Lewis News

Vol. 7, No. 15

5,000 expected at open house

More than 5,000 people are expected to tour Lewis tomorrow and Sunday during an Open House to commemorate the first anniversary of the manned landing on the moon.

Astronauts Neil Armstrong, Michael Collins, and Edwin Aldrin lifted off from Cape Kennedy on July 16, 1969. Armstrong and Aldrin landed on the moon's surface July 20.

During the two day period more than 300 employees have volunteered to speak to the visitors and help guide them through the hour and a half tour. Lewis Director Bruce Lundin said, he is greatly appreciative of the many people who have volunteered to help. "I think everyone at the lab recognizes the very important role NASA is playing in our nation's future and the importance of keeping the public informed of the contributions to their daily lives."

Visitors will see some of the major facilities that have helped the United States gain and maintain its position of leadership in the aerospace field. The tour will include the 10×10 supersonic wind tunnel, the Zero-Gravity Facility and the Electric Propulsion Laboratory.

In addition to the three facilities, visitors will have a chance to see the new Aerospace Information Display Center in Building 8. The tour will start with a short Apollo film and talk in DEB auditorium.

To avoid traffic problems in the airport area, people had to write to the Center for a ticket to the open house.

Tours of the Center will start at 9:30 Saturday morning, July 18, and 12:30 p.m. Sunday July 19. A complete tour will take approximately an hour and a half. Tickets specify the starting times for each tour. Visitors

LEWIS RESEARCH CENTER CLEVELAND OHIO

> and employees taking the tour are asked to park in the DEB parking lot. The hangar lot will be used for overflow.

Lundin, Barnett on FEB

Lewis Director Bruce Lundin has been elected Vice-Chairman of the Cleveland Federal Executive Board for Fiscal Year 1971. In this capacity, he will be in charge of the Federal Awards Banquet to be held next Spring.

Henry Barnett, Assistant Director for Administration, will chair the Government-wide Policy Implementation Committee for FEB for the coming year. The committee will involve Fed-

Assistant Director Dr. Walter Olson and Deborah Bloser of Educational Services look at the many displays in the Aerospace Information Display Room located in Building 8. The display room will be opened to the public during open house. (Martin Brown photo)





Lewis AID shows NASA story

A major need for a permanent display area for exhibits at Lewis has been met with establishment of the Aerospace Information Display (AID) in Building 8.

Formerly called the Solar Collector Laboratory, AID is now chock full of hardware, models and exhibits depicting major NASA programs. Scale models of the entire NASA family of launch vehicles,



Deborah Bloser of Educational Services and Dr. Walter Olson, Assistant Director, look at many of the displays in the AID room of Building 8. Directly to their right is a full scale model of the Mariner 4 spacecraft. In the foreground is a dummy suited up with clothing used in the first manned sub-orbital flight on May, 1961. (Martin Brown photo)

third scale models of the Apollo Command Module and Lunar Module stand side by side with displays of bearing technology and other basic work carried on there at Lewis.

Cal Weiss, Chief of Educational Services, says AID will be a valuable tool in showing visitors the wide range of work being accomplished by NASA, and the contributions Lewis is making.

> AID was first open to the public during the recent Open House. For the benefit of employees who were unable to see it during that period it will be open during lunch hours (11:30 a.m. to 1:00 p.m.) every day during the coming week, August 3 through 7.

Bowlers unite!

The NASA Mixed Couples Bowling League will begin its season on September 13, at 7 p.m. at the Berea Lanes. A meeting to elect officers and team captains will be announced later. Couples or teams interested in joining this league should contact Bill Goette, PAX 7135.

Students learn

(Continued from page

ing as counselors for the students. They coordinate the day to day activities, distribute paychecks and counsel students with problems. A co-op student from Wilberforce University acts as the official between the Center and the students, affording Lewis the opportunity to have an employee devoting fulltime to the program. "We could not do this before the co-op came," Wycoff said.

When the CTS bus strike began, SNYC counselors devised a plan to ensure that

students work. T ployees at speci the more work. ' than usu more im usual tim of the p able incu the cour

Lewis News: July 31, 1970



Duck!

The first thing visitors see as they enter the lobby of the Visitor Information Center is the impressive group of model aircraft representing every type from the first one flown by Orville and Wilbur Wright to the present day Space Shuttle. Visitors look at the picture vertically and get one perspective. Lewis photographer Martin Brown decided to take a horizontal shot. The result: readers get the impression hundreds of aircraft are flying in formation directly at them! (Martin Brown photo)

Technology Utilization and Public Affairs



DR. WALTER T. OLSON, DIRECTOR

It was a boom year for the Technology Utilization Office, with more than 10,000 individual inquiries for technical information or assistance (average: 40 per day!); that's more than double the number ever before handled in a year. The handsome new journal format for Tech Briefs and extensive republication by others are credited for the heavy action.

Between visits, calls, letters, and relocating their offices, T. U. engineers also prepared and submitted for publication 57 Tech Briefs and descriptions of new computer programs, completed a handsome display titled "NASA Technology is Everywhere" for Lewis' Visitor Information Center, and managed eight applications engineering projects.

Biomedical engineering was featured among these projects. Working under a grant from the National Cancer Institute, physicians from the Cleveland Clinic are treating cancer patients with a neutron beam generated by the Lewis cyclotron. A surgical tool for removing cataracts through a small incision and related intraocular pressure regulating components are undergoing field trials. Other projects include technical assistance to the Central Medical Emergency Dispatch System in the Cuyahoga County area and image enhancement of CAT scan x-rays; use of a nickelzinc battery to improve powered wheel chair performance has been negotiated for performance this year. Four in-house developments plus one with Hughes Aircraft Company were selected in the nationwide IR-100 competition for the 100 most significant new technical developments of the year. These five winners put Lewis third behind giants General Electric Company and Union Carbide Corporation in 1977, and twelfth out of 500 on the all-time winners list, - far ahead of any other federal laboratory.

Cash awards for reporting a technical innovation were made to 46 Lewis staff members and 20 contractor personnel.

In University Affairs, the first year of Project MINE was completed. Project MINE comprises a wide varietv of activities between Lewis and Tennessee State University and between Lewis and Tuskegee Institute and is aimed at helping to launch minority graduates into useful aerospace careers. The two projects so far have involved eight students on summer jobs, two transfers of equipment, a research grant, a lecture, and two visits to Lewis by 22 students and faculty.

The Lewis Visitor information Center, managed by the Educational Services Office, neared completion, with all but one of the seven subject galleries finished, or nearly so. In use during construction, the VIC had 60 percent increase in traffic over 1976. In the VIC Resource Room, 908 teachers copied 8,734 slides, 54 audio tapes, and 50 video tapes and gathered thousands of flyers for classroom use. The Lakewood and Parma school systems developed astronomy and energy teaching units drawing substantially on Lewis information and Rostafinski for airing visual aids.

A Spacemobile is a van bout twice as many work- reached 300.



Cyclotron at Lewis creates a neutron beam for experimental treatment of specific cancer tumors.

Lewis Box Score – 1977				
	Public contacts (6-state area)			
Traveling exhibits (38 events)	9,000,000			
Film viewing (20,763 loans)	3,696,250			
Spacemobile (1193 demonstrations)	183,878			
V.I.C. Visitors	32,000			
Speakers' audiences (193 speeches)	31,285			
Center tours (475 tours)	22,306			
Mail inquiries answered	17,577			
Teachers Workshops (268)	1,995			
TV, Radio, Press				

to Polish-speaking people.

Yet another highlight was plus lecturer with enough the annual meeting of the visual aids for a variety of Cleveland Regional Council school programs. The three of Science Teachers, Novem-Spacemobiles tour Lewis' ber 4 and 5. Lewis Research six-state area (Ohio, Michi- Center was both host and gan, Indiana, Illinois, Minne- participant; Astronaut Jossota, Wisconsin). Spacemo- eph Kirwin, M.D., was banbile personnel presented a- quet speaker; attendance

> The Educational Services Office also manages film loans, answers general interest mail; supervises tours, and operates the speakers bureau; see "Box Score".

The Public Information Office was expanded and its capability increased with addition early in 1977 of a Public Information Officer.

One of the main thrusts of the Office during the year was to reflect the changing image of Lewis as an aerospace center of leadership to one including substantial achievements in technology transfer, such as the Center's growing role in studying and developing alternate energy forms for terrestrial applications.

Notably, sizable promotional efforts were under-

infrared thermography of heat-leaking rooftops in a number of cities, the Office actively sought to boost the stock of Lewis as a proponent of space technology for terrestrial purposes.

By number, some 75 press releases were produced and distributed during the year to local, regional and national media; this effort was augmented by Headquarters corelease of most of this material to their extensive news media lists. Nearly 400 individual media requests or call-generated media responses were recorded at year end, each of them resulting in specific placement of Lewis news on the air or in print of local, regional or national character.

In spite of proposed cutbacks in manpower and program money, efforts to reassess Lewis' new place in the scheme of things and to find new opportunities to tell the Lewis story are succeeding.

Among other noteworthy items in 1977:

• PIO detailed a staffer fulltime to the Combined Federal Campaign for three months, sharing in the achievement of a recordbreaking \$750,000 raised from among Greater Cleveland federal employees. • Lewis traveling exhibits were provided for 30 events in our six-state area with additional displays supplied for eight continuing exhibitions. • The Lewis News distributed 5000 copies on a biweekly basis to the staff, Headquarters, other NASA installations, federal government agencies, and approximately 1000 Lewis "alumni."

Grants were active at five minority colleges and universities where a match had been found between the grantee and his students and a Lewis technical activity. The 14th year of the

ASEE/Case Western Reserve University Lewis Summer Faculty Fellowships brought 33 faculty from 32 universities to the Center for ten weeks of participation in research and an eclectic program of lectures and other activities.

The Director of Technology Utilization and Public Affairs continued to be active in several university advisory and civic capacities in order to help tie Lewis to the broader community.

shops for teachers as in 1976, participated in summer workshops, including Lewis' 8th Annual Aerospace Workshop for Teachers, with college credit offered by Baldwin Wallace College and by Kent State University. The Spacemobiles also conducted two weeks of programs at Chicago's Museum of Science and Industry. While there, they participated with members of the museum staff in "News of the Air", a question and answer radio program; the program was subsequently distributed to 800 Voice of America stations. Voice of America also taped discussions of NASA

work by Lewis' Dr. Wojiech

taken in support of the Communications Technology Satellite, solar cell applications and wind energy devices. Considerable media attention resulted with the promise of even greater productivity in 1978.

Better ways to project the Center's current R&D involvement were investigated, and procedures were initiated to help accomplish the objective of showing Lewis as a continuing strong component in maintaining U. S. superiority in aeronautical and space propulsion.

Through exploitation of such technology transfers as new batteries from electric vehicles, the fast neutron cancer therapy program, and

In sum: a busy and productive year for this Directorate.

Lewis News May 12,1978

Visitor Center

sets record

for April

Over 7,000 people visited the Lewis Visitor Information Center during April, more than in any previous month. The previous monthly record of 5,493 was set in July, 1976, the month the VIC opened.

Programs presented to 52 different groups at the VIC last month reached 2,564 people, while 4,468 walkins brought the April total to 7032. Included in the walk-in total were some 2,000 Girl Scouts from the Greater Cleveland area who visited Lewis on four consecutive Saturdays.

"Large crowds will continue through May and early June. The VIC calendar is filled up for May and the first two weeks in June. Programs being planned for 89 groups this month will reach an anticipated audience of 4,800 people," Richard Athey of VIC said.



Carol Gibbs (left) and Diane Steadley of the VIC made visiting instructor Hall Easterling a very happy person, sending him back to Elkhart, Indiana with loads of teaching material for use in his school district. (Tom Cowell photo)

Teacher lauds VIC for furnished teaching aids

"Why haven't other schools been told of the large number of materials available here?" asked Hall Easterling, as he wound up three days of gathering audio-visual aid, for his school from the Visitor Information Center.

Easterling, a teacher in the Elkhart, Indiana Community Schools, was here to gather slides and other graphic depictions of NASA work "to help teachers improve teaching skills in mathematics, science and social science." More than 13,000 students in that Indiana school system will benefit from the material, Easterling said.

(Continued on page 4)

Lewis News: July 7,1978

Teacher's find... (Continued from page 3)

The material was gathered from the Teacher's Resource Room of the VIC which has a slide library, slide copier, audio-cassette library, extensive stocks of NASA educational publications and even lesson plans for teachers. Video programs available for copying range from "'A' Is for Aeronautics," to "Living in Space." All are available free of charge to teachers. The latter may call Diane Steadley (433-4000 Ext. 6110) for an appointment or come to the VIC and select what they need.

Some 1200 slides copied by Easterling are highest number ever copied here.

"The material available here is just a Godsend. It has eliminated the bureaucratic nightmare of ordering for our library. We can now show students even more about NASA and its historical significance. You can be sure we will be getting more materials about NASA as its programs unfold."

VIC observes first moon landing

For the first time, Lewis Research Center's recently dedicated Visitor Information Center (VIC) will open to the public on a Sunday.

The occasion is to observe the 9th anniversary of the first manned landing on the moon, July 20, 1969, and the "out of this world" place will be open Sunday, July 23 from 1 to 5 p.m. It was also opened on Sunday, July 16.

The Visitor Center, which expects to receive its 100,000th visitor during anniversary month, will be open as usual on weekdays, 9 a.m. to 4 p.m., and Saturday, 10 a.m. to 3 p.m.

To help visitors, youngsters especially, get into "orbit" as they enter the VIC, cardboard Space Shuttles, ready to be cut out and assembled, are being given out free this month. The souvenir is scaled to 1/200th the size of the real U.S. Shuttle Orbiter which is scheduled to be launched late next year.

Once in the "proper tra-

The Centaur story and the special Sunday openings of the Visitor Information Center commemorate the 9th anniversary of the first manned landing on the moon. July 20, 1969. Centaur played a major roll in the success of the first moon landing. jectory," visitors will be able to see how earth-orbiting satellites communicate worldwide, report weather data, inspect forests and monitor pollution. They'll discover how space exploration is still unlocking agesold mysteries of the universe by probing the moon, the sun and the planets. n

As a guest you will learn how NASA, right here in Cleveland, is working to harness the wind, convert the sun's energy into electricity, develop advanced propulsion systems for aircraft and spacecraft, and applying some of this to still other areas that affect people on a day to day basis such as medicine and industrial processes.

Lewis News: July 21,1978

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Vol. 15 No. 18

Virginian, 8, becomes 100,000th VIC visitor

Eight-year-old Rhett Hudson of Reston, Virginia, recently became the 100,000th visitor at the two-year-old Lewis Visitor Information Center (VIC).

Accompanied by his grandfather, Harold Hudson of Olmsted Falls, Ohio, Rhett enjoyed a special tour of the Visitor Center and was presented a book of photographs of the earth taken by the Landsat satellite.

He also received a framed aerial photograph of the Center. Part of Rhett's interest in the Lewis Center derives from the fact that his father, Wayne Hudson, worked at the Lewis for about 13 years as an aerospace engineer and is currently program manager for electric propulsion in the Office of Aeronautics and Space Technology at NASA Headquarters, Washington, D.C.

The Visitor Information Center has seven main exhibit areas: Flight in the Atmosphere, Flight in Space Terrestrial Energy Systems, Servants in Space, Propulsion, NASA Technology, and Materials Research. Many of the exhibits are "hands-on," allowing visitors to participate. The VIC

(Continued on page 2)

100,000th visitor...

(Continued from page 1)

is free and open to the public daily except Sunday. Hours are 9 a.m. - 4 p.m. Monday through Friday, and 10 a.m. -3 p.m. on Saturday. Families, small groups, and individuals may visit any time during those hours.

Tours can be set up in advance for groups of 20 or more by calling 216-433-4000, ext. 731, or writing to the Visitor Information Center.

(commuca on page 2,



Judy Christofferson of the VIC holds one of the new "take one" boxes containing information booklets about the VIC. Employees are invited to place one or more of the little booklet-filled racks at a favorite location such as church, store or other public area. (Martin Brown photo)

Way to go! Be a VIC booster

A campaign is underway to tell the public more about Lewis and NASA through the Visitor Information Center.

"I believe the employees can really help," said Calvin W. Weiss, Chief, Educational Services Office. "What we particularly would like to see are employees taking boxes of brochures to public places they commonly visit."

Here is what is being done: Posters, along with brochures, are being sent to 1800 school principals within a 100-mile radius of Lewis. More than 100 of the containers (Continued on page 2)

Be a VIC booster...

(Continued from page 1)

are being sent to airport managers of fields within the same radius. All airlines at Cleveland Hopkins took at least a box for their employees. The Information Counter at Hopkins also will be displaying our folders.

Cuyahoga County Library System has 26 boxes. Akron and Stark County Libraries have 18 boxes. Other library systems have brochures, including Lorain, Geauga, Franklyn Sylvester in Medina, and Portage Lake in Barberton, Ashtabula County.

Brochure boxes also have been sent to the Cleveland Automobile Club, Better Business Bureau, Board of Realtors, Convention Bureau, Growth Association, Anderson Tours, See Cleveland Tours, and the Information Desk of the Federal Building. Nearly all the motels up and down Brookpark Road have been supplied.

Weiss said, "One good location possibility for the boxes are area restaurants. Many of you have favorites or have friends in the business. How about getting a box or two into their hands. Barber shops and beauty parlors also sound like good places. "If you have ideas and wish to assist, drop into the VIC and ask for a box or two. We would like to know where you are planning the dropoff so that we can keep a record." "We have had many, many favorable comments regarding the VIC and NASA from visitors during the week and on Saturdays. Although we will have close to 50,000 visitors this year, we can easily accommodate twice that number. "This is your Center to enjoy and boast about and we can all get behind the program to invite the public to visit us and visit us often. Pick up your VIC brochures in the VIC."

VIC sets visitors' record

More than 11,000 people toured the Center's Visitor Information Center (VIC) during October to set a new monthly attendance record for the facility.

In observance of NASA's 20th anniversary, the VIC was open to the public all five Sundays in October, in addition to the usual weekday hours.

The VIC has now returned to its usual operating hours: weekdays, 9 a.m. to 4 p.m., and Saturdays, 10 a.m. to 3 p.m.

In November the VIC theme will be "Space Technology in Daily Life," featuring exhibits depiciting how space technology is being used in down-to-earth applications.

Lewis News: November 9,1978



DR. WALTER T. OLSON, DIRECTOR

The U.S. Olympic luge team, dental researchers, poultry processors, ophthalmic surgeons and miners are among the many and diverse targets for assistance from applications projects of the Technology Utilization Office. In 1978, nine projects were added to eight continuing ones, all designed to demonstrate, or assist in the transfer of, aerospace technology to areas of broad benefit to our nation's people. Among examples, a medical emergency communications system was designed for the City of Akron and is now in use.

Lewis also contributed 56 items to NASA's quarterly magazine, *Tech Briefs*, a handsome current-awareness publication with wide circulation in business and industry. T.U. staffers gave 17

Technology Utilization and Public Affairs

Many of Lewis' staff contribute to the technology utilization mission: cash awards were earned by 47 people here; the Center Director presented Awareness certificates to 92 staff members; and more than 700 received letters of appreciation.

Five of eight items submitted were winners in the nationwide IR-100 competition for the 100 most significant new technical developments of the year. With a total of 26 such awards in the last 12 years, Lewis now ranks eighth in the nation on the all-time winners list, right up there with the nation's corporate giants.

The Visitor Information Center, managed by the **Educational Services Office**, was dedicated with ceremonies during the week of April 24. Since then it has served as a point of interest for dozens of meetings hosted by Lewis, has sponsored six interactive programs with other parts of the country via the Communications Technology Satellite, and has greeted its 100,000th visitor. Publicity by pamphlet and by announcements on radio and TV is swelling

Evansville, Indiana • Community Program, Albert Lea, Indiana

• "Chicago Meets Outer Space," with Chicago State University

• National Sun Day, with 10 speakers out and tours at Lewis

• "Hurray for Black Women," Cleveland

• Lewis' 9th annual Aerospace Workshop for Teachers, with college credits offered by Baldwin-Wallace College and Kent State University

With an addition to staff, the Educational Services Office initiated efforts to serve education, cable and public service television with informational tapes, films and original film converted to The ASEE/Case Western Reserve University Summer Faculty Fellowship program brought 24 educators here.

The Director of Technology Utilization and Public Affairs continued to be active in several university advisory and civic capacities in order to help tie Lewis to the broader community.

The Public Information Office was heavily engaged in a number of media-attracting events in 1978. NASA's 20th Birthday celebration in October won broad radio, TV and press coverage, interviews were arranged for newly arrived Director McCarthy. The office helped with public affairs events and media needs for several Department of



The remote Papago Indian village of Schuchuli in Arizona is touched by the spaceage addition of a photovoltaic array supplying all of its electrical needs. Dedication of this world's first solar electric village power system took place on December 16.

tape. To date, a conservative estimate of audience for all products in this activity is 50 million viewers, Energy-Lewis events: dedications of wind turbines at Clayton, New Mexico and Culebra Island, Puerto Rico, and solar cell power installations at Lassen, California and Schuchuli, Arizona. Several programs using the Communications Techno-

logy Satellite received special support from the Public Information Office. Media activity continued to be generated for launch operations involving extraordinary payloads such as Pioneer-Venus probes and HEAO's with a view to focusing local media attention on Lewis' contributions to the success of these missions.

Five 28-minute TV shows on NASA role in terrestrial energy were prepared and shown by NBC in New York, Los Angeles, Chicago, Washington, Dallas and Cleveland.

Some other activites:

• Prepared and distributed 80 news releases to average of 300 media each.

• Served TV with 35 interviews, radio with 50 interviews.

• Served 400 media requests for detailed information.

• Processed 76 Freedom of Information requests.

• Prepared special answers to more than 500 public inquiries.

• Managed exhibits program; see Box Score.

• Published Lewis News bi-weekly; 5000 copies to staff, NASA Headquarters and installations, other agencies, news media, and retirees.

At year end, the PIO was endeavoring to increase its activities by adding staff, using contractors and enlisting help internally. Sixty representatives from all major R & T activities at Lewis have been charged to identify and rough-draft newsworthy stories for processing by the Public Information Office.



At dusk, the 200-kw wind turbine at Clayton, New Mexico, takes on artistic dimension. The generator, dedicated in January, became the first to be connected into a community power system in this country on a continuing basis.

speeches on their business. In February, a Lewis team presented a conference session, "Making Aerospace Technology Work for the Automotive Industry" at the 1978 SAE Congress and Exposition in Detroit. Also approximately 3000 technical inquiries were serviced by the T.U. office during the year. attendance. Its resource room for educators served 820 teachers with 15,373 slides, 123 audiotapes, 640 video tapes, 128 short (4½ min.) movies, and thousands of pamphlets and flyers.

Some noteworthy events sponsored or assisted by the Educational Services Office in 1978 were:

• Community Program,

mostly in the midwest.

The Educational Services Office also manages film loans, supervises three Spacemobiles (van with lecturer and visual aides for school programs), operates the speakers' bureau, provides tours and answers general interest mail. (See Box Score.)

In University Affairs, Project MINE, which is a wide variety of activities between Lewis and Tennessee State University and between Lewis and Tuskegee Institute aimed at launching minority graduates into useful aerospace careers, completed its second year. Additionally, grants were active at five minority colleges. All in all, a busy and productive year for this Directorate.

Lewis Box Score - 1978 Traveling exhibits (78 events) 9.221.500 Film viewing (20,417 loans) 3,003,540 Spacemobile (1,182 programs) 150,356 V.I.C. Visitors 64,000 Community Programs (3 events) 43,580 Speakers' audiences (222 speeches) 37,135 22,444 Center tours (492 tours) 5,691 Mail inquiries answered Teachers Workshops (249) 3,765 TV, Radio, Press Est. millions

Want to tour the VIC? Here's how!



Employees, resident and contractor personnel: Has your child's class toured the Visitor Information Center (VIC)?

If they weren't among the more than 7500 students (kindergarten through high school) from 160 schools who have visited VIC since September, why don't you have them suggest to their teacher, a field trip to Lewis?

The recently completed VIC has some of the most exciting exhibits in these parts depicting the space agency and Lewis' roles, plus VIC will prepare a program for groups of 20 or more students, scheduling visits two weeks in advance.

For students in kindergarten through second grade, a 90-minute program is recommended. The program includes explaining the work at Lewis, looking at the many VIC displays, and watching a film or videotape. To insure that the students get the most out of the visit, there should be one adult for every six to ten children.

There is usually a two hour program for third through ninth graders.

And if Junior high school students are bused here, VIC will schedule a drive around the lab.

High school students ususally visit two laboratory facilities. The 10' x 10' Supersonic Wind Tunnel, Propulsion System Laboratory, and the Communications **Technology Satellite control** room are the most frequently visited tour stops. Other stops can be arranged.

Over 170 groups are scheduled for the remainder of the school year. Plenty of dates are still available, but they are filling rapidly, especially those in March, April, and May.

If you would like your child's class to learn about the work done here at Lewis, send a note to school. and send this page along with it. It has all the information a teacher needs to plan a visit.

By the way, how long has it been since YOU toured the VIC?

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J. YDANI 11cm ma. 1 11.51. 10.0 イイシノ .E

Bion nasa, He thank you for howing us come to the Lewis Personal Center and you the demonstration of the space suit and the ford it a out to crystan. 1. Allet in space. He reaking for d discussion me and the life and the videstree of the space thatter. The set of the class really i four the dis also an really i in in it is also and may son

> tirculy yours. Student a tim



Dear Mr. Poe. Suart to the nk you for giving us those demonstrations at Nasa Decally enjoyed thim. You know what you were talking about and sepressed it in a pleasing way. Suspecially light the second part about action and reaction, and that liquid Ritrogen was really cool . hope if I come back again Swill see you, Got Honatin

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The Herry Top Para . Seuis Research

I mformation Center

Diar Mir Tipe, I really injoined the talk you gave on space you thoroughly went through all the parts of the Town Sundary is in space from on the is in space from on i and how fast you would travel ite. I think I've harned alot more about he the astronauts perform this daily living Hanks you for quing us a better new of space

Sincerely, Jackie Ott

Dear n.a.s.a.

I liked everything that I saw especially the that I sour especially the movies because they were very exciting. I also liked the building destroyer because it made me feel like I was blowing up the building ! I enjoyed the rockets in the folly because they made me feel I was in space. I am sure the rest of the class liked it, too. I hope I can come again very soon with my family.

Sincerely, Robin Scenelloder

Dear Sira,

Ididn't know what Oduant know what Defacted, but, when Ogot thue, Dwas guite surprised. Ot was guite educa-tronal and interesting. yound the extilities especially need They were disagned in a manner in which aimost everyone could

understand.

The little added things, lise the pressure bar etc, were

farrenteng Odified to thankyou to ritaing our class to bu fit in Byour busy social

Sincerely yours, Bicky Garling

april 26,1978

yours Truly. Tony dacotte

Dear Mr. Pope, I liked the part of the field trip when you gave the talk about how many layers of the space suit three are and how they protect the astronaut in space.



Lear Lindy Thank you for leting us we some things some hank you tgr ' deing, nice YOU TOT teorining Inank atronaut abyol ine cini Ŷί.Ύ .ith and, how they ear eat and what

Vear Mr. Kga, Sharkyou for taking the time to bill no about a ner I liarrid many new things. There experiments were very informing. I especially liked barning about the solor latences and de shill. ciafe. if my hard lick to time

At INFORUMS VII & VIII

Comments show wide-ranging concerns

Editor's note: The Awareness INFORUM series provides a means for the Lewis staff to express their concerns and ideas regarding many aspects of Lewis operations to Senior Management. Comments and concerns of the staff as heard by Management Senior members at the last two INFORUMS are included in this article along with responses and feedback from Senior Staff those members. The directors who participated were Walter F. Dankhoff, Reliability & Quality Assurance; Daniel J. Shramo, Space Systems & Technology; G. Mervin Ault, Energy programs; James F. Connors, Technical Services; Dr. Bernard Lubarsky, former Deputy Director; Warner L. Stewart, Aeronautics; William Dey, Jr., Administration and Jack B. Esgar, Engineering Services.

How can Lewis make its capabilities and programs known – especially to those who influence our future?

MANAGEMENT RE-SPONSE: The discussion groups on this topic were both lively and stimulating. indicating a strong interest and some concerns. The groups' consensus of our public relations is that much more needs to be done, that knowledge of our work and accomplishments fails to adequately reach the public. The problem is perceived both on a local scale with regard to Lewis and on a national scale with respect to NASA. Much concern was expressed that the public is really unaware of the full spectrum of NASA activities, and that most people associate NASA with high visibility space projects only. Furthermore, the prevailing public attitude regarding the productivity of federal employees doesn't help the situation.

communications satellite programs, medical research projects, and Boy Scout activities. The groups also tried to contribute a number of new or expanded avenues to give Lewis more exposure and promote its programs. Some of the groups more specific concerns and suggestions, and senior management's responses are as follows:

COMMENT: **STAFF** There is a need to improve the staff's understanding of exactly who has a major influence on our future including the determination of what programs are assigned to Lewis. In order to improve this situation, invitations should be extended to key Headquarters personnel, who are responsible for program and budget planning. to visit Lewis and explain the planning process, including NASA's interfaces with OMB and Congress.

Lewis should invite some key members of Congress and other VIP's to visit the Center and become better acquainted with our programs and capabilities. The Center's top management -Director, Directors Of, and Managers of major projects - should devote more of their time and energy in selling Lewis programs to NASA Headquarters. The staff needs to be regularly informed of these activities, including both positive and negative results.

It certainly is important that our staff understand how NASA's programs are selected and assigned to Centers and who plays a major role in this process. Although there are several activities with this objective in mind, and improvement that can be made in this area should be actively pursued. One example of this is the Project Management Training Course that has been offered in the past and which will be repeated several times this year. This course brings in a key top official from NASA Headquarters, OAST, to discuss NASA Headquarters operations, including the planning process and selection of new starts.

pects the Center Directors Of, and Managers of Major Projects, to do the same thing. In addition, he has stated that our approach should be somewhat different. We may have shown a little technical arrogance in the past, "Just give me the money and the time and go away and I will do the job." Recognizing that in the real world and the competition for new starts, this attitude is unrealistic. We need to become good salesmen in every respect in order to sell our programs and our capabilities

In regard to informing the staff as to our success or lack of success in obtaining new work and new projects, it is obvious that this is of prime interest to the staff and they deserve to be informed as completely and as soon as possible. The yearly Director's Message to the Staff and the follow up Directorate Meetings, plus Division Meetings, etc., are a major source of this information. Obviously, these actions may not be timely nor complete enough to keep the staff adequately informed and new avenues of approach need to be explored.

Many members of the Lewis staff have little knowledge of the status of Lewis projects and their accomplishments. Often they are not even aware of all the major projects the Center is working on. This lack of information becomes particularly bothersome when attempting to inform friends and neighbors about Lewis, its purpose, and programs. Publication of a brochure or report periodically which explains, in a simple way, what how they benefit the nation, the city, and the local people. Also, an informed staff will feel a greater sense of pride in the Center, themselves, and what we are accomplishing.

Upon studying the situation, one concludes that there are in existence, many publications available which attempt to keep our staff informed. Foremost among them is the LEWIS NEWS which you are reading. See, especially, the first-of-theyear editions! There are also brochures on the Center with broad descriptions of its programs and operations, project reports, etc. However, the problem with most of these documents is that they provide the needed information in a "piecemeal" fashion. We need to explore the possibility of periodically publishing a single document that provides a summarized description of each of Lewis' major programs and projects.

Senior Management is kept informed as to the status of the Center's total programs and projects and we bear the responsibility to insure that all levels of the organization are verbally informed on a continuous basis with no breakdowns.

What do other NASA Centers do to sell their programs and gain the support of the general public?

Tom Griffin of KSC, who visited Lewis to observe an INFORUM in action, stated that KSC was setting up displays showing slides and handing out brochures on KSC activities at shopping centers and malls. They are also providing packets of information on KSC activities to contractors after the aties are often of greater importance to the country than many of the prominent stories in the newspaper or on T.V. However, because its effect is long term, its explanation at times complex, and its not being controversial, Lewis activities are generally not regarded by the media as front page or prime time material.

Lewis should publicize the good things it does which the public can relate to such as the items which appear in NASA activities and Spinoff 78. It's important to publicize our activities in schools to inform the coming generation.

We aren't doing enough. Nevertheless, Lewis has many activities which publicize it's work. Because we so frequently get inquiries on this subject, I think the staff should know more about these activities, so I'll expand my response.

Lewis' Public Information Office tells our story nationally through the media. For example, in 1978, 80 news releases went to an average 300 media per release, and we had 35 television interviews and 50 radio interviews, including a number with Dr. McCarthy during October. A five-part series of television shows on energy programs was repeated in 6 of the nation's largest cities. Additional television programs feature news or use NASA film-clips. Special programs, including press conferences, are staged for events such as wind turbine dedications, solar array installations, exceptional uses of the communications technology satellite, etc. The PIO processes about 100 telephone calls for information weekly. Several dozen trade journal articles about Lewis work appear annually. The contacts that result can only be estimated-probably tens of millions. In the six state area served by our PIO and Educational Services Office, Lewis' exhibits were in 78 events last year with nine million attendees; 20,416 film loans served an estimated audience and 222 of 3 million, speeches were delivered to 37,125 people.

A number of positive elements of our public relations were identified. These included promotion of the Visitor's Information Center, the Speaker's Bureau, the Spinoff publication, Dr. McCarthy has already indicated he intends to expend a considerable amount of his time working with key people in NASA Headquarters to show them what we do and can do. He also exprojects the Center is conducting, their purpose, their accomplishments, and status would be very helpful in keeping the staff informed.

This type of information is transmitted to the staff through various meetings, but often there is a breakdown as it passes through the many organizational levels.

We should keep our staff well-informed as to what projects are underway at Lewis, their status, etc., for several important reasons. One is that an informed staff can be a very effective part of our activities to acquaint the general public, particularly at the local level, with our programs at Lewis and ward of a KSC contract.

We have no plans for displays at shopping centers, but the possibility and payoff of doing this will be studied along with a general study of the nature and value of displays that is underway. A NASA-Lewis display is being prepared for installation at the Cleveland Hopkins Airport.

Lewis should see to it that more of its activities are reported on the front page of newspapers and during prime time on television.

The media judges the importance of news and determines where it appears in newspapers or when it appears on T.V. Lewis activiMore than 400 copies of Spinoff -78 have been sent to selected local leading citizens. Lewis participates strongly in a number of community affairs.

(Continued on page 8)

INFORUMS VII & VIII... (Continued from page 7)

In education, Lewis relates to universities with research contracts, graduate programs in aeronautics, resident research associateships, summer faculty fellowships, service on advisory boards, lectures by Lewis' staff, loaned faculty, training courses here, and a variety of temporary employment opportunities for students: co-ops, interns, work/study, and summer jobs. Several programs are active with selected minority institutions. In schools, Lewis' Spacemobiles gave 1182 demonstrations to 150,136 youngsters and 249 workshops to 3765 teachers; the program is being reduced this year, however. Of the 64,000 people visiting the Visitor Information Center in 1978, about two thirds were students; about 900 teachers annually use material from the educators' resource room there. The VIC is advertised with flyers and radio and TV spots. A new Lewis activity serving education, public and cable television has already achieved 48 showings of NASA films and videotapes to millions of viewers. More than 17,000 mail inquiries, mostly from students or teachers, are answered annually. Special events for students were held in Cleveland and Chicago this year. We maintained displays in the Supplementary Education Center of the Cleveland Public Schools.

All in all, a lot of action! See the January 5, 1979 issue of the *Lewis News* for the full story. Dr. McCarthy seeks to augment activities that will give Lewis the good reputation that it deserves.

How can we utilize skills and talents more effectively at Lewis-including yours? managements have not been able to reverse that trend for NASA and Lewis. It has been thought that we could counteract this trend by contracting out some of the less critical functions. It has been our policy to maintain our in-house skills in critical areas and to utilize that skill in part to guide the work of the supporting contractors. It would be a mistake to erode the quality of the in-house capability including the creative designs and sound engineering of Engineering Services. These concerns are being further explored in the Engineering Services Directorate.

The hardware our contractors are supplying for use in-house is often inferior to what we produce in our own shops. We must spend too much time correcting it.

Recognizing that we must contract some of the work if we are to maintain our level of overall Center output, then it becomes incumbent on the contract manager to work to upgrade the quality of the contractors' product. It was understood that progress was being made in this direction. Surely, we cannot afford to do the job twice, especially when it requires the investment of our in-house staff.

The skill mix of professional to support staff is out-of-balance to the point that the higher paid professional staff must perform support type work that support personnel could usually do better.

This is a topic upon which there continues to be a lack of full agreement among various members of senior management but it comes up often enough that it must be recognized as true for some areas of the laboratory effort. Meetings such as IN-FORUM are serving to focus management attention on this issue.

such as the Air Force. The previously mentioned review to develop better methods for allocation of our engineering and technical support resources should minimize these occurrences.

One way we could improve utilization of our people is to provide small amounts of often used parts in their trucks to men who work around the laboratory so they do not have to wait for stock orders and delivery in the middle of a job.

Another good thought! Technical Services Management has reviewed this observation and do not feel it is generally valid. Good work planning and layout would dictate the on-hand availability of stock and parts before a job is initiated. However, this comment will be passed on to persons who can investigate further and take action as appropriate. Other similar suggestions that were made but could not be reported herein were also passed along to responsible persons.

First-line supervisors are spending too much time performing administrative duties at the cost of failing to provide technical direction and participating in the technical work of subordinates. Can my supervisor (in a five-man section) be relieved of the administrative burden? The method of selecting first-line supervisors was questioned. Do managerial abilities apply in the selection of a supervisor, or is it simply technical ability and seniority?

By definition, a first-line supervisor has both administrative and technical responsibilities and can't afford to neglect either. Without actually doing the jobs of subordinates, the good supervisor develops plans and methods, makes assignments, provides technical direction, evaluates personnel performance, motivates and provides for the training and development of the people under him. Essential to his success are two-way communications and understanding of their respective team roles. Bring this up for discussion at one of your section meetings! In the selection of firstline supervisors, both technical and managerial skills must be taken into account. The individual's qualifications should be matched to the job requirements. Seniority per se is not a major factor, only insofar as it reflects specialized experience, maturity and breadth of knowledge.

In the press of providing services to others, our computer equipment cannot be properly maintained. Note was taken of the Technical Services' annual shutdown of the central process air systems for preventive maintenance. Not suggesting that the computers necessarily be shut down, but couldn't the technicians be taken off the everyday firing line to do some software development and introspective thinking to promote long range improvements.

Computer equipment under CSD management responsibility is maintained in two ways. First, a preventive maintenance is conducted at regular intervals (twice weekly) to insure that equipment is performing as required. Second, when inadvertent failures occur, remedial maintenance is performed to get the equipment back into operation as soon as possible. Furthermore, software enhancements of the basic operating systems are continuously being made to effect long-range improvements.

With regard to providing needed maintenance to equipment, it is impossible to provide good service to customers if equipment is not adequately maintained. If you feel that we are not adequately maintaining equipment because of pressure to provide service, discuss it with your supervisor. There may be a good reason for taking this compromise, or it may be an oversight.

Too many experimental/ computational records are kept on file. Can this excessive paper burden be controlled by limiting the amount to be saved to engineering units and eliminating the raw data counts and all intermediate data reduction steps. Supervision merely cites some vague policy, rather then dicussing the logic (i.e., merit or inadequacy) of the proposal. To save engineering units only would destroy the ability to reprocess data, after the fact, if an error is detected. There have been instances, in the past, of incorrect hookup or calibration shifts being detected after the experiment is completed. The only way to salvage such data is to go back to the raw data and redo the intermediate data reduction steps. Since experiments are

very costly, and in many cases the data cannot be retaken, the policy has been to maintain the data and records at a level to permit compensation for such errors.

As instruments become more sophisticated and micro-logic is built into the instrumentation, the raw data may well become the engineering units. Also, as more computing power becomes available in the test cell, the engineering units will become available from the mini-computer for direct recording. We are currently considering the pros and cons of accepting computed engineering units as the minimum record from the facilities with sufficient computing power to make this a valid alternative.

Frequently, programs and equipment are developed and provided by Computer Services only to find that, when the system was installed in the field, it was poorly laid out causing engineering inefficiencies and excessive equipment unsafe. The suggestion was made to set up a task force to inspect field installations. Can CSD be more actively involved in the total project team? It seems that CSD consultants aren't consulted.

Obviously, CSD personnel have assigned responsibilities in areas of data acquisition and computing systems and must be regarded as recognized members of the Center's research and technology teams. As with any effective team, all of our resources (expertise) must be focussed and applied to their specialty areas to insure overall success of the Center mission. In the Lewis matrix organization, communications again are vital to project effectiveness and interpersonal skills are at a premium. Presently, CSD is planning on setting up an ad hoc task group, much like that suggested. It will be chartered to make a review and an assessment of the efficacy of all ESCORT field installations. It will include both CSD and field representatives.

The in-house staff in Engineering Services is losing its skills because we contract out so much of the work including the important analytical (and conceptual design) effort.

We have been forced to reduce our staff over the years and from President Carter's recent speech, it would appear that there is a plan to again modestly reduce the overall government staff which could impact us. NASA and Lewis There are cases where hardware has been created on a priority basis and when completed, it has not been immediately placed into the research program. This seems wasteful.

Surely such occurrences are not representative of the best utilization of our talents. In a dynamic organization such as ours, however, it is not unlikely that priorities could change because of some unforeseen need in our program or to meet an urgent need of some other agency whom we serve

"What are the obstacles to getting work done at Lewis?"

The procurement cycle is much too long for both hardware and R&D con-(Continued on page 9)



Judy Christofferson of the Visitor Information Center admires an enlarged color photo of Jupiter's giant Red Spot. (Don Huebler photo)

Visitor center to open every day in July

During July only, the Visitor Information Center will be open all five Sundays, plus evenings, Monday through Friday, in addition to regular visitor hours.

The complete July schedule will be as follows: Mondays through Fridays, 9 a.m. - 9 p.m.; Saturdays, 10 a.m. - 4 p.m.; Sundays, 1 p.m. -6 p.m.

Man's first landing on the moon took place July 20, 1969. Apollo 11 was the mission and the historic astronauts involved were astronauts Neil A. Armstrong, Edwin E. "Buzz" Aldrin, Jr. and Michael Collins. The 10th anniversary will be observed nationally July 16 -24.

At Lewis a special exhibit of spectacular color photo enlargements of the planet Jupiter and its satellites, taken earlier this year by the Voyager 1 spacecraft, will be on display. Voyager 1, launched by Lewis, conducted the most detailed scientific examination ever made of Jupiter and five of its major satellites. Revelations of the violent environment of the Jovian domain came during the first week of March. Voyager 2 is scheduled to take additional photographs of Jupiter during its flyby in July.

In addition to the photo display, Lewis will present special 20-minute lectures and films reflecting man's advancement from the first moon landing to present and future space exploration programs. Topics will include:

• Man in Space – Apollo 11 through 17, Skylab, Apollo Soyuz Test Project and Space Shuttle.

• Aeronautics, 20th Century Transportation – Short Takeoff and Landing Aircraft, Vertical Takeoff and Landing Aircraft, and Quiet Clean Efficient Engines.

• Spacecraft, Our Link with the Universe – Exploration of Planets and the Solar System.

• Satellites Serving Man – Communications, Weather and Earth Resources.

• Energy – The Lewis Center's efforts for the Department of Energy to help solve the nation's energy crisis.

The Visitor Information Center is made up of seven galleries including: Servants in Space, Flight in Space, Propulsion, Flight in the Atmosphere, Materials Research, Technology Utilization and Energy.

Families, small groups and individuals may visit any time during the hours listed for July. Tours can be arranged on weekdays for groups of 20 or more by phoning in advance 216-433-4000, ext. 731, or by writing the Visitor Information Center.

VIC opened each day last month: record 17,000 came!







The Lewis story got to more people in July than ever before. The occasion was the Apollo 11 observance and myriad of activities prompting record crowds at the Visitor Information Center.

In fact, the VIC reports that Sunday openings and other extended hours, plus strong promotional efforts brought 17,077 people in to see the exhibits.

"From 5 to 10 p.m. on weekdays we averaged 60-70 people," said Richard C. Athey, manager of the VIC. "We also saw crowds on Saturday, but on the five Sundays we were open, the VIC averaged 700-1000 people, most encouraging."

According to Linda Peterson, coordinator of the Center's efforts to project the 10th anniversary commemorative events, television public service announcements went to 13 stations, and 71 radio stations received spot announcements. Strong newspaper efforts backboned the "publicity" campaign.

In addition to the VIC

promotion, astronaut candidate Judith A. Resnick became part of the celebration on July 18. People from all over northeastern Ohio were able to either see or hear one of the first women astronauts on TV or in person at the VIC.

More than just the general public visited Lewis during the 10th Anniversary period. Tourists made from foreign lands as well as out of state school groups, summer day camps and professional associations, also combined to make July a "top encounter" month.

"With record visitor numbers in July, we will most likely reach 120,000 people visiting the VIC by yearend," reports Calvin W. Weiss, head of the Educational Services Office. "That is our goal, and July brought it within sight."

The Lewis story got to more people in July than ever before. The occasion was the Apollo 11 observance and a myriad of activities prompting record crowds at the Visitors Information Center.















VIC is now open every day

Space buffs can now view displays at the Visitor Information Center here *every* day of the week, including Sundays, beginning November 4.

For the first time since it opened to the public in July of 1976, the Visitor Information Center has added Sundays to its regular schedule of public visiting days.

"We're trying to accommodate more families and students who want to come to Lewis to keep up with space, aeronautical and energy advances," explains Calvin W. Weiss, chief of the Center's educational programs. "When we first opened our doors a little over three years ago, we drew 20,000 visitors a year. Now we have annual traffic of over 100,000 and it's still growing."

Free to the public, the Visitor Information Center's new Sunday hours are 1 p.m. to 5 p.m. Visiting times on all other days remain the same: Saturdays 10 a.m. to 3 p.m., and weekdays 9 a.m. to 4 p.m. Small groups including families and individuals are welcome anytime during these hours. Plenty of free parking is available.

Tours of the Visitor Center and research facilities at the 360-acre Lewis Center may be set up for Mondays through Fridays for groups of 20 or more by advance appointment by calling (216) 433-4000, ext. 731, or by writing to the Visitor Information Center, NASA Lewis Research Center, 21000 Brookpark Road, Cleveland, OH 44135.

The Visitor Center comprises seven main exhibit areas: Terrestrial Energy, Servants in Space, Flight in Space, Propulsion, Flight in the Atmosphere, Materials Research and Technology Utilization.

There is also a modern 150-seat auditorium where films, seminars and lectures are presented. A wide range of films and other audio-visual aids are stocked in a separate library for educators. Screening in specific interest areas can be arranged in conjunction with group visits.



"Father" of VIC retires

Calvin W. Weiss, who retired December 12 after 36 years of service, recalled that his greatest contribution to Lewis was "fathering" the Visitor Information Center.

He conceived and supervised the design and construction of the VIC, which will have shown displays of past, present and future NASA and Lewis programs to some 100,000 visitors this year.

Serving as chief of the Educational Services Office at the time of his retire-

(Continued on page 2)





Weiss retires. . .

(Continued from page 1) ment, Weiss previously served as the Center's assistant training officer and chief of the Technical Publications Division.

His Educational Services Office works closely with educational officials, industry, the general public and students in a six-state area from Ohio to Minnesota through various print and electronic media.

Post-retirement plans include traveling, participating in the American Aviation Historical Society, the Great Lakes Historical Society, the Academy of Model Aeronautics, painting, and singing at weddings, a little-known fact among his co-workers.

Cal and his wife, Marilyn, live in Parma Heights and are the parents of two daughters. A retirement party for Cal will be held Sunday, January 27, from 3 to 5 p.m. in the Administration Building Auditorium. Contact Jean Bertoia, PAX 2269, for tickets.

ADMINISTRATION: Still provides all administrative and management support

Administration William Dey, Director Victor Gordon, Deputy Director, Resources & Financial Mgt.					
		Personnel Division Paul Cline Clarence Forbes, Deputy			
		Financial Management Division Charles Calvert			
		Procurement Division Clarence Brown			
		Resources Management Division Paul R. Cote			
		Management Services Division George Mandel			
		OFFICES: Environmental Health Julian Earls Security Andrew Corcoran Plum Brook Management Raphael Koch Patent Counsel Norman Musial Chief Counsel William Brahms Occupational Medicine			
		John Gulan			

Technology Utilization & Public Affairs Walter T. Olson, Director James E. Burnett, Industrial Programs

> **Public Services Office** Harrison Allen **Technology Utilization Office** Paul Foster **Public Information Office** Paul Bohn

tives of the Administration the Financial Management Directorate are essentially Division. Business data sysunchanged. The Directorate provides the administrative and management support ty of the Financial Managefor all Center operations. It also acts as liaison with NASA Headquarters, other NASA Centers and other elements of the Federal Government on administrative and management mat- vision provides such servters.

The Directorate comprises five line divisions and six staff offices. Budgeting and financial control for the

Organization and objec- Management Division, and tems and processing for the Center will be a responsibiliment Division. Additionally this division administers the payroll, all disbursements and collections, accounting, and financial reporting.

Management Services Diices as editorial, graphics, photography, library, printing, communications, travel, transportation and mail. The Personnel Division Center are provided by the provides the full range of Deputy Director for Re- support services including sources and Financial Man- recruiting, training, classifiagement, the **Resources** cation and employee counseling and service, and labor relations activities. Procurement will continue to provide those services necessary to acquire the goods and services required to support the Center's programmatic and institutional needs.

Administration Directorate staff offices help establish policies and practices and generally administer the functions that their name implies: Environmental Health, Security, Plum Brook Management, Patent Counsel, Chief Counsel and Occupational Medicine.

TECHNOLOGY UTILIZATION AND PUBLIC AFFAIRS: Manages the external relations function

The Director of Technology Utilization and Public Affairs manages the technology transfer, informational and public affairs activities of the Center. Changes from the reorganization of the Center are small. This organization comprises three offices.

• The Technology Utilization Office facilitates the transfer of technology derived from Lewis activities to non-aerospace users. It systematically searches for, identifies and communicates by a variety of methods those technical innovations that have potential usefulness to non-aerospace sectors of the national economy. The office also initiates and manages projects designed to make aerospace technology directly applicable to nonaerospace purposes.

• The Public Information Office, with the Public Services Office, plans, develops and carries out local, regional and national programs to provide the public with information about NASA and Lewis activities. The PIO works principally with the news media to achieve public awareness and appreciation of Lewis goals and activities. The PIO also publishes the Lewis News.

• The new Public Services Office continues the activities of the former Educational Services Office, serving in particular the educational community within the six-state area of Ohio, Indiana, Illinois, Michigan, Wisconsin and Minnesota. Activities include the Visitor Information Center, film loans, Spacemobile, teaching resources, teacher workshops and student programs. Additionally, that office will manage part of the Center's university affairs and such public services as community programs, speakers' bureau activities and public service television.

The Lewis Awareness program, chaired by the Center Director, will move to Technology Utilization and Public Affairs, with the Director of TU and PA serving as its vice-chairman. The program is intended to help the Lewis staff understand and appreciate the mission, objectives and accomplishments of the Center and its components.

The Director authorizes

EQUAL EMPLOYMENT OPPORTUNITY: Evaluates EEO status and recommends policies

Research Center to afford equal employment opportunity to all employees and applicants for employment at the Center. An equal employment opportunity program and goals have

It is the policy of the Lewis been established to insure equality of opportunity in employment, development, advancement and treatment of all employees and applicants for employment regardless of race, color, sex, religion, national origin,

age, physical or mental han- goals and programs. dicap.

the Center's Equal Oppor-The program is administunity program Suborditered by the combined efforts of Center management. nate line managers are resupervisors and the Equal sponsible for implementing **Employment** Opportunity the goals, programs and Office. This staff office timetables in their areas of evaluates the EEO status responsibility. Equal Employment Opportunity Ofand recommends policies,

Office of **Equal Employment Opportunity** Edwin M. Robinson*

*Acting Chief

fice staff members monitor progress and advise line officials who respond with appropriate action. These procedures reflect the Center's policy that line management is as accountable for meeting Equal Opportunity goals as for meeting mission goals and schedules.

The LEWIS NEWS presents the Lewis Research Center story in terms of its people, its purpose and its progress. Published on alternate Fridays, the News is produced by the Public Information Office, Lewis Research Center, National Aeronautics and Space Administration, 21000 Brookpark Road, Cleveland, Ohio 44135

News items should be phoned into PAX 3284, or sent to Room 120, Ad Bldg., Mail Stop 3-11. Deadline is ten days prior to publication. Editor Charles Mitchell

NASA displays at Lew



NASA'S EFFORTS TO EASE THE ENERGY CRUNCH ARE DISPLAYED.

By PAT DREGER C-T Staff Writer

Even the most casual visitor can almost feel his or her brain shift into a higher gear when browsing through the magnificent Lewis Visitor Information Center.

The center is located on National Aeronautics and Space Administration grounds at 21000 Brookpark Road in Cleveland.

Admission is free. Just stop at the gate and the guard will direct you to the visitor's center. A blue line painted on the roadway takes you right to the parking lot. Hours are 1 to 5 p.m. Sunday, 10 a.m. to 3 p.m. Saturday, 9 a.m. to 4 p.m. weekdays except holidays.

GUIDED TOURS are available for groups of 20 or more, but individuals and families are welcome to visit whenever they choose, and are often invited to attend special group programs in the center's auditorium.

Space buff or not — the attractions of the center offer a wonderland of fascinating displays which light up, move, rotate or entice involvement in other ways. Many displays include brief, easy to understand recorded messages.

Mounted on the lobby wall is a display of scale models of American aircraft from the Wright Brothers in 1903 to the most recent supersonic aircraft. Another wall features scaled models of

C-T photos by D

Chronicle-Telegram/Sunday Scene December 28, 1980 7

s Center an adventure

18 launch vehicles from the early Scout to the mighty Saturn V.

SEVEN MAIN AREAS stretch from the far reaches of the unexplored universe to our own kitchen and backyards.

The "Our Servants in Space" area has a six-foot scale model of Earth. slowly turning on its axis. Displays in this area feature the various Earth orbiting satellites - weather satellites which allow meteorologists to keep an eye on developing weather conditions; communications satellites inexpensively and quickly relay telephone and television signals around the world; and "Landsat" - the satellite whose polar-orbit images allows us to view the entire Earth once every 18 days, enabling fast and economical map-making, relocation of wildlife, study of geological features, location of minerals, and detection of plant disease or insect infestation.

FLIGHT IN SPACE displays include a replica of the Sun with images of the planets and the moon superimposed to show the comparative size.

A photo-globe of the planet Mars, and a scale model of the moon share space with information from various space probes. A chunk of moon-rock is on display.

Continued to Page 8





STUDENTS from Windsor School listen to a recording about future jobs in the aircraft industry. Pictured are (left to right) Peggy Plummer, two unidentified students, Brad Paxton and Mrs. David Paxton.



THE RELATIVE HEIGHTS OF VARIOUS AIRCRAFT ARE SHOWN IN COLOR.

111. 1222 C. 1221 1222.



Elyria students write impressions

BY PAT DREGER

Growing up in the space age in no way detracts from the thrilling mysteries of space exploration, and school children love a visit to the space agency. A group of third (and a few second) graders from Windsor Elementary School in Elyria went to N.A.S.A.'s Visitors Center in Brookpark on a field trip December 1. Classes involved were those of teachers Emma Paonessa, Carol Stradley, Nancy Whitney and Diane Schroeder.

Continued to Page 8



KELLY KOCSIS (left) and Debbie Owens listen attentively to a recorded message.

BRIGHTLY colored displays and recorded messages make NASA's story come alive.

NASA displays are outstanding

From Page 7

A copy of "Sounds of Earth," the record sent aloft with Voyager spacecraft to convey a picture of life on Earth to anyone who might come across it, plays in short segments to interested listeners. The record is a collection of electronic information which can be converted into diagrams, pictures and printed words. Human voices send "greetings from the Planet Earth" in 60 languages. Samples of music, nature sounds, representative photographs of all the earth's peoples are included.

"TERRESTRIAL ENERGY" is an area in which NASA's Lewis lab is deeply involved. Included are displays on new energy sources, fuel-conservation engines and energy research projects.

"Propulsion" is another area of main involvement for NASA, developing quieter and more efficient aircraft engines, better propulsion systems for deep space flight and reuseable space vehicles.

"Flight in the Atmosphere" details NASA research in aircraft design, flight altitude and speed, and environmental impact.

AN INTERESTING DISPLAY shows a map of northeast Ohio, which lights up to show the noise "footprint" of old DC-8 or 707 models landing or taking off as compared with the new 747's or DC-10's. The noise factor is about half with the newer aircraft, and further development is expected to confine the noise to the airport area.

"NASA Technology is Everywhere" is the theme of the Technology Utilization area. The myriad benefits of space technology are sampled in an assortment of displays:



THE LOBBY WALL has one of the most impressive of the displays as its shows 156 representative American aircraft. Each model is scaled one inch for six feet and each is neatly labeled with a number which corresponds to a number of a wall board listing the aircrafts names. Visitors are asked to see how many then can identify. For example, No. 1 is the Wright Brothers' "Kitty Hawk" and they go all the way to No. 156 which is the space shuttle. or displays.

 freeze-dried foods developed for astronauts has led to packaging techniques for the elderly, for recreation and other uses;

 computer technology in banks, airline reservation desks, hotels, newspapers;

 lightweight, extra-warm clothing developed for use in space has been adapted for use on Earth as ski clothes, hunting boots, children's snowsuits, mittens, etc.;

— the techniques for separating stages of rockets have been used in creating emergency explosive devices called "Jet-cord" which can fell huge buildings or bridges neatly and safely; and the "Jet-axe" which fire-fighters and other rescue people use to cut emergency openings in steel doors, roofs, brick walls — the device simply blows out a neat opening without destroying the whole structure;

 the rechargeable Pacemaker for heart patients, which eliminates the need for frequent surgery to replace the instrument, was developed from miniaturized solid state circuitry and rechargeable batteries for spacecraft;

— fire retardant materials originally developed for use in space have been put to daily use in carpeting and draperies, in aircraft seats and sidewall panels, as well as for fire-fighting outfits.

"METALS RESEARCH" has one of the center's most popular exhibits, an array of metal samples arranged in order of increasing density (weight) from magnesium to tungsten. Visitors select a sample, push a button to light up areas of major sources of that metal on a wall map of the world, and a lighted panel indicates the melting point and various uses of the metal.

Visitors can take their own blood pressure.

From Page 7

The children wrote their impressions of the museum, and we would like to share a few of them.

OUR TRIP TO N.A.S.A. By Leslie

"When we went to N.A.S.A. we saw model airplanes on the wall in the lobby. There were old planes and new planes. There were 106 model planes on the wall. We heard Mr. Pope tell us about some of the planes. One of the planes was called Wright Brothers plane. It was the first airplane to fly in 1903. There were helicopters on the wall.

"Next we saw a big globe of the earth, like you would from 1,000 miles in space. It looked different from a regular globe. Next we saw models of some satellites. One of them could get a picture of the earth to see if there was pollution in the water (Landsat equipment.)

"Next we went into the auditorium and listened to Mr. Pope tell about the space suit and what the food looked like that the astronauts ate. We saw a film "Day in Space" then some slides about the planets, such as Jupiter and Saturn. After we saw the slides we got on the bus to school. At school we ate our lunch and played a game of mixed up space words. We all had fun and we all wanted to go again some day."

The End

...

Eight-year-old Brad was moved to poetry:

They can try out paper money on a device which "reads" various denominations for the blind.

NASA's visitor information center holds fascinating adventure for people of all ages. It's hard to believe a place so educational could be so much fun.

Students writeimpressions

SPACE Space is a place Space is a pretty place Space is a weightless place You can race in space.

...

Another account of the trip to N.A.S-.A. is given by Heather,

A Trip to N.A.S.A. By Heather

"When we were at school, we got ready to go to N.A.S.A. We went on a bus and my Mom went with us, We left school at 9:00 and it took us a long, long time to get to N.A.S.A. All of the children got off the bus and we went inside. There was a man named Mr. Pope and he showed us a movie and some slides. He showed us some planes and one looked like a heart. He then picked David to come up and David put a space suit on. We all went upstairs and some children got their blood pressure taken. I was scared to. They passed food around like pea soup and cranberries. We were given some papers and we left at 10:30. We got back to school and we ate lunch. Then we went home."

The End

...

Julie S. was impressed with the life of astronauts in space:

"When we got to N.A.S.A. we saw a lot of aircrafts on the wall. George Pope our tour guide, said they were 160 aircrafts on the wall. When we went into the auditorium he showed us how astronauts wear their suits. When they are inside the spacecraft, they wear inside clothes. When they are outside they wear outside clothes. When they let us go into exhibit areas they had head-phones to listen to. I went upstairs and they had a blood pressure thing. Kathleen had her blood pressure taken, but when it was my turn we had to go back to the auditorium."

Young Laurel seems to know a lot about the solar system — and intends to know a lot more about the whole subject...

SPACE By Laurel

"The nine planets and their moons and the sun make up our solar system. The planets are different sizes. The planets go from one to nine. First comes Mercury, then Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto. The planets revolve around the sun in orbits. Planets close to the sun take less time to orbit than planets farther away from the sun. The largest object in the solar system is the sun. The planet on the track farthest from the sun will take the longest time to go around the sun. It takes Pluto two hundred forty eight years to go around the sun. Mercury takes only eighty-eight days to go around the sun. Also in the skys you see constellations. There are Cassiopeia, Great Bear, Orion, Big Dipper, Little Dipper. At the end of the Little Dipper is the North Star. There is also Draco. The sun pulls on the earth. The pull of the sun is gravity. The sun's gravity keeps earth in orbit. The earth revolves around the sun all the time. The astronauts need special things to go to space - like air.

"When astronauts landed they landed in a spacecraft. It only takes a few days go to the moon. There are many things that are in the sky that we don't know about. But we'll find out all the things that we don't know about."

(Atta girl, Laurel, we will find out.)

Communications Consultant Helps Get The Word Out

Michael D. Roberts, a journalist and public relations professional who spent 16 years as editor and publisher of "Cleveland Magazine," brings his talents and enthusiasm to Lewis. In addition to heading up negotiations for an aerospace complex at the International Exposition Center (I-X Center) in Brookpark, which would include a museum, offsite visitor center, and Space Camp, Roberts is helping improve internal and external communications at Lewis.

Q. What is your role at Lewis?

A. Well, I'm a consultant of sorts. Basically I was asked to look at the state of internal and external communications. Easier said than done. Because of the complexity of the work and the vastness of the Center, we face some of the same communications problems that we do with the general public. Not many people are clear as to what it is that we do.

Q. Besides your communications background, are you familiar with aeronautics and space?

A. I have a lifetime fascination for both. When I was a reporter for the *Plain Dealer* in Vietnam, I got to fly a number of combat missions in a number of different aircraft. I know what it feels like to pull some hard Gs and I know what it is like to be upside down and afraid. I'm not a pilot, but





those experiences gave me a great sense of aviation, and more importantly a feel for the people involved in it. You always got a sense of confidence and mission from them. In the short time I have been here I have noticed those same two qualities.

Q. What have you learned about Lewis so far?

A. Anyone who visits Lewis realizes that this center is really self-contained. Once you get past the guards at the front gate, you are dealing with a unique environment.

I also learned that the amount of talent, intelligence,

and energy at Lewis is stunning. Over the years, Lewis has been tasked with so many different kinds of projects, that it is hard to focus on one particular area. The community is really unaware of the contributions that Lewis has made in the last 50 years. I think the employees and the public need to know more of what Lewis is all about.

Q. Can you change that?

A. Well, I can't do that alone, but there are some things that we all can do. You have to make changes in steps. It is a mater of organizing your effort.

Q. Is there anything wrong with the Center's image?

A. No, there is nothing wrong with Lewis' image. It's just that people don't understand what Lewis is all about. The aerospace complex would offer a whole new experience for the community. People will get to know and appreciate that Lewis is right here in their community.

Q. What are some ways Lewis employees can generate community awareness?

A. One way Lewis employees can get the word out about the Center is to become more involved in their local communities. By participating in local government, fund raising, and other events—and getting to know some of Cleveland's movers and shakers—the public will get to know Lewis Research Center. Many do that now.

Q. What about on-site ways to improve Lewis communica-tions?

A. I'm still in the process of meeting with key people to find out the individual roles they play. We are working on ways to improve on-site awareness. I do believe, however, that the *Lewis News* is a great place to start improving employee communications. The paper should always be the focal point of change. We need to communicate and tell people on one side of Brookpark Road what the people in the Hanger are doing and vice versa. That means meaningful, quality news and features. So I hope we'll be seeing a lot of changes in the *Lewis News* in the months to come.

Q. How can moving the visitor center off-site help Lewis?

A. The I-X Center draws 1.5 million visitors annually, and moving the visitor center to that location would give Lewis high-visibility in the community. The I-X Center is an ideal location because it offers the footage and ceiling height necessary to house large aircraft. The visitor center, along with a museum and Space Camp, would also help local students to understand and nurture an interest in aeronautics and science.

Q. When do you think the aerospace complex will become a reality?

A. We are beginning a study that will give us the details of the cost. I would hope we can conclude that in say, nine months. Legal work on a private foundation has begun. It would run Space Camp and the museum. Lewis would retain control of the visitors center and run it much in the same fashion that it is now. It is too early to give you the exact date. We are going to learn more as the study proceeds.

Visit VIC

With gasoline prices still soaring, you and your family may want to consider seeing the sights right here at Lewis.

The best place to go for a look at what's happening in space, aeronautics and energy is the Visitor Information Center.

With more than 40,000 visitors already this year, the spaceage attraction is no more than an hour's drive for most Cleveland-Northeast Ohio residents, far less for West Side Greater Clevelanders.

This will be the first summer the Visitor Information Center is to be open every day of the week, including Saturday and Sunday, a policy adopted last fall. Sunday hours are 1 p.m. to 5 p.m.; Saturdays, 10 a.m. to 3 p.m.; and weekdays, 9 a.m. to 4 p.m. Small groups including families and individuals are welcome any time during these hours. There is no admission charge and plenty of free parking is available.

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Seven main galleries comprise the Visitor Information Center.



Voyager watchers

An overflow crowd of more than 3,000 visitors poured into the Lewis Visitor Information Center November 11, 12 and 13 during the Voyager 1 spacecraft close encounter of the planet Saturn. Some had to be turned away.

The events were shown live on a huge television screen to the unexpectedly huge throng of spectators. The largest single crowd, 1617 people, came on November 12 when Voyager 1 made its closest encounter, some 77,174 miles from the ringed planet. Principal investigators discussed the data streaming in, including pictures of Saturn, its rings, and its moons. A Lewis team launched the Voyager 1 on September 5, 1977. (Don Huebler photo)

Lewis News: November 21,1980



Vol. 18 No. 14



New VIC display reports on energy

Energy is just one of seven main galleries at the Visitor Information Center, but it's one of the most popular as evidenced by new exhibits such as this Solar Energy Reporter. The Reporter "calls" out the amount of useful sunlight energy available for the day before, so far today, and as of the moment.

More than 50,000 already this year have visited the VIC. Regional Transit Authority (RTA) bus service, now available on weekdays, should help swell those numbers this summer.

Exchange branches out to VIC

The Lewis Exchange Store established a branch in the Visitor Information Center on December 2 to serve the nearly 100,000 visitors who come to the Center each year.

Richard Athey who manages the VIC, said plans were formulated about two years ago to add the branch because visitors wanted to buy memorabilia but were not permitted to go to the Exchange Store. "It's really great. The store satisfies a demand and request of the public and it's our job to serve the public as best we can," Athey said.

Ruthe Nosko, longtime Exchange staffer, who set up the store, says that business has been good and that most of her clientele so far are school children. Hottest items sold are space-related souvenirs including T-shirts, models, pictures, charms, patches, stamps and ice cream that the astronauts ate while in space.



Ruthe Nosko waits on a customer in the new Exchange Store branch in the Visitor Information Center. (Laura Bagnell photo)

"During the week, we get a lot of school children. However, on weekends, parents bring their children and they (parents) purchase items for them." Nosko said.

Currently, the hours of operation correspond to the weeklong visiting hours observed by the VIC.

Lewis News:

<u>VIC UPDATE:</u> Astronaut and solar system displays updated

Presently, two displays are being updated at the Lewis Visitor Information Center.

The astronaut display is being completely redone. The new display features each Mercury, Gemini, Apollo, Skylab and Apollo-Soyuz mission, and it includes a color picture of each astronaut, the actual mission patch and a brief mission summary. The first three Shuttle missions will also be included in this exhibit and information on each forthcoming shuttle flight will be added.

The solar system display is being updated to include

information and pictures on the planets Jupiter and Saturn. This display will include a glimpse into the outer planets of the solar system.

Energy Conversion is the theme for the month of May. On each Saturday and Sunday during this month, the Visitor Information Center will be showing on an hourly basis video tapes and films dealing with energy conversion. Briefings on the Lewis Research Center will also be given on weekends. Saturday hours are 10 a.m. to 3 p.m., Sunday from 1 to 5 p.m. and weekdays from 9 a.m. to 4 p.m.

Lewis News: May 7, 1982

<u>VIC update:</u> New solar system display ready

By Pat Hannan The Visitor Information Center has completed work on a new solor system display that includes the latest information and color photos obtained by the Pioneer and Voyager missions.

Included is a chart comparing the planet's features, how they were named and their mythological meanings. The display also includes NASA's Space Telescope and details of Lewis' role in the exploration of the planets. Deep space telemetry and coverage of other NASA space probes is included. New information will be added when available.

The unique feature of the

exhibit is the manner in which the color transparencies are displayed. Credit for transferring the picture transparencies goes to the Lewis Photo Lab.

The solar system exhibit was designed by John Ulrich; construction was supervised by Dick Athey.

"Energy for Trans -portation" is the monthly theme for June. On each Saturday and Sunday this month the VIC will show documentaries dealing with this subject on an hourly basis.

Saturday hours are 10 a.m. to 3 p.m.; Sunday from 1 to 5 p.m. Weekday hours are 9 a.m. to 4 p.m.

VIC update:

Forget Pacman, come to Lewis this summer

By Pat Hannan

Do you dread the thought of summer arriving with the kids home all day spending their money on the likes of Pacman? Well, fear no more — the Visitor's Information Center has initiated an individual tour program.

It is designed for persons who can't meet the group tour requirements. Available every Wednesday afternoon from 2 to 3 p.m., the program consists of visiting two research facilities, primarily the 10' x 10' Supersonic Wind Tunnel and Propulsion Systems Laboratory. Due to their running schedules, both facilities are subject to be changed and another facility is then substituted.

Persons interested in this program must be over 16

years of age, must provide their own transportation and must make advance reservations by calling the VIC office at 267-1187 prior to 1 p.m. on that particular Wednesday. Non-citizens are required to give additional information regarding passport or visa status.

This is a great opportunity for your out-of-town guests and neighborhood friends to see the Lewis Center.

This program has been in operation for over six months and has been well received. Each Wednesday an average of 18 persons participate and during the summer months, that number should pick up considerably. A maximum number of 40 persons can be accommodated on each tour.

VIC demonstrations spark interest

A little smokeless gunpowder, a sponge soaked with alcohol and a vial of liquid oxygen can kindle an impressive blaze that lights up the faces of intrigued students during rocketry demonstrations at the Lewis Visitor Information Center.

The presentation is one of a series of minilessons, exploring a wide range of topics associated with basic principles of space flight and energy research.

While many classroom teachers opt for the popular Space Shuttle and energy programs, perhaps the most captivating selection is the rocketry demonstration given regularly by aerospace education specialists George Pope and Lindy Perkes.

Aimed at the intermediate grade levels, the rocketry sessions are designed to illustrate the advantages of liquid fuels in rocket propulsion over the more conventional solid fuels, a concept first recognized by rocket pioneer Robert Goddard in 1917.

Visual demonstrations serve to enhance the presentations "in a way the kids can relate with," said Pope, a VIC Assistant Manager. "I try to get them involved as much as possible so they can take this information back to their science classes."

Scheduling Coordinator Pat Hannan agrees: "He keeps the kids in the palm of his hand."

Of special interest is his demonstration of solid versus liquid propellants, showing clearly the nature of those fuels to his enthusiastic audiences.

VIC Manager Richard Athey and John Ulrich are also lecturers in the nine-part ongoing series that has both entertained and enlightened over 14,000 students since January. Together, they cover a variety of space research-related subjects, including "Living in Space"—where an eager young volunteer dons a spacesuit—and "Spinoffs", a discussion of the ways in which NASA technology has become a part of everyday life.

VIC UPDATE

Today begins a week-long celebration of National Space Week. The VIC will present a one-hour program at 1 and 3 p.m. today and every day next week. This program consists of a multimedia slide presentation entitled ''The Lewis Factor,'' the film ''Apollo 11-The Eagle has Landed'' and a video tape on the fourth space shuttle mission.

Lewis News:

July 30, 1982 Ordinary room becomes 'gem' of Visitor Information Center **By Pat Hannan**

There is small а windowless room located on the second floor of the VIC. It was originally designed to be a much needed storage area. However, gradually, drywall and paint were applied to the Heating, air walls. conditioning and carpeting were installed. The first furnishings were a table, one slide projector and one slide copier. It was slowly transformed into the Teachers Resource Room (TRR).

The TRR makes available exclusively to educators the latest aerospace information-information not found in current school textbooks-which can be used in the classroom or a science-related situation. The Lewis TRR is the first such facility in the agency and has been used as a model for other NASA centers considering this concept.

Initially, 1,000 35mm color slides were the only source materials in the room. These slides were sorted and categorized by subject. According to Diane Steadley, the TRR education co-ordinator since its inception in 1976, the file has grown to its present size of 4,500 slides with the assistance of NASA headquarters, other NASA centers, the Department of Energy and other organizations. Detailed slide descriptions are available upon request.

Later, audio and video tapes were added. At present, there are more than 375 video tapes available for duplication. The tapes range in length from five to thirty minutes. The TRR has four duplicating capabilities: 3/4" cassette, 1/2" Beta, VHS and

1/2" reel-to-reel.

By the end of 1977 over 500 educators copied 7,498 slides and duplicated 60 video tapes and 27 audio cassettes.

For the year ending 1981, over 1,000 educators copied systems are able to use the TRR during their school's visit at the VIC. Although they spend only minutes talking with Steadly or Judy Buttler, the educators become acquainted with the room and



Judy Buttler (left) and Diane Steadley select slides for duplication in the VIC's popular Teacher Resource Room. Paul Farace photo

17,538 slides, duplicated 1,503 video tapes and 73 audio cassettes.

A 16mm film clip library, single subject audio cassette-slide programs, a vast collection of lesson plans, publications in addition to classroom activities suitable for kindergarten through grade 12 have been assembled and are available to educators. Teachers from area school

are encouraged to schedule a later appointment to use the lessonvues. Teachers are made aware that special slide film is available for a small fee. Educators, however, must provide blank tapes for copying programs.

What's in the future for the TRR? Hopefully, it will expand to larger facilities, Continued on page 4

4

Oshkosh showcases NASA, Lewis work

Continued from page 1

They include Bill Waters, in charge of coordinating the preparation of display panels and models; Bonnie Kaltenstein, scheduling and staffing; Bob Redinger, packing and shipping; Mitch Sojack, publications tent; John Shaw, NASA press tent, and Bernie Cieslak, craftsmanship tent, where technical craftsmen such as model makers will show off their talents in a special display. Providing primary technical support for exhibits and hardware are Paul Adam, Bob Davies, Joe Defazio, Dave Hubbard, Russ Keller, Stu Lowenthal, Jim Lucas, Joe Shaw, Dave Vincent, and Howard Wine.

Three distinguished Lewis scientists of the past will be honored as "outstanding aeronautical researchers." They are Abe Silverstein, for accomplishments as Lewis Director; Irv Pinkel, for his



Experimental wood model makers Randy Kwasny (left), Bob Reminder, Herb Lawrence and Edwin Hagedorn assemble a display model of a quiet-running, fuel-efficient engine for the Oshkosh Air Show. The four craftsmen work in Lewis' Experimental Models Branch. early pioneering work in hydrogen fuel engines and aircraft crash fire research; and John Evvard, key researcher in supersonic flow studies and ion engine work.

Distinguished NASA attendees will also include NASA Administrator James M. Beggs, OAST Director Jack Kerrebrock, and the Langley, Ames and Lewis Center Directors.

Up in the skies of the small Wisconsin town, NASA's AD-1 oblique wing aircraft will make an appearance, along with rebuilt WWII aircraft and sky writing planes that will attempt to create the world's largest billboard, a smoke message 1,000 feet high and six to eight miles long.

In gratitude for the spotlight, Lewis is donating an early experimental jet engine to the Experimental Aircraft Association's aviation museum. Jim Lucas, a member of the Fluid Mechanics and Acoustics Division, "discovered" the 1946 vintage Westinghouse turbine sitting in a crate on the lab and proposed the contibution.

Via Air describes the show

as the ''world's greatest aviation event,'' flying some of the most advanced, state-of-the-art aircraft.

For example, it reports, Quickie Aircraft Company's "Free Enterprise" will be among the most exotic planes on display. The aircraft was designed and built for an unprecedented attempt to fly non-stop, no-refuel, around the world.

"Burt Rutan's new powered sailplane, The Solitaire, and his much-publicized 'Grizzly' bush plane will be highlights. One of the world's fastest recreational airplanes, Doc Brokaw's 'Bullet', and one the the lightest, Molt Taylor's 'Paper Airplane', will also attract a great deal of attention. The 'Paper Airplane' is constructed around a core of a type of cardboard fiber and has a unique, reversible propeller."

Wittman Field is the site and it will become the world's busiest airport July 31 through August 7 as EAA salutes the "A" for Aeronautics in NASA.



In charge of display logistics for Oshkosh, Bob Redinger (left) and Phil Meng inspect two rotary aircraft engines being crated for shipment to the 30th annual air spectacular. Paul Farace photo

Third World nations to seek space benefits

Continued from page 1

villages with a source of potable water for human consumption, livestock watering and irrigation purposes.

In a gallery adjacent to the conference hall, also on display, will be facsimile machines, slow-scan video screens, teleconferencing equipment and computer terminals. All of these will be connected to a photovoltaic groundstation outside. The U.S. Agency for International Development is funding this portion of the Lewis exhibit to illustrate AID's Rural Satellite Program.

Under the program

managed by Lewis, low cost, photovoltaic-powered ground stations will be deployed in rural areas of the developing world to provide communications for education, health care, agricultural planning etc. The first system will be installed in Senegal in early 1983.

Brainard sees the potential

application of this hardware in Third World health clinics, schools and farms. Rural medical practitioners, for example, can request aid in the diagnosis and treatment of their patients, via these satellite communications systems.

The U.S delegation to the UNISPACE '82 conference

will be headed by NASA Administrator James Beggs and will include members of Congress and leaders in private industry, academia and various government agencies.

UNISPACE '82 is a follow-up to a 1968 conference on the peaceful use of space technology.

Up and Coming

William Schneider, 18, son of Lewis employee Bob Schneider and his wife, Peggy, won a four-year scholarship from Equitable Life Assurance Society. Schneider plans to

Providing engineering services to high-technology industry is the aim of former Lewis employee Elmer H. Davison and Davison & Associates, Inc., the local consulting firm he founded earlier this year. Davison, who lives with his wife in Rocky River, retired in February, 1980 after a 33-year career at Lewis, but soon found that retirement life was not for him. After a year of travel, he dug out his old college textbooks and began preparing for the Professional Engineer Certification exam. Last spring, the Ohio State Board of Registration for Professional Engineers and Surveyors awarded him a P.E. certificate and its distinguished Certificate of

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Merit for attaining the highest score in the aeronautical

Retiree opens own firm

and his M.S. in aeronautical engineering at Case Institute

attend Emory University in Atlanta. He graduated from St. Ignatius High School.

Andrew T. Serafini graduated as 1982 class valedictorian of St. Edward High School. Serafini, son of Dr. Tito T. Serafini, won a \$1,000 National Merit Scholarship. He plans to attend Case Western Reserve University in the fall where he will major in biochemistry and medicine.

Chris Matusik, daughter of Lewis machine shop foreman Jerry Matusik, recently had one of her acrylic paintings on display at the Parsons School of Design in New York. The work, a view of the train control tower on Main St., Grafton, also won the high school artist a gold medal in the National Scholastic Art Competition.

BUY U.S. BONDS and Invest in America

engineering category.

Davison's latest move was to form his own engineering consulting firm, backed by a team of Lewis support personnel with experience in communications technology, electronics, computer programming, structural design and thermal systems.

During his tenure at the lab Davison served as technical consultant to the Space Directorate; assistant chief, Spacecraft Technology Division; assistant project manager, Agena Mission. He previously worked 10 years in the Compressor and Tube Division.

Davison earned his B.S. at the University of Cincinnati

of Technology.

Ordinary room becomes 'gem'

Continued from page 3

perhaps with a window or two! Also, Lewis and the VIC hope to establish regional TRRs to be housed in libraries or universities in the six state area presently being served by Lewis. These regional centers would be furnished with duplicate copies of all resources and would continually receive updated materials. The advantages to all educators in the six-state area would be tremendous and the good word from Lewis would continue to spread.



Shuttle Pilot Robert Overmyer's recent Cleveland visit was one of several events in 1982 that drew upon the resources and talents of employees throughout External Affairs.

EXTERNAL AFFAIRS By James E. Burnett, Dir.

External Affairs continued to keep Lewis in the public eye, not only in Cleveland but throughout the nation as well. Four distinct but interrelating groups (Public Information Office, Educational Services Office, Technology Utilization and Special Programs Office and Awareness) combined to produce far-ranging effects.

Public Information Office

Closing rumors and budget cuts.

ward curve with the public. There were bright glimpses early on, of course. Senator Glenn's visit in January drew much favorable media attention. STS-3 coverages included two live half-hour TV remotes from the VIC and some two dozen interviews including Channels 3, 5 and 8 highlighting Todd Nelson whose astrobug collection was an STS-3 "payload." Astronaut appearances by Lousma and Fullerton (at the Detroit Space Odyssey) and Fullerton (at the Cleveland Ad Club's "Aeronautics &

trator Jim Beggs. Each occasion drew heavy, continuing local media response. Outstanding were the Beggs news conference (with nearly two dozen news reps); front page and lead section page stories in the Plain Dealer on the Propulsion Conference; and print and broadcast interviews over the space of 6 to 8 weeks with Andy Stofan.

July/August brought a highly successful NASA participation at Oshkosh '83. ThisConvention/Air Show counted over 700,000 admissions. Major Lewis contributions included: management of the Publications Tent; strong participation in the NASA Central Pavilion Exhibit Tent, Press Tent and Craftsmanship Tent; twelve Forum talks; donation of an experimental jet engine to the Experimental Aircraft Association; Lewis TV crew videotaping "action" for future use. A media-oriented EEO effort to recognize signal contributions and achievements by women and minority employees was begun. Upgrading in layout and content of the Lewis News continued.

studies, advanced turboprop, traveling wave tube potential for UHF-TV. We struck paydirt with lead story, page one treatment in the Plain Dealer for the additional \$107.4 million funding for ATP, Centaur-in-Shuttle and 30/20.

Two special fall media events merit mention. Mini-Trade Press Day, in October, attracted 31 Penton/IPC editors for an exclusive daylong briefing by the Science and Technology Directorate. Earlier this month, Cleveland's second man in space, Col. Bob Overmyer, fresh from STS-5 success, drew heavy media coverages for three days, anchored by a press briefing at the prestigious City Club where he spoke Dec. 8.

Educational Services Office

The Educational Services Office, as usual, continued a very effective outreach.

Literally millions viewed Lewis-produced television programs this past year. Major TV items: 3 half-hour NASA-At-Work television programs about Lewis technology distributed nationwide via WESTAR IV satellite; first-time captioning for television of a NASA film ("Universe") for showing to the deaf; growing use of cable TV outlets.

The Visitor Information Center continued to draw well with visitors totaling about 100,000 for the year. Each quarter one major new program, such as "Space: the Final Frontier," was presented on weekends. In addition, the flights of STS 3, 4 and 5 were big-screen shows for the public in the VIC auditorium. The "Exploring Space" display area was updated significantly and a new exhibit on the communications satellite was opened.

During 1982 we provided exhibits for over 70 events

"Touch Tomorrow Today" exhibition, visited by some 500,000 persons.

In October, two Community Involvement Programs were conducted: in Coon Rapids and Burnsville, Minnesota. During the two events, presentations were made by Spacemobile lecturers and Lewis scientists and engineers to about 65,000 people. Exhibits in two malls in the area were visited by over 250,000 shoppers.

During a January recruitment drive for new members, the Lewis Speakers Bureau added 25 people. In July, a speech training program for all members was conducted. In addition, a new promotional brochure for the Bureau was printed and distributed, almost assuring a stepup in activity for the endeavor.

The two Lewis Spacemobile lecturers, operating from new vans, gave presentations to over 180,000. In addition, they conducted 18 aerospace education workshops for teachers at colleges and universities in our area.

Direct student activities were at a high level. Forty semifinalists in this year's Space Shuttle Student Involvement Program came to Lewis in March. After having their proposed projects critiqued by Lewis scientists, the students revised and resubmitted them to a national judging panel. Of 20 national winners this year, seven were semifinalists from the Lewis six-state area, a remarkable number.

The Summer High School Apprenticeship Research Program (SHARP), targeted at motivating minority high school pupils to seek careers in science and engineering. was again conducted during the summer with 19 students participating. The NASA Science Fair award winners from our six-state region were invited to Lewis for a special VIP day in August. The first draft of "Lewis Contributions to Aeronautics," a publication highlighting the 41-year aeronautical history of Lewis. was completed.

That was the media climate for the early part of calendar 1982. Lots of media attention (but not all wanted). On the plus side, Lewis never enjoyed stronger editorial support, almost across the board. . .broadcast, wires, dailies and weeklies.

The Lewis image hit bottom with Dr. McCarthy's resignation in March. But appointment of the new director, his inauguration in June, the Beggs visit coinciding with the inauguration, and the infusion of new funding for three key programs all combined to reposition Lewis on a strong upcrowds and lots of press. Major Lewis stories that played broadly to both technical and general audiences: full operating status for the MOD-2 windfarm . . . fuel cell technology for electric utilities . . . HOST . . . the SERT-2 ion engine success . . . IAPS . . . the Tunisian solar-electric village for AID. And we made Discover and High Technology with major coverage on advanced turboprops and alternative auto engine work.

Space Day'') drew big

June and July ushered in peak PIO efforts in behalf of the new director, the AIAA Propulsion Conference, and the visit of NASA Adminis-

Last-half '82 media items of note: convertible engine technology, COSAM, icing and more than 5 million people viewed them. An exhibit highlight was a new 7panel display, "Developing Technology for the Future," provided to Gimbels, in New York City, for their

Continued on page 12

Lewis welcomes 500,000th guest to Visitor's Center

A Pratt and Whitney Aircraft Co. purchasing agent had no idea that he would become an instant celebrity when he decided to spend the last few hours of his Cleveland business trip at Lewis' Visitor Information Center.

As the unsuspecting guest walked through the doors of the VIC, he was met by Lecturer George Pope who congratulated him on becoming the 500,000th person to visit the VIC since it officially began taking headcounts on Independence Day, 1976.

Vincent G. Girard, Jr., who was officially greeted by James Burnett, Director of External Affairs, said, "I had a few hours to kill before catching my flight home to East Hartford, Conn."

A delighted Girard was presented with a framed aerial photo of the lab and copies of recent NASA books.

Following the presentation, Girard toured the display area and then left for Hartford with a good story to tell.



Vincent G. Girard, Jr., inspects one of the VIC's space displays during his historic visit. Paul Farace photo

Lewis News August 17, 1983

Volunteer program highlights new VIC initiatives

The Lewis Visitor Information Center is inaugurating a novel volunteer program that will enable it to diversify educational programs and services.

"In addition, the Educational Services Office is transferring some responsibilities to the Visitor Center and to the corps of volunteers to come for the sake of greater efficiency and to make maximum use of the talents of the VIC staff," said ESO Chief Lynn Bondurant.

Heart of the changes is establishment of a volunteer group to help perform tasks assigned to the VIC staffers. Accordingly, they will be able to devote more time to new aerospace education initiatives.

Among these new education initiatives, VIC Manager Richard Athey lists operation of a telelecture program, development of educational materials, and establishment of regional Teacher Resource Centers in the six-state area of Lewis responsibility.

The telelecture program, organized by VIC Educational Resources Coordinator Diane Steadly, will enable students in schools throughout the six-state region to obtain live audio lectures from volunteer Lewis researchers. This will produce a

Continued on page 4

Volunteer program for VIC opens its door to applicants

By Nickie Fadil

All "Lewis people," family and friends of employees and retirees are invited to become volunteers at Lewis' Visitor Information Center. The work is exciting, innovative and all NASA.

Lindy Perkes, manager of the volunteer program, will place volunteers as either lobby aides or docents.

The hours are up to the volunteer, as long as a minimum of four hours in one day per week are maintained. Volunteer hours begin at 9 a.m. and end at 4 p.m., Monday through Friday. All applicants must be 18 years or older.

A lobby aide will greet visitors and groups, answer phones and perform a variety of clerical duties. Typing is preferred but not required.

Docents will answer questions on VIC educational programs, talk to the public and give lectures to groups in the VIC auditorium. Prerequisites are communication skills and familiarity with aerospace information. Technical backgrounds are preferred but not required. Experience in education is also helpful.

A training session for both jobs will be given to volunteers, according to Perkes, who is shooting for a pool of 20 lobby aides and 30 volunteer docents. For more information or an application form, call Perkes at PAX 5127 or 267-1187.

Thomas elected VP

Procurement Contract Specialist Louise Thomas recently was elected First Vice President of the National Contract Management Association, Northeast Ohio Chapter. Thomas, a Lewis employee since 1980, has held positions as secretary and treasurer in the association.





s in past years, three External Affairs Offices - Public Information (PIO), Educational Services (ESO) and Technology Utilization and Special Programs (TU & SP) - helped maintain Lewis' favorable public image in Cleveland, our six state region and nationally. At the same time, the Awareness Office planned and coordinated a very active internal communications program.

In the following report we cover all aspects of the directorate. The ESO, however, is represented in greater detail because of the varied nature of its programs and projects.

Public Information Office

Two major news opportunities were part of calendar '83: the 100th Lewismanaged launch in May and

turboprop program and Shuttle-Centaur.

But icing studies, the low-thrust chemical propulsion effort, development of the repeatable siliconcarbide semi-conductor manufacturing process, holographic research, the bi-polar nickel-hydrogen battery and high-efficiency solar cells for space also produced good press. Two non-technical stories that gained state-wide notice: SEB action leading to the \$20-million Sverdrup contract and the 190 "freshout" new hires.

Local TV coverage of Lewis continued at a high level and national coverage of Lewis projects increased largely through the NASA-issued "Air and Space Reports." Notable print media coverages of Lewis projects appeared in Machine Design, **Industrial Research and Development** magazine, Aviation Week and Space



USN Office of Naval Research - Special Devices

Program, Designers for Industry, Inc., and Frontier

Astronaut Sally Ride's visit in September. PIO used the first to generate broad public attention, worked hard on the second just to "keep up with" media and community demand.

Electronics.

Substantially contributing to the year's solid public information media results were the Oshkosh Convention and Air Show, Cleveland Air Show, STS missions 6 through 9, astronaut visits by Onizuka, Chang Diaz and Bluford and visits by Governor Celeste and Congressional members Stokes, Oakar and Feighan.

Key technology stories of the year. broadsided to trade and general news outlets alike in most cases, were fueled largely by the Center's deepening involvement in space communications, the advanced

Technology, Forbes and USA Today. Last but not least, redesign of the

Lewis News was completed, imparting a more visually attractive, contemporary look. This was paralleled by renewed emphasis on presenting a balanced, high-quality

news content. Noteworthy was the colorfully frontpaged 25th Anniversary issue. Calendar '84 begins on a bright

note, with installation, momentarily expected, of a word processor communication station linking us with the NASA news net and information banks.

Educational Services Office

1983 was a particularly productive



The highly successful visit by Astronaut Sally Ride represented the combined efforts of PIO, ESO and ALERT staffers.

In the area of educational television, an estimated 14 million viewers saw Lewis TV programs. This estimate is conservative, based on returned questionnaires, Broadcasting Yearbook and the Arbitron Rating Guide. Cablecasters were not included, but this market for our programs is expanding rapidly. A new 13-part series -- "25 Years of

Progress" -- was produced and will be aired shortly.

In May, Educational Programs for the Handicapped were initiated. The overall goal involves production or reproduction of NASA educational materials in forms usable by individuals with sight or hearing disabilities.

This year the 500,000th visitor toured the Visitor Information Center. Total attendance for the year approached the 90,000 mark. Programs for area schools remained popular for those school districts providing field trips for their classes. About 590 groups totaling more than 29,000 students received programs this past year. Additionally, 160 adult groups representing business, professional and senior citizens and totaling 5,300 people were served.

During the year, several changes occurred in the VIC exhibits area, and operation of the Lewis Speakers Bureau and the Traveling Exhibits Program were assigned to the VIC. Also, a new VIC volunteer program is well underway.

The Speakers Bureau members gave approximately 200 presentations this year to nearly 20,000 persons.

More than a million people viewed Lewis exhibits this year. The Traveling Exhibits Program is

Paul Farace photo

this year's Space Shuttle Student Involvement Program came to Lewis in March. A highlight of their visit: conferences with Lewis and other local scientists to advise them and help refine their proposals for national judging. One of the Lewis 1983 semi-finalists was selected as a national finalist.

The Summer High School Apprenticeship Research Program (SHARP) geared for 11th and 12th grade gifted minority students and designed to encourage pursuit of careers as scientists or engineers, was again conducted. Also, NASA Science Fair award winners from our six-state region came to Lewis for a special VIP day in July.

ESO served as technical monitor for the production of the partly NASA-funded planetarium program "All Systems Go!" It features NASA's achievements during its first 25 years. The program is currently being used in over 100 planetariums nationwide.

Technology Utilization & Special Programs Office

Four I-R 100 awards, Industrial Research Magazine's annual competition, were received making it 40 Lewis awards in 16 years and placing Lewis 6th among the nation's all-time I-R 100 award winners.

A total of 14 Lewis items appeared in the 1983 edition of NASA Spinoffs. Six of the items related to specific technology transfers to industry. The other items generally described Lewis technical contributions in the areas of aircraft. energy and communications. The TU Office monitored over 1175 grants and contracts for new technology compliance. This was an increase of 10 percent over previous years. Efforts are being made to incorporate this information into a computer data retrievable system. Six application projects for technology transfer were either monitored or managed with university and industry organizations. Several of these projects incorporate substantial industrial funding to support them. Projects are the High Effeciency Klystron Tube for UHF TV; Biomedical Vascular Access Device, ion beam-etched material; Case Western Reserve University Center for Biomedical Excellence, medical materials research; Die Cast Research Institute, coatings to promote longer



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Cleveland Air Show patrons inspect a large-scale model of the Shuttle in one of two large tents rented to house the NASA exhibit.

Paul Farace photo

year for ESO.

A Cincinnati Community Involvement Program (CIP) during the last two weeks of October was the largest community impact program ever. NASA Headquarters, Goddard, Kennedy, Marshall, Langley and NSTL supported the Lewis CIP with personnel and exhibits. A one-day inservice program was attended by 2,300 teachers. NASA exhibits at the Tri-County Mall attracted 150,000 viewers. During a two-week period presentations were given to about 44,000 elementary, 21,000 junior high, 28,000 high school and 500 university students.

In Illinois, Indiana, Michigan, Minnesota, Wiscoinsin and Ohio, Lewis' two Spacemobile lecturers gave 984 presentations to approximately 134,000 students, teachers and general public audiences.

under critical review with a view to substantially update them.

Teacher Resource Room (TRR) operations continue to grow with service to approximately 3,200 educators in 1983. The TRR staff copied 13,000 slides, 2,700 videotapes and provided hundreds of lesson plans and activities and thousands of NASA publications for use in the classroom.

The first Regional Teacher Resource Center was established at Oakland University in Michigan in July. The TRR at lewis provided master copies of audio, visual and printed materials and the regional center is duplicating the materials for educators in their area. We plan to establish such regional centers throughout the Lewis six state region. Direct student activities continued at a high level. Forty semi-finalists in

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Community volunteers swell ranks of VIC staff

By Del B. Zatroch

Twenty area residents have signed up to assist with educational efforts at the Visitors Information Center. The volunteer program, managed by Lindy Perkes, started in August 1983 and grew significantly after publicity went to the local news media in January 1984. From one volunteer in August, the group has grown to 20 and "we're looking for ten more," Perkes said. They come from as near as Fairview Park and far away as Mayfield Heights.

Requirements to become a volunteer are easily met: Take Perkes' in-house VIC training to be a lobby

Volunteer Bill Victory of Lakewood is a distant relative of the late John Victory, the first secretary of the National Advisory Committee for Aeronautics, predecessor to NASA. He retired from the East Ohio Gas Co. in January 1983 where he had been manager of employee benefits.

"I come in to the Visitor Information Center every Tuesday afternoon. I enjoy it very much because I'm interested in the space program. I like to get up and talk before a group. This gives me a chance to do that once in a while. It's especially enjoyable when the audience is school kids and teachers," said Victory. He has been a volunteer since November.

aide or docent (one who conducts groups) and volunteer at least four consecutive hours a week. Hours can be any time between the hours of 9 a.m.- 4 p.m. Monday through Friday. Working options are all day or half shifts of 9 a.m. to 1 p.m. or 12 noon to 4 p.m.

Primary skills needed are the ability to communicate clearly with others in a courteous manner and the ability to understand, assimilate, and transmit to others information on aeronautics and space.

Lobby aides greet and direct visitors on arrival to the appropriate VIC area; answer telephones; type (typing ability is preferred but not necessary); maintain lobby stock material; and keep track of all films and video tapes shown throughout the day. Lewis bus tours, set-up film and multi-media equipment, and research queries.

According to Perkes, "the goal is to create an environment at the VIC in which visitors will be able to understand more easily the purposes of the nation's space exploration and aeronautical research programs. The volunteer effort provides enjoyment and education for those interested and permits us to expand on the services now provided by full-time paid staffers."

The Lewis program is a pilot for other NASA centers. "I believe we're the only center that has volunteers performing such in-depth educational programs and related tasks," said Perkes.

Perkes works with each individual volunteer evaluating individual potential and fitting each into the best-suited area of interest. What is significant is that volunteers generally have no background in aerospace. They range in age from 24 to their mid-60s, have children that are off to college, or are retirees who want a challenge. "When you get volunteers from the community, they learn what

Linda Newcomb of North Ridgeville, another volunteer, is a full-time college student at Baldwin-Wallace College in Berea. She also is an aviator with a pilot's license.

"I've been fascinated by aviation and space all my life. I enjoy flying. The space program is something I really believe in and I want to participate in some way. Being a volunteer at the information center is an enjoyable way to do this. I get a lot back too. Although I don't get paid I feel that the enjoyment from this activity is well worth the time and effort. The small children are especially fun because they are so interested and excited," she said.

NASA is doing. They get involved and excited about the programs and go out to promote NASA to friends, neighbors and relatives," Perkes said.

The volunteers have their own study office, in which video tapes and films are available for their viewing. Library books, NASA Facts, and information are assembled for their review and home-study checkout.



Evelyn Nunn of North Olmsted wants to be with people since she retired from Sherwin-Williams so she serves as a volunteer in the VIC every Tuesday morning.

Bill Victory, retired executive, carries on the Victory tradition as a distant relative of John Victory, first secretary of the National Advisory Committee for Aeronautics. He volunteers in the VIC every Tuesday.





Docents lecture in the auditorium, assist visitors in the display area through guided tours, and answer questions. Additionally, they conduct

Evelyn Nunn of North Olmsted worked in the graphic arts department of the Sherwin-Williams Co. for 30 years. She heard about the need for volunteers in the information center from the Retired Seniors Volunteer Program.

"I'm retired but I don't want to stay home. I like to be with people and get in on all the commotion and keep in touch with everything. I'm all for the space program and I look forward every week to my Tuesday morning at the center," she said. Anyone interested in becoming a VIC volunteer should contact Lindy Perkes at pax-8102, pbx-731, or MS-8-1.

Volunteers who staff the VIC are: Margaret Burian, Fairview Park: Gretchen Burt, Rocky River; Robert Cattrell, Fairview Park; Glenn Crockett, Fairview Park: Antoinette M. Grove, North Olmsted: Rebecca K. Lee, Fairview Park; Marty Mayer, Mayfield Heights; Jim Merriman, Rocky River; Velma Mohr, Westlake, Also: Darlene Murray, Rocky River; Linda Newcomb, North Ridgeville; Evelyn Nunn, North Olmsted; Marian Parmelee, Westlake; Barb Paul, Parma; John Sulko, Rocky River; Shirley Tabar, Westlake; Eleanor Tkacs, Brook Park, and Bill Victory, Lakewood.

Linda Newcomb, North Ridgeville pilot and college student, points out some details of the Skylab to grade school pupils touring the Visitor Information Center. She likes being a small part of the big space program.

ALERT colloquium

Continued from page 1

lecture in this continuing series," said Center Director Andy Stofan.

Tickets for each of the programs will be available from division secretaries about one week in advance. All presentations will begin at 2 p.m. and will be held in the DEB auditorium, with closed circuit TV coverage available for the DEB cafeteria and Ad Building auditoirium. Coffee/tea discussion periods with the lecturer in the DEB cafeteria will follow the programs. Special ALERT buses will follow the regular Lab shuttle buses beginning at 1:30 p.m. on the day of the program.

TECHNOLOGY UTILIZATION & PUBLIC AFFAIRS



October two-day Open House drew a record 18,000 visitors.

TU&PA had a very productive year, in part because we had the opportunity to build on a unique combination: the Lewis 40th anniversary year and the first two flights of Columbia. A variety of events tying in with these provided widespread exposure for Lewis and Lewis programs.

Technology Utilization

Technology Utilization worked with the Science and Technology Directorate on the Advanced Power Transmission Technology Symposium. The Symposium had T.U. overviews the first and specialist sessions on days two and three, the first such combined event. Other highlights:

• Another Lewis IR-100 winner was received making it 33 in 15 years and a prominent national position for Lewis.

•A total of 16 Lewis items appeared in NASA's 1981 edition of SPINOFF.

• T.U. engineers continued successful work with OTTO (Ohio Technology Transfer Organization), the state's community college-based effort to transfer technology.

• The office monitored over 950 grants and contracts for new technology.

• Four ion beam applications projects were continued under T.U. office project management with university and industry organizations. • Negotiations were completed and an agreement signed for five-year operation of the Lewis cyclotron by the **Cleveland Clinic Foundation** in connection with their National Cancer Institute program of newtron cancer therapy.

five Recognitions, 4 promotions and assistance in five Directorate Messages. That was just the "regular" program.

There were also two special Recognitions: Centaur, for the Nelson P. Jackson Award, and a special "thank you" for the many 40th anniversary volunteers. Awareness also prepared and distributed to the staff the attractive 40th anniversary decals.

Public Information and Public Services

Public Information and Public Services along with others in the TU&PA Office, executed an extraordinary series of events.

Our early estimates show that results in media space and time devoted to Lewis in 1981 exceeded any previous year. Radio interviews doubled over 1980 and TV interviews ranged about 20% ahead of last year. Column inches of print media easily outpaced previous years.

While a portion of these results surely owed to conditions beyond our control (rumors of closing, for example), together they exposed the public as never before to the positive facets of Lewis and to awareness and appreciation of the Center as a resource of excellence.

Six specific events contributed with telling effect:

(1 & 2) Shuttle missions I and II had VIC big-screen TV showings and mission updates for local media by Space Directorate personnel; (3) 40th Anniversary Open House which drew 18,000 two-day attendance (could have been many more if we had been able to accommodate all) and produced our first cover story ever in the popular weekend entertainment tabloid of the Plain Dealer and a front-page story/color photo treatment in the Cleveland Press; (4) the October 40th Anniversary program with the Cleveland Museum of Natural History, measured not only in good attendance but in continuous publicity plus development of a promising new association of possible long term mutual benefit (an outreach to the University Circle area); (5) Trade Press Day, which produced an excellent turnout of 31 media and opened or renewed avenues of communication with key technical publication editors (including Aviation Week and Industrial R&D magazines); (6) the Voyager II flyby TV pickup by the VIC which generated record VIC crowds and outstanding local media coverage.

As to the possibility of Lewis closing, strong, local support of Lewis as both a Cleveland and national resource came from the media, increasingly as the year drew to a close. Lewis has seldom had a more supportive press.

Other noteworthy specifics:Calendar 1981 saw a

decided upturn in the amount and quality of trade press attention given to Lewis with both covers and feature treatment.

• Lewis News continued to upgrade content and form, and published two special issues during the year.

• NASA Lewis exhibits within the six-state area of Lewis responsibility reflected more long-term bookings and updated subject matter.

•Draft texts for a dozen new "penny pamphlets" on Lewis projects and activities of importance were completed.

Further major items, in no particular order, were:

WRAHF -- The Director received from Fred Crawford a Lewis 40th anniversary plaque in program ceremonies at the Western Reserve Aviation Hall of Fame annual awards dinner.

SECA -- a long-term agreement was established with the Southern Education Communication Association for their satellite national distribution to public service stations of one Lewis TV program each month. This continues to result in very broad national Lewis exposure, measured literally in millions of people through cable networks, and many public TV stations.

TV CREW -- Help was provided to Jet Propulsion Laboratories at Pasadena during the Voyager Flyby by a Lewis TV crew from TU&PA and Technical Services, with both JPL and Headquarters thanks and compliments resulting.

SPACE ART -- A Greater Cleveland primary schools contest drew 6000 entries, with five outside judges picking 60 winners and runners-up for a later traveling



James E. Burnett Acting Director

exhibit.

LEWIS 40th EXHIBIT --An unusual and substantial 40th anniversary exhibit was constructed and put on consecutive display at the Cleveland Museum of Natural History, the Arcade, the Justice Center and, still to come, the Terminal Tower concourse. It will come to Lewis in February after this multiple exposure to many thousands of Greater Clevelanders.

SFF -- The long running Summer Faculty Fellow Program completed another productive year with 33 participants from colleges and universities around the country.

VIC -- The Visitor Information Center, moving up on 92,000 visitors, children and adult, and with 1170 teachers served in the Teachers Resource operation continues to be a Lewis and Cleveland asset. They built their own first gallery exhibit, with an assist from the Space Directorate, began planned outreach efforts and received thanks and compliments from many.

STUDENTS -- Very strong student involvement programs executed included SHARP (Summer High School Apprenctice Research Program); The Space Shuttle Student Involvement Program and varied Science Fair judging and recognition activities. The Spacemobiles operating out of Lewis continued student programs throughout several states and conducted teacher workshops at Lewis and elsewhere. CITY CLUB -- Last, but very far from least, the Director spoke from the prestigious Cleveland City Club platform with local and national radio and local print media coverage. His talk caused a considerable stir.



Awareness

Awareness, with continued strong input from the Awareness Committee, broad participation from many groups and strong management support, completed a program including the Director's Message, three "Xchanges,"

First Trade Press Day at Lewis attracted 31 magazine editors.

Well, that's not all. We continued active programs in other areas like film and TV tape loans, Speakers Bureau, public mail. But we're out of reporting space. We look forward to the challenges of a New Year with interest and enthusiasm.

Taking on lead role: Lewis expands Teacher Resource Rooms nationwide

The Teacher Resource Room (TRR), a concept for making aerospace teaching materials available to teachers, was pioneered by Lewis, and is now being expanded nationwide.

Recently the Center's Educational Services Office, headed by Lynn Bondurant, received an initial \$220,000 from NASA headquarters to develop and establish TRRs at NASA field Centers across the country.

Plans are underway to establish such facilities at Ames, Goddard, Johnson, Kennedy, Langley, Marshall and National Space Technology Laboratories. The startup funding will provide video recording and viewing equipment, slide storage cabinets and personal computers for each TRR.

In addition, equipment for Lewis' own Teacher Resource Room will be updated.

Dating back to the late '70s, the Lewis TRR has been providing an easily accessible source of aerospace educational materials for organized review and selection by teachers in Indiana, Illinois, Michigan, Minnesota, Ohio and Wisconsin. The TRR has served more than 10.000 teachers in this six-state area where 23 percent of the nation's schools are located.

Monthly through Lewis' TRR, some 300 to 400 teachers are provided with NASA resource materials for use in classroom and other educational or instructional applications. Print, audio-visual and videotaped programs cover such curriculum areas as life sciences, physical science, astronomy, energy, Earth resources, environment and mathematics. Lesson plans are also available to integrate the material into a readily used classroom package.

In the last year, Lewis' Educational Services Office has undertaken a program to locate Regional Teacher Resource Rooms at selected cooperating institutions in the Lewis six-state area.

In January Lewis helped open and dedicate a new TRR (the fourth regional unit) at the University of Wisconsin-Lacrosse to serve some 25,000 educators in Western Wisconsin, Southeast Minnesota and Northeast Iowa. And within the next six months, three more TRRs are planned to be opened in Indiana and Illinois.

Coordinator for the regional TRRs is Judy Olson, who works closely with the Visitor Information Center's Judy Buttler and Diane Steadley.

"With the expanded effort now underway, resource rooms will have a great impact on students and teachers who were previously unreachable." said Bondurant. "And it is our hope that within the next five years we will perhaps be able to set up an additional 200 resource rooms across the country."



Teacher Resource Rooms such as this one in the Center's Visitor Information Center will be established at NASA Centers across the country under Lewis leadership.

Lewis Newsline

SHUTTLE LAUNCH VIEWERS—12 Lewis Quality Circle program honorees will be at Kennedy Space Center for the launch of the 51-F Challenger which (as this isue went to press) is slated for March 3. Payload for the 51-F includes NASA's Tracking & Data Relay Satellite-B and Telesat Canada's Anik C-1 comstat. In addition to getting a bird's-eye-view of the launch, the following honorees-- chosen by their Quality Circle program peers-- will meet the mission team and tour KSC facilities: Bruce Brosky. John Carpenter, Carolyn Clapper, Bob Flower, Mary I ou Herrmann, Tom I apka, Wayne Lafcey, George Mazaris, June Mischnick, Henry Smith, Quieto Thomas and Del Wolfe.

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Lewis 'ambassadors' support varied VIC programs

With some 86,000 people visiting the Lewis Visitor Information Center each year, it's not too hard to figure out why volunteers are needed to help support the center's active weekday and weekend programs.

"Our day-to-day VIC activities would not be a success without our volunteers who serve a valuable and resourceful role in helping us effectively communicate the many facets of the nation's aeronautical research and space programs," says program coordinator Anne Jones, an employee of on-site contractor Bionetics whose 10-member staff has been managing the operation of the VIC since November of last year.

"Full-time" VIC volunteers. who now number 35, come from a variety of backgroundsretired school teachers, executive secretaries, engineers and aircraft mechanics. Among the crop of part-time volunteers are homemakers, chemists and computer buffs.

"The enthusiasm exhibited by our volunteers is inspiring," relates Anne. "Never have I seen a group of people so interested in learning all they can so that they can share with others.

Volunteers serve a minimum of four hours per day, one day a week and receive training for a variety of VIC roles, including:

• Lobby Aides—answer phones, greet visitors and supply information about auditorium programming and exhibits;

• Docents-make presentations on aerospace-related topics and help visitors better understand NASA activities through VIC and laboratory tours;

• Administrative Assistants-help write a volunteer newsletter, maintain an information library and assist with answering phones;

 Technician Assistants help maintain VIC exhibits and audio-visual equipment;

• Weekend Aides-help with set-up and take-down for special weekend programs, and conduct monthly workshops for various community groups.

The VIC has eight major exhibit areas covering aeronautics. space travel, terrestrial energy, and technology spinoffs that benefit humankind. Two of the newer viewing areas are the space shuttle gallery and the communications satellite exhibit.

According to Jones, "The volunteers are helping us expand and shape our programming and improve our service to the community. Many innovations toward new ways of exhibiting and presenting programs have been inspired by our creative and industrious volunteers."

From children to adults, small to large groups, the VIC offers an appropriate program, either on an individualized or cooperative basis. For a group of 20 or larger (up to 150) the VIC offers a program that features a halfhour presentation in the VIC Auditorium, a guided walkthrough the exhibits, as well as a visit to the Center Hangar to see the NASA test planes.

And throughout the year, the VIC works with area schools to plan special tour and visit activities.

Another aspect of the Volunteer Program is providing support and encouragement for its hard-



VIC volunteer trainees and visitors get an overview of the Center's zero-gravity drop tower from Volunteer Program Coordinator Anne Jones.

working volunteers. For example, an annual recognition program is held to demonstrate Lewis' appreciation of volunteer efforts and welcome new volunteers. Also, monthly social activities are planned. And, most recently, the program has introduced volunteer outings to increase interaction and the sharing of ideas among the volunteers.

In addition, a volunteer newsletter, edited by local high school students, helps keep volunteers informed about VIC programs and activities, and provides tips to aid volunteers in executing their respective roles.

gram is conducting a recruitment effort, with plans to increase the volunteer team to 60 people by the end of this year.

"We see our volunteers as NASA Lewis ambassadors." adds Anne. "They not only help to share our story with thousands of visitors, but they also serve as good-will representatives to the community. And judging from their own responses, we seem to be providing them a very rewarding avenue of participation. Many are excited to be part of the nation's space program in this way."

To be a volunteer, reports Right now, the Volunteer Pro- Jones, there are only a few basic

requirements: you must be 16 years of age or older, a U.S. citizen, of sound physical and mental health; and of course, you should be enthusiastic about aerospace research and development.

For more information on the VIC Volunteer Program, contact Anne Jones, PABX 2004. Those wanting to be volunteers should submit a letter of interest, including address and phone number to: Anne Jones, Volunteer Program Coordinator, NASA Lewis Visitor Information Center, Cleveland, Ohio 44135.

Francescangeli to manage VIC operations

James Francescangeli, editor of the *Lewis News* since September 1984, will serve as operations Project Manager of the Lewis Visitor Information Center beginning September 1. The VIC is managed by Bionetics Corp., whose contract began in November of last year.

Francescangeli brings to the project manager position more than 12 years of communications, public relations and management experience. In addition to having served as director of a Cleveland area Community Center, Jim has worked as information specialist with Ohio Edison Co., managing editor of a nationwide trade publication. and account executive with Carr Liggett Public Relations.

Francescangeli holds an M.A. in mass communications from St. Louis University, with a concentration of study in instructional technology and media. He also holds a Master of Divinity from Concordia Seminary, St. Louis, with studies in speech and audio-visual and broadcast communications. He and his wife reside in South Euclid, Ohio.

"Serving as editor of the Lewis News has been a very rewarding experience," says Jim. "NASA Lewis and the talented and resourceful people who work here have made covering the varied and highly interesting events, stories and activities of the Center both a pleasure and a professionally stimulating experience. I am thankful to all who have worked with me in producing the Lewis News these two years, especially to Public Information Office Chief, Marilyn Edwards, and D-K Project Manager, Gregory Warner."

"Now," adds Jim, "I am looking forward to serving the Center in yet another capacity that reaches thousands of people with the accomplishments and programs of NASA and Lewis. The VIC is our link to the community-to students, to educators, to people of all ages and interests who want to learn more about the exciting history of aeronautics, space travel and the accompanying technology that is benefiting humankind."

As project manager, Francescangeli will oversee the nine-member Bionetics staff in carrying out



James Francescangeli at the V.I.C.

the varied VIC programs. The staff includes: Teacher Resource Room coordinators Diane Borys and Judy Buttler; Larry Carnahan, display technician; Lori Drum, tour scheduler; Dorris Forror, curriculum coordinator; Pat Hannan, Speakers Bureau coordinator; Anne Jones, Volunteer Program coordinator; Marge Lehky, aerospace lecturer; and Marian Mroz, Publications Office.

The VIC is part of the Center's Educational Services Office, headed by R. Lynn Bondurant, Jr., Chief, and Judy Olson, Deputy.





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APOLLO CAPSULE TO BE DISPLAYED AT VIC—The newest addition to the Visitor Information Center is the Apollo Command Module used for the second manned mission to Skylab. With astronauts Alan L. Bean, Jack R. Lousma, and Owen K. Garriott on board, the capsule lifted off on July 28, 1973 and splashed down 59 days, 11 hours and 9 minutes later.

A special dedication ceremony for the new display is set for 2 p.m. on Sept. 21 in the VIC. Lewis employees, contractor and exchange personnel and their guests at the Employees' Open House are welcome to attend.

Lewis Employee Participated In Apollo Capsule Recovery

When the new display of the Apollo Command Module 207 was dedicated at the VIC recently, it brought back special memories for Lewis employee Tim Hogan. A metal fabricator in the Fabrication and Support Technologies Division, Tim was a member of the Navy team of frogmen that recovered the capsule and its astronauts after splashdown in the Pacific on Sept. 25, 1973.

His job was to recover one of the three parachutes used during the capsule's return to Earth. Because a parachute had malfunctioned on an earlier mission, frogmen had been instructed to recover the parachutes for inspection.

"The sea was really rough," Hogan recalls. He was also struck by how long the capsule remained upside down after splashdown. He remembers standing in the helicopter doorway imagining how the astronauts must have felt bobbing upside down in the rough sea. Originally, the recovery team had been instructed to wait until the righting bags attached to the capsule turned it over before proceeding with the recovery. But when that didn't happen as quickly as expected and the parachutes began to sink, Hogan and his parachute recovery teammates were given the go-ahead.

Tim was dropped from a helicopter hovering about 10 feet

above the water's surface. He said it took about 15 to 20 minutes to inflate a flotation device, gather up the bulky parachute, stuff it in a special bag, and signal the helicopter to drop a line to lift the bag up. Tim was then lifted up into the helicopter which didn't return to the ship until the astronauts and capsule had been safely recovered by the four-man team on another helicopter.

The recovery team had been training for the September recovery since early July. They had prepared for both day and night recoveries and each member of the team was trained to handle any assignmentwhether it was recovering a parachute or the capsule and crew members. There was a primary team of four frogmen to recover the capsule and astronauts; six frogmen to recover the three parachutes; and a four-member back-up team.

Using a mock capsule, the frogmen learned their own roles first. Next, they practiced with the helicopter crews, and finally with the ship and its crew. During all these practices, Hogan repeated his assignment many times. The hardest part of the job, says Hogan, was the constant repair and maintenance required by the inflatable recovery gear.

tion for the recovery about 2-1/2 The primary recovery team had to undergo physicals every other weeks before the scheduled day, says Hogan, as a precaution splashdown date in case the

The Apollo Command Module now on display at the VIC brings back special memories for Lewis employee Tim Hogan. Tim was a member of the Navy team of frogmen that recovered the capsule after it splashed down in the Pacific on Sept. 25, 1973. (Photo by Laura Bagnell) against infecting the astronauts

with a cold or other illness.

One of the fun parts of the

assignment was spending time in

Hawaii prior to the recovery

operation. The ship, the USS

New Orleans, had to be in posi-

planned 59-day Skylab mission had to be cut short.

Even before the televised recovery operation, Hogan began getting mail from admirers around the world: "We got letters from people in West Germany, Australia, and other places wanting mementos or wanting to visit us in the U.S." The frogmen

responded to the letters with autographed flyers featuring photos of the recovery team.

Today Tim serves in the U.S. Navy Reserves as a member of a Seal Team based in Little Creek, VA. He has worked at Lewis since 1977 and is a member of the Lewis Christmas Club, ski club, and speakers bureau.

Astronaut Speaks





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At Apollo Capsule **Dedication At VIC**

Astronaut Jack R. Lousma, mission pilot on the second manned flight to Skylab in 1973, was the featured speaker when the Apollo Command Module he piloted was dedicated as a display at the VIC.

More than 2400 people turned out for the ceremony, which was held during the Employee Open House, Sept. 21.

While at the VIC, Lousma and his wife watched as their son Joey, 5, climbed inside the capsule and imagined how his father must have felt preparing for liftoff.

(Photos by Laura Bagnell)



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THE PLAIN DEALER SEPTEMBER 22, 1986

Celestial memories

Former astronaut recalls his days in NASA capsule

By MAXINE L. LYNCH

STAFF WRITER

The deep-set blue eyes of Jack R. Lousma shot a glance skyward at the supersonic jet that was drowning out his description of life in outer space. "I would like to go back (into space)," Lousma said

"I would like to go back (into space)," Lousma said to a group of women seeking his autograph. Lousma, a former Marine colonel in the space program, was at NASA Lewis Research Center yes-terday to help dedicate the center's newest exhibit, an Apollo 3 command capsule. It was part of Lewis' month-long 45th anniversary celebration. The space vehicle is the one that in the 1970s took Lousma and fellow astronauts to the Skylab space laboratory. "There are so many memories," said the former astronaut as his son, Joey, 5, played inside the cap-sule.

sule

sule. "When you got through the edge of the atmo-sphere, I mean it is really dramatic," Lousma said. "When you lift off, the sky is light blue, just like it is today. Then, you get deeper and deeper blues and the sky becomes a darker blue. Then a very beautiful royal blue. Then all of a sudden, it is black. You just go through the edge in a matter of a few seconds." Joey sat in the spot where his father was on July 28, 1973, when the capsule flew astronauts to the lab and then back to Earth. Lousma and two other astronauts lived in the lab for 59 days and orbited the Earth 858 times. Lousma, pilot of the mission, told Joey yesterday, "Just pretend ... the rocket is down there shaking and vibrating." Joey made some sounds simulating the rocket boosters. "Ten, nine, eight...*liftoff.*" eight ... liftoff.'

Joey's imagination played on as his father contin-ued to relate the real-life experiences on board the command capsule.

"I was afraid we were not going to complete the mission," Lousma said. Not long after they took off, Lousma noticed fluids leaking and freezing on the

"What was happening was the propellant was leaking out and freezing. We checked our gauges and, sure enough, we had been losing some pressure. So we shut off those systems. The command module

So we shut off those systems. The command module had to dock and board the orbiting laboratory with only three systems instead of four," Lousma said. That was not the end of their problems. "About 10 days into the flight, I looked out of the kitchen window of the Skylab and it looked like a spray of fireflies was outside." That meant that another leak had developed — when fluids leak into space, they break into droplets and sparkle when the sun shines on them. "It's like a blizzard," Lousma explained.

Lousma, a 6-foot, 195-pound former college foot-ball player, wrinkled his brow as he thought about the seven crew members of the space shuttle Chal-

lenger killed when the space craft exploded Jan. 28. He said he agreed with NASA's decision to post-pone shuttle flights until 1988 to give NASA time to design and test a new solid-fuel rocket engine

design and test a new solid-fuel rocket engine to prevent another explosion. Lousma, who in March 1982 commanded the third orbital flight of space shuttle Columbia, discussed the differences between flying a space shuttle and a command module.

"It takes about 10½ minutes to get into orbit with this," he said, referring to the space capsule. "The shuttle gets you up just a little quicker." Lousma, who became an astronaut in 1966, also was trained as a member of support crews for three Apollo lunar missions and was a backup pilot for the Apollo spacecraft that linked up with a Soviet-Soyuz craft in 1975.

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Lewis-Your Investment in the Future Center Celebrates Anniversary with Open House

The NASA Lewis Research Center will celebrate its 45th anniversary on **September 27** and **28** with an **Open House** for the general public from **10 a.m.** to **6 p.m.**

Acting Director Dr. John Klineberg points out that this year's theme for the celebration is Lewis-Your Investment in the Future. In describing the Center, Klineberg said, "Lewis' responsibilities in the Space Station Program, our work in aeronauticsincluding the National Aerospace Plane-and our role in space technology and satellite communications means that the Center is not only an exciting part of our nation's future but also is an important example of Ohio's investment in the future. The Open House gives us an opportunity to share this valuable asset with the public." The event, with the support of some 280 volunteers, includes guided tours through selected key research facilities, including the 500-foot zero-gravity facility.

While being shuttled by bus to the individual tour stops, visitors will be able to view the Space Power Test Bed, the new Apollo exhibit and other behind-the-scenes areas. The large NASA Hangar will contain exhibits and displays for visitors to view at their leisure. Admission to the Open House will be by ticket only in order to provide for an orderly flow of visitors. The six-stop tours, lasting about one-anda-half hours, will be conducted at 15-minute intervals starting at 10 a.m. with the last tour beginning at 4 p.m. Tickets are free and will be distributed in advance. Early requesters will be able to specify the day and time they'd like to visit. The general public can obtain tickets by contacting:

Employees' Open House on September 21 from. 10 a.m. to 6 p.m. All employees, contractor and exchange personnel and their familes are invited. Center offices and labs, as well as the Visitor Information Center, will be open for visits. And family members will have the opportunity to visit employees' workplaces. Those driving can travel to the various tour stops in their own cars and non-drivers can use Lab buses that will run from the DEB to the Hangar to the tour stops. Light refreshments will be available in the Main Cafeteria and souvenirs will be on sale in the Exchange Store. Though the Picnic Grounds will be closed, the Guerin House patio will be open for employee use. As part of the Employees' Open House activities, a Skylab Apollo Capsule Dedication will be held at the Visitor Information Center at 2 p.m.

the Employees' Open House activities.

Also as part of the 45th anniversary celebration, a **Retirees' Day** will be held on **September 26** from **4 p.m.** to **6 p.m.** Supported by the Supervisors' Club and the Retiree Committee, the event will include a \$6 per person dinner beginning at 5 p.m. in the Main Cafeteria. The Visitor Information Center will be open until 8 p.m. that day. Tickets for Retirees' Day can be obtained (by no later than September 12) by sending a check to:

NASA-Lewis Supervisors' Club Attn: Al Dagleish, MS 21-13 Lewis Research Center 21000 Brookpark Rd. Cleveland, OH 44135

Open House Lewis Research Center Mail Stop 3-11 21000 Brookpark Rd. Cleveland, OH 44135 (216) 433-8084, 8088, 8089 or 8090

The Center will also hold an teers will be assisting with

Supervisors' Club volunteers will be assisting with

(216) 433-2193

Supervising official for the 45th anniversary Open House is Americo "Moe" Forestieri, Director, Office of External Affairs. Chairman is Ronald F. Kiessling, Deputy Chief, Logistics Management Division (PABX 3048).

Open House Tour Stops

Tour buses will leave from the Hangar at 15-minute intervals, starting at 10 a.m. The last tour will begin at 4 p.m.

Stop 1:	Propulsion Systems Lab
Stop 2:	Zero-Gravity Facility
Stop 3:	Fabrication Shop
Stop 4:	9' x 15' Test Section
Stop 5:	Electric Propulsion Research Bldg.
Stop 6:	Central Control Building



Open House Tour to Showcase Lewis

The Open House tour will start at the Flight Research Building (the Hangar) where a variety of exhibits covering 23,000 square feet of floor space will be set up.

collector. Aeronautics for the 21st Century will also be featured. Other exhibits will spotlight the center's technical services and the status of space

A portion of NASA's Osh- Engine Control Research Pro- The Zero-Gravity Research Dynamic Concentrator Optical

kosh '86 display entitled gram. Displayed in the shop Facility has also been used to Facility and learn more about develop time devices for tests on the moon and for instruments on the Mars lander, the Voyager, and Skylab. Today, the facility supports the development of many experiments to be conducted aboard the space shuttle. At the Fabrication Shop, the third stop, visitors will see examples of the highly sophisticated one-of-a-kind research items that are modeled and built by the skilled tradespeople who work at Lewis.

be designed for future flights. participants will see the Solar the solar dynamic power system proposed for the Space Station. A short videotape will introduce work that Rocketdyne has completed on Space Station definition and design and includes a segment on testing of a terrestrial solar concentrator. A kinematic model of the solar concentrator being developed by the Harris Corp. will also be displayed. The final stop on the tour will be the Central Control Building, where computers are used to control the different environments and air flows needed in the various research facilities.

At the entrance to the Hangar, visitors will be able to visualize how big the proposed Space Station will be by viewing a full-scale model of two bays of the station's truss structure. Other Space Station models on display will be a 1/100 scale model of the entire configuration, a photovoltaic power module, a solar dynamic power module, a resistojet and hydrogen-oxygen thrusters.

Visitors can watch three station-related videotapes showing: an overview of the Space Station program; shuttle astronauts assembling station-type hardware in space; and the testing of an experimental solar energy

communications. The Propulsion Systems Lab will be the first of six stops on the tour. This lab is NASA's only altitude simulation test facility for engine system experimental research. Since this facility opened 14 years ago, experiments have been successfully conducted on engine noise reduction, fuel efficiency, emissions reduction, controls, afterburners, blade flutter, stall, and stability. On display will be a GE J85 engine installed for a checkout run as part of an Advanced Nozzle Material Evaluation Program and a PW F100 engine used in a Digital

area will be a PW1128 engine, an advanced derivative of the F100 engine used in the F15 and F16 aircraft.

The Zero-Gravity Research Facility is the next stop on the tour. The only facility of its kind in the world, the "drop tower," as it is commonly known, provides five to ten seconds of zero gravity and enables researchers to answer a multitude of guestions involving the effects of weightlessness. Since it became operational in 1966, more than 2000 experiments have been performed here, including studies on the behavior of liquid hydrogen and oxygen in zero gravity. One investigation simulated the conditions that existed during the Apollo 13 explosion so preventive measures could

At the fourth stop on the tour, the 9' x 15' Test Section, Open House guests will see a low-speed wind tunnel and a test model of an advanced counter rotating turboprop engine.

At the Electric Propulsion Research Laboratory, tour

At each of the tour stops, volunteers from the Lewis staff will be on hand to answer questions.

Lewis News: January 9, 1987

Office Of _____ External Affairs



Americo F. Forestieri Director

T his has been an extremely busy and exciting year for External Affairs. Next year promises to be even more challenging. Our plans include new programs to enhance the visibility of Lewis. Through the Public Affairs Office, and its contacts with the media, and the Community and Special Programs Office, we will make many Lewis projects and programs known to the public. Our aim is to feature our own Lewis experts as spokespersons.

Through the Awareness Program, increased communication is becoming a way of life at Lewis. This will continue and grow, with new and novel programs. In just the last year, Awareness events increased by over 40%.

The Greater Cleveland Growth Association is presently under contract to study the feasibility of locating the Visitor Information Center (VIC) off site. This study was precipitated by security and safety problems and lack of expansion space. Results thus far are very promising. The study will be completed next summer.

Many of you remember the simulated Shuttle launch arranged for two elementary schools in 1985. The Educational Services Office will coordinate a similar launch for nine cooperating Northeast Ohio schools this spring.

Finally, we would like to thank the many volunteers who make our programs possible. We continue to need each and every one of you and want you to be involved. Please contact our office if you would like to volunteer your services for future events.

Awareness/Alert Office

One objective of our Awareness Program is to help the Center achieve the highest level of productivity by encouraging and recognizing employee participation. Nine special Recognition Ceremonies were held last year, honoring 933 employees for their outstanding contributions to successful projects.

With continued excellent input from the Awareness Committee, broad participation from many groups, and strong management support, 16 "Issues And Answers" programs were held. The "Issues And Answers" program is designed to help Lewis staff become more fully aware of and openly discuss current Lewis and NASA issues. As another avenue to enhance communications between Lewis management and staff, a "Let's Talk Procurement" Program, and a "Let's Talk Budget" Program were held.

As the year progressed, Awareness sponsored and executed an extraordinary series of events. "Director-of" messages and communication follow-ups increased greatly in 1986, as our commitment to the participative management concept continues to grow. "Director-of Thank You" programs flourished, honoring 755

The Awareness Office also coordinated the presentation of Center-wide messages from the Center Director. Andrew Stofan presented one formal message, and two closed-circuit TV messages before he left for his new assignment at Headquarters. Acting Director Dr. John Klineberg presented a closed circuit TV message to discuss our recent reorganization.

In addition, two major awards ceremonies were produced by the Awareness Office. In the spring of 1986, Lewis inventors who received patents in 1985, were presented plaques at the annual Inventors' Award Luncheon. In the fall, the Awareness Office organized and produced the annual Honors Awards Ceremony, during which NASA's highest medals for excellence in science, engineering, and service were presented. NASA Administrator Dr. James Fletcher joined Dr. Klineberg in presenting the awards.

The Alert Committee also had a busy year. Something new for the Alert Committee last year was the "NASA Update" lunchtime videotape program. As an Agency-wide initiative to expand internal communications, these videotapes from Headquarters let employees know what is happening throughout the Agency. Our Alert Committee implemented this program by enabling employees to view the tapes via our LINK system throughout the lunch period.

The Alert Committee also presented exciting and educational colloquiums, enabling Center employees to hear a variety of informative speakers. Colloquiums in 1986 included:

- Barbara Morgan-"Teacher in Space";
- Congresswoman Mary Rose Oakar—"Federal Employee Issues";
- Congressman Bill Nelson—"Future of the Space Program";
- Dr. Hans Mark—"Challenger and Chernobyl";
- Prof. John Logsdon—"Reconstituting the U.S. Civilian Space Program"; and
- Dr. Walter Doherty—"Use and Misuse of Computing in Research".

The Awareness/Alert Office looks forward to 1987 with continued enthusiasm and pride. By strengthening the team concept and team spirit, the future challenges and goals of the Center can be met. Lewis truly does mean TEAMWORK.

Educational Services Office

The Educational Services Office (ESO) had a very busy 1986. Various educational programs were conducted throughout the Lewis region, which includes Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio.

The year saw the expansion of the Regional Teacher Resource Center effort. Three new centers were opened at Northern Michigan University, Parks College in Illinois, and the Children's