"BIG JOE", LEWIS' PART IN THE PROJECT MERCURY STORY

Before man is boosted into orbital flight, a progressive series of testing must be done. For months the Project Mercury group has been conducting tests on air drops, escape systems, impact and recovery.

Continuing in the progression will be flights of test vehicles to varying altitudes. Mounted on the nose of four clustered Sergeant missiles will be "Little Joe". Other shots will be with Redstone and Jupiter.

"BIG JOE"

"Big Joe will be a full-scale, highly instrumented, unmanned test vehicle, boosted into orbital flight by an Atlas-D missile.

What is being done at Lewis Research Center in the Project Mercury program? It is the job of control and instrumentation of "Big Joe".

Why is this test vehicle so important? Before a manned space capsule can be built and launched, much information must be obtained concerning the performance of the heat shield, the temperatures of and within the capsule, and the attitude stability and controllability of an unmanned capsule.

These are responsibilities assigned to Lewis.

Two test vehicles are being built. The lower half of the capsule, containing the entire pressurized section, is being fabricated in the Lewis sheetmetal and machine shops. The afterbody and recovery cannister are being built at Langley. General Electric Co. is fabricating the heat shield. All parts, when completed, will be shipped to Lewis where they will be assembled into the fully instrumented test vehicle that is to be launched on the nose of the Atlas-D at Cape Canaveral.

A special "over-the-top" launching will be executed for "Big Joe" tests, covering a total maximum time of 25 minutes from launch to splash on the Atlantic Missile Range. This will simulate, in a short distance and period of time, the re-entry speed and trajectory. The Atlas will take the test vehicle in a 70 to 80 mile ascent, then nose over into proper trajectory toward the Earth. At a programmed point the test vehicle will separate from the Atlas, afterbody first. Before re-entry it must be turned over to place the heat shield in proper position.

Data obtained from these unmanned tests will be utilized in the final construction of the manned space capsules by McDonnell Aircraft Corporation of St. Louis, Mo.

Two groups at Lewis are working on Project Mercury's "Big Joe". G. Merritt Preston, formerly Flight Problems Branch Chief is the
LEWIS CONTROLS MEN, (l to r), Carl Wentworth, Warren Plohr and Harold Gold discuss the problems.

gas from four tanks beneath the floor. Within this area will be the autopilot, a combination of gyros, acceleration switches control relays and amplifiers that will activate individual jets for attitude control.

The autopilot equipment must do three things: (1) rotate the vehicle and hold proper attitude for re-entry into the atmosphere (2) sense entry into the atmosphere and provide damping control and a steady roll rate through peak heating phase of re-entry; and (3) turn itself off after maximum "g" loads to provide uncontrolled vehicle stability data.

Calibrating the equipment on a rig in the Controls Branch's Analog Computer section at the 8x6 Supersonic Wind Tunnel is H. Warren Plohr, assisted by Ronald J. Blaha and Donald A. Petrash.

A capsule "mock-up" is being assembled in the Altitude Wind Tunnel to check hardware installation. Testing of the "mock-up" and later the flight capsule, will be performed in the Multiple Axis Space Test Inertia Facility (MASTIF) now in final construction in the AWT vacuum chamber. The MASTIF is a three-axis gimbal rig. Here all flight attitudes can be simulated. Handling installation of hardware of project's deputy chief of operations at Langley. Under his supervision is the newly designated Lewis Division Space Task Group, headed by Scott H. Simpkinson whose job is to direct the fabrication, instrumentation and launching of the two unmanned test vehicles.

Another Lewis group, headed by John Sanders and project engineer Harold Gold, is designing, developing, building and testing the attitude controls of the two vehicles.

ATTITUDE CONTROLS

The controls of the six-foot-diameter stainless steel and Inconel test vehicle will be mounted on the capsule floor. Near the vehicle's periphery are eight reaction jets connected to a ring that feeds nitrogen

FLIGHT TEST FIXTURE: Basil Kluchnik (left) and Ronald Kiessling at the recorder and computer console, part of the analog computer equipment used to simulate flight control performance.

In the foreground is the autopilot equipment with (1) two attitude and (2) three rate gyros used in positioning and stabilizing the vehicle. Number (3) is power supply, (4) the acceleration switches used in programming, and (5) are lights which indicate the operation of the control jets.
the air around the antennas, primary data will be recorded during blackout and re-transmitted by a third RF link.

Each of fifty-two thermocouples on the head shield will relay data once every one-and-a-half seconds. On another channel in a similar manner fifty-two temperatures of the recovery cannister and afterbody cone will be recorded. In this way direct heat transfer will be measured. Pressure and accelerometer data will cover exit, re-entry and impact. Noise where the pilot's head would be in a manned space capsule, as well as noise outside the vehicle, will be picked up by three microphones and recorded on tape. Other recorders will be on board to provide a back-up recording of all data in case of gaps in the telemetering. Instruments will constantly monitor the gyro signals of the test vehicle. Valves to the eight control jets will be monitored to see that proper signals are being received and acted upon. Other signals to be monitored will be drogue chute development, and impact. The conical afterbody of the vehicle, being fabricated at Langley, will contain six flush antennas for the tracking beacons and telemtery.

Data will be taken off tape and converted to analog form in the Lewis Flight Research telemetry ground station in the Hangar, lined to Instrument Research Division for digitizing and editing, then fed on landlines to the 10x10 SWT for computing on the Remington Rand 1103.

In charge of all onboard instrumentation, including telemetry and tape recording of data, is Jacob C. Mosher, assisted by William Lauten of Langley and Marty Eiband. These tests determine the structural capability of the vehicle to withstand vibration levels it will encounter in flight. Shake tests also determine that all systems function properly.
MOCK-UP in MASTIF is inspected by (l to r) Phil Ross, Lou Corpas, Pete Wanhainen, Bob Miller.

by Michael Wedding. A. Martin Eiband coordinates the fabrication, handling and mechanical details involved in the launching of the first test vehicle. Dugald O. Black will handle coordination for the second test vehicle. Assisting is John Janckaitis. Frank A. Maruna is in charge of instrument building.

Elmer H. Buller is now stationed at the Air Force Missile Test Center, Patrick AFB, Florida, working with Melvin Gough, Director of NASA activities at the Cape. Buller is assisting in coordinating the range for all Project Mercury shots. Cliff Haight is assigned the task of liaison with instrument vendors in the Florida area.

Commuters to Langley are Andre J. Meyer, assistant chief of Engineering and Contract Division of Space Task Group, assisted by William Nesbitt and John Gilkey. Andy was responsible for the Mercury capsule design.

Former Lewis men now assigned to the Langley Division Space Task Group are Milan Krasnican, Glynn Lunney, Leonard Rabb and Kenneth Weston. Krasnican is in Flight Component section, Lunney in Space Mechanics, and Rabb and Weston in Heat Transfer. John Disher is now at Headquarters, working with George Low, Chief of Manned Space Flight Program.

Now at Langley as technical advisor for the Bio-Medical Group is former Lewis Flight Safety section, Gerard J. Pesman.

When the test vehicles are ready to leave Lewis, Ed Gough and his pilots will handle the job of transporting them to Cape Canaveral for launching.

There are fifty-five scientists and engineers in the Lewis Division Space Task Group. All the divisions will, upon completion of facilities, be housed at Goddard Space Flight Center. The NASA Space Task Group is headed by Robert R. Gilruth, assisted by Charles J. Donlon. Project engineer for the "Big Joe" shot is Alec Bond of Langley.

These are some of the Lewis people working on the project. Others, such as expeditors, mechanics, purchasing agents, sheetmetal workers and all supporting personnel in many branches, are also contributing their efforts and talents to the project.

The story of man in space is a big one - and it's just beginning.
CONGRESS PASSES HEALTH BILL

The house has passed our health program bill and it is almost a certainty that the president will affix his signature before the October 1 deadline.

It is too early at this date to determine what the bill will provide specifically when it becomes law. However, it is certain that basic and catastrophic health protection will be offered all government employees on the basis of four available plans.

The all-important dollar contribution will be made half from the employee and the balance from the government. Also, for the first time the employee's share will be handled via payroll deduction.

Enrollment in any of the four plans will be accepted without physical examination and, upon separation from the government, employees may convert their coverage to a private plan.

Orbit will carry more specific and detailed information relative to the health program when such becomes available.

IT WAS LIKE THIS AT CANAVERAL

We learned early last week that the "Big Joe" launching at Cape Canaveral had been exceedingly successful in spite of booster troubles. During its 1400 miles journey down the Atlantic Missile Range at a height of greater than 100 miles, the Space Capsule re-entered the earth's atmosphere at about 14,000 m.p.h., and was recovered by picket line ships. During its historic flight the capsule registered a high temperature of 100 degrees F. which meant an easy capability to support human life . . . . . Here are facts concerning our "Big Joe" launching on September 9, 1959 which have not seen print anywhere. The story of Big Joe is the story of the men who helped design and build it. How do these men feel as they sit in the Block House or Central Control Building at Cape Canaveral, following the launching and the flight of Big Joe? Some of our Lewis men were interviewed after their return from the Cape. Here are their comments:

Harold Gold (Attitude Controls project engineer): "For me the most exciting period during the launching of the Big Joe capsule began at the end of the countdown and ended five minutes later when telemeter signals indicated that the attitude control system was in operation. At T minus 30 seconds I could see the umbilical cable fall away on the television screen in the block house. The meter on our control panel swung to zero. After months of testing the attitude control system was finally operating independently of us. We had made our last check. Moments later we heard and felt the roar of the engines. The capsule was on its way. We turned to the clock and watched the seconds count off. At T plus four minutes all eyes turned to the telemeter panel. Finally the meters on the panel deflected. The control system was on and our hopes were high for a successful flight."

Scott Simpkinson (Space Task Group in charge of fabrication, instrumentation and launching of Big Joe): "One of the most revealing items was the increase of our "Countdown" from three double-spaced pages to a book of forty-three pages which took seven hours and forty minutes to accomplish. The Cape cooperation is really shown by the fact that this countdown was printed by the Martin Co.

(Continued on page 3)
on the tv scene

Interviewed by Dorothy Fuldheim on her news show last week were Harold Gold and G. Merritt Preston. Just back from Cape Canaveral where they assisted in the "Big Joe" launching, Preston and Gold answered Miss Fuldheim's questions about the launching and space flight.

A few days later H. Warren Plohr was interviewed by Miss Fuldheim on the "One O'clock Show." Using models of Atlas-Mercury, Redstone-Mercury and "Little Joe", Plohr explained the build-up to putting man in space.
at the Titan Hangar on the third shift, just three days prior to launch.

The outstanding thing throughout the entire nine months of preparation, right to the final countdown, was the ever-present determination of the NASA crew from Cleveland to have a perfect shot in spite of the back-breaking schedule and seemingly insurmountable obstacles which kept looming in front of them.

H. Warren Plohr (Lewis Controls engineer): "It was about 6 a.m., more than three hours after the launching of Big Joe. Initial data showing the Atlas hadn't operated as well as expected had left us disconsolate and weary. Suddenly Alec Bond, Langley Big Joe project engineer, received a call from down range and he started to shout: 'They found it! They found it! JUG WUMP, JUG WUMP.' Jug Wump was code meaning the recovery plane crew were looking right at the capsule - not just seeing dye marker in the water, but there it is, the capsule itself! Happy pandamonium reigned in Central Control."

Jacob C. Moser (Space Task Group, in charge of all onboard instrumentation): "Our instrumentation system measured and recorded 160 quantities, 26 continuous and 134 sampled. The system included three transmitters and four tape recorders. Our microphone records sound weird - really from 'outer space.' Complete success of such a monumental effort came through the sweat and blood of the finest bunch of instrumentation people in the business."

G. Merritt Preston (Space Task Group, deputy chief of Big Joe project): "The success of the mission proves the capability of Lewis people involved in the operation."

Blockhouse Scene: Waiting during countdown of Big Joe are 1 to r: G. Merritt Preston, Scott Simpkinson, H. Warren Plohr, Harold Gold, Hap Johnson and Jacob Moser. Seated in the foreground is Alec Bond.
25 From Lewis Lab to Build Man Capsule

Twenty-five Cleveland scientists will have a major responsibility for actually putting a man into space.

This group has been transferred by the National Aeronautic and Space Administration to Cape Canaveral, Fla., from the Lewis Research Center here.

For six weeks they were in Canaveral working on the test firing of the man capsule last Wednesday. Now they are preparing to leave Cleveland permanently.

Their work was explained yesterday by G. Merritt Preston, assistant operations chief for Project Mercury, who has been commuting between Canaveral and Berea for a year.

The task of the Cleveland group will be to put the space capsule together and make sure it functions properly during the countdown.

Actually, 40 persons had this responsibility, but 25 were Clevelanders. Their group leader is Scott Simpkinson of the Lewis lab.

So complete is the Cleveland transfer that even Miss Emily Ertle, a secretary, has been sent to Florida.

Preston said the Cleveland group is the only large working unit that was transplanted for the project. It was selected, he explained, because of its experience in crash fire projects and missile firings.

Since 1945, Lewis personnel experimented in maintaining instrument contact with airplanes that were being crashed to determine why they caught fire.

Simultaneously, in other operations, the local scientists experimented by firing missiles from moving airplanes.

Preston, who was flight research chief at Lewis during this time, said the only difference between the earlier research and Mercury was the scale of the project.

"We needed people trained to throw something away," he said. "Once you let go of this beast, you just don't have it anymore. We needed the Cleveland group because we had to make sure once we let go of it, it was going to work."

Average age of the Cleveland group is between 35 and 40, and average working time with the group for each man is 15 years.

Preston, 43, a native of Athens, O., praised the esprit de corps of the Cleveland contingent. "It's tremendous," he beamed. "They work 20 hours a day."

He singled out as key men on the team Martin Eiband, capsule engineer, Frank Maruna, in charge of electronics, Frank Crichton, mechanical technician chief, and Jacob Moser, head of instrumentation.

Clevelanders transferred to Canaveral in addition to those mentioned are Donald Woods; Jack Campbell, Warren Plohr, Harold Gold, Don Wilpert, Charles Heckelmoser, Robert Sorg, Vern Fisher, Michael
Clevelanders Lead in U.S. Effort to Put Man Into Space

By WILSON HIRSCHFELD
Plain Dealer Staff Writer

Provincing for a minute shot at Cape Canaveral were Shephard, one of the seven U.S. astronauts, and two Clevelanders from the Lewis Research Center. They are standing some 100 feet above the ground on a missile tower.

Don M. Corcoran, A. M. Elkind
These engineers from Cleveland's Lewis Research Center are shown inserting an "umbilical plug" into a Project Mercury space capsule, atop a missile at Cape Canaveral. They are on the 11th deck of the missile gantry.

Globe to Great Britain

Mr. and Mrs. woodhams, who got chuted out of the Congo in July, leaving all his worldly goods behind, took a restful trip yesterday.

He joined the U.S. Army.

"As far as I can tell, an army is the only way to bring peace to this Congo," said Sgt. Woodhams, who was in medicines, and spent most of the time in The Congo. His father lives in Cleveland.

A large crowd gathered here to bring peace to the Congo.

Dr. Woodhams said: "I think the Congo people are only too glad to see us."

Dr. Woodhams had been a typist.

Welcoming the first Congo volunteer.

"I hope to have an astronaut in orbit before long," said Dr. Woodhams, who had been a typist.

"It is a great effort we are making," said Dr. Woodhams, who had been a typist.

"It is a very important project," said Dr. Woodhams, who had been a typist.

"It is the greatest project we have had," said Dr. Woodhams, who had been a typist.

"But it is a great project," said Dr. Woodhams, who had been a typist.

"It is not because we are not trying," said Dr. Woodhams, who had been a typist.

"You are doing a wonderful job in the Congo," said Dr. Woodhams, who had been a typist.

"I am proud of you," said Dr. Woodhams, who had been a typist.

"It is a great honor to be able to be a part of this project," said Dr. Woodhams, who had been a typist.

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Words are for words. Words are for words. Words are for words.
Family Spends Night in Armory

30-Day Mock Journey to Moon Ends for 2

SAN ANTONIO, Tex.--Capt. William D. Hitchcock is released with his wife after spending 30 days in a simulated flight chamber.

Lewis Lab Staff Doctors, Nurses Mercury Capsule at Canaveral

Three Clevelanders at Cape Canaveral unload recovered nose cone after an Atlas space shot.

In Father's Footsteps

FEBRUARY 16--Emmett Kelly Jr., first son of the famous funnyman, is to walk the pickup line at his father's bus stops in show business. Kelly Jr., who was born on a service post in the South Pacific, will begin making his rounds Saturday in the annual Circus City Festival parade here. He is holding his father's picture of old.

Tornado Quirk

PANAMA CITY, Fla. -- A tornado appeared in conjunction with Hurricane Cleo, dropped down near the city, felled about 200 trees. The tornado damned about 500 houses, including James L. Anderson's.

Lewis Lab Staff Doctors, Nurses Mercury Capsule at Canaveral

Pleasant Weather Lures Throng to Shaker Art Sale

Pleasant temperatures and lingering morning mist made visitors crowd into the Shaker Square Benefit Art Sale and sidewalk exhibit yesterday.

The display of 1,000 arts and crafts continues today and until 10 p.m. tomorrow.

Enthusiastic visitors spent more than $900 yesterday for paintings, jewelry, ceramics, sculpture, pottery and sculpture. Proceeds go to the art institute scholarship fund.

Demonstrations in painting are scheduled by Paul H. Tregay, Stacey Bunch, Wayne Mamel, Eneyd Shapack and others. "Erie Express" is the theme of the festival.

S. H. Simpkinson

G. M. Fuesten

Alec Bead

J. C. Moore

A. H. Ebsen

C. J. Hochkammer

Joseph Bobic

E. H. Kierberg

Sgt. John A. Kross

Grandinister

James P. Melonson

The party grew.

Fort Monroe Photo (Richard H. Shafer)