Through Center research

Auto thermal reactor would curb pollution

A Lewis station wagon is one of the most unusual cars in the country. This 1968 Ford has clocked almost 10,000 miles without contributing to pollution. It is the Center's road tester for automobile thermal reactors.

A thermal reactor, used in place of a normal cast-iron manifold, generates enough heat to burn completely hydro-carbons and poisonous carbon monoxide. These elements, instead of polluting the air, are converted to harmless carbon dioxide and water.

About two years ago, the National Air Pollution Control Administration funded Lewis to develop inexpensive materials to withstand high temperatures, vibration and shock. After testing many materials, project managers Robert E. Oldrieve and Philip L. Stone of the Materials and Structures Division found that certain metallic and ceramic materials can be used effectively in automotive thermal reactors.

To develop an automobile thermal reactor, Lewis engineers set practical limitations. The complete reactor would have to cost less than $50 per unit. The reactor core would have to resist oxidation and be able to maintain its strength at temperatures up to 1900°F. The unit would have to withstand shock and vibration for at least 50,000 miles of road use.

Oldrieve has considered and tested several types of metallic materials for automobile reactor use. Because the stronger metals cost too much, he finds iron-chromium-aluminum alloys very promising. They are not too expensive, they resist oxidation well and are strong enough to resist shock and vibration.

Philip R. Meng of the Propulsion Chemistry Branch, Physics and Chemistry Division, supports the program.

The Suggestion Awards program is not to be confused with Lewis' Cost Reduction Program, although both are designed to create an atmosphere of cost consciousness. The Cost Reduction Program recognizes employees for implementing good management practices within the scope of active suggestions.

The Incentive Awards Committee, which presents cash awards to employees for cost saving ideas as well as for superior job performance, presented cash awards totaling $27,045 to 100 recipients last fiscal year. The suggestions saved the Government $166,235.

The committee also named a new chairman who took office January 31. He is Charles S. Corcoran of the Power Systems Division. Corcoran, who replaces Donald R. Packer, has served a year as a member of the committee before being named to the new post.

Last fiscal year, the committee reviewed 82 suggestions and adopted 51. "We gave an average of $226 per award last fiscal year and $159 per award the year before that." This shows us that the quality of the suggestions has improved," says Robert W. Schmidt, the committee's executive secretary. He explained that the dollar amount is based on the first year tangible savings or benefits to the Government.

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Credit union delayed

The opening of a Lewis branch office of the NASA-Washington Federal Credit Union has been delayed pending further review by the National Credit Union Administration, according to Robert W. Schmidt, assistant to the Director of Administration.

Schmidt, who is coordinating the details of opening a branch at Lewis of the Washington based union, said the delay is due to the fact it would overlap some territory served by the Century Federal Credit Union based in Cleveland. More than 900 Lewis employees are Century members.

"We are hopeful that an agreement can be reached whereby employees can be provided with the services..." (Continued on page 2)

Centaur Shroud

This three-ton shroud was produced for Lewis' Centaur booster and the Viking spacecraft at Lockheed Missiles and Space Company, Sunnyvale, California. The Viking spacecraft is scheduled for a soft Mars landing in 1976. The shroud will protect the booster and spacecraft from stresses and friction as they soar through the Earth's atmosphere.

Dr. Eggers to examine new uses for research

How can science and technology be better applied to solving social problems and helping man? That's what Dr. Alfred J. Eggers, Jr., of the National Science Foundation will be discussing at the Center's next Awareness program on Feb. 28. As Assistant Director for Research Applications, Dr. Eggers directs a new program aimed at studying earthly problems and marshalling research to solve them.

The program is called RANN, for Research Applied to National Needs. According to Dr. Eggers, it covers the broad areas of:

- Environmental systems and resources—for instance, (Continued on page 3)

Lang's "Bird Lover"

This photograph took first prize in the Lewis Camera Club's contest held last month at Lewis. William F. Lang, Jr., of the Test Installations Division submitted it in the black and white print competition. See other winning photos on page 4.
Centaur shroud passes cryo test

In a split second during the quiet evening hours last Wednesday, two batches unfastened, hinges rotated and a 6500-pound aluminum cover on a rocket broke loose at Plum Brook Station.

No alarms were sounded, no emergency crews were summoned. The events were part of a test to prove that the Centaur Standard Shroud would work properly. The shroud is a new development for NASA’s largest unmanned launch vehicle of the coming decade, the Titan-Centaur.

In the event that the shroud fails during the launch, a shroud protects the launch vehicle and spacecraft. The Centaur shroud keeps the spacecraft and Centaur launch stage from freezing for two hours when liquid hydrogen fuel at -423°F (Fahrenheit) is being pumped into the Centaur just prior to launch. It also shields them from heat and pressure of the atmosphere after launch during ascent through the atmosphere. Once these goals are reached, the shroud must be safely “blown off,” out and away from the payload it so carefully protected.

The test on Feb. 14 was the third of a series to check out the shroud in the worst possible weather conditions the vehicle would face when launched from the Cape. In a Plum Brook test stand 200 feet tall, the shroud, 14 feet wide and 58 feet high, was kept warm during the two-hour Centaur tanking. Then, the shroud was split into two halves to prove that the pyrotechnic joints and rotating hinges would perform as expected. The test was successful, confirming an important part of the total qualification of the shroud. The first two tests of the cryogenic un latch series failed because a tube broke, spraying the vehicle with unwarmed debris, and a seal did not function properly. Neither of these failures resulted in any changes to the shroud shell itself, made under a Lewis contract to Lockheed Missiles and Space Company of Sunnyvale, California.

The Centaur Shroud Development Program is NASA’s largest vehicle test program currently underway. In the Lewis program will be tests of the strength of the shroud conducted at Plum Brook through the summer, and then a series of tests in the fall to prove that the shroud

(Continued on page 2)

AF general speaks at lab

Major General Kenneth R. Chapman, Deputy Chief of Staff for Development Plans for the Air Force Systems Command, will be the Lewis Awareness speaker for February.

In his speech, which will be classified SECRET and limited to employees with red badges, he will discuss “Air Force Plans, Technology and Development Concepts of the Future.”

The presentation is scheduled for February 24 at 4:30 p.m. in the B-2 Auditorium.

Trio paper judged best at conference

A technical paper written by Dr. Christos C. Chamis, Dr. Tito T. Serafini and Morgan P. Hannon of the Materials and Structures Division was judged as the outstanding paper at the Society of the Plastics Industry’s 28th annual conference on reinforced plastics and composites held in Washington, D.C. earlier this month.

International in scope, the conference is recognized throughout the world as the leading one of its kind on reinforced plastics technology and was attended by some 1500 scientists from all over the world.

The paper titled “Criteria for Selecting Resin Matrices for Improved Composite Strength,” was placed in competition with some 100 other entries from this country, England, Holland, Canada, Japan, Germany, Italy and Austria.

(Continued on page 2)

NASA spinoff

A NASA-developed system to measure human performance by testing perceptual and motor skills has been redesigned for the commercial market. The system is designed to identify and solve human psychomotor coordination problems in biommedicine, psychology, education, law enforcement, and rehabilitation is shown in operation. In the foreground is the control console for programming the problem for the subject to respond with hand and foot signals.

Authors of the outstanding paper presented at the Society of Plastics conference are (from left to right) Morgan P. Hannon, Dr. Christos C. Chamis and Dr. Tito T. Serafini.

(Paul Riedel photo)
Best paper... (Continued from page 1) "Our paper establishes criteria for selecting resin for fiber composite materials which can be used in a wide range of applications in industries such as chemical, tire, transportation, and aircraft manufacturing, and many others," explains Dr. Chamas who delivered the paper at the conference.

The papers were judged on contribution toward advancing reinforced plastic technology, originality and ingenuity in concept, adequate evidence to claim or conclusions; and the quality of the written paper.

In recognition for having the outstanding conference paper, the authors received a plaque and a monetary award.

The latest award marks the second time Dr. Chamas has received the outstanding award for a paper presented at the Society for Plastics conference. The first was in 1960.

Plohr attends seminar

H. Warren Plohr, Chief of the Spacecraft Technology Division, left last week to attend an eight-week executive training program in Charlottesville, Virginia.

Called the Federal Executive Institute, the program is sponsored several times a year to strengthen the skills of Federal managers. Plohr was one of 60 selected from throughout the country to attend the present session.

Workshops, lectures, and seminars designed around the needs of industry participants comprise the program. Participants are drawn primarily from the top management of GS-16 and above.

In 1970, Robert E. English, Chief of Lewis' Power Systems Division, attended the FEI.

Plohr has been a Lewis staff member since 1947. During his career he has managed the Agena and Titan projects, and was responsible for the Atlas-Agena, Thor-Agena and Titan launch vehicle activity for Lewis.

He was named Chief of the Spacecraft Technology Division in November 1971, moving from his prior post as Chief of the Advanced Systems Division. He holds a Bachelor of Science degree in mechanical engineering from Carnegie Institute of Technology and a Master's degree from Case Institute of Technology.

Cryost test... (Continued from page 1)

will pull away properly after being exposed to heat in flight and the vacuum of space. These tests will be in Plum Brook's Space Power Facility, a 100-foot tall chamber in which the air can be thinned to simulate space and heat can be applied to the shroud, There, the shroud again will be exposed to a vacuum, which can be brought by large nets on each side of the vehicle assembly.

The Centaur Standard Shroud testing at Plum Brook makes it one of the last major programs run there for some time. Under the current Federal budget cutbacks, Plum Brook's nuclear reactor work is being terminated, and by June of 1974 the Station will be placed in a standby condition, reducing the present work force of nearly 600 persons to a maintenance and security crew. About 180 of the Station's personnel are involved in the shroud tests.

The Centaur launch vehicle is being modified to be boosted by a Titan III booster for high-performance planetary missions as well as for placing large spacecraft into orbit around the Earth. The total thrust of the Titan III/Centaur shorty after liftoff is about 2.5 million pounds. The proof test of this vehicle combination is scheduled for early 1974. Some missions to be flown on the Titan/Centaur are the Viking Spacecraft, a dual landing mission to Mars in 1977 in a cooperative Sun-synchronous mission with the West German government called Helios.

Office reports job picture fair

On Monday, February 5, personnel of the Outplace- ment Service Office met to review progress and update plans on their search for jobs for those affected by the RIF.

The meeting was held in Conference Room 100 of the DBB-Annex which ironically once housed the Space Nuclear Systems Office (SNSO). SNSO is gone, perhaps the first victim when NASA decided to de-emphasize nuclear research.

Morton H. Kramer heads the group. Most of the men who make up the personnel of the Outplacement Service Office are directly connect- ed to either nuclear systems research at Lewis-Cleveland or attached to Plum Brook, neither of which NASA says, fits into current plans.

NASA is limiting its atten- tion to solving more immediate Earth-oriented prob- lems, and benefits from nu- clear clear research would be too long in coming. So that as-
pect of aerospace research is labeled "expendable," and, by and large, mothballed.

A report by one of the Office members said that the Outplacement Service Office has appointed four men to locate job opportunities for technicians in the Cleveland and Sandusky areas. They are Theodore H. Guzik and Robert L. Walker, Jr., of Lewis-Cleveland and Deane Neagon and Clyde J. Groe of Plum Brook.

He went on to report that the American Institute of Aeronautics (AIAA) is conducting sessions at Cleveland and Plum Brook to train coun- selors. These counselors will help others. As a result, Lewis has 25 people who are now qualified to help persons to evaluate their capabilities, resumes, and to prepare proper interview technique.

After hearing the reports, all agreed that the prognosis is encouraging. The employment picture is pretty good.

Many companies, more than a hundred throughout the U.S., have indicated some interest in hiring some of Lewis employees. Several companies here and at Plum Brook have found jobs on their own. The employment picture is encouraging. Indeed, they all agreed.

Already, companies such as Pratt & Whitney, General Electric, Babcock and Wilcox, Nuclear Fuels, have sent representatives to interview employees.

The Atomic Energy Commission has also sent representatives here.

The responses from these and other companies are due in large measure to the Outplacement Service Office, which in just two weeks, sent out some 2,000 resumé.

These men will meet a gain the following week and every week thereafter until their services are no longer needed. Although it is re- search of another sort for all of these engineers, scientists, and technicians involved, it is some of the most important work they will ever do.

Europe makes sortie lab

NASA has been told that the European Space Research Organization (ESRO) voted to establish a "Special Project" to develop a sortie laboratory to fly with NA-BA's reusable Space Shuttle in the 1980's.

The following new publications are available at Lewis' Technology Utilization Office, Room 228, Ad. Bldg., PAX 5233 or 5049.

TECH BRIEFS

High Temperature, Long-Life Thyatron, General Electric Corp., under contract to Lewis Research Center, B72-10134.


Paul Lustig (facing camera) tells interested members of his division what the Parent Effectiveness Training (PET) course is all about. (Johns photo...
Raisins killed by record freeze

TEXAS (AP) - Raisin growers were told to destroy the entire crop of raisins, the largest in history, that would otherwise have been harvested this fall. The cold, wet weather that followed an earlier period of hot, dry weather damaged the raisins. The raisins were killed by a record freeze that occurred in the fall of 1973. The freeze destroyed the entire crop of raisins, the largest in history. The U.S. Department of Agriculture reported that the freeze killed an estimated 1,000,000 tons of raisins. The raisins were to be destroyed to prevent the spread of disease and to prevent the market from being flooded with the affected fruit. The raisins were to be destroyed at a cost of $100,000,000.
Daily Investor

By DON C. CAMPBELL

We've had quite a bump up in the price of gold and the Cleveland Home & Office Show this week. Home manufacturers are feeling the squeeze on gold prices, and the show is no exception. Many factories are having to lay off workers or beacome more efficient.

Market still doesn't thaw:

NEW YORK (UPI) -- The stock market's spring hibernation continued Tuesday with lumber on the plus side and silver on the minus. The Dow Jones average of 30 industrial stocks closed at 200.49, a decline of 1.05 points, on a volume of 16.77 million shares traded on the New York Stock Exchange.

The Nasdaq market index of 1,877 securities closed at 61.38, down 0.45 point, on a volume of 6.5 million shares.

The market has been tentative lately, with investors unsure of where to put their money. A recent survey conducted by the National Association of Securities Dealers found that 45% of investors expect the market to rise, while 41% expect it to fall and 14% believe it will remain about the same.

Spacecraft shield:

SPACECRAFT SHIELD - This massive Centaur Standard aeroshell will protect a Viking spacecraft during launch and ascent through the earth's atmosphere before it lands on Mars. The JPL's Viking program is scheduled to land on Mars in July 1976. Once free of the atmosphere, the spacecraft will decelerate and continue its voyage.

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