LEWIS NEWS

Lewis Research Center
National Aeronautics and Space Administration
Cleveland, Ohio

Vol. 3, No. 18 **September 2, 1966**

Silver Anniversary Inspection Is Oct. 4-7; Open House Is Oct. 9

The Silver Anniversary Inspection of Lewis Research Center — the most extensive inspection of overall facilities and programs since 1957 — will be held on Thursday through Friday, October 4, 5, 6, and 7.

A carefully selected audience of officials, numbering about 450 for each of the four days, has been invited to this inspection.

TOP EXECUTIVES from private industry and business, the military services, labor, higher education, and government are included among those expected to tour the center.

Dr. Abe Silverstein said that the occasion has been specifically planned so that visitors might examine some of Lewis' newest facilities and learn the scope and nature of Lewis' advanced research and development in support of NASA's mission.

THE DIRECTOR noted that 1966 is the 25th year since ground was broken at Cleveland to build what has become this nation's major center for advanced research in aeronautical and space propulsion and in the generation of electrical power in space.

He noted that a special Inspection Task Force is planning inspection presentations that are understandable and interesting to all segments of the community and that visitors will find the tours and sessions instructive and rewarding.

The practice of periodic reports to national leadership, through such inspections, started here shortly after World War II and was continued until 1957.

LEWIS has significantly increased its staff, the scope of its work, and its research facilities since it became a part of the newly-created NASA on Oct. 1, 1958.

As in the past, the 1966 inspection is designed to exhibit major Lewis facilities, and to present its capabilities and accomplishments to key personnel of organizations served by Lewis.

ON SUNDAY, OCTOBER 9, following the Silver Anniversary Inspection, there will be an Open House for NASA employees and their families.

More than two dozen staff members form the special Inspection Task Force named by Dr. Silverstein. They include:

WILLSON H. HUNTER, inspection manager; James J. Modarelli, assistant manager; Harold D. Wharton, administrative manager; Kathleen Brown and Virginia Wilson, inspection office invitation, and information; Robert W. Gaines, registration; Lyndell L. Manley, brochure and public information;

Richard G. Schulke, design and graphics; James H. Daus, design and graphics assistant manager; Arthur L. Laufman, movie and slide production and systems; Richard S. Williams, public address systems; Robert L. Clarke, technical services coordinator;

George L. Mahnke, Joseph VanGilder, Milton E. Lipes, and Frank L. Cimperman, Jr., general services and contracts; Frank J. Kuchta, model and display preparation; John M. Auerbach and Edward A. Werner, in-house fabrication; Andrew Pindor and John A. Guarnieri, cafeteria arrangements; William V. Waite, chartered bus transportation; and Harry E. Dombroski, special NASA transportation.

Season's First Staff Social Is On Sept. 9

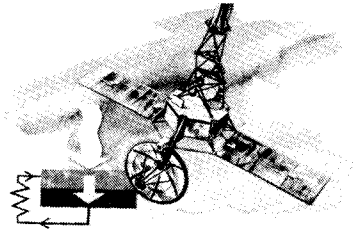
The first Staff Social of the fall season will be held from 5-7 p.m., Friday, September 9, at the Guerin House. Dr. Silverstein and members of his staff will meet informally with employees of:

Office of Development — Plans and Programs, Personnel Division, Air Breathing Engine Division, Centaur Division, Facilities Engineering Division, and the Patent Counsel Office.

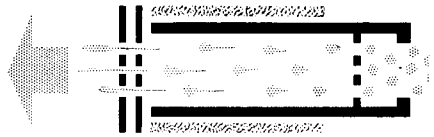
The staff socials are arranged by LeSac committees. All Lewis employees are invited to attend one of the 11 socials in the series each year.

With the pleasant weather "ordered" for September 9, most of those attending are expected to enjoy the relaxing grounds around the Guerin House for their conversations and refreshment hour.

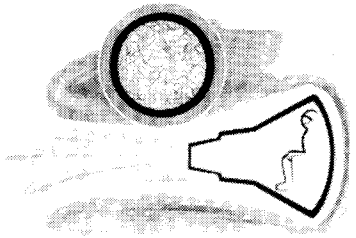
Nuclear Propulsion



Space Power Generation



Electric Propulsion



Materials and Structures

Chemical Propulsion

Thousands To View Lewis Work At Inspection, Family Day

Almost 2000 industry, government, military, educational, and NASA leaders, plus thousands of employees and their families, will view Lewis accomplishments and present programs during the October 4-7 Silver Anniversary Inspection and the family day on Sunday, October 9.

Many new facilities, plus older ones which will show the research and development work accomplished since the last major inspection nine years ago, await the spotlight of this on-site visual report to public representatives.

Almost every route and stop on the inspection tour, plus displays, demonstrations, and informative talks, are ready for the inspection next week.

AS A PART of the Silver Anniversary observance, Lewis facilities will be open to employees and members of their immediate families from 12:30 to 6:30, Sunday, October 9.

Cars should be parked in the DEB lot. Circulating buses will cover the center. Family groups can set their own pace and get on and off at various stops.

Many buildings will be open to the families. Demonstrations will be given in several buildings. Films on Plum Brook facilities will be shown in the DEB auditorium.

TICKETS, AVAILABLE from division representatives, will be required for admission on October 9. Further information is to be made available to employees through a memo which is now being produced.

This inspection will provide the first formal viewing of several Lewis installations, such as the new Zero-G Drop Tower.

JAMES E. WEBB, NASA administrator, and Dr. Silverstein will open the inspection at 9 a.m. on October 4 in the DEB auditorium. Other NASA officials and Dr. Silverstein will welcome visitors each morning during the other three inspection days.

"Lewis' Role in Support of NASA's Missions" will be described at 9:15 and an illustrated report on Plum Brook and the Nuclear Rocket Development Station will follow at 9:30, all in the DEB auditorium.

AT 10:05, eight tour groups will start their visits to nine selected facilities throughout the center.

Group leaders will observe a time schedule almost as exact as a launch schedule to eliminate confusion at any one stop or while enroute through other interesting installations.

Concluding the inspection program each day, a social period will be held at the picnic grounds, or the DEB cafeteria in case of bad weather.

LEWIS NEWS

Lewis Research Center
National Aeronautics and Space Administration
Cleveland, Ohio

Vol. 3, No. 20 **September 30, 1966**

1966 Inspection; Mission Accomplished

RADIO CORPORATION OF AMERICA
PRINCETON, N. J.

October 6, 1966

BROWN
PRESIDENT
ENGINEERING

I must hasten to send my compliments to you and your c
for the very impressive day of October fourth, the first this we
your 1966 inspection. Of course, the mechanics of the operatio
kept things going precisely on schedule showed the perfection o
staff work. But most impressive to me was the performance o
technical staff. The lectures seemed perfectly to gauge the de
sophistication of the very mixed audience. Throughout the day
ling of enthusiasm that comes, in a research organization
nd a respect for one's coll
ne of your

THE GARRETT CORPORATIO

GARRETT

9851 SEPULVEDA BOULEVARD · LOS ANGELES, CAL

VICE PRESIDENT
ASSISTANT TO THE PRESIDENT

I was particularly impressed by the
Mr. or Dr. Roberts, on Materials. When
and ability so evident in him, I think the e
the world's future is made brighter.

University of Notre Dame
Notre Dame, Indiana 46556

Assistant Dean, The Graduate School
Research Administrator for the University
284-7432

The 1966 Inspection of the Lewis Research Center w
exciting and stimulating experience. I cannot praise too hi
many deftly presented reviews of the work of the center. M
preparation was a self-evident feature of every one of them
ld have been pleased to hear the many spontaneous
tion by those who were in my grou

THE OHIO STATE UNIVERSIT
COLLEGE OF ARTS AND SCIENCES
DENNEY HALL
164 WEST 17TH AVENUE
COLUMBUS, OHIO 43210

As one of the participants in the 1966 inspect
Lewis Research Center, I wish to extend most hearty c
tions to you. The congratulations are due on at leas
counts. First, and of course most important, I comme
the quality of the research and development that is ta
in this center. Second, I was greatly impressed by th
tion made by you and your staff. As I look back on th
can see no place where I think anything could have bee
more effectively, or in a way to make your guests more

It is the hope and expectations of many of
Research Center will continue to di
of service to the peopl
significant

From: Dr. W.B. Littler, C.B., Minister, I
and Dev
DEFENCE RESEARCH AND DEVELOPME
BRITISH DEFENCE STAFF, WASHINC

Telephone: HObart 2-1340
Your Ref:
Our Ref:

BRI
3100 MASS
WASHIN

10th

Dear Dr. S.

I have just written to Mr. Arnol
thank him for inviting me to attend t
of the Lewis Research Center.

It was a great pleasure to meet
and to see a cross-section of the mag
facilities and the very high-grade wo
on in your Establishment.

The programme was outstandingly
and I have no hesitation in
the best of its
Dres

City of Cleveland

DCHER
R

October 6, 1966

Thanks for inviting me to attend the 1966 Inspection
Lewis Research Center - October 4 through 7.

I had a fine time, and the visit proved an interestin
me.

ALUMINUM COMPANY OF AMERICA

2210 HARVARD AVENUE · CLEVELAND, OHIO 44105

I was one of the fortunate few in the United States wh
will have the opportunity to inspect the Lewis Researc
NASA. I cannot begin to tell you how extremely impres
not just with the presentation itself which was excell
learn of the wide diversity and technical complexity o
being carried out. To say that I was amazed and flabbe
an understatement. In fact, my reaction at the end of
to feel like a technical dropout.

LOCKHEED AIRCRAFT CORPORAT
BURBANK, CALIFORNIA 91503

COURTLANDT S. GROSS
CHAIRMAN

I want to tell you again how grateful I a
the chance to visit your Center today.
gracious indeed to spend so much time
your guests. All in all, it could not ha
pleasant and interesting day.

BEREA NEWS
October 6, 1966

Lewis Research Opens Doors To Visitors

James E. Webb, Administrator of the National Aeronautics and Space Administration, and Mayor Ralph Locher of Cleveland were among the 465 leaders of Congress, government, universities, business and industry present this week on the first day of a four-day inspection of NASA's Lewis Research Center.

The 1966 NASA Lewis Inspection commemorates the Cleveland center's 25th year as the nation's major laboratory for research in advanced aeronautical and space propulsion, as well as systems for generating electrical power in space.

Identical programs were planned for each of the four days, with about 450 visitors expected each day.

WILLOUGHBY NEWS HERALD
October 5, 1966

Webb Says Russia Leads in Payloads

CLEVELAND — NASA Administrator James Webb says Russia is ahead of the United States in some aspects of the space race and the gap probably is widening.

During a press conference at the Lewis Research Center, Webb said the Russians have been flying 10,000-pound spacecraft and recovering them at will.

Webb added that the Russians are probably widening the gap with these large payloads and are building boosters which are capable of lifting more than Saturn 5.

Saturn 5 is the American manned moon - expedition rocket still under development. None has been launched.

Webb said America is not spending enough on its space program and if the budget is not increased, "Some major part of what we are now doing will have to be eliminated."

Webb and other top officials in government, industry and education were here for the first day of the 1966 Lewis Resarch Center inspection.

NEW RESEARCH FACILITY OPENS

NASA Winds Up in a Hole on Weightlessness Tests

By EDWIN G. PIPP
Detroit News Aerospace Writer

CLEVELAND, Oct. 4. — A hole has been drilled 510 feet deep into the ground here to learn more about the problems of weightlessness that astronauts experience while in orbit.

The Zero Gravity Research Facility at the National Aeronautics and Space Administration (NASA) Lewis Research Center is one of the newest and most unusual facilities in the country for the study of weightlessness.

Objects that are to be tested in zero gravity are dropped into the hole and cushioned at the bottom so they are not damaged.

VACUUM CHAMBER

The hole is lined with an 18-inch thick concrete casing 28 feet in diameter. Inside is a welded steel vacuum chamber 20 feet in diameter.

Five seconds of weightlessness can be produced by releasing the object from the top of the shaft.

This time is doubled when the experiment is projected upwards from the bottom of the chamber by a "high-pressure accelerator" and then falls back to a "decelerator cart."

The vacility can handle experiments weighing up to 6,000 pounds.

MAJOR PROBLEM

Weightlessness is one of the biggest problems facing NASA in the nation's space program. Longest periods it can be simulated in the earth environment is less than two minutes in aircraft.

The new facility here was shown to the public for the first time today on the first of four day-long inspection tours of the sprawling Lewis facility which will be attended by some 1,800 representatives of Congress, industry, business, universities and other government units.

The Lewis center is celebrating its 25th year as a major laboratory for research in advanced aeronautical and space propulsion as well as systems for generating electrical power in space.

PHOTOGRAPHED IN ACTION

The Zero Gravity Facility is to be used for tests on equipment designed to operate in space.

The objects which can be photographed and their action recorded as they fall are saved from destruction by the huge deceleration cart which is 19 feet high.

OXFORD PRESS
October 6, 1966

TO INSPECT CENTER

Four members of the Miami University faculty are among those invited to take part in the 1966 inspection of the Lewis Research Center at Cleveland, an establishment of the National Aeronautics and Space Administration, on Oct. 7. They are Dr. Phillip A. Macklin, professor of physics; and Dr. Joseph S. Cantrell and Dr. Hyunyong Kim, assistant professors of chemistry.

B ROOKPARK NEWS, BEREA
October 6, 1966

Mayor John D. Munkacsy, Jim Toedtman and Will Largent, News publisher and editor, respectively, were among 2000 civic leaders, business executives and members of the press attending NASA's 25th anniversary open house this week.

SPRINGFIELD NEWS
October 5, 1966

Claims Russians Are Still Ahead

CLEVELAND, Oct. 5.—(AP)—Russia is ahead of the United States in some aspects of the space race and the gap probably is widening, the administrator of the National Aeronautics and Space Administration said yesterday.

"For several years the Russians have been flying 10,000-pound spacecraft and recovering them at will," James E. Webb said during a press conference at NASA's Lewis Research Center here.

"I would say they are probably widening the gap with these large payloads," he said. "They are building boosters, I believe, which are capable of lifting more than Saturn 5."

Saturn 5 is the American manned moon-expedition rocket still under development. None has been launched.

Webb said America is not spending enough on its space program and if the budget is not increased, "some major part of what we are now doing will have to be eliminated . . ."

Webb said the Soviets have not abandoned the space race just because they have had no spectacular launches recently.

"I think they are going through a period of digestion and development of systems bigger than anything we have seen yet," he said.

Webb and other top officials in government, industry and education were here for the first day of the 1966 Lewis Research Center inspection.

'9th Anniversary of Sputnik and Still Behind'

$7 Billion a Year on Space Needed, NASA Chief Says

By JACK JONES, Daily News Staff Writer

CLEVELAND, Oct. 5—The space agency unveiled the nation's most unusual hole in the ground here yesterday.

National Aeronautics and Space administration officials also reported progress in hushing the irritating roar and whine of jet engines and told about advances in space power while NASA boss James E. Webb restated his feeling that the United States is losing the space race to the Russians at the present $5 billion annual rate of U.S. space spending.

THE ACTION all took place at the opening of the four-day 1966 inspection of NASA's Lewis Research Center which adjoins Hopkins airport here.

The inspection is in the manner of a periodic report to leaders of the country—a sort of high-level open house. By Friday some 1,800 top executives of government, business, industries and universities will have seen firsthand some of Lewis' work on air-breathing engines, materials, basic research, advanced chemical rockets, space power generation and electric propulsion.

Lewis' 5,000 employes, headed by Dr. Abe Silverstein, put together an impressive series of exhibits and presentations to acquaint visitors with their work.

THE INSPECTION began on the ninth anniversary of the beginning of the space age—the Soviet launching of Sputnik 1. Oddly enough, it was the first held at Lewis since October, 1957, when the center was part of the old National Advisory Committee for Aeronautics.

At that time, officials recalled, "space" was pretty much a dirty word in government although Lewis had been working quietly on a few space projects. Suddenly Sputnik was orbited just three days before the 1957 inspection. It caused a hasty revision of many of the presentations in view of the Russian achievement.

NASA Administrator Webb, here to greet Lewis visitors, was still talking about Russian space achievements yesterday.

HE SAID he feels the Russians are ahead in launch capabilities and that the United States cannot close the gap with the space budget at the present $5 billion a year level.

He suggested that spending $7 billion a year for the next three years could do the job.

The hole in the ground is a new, 500-foot deep, 20-foot diameter vertical shaft or drop tower—the largest such facility in the United States for the study of zero gravity.

FIVE SECONDS of weightlessness can be produced by dropping an experiment from the top of the shaft—a demonstration that was the highlight of the tour for most visitors.

The experiment—for example, a model fuel tank with a camera to photograph how liquid behaves in zero gravity—falls free for five seconds before landing in a 19-foot deep bucket containing millions of BB-size foam plastic pellets. They bring the falling 1,500-pound experimental package to a safe halt.

Ten seconds of weightlessness can be produced by shooting the experiment up from the bottom of a chamber with an air gun arrangement, and then letting it fall back.

THE NEW FACILITY promises to be a low-cost replacement for some of the weightless work now being carried out by special zero gravity airplanes flying from Wright-Patterson Air Force base.

However the drop tower is aimed at technological experiments—not human ones—so there still will be plenty of use for the planes, which can achieve up to 30 seconds of weightlessness during a zooming, parabolic maneuver.

During the tour, Lewis engineers showed new sound suppressors for jets. Dr. Silverstein said they and other methods being studied by Lewis could reduce the whine of subsonic turbofan engines a significant 15 decibels, thus reducing complaints around airports.

(CITY STREET noises are said to vary from 50 to 85 decibels. Port of New York Authority limits planes at its airports to 112 decibels.)

He said the subsonic jet noise problem seems well in hand, but the supersonic transport would require more work.

NASA officials also announced that electric rocket engines, designed at Lewis, will go on their first prolonged space flights in 1968.

THE ION ENGINES were tried on suborbital flight two years ago. Now plans call for the electric space thrusters to be tried on a six-month mission aboard an Agena satellite.

Ion engines produce small amounts of thrust but they can be operated for prolonged periods. They may eventually supply the motive power to get men or instruments to other planets.

The Lewis inspection comes as the former NACA Aircraft Engine Research laboratory is observing its 25th anniversary.

NOW LEWIS is one of the space agency's eight principal centers and is responsible for, besides research and technology, launch vehicles for unmanned space flights including Atlas-Agena, Thor-Agena and Atlas-Centaur.

Technicians Check 20-Foot Aluminum-Finished, Magnesium Solar Mirror Built at Lewis Research Center

Experiment Weighing 1,500 Pounds Being Prepared for Testing in Zero Gravity Research Facility

DAYTON DAILY camera NEWS

Page 36
Wednesday, October 5, 1966

Aerial View of the Lewis Research Center Located on 350 Acres Adjacent to Cleveland Hopkins Airport

CLEVELAND PLAIN DEALER
October 6, 1966

Lewis Visitors See Hot, Cold Research Tests

When you need materials for rocket nozzles that get as hot as 5,000 degrees and fuel tanks that cradle liquid hydrogen at minus-420 degrees, where do you go?

To the Lewis Research Center out at the far end of Cleveland Hopkins International Airport, that's where.

The Lewis center is an installation of the National Aeronautics and Space Administration. Its materials processing laboratory is one of the nine stops on all-day inspection tour being provided this week for about 2,000 invited visitors.

THEY INCLUDE educators, scientists, manufacturers and members of the federal government and military services. They are being carted by bus around the huge Lewis layout, with its maze of buildings, offices, wind tunnels, towers and tanks.

The visitors travel in groups of about 40, each led by NASA scientists and identified by a color to keep bus groupings together.

Yesterday's green group saw a materials research demonstration by NASA-man Ernest Roberts.

He showed how NASA learned to stretch plastic film to make it stand up against extreme cold as a fuel-tank liner. He compared the stretched and unstretched material by subjecting both to liquid nitrogen, which is exceedingly cold. They both popped but the former lasted longer.

ROBERTS also demonstrated stress and heat tests that showed the ability of "super" alloys to bend rather than crack in outer space.

He showed how one cobalt-based alloy's ductability was greatly improved by reducing its silica content from 1% to ¼%. He also demonstrated the heat resistance of a NASA-developed tungsten alloy.

One phase of the Lewis center's materials research has been finding short-term tests that determine the long-term effects of space environments.

From the materials lab the green group went to the Lewis hangar, where it joined the yellow group for a demonstration of efforts to muffle the screaming thunder of jet engines.

OVERSIMPLIFYING it a bit, the problem is that when you cut down on the thunder, the screaming gets somewhat worse.

There is a way to combat the screaming with sound-deadening material in a sort of shroud on the engine. To demonstrate, the Lewis staff rolled back a hangar door to reveal a B-57 bomber parked outside.

The craft is a NASA research vehicle. One of its two engines was equipped with the shroud, the other was not. They were started one at a time.

The untreated engine made a rising, piercing shriek that went through your head like a knitting needle.

The treated engine made a rising, piercing shriek that went into your head and stopped.

At a distance, that is probably quite an improvement.

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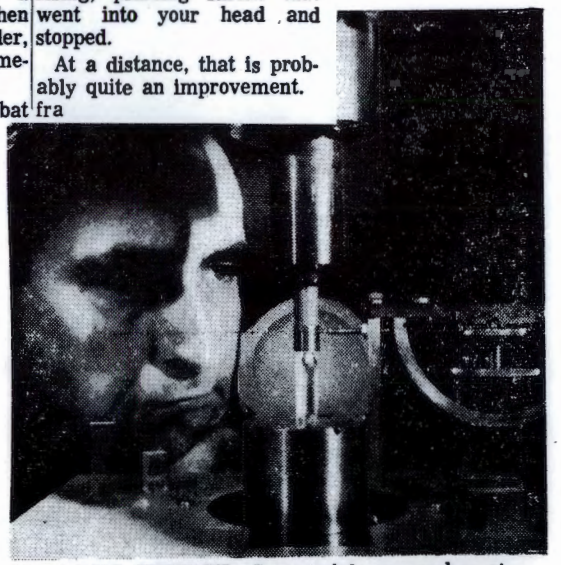


LONG STRETCH—A materials researcher at the NASA Lewis Research Center observes the polarized stress pattern in a stretched crystal.

CLEVELAND PRESS - October 5, 1966

More Cash Needed to Catch Reds in Space Race, Webb Says Here

By CHARLES TRACY, Aviation Writer

Russia is widening the gap in its space technology lead over the U. S., according to James E. Webb, administrator of National Aeronautics & Space Administration.

He toured NASA's Lewis Research Center here on the first open house inspection since it became part of the space agency. Nearly 2000 government agency and aerospace industry leaders were registered for the inspection today and tomorrow.

Webb said Russia is ahead in orbiting large payloads of 10,000 to 60,000 pounds.

The U. S. space budget should be increased by $2,000,000,000 a year for three years to provide the manpower effort necessary to close the gap with Russia, said Webb.

"We can't close the gap with the present budget of $5.000,000,000 a year, but with $7,000,000,000 our program would move rapidly into extremely valuable space systems," he said.

The U. S. space effort will not have the capability for large payloads until Saturn 5 is flying in 1968. Then it will be able to put 160,000 pounds into orbit.

The Russians have been very quiet for 18 months. Webb said they are developing very large rocket launching systems and have been busy modifying their launching areas.

An increased U. S. investment in space technology will yield far greater returns than are now coming from the program. Benefits will multiply and the cost actually will be reduced, he said.

"The technology is being applied right here in Cleveland's steel industry," said Webb.

Additional funds will be used to buy more contracted work with industries, Webb pointed out. Today 20,000 contractors with 452,000 employees are busy on space projects.

Webb lauded work done at Lewis, which he described as a $200,000,000 installation responsible for all propulsion research in the U. S.

In the last five years Lewis has received $70,000,000 to carry on various projects.

YOUNGSTOWN VINDICATOR
October 3, 1966

2,000 to Tour NASA Center

About 2,000 top executives of government, business and industry, including some from the Youngstown area, will tour research facilities at the National Aeronautics and Space Administration's Lewis Research Center at Cleveland Hopkins Airport Tuesday to Friday.

Purpose of the inspection is to brief aerospace leaders on research and development progress at the center. Identical programs will be held on each of the four days, followed by an employe open house Sunday, Oct. 9.

Emphasis will be on the center's work in advanced research and technology. Formal presentations and exhibits will focus on work in air-breathing engines, materials, basic research, space vehicles, advanced chemical rockets, space power generation and electric propulsion.

Dr. Abe Silverstein, Lewis center director, said the visit has been planned so that the visitors might examine some of Lewis' newest research facilities and learn the scope of its work in supporting NASA missions. First-day visitors will be welcomed by Dr. Silverstein and James E. Webb, NASA administrations.

HAMILTON DAILY NEWS JOURNAL
October 3, 1966

Faculty Members Visit NASA Center

OXFORD — Four members of the Miami University faculty are among those invited to take part in the 1966 inspection of the Lewis Research Center at Cleveland, an establishment of the National Aeronautics and Space Administation, Oct. 7.

They are Dr. Philip A. Macklin, professor of physics; and Dr. Joseph S. Cantrell and Dr. Hyunyong Kim, assistant professors of chemistry.

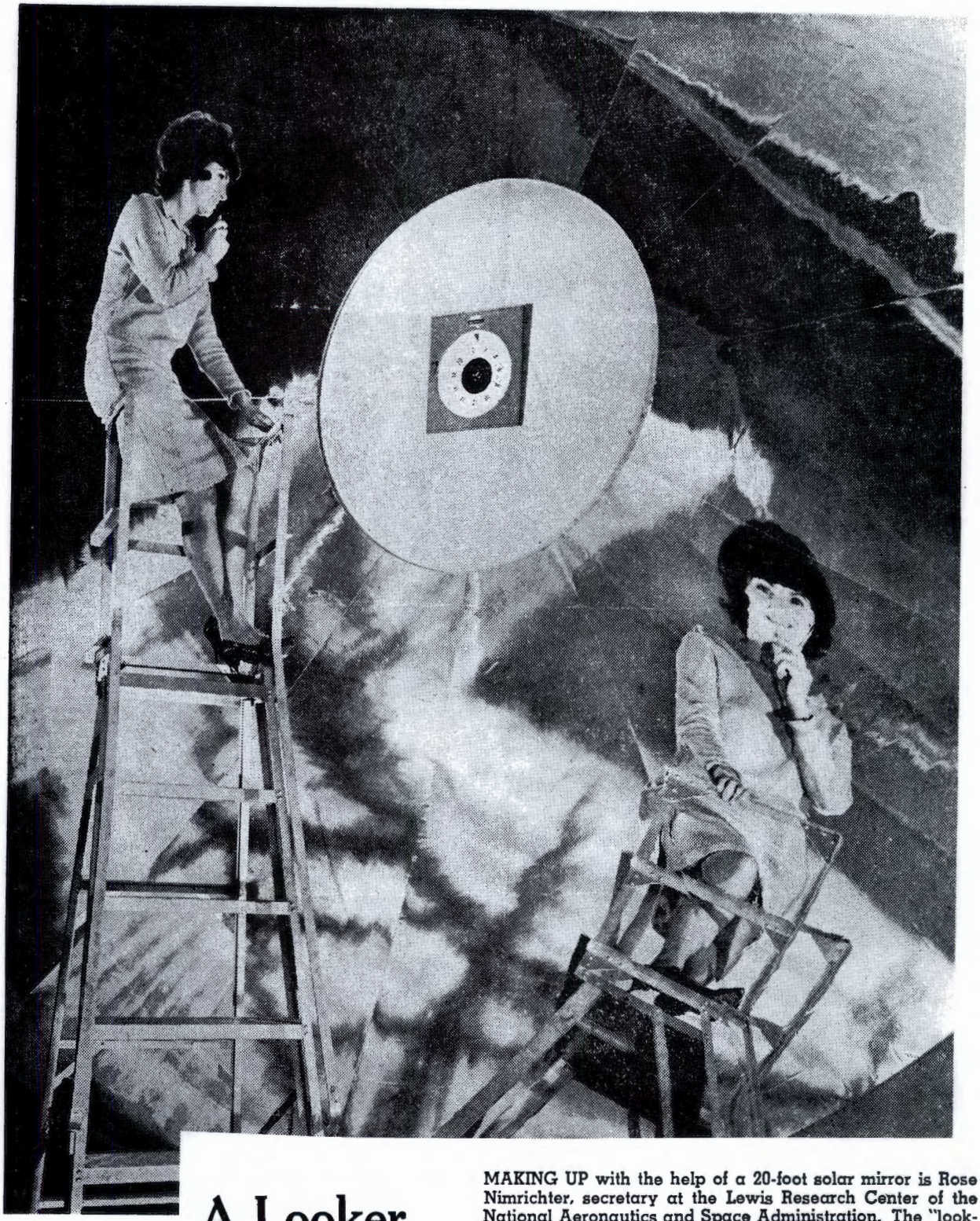
MEDINA COUNTY GAZETTE
September 30, 1966

Research Center Hosts U.S. Chiefs

Advanced research and technology in support of NASA aerospace programs will highlight a tour and orientation here next week when the National Aeronautics and Space Administration's Lewis Research Center will host top executives from around the United States.

Occasion is the 1966 NASA-Lewis Inspection, Oct. 4-7. Some 1,800 leaders of Congress, government, universities, business and industry are expected to tour the Cleveland Center during the four-day program.

CLEVELAND PLAIN DEALER
October 7, 1966



A Looker

MAKING UP with the help of a 20-foot solar mirror is Rose Nimrichter, secretary at the Lewis Research Center of the National Aeronautics and Space Administration. The "looking glass," first rigid mirror used with a space power-generating device, is one of the things invited guests are seeing during the four-day Lewis inspection ending today.

CLEVELAND PRESS
October 6, 1966

Space Experts See Capsule Plunge

By CHARLES TRACY, Aviation Writer

Biggest thrill for hundreds of aerospace executives at Lewis Research Center's inspection, ending today, was watching a 1500-pound weight plunge down a $2,000,000 hole in the ground.

The long, yellow-painted tunnel, straight down for 500 feet, is the world's newest laboratory for producing weightlessness.

It's the only place on earth where 10 seconds of total weightlessness can be attained inside a test capsule under controlled, easily repeated, ground-based conditions.

VISITORS STOOD around the top of the 20-foot-diameter metal tube. The streamlined 1500-pound capsule, in which experiments and cameras are mounted, hung at eye-level above the center of the hole. It was brilliantly lighted all the way down.

Far below, at the bottom of the shaft a small white pillow was in place to catch the capsule and save it from damage. There was a countdown, release, then the capsule plunged at 120 mph. It hit bottom with an explosive boom.

The pillow actually is a specially designed decelerator cart 12 feet in diameter, 19 feet high, weighing 22 tons. It is filled with millions of small spheres of expanded polystyrene which stops the capsule's fall with a force of 30 G's (30 times normal weight).

TO DESIGN this part of the tower, Lewis engineers tested various kinds of pillow materials by dropping weights down elevator shafts in the Terminal Tower on Sundays.

The length of the shaft in the ground is still less than the height of the Terminal.

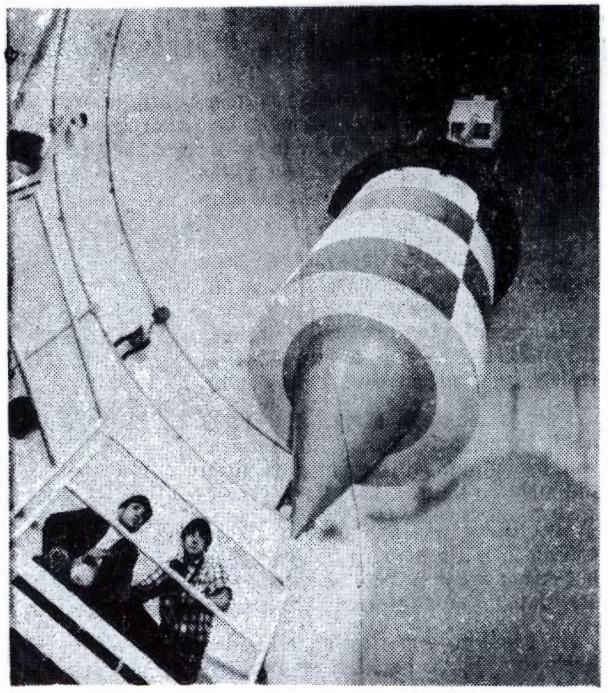
They call the shaft the "Zero Gravity" laboratory. Its primary objective is to provide space scientists with more detailed information on the behavior of fluids in a weightless situation. This is a particularly vital area concerning fuel positioning in rocket vehicles coasting in a zero-G condition in orbit.

FIVE SECONDS of weightlessness can be produced by releasing the experiment in the capsule from the top of the shaft. This time is doubled when the capsule is shot upward from the bottom of the chamber by a Lewis-designed high-pressure air cannon. The experiment then falls free to the decelerator cart, thus traversing the 500-foot distance twice.

The facility can handle experiments weighing up to 6000 pounds.

When a shot is fired up from the bottom, the decelerator cart retracts for the firing, then swings out into position in four seconds to make the catch.

Abe Silverstein, Lewis director, said the capsule flies amazingly true up and down the huge shaft.



Bottom of this hole is 510 feet below surface of the ground. Technicians are inspecting a capsule which carries cameras and experiments inside. Photos are made as the capsule plunges down the 20-foot-wide tube at 120 mph.

NILES OHIO DAILY TIMES
September 30, 1966

NASA Research Center To Host Executives

CLEVELAND — Advanced research and technology in support of NASA aerospace programs will highlight a tour and orientation here next week when the National Aeronautics and Space Administration's Lewis Research Center will host top executives from around the U.S.

Occasion is the 1966 NASA-Lewis Inspection, October 4-7. Some 1,800 leaders of Congress, government, universities, business and industry are expected to the four-day program.

NASA Administrator James E. Webb and Dr. Abe Silverstein, Lewis director, will greet visitors on the first day of the Inspection, followed by a series of "stops" during which key work at Lewis will be explained and demonstrated. Identical programs are planned for each of the four days, with about 450 visitors expected each day.

In addition to the tour of Lewis facilities, visitors will have an opportunity to view many exhibits representative of NASA work in space, including the Gemini VII spacecraft, a Centaur high-energy rocket vehicle, and models of many scientific spacecraft launched by Lewis-managed vehicles.

Gemini VII is the spacecraft in which Astronauts James Lovell and Frank Borman completed the longest manned mission to date — 14 days — in December 1965. The Centaur vehicle, whose development has been directed by the Lewis Research Center, has successfully sent two Surveyor spacecraft on lunar trajectories. Surveyor I, launched last May 30 by an Atlas-Centaur vehicle, recorded the U.S. first soft-landing on the Moon and subsequently returned to Earth thousands of high-quality, detailed photos of the lunar surface.

Major Laboratory

The 1966 NASA-Lewis Inspection has been planned to commemorate the Cleveland Center's 25th year as the nation's major laboratory for research in advanced aeronautical and space propulsion, as well as systems for generating electrical power in space. Visitors will hear detailed presentations and at the same time view facilities in which this work is actually being conducted. Major topics to be discussed include: advanced air-breathing engines, materials, basic research, space vehicles, advanced chemical rockets, space power generation and electric propulsion.

This year's inspection will be the first held at Lewis since 1957 when the Center was a part of the National Advisory Committee for Aeronautics, NASA's predecessor agency. The Lewis staff has since grown to almost 5,000 employees, including 1,900 scientists and engineers, located at the main Cleveland facility and at the Plum Brook Station near Sandusky, Ohio.

YOUNGSTOWN VINDICATOR
October 4, 1966

2,000 to Tour NASA Center

About 2,000 top executives of government, business and industry, including some from the Youngstown area, will tour research facilities at the National Aeronautics and Space Administration's Lewis Research Center at Cleveland Hopkins Airport today to Friday.

Purpose of the inspection is to brief aerospace leaders on research and development progress at the center. Identical programs will be held on each of the four days, followed by an employe open house Sunday, Oct. 9.

Emphasis will be on the center's work in advanced research and technology. Formal presentations and exhibits will focus on work in air-breathing engines, materials, basic research, space vehicles, advanced chemical rockets, space power generation and electric propulsion.

Dr. Abe Silverstein, Lewis center director, said the visit has been planned so that the visitors might examine some of Lewis' newest research facilities and learn the scope of its work in supporting NASA missions. First-day visitors will be welcomed by Dr. Silverstein and James E. Webb, NASA administrations.

THE PLAIN DEALER

Monday, Oct. 3, 1966

Lewis Center, One of the Family

Lewis Research Center of the National Aeronautics and Space Administration is celebrating its 25th anniversary this year; tomorrow will be open house for some 2,000 top business executives across the country.

Greater Cleveland can repeat with deep affection a "Happy Birthday" to an installation which has become so much a part of the family. There is great civic pride because of the importance of the center in the country's space program, an activity which often has reflected credit on Cleveland.

Each of the space projects in some way has been dependent on the scientists, engineers and technicians who have made the propulsion laboratory a byword in international space talk.

But Lewis, in its 25 years, has been more than a mechanical marvel occupying large acreage near Cleveland Hopkins International Airport. It has brought into the community high-grade personnel (40% of its 5,000 employes are professional people) who have become active participants in local government, in social and civic affairs, in education and in welfare. Mostly they have been keen, young and active.

And heading the list is the center's director, Dr. Abe Silverstein. Dr. Silverstein first came to Cleveland in 1943 but he joined NACA, forerunner of NASA, back in 1929.

This remarkable man is regarded as the father of Project Mercury and a key figure in the manned space flights.

Dr. Silverstein, rounding out 38 years in the space business, was called back to Washington for 3½ years beginning in 1958, to develop and organize the NASA structure. But he has wedged himself firmly into the community as a trustee of Case Institute and Cleveland State University and through his great interest in the Boy Scouts. He is chairman of the B.S.A. Southwest Cleveland District—and at his urging the center itself sponsors an explorers' group of Boy Scouts at the laboratory.

Because of the nature of the work, Lewis Center cannot open its doors at random to the public but it does arrange for special tours and, in 1962, cooperated with The Plain Dealer in sponsoring a Space and Science Fair at Public Hall to display its products.

When NASA Administrator James E. Webb comes here tomorrow to help welcome the birthday anniversary guests he should know that Cleveland is terribly proud of the center and of Dr. Silverstein, both of which are so big league in every way. At 25, the NASA lab has become, you might say, civic kinfolk.

DAYTON DAILY NEWS
October 4, 1966

WEIGHTLESSNESS MAKER

Hole in Earth New Space Aid

By JACK JONES, Daily News Staff Writer

CLEVELAND, Oct. 4—The country's most unusual hole in the ground was unveiled here today at the Space Agency's Lewis Research center.

The 500-foot deep hole is really one of the nation's newest and most unusual research facilities for the study of weightlessness.

FOR mechanical tests it promises to give some competition to the zero gravity airplanes based at Wright-Patterson Air Force base

Some 400 visitors witnessed a dramatic demonstration of Lewis' new zero gravity research facility during the first day of the 1966 National Aeronautics and Space administration Lewis center inspection.

The demonstration featured a drop of a 1,500 pound test specimen.

The 1966 inspection is being held by Lewis to permit representatives of Congress, industry, business, universities and government to view firsthand the results of aerospace research and development taking place at the Cleveland center.

SOME 1,800 visitors are expected during the four days of the inspection.

The zero gravity facility is a shaft that extends 510 feet down into the ground. Five seconds of weightlessness can be produced by allowing an instrument package to fall from the top of the shaft. This time is doubled when the experiment is shot upwards from the bottom of the chamber by an air gun and then allowed to fall back.

When the experiment reaches the bottom of the tank it is stopped gently by a decelerator which contains millions of tiny plastic spheres.

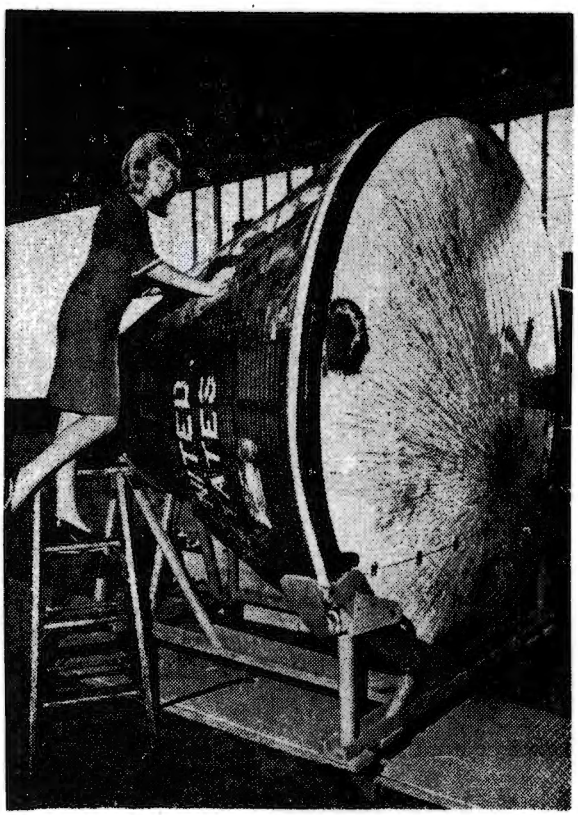
DURING the past few years studies of zero gravity have been made in rocket flights, in airplanes flying zero gravity parabolas, in smaller drop towers such as Lewis' 100-foot facility and in some orbital flights.

Lewis' new hole in the ground provides a cheaper long-duration method of making the weightless test on such items as space fuel tanks.

NASA Administrator James E. Webb and Dr. Abe Silverstein, Lewis' director, greeted visitors today before they took off on a day-long tour of the Lewis center, which adjoins Cleveland's Hopkins airport.

CLEVELAND PRESS
October 5, 1966

A Pretty Space Engineer



Miss Corrine Palgut, a space engineer and also Miss NASA Lewis, was one of the decorations at Lewis Research Center today as some 2000 industry executives and other guests met for a catch-up on research. Miss Palgut is alongside Gemini-7 which made man's longest journey in space—14 days. Heat shield shows seared effects of re-entry.

CLEVELAND PRESS
October 4, 1966

Silencer for Shrill Jet Engines Gets Audition at Lewis Center

By CHARLES TRACY, Aviation Writer

Screaming jet engines are being quieted with inventions revealed today by engineers at NASA's Lewis Research Center, Cleveland Hopkins Airport.

In tests for visiting executives from aerospace industries, here this week for briefings on Lewis progress, a jet engine's whine was reduced by eight decibels, described as a significant noise decrease. Normal engine sound is 95 decibels.

James Kramer, engineer in charge of the noise research program, said people living near airports can expect considerably less annoyance from landing planes within several years.

HE SAID THE PROGRAM is just beginning and will be expanded to develop quieting systems for current planes and big ones now being developed.

The researchers set up recording equipment on ends of runways at Hopkins Airport to find out what makes noise and how to kill it.

Kramer said fan-jet engines, the newest type, have large, multi-bladed turbine wheels which generate an irritating, high-pitched whine like a siren. This is the type that was attacked first.

New air inlet cowlings and plugs made of porous metal were designed to fit the intake of one jet engine on a Lewis jet bomber used for test-flying. The plane's twin engine has no noise-absorbing equipment.

WHILE VISITORS WATCHED, one, then the other engine was run on the flight ramp. Big decibel dials in the hangar registered sound readings for each engine.

Kramer said engine efficiency is not expected to be changed by the acoustical treatment.

Many engineering offices at the research center have been bombarded for years with jet noise from planes leaving Hopkins Airport. A recent outdoor meeting of some 400 engineers was rendered speechless during an evening of heavy air traffic.

THE INSPECTION which opened today marked Lewis' 25th anniversary here. Some 1800 leaders of Congress, government, universities, business and industry will tour the center during the four-day program.

NASA Administrator James E. Webb and Abe Silverstein, Lewis director, greeted visitors.

It's the first such inspection since Lewis became part of the space agency in 1958.

Jet engine air intake is fitted with a muffler made of porous metal sheets. Engineer James Kramer, program director, checks surfaces after a test.

CLEVELAND PLAIN DEALER
October 5, 1966

NASA Cuts Cited

Soviet Payload Lead Widens, Webb Says

By JOHN LUDWIGSON

The Soviet Union is not only still ahead of the United States in its ability to launch heavy payloads into space but the gap is widening, James E. Webb, administrator of the National Aeronautics and Space Administration, said here yesterday.

"For several years the Russians have been flying 10,000-pound spacecraft and recovering them at will," he told a press conference at the Lewis Research Center.

"I would say they are probably widening the gap with these large payloads," Webb added. "They are building boosters, I believe, which are capable of lifting more than the Saturn 5."

SATURN 5, a huge rocket which is scheduled to launch the first American expedition to the moon, is still being developed. None has been launched. With a thrust of 7.5 million pounds, the rocket will be lifting more than 6 million pounds at liftoff.

While the Soviets have had no spectacular launches in some time, Webb said, they have not abandoned the space race.

"I think they are going through a period of digestion and development of systems bigger than anything we have seen yet," he said.

THE GAP IS widening, Webb told reporters, because the United States is not spending enough on its space program.

"At $5 billion a year (the present NASA budget) we can't close the space gap," he said. "At $6 billion, we could utilize the technology we have already developed. At about a $7-billion level you would see us move very, very rapidly into space systems that would be very valuable."

"Certainly it is true," the administrator observed, "that the balance of technology is an important part of the balance of power among nations."

IF THE NATION'S space budget is not increased, he warned, "some major part of what we are now doing will have to be eliminated. . ."

Webb and other top officials in government, industry and education were here for the first day of the 1966 Lewis Research Center inspection.

On a day-long tour of the propulsion center they were bombarded with a series of carefully prepared briefings on the state of advanced research at Lewis.

The center's newly finished 500-foot-deep zero gravity simulation facility was publicly shown for the first time. A 1,500-pound test package was repeatedly dropped down the shaft — as it would be in actual zero gravity tests — to demonstrate its operation.

The inspection, to which some 2,000 have been invited, continues through Friday.