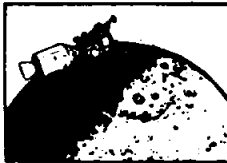


ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



Vol. 14 No. 1

Friday, December 20, 1974

Season's Greetings

We began this year with the successful completion of Skylab, the longest and most productive manned space program ever performed by any country to date. We can all be proud of our past accomplishments, but now we must look to the future.

A good part of this year has been occupied with focusing our efforts toward NASA's future manned space programs and projects concerning the environment in which we live.

Many realignments of personnel have occurred during the year and I feel that we have emerged as a stronger and more productive team.

Preparations for next year's Apollo/Soyuz Test Project, the joint mission with the Soviets, have remained on schedule as we aim for a culmination of that mission in July.

Outstanding performances have been exemplified this year by our many teams working toward development of the Space Shuttle, and continuation of our efforts in the Earth Resources, environmental and ongoing programs here at the Center.

As NASA enters its 17th year in the manned space program we continue to face new challenges. I look to your continued support and dedication to every task, no matter how small.

I would like to wish each of you and your loved ones a most happy Christmas season and all the best in the New Year.

*Christopher C. Kraft, Jr.
Director*

Astronauts Open Apollo 16 Samples

On April 21, 1972, astronauts Charles Duke and John Young retrieved two samples of the moon's topmost surface at Apollo 16 Station 9. Two years and 8 months later a team from Bristol University, England, and members of the Lunar Sample Curator's Office here opened the samples amidst scientific "ohs and ahs."

The samples were taken by pressing a cloth-type material against the moon's surface dust. By doing so scientists hoped to get a "pristine" example of the moon's surface, the layer where cosmic particles interact with the regolith. It is also the area where temporarily gaseous materials might also be deposited as a result of out-gassing from the lunar interior, from cosmic interaction with surface materials or from the vaporization of matter by meteoritic impact.

Prior to the launch of Apollo 16, scientists at JSC worked long and hard to devise the sampler itself, leaving the problem of opening it until later—when there was more time. What they produced was a cigaret-case shaped aluminum container in

which a cloth was suspended. In sampling the surface, the cloth was spring loaded so it would exert only a slight pressure on the surface thereby preserving the orientation of the material. Two cloth samplers were used. One was a beta-type material and the other a velvet-type material.

Both samples were opened last week. The beta material recovered about 30 milligrams of lunar dust and the velvet material about 11 milligrams. Performing the delicate opening maneuver—made so by the spring loading of the sample itself—was Dr. Colin Pillinger, University of Bristol, and inventor of the instrument used to open the sample. Drs. Michael Duke, Curator, and Robert Pepin, LSI Director, and Peter Eberhardt, University of Bern and collaborator with Dr. Pillinger in devising the opener, looked on providing technical and moral support during the operation.

Because of the importance and nature of the sample, the room was immediately ebullient when Dr. Pillinger finally removed the top from the velvet sampler, safely exposing the lunar dust

trapped in the cloth. "Wow," Dr. Pillinger exclaimed as the tensions of the previous 30 minutes were wiped from the room.

Director Named

Captain Lee R. Scherer, USN (ret.) has been named Director of NASA's Kennedy Space Center, Fla., succeeding Dr. Kurt H. Debus, who retired October 10. Capt. Scherer will take up his duties in mid January, 1975. Until that time Miles Ross will continue as Acting Director. Scherer is currently Director of the Flight Research Center, Edwards, Calif.

JSC Employees Receive Honor Awards

A number of Center employees recently received awards at JSC's Annual Honor Awards Ceremony.

JSC Director Dr. Christopher C. Kraft remarked, "While their achievements have been outstanding, their service only exemplifies the dedication and determination of all of our employees who helped to make 1974 a memorable year."

Employees receiving the JSC Certificate of Commendation, the Center's highest award, were Arnold Aldrich, Joseph Algranti, Eduard C. Burchard, Parker L. Carroll, Clifford E. Charlesworth, Gary A. Coultas, Larry G. Damewood, Eugene L. Davis, Jr., James D. Derbonne, Homer W. Dotts, Robert E. Driver, William E. Drummond, Lynwood C. Dunseith, Thomas J. Edwards, Grant H. Heiken, Robert C. Hood, Robert E. Johnson, Marion M. Lusk, D. Wayne



LOW-COST POSTER—Paul Fitzgerald, JSC's Low Cost Systems Officer, presents a poster to George Muinch, Director of the Low Cost Systems Office at NASA Headquarters. The poster emphasizes the need for the agency to reorient its thinking such that low cost is a more important factor than in any previous program.

Cost Considerations 2nd Only To Safety Concerns

JSC Director Dr. Christopher C. Kraft recently stated, "It is clear that if we are to achieve program success within the constraints of present and potential future limited budgets, we must reorient our thinking and priorities such that cost considerations are, in many cases, second only to crew safety considerations."

With this mandate as a guideline, JSC has launched a campaign to contribute to the Agency-wide goal of significantly reducing space system and program costs.

Some 150 suggestions have already been submitted by Center personnel on ways to streamline present and projected expenditures in such areas as management, function and facility, administration and contracts, paper data and documents, hardware and software, and other categories.

NASA has established a Low Cost Systems Office at Headquarters, directed by George Muinch with Agency-wide participation and support by the

NASA field installations. The designated focal point for JSC's participation and support is Paul Fitzgerald, Low Cost Systems Officer.

Agency policy for development and use of all standard equipment has been set forth in NASA Management Instruction (NMI) 7050.1, Standard Space Systems Program. This program has been established to provide NASA's Program Managers with a range of low cost, standard subsystem and component options which can be acquired and assembled into operational systems economically, while fulfilling the utility and service requirements of the majority of future missions.

The Low Cost Systems Office has approved the program plans for a number of NASA Standards including the "Standard Pyrotechnic Initiator Procurement and Implementation Plan" submitted by JSC.

Also a number of "design to cost" and "produce to cost considerations are under review.



SPACELAB—Dr. Story Musgrave shows a group of Spacelab representatives some of the photographs taken during the recent shakedown test in the mockup Spacelab. From left to right are T. J. Lee, Peter Gehrke, Hans E. W. Hoffman, Dieter Ottemeyer, Professor Gerhard Eggers, F. Story Musgrave, M.D., Dr. Peter Whittingham, and Dr. D. R. Morrison.

ley and Eugene B. Stewart, Administration and Program Support; Arthur Mandell, John A. Mason, and Gary R. Primeaux, Life Sciences; William J. Bennett, Charles W. Busch, Howard G. De Vezin, Jr., Dr. John L. Engvall, Jackie L. Fisher, Shirley H. Hinson, Johnny L. Parker, Joseph W. Snyder, Wilbur R. Wollenhaupt, Data Systems and Analysis; Marilyn J. Bockting, Michael A. Collins, Jr., Melba S. Henderson, William J. Nesbitt, Program Operations; Kenneth J. Demel, Victor L. Ettredge, Allan L. Grandfield, Donovan L. Teegarden, Jr., Milton C. Trichell II, and Richard A. Wright; Science and Applications; Glen Brace, Dorothy R. Wilson, Personnel; Wyndell B. Evans and John E. Roberts, Jr., Shuttle Program Office; and Louis R. Gomez and Michael Hamilton of the White Sands Test Facility.

(Continued on Page 3)

JSC Security Policemen Perform Diversified Duties

Probably some of the least appreciated services are those performed by law-enforcement officers. However, without ample control over lawbreakers or potential lawbreakers, instant chaos would be the inevitable result.

Although the Wackenhut Security Policemen are posted at the Center to enforce the rules and regulations of JSC—not the

law—they too, receive their share of criticism. They've been tagged everything from "busy-bodies" to "rent-a-cops", but take away their efficient operations and certain functions at JSC would not operate as smoothly.

Robert Barnard, Chief of the Security policemen says the Wackenhut security personnel are probably the most diversified

guard force in the country. He said most of JSC's security policemen have had civilian police or security experience or military police experience. In addition, each security policeman must undergo refresher training in all aspects of his job every year and must qualify for use of weapons every six months. A number of the men also are currently enrolled in advance police subjects.

Probably one of the most essential duties of the security force is that of providing perimeter entry control at the Center. This requires the assignment of personnel at the entry gates of the facility and in the Visitor Registration Center on a designated schedule. The objectives of entry control are to limit entry to approved personnel; to prohibit the entrance of persons whose conduct manifests a significant risk of injury to persons or property at JSC; to identify and badge approved personnel seeking admission to the Center; to con-

firm the validity of visits to certain internal areas and buildings on the facility; to issue vehicle passes when required and to maintain records of visitors.

Internal visitor control service is also provided by Wackenhut. The main objective of internal control is to monitor compliance to JSC badge requirements.

Security also maintains a traffic and parking control system, including directing traffic during peak driving hours, preparing and issuing traffic violation notifications, investigating accidents and performing other investigations.

Chief Barnard says that about 67 percent of the tickets issued are for parking violations and 33 percent are for moving violations. Although employees do not have to pay for the tickets, they are assessed a certain number of violation points, depending on the circumstances of the "offense". After receiving 10 points within a year, employees stand a chance of losing their driving privileges at the Center.

In addition to the visible functions of the JSC security personnel, there are a number of "behind-the-scenes" duties for which they are responsible including issuing permanent badges and other identifications pieces, and issuing vehicle decals to government and contractor personnel working at JSC. This function involves photographing personnel, preparing badge inserts, operating lamination equipment, fingerprinting designated personnel for security check and clearance purposes and similar assignments.

They are also responsible for

protecting all data, materials and equipment against unauthorized access, loss, theft or damage, and they perform escort duties for classified shipments and wideloads.

Other duties include providing locksmith service such as key and combination lock work, installing security alarm equipment at designated locations and destroying classified and sensitive waste material. Employees performing these duties must be favorably processed by NASA for a full field investigation in addition to meeting regular clearance requirements.

Wackenhut handles all telephone calls coming into the center on weekends as well as after 5:00 p.m. through the week. They are also responsible for security of NASA buildings at Ellington Air Force Base.

They must be prepared to perform other necessary functions in the event of any situation affecting the security of the facility such as fires, accidents, internal disorder, attempts to commit espionage, sabotage, or other criminal acts.

JSC's Wackenhut Protective Service is a subsidiary of Wackenhut Corporation, Coral Gables Florida, the third largest security and investigation corporation in America. Ed Long, Manager of JSC's Wackenhut operation, says that no major security problems have confronted the Center, but feels "confident that Wackenhut Protective Services will be able to handle any situation that might arise."

Take stock in America
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ENTRY CONTROL—Matthew Williams, Security Policeman stationed at Perimeter Gate 1, stops a car for identification purposes. There are six perimeter gates throughout JSC.

Contract Awarded

NASA has selected Boeing Company, Aerospace Division, Seattle, Washington, for negotiation leading to the award of a contract to provide Safety, Reliability and Quality Assurance Engineering Support at JSC.

The contractor's proposed cost for the first 2-year cost-plus-award-fee type contract is approximately \$8 million. It is contemplated that there will be two extensions; one for 2 years, the other for 1 year.

The work to be accomplished by Boeing consists of Safety, Reliability, and Quality Assurance Engineering and technical tasks associated with current and future NASA-JSC programs for space vehicles, ground support equipment, facilities, and payloads (including experiments).

Two other firms submitted proposals for the work: Management and Technical Services Company, Philadelphia, Pennsylvania; and Planning Research Corp., McLean, Virginia.

The contract will be under the technical direction of JSC.

ABC-TV To Air "Politics of Safety"

"The Politics of Safety", an ABC-TV News documentary narrated by ABC News science editor Jules Bergman, will be aired at 7 p.m. CST December 28 by the Houston ABC-TV affiliate, KTRK-TV Channel 13. The film may include segments shot at JSC of work under way by the Structures and Mechanics Division in the field of aircraft flammability. At Roundup press time, the film was still in editing.

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PISTOL RANGE—Security Policeman Herb Landon practices on the pistol range at Clear Lake City. Each security policeman must qualify for weapon use every six months.

Employee Says "You Name It, I'll Do It!"

With an attitude like, "You name it, I'll get into it," can a day ever be dull? Can the person with that frame of mind ever slow down or allow himself to get bored?

Nick Fatica, a Cleveland State University Co-op student, says NEVER! He can't pick one favorite hobby, because he indulges in so many—guitar playing, singing, reading, studying, dancing, and all sports.

Completing his first Co-op assignment, Nick—an electrical engineering major—is working in the Test Facilities Branch of the Engineering Division. He's been here for only three months, and yet he says, "I've learned so much more about electrical engineering than I would have out of a textbook."

The process of supplying electrical power to various branches after reviewing work requests is one that Nick deals with on a daily basis, and "everytime the situation is different, and I learn something new," he says.

But along with all the scholastic matter he will take back to school with him, there's much more new knowledge that Nick has acquired. His first time away from home, this three-month

stay in Houston with the encountering of new faces, a job, and attitudes different than those of Easterners, Nick has learned many valuable things about life itself and about "getting along."

He says that many things he knew about before have now finally fallen into place making more sense. "I've learned to 'be myself', to have patience with others," and seeing himself alone in new situations, he's found confidence and self-respect.

Nick has been sharing rent and problems with two other Co-op students, thus he's learned tolerance and more about what he is like.

When he first started working at JSC, he read booklets with basic information about his job. Then Nick discovered more could be learned by asking questions and actually listening to others' answers and opinions. Since then Nick says he's learned more about getting along with people and what it takes to gain other's confidence and friendship. He is very grateful to the personnel in the Test Facilities Branch and in the entire Engineering Division who "listened, never turned me
(Continued on Page 3)



DIRECTING TRAFFIC—Security Policeman Roosevelt Woodard directs traffic on Second Street near Building 45.



ISSUING BADGES—Security Policemen Frederick F. Patton, left, and Leon Price, right, issue temporary badges to JSC visitors. They are in the Visitor Registration Center in Building 100.

Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn; Roundup) by Thursday of the week before publication.

MISCELLANEOUS

Wards pet clipper w/ accessories, used once, \$10 Barbara, X4026 or 481-5965 after 5:30.
 Beautiful handmade quilts, only four left, pick up now for Christmas, \$50 each, 473-1332.
 .44 calibre Navy Colt revolver replica, nvr fired, blu steel barrel and cylinder, brass frame, fruitwood grips, \$65, Ullrich, 487-0307.
 VW engine, 1300cc recently overhauled, except for muffler ready to install, \$100, 471-3709, X2131, Norma.
 Sacrifice Akai tape recorder 360D. Original cost \$800, mst sell at \$225, nds repair, Donna, 487-1448.
 Five 90 lb. bags ready-mix concrete, \$7, single roof-a-way bed, \$10, 474-4885.
 Bell R/T motorcycle helmet and visor, sz 7 1/2-7-5/8, orange, nw, \$30, 534-4603.
 Steel-belted radial tires, Uniroyal Zeta 40M sz JR 78-15, 2 w/ 6,000 mi, \$40 ea, and 1 w/ 25,000 mi, \$15, 534-4603.
 Photographic print dryer, premier professional model no 110 for color and b/w, thermostat controlled, roller inclu, new, \$30, 534-4603.
 Dokordor 9020, Solid State tape deck, used 3 mos, X5406.
 Boy's clothes 16-18, Nunn Bush men's shoes 12 narrow, GE portable stereo, all xint cndn, 554-7139 aft 5.
 Peavy bass amp, 2-15 box, new, Fender jazz bass, new, light show, clarinet, 481-6880.
 Beautiful Conn Cornet and case, \$200 new, will take \$100, 554-3473.
 Lafayette RK-87 AM-FM radio and cassette tape recorder, portable w/ AC adapter, bit-in and external mikes, auto shut-off, li nw, \$45, 333-3071.
 Game table, octagonal, beige vinyl/walnut, removable top, folding legs, sturdy, xint cndn, cost \$40, will take \$25, 474-2660.
 Sidewalk bike, li nw \$18, Silver Christmas tree, 6 feet, and color wheel, li nw, both for \$10, 333-2340.
 Shotgun, Remington 870 pump, 12 gal, vent rib, kick pad, varichoke, li nw, \$100, 488-6764.
 Girls roller skates, sz 1, gd condn, cost \$34, new, now \$10, 944-1019.
 Worldbook encyclopedia, 73 ed, xint cndn, 47
 Worldbook encyclopedia, 73 ed, xint cndn, 74 yrbk included, \$195, Kilbourne, 482-7879.

Two 5" reel to reel portable tape recorder each with 15 li nw tapes, AC or DC operation, \$25 each, 554-6683.
 Amana "radar range" microwave oven, model MR-2, unit is nw w/ 5-year warranty, \$300, 554-3884.
 Colt 30-06 rifle w/ 2 1/2 to 8 variable scope, \$150, 554-3884.
 Colt 357 magnum pistol, nw, still in carton, \$190, 554-3884.
 Old cider press in working cndn, \$40, 554-7052.

HOUSEHOLD ARTICLES

Small formica table w/ drop sides and 2 li nw tan vinyl covered chairs, Lil, 333-2638 aft 2:30 p.m.
 1970 RCA portable stereo, nice cndn, plays well, \$45, 473-1332.
 Beautiful tall antique plantation desk, has roll top and liftoff book shelves, \$1500, Tiffany large light fixture, \$350, 488-5564.
 Old-style upright piano, ideal for beginner, \$275, McCanley, 471-3298.
 Coppertone Delux Frigidaire refrigerator, 15 cu, gd cndn, \$55, 946-7028.

VEHICLES

73 Chevrolet Caprice sta wgn, 3 seats, air, pwr, AM/FM, door locks, lug rack, cruise, tilt steering, 22,000 mi, 333-3060, \$3500.
 Honda 350, 1000 mi, \$700, 333-3060.
 69 Grand Prix, air, auto trans, pwr str, pwr disc brks, 46,700 mi, xint cndn, \$1650, 488-5077.
 Honda 70, just serviced into perct cndn, \$250, 488-0192 aft 5.
 67 Ford Custom Sedan, pwr, air, auto, 65,000 mi, gd running cndn, body fair, \$300, 482-7829.
 Sidewalk bike, li nw, \$18, 333-2340.
 Go cart, Rupp-Sprint, MC-91 McCollough, very fast, xint cndn, will sell or trade for small dirt bike, Nelson, 554-6668, X3007.
 69 Ford Country Squire Wgn, A/C, auto, p/s, p/b, steel radials, 390 cu. in, runs gd, 20 mpg, \$899, Plauche, 474-2660.
 Honda XL250, low mi, xint cndn, \$750, Boykin, X4476 or 481-0050 aft 5.
 67 Buick Le Sabre, auto, air, nw rings, bearings, ignition, carburetor, tires and paint, \$1050, blu w/white vinyl top, 644-0853.
 73 VW 412 sta wgn, a/c, porche engine, 6000 mi left on warranty, 25 mpg, \$3750, 644-0853.

69 Dodge PU, Adventurer 100, 318 cc V-8, auto, radio, LWB, nw rubber, shocks, brakes, etc, \$1350, 554-7052.
 62 Ghia, eng recently overhauled, runs good, 25mpg, rubber fair, \$375, 554-7052.
CREDIT UNION REPO, 73 Maverick 2-dr SDN, 16k mi, 250 C.I.D., 6 cyl engn, air, AM radio, tintd glass, vinyl seats, yellow, bids taken Dec. 26-Jan. 9, min bid, \$2500, interested parties should contact Georgia Bennett, X2066 for bid forms and appointment to inspect car.
PROPERTY AND RENTALS
 Brook Forest, Olde English, 3 BR, beautifully decorated, landscaped and draped, equity, low interest loan, many xtras, \$47,000, 488-6507.
 Wooded corner lot, sec 3, Elkins Lake, \$6,950, 944-3765.
 One BR house, 4 yrs old, Friendswood, large wooded lot on water, \$12,500, owner financed, \$110/mo, 333-3457.
 108 acres, Central Texas, \$3300/yr income, \$550/acre, 481-0708.

PETS

Mixed breed 4-month-old male pup, will make xint watchdog, Dave, 4878 or 488-2364. Registered 1/2-Arabian Filly, line-back dun, 2 yrs old, 331-5667.
 AKC reg Borzi pups and adult dogs, \$75, Carol, 1-925-3312.
 AQHA reg quarter horses, \$350 up, Carol, 1-925-3312.

WANTED

Want to assume reasonably low interest loan on 2500-3200 sq ft home in NASA area, Allegeier, 4771.
 Interested in used Olympia standard manual or IBM-C or D model typewriter, home phone, 488-4238.

Attention!

The Roundup scheduled for January 3 will not be published. Normal publication will resume on January 17. Merry Christmas and Happy New Year!

The Editor

Awards

(Continued from Page 1)

Group Achievement Awards were presented to the Aircraft Operations Team; the ASTP Communications System Verification Team; the ASTP Docking Module Thermal-Vacuum Team; the ASTP Docking Qualification Test Team; the ASTP Environmental Control System Test Team; and the Energy Conservation Team.

Members of the Flight Control Team also received special recognition at the ceremony for "their dedication, responsiveness and outstanding performance while serving in the Mission control Center throughout the Skylab missions."

Sigurd Sjoberg, Deputy Director of JSC, was awarded the FAI (Federation Aeronautique Internationale) Paul Tissandier Diploma "in recognition of his invaluable services to astronautics and the manned spacecraft program of the United States as Flight Director of the Lyndon B. Johnson Space Center at Houston, Texas." A limited number of these Diplomas are awarded each year to individuals who, "while not qualifying for one of the medals of the FAI have nevertheless, during the previous years, served the cause of aviation and space exploration by their work, initiative, devotion, or in other ways."



TABLE TENNIS WINNERS—The winners of the Semi-Annual Open Table Tennis Tournament at the Gilruth Center are shown receiving their trophies from club president Stephen Jacobs, far left. From left to right are Richard Kauth, first place, Michael Loftin, second place and Richard Arndt, first place in the consolation bracket.

EAA Attractions

GOLF

The JSC Golf Association (JSCGA) is now accepting membership applications for the 1975 season. JSCGA members participate in competition for merchandise, trophies and fun. The first of 10 or 11 tournaments will be played in February. Membership costs of \$28.50 include tournament prize fees and trophy costs. JSC and JSC contractor personnel are eligible.

In application include name, location, mail code, office and home phone numbers, and a check for \$28.50 payable to JSCGA. New members must submit 5 recent attested scores to establish their JSCGA handicap. Mail them to Dick Siler, ZS/8, January 15, DEADLINE!

TABLE TENNIS

The JSC Table Tennis Club's Semi-Annual Open Tournament was held at the Gilruth Recreation Center Saturday, November 23. The championship bracket winner was Richard Kauth after a three-out-of-five series against Michael Loftin. Consolation bracket winner was C.D. Arnot. Tournament directors were Michael Zuteck and Melvin Ellis; tally keeper was Robert Clark. Because it was such a great success, another tournament is being considered for February. The Table Tennis Club meets on Tuesday nights at the Gilruth

Recreation Center, featuring Ladder matches, instruction and open play. Dues are \$1 per year; additional information can be obtained from Steve Jacobs, X3561.

LAST CALL

Join our trip to Panama, Costa Rica, Guatemala and El Salvador sponsored by the EAA-Aerospace Employees Cultural Club. We'll be leaving Houston on 2/13/75 via Pan American, and we'll return on 2/26/75; \$425 double occupancy and \$450 single occupancy. This includes airfare, baggage transfers and transportation to hotels. \$100 deposit required by 12/18 with full payment by 1/8/75. Call Helen Statz, X4039, or Tom Gallagher, X2281, for more details.

TICKET CORNER

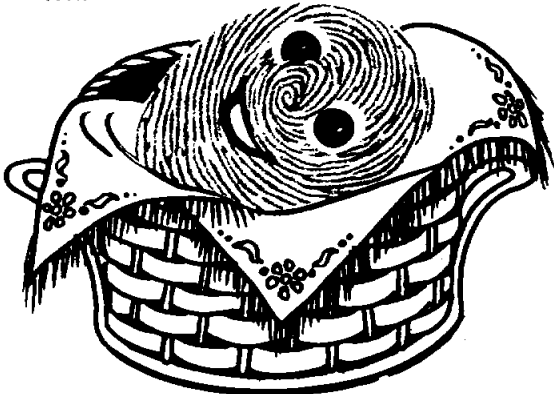
ABC Interstate Theatres—\$1 coupon good for any ABC Theatre.
 Sea Arama—Year Around—Adults, \$3; Children, \$2.
 Houston Aeros Hockey—All Season, \$4.40 gift certificates (\$5.50).
 Lion Country Safari—Year Round—Free Safari cards for 10% discount.
 Disney Magic Kingdom Club—FREE
 Houston Livestock Rodeo—Feb. 23 matinee, \$5.

"Name The Fingerprint"

A poster entitled "fingerprints on the vastness of space" has been designed for circulation at JSC. The fingerprint will be the Center's low-cost symbol, but it currently has no name.
 As a result the EAA in conjunction with the Technical Planning Office is sponsoring a contest to name the fingerprint. The employee who submits the most

clever name will receive a \$25 Savings Bond. To enter the contest, fill out the form below.
 Information will be released soon on another human motivation cost reduction program entitled R.E.A.C.T. (Reduce Every Agency Cost Today). R.E.A.C.T. will concern obtaining cost saving ideas from all Center employees.

"I AM A LOW COST FINGERPRINT ON THE VASTNESS OF SPACE AND YOU'LL WIN A BOND ...IF YOU NAME MY FACE"



NAME _____
 PHONE NUMBER _____ CODE _____
 SUGGESTED NAME _____

**MAIL ENTRY TO: EM/BILL JONES
 NO LATER THAN JAN 31ST, 1975
 ENTRIES TO BE JUDGED BY EAA PANEL
 WINNER WILL BE ANNOUNCED FEB 3rd, 1975
 \$25 BOND TO BE AWARDED BY EAA**

You Name It *(Continued From Page 2)*

away—they always were patient with me and made these three months the unforgettable experience they were."
 Nick speaks for almost all first-assignment Co-op students when he says that the Co-op can do what he should or must only after the supervisor or personnel in-

involved explain patiently and are then open to questions.
 With many, many dreams and goals for tomorrow, his first is to finish school. Nick will always search for happiness in whatever he encounters, and he feels that happiness is "using his knowledge to the best of his ability."



The Roundup is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for JSC employees.

Editor: Janet Wrather Photographer: A. "Pat" Patnesky

USPO Conducts Technical Studies For MIUS Project



"We put it all together for 33 hours in the Mercury Project; We put it all together for 14 days in the Gemini and Apollo Programs; and we put it all together for 84 days in the Skylab Program."

Edward L. "Ted" Hays, Manager of the Urban Systems Project Office (USPO) at JSC, says that through the years, manned spaceflight crews have been provided a comfortable environment by an independent, integrated life support and utility system.

Recognizing that the concepts and analyses used in developing aerospace utility systems might have practical applications on Earth, JSC in 1972 began working on a project to investigate the design requirements for providing improved utility services to new or renewal communities.

Called MIUS (Modular Integrated Utility System) the project is sponsored by HUD (department of Housing and Urban Development) with the major technical studies being conducted by JSC and a number of other agencies. JSC's participation is provided by the Urban Systems Project Office which was established in 1972. The office includes specialists in power generation, water processing, solid and liquid waste management, heating, ventilation and air conditioning, materials, etc.

Although each of the engineers assigned to the MIUS team had little experience in civil systems per se, their high degree of training and experience in systems engineering and integration of complex technological systems allowed an accelerated adaptation to their new assignments. For example, a space suit engineer became a water and liquid specialist; an expendables analysis engineer became a solid waste management engineer; a structural engineer became the subsystems office manager, etc.

The MIUS concept recycles energy by packaging into one processing plant all of the five utility services necessary for community development, including electricity, space heating and air conditioning, solid waste processing, liquid waste processing, and residential water purification.

In conventional utility service practices, power is generated

remote to the using site and the heat energy is rejected to cooling water. In addition, further energy loss is encountered in transmitting the power to the using site. The solid waste is either carried to landfill or incinerated without recovering the heat energy. The liquid waste is collected and processed at a remote site. The potable water is also purified at a remote site.

Conceptual design studies conducted at JSC demonstrate that adaptation of the MIUS concept would increase the efficiency of using energy and other natural resources, decrease the total impact of the environment on the community, and reduce the total costs of utility service.

For example, one analysis indicates that in providing utility services to a 648 living unit garden-type apartment complex located in Houston, an energy savings of 33 percent can be achieved with the MIUS design as compared to conventional practice. With this savings in energy, a nine percent reduction in freshwater supply, 48 percent reduction in effluent (flowing) wastewater and 74 percent reduction in solid waste could be achieved.

In a similar analysis performed on a 730,000 square foot shopping center and a 12-story high-use apartment complex, an energy savings of 23 percent and 38 percent, respectively, was realized.

When the analysis was performed on a conceptually designed new city of 110,000 population, the energy savings was 38 percent, freshwater supply was reduced by 17.5 percent, wastewater effluent volume was reduced by 27.1 percent and the solid waste volume for ultimate land placement was reduced by 80 percent.

In support of these analytical studies, a contract was awarded to the Hamilton Standard Division of the United Aircraft Corporation early in 1973 to design and construct a testbed utility system called the MIST (MIUS Integration and Subsystems Test) laboratory. Located at the north end of JSC, the facility was completed early this year and is producing test data.

In the MIST, electrical power is generated by a diesel-electric

MIST FACILITY—Shown above is the west side of Building 32J, site of the MIST facility. Items in the foreground are, left to right, electrical load simulator, cooling load simulator, cooling tower, heating load simulator, hot thermal storage tank (rear), wastewater storage tank (foreground) and the solid waste management subsystem.

generator and the engine's waste heat is recovered for use in the heating and air conditioning and sewage treatment processes. A conventional incinerator, which meets all Environmental Protection Agency standards, is used to burn trash and other solid wastes including sewage sludge. Here also, the waste heat is recovered for use elsewhere in the system. Hot and cold thermal tanks are also provided to improve system efficiency. Sewage treatment is accomplished in a multi-step process which includes filtration, physical chemical, reverse osmo-

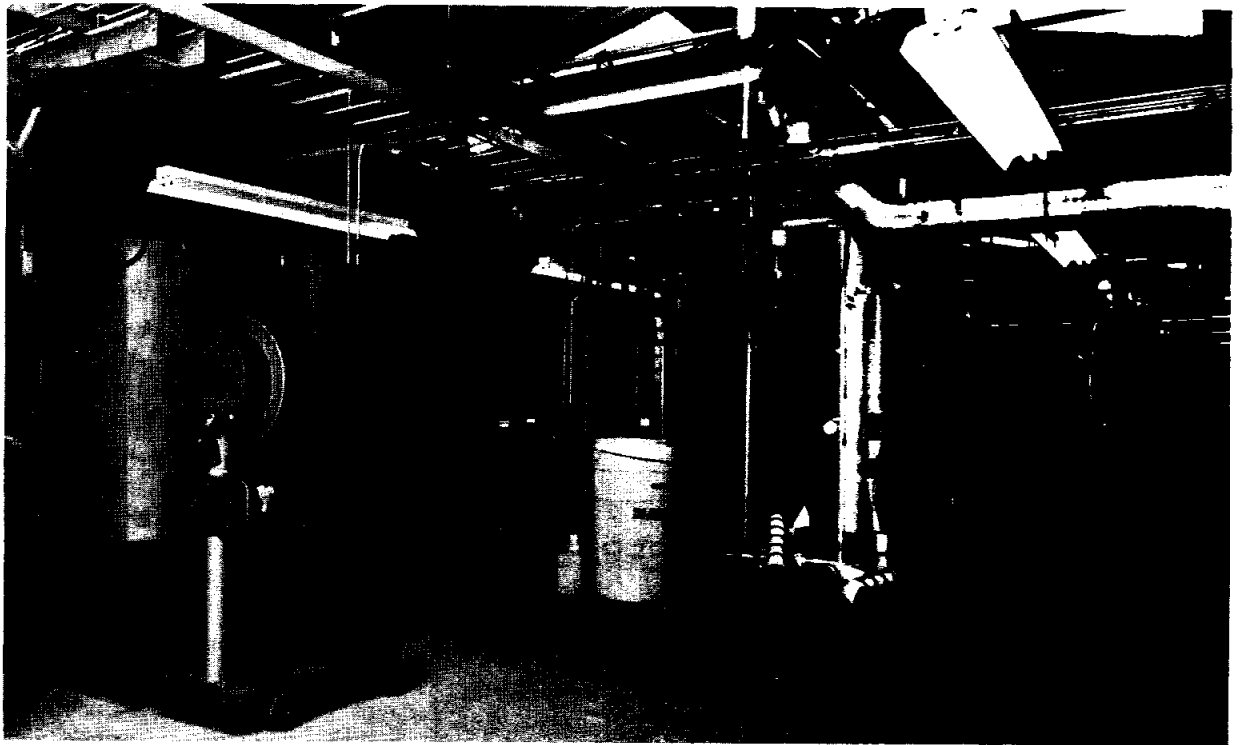
sis and chlorination. The purified water is then used in the cooling tower or returned to the environment. The MIST laboratory is designed so that alternate advanced subsystems can be installed and evaluated.

Currently, HUD is in the process of selecting a "real life" demonstration site on which to build a MIUS model. This model will be a multi-family apartment dwelling and will be highly instrumented so that environmental and energy benefits in applying the MIUS concept, as opposed to conventional utility

service practices, may be accurately assessed.

JSC will participate in the design reviews and will probably play a significant role in the instrumentation and monitoring of the demonstration. Also, MIST will be used to support design problems associated with the demonstration project.

In addition to the HUD/NASA project, USPO is conducting a number of systems design and development projects to provide advanced and more efficient alternatives to current methods of providing utilities.



MIST SUBSYSTEMS—Pictured above are some of the subsystems in the MIST laboratory. The wastewater treatment subsystem is in the foreground. In the middle of the photo is the power generation subsystem and its associated heat recovery equipment while the heating and air conditioning subsystem is to the rear.

Data Transformation Corp Gets MBEP Contract

The Data Transformation Corporation (DTC) has been awarded an 8(a) contract for maintenance and operation of the JSC Earth Resources Cataloging and Indexing (C&I) System. The 8(a) program, which is part of the Minority Business Enterprise Program, (MBEP) allows JSC to award contracts to minority businesses through the Small Business Administration.

Through the MBEP, the Government seeks to promote the establishment and the growth of minority business concerns so that these companies may become self-sustaining, competitive entities.

Under the contract, the DTC entry analysts determine the geographical location of the photography by using a semi-automatic, computer assisted, plotting technique. This system calculates the latitude and longitude of the four corners and center point of Earth Resources photographs by registering them with standard maps.

In addition, the computer analyst enters 25 other descriptive items about each photograph into the computer. Once a roll of photographic film has been cataloged and indexed, the C&I data, along with a copy of the film, is sent to a Federal Data

Center in the United States Department of Interior in order to place all Earth Resources photographs in the public domain.

This system also includes an efficient data retrieval system so that given a specific geographical area, all photographs meeting specific requirements will be displayed with an accession number used for locating and ordering. In addition to maintaining both the hardware and software and cataloging and indexing photographic data, DTC will be responsible for expanding the system to include Earth Resources electronic data.