

Space News Roundup

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National Aeronautics and Space Administration

News Briefs

3M praises DMOS results

The 3M Corp. last week described its Diffusive Mixing of Organic Solutions (DMOS) experiment aboard STS 51-A as "99 percent perfect and an unqualified success." Crystals grown in two football-sized chemical reactors aboard *Discovery* were shown to the public Nov. 20. A third reactor produced "technically significant amounts of crystals," 3M said, while the remaining three reactors produced no crystals, apparently because valves within the DMOS experiment did not open properly. "Despite concern over the unopened reactors, 3M scientists were decidedly bullish about obtaining results from three of four experiments conducted in the six reactors," a company announcement said. Photo-optical properties of the crystals will be studied as part of a long-range 3M research program.

Miss Baker passes on

Miss Baker, who with another squirrel monkey named Able was launched 300 miles into space aboard an Army Jupiter missile in May 1958, died Nov. 29 in Auburn, Alabama. The 27-year-old primate died of kidney failure at the Auburn Clinic. The 15-minute suborbital flight of the two animals paved the way a year later for the first manned Mercury mission by Alan Shepard. Miss Baker had lived for years at the Alabama Space and Rocket Center in Huntsville. Able died shortly after the 1958 flight.

Ariane-3 boosts MARECS

The second launch of an uprated Ariane rocket, the Ariane-3, and the 11th launch of the European Space Agency's expendable rocket system, boosted the ESA maritime communications satellite, MARECS B-2, and an American satellite, SPACE NET F2, into orbit on Nov. 9. The first Ariane-3 launch, featuring a more powerful version of the basic rocket system, launched two communications satellites into orbit Aug. 4. Both launches took place at the Kourou, French Guiana launch site.

CU sets holiday closings

The JSC Federal Credit Union will be closed Monday and Tuesday, Dec. 24 and 25, and Tuesday, Jan. 1, in observance of the holidays. The 24-hour automated teller machine at the Credit Union will, however, be open those days.

BAPCO to meet

The Bay Area PC Organization will hold its next meeting at 7:30 p.m. Tuesday, Dec. 18, at the Sheraton Kings Inn on NASA 1. The program will feature a discussion of Wordstar word processing. For more information, call Earl Rubenstein at x3501, or Hattie Thurlow, x2213.

Casa de Esperanza seeks aid

Casa de Esperanza (CDE) is a temporary housing facility for neglected or abused infants and toddlers that is dependent on donations in order to operate. Donations of clothes, food, toys, diapers, blankets, money, or volunteer services are needed. Contributions or questions about the organization may be addressed to CDE, P.O. Box 66581, Houston, TX 77006, or call CDE at 526-7269 or Bobby Ann Landroop at 482-6686 after 6 p.m.

Children's Christmas Party

The annual JSC Children's Christmas Party will be held at the Gilruth Recreation Center on Saturday, Dec. 15, at 10 a.m. Party activities planned are pictures with Santa; a movie, "Babes in Toyland;" and Christmas stocking favors. Tickets, on sale at the Bldg. 11 Exchange Store, are \$1.50 each.



Astronauts Joe Allen and Dale Gardner, atop the highest and most versatile billboard in this part of the Galaxy, advertise the upcoming sale of two slightly used communications satellites in this picture from Mission 51-A. The photo was taken during the second EVA after retrieval and berthing of the Westar satellite. For more photos, see page 3.

Industry returns 13 proposals on Space Station RFP

NASA has received 13 proposals from U.S. industry for definition and preliminary design of a permanently manned Space Station to be operational in low-Earth orbit in the early 1990s.

A Request for Proposal (RFP), issued in September 1984, contained four "work packages" covering definition and preliminary design, or Phase B, of Space Station elements. NASA plans to let competing contracts for each of the work packages and has scheduled April 1, 1985, as the effective date of the contracts.

Proposals from the following groups of companies were submitted to the Source Evaluation Board on Nov. 15, 1984. Work packages and NASA Centers responsible are listed first with primary team leaders, other team leaders, subcontractors, and advisors submitting proposals following each work package.

Work Package One: Marshall Space Flight Center — definition and preliminary design of pressurized "common modules" with appropriate systems for use as laboratories, living areas, and logistic transport; environmental control and propulsive systems; plan for equipping a module as a laboratory and additional ones as logistics modules; and plan accommodations for orbital maneuvering and orbital transfer vehicles. Bidders were:

- Boeing - Teledyne Brown Engineering; General Electric; Vought; OAO; Thermacore; Garrett; Hamilton Standard; Life Systems; Lockheed; Umpqua; Perkin-Elmer; Fairchild; Aerojet; Rocketdyne; Rocket Research; Eaton; Sundstrand; Westinghouse;

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Employee teams sold on NETs concept

"Results" is becoming a byword for JSC's NASA Employee Teams (NETs), as four teams have received overwhelming approval of their recommendations following presentations to management.

In the NETs program employees work in groups to investigate organizational problems and make recommendations for improvements. All team members are people who volunteer because they see a potential to make improvements. The four teams who have presented their recommendations to management are among the six original NETs teams formed at JSC last April. They include groups in Procurement, Technical Services, and Facilities Design, as well as a center-wide administrative/executive secretarial team. Although skeptical at first, team members, leaders, and facilitators now agree that employee involvement through NETs can result in worthwhile solutions for a variety of work area problems.

Helen Crawford, a member of the Procurement team who has been with NASA nearly 20 years, had early reservations about the program, as did many of the participants. "I have seen a lot of new things come and go here and I wasn't sure this one would be any different. We were not sure that we would be allowed to work on the things we felt needed to be changed; or that we could safely 'speak' our minds and work toward a solution for the benefit of all," Crawford said.

But management seemed sincere and Crawford said she decided to get involved. She and the others soon found that they could be honest in working on problems and that management greatly valued their input. "NETs are workable, lead to higher productivity, cost savings, and happier employees," Crawford said.

Seconding Crawford's enthusiasm for the NETs process, Procurement team leader Eleanor Der Bing pointed out that "this was the first opportunity that our employees have had to be participative in decision-making."

John Heckler, team leader from Technical Services and Quality Assurance was also skeptical at first, and said his team "came up with a whole list of concerns in our training about why the NETs program might not work." These early doubts, shared by the other NETs teams, included strong reservations about whether management would seriously consider team suggestions and a concern that uncooperative and overbearing personalities could cause teams to be ineffective. Today, however, Heckler said, most of these apprehensions have proven to be either unfounded or non-existent.

"I think many people were skeptical that a program like this could work at Johnson Space Center," observed Jack Kochner, who facilitated two teams, "and I think many of these people have been surprised."

In fact, support for the NETs effort has been very strong, with enthusiasm and commitment coming from employees and managers throughout the Center. Grassroot level support comes from the team members who consistently chip away at problems week after week, striving for improvements in keeping with organizational goals. The reason for this dedication to the NETs effort was explained by Heckler, who said, "we should be at top efficiency to support the missions of the Center and if management and employees can meet halfway to solve the barriers that get in the way of top performance, we should do that."

Team participants are not the only ones who support NETs. Management has been extremely pleased with NETs' results as well.

"I don't know what they learn in training, but I'm impressed with their teammanship and results," said J.D. Williams, Chief of the Technical Services Division. Dick Thompson, Facilities Design Chief, agreed that the team contributes to his division and also acknowledged its merit for employees, crediting NETs as being "valuable experience and training for the people involved."

Harvey Hartman, Deputy Personnel Officer who chairs the Center's NETs Steering Group, summarized, "the teams' work has been high quality. Not only have they done sound homework and not left any stones unturned, but

they make pragmatic, realistic decisions." He attributed their success to two factors. "First, they have solved some real problems and, secondly, they've gotten real commitment to make their solutions work."

Positive response to the original NETs has been strong enough that four more teams were organized and trained in August. According to Alma Martin, the Center's NETs Coordinator, further expansion of the program is on the horizon. "I have gotten new requests for NETs and we'll be having another round of training sessions very soon," Martin said.

The process takes time and effort, but satisfaction at making a solid contribution is evident among team members, as is illustrated by the team stories which follow.

NASA-wide uses

The Space Center Operations Procurement team, comprised of contract specialists in the Base Operations Procurement Office, is led by Eleanor Der Bing and facilitated by John Duncan.

Known as the P.E.P. (Promoting Efficient Procurements) team, this group designed a new purchase order form (NASA Form 1429) to replace NASA Form 1379, now obsolete due to the relatively new Federal Acquisition Regulations (FAR). The team also developed new internal procedures to simplify procurement.

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Opinion

The Fat Lady Sang

Throughout the most recent Space Shuttle mission, a flight which is already being labeled as among the most spectacular and important of the 14 mounted thus far, a certain tangible sense of caution could be perceived running through the collective mind of NASA management. Managers and members of the flight control team seemed to be saying to themselves, midway through the flight, "Okay, we've got Palapa. Let's wait and see how the Westar retrieval goes before we light any cigars." After Westar was hauled into *Discovery's* payload bay, it was a matter of awaiting a successful landing before that last long sigh of relief and exultation could be breathed. The mission, more than most, seemed to have a great many adherents to the old cliché that "the opera ain't over 'til the fat lady sings." The sense of having a great deal riding on the mission was palpable. But hasn't NASA done this kind of thing before? Doesn't the Agency have a solid record of venturing out to the edge of the envelope, snatching success out of the ether, then journeying home to build on that achievement? The answer to those questions is yes, but there was more to it than that. Flight 51-A was something beyond a journey to the edge of the envelope. It was a flight which defined an entirely new envelope, and then with no overwhelming assurance of success, went out to meet the challenges which had been set, all in something less than eight short months. NASA has said for some time now that the achievements of Apollo and later manned missions forever put to rest, in the most practical of terms, that old space age debate over man versus machine. It is now a question of man *and* machine, and Flight 51-A was the latest and perhaps the best demonstration of that. But the proof of the pudding was something more than just demonstrating the utility and flexibility of people in space. "The flexibility that people bring to the equation," JSC Director Gerald D. Griffin said, "has made what in several cases could have been the ultimate difference. We have proven that the flexibility of people in orbit allows us to respond in short order to unforeseen circumstances." Spacewalkers Joe Allen and Dale Gardner, he pointed out, handled two large masses which were not designed to be handled. George Nelson and James Van Hoften performed repairs on Solar Max last April which were not originally designed into the spacecraft's tolerances. "Both flights taught us a great deal about what we can do with people in Low Earth Orbit, and this knowledge will prove useful to us as we construct the Space Station," Griffin said. But we also now can be sure of something else, he continued. "What we are now capable of doing in Low Earth Orbit will be carried to higher orbits. Using the Space Station as a staging point, we will eventually send people to Geosynchronous Earth Orbit." Once we achieve that capability, almost all satellites will be within reach of the repairman's screwdriver or the delivery system's transport back to Earth. With Flight 51-A, an entirely new book is about to be written in the space business, and the mission itself was but the first chapter.

Space Station proposals

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Rockwell Autonetics; TRW; Computer Tech Associates; Hughes; Telephonics; Camus.

• General Dynamics - Grumman; Hamilton Standard; Life Systems; Ford Aerospace; TRW; Ball Aerospace; Computer Sciences; Otha C. Jean & Associates; Aerojet; Honeywell; RCA; Rocketdyne; SPAR Aerospace; Sperry; Telephonics.

• Martin Marietta - McDonnell Douglas Technical Services; Hamilton Standard; Honeywell; Hughes; Hercules; Wyle Labs.

Work Package Two: Johnson Space Center - definition and preliminary design of the structural framework to which the various elements of the Space Station will be attached; interface between the Space Station and the Space Shuttle; mechanisms such as the Remote Manipulator Systems; attitude control, thermal control, communications, and data management systems; plan for equipping a module with sleeping quarters, wardroom, and galley; and plan for extravehicular activity. The bidders were:

• Lockheed - TRW; Bendix; Hughes.

• McDonnell Douglas - IBM; Honeywell; RCA; Ball Aerospace; Computer Sciences; Design West; Communications and Data Systems Associates; Eagle Engineering; Essex; Fluor; Ford Aerospace and Communications; Hamilton Standard; ILC Space Systems; SPAR Aerospace; LTV Aerospace and Defense.

• Rockwell International - Grumman; Harris; Sperry; Intermetrics; SRI International.

Work Package Three: Goddard Space Flight Center - definition and preliminary design of the automated free flying platforms and of provisions to service, maintain, and repair the platforms and other free-flying spacecraft; provisions for instruments and payloads to be attached externally to the Space Station; and plan for

equipping a module as a laboratory.

• General Electric - TRW; Essex; Integrated Systems Analysis; Perkin-Elmer; SPAR Aerospace; Teledyne Brown Engineering.

• RCA - Lockheed; Ball Aerospace; Computer Sciences.

Work Package Four: Lewis Research Center - definition and preliminary design of the electrical power generation, conditioning, and storage systems.

• Garrett - Acurex; Avanco; University of Houston; ElectroSpace; Mechanical Technology; Thermo Electron; LTV Aerospace and Defense; EBASCO Services; GA Technologies; Lockheed.

• Rocketdyne - Sundstrand; Ford Aerospace and Communications; Harris; Lockheed; Spectralab; Acurex; Georgia Tech.

• TRW - General Electric; Grumman; General Dynamics; Perkin-Elmer; United Technology; Mechanical Technology; Life Systems.

Other proposals were submitted by Natural Energy Systems with ODC, Inc., and by J.C. Gadouy.

In addition to the study of the permanently manned system, the RFP requires contractors to study how those elements of the Space Station would change were the station initially man-tended rather than permanently manned. Contractors also will be expected to pay particular attention to recommendations of the NASA Advanced Technology Advisory Committee, which is identifying automation and robotic technologies that could be used in the Space Station.

Following completion of the 18-month definition and preliminary design contracts, NASA intends to move, in 1987, into final design and development of the Space Station. Proposers for Phase B must have the capability to perform and manage the design, development, and test phase, Phase C/D, of their appropriate work packages.

NETs concept draws praise

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"The project required support and assistance from numerous JSC and contractor personnel and we want to express our appreciation to these individuals," team members declared. James Neal, Director of Procurement, approved the implementation of the team's proposals and the team expects a substantial cost savings to the government as a result. The new purchase order form is already in use.

Since completion of their first proposal, the P.E.P. team has been concentrating on developing a one-page instruction for initiators of purchase requests. Team members said that since there is no such aid, employees who initiate purchase requests frequently supply inadequate or incorrect information.

Thirty-two proposals

The "STEP" (Solutions Through Employee Participation) team from Technical Services and QA is led by John Heckler. Facilitated by Jack Kochner, the group developed 32 separate recommendations for

the Technical Services Division in the safety areas of training and education, equipment, and enforcement of existing rules and regulations.

According to Division Chief J. D. Williams, the team's solutions are realistic and will serve to keep the division's safety program active and viable. Williams was appreciative of the team's proposals, and responded with a letter and a personal presentation to the team, explaining the actions he intends to take as a result of their work. Among these actions is a complete rewrite of the Technical Services Safety Manual, which will incorporate the team's suggestions.

The STEP team's second project, determining potential improvements in work flow through the division, is now underway with Tom Baugh as facilitator. Heckler says this problem is a complicated one with many connections between people, divisions, and shops, all providing chances for work to get "hung up" on its way to completion.

The team is now identifying the obstacles to smooth work flow, after which they will decide how

to eliminate those congestions. Williams has a lot of faith in the team and is "confident they will come up with ideas to enhance work flow in our division."

Efficiency improved

Employees on the Facilities Design team, led by Grady Owens and facilitated by Ginny Hughes, considered alternatives to having engineers fold construction drawings.

On the surface, this may appear to be a petty problem. Team leader Owens, however, said that some 13,000 drawings per year are folded by project engineers, and time spent folding drawings could be spent more efficiently in managing projects or reviewing designs.

Teams are told during training to start with a relatively simple problem, but this problem proved more complex than the Facilities Design team had anticipated. "Every issue we examined in solving the problem impacted other people and we had to consider those impacts," Owens said.

After exploring all alternatives, the team decided the best solution was to completely eliminate the folding requirement.

When the team presented the rationale for its solution to Division Chief Dick Thompson in August, he immediately approved the proposal and implemented it.

Members of the Facilities Design team have now turned their attention to the drawings themselves, with emphasis on identifying and eliminating unnecessary details, doing away with wasted drafting time and possibly reducing the number of required drawings per project. The team felt this effort would improve their division's productivity, enabling it to take on more assignments.

Training planned

Led by Carolyn Lowrimore and facilitated by Jack Kochner, an employee team of JSC administrative officers and executive secretaries has developed a five-day training course for new JSC secretaries.

The group was first formed last January when the Employee Development Branch asked them to examine JSC's current secretarial training opportunities and make recommendations for improvement. After learning of the NETS concept, the group decided it provided a perfect forum for their work and became a NET in April.

With regard to their team effort, Lowrimore said, "currently there is no formal training and new secretaries are trained by other secretaries in their area." This means new employees may not get all the information they need.

In approaching this problem, the team interviewed representatives from other NASA centers as well as private sector companies to learn what secretarial training other organizations offered. Out of this information and their knowledge of JSC requirements, the group formulated the five-day training plan.

Following the team's management presentation, Center Personnel Officer Jack Lister approved the training program and took responsibility for implementing it. The training will eventually be offered five days every month.

No limits set

The limit of NETS expansion is only set by the level of employee interest throughout the Center, Martin said. Teams are available to any area of the Center that would like to form one. Any person or group who would like more information about the NETS program should contact Martin.

--Patti Ferguson



STEP Team members pictured, from left, are Herbert Mitchell, Norman DeLoof, Quinan Swing, John Heckler, Ralph Orwick and Hollis McDaniels. Not pictured: Greg Barbour, Tom Baugh and LaMarr Beatty.



PEP Team members pictured are, from left, Gerri Mason, Helon Crawford, Jerry Smith, Marsha Fuller, Eleanor Der Bing, Mary Youngblood, Mitzi Broyles, Carol Coats and John Duncan. Participants not pictured are Roy Field, Joyce Fields, Kateri Cummings and Erika Sharp.



Center-wide NET members are, from left, Ruth Hollen, Kochetia Morman, Sue Wilson, Freda Lowe, Lynn Ross, Jack Kochner, Hannah Thornton, Carolyn Lowrimore, Judy Wyatt and Marie McCright. Not pictured are Teresa Sullivan and Sylvia Salinas.



Facilities Design NET members are, from left, Ron Williams, Sharon Cordes, Tom Conger, Grady Owens, Ginny Hughes, Joe Gardner, Kathy Rauch and Phil Callen. Not pictured is Tom Raines.

The Eagle flies



The Eagle flew in more ways than one during STS 51-A, as payoffs came from planning, training and hard work in preparation for the difficult mission. Above, Dale Gardner makes it look easy as he closes on Westar for the retrieval phase of the second EVA. Below left, he then flies Westar back to the Orbiter. Below, Joe Allen wrestles with Palapa as Gardner gathers stools. One result of those exertions came during the second EVA, when this euphoric photo of Gardner, left, was taken by Allen, mirrored in the visorplate. Below, the meteoric streak of an Orbiter on reentry, accompanied by a sonic boom, was photographed and felt over Houston, but not before one last crew portrait. After the landing came the welcome at Ellington, including a reunion of the Fisher family — Bill, Kristin and Anna.



