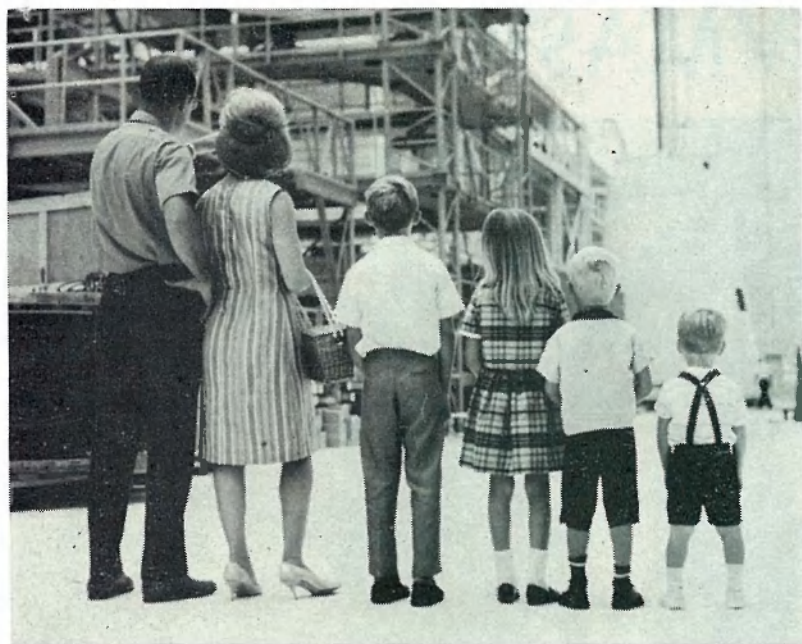
Mrs. Beaver will also be available to coordinate the scheduling of meetings in other KSC conference rooms.

SPACEPORT



NEWS

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Hundreds of KSC employees and their families took advantage of the first of four successive Saturday open houses last week and toured the Spaceport.

OPEN HOUSE AN EYE OPENER

Above, Charles Meyer of McDonnell Aircraft, explains functions of the Manned Spacecraft Operations Building's high bay area to his wife and four youngsters.

At right, KSC's Robert Carlson shows his son, Mark, one of the Mobile Launchers.

Below, KSC engineer Herman Baum briefs a group of employees and their families in the Vehicle Assembly Building.

Highlights of the open house were briefings and tours of the VAB, the Launch Control Center, the Mobile Launchers and the MSO and KSC Headquarters Buildings.



Local Fishing Policy Outlined For Public

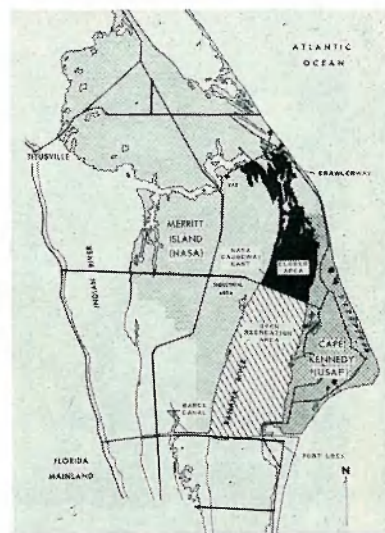
Recognizing the importance of the Banana River to the people of central Florida, and particularly neighboring communities of Brevard County, the Kennedy Space Center and the Air Force Eastern Test Range have jointly agreed to the following statement of policy:

"As previously determined and announced, the portion of the Banana River north of NASA Causeway East, contiguous to operational launch complexes, will be closed to public access because of potential hazards. It will be observed as a breeding ground for fish life and as a refuge for migratory waterfowl.

"That portion of the Banana River south of NASA Causeway, bounded on the east by Cape Kennedy and on the west by the Kennedy Space Center, NASA, south to the Barge Canal, will be open to the public for recreational purposes with the exception of clearly marked areas wherein potential hazards exist.

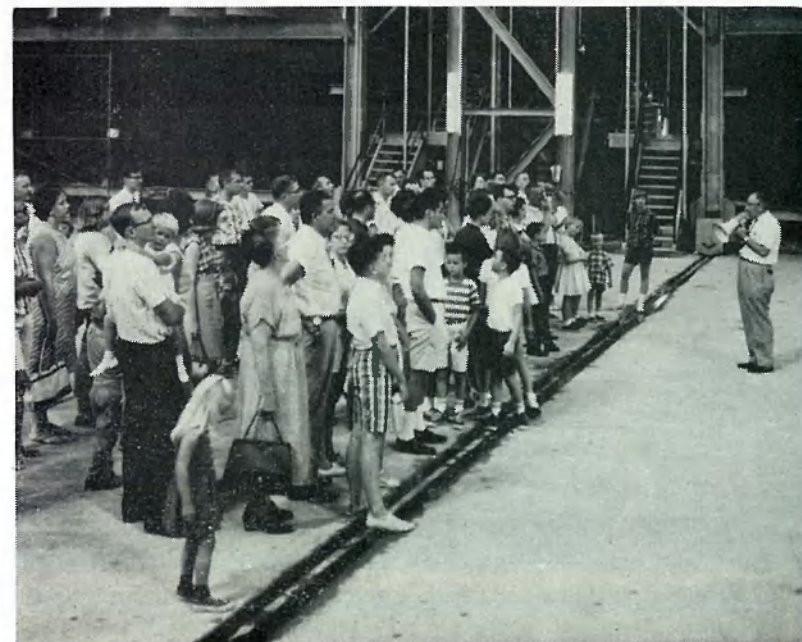
"A minimum of dredging, land fill or other activities which might impair the suitability of the potential areas for spawning fishes will be undertaken only when required for the assigned missions of the Federal agencies."

The two Banana River areas to which the statement refers cover 19,650 acres. The open portion, which represents 14,692 acres of the total, may be used by the public for fishing.



Nimbus Techniques

NASA's future Nimbus satellite flights will test components and techniques for systems to collect weather and other information from sensing devices such as buoys at sea, meteorological ground stations, or constant-altitude weather balloons.



Dear Sir:

Can girls be astronauts? If so, don't call me, I'm going to be a school teacher!

Sara U.
Brighton, Colo.

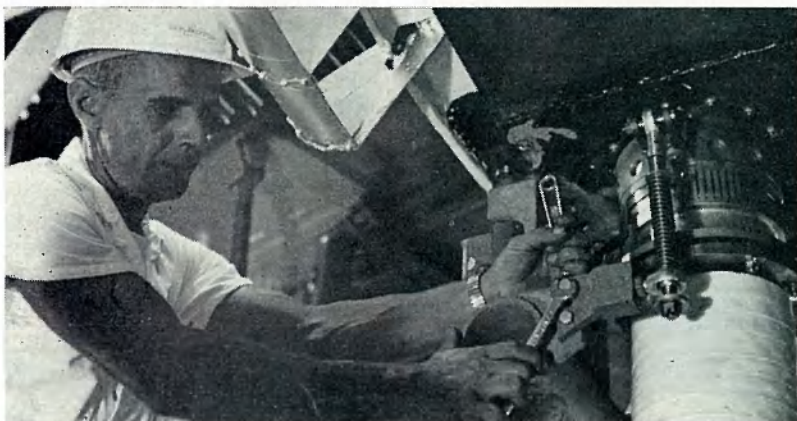
THIS IS the stamp cachet that will adorn envelopes from the Kennedy Space Center post office on SA-10 launch day, which is scheduled for tomorrow. Employees who wish to obtain such a memento should send stamped, self-addressed envelopes in intra-office folders to the Chief, Mail and Distribution Section, ASO-21. When addressing the envelopes, room should be left in the lower left hand corner for the cachet, and a piece of paper or filler should be stuffed in the envelope.

SKILLED HANDS OF MASTER MECHANICS



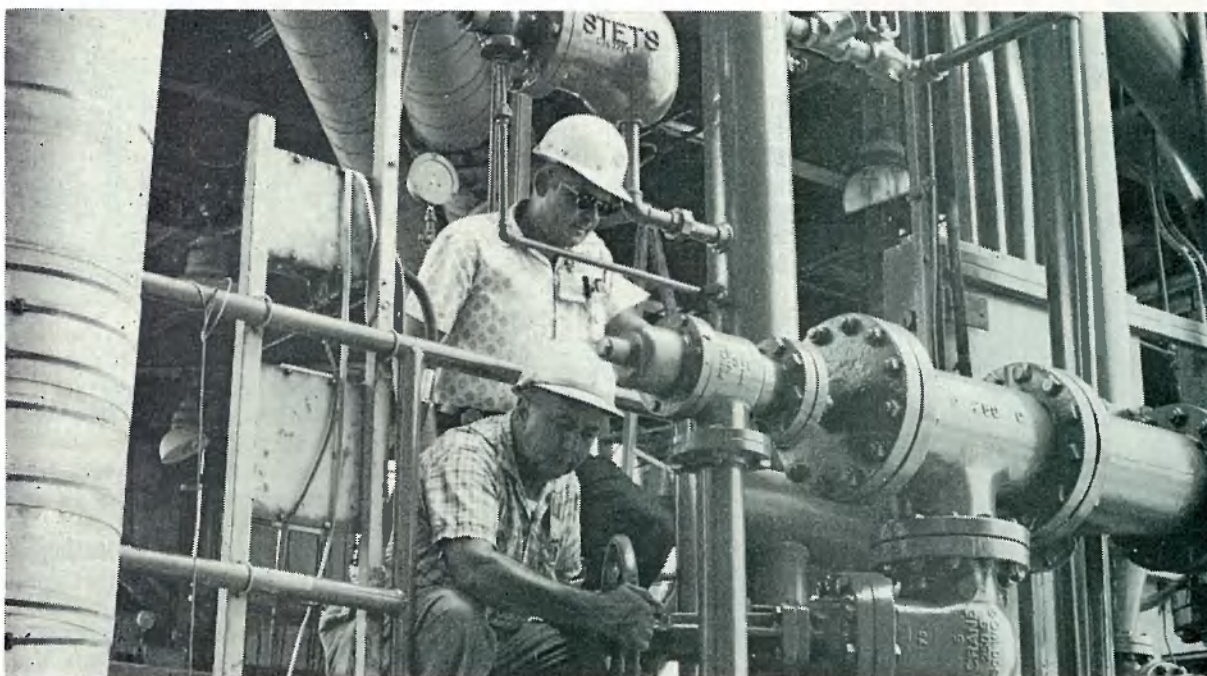
It takes many skilled hands of master mechanics to ready a launch vehicle like the Saturn I for flight. The work begins even before the "bird" reaches the pad area, picks up after its arrival and intensifies during the final days and weeks before liftoff.

Last minute modifications, in addition to routine work, call for such experienced, capable hands, many of which are pictured on these pages—tightening bolts, checking torques, drilling holes — all working together to ready SA-10 for flight.



CHRYSLER mechanic Paul Tzareff tightens bolts on water quench bracket.

WHILE George Hughes of KSC supervises, Chrysler mechanic Dave Wiggins checks a torque on the holddown arms.



ED WEST of KSC, above, and **T. R. Allen** of Chrysler check valves on tower water systems at Launch Complex 37.



A PAD mechanic makes modification to pad's water quench brackets.

AS PREPARE SA-10 VEHICLE FOR FLIGHT



J. L. Chamberlain fits drill bit.



LARRY Robedeau prepares Lox replenish lines.



MECHANIC J. L. Chamberlain uses drill to make modifications to water quench system.

Final Saturn I

(Continued from Page 1)

its 96 feet by 14 feet panels. The two-stage Saturn vehicle is 188 feet tall and weighs at liftoff about 1,130,000 pounds. Its eight booster engines develop a thrust of 1.5 million pounds.

Prime contractors for the launch are: Chrysler Corp., S-I first stage; North American Aviation's Rocketdyne Division, S-I engines; Douglas Aircraft Company, S-IV second stage; Pratt & Whitney Aircraft, S-IV engines; the Marshall Space Flight Center, instrument unit (using major components supplied by International Business Machines Corp. and others); Fairchild-Hiller Corp., Pegasus satellite; North American Aviation's Space and Information Division, Apollo spacecraft.

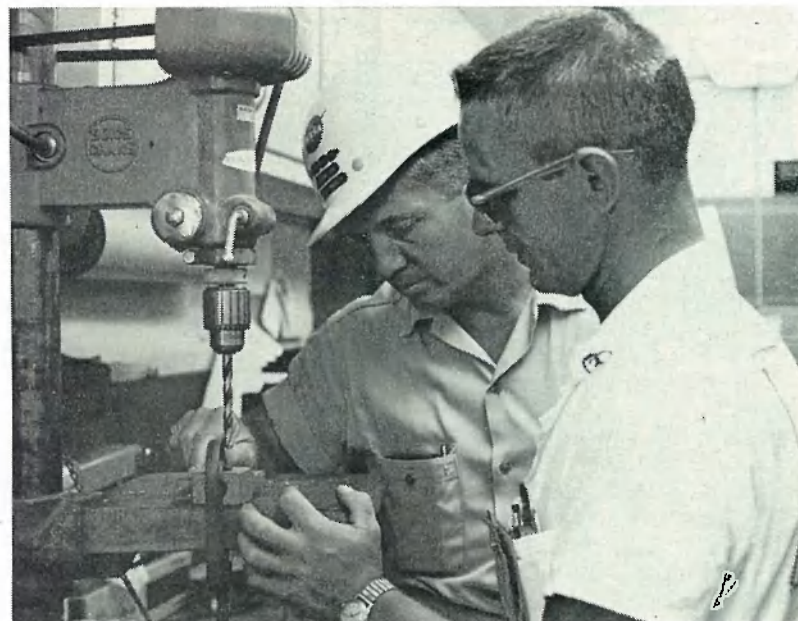
Bob Moser of the Kennedy Space Center is test supervisor for the SA-10 launch. Assistant test supervisor is Paul Donnelly. John Twigg is launch vehicle test conductor and his assistant is E. M. Sestile.

T. J. Lee of Marshall is Pegasus test conductor, and Norm Carlson of KSC is assistant test conductor for the spacecraft.

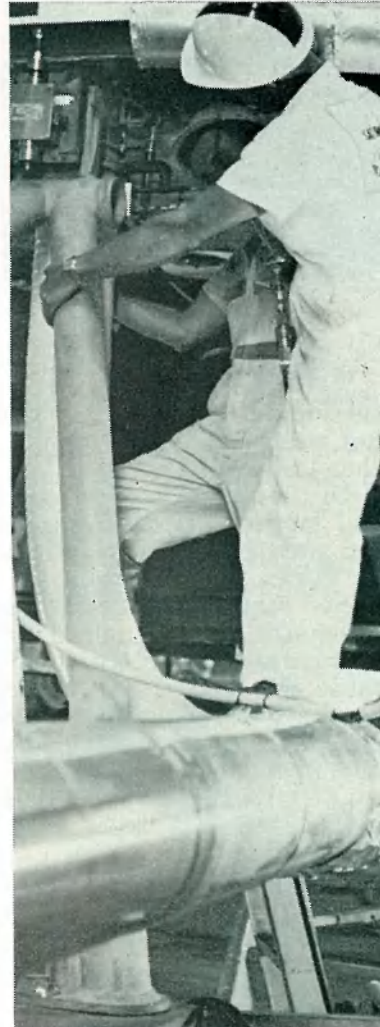
G. I. Turner is director of Apollo boilerplate operations. Chrysler's M. J. Peacock is S-I stage operations engineer, and W. D. Guest of Douglas is stage operations engineer for the S-IV second stage. Operations engineer for the instrument unit is A. B. Case of IBM, and R. Brown of Fairchild is Pegasus operations engineer.



G. L. STEINES, K. C. Jordan and C. H. Ormond, all of Chrysler, run air conditioning checks on environmental control system.



NASA's George Hughes overlooks operation as Paul Tzareff drills new bolt holes for water quench bracket at Launch Complex 37.



AS THE photo indicates, pad mechanics must be agile and able to work in "hard-to-get-to" places.

KSC Veteran Employee Jim Finn Recounts Early Day Launchings

Few Kennedy Space Center employees were here when the first American satellite, Explorer I, went into orbit January 31, 1958. Fewer still were on the personnel rosters when the first Redstone was fired on August 20, 1953, and only a bare handful were working at the Cape when the first missiles were launched some 15 years ago.

Jim Finn, Chief of KSC's Ground Support Equipment Planning and Activation unit, not only remembers those first flights, he helped set up one of the earliest tracking stations.

Finn went to work for the old Air Force Joint Long Range Proving Ground (today the Eastern Test Range) on March 27, 1951. He was sent to Jupiter, Florida, a few miles north of West Palm Beach, to help open a tracking site there.

"I'll tell you how far this business has progressed," Finn said recently, from his modern new office on the third floor of the KSC Headquarters Building.

"Look around at the facilities on the Spaceport — the latest in everything from electronics to launch equipment. At Jupiter in 1951 if we didn't have the right piece of gear to do a job, we found something. For instance, we used old soft drink bottles on telephone poles as insulators."

Jim transferred to Cape

PROGRAM SUCCESSFUL

(Continued from Page 1)

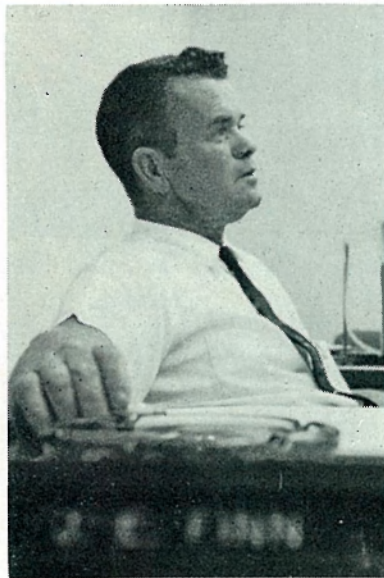
pound Pegasus meteoroid detection satellites into Earth orbit.

In addition to orbiting the Pegasus, the Saturn I flights have verified the propulsion, guidance and flight control systems of the two-stage vehicle; tested the structure and design of the Apollo spacecraft during flight through the atmosphere; demonstrated physical compatibility of launch vehicle and Apollo spacecraft; and tested jettisoning of the spacecraft launch escape system.

Canaveral in 1952, where he had charge of sequencing firing systems for such early-day missiles as the Snark, Bomarc, Matador and Larc.

He joined Dr. Kurt H. Debus' original Missile Firing Laboratory team in May 1954.

"We had about 39 people in the Lab then," Finn recalls. "I worked with electrical systems in the old network section. We used to test and check out the Redstones in



Jim Finn

an old Quonset hut.

"We'd hook up the electrical support equipment in the hut, check out the vehicle then load up the ESE and take it to the pad for installation and launch. Permanent cabling systems didn't exist then.

"When the launch was over," Finn said, "we had to dismantle all the electrical equipment and store it because we shared the blockhouse with people who were launching Snarks, Matadors and other birds."

Over the past 14 and a half years Finn has seen many changes.

"The first time I went through the Cape's south gate, it seemed like I drove

WINDOW DEFINITION

A launch window is defined as a period of time during which a spacecraft can be launched and meet its objective.

for half an hour before I could see anything. We've sure come a long way from the first Redstones."

"I would like to say this is about the finest group of people I've ever worked with. I think the best thing you can say about Dr. Debus' team is to look back and see how many fellows have left us over the years. There have been very few."

Finn is forever running into old working buddies at the Kennedy Space Center these days. Boeing and North American employees who were here a decade or so ago on the Bomarc and Navaho programs and packed up when they phased out, are back now on future Saturn projects.

Jim never had any real doubts about the future of rocketry, even back in the earliest days of missile launchings.

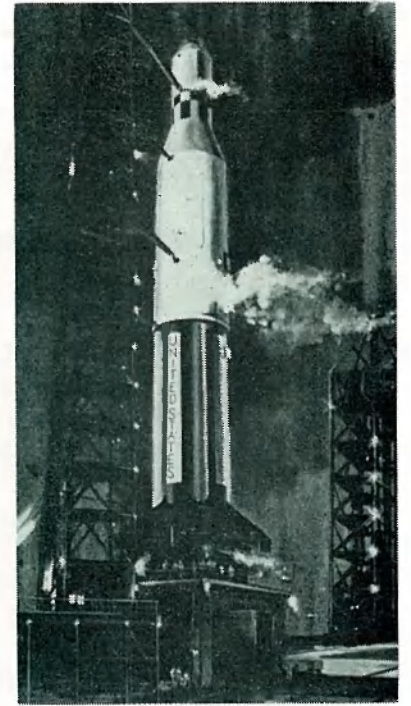
"I can recall seeing films in the early days with a lot of way out concepts," Jim said. "Today a lot of those concepts have come into being."

Jim Finn is responsible for the electrical systems that are supplied to Launch Complex 34, 37 and 39. His unit documents all electrical inputs into the Complex for Launch Vehicle Operations. In addition, documentation is made of over 4,000 racks of equipment on LC 39 alone.

He built his 10-room house at 128 Pine Lane, Titusville, by himself, block by block. It took five years, and he moved in 1956.

"Everyone kidded me about moving to Titusville then. They said there was nothing there. Now all the activity has moved up my way, and a lot of the fellows are moving into houses in the neighborhood."

Jim's 18-year-old son, Michael, was one of only nine students in this year graduating class who went through the entire 12 grades of school in Titusville. He will attend Notre Dame this fall. Jim and his wife, Ann, also have an 11-year-old daughter, Michelle.



Artist's concept of the Saturn IB

IB LAUNCH

(Continued from Page 1)

use the reliable S-I booster with a more powerful second stage.

For IB, the booster will be modified in several areas, but will remain basically the same vehicle. Booster weight will be reduced by more than 16,000 pounds by reducing the fin area, removing hydrogen vent pipes and brackets unnecessary to the new design, modifying propellant tanks, and by reducing weight in the propellant, instrumentation and electrical systems.

With its added thrust, the Saturn IB will be capable of placing 17 tons of payload into low Earth orbit, compared to the 11-ton capability of Saturn I.

Astronauts will be boosted into Earth orbit in their Apollo spacecraft on later IB flights to train for the lunar landing mission, which will be accomplished by the largest of the Saturn family, the Saturn V.

Real Repellant

For Jim Finn and other veterans, mosquitoes were a real hazard back in the early days of rocketry—but so was mosquito repellant!

"We had to be careful when we sprayed it on," Finn remembers, "because if any got on our badges, it rubbed our pictures off."



Dick



Gene



Joe



Tom



Bill



Paul



John



Albert

Launch Complex 37 Workers Recall Past Shots

SA-10, scheduled for launch tomorrow, will be the last Saturn I vehicle to go from Cape Kennedy. It will close out a program, full of memories for all who worked on it, that began on October 27, 1961.

The Capeside Inquirer asked employees at Complex 37, both civil service and contractor members of the launch team, which of all the Saturn I launches they remembered best, and why. Here are the answers:

Dick Deagro, KSC: "I remember SA-1 best. This was the first launch of a multi-engine booster. It wasn't expected to get off the pad, but is sure did!" **Gene Thompson of Chrysler** echoed Deagro's comments. He too, felt the SA-1 launch was the most memorable of the series.

Joe Lendle, KSC: "I'd have to say I remember SA-7 best, I guess because there wasn't any static test of that vehicle before launch.

Tom Regina, Douglas: "For me SA-1 sticks out, primarily

because there was very little noise as compared to what was expected."

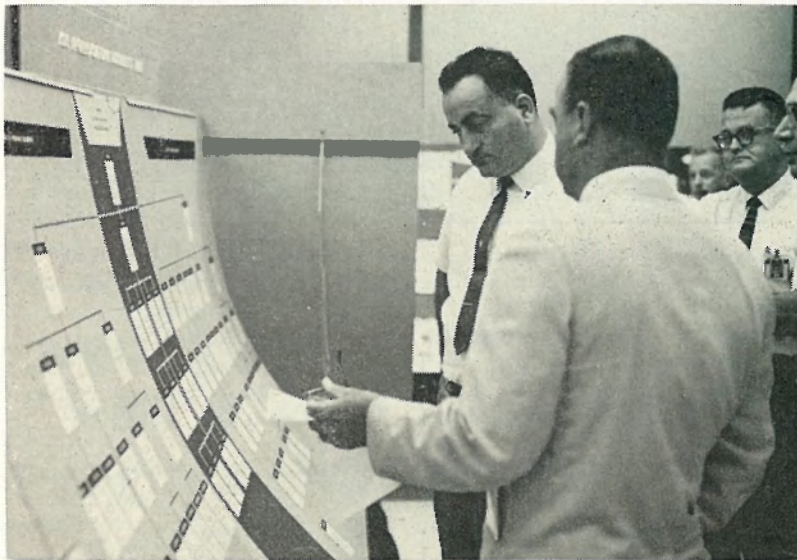
Bill Thidodeaux, Chrysler: "I remember SA-8, naturally, because it was the first Chrysler built booster to be tested in the program."

Paul Huckleberry, North American: "SA-6, because I followed the Apollo boilerplate, number 13, all the way from Downey, California, to the Cape and through launch."

John Massa, Fairchild-Hiller: "I remember the last

launch, SA-8 best. This is mainly because it had such a smooth count. We didn't have any real problems with the spacecraft. Also, I wasn't in the blockhouse so I got to see the night shoot, and it was spectacular."

Albert McCrea, IBM: "SA-5 was the first launch I worked on and it was quite a thrill for me. Over the past two years I've learned quite a bit from my association with NASA people. It's been a real pleasure."



DON W. Dunn of NASA Headquarters briefs Rocco Petrone, Director of KSC's Plans, Programs and Resources, on an Apollo Program Documentation Exhibit.

APOLLO DOCUMENTATION EXHIBIT AT KSC

Kennedy Space Center employees have been viewing an Apollo Program Documentation Exhibit the past few days designed to show orderly arrangement of documentation requirements at various levels of management in the Apollo Program.

The exhibit, which was lo-

THOMPSON APPOINTED

Robert F. Thompson has been named mission director by NASA for future Gemini flights.

ated on the third floor of the Headquarters Building, points out the implementation of the Apollo Program development plan and the Apollo documentation administration instruction.

Purpose of the display is to aid all levels of management by showing them visually the relationship of one document to another and how these documents are used to carry out the goals and objectives of the program.

Activation - Control Group Selected For Complex 34

An Activation Planning and Control Group for Launch Complex 34 has been formed to provide planning, direction and control for the activation of the Complex in support of the upcoming Saturn IB program.

The group includes key Kennedy Space Center personnel from almost every major element. Tom Goldcamp, Chief of the Launch Complex Branch, Apollo-Saturn I/IB Systems Office, is Group chairman. William Brown of the same branch, is co-chairman.

Construction work to prepare the Complex for the Saturn IB is virtually completed, but much work is needed on the coordination of ground support equipment installation and checkout.

The 225-foot-tall IB vehicle will be used to boost astronauts in three-man Apollo spacecraft into Earth orbit for lunar landing training missions.

Goldcamp said the group was organized by Rocco Petrone, KSC Director for Plans, Programs and Resources, in early July.

"We're holding daily status

meetings now," Goldcamp said, "to coordinate all problems and to speed up work as fast as possible."

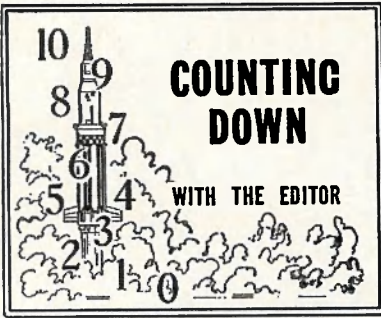
In addition to the KSC members of the group, there are representatives from the Manned Spacecraft Center's Apollo Spacecraft Project Office and from the Marshall Space Flight Center's Saturn I/IB Project Office.

With the exception of pending launch operations for vehicles now undergoing checkout, the activation of Launch Complex 34 for the Saturn IB has the highest priority at the Center.

The first Saturn IB is scheduled to be launched from Complex 34 early next year.

Employees To Meet

Members of the American Federation of Government Employees, Lodge 2498, KSC, will meet tonight at the First Federal Savings and Loan Association's conference room, located in the Merritt Island shopping center. The meeting will begin at 7:30 and all civil service personnel are invited.



Gemini 5 Launch Date: August 19

The eight-day Gemini 5 mission, the longest United States manned flight yet attempted, is scheduled to be launched from Cape Kennedy, August 19.

Many tests which must be conducted between now and launch, and the weather are vital factors in meeting the launch date.

Pilots for the 122-revolution flight are Astronauts L. Gordon Cooper, Jr. and Charles Conrad, Jr. Backup pilots are Astronauts Neil A. Armstrong and Elliot M. See, Jr. All four are in training for the flight at the Kennedy Space Center.

Cooper's Second

The flight, the second for Cooper, will give him more time in space than any other man. His flight in Faith 7, May 15, 1963, was the longest of the Project Mercury series, 22 revolutions or 34 hours and 20 minutes.

Primary objectives of the flight are:

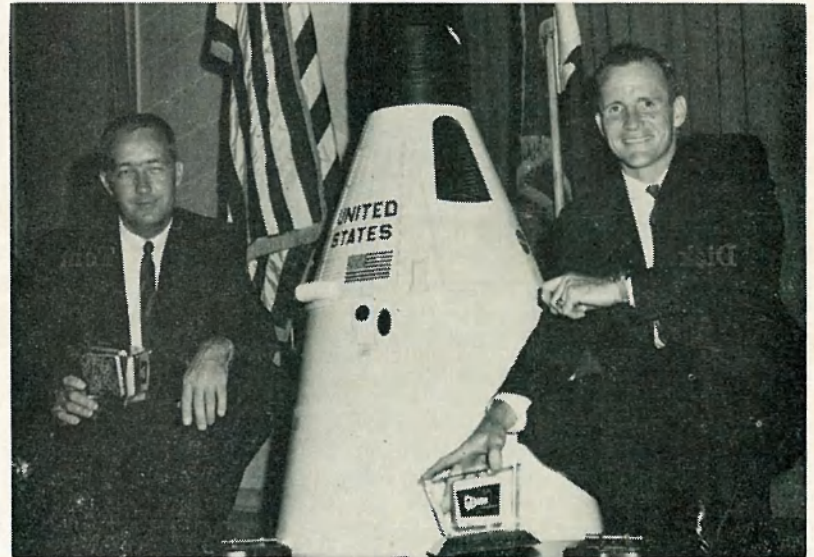
- (1) Demonstrate and evaluate the performance of the Gemini spacecraft for a period of eight days.
- (2) Evaluate the performance of the rendezvous guidance and navigation system using the rendezvous evaluation pod.
- (3) Evaluate the effects of prolonged exposure to the space environment on the two-man crew.

17 Experiments

Seventeen experiments are scheduled to be conducted during the flight. Five are medical, six scientific and six technological.

The eight-day mission is about the time required for an Apollo crew to fly to the Moon, explore its surface and return to Earth.

Gemini 5 is expected to demonstrate that the prolonged weightlessness of a manned Moon landing mission is not a threat to the health of the crew and that well-conditioned, well-trained astronauts can perform effectively over the duration of



Astronauts Have A Ball

GUESTS OF HONOR at the GT-4 astronauts' party Saturday night were Jim McDivitt, above left, and Ed White, each of whom received a number of gifts during the evening, including an actual piece of their spacecraft's heat shield encased in plastic. Proud wife Pat White, left, beamed during the presentations. NASA Exchange Council sponsored the party. It was attended by more than 1,200 people, and featured a buffet supper, entertainment and dancing at the Melbourne Civic Auditorium.

Advisory Committee Briefed At Center

Two distinguished scientific advisory groups met at the Kennedy Space Center this week for briefings on current space programs at the Center and tours of KSC facilities.

The two groups were the Presidential Scientific Advisory Committee and the Science and Technology Advisory Committee for Manned Space Flight.

Dr. Franklin A Long is Chairman of the Presidential group. Following a joint meeting and briefing Monday, where they were welcomed by KSC Director, Dr. Kurt H. Debus, Dr. Long's members toured Gemini Launch Complex 19 Monday and the Spaceport Tuesday.

The Science and Technology Advisory Committee Chairman is Dr. Charles M. Townes.

KSC Not MILA

The Kennedy Space Center is dropping use of the term "Merritt Island Launch Area," and the acronym of "MILA."

All records, reports and public contacts should use the full, official title of the Spaceport, which is the "John F. Kennedy Space Center, NASA."

Geographical location and post office address of the Center is "Kennedy Space Center, Florida," and for mailing purposes this should not be abbreviated. Otherwise, the abbreviation for the Center is simply "KSC."