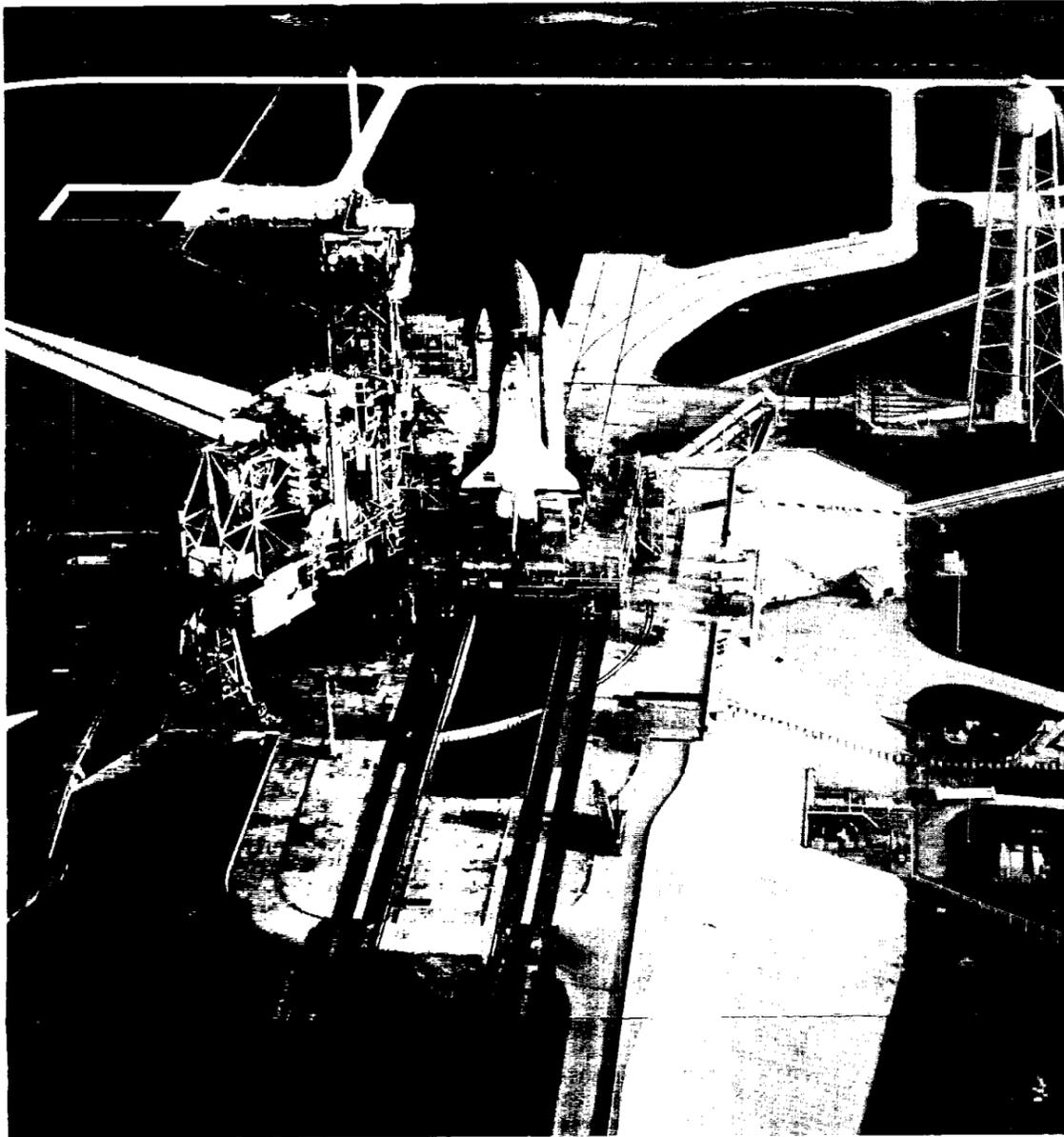


Space News Roundup



The Orbiter *Atlantis* is now at Launch Pad 39-B at the Kennedy Space Center where it will remain for seven weeks in support of a variety of tests. The tests include launch team proficiency exercises, emergency egress simulations and checkout of a new weather protection system.

NASA will use horizontal method for SRB testing

After an intensive study, NASA has determined that the redesigned Space Shuttle Solid Rocket Motor (SRM) will be test fired in a horizontal attitude.

This test attitude best simulates the critical conditions on the field joint which failed during the STS 51-L mission.

NASA also will conduct extensive component tests, full-segment joint environmental simulation tests (with loads applied) and full-scale motor static tests to verify and certify the redesigned motor for flight. Also being considered at this time is the construction of a second horizontal test stand with the capability of simulating launch

and flight loads on the motor during static test.

This second horizontal test facility, which should be ready for use in about 12 months at a location still to be determined, would provide additional test capability and redundancy in case of the loss of the only test facility now available to NASA.

The Presidential Commission investigating the STS 51-L accident recommended that NASA consider the vertical attitude for the motor firings and duplicate the actual flight conditions as closely as possible.

It is NASA's belief that testing in
(Continued on page 2)

51-L debris to be stored in silo at Cape Canaveral

Pieces of the Orbiter *Challenger* and other debris from the 51-L accident will be put into long-term storage at Cape Canaveral Air Force Station, Florida, NASA said Oct. 3.

In preparation for the storage, the U.S. Air Force has transferred to NASA the deactivated Minuteman facilities at Complex 31 and 32 at the Air Force Station.

The Minuteman facilities, which were deactivated in the early 1970s, include two below-ground launch tubes that were used in early testing of the Minuteman ICBM system. These silos contain about 31,000 cubic feet of storage space. Included in the transfer to NASA will be several equipment rooms and a

launch control block house.

Required facility modifications will take place in the fall of 1986 and installation of the debris will begin in early 1987. After debris installation, large concrete covers will be placed over the tubes to provide a weather-tight seal that will protect the stored debris.

NASA considered specific requirements while evaluating potential storage sites. Sites were sought that were near NASA's Kennedy Space Center (KSC), Fla., to minimize transportation requirements; that required only minor modifications to keep costs down; and that provided a sheltered environment
(Continued on page 2)

Doing just fine

Little Sara Remington thriving two years after transplant

At two and a half, Sara Remington is typical of any child going through the toddler stage.

She is cute, active and inquisitive, but there is one difference between Sara and most children: the heart of another child beats in her chest, and until recently, she was the world's youngest living heart transplant recipient.

Sara, the daughter of Dan and Jane Remington, underwent a heart transplant at the age of 8 months on Nov. 1, 1984. Her father works in the Legal Office at JSC, and recently hosted a tour of the center for Dr. Ferdi Waldenberger, an Austrian surgeon who watched over Sara by the hour following her life-saving operation.

Today Sara is happy and healthy, and with the exception of three episodes when her body tried to reject the new organ in the first months following surgery, she has done surprisingly well.

But in the summer and fall of 1984, the outlook was less optimistic.

In February 1984, Sara came into a family of three boys, and seemed healthy and normal. She had normal weight gain and went through the steps of infancy just as the Remington's three previous babies had.

But in July 1984, the Remingtons had to take her to the hospital emergency room because she was having trouble breathing. X-rays taken to see if she had pneumonia revealed a very enlarged heart, and after an emotional trip to Texas Children's Hospital, she was admit-

ted with congestive heart failure. She was later diagnosed as having degenerative and terminal heart disease. In October, doctors started considering a transplant.

By that time, Sara's condition was very serious. What had been thought of as normal weight gain was actually retention of body fluids due to the inefficient pumping action of her heart.

Sara was admitted to the hospital on October 26 to be tube fed and to receive medications, but she continued to deteriorate.

On the day before Halloween, Sara's name was placed on a list in the organ network sponsored by the Living Bank, an organ donor registry and placement service. The next day, a heart was found. The donor heart came from a two-year-old Dallas girl who died as a result of head injuries on Halloween.

The surgery, performed the next day by a team led by Texas Heart Institute Chief Surgeon Dr. Denton Cooley and Dr. O. Howard Frazier, was a complete success. "We were fortunate," Cooley said later. "It was an uncommon circumstance to find a donor for such a small child."

Sara stayed in the hospital for a month and went through three bouts of her body rejecting the new organ. The heavy dosages of steroids needed to fight the rejections temporarily turned her blond hair black and puffed up her face with what the Remingtons called "chipmunk cheeks."

On Nov. 29, only four weeks after the transplant, Sara went home

with her parents.

Today she is chubby and cheerful. She will have to take daily dosages of cyclosporin, a liquid anti-rejection drug, and a steroid that further suppresses her immune system for the rest of her life, but the Remingtons believe that is a small price to pay.

"Now that Sara is doing well, my 'cause,' if you will, is the Living Bank," Remington said. "We were lucky to get a heart for Sara so soon. Others aren't so lucky, and the people at the Living Bank will tell you that enough organs and tissues are buried every day that, if they were donated, the transplant lists could be eliminated."

The Remingtons say their lives now revolve around the organ donation issue. They are members of PATCH, Parents Associated Through a Child's Heart, and have kept in close contact with the people at the Heart Institute and Children's Hospital who helped give Sara a second chance.

Jane Remington has spoken to and counseled parents of other children who have received heart transplants, and Dan has worked with the Living Bank in presenting a program to civic organizations.

"It's something to think about," Remington said. "All it takes is a phone call to the Living Bank to find out how to donate organs. It saved Sara's life, and that's something you just can't forget."

For more information on the Living Bank, call 528-2971 or write Box 6725, Houston, 77265.



Proud parents Dan and Jane Remington are shown with visiting Austrian surgeon Dr. Ferdi Waldenberger during a recent tour of JSC. Waldenberger is holding two-and-a-half-year-old Sara Remington, whom he helped care for after her heart transplant operation two years ago.

Bulletin Board

Federal retirees to meet

The next meeting of the JSC Chapter of the National Association of Retired Federal Employees will be at 1 p.m. Monday, November 3, at the Harris County Park Bldg. on NASA Road One. The group usually meets the first Tuesday of each month. For more information, call 326-2494.

Cargill to address AFCEA luncheon

Rear Adm. D. Bruce Cargill, Commander, Naval Space Command, will be the guest speaker at the Armed Forces Communications and Electronics Association (AFCEA) luncheon at 11:30 a.m. Tuesday, Oct. 28, at the Holiday Inn on NASA Road One. Admission is \$8, and reservations must be made by Oct. 24. For more information or to make reservations, call 280-6018 or 280-6019.

Flight systems commonality workshop set

A workshop designed to address the proliferation of software and hardware systems unique to each space flight program will be conducted Oct. 28-30 at JSC. The Workshop on Commonality in Computing for NASA Flight Systems is being prepared by the Headquarters Advanced Programs Office, the Office of Space Flight and JSC. Participants will attempt to categorize major flight computer programs and their data systems development tool sets in an effort to reduce life-cycle cost for future NASA projects. Coordinators at JSC are R.J. Smith (x2586) and R.G. Musgrove (x3566).

Junior high Space Station program planned

How do you prepare junior high students for a career in aerospace? Interested JSC employees are contemplating an on-site class with a Space Station theme. Anyone interested in helping class planners is invited to bring ideas to a brown bag session at noon Wednesday, Oct. 22, in Bldg. 2, Room 135. For more information, call Andy Petro, x2538, Peggy Lathlaen, x3165, or Jim Poindexter, x4241.

Stofan to address NCMA conference

Andrew Stofan, NASA Associate Administrator for Space Station, will be the keynote speaker at the Space City Chapter of the National Contract Management Association's (NCMA) 19th annual Educational Conference Nov. 12-13 at the Hobby Airport Hilton. The conference, built around the theme "Current Contracting Problems and Solutions," begins with a banquet at 6 p.m. Wednesday, Nov. 12. Sessions begin at 8 a.m. Discussion topics will include "The Effect of Consolidations on Small Businesses and Small Disadvantaged Businesses," and "Anatomy of a Defective Pricing Case." To register, contact Ruth Elder, BC21, x2141.

Griffin to address NASA/industry challenges

Col. Richard L. "Larry" Griffin, USAF Ret., will address the Houston section of the American Institute of Aeronautics and Astronautics at 7:30 p.m. Thursday, Oct. 23 in the Gilruth Center. Griffin, now of Griffin & Associates Inc., Houston, will review the primary challenges facing the NASA/industry team in the areas of organization, budget, personnel retention and strategic planning. The social hour begins at 5:30 p.m., dinner at 6:30 p.m. Dinner tickets are \$8 for members, \$10 for non-members, and \$7 for students. Reservations deadline is noon Oct. 20. Reservations are not required for those attending only the program. For more information, call 333-4150, 483-2741, 280-1500, 333-6492, or 845-6492.

MOD Olympics to be held Oct. 25

The second Mission Operations Directorate Olympics will be held at the Gilruth Recreation Center Oct. 25. All divisions of MOD, including STSOC, are forming teams for the competition. Games will include basketball, baseball, tennis, trivial pursuit, beer chugging, the management relay and many more. Tickets are \$3 in advance, \$4 at the gate, and the price of admission includes beverages.

EAA Halloween costume dance set

A Halloween costume dance sponsored by the Employees Activities Association will be held Oct. 31 at the Gilruth Recreation Center. The evening will begin with a social hour from 7 to 8 p.m., a pork loin dinner from 8 to 9 p.m., and music by Backstreet from 9 p.m. to 1 a.m. Costumes are encouraged but not required, and prizes will be awarded for best couple, best individual and most original. The cost is \$10 per person, and tickets are on sale until 2 p.m. Oct. 28 at the Bldg. 11 Exchange Store.

NMA meeting scheduled for Oct. 22

The JSC Chapter of the National Management Association will meet at the Gilruth Recreation Center Oct. 22. The meeting will begin with a social hour at 5 p.m., followed by a dinner meeting at 6 p.m. The speaker will be Dr. Jim Will, a noted specialist in the field of business psychology. The NMA chapter also plans to combine the November and December meetings, and hold that gathering Dec. 10 at the Rec Center. The speaker for that meeting will be former JSC Director Gerald D. Griffin.

Clinic schedules influenza vaccine

Again this year, the JSC Clinic will be giving influenza vaccine inoculations, according to Charles P. Bergholdt, Occupational Health Officer. The Center for Disease Control advocates vaccinations of identified risk groups, such as those with heart disease of any type or chronic bronchopulmonary diseases. Those who provide essential services or who merely want to reduce their chances of coming down with the flu this winter are encouraged to consider the inoculation. Adults will require only one dose, Bergholdt said. Those who receive the vaccine will be asked to sign a consent form and will be given the opportunity to ask questions prior to the inoculation. The vaccine is available in the Clinic, Bldg. 8, from 10 a.m. to noon and from 2 p.m. to 4 p.m.

Astronaut **Gordon Fullerton** has been reassigned as an aerospace test pilot at the Dryden Flight Research Facility. Fullerton, a veteran of two Space Shuttle flights, was pilot on *Columbia* for STS-3 and commander on the *Challenger* on STS-51-F. He was selected as an astronaut in September 1969. At Dryden, Fullerton will take part in test and evaluation flights aboard such aircraft as the F-104, T-38 and B-52. His more than 11,200 hours of flying time includes experience in 84 types of aircraft.

A man of words, of song and of engineering. That's what we said about **Jerry Elliot** of the Systems Engineering Office, Space Station Projects Office, back in May when his music was featured on KQUE-FM. Now Elliot is involved in another project, this time with much broader implications. Elliot, a member of the Intertribal Council of Houston, journeyed to Ecuador this week for the dedication of a memorial site to world peace at the equator. The dedication is part of a cultural exchange effort which marks the first time that native Indians from the Northern and Southern Hemispheres have united for a common cause. The Houston group carried with them a City of Houston medalion from Mayor Kathy Whitmire to present to the representatives from Ecuador. The memorial site has been donated by the government of Ecuador as a national park, and is located at the equator to symbolize the center of the world and the meeting place of two hemispheres.

The new marketing director at the JSC Federal Credit Union is **Molly Springer**. She worked as a free lance writer and photographer for business and media publications prior to joining the Credit Union,



Molly Springer

and is a 1985 graduate of the University of Houston-Clear Lake. Springer will be responsible for all external and internal publications, employee training and public relations. She lives in Seabrook with her husband, astronaut **Robert Springer**, and three children.

The keynote speaker for Symposium '86 was **Dr. Michael B. Duke**, Chief of the Solar System Exploration Division. The symposium, which focused on new concepts and technologies for lunar development and transportation, combined the First Lunar Development Symposium and the First U.S. Maglev Transportation Conference. Featured speakers included author Isaac Asimov and columnist Jack Anderson. Duke's keynote address concerned magnetic levitation technology, which may be a strong future candidate for a transportation system on the surface of the Moon.

SRB horizontal tests planned

(Continued from page 1)

the horizontal attitude is the most demanding test of the redesigned joint for pressure and flight-induced loads and thus best satisfies the Commission's intent.

These findings were reviewed within NASA's technical commun-



Marcia Jarvis accepts a posthumous outstanding alumni award for her late husband, **Greg Jarvis**, from **Northeastern University President Kenneth Ryder**. Also pictured are **Board of Trustees Chairman Robert H. Willis** and **Alumni Association President Elaine Gross**.

John Trebes, a longtime JSC employee who now serves as Space Station mockup manager for the Man-Systems Division, has seen the ebb and flow of a large bureaucracy at work, and now he's learned how to combat that most pervasive of all the bureaucracy's trademarks: the NASA Move sticker. JSC Form 990 (March 1966). You've seen them

People

everywhere—on desks, trash cans, credenzas, coat racks and other government furnished office paraphernalia. The stickers have long been used to identify which pieces of equipment are to be moved when the great migrations of offices have occurred over the years. Finally, thanks to Trebes, there is a new technique for removing those stickers, "without a flamethrower," once the move is complete. First, Trebes counsels, "slather mayonnaise on the dried move sticker. Leave the mayo on for one, two or three days. The older the sticker, the longer you leave the mayo on. Each day, slather more mayo on. When the sticker is thoroughly soaked, remove it with a putty knife or scraper. Spray the area with WD40 and wipe clean with Kim-Wipes." There is an added benefit to this discovery, Trebes says. "It works on bumper stickers, too."

In addition to her work at Computer Sciences Corp., **Gayle Taylor** is branching out as a writer. The author of several features for the Roundup on Data Processing Systems Division features and offerings, Gayle recently landed a story in **Government Computer News**, a newspaper serving computer users throughout the U.S. Government. The story featured news of JSC's Product Demonstration Facility, the Computer Help Desk, the User Work Station Support Group, software support operations and DPSD's Technical Manual Library.

Fred Swerdlin, an employee of the Bendix Corp., was honored recently by the Gulf Coast Regional Blood Center for his 81st blood donation. Swerdlin has now donated 10 gallons of blood since 1969. Patients in nine states have benefited from his blood donations over the years, according to the

Blood Center, and over 40 of his donations have been made in the Clear Lake area. Officials said each unit of whole blood donated is separated into components at the Blood Center before being sent to hospitals, and Swerdlin may have helped as many as 230 individuals in his years of giving blood. Swerdlin said his personal goal is to make 100 donations of blood.

Northeastern University has honored the late **Gregory B. Jarvis**, a member of the 51-L crew, as one of six outstanding alumni for 1986. Jarvis was honored in the field of science and technology. His wife, Marcia, accepted the posthumous honor from University President Kenneth G. Ryder, and presented a Northeastern flag to the University that Jarvis carried with him on the *Challenger*. Jarvis earned a master's in electrical engineering from Northeastern in 1969. In June, Northeastern's graduating class of 1986 established a scholarship fund in Jarvis' memory.

Dr. Kenneth Cox, Chief of the Avionics Systems Division, has been honored by the American Institute of Aeronautics and Astronautics with the Digital Avionics Award for 1986. The award was presented to Cox in recognition of



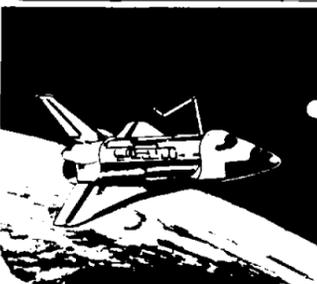
Dr. Kenneth J. Cox

his "commendable technical and management initiatives to advance the applications of digital avionics into the manned space program." The award was presented to Cox Oct. 15 at the AIAA/IEEE Digital Avionics Conference and Technical Display in Fort Worth.

Awards, honors, distinctions, hobbies, noteworthy accomplishments—they're all suitable items for the People section. If you know of someone in the JSC community deserving of recognition, let us know. Call the Space News Roundup at x5111.

NASA
Lyndon B. Johnson Space Center

Space News Roundup



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 all space center employees. **Roundup** deadline is the first Wednesday after publication.

Editor: **Brian Welch**

51-L debris to be stored

(Continued from page 1)

to prevent weather damage to the debris.

Other options considered included construction of a special building or underground facilities and utilization of the Vehicle Assembly Building (VAB) at KSC

or of various silos. The CCAFS facilities were selected because they are close to KSC and present few handling problems, provide adequate volume to store the approximately 215,000 pounds of debris and are currently available.

The storage of the *Challenger*

debris will conclude NASA's primary activities related to the analysis and disposition of recovered hardware. Where selected components require continued testing, the hardware will be transferred to the storage facility at the conclusion of its test programs.

Fletcher announces manifest

NASA's plan for renewed Shuttle flight operations through February 1991 is a prudent plan reflecting many competing priorities, Administrator James Fletcher said Oct. 3.

The first post-51-L Shuttle mission is scheduled for launch on Feb. 18, 1988. Following is Dr. Fletcher's explanation of the manifest and the thinking that went into its design:

This Shuttle manifest is based on a flight rate goal that we believe is acceptable and prudent. It complies with White House policy that NASA will no longer launch commercial and foreign payloads except those that are Shuttle-unique or those that have national security or foreign policy implications. And it reflects the outstanding work of Admiral Truly and his team in accommodating such a wide variety of urgent competing demands in light of our two-year downtime, the reduced number of orbiters and our intentionally-reduced flight rate.

The manifest is the product of a major intergovernmental decision-making process that has been going on for the past several months. We worked very hard with the Department of Defense, the Department of State and other government agencies to achieve an optimum program to meet national needs.

That process focused on near-term requirements of the United States' national space program in light of the payload backlog resulting primarily from the two-year downtime in Shuttle missions.

The manifest represents an equitable balance among the many interests seeking access to space aboard the Shuttle. Achieving that balance was not an easy task. But, in the long run, all involved in this process, including NASA, believe it will serve the best interests of the United States at this critical juncture in our national space program.

The needs of the United States' Department of Defense, science community, commercial sector and our foreign customers had to be considered in the light of many factors. Those factors include national security interests, the new national policy to accelerate the development of a viable private expendable launch industry, and our present and projected national space flight capabilities. In addition, several constraints had to be taken into account. These constraints relate to orbiter capability and capacity, air and ground support equipment, orbiter turn-around time, launch windows for planetary missions and satellite replacement schedules.

During the intergovernmental discussions on the manifest, NASA sought to accommodate all of its customers who had signed up to fly aboard the Shuttle. Clearly, we were not able to do this because of the constraints I just mentioned. Nevertheless, we will continue to work with our customers to help them make other launch arrangements before 1995, when most contracts expire.

Another highlight of this manifest is the high priority assigned to major NASA science payloads. As you know, the Hubble Space Telescope, Ulysses and Galileo all had been scheduled for launch this year. As things stand now, they will be launched as expeditiously as possible.

The Space Telescope, one of NASA's highest priorities will be launched in 1988; Magellan, which will map Venus with a high-resolution radar, will be launched in 1989, as will ASTRO-1, a Shuttle-borne ultraviolet observatory. In 1987, we will allocate specific launch assignments to three planetary missions: Ulysses, which will study the Sun's northern polar regions for the first time; Galileo, which will make the first compre-

The Manifest Space Shuttle operations through Flight 83

Flight	Date/ Orbiter	Inclination/ Altitude	Crew/ Duration	Payload	Carrier	Payload Acronym List
26	2/18/88 <i>Discovery</i>	28.5° 160	5 4	TDRS-C	IUS	ASTRO Ultraviolet Astronomy Telescope
27	5/26/88 <i>Atlantis</i>	0.0 0	0 0	DOD		ATLAS Atmospheric Laboratory for Applications and Science
28	7/28/88 <i>Columbia</i>	0/0 0	0 0	DOD		COFS Control of Flexible Structures
29	9/22/88 <i>Discovery</i>	28.5° 160	5 4	TDRS-D	IUS	EOS Electrophoresis Operations in Space
30	11/17/88 <i>Atlantis</i>	28.5° 320	5 7	Space Telescope		GPS Global Positioning System
31	1/19/89 <i>Columbia</i>	28.5° 190	7 7	ASTRO-1	IG+2P	IML International Microgravity Laboratory
32	3/2/89 <i>Discovery</i>	0.0 0	0 0	DOD		MSL Materials Science Laboratory
33	4/25/89 <i>Atlantis</i>	28.5° 110	5 4	Magellan	IUS	SHARE Space Station Heatpipe Advanced Radiator Experiment
34	6/2/89 <i>Discovery</i>	0.0 0	0 0	DOD Spacelab	LM	SLS Space Life Sciences Laboratory
35	6/21/89 <i>Columbia</i>	28.5° 160	5 7	GPS-1 GPS-2 MSL-3	PAM-D2 PAM-D2 MPSS	SSBUV Shuttle Solar Backscatter Ultra-Violet Instrument
36	7/20/89 <i>Atlantis</i>	0.0 0	0 0	DOD		TSS Tethered Satellite System
37	9/1/89 <i>Discovery</i>	0.0 0	0 0	DOD		
38	9/21/89 <i>Columbia</i>	28.5° 160	5 5	GPS-3 GPS-4 MSL-4	PAM-D2 PAM-D2 MPSS	
39	11/1/89 <i>Atlantis</i>	28.5° 110	5 4	Planetary Opportunity		
40	12/7/89 <i>Discovery</i>	57.0° 160	7 7	SLS-1	LM	
41	1/18/90 <i>Columbia</i>	28.5° 200	5 4	Gamma Ray Observatory		
42	2/15/90 <i>Atlantis</i>	0.0 0	0 0	DOD		
43	4/20/90 <i>Discovery</i>	28.5° 160	7 7	IML-1	LM	
44	5/4/90 <i>Columbia</i>	28.5° 160	5 7	GPS-5 Pathfinder EOS-1 SHARE	PAM-D2	
45	5/31/90 <i>Atlantis</i>	0.0 0	0 0	DOD		
46	7/12/90 <i>Discovery</i>	0.0 0	0 0	DOD		
47	7/26/90 <i>Columbia</i>	28.5° 160	5 7	GPS-6 SKYNET-4 MSL-5	PAM-D2 PAM-D2 MPSS	
48	8/31/90 <i>Atlantis</i>	0.0 0	0 0	DOD		
49	10/5/90 <i>Discovery</i>	28.5° 110	5 4	Planetary Opportunity		
50	10/25/90 <i>Columbia</i>	28.5° 160	5 7	GPS-7 INSAT-1D TSS-1	PAM-D2 PAM-D	
51	11/15/90 <i>Atlantis</i>	28.5° 200	5 7	LDEF Retrieval SYNCOM IV-5		
52	1/17/91 <i>Discovery</i>	57.0° 160	7 7	ATLAS-1 COFS-1	IG+2P Pallet	
53	2/14/91 <i>Columbia</i>	28.5° 160	5 7	GPS-8 GPS-9 MSL-6 SSBUV-1	PAM-D2 PAM-D2 MPSS	



hensive survey of Jupiter and its moons; and the Mars Observer.

As you know, each of these must be launched within specific launch windows in time, because of specific Earth-Jupiter and Earth-Mars geometry. Thus, it was possible to accommodate only one mission per window.

Before the *Challenger* accident, roughly one-third of the Shuttle manifest was given over to Department of Defense missions; roughly another third to scientific missions; and the remainder to commercial satellites and foreign government

missions.

For the seven-year period following resumption of Shuttle flights—that is, through 1994—we will use 41 percent of the Shuttle's capability to fill DOD needs; 47 percent to fill NASA's needs and 12 percent to accommodate commercial, foreign government and U.S. Government civil space needs. I would point out that in the first three years of operations, the DOD will utilize considerable Shuttle capability to reduce its critical payload backlog; but, in the remaining four years, DOD's utilization trend will even

out at approximately one-third of the Shuttle's capability.

As you are all aware, the Shuttle manifest must be a dynamic document. It will be reviewed constantly to reflect such factors as the NASA and DOD budgets, NASA's ability to meet our milestones for resuming operations and customer decisions.

Again, let me stress that Admiral Truly and his people have gone through an arduous and very difficult process to get us to this point. I commend them for their very good work.

NASA looks forward to a new era

of Shuttle operations in space. We expect that era will be coming soon. And when it does, this nation will be proud to resume its grandest adventure of all—the exploration and development of humanity's final frontier.

At this point, one thing is clear. Our incurable urge to know the unknown will continue to move us forward to open new doors of discovery, opportunity and hope for people everywhere. The result will be greater knowledge and understanding of ourselves, our origins and our ultimate destiny.

Gilruth Center News

Call x3594 for more information

Defensive driving — Learn to drive safely and qualify for a 10% reduction in your auto insurance for the next three years. This all day Saturday class meets from 8 a.m. to 5 p.m. Nov. 22. Space is limited.

Dancercise — Part dance, part exercise and all fun, this class works on toning and will gradually get you into shape. This 6-week course begins Oct. 21 and meets Tuesdays and Thursdays from 5:15 to 6:15 p.m. The cost is \$25 per person.

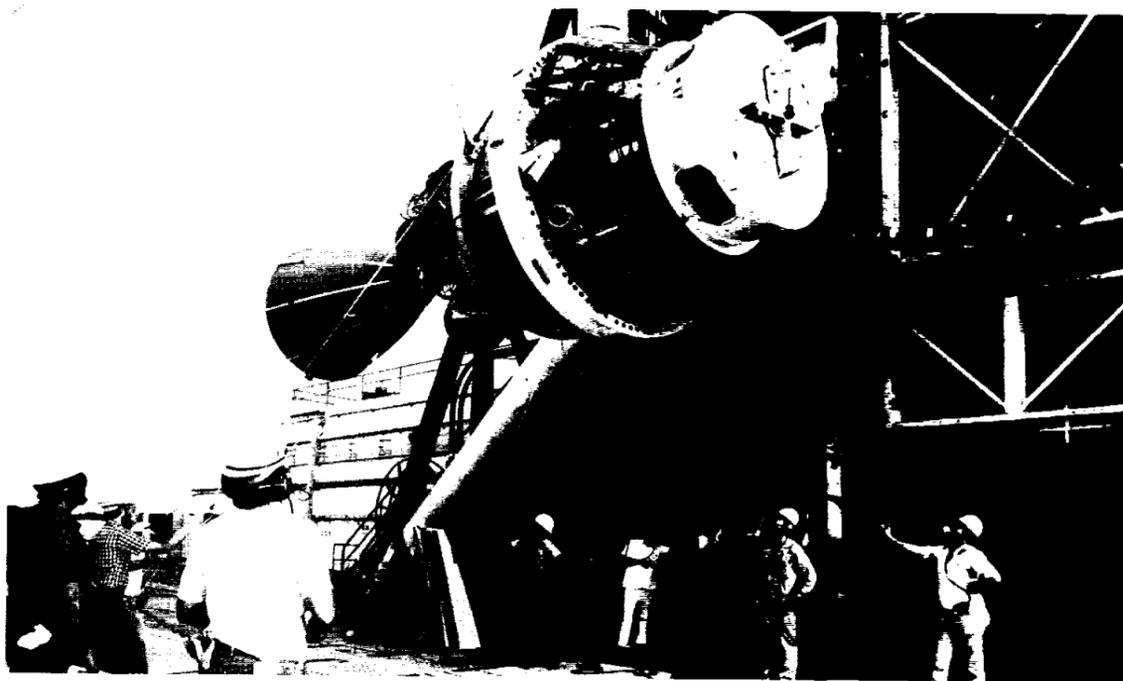
Country western dance — This course teaches the basic fundamentals of country and western dance, and teaches students the two-step as well. Two beginners classes will be offered, meeting from 7 to 8:30 p.m. and from 8:30 to 10 p.m. Monday nights beginning Oct. 27.

CPR — Learn the basics of Cardio Pulmonary resuscitation in this one-day class Thursday, Oct. 23. The session will last from 5:30 to 10 p.m. and will cost \$20 per person.

Guitar — This six-week class, for people with no previous guitar experience, will teach students simple songs, chord strums and melodies. The sessions are held from 7 to 8 p.m. beginning Oct. 28. The cost is \$25 per person.

Banjo — Learn to play a 5-string banjo in this class which begins Oct. 28. The class times are 8 to 9 p.m., and the course lasts for 6 weeks. The cost is \$25 per person.

Halloween Fun Run — Come dressed in a costume and participate in the 6th Annual Halloween Fun Run. The 5-kilometer run begins at 7 p.m. The pre registration cost is \$6. Late registration is \$8.



The second stage Delta 179 is hoisted into the gantry at Launch Complex 17A at Kennedy Space Center in preparation for launch next month. The expendable rocket will carry GOES-H, a weather satellite, for the National Oceanic and Atmospheric Administration.

Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

Sale: Forest Bend 4-2-2, FPL, fenced, game room w/bar, pool table, new high efficiency AC, low taxes, CC schools, never flooded, \$57,500. Glen, x6541 or 486-0462.

Lease: LaPorte 3-2.5-2 townhouse, pool, tennis, basketball, clubhouse in neighborhood, just painted, \$495/mo. 486-4466.

Sale: Baywind II 1-1 condo, FPL, mirrored walls, miniblinds, fans, W/D connections, assumable. 471-6814.

Lease: Seafarer townhouse, near NASA, 1 BR, attached garage, deck overlooking golf course, FPL, cathedral ceilings, ex. cond. 333-1480.

Lease: Tranquility Lake condo, 1 BR, miniblinds, FPL, fan, W/D, energy saving thermostat, 2 pools, jogging trail, security gates, clubhouse, \$375/mo. 486-4466.

Sale: Forest Bend 2 BR townhouse, ex. cond., quiet, \$35,000 w/\$1,200 down. Glen, x6541 or 486-0462.

Rent: 2336 Crows Nest Lane townhouse on Clear Lake, 2 BR, 3 story, A-frame, rough cedar beams and staircase, FPL, view of NASA and marina, boat slip optional, \$850/mo. OBO. Keith, (202) 488-3276.

Sale: Seafarer townhouse on golf course, 2-2.5-1, loft, mirrored FPL, built-in buffet, bookcases, custom deck with bar. Bob, x2231 or 480-8597.

Sale or Lease: LaPorte (Fairmont Pkwy.) spacious 3-2-2 with game room, 2,000-sq. ft. lot, garage door opener, low down, assumption, \$74,000 or lease \$625/mo. 481-6453.

Sale: Forest Bend townhouse, 3-2.5, LR, corner, lots of storage space, quiet pool, park, \$41,500. 333-2322.

Sale: '78 Lancer mobile home, 3-2, in Pearland Mobile Home Park, small down, assume or owner refinance. 485-9425.

Lease: West Galveston Island beach house, 3-2, furnished, day/week/month. Ed Shumilak, x6575 or 482-7723.

Lease: Vail condos, Beaver Creek, 1 BR, 3 avail. wk. of Dec. 6-13, \$595/wk. ea. D. Smith, x6455 or 280-0027.

Sale/lease: South Austin condo, 2 BR, like new, in beautifully landscaped development, UT shuttle bus. 482-7910.

Lease: Lake Livingston waterfront house, 3-2, furnished, pier, excellent fishing, skiing, swimming, weekend or weekly rates. 482-1582.

Sale: Meadowbend brick 3-2-2, ex. cond., appliances, fenced, \$50,900. Glen, x6541 or 486-0462.

Sale/lease: Forest Bend townhouse, 2 BR, ex. cond., quiet area, \$35,000 or lease option. Glen, x6541 or 486-0462.

Sale: Webster Green Acres residential lot, cash price \$10,000. Call 324-4946.

Lease: League City 3-2-2, large enclosed patio, storage building, 1 block from elementary school, available Nov. 1, \$550/mo. 554-4133.

Lease: CLC 1 BR condo, appliances, FPL, fans, W/D connections, tennis courts, exercise room, 2 weeks free rent applies to purchase option. Jim Briley, 282-1958 or 488-7901.

Cars & Trucks

'83 Jeep CJ7, white with brown soft top. Karen, x4866 or 947-2025.

'73 Chevy 4x4 pickup, runs good, \$1,000. 332-7035.

'79 VW Scirocco, 34K mi., ex. cond., 1 owner, \$2,750 OBO. Karl, x4326 or 339-2025.

'80 Chevy Citation, auto, PS, PB, AC, AM/FM, radials, electric rear defroster, very clean. 488-0901 or 661-2335.

'78 Chevy van, 3/4 ton, dual air, 4 captain's chairs, bench seat/bed, tilt/cruise, \$2,300. 488-4117.

'80 Buick Skylark, 4 cyl., auto., \$900. Whitney, x3471.

'67 Camaro, good cond., \$1,200. 482-3043.

'80 Ford Elite, 2-dr, AC, AM, 2 new tires, good cond. 472-2876 or 471-3165.

'78 Toyota Corolla, runs great, \$1,000. 480-7550.

'83 Toyota Celica GT-S, 5-speed, sunroof, power upgrades, silver and black, was \$14,000, asking \$7,000. Jane, 333-6112.

'77 Chevy Blazer, 4 WD, lifted, PS, tilt, cruise, new auto. trans., \$2,200 OBO. Kyle, 481-2195.

'82 Mazda RX-7, 36K mi., sunroof, AM/FM/cassette, immaculate. 333-1480.

'79 Olds Cutlass station wagon, 59K mi., new tires, new brakes, stereo cassette, very good cond., \$2,400. Manisha, x6414 or 280-9822.

'84 VW GTI, low miles, AC, sunroof, ex. cond., \$6,600. Mary Lou, x2308 or 488-6323.

'82 Cadillac Cimarron, loaded, clean, \$3,500; '79 Pontiac small wagon, loaded, \$1,500. 471-5964.

'74 Cougar XR7, 72K mi., AC, PB, PS, new tires and battery, 1 owner, good work car, \$700 OBO. Karl, x4326 or 339-2025.

'84 Chrysler Laser XE Turbo, 5-spd, AC, AM/FM, new tires, \$6,200. Frank, x4513, 333-2035 or 333-3198.

'79 Ford F-150 pickup, V-8, std. trans., AC, -PS, PB, new battery and tires, \$1,650 OBO. John, x6545 or 554-7779.

Recreational Vehicles

Starcraft pop-up camper, excel. cond., sleeps 6, awning, swingout kitchen, \$2,100. Fred, 282-4687 or 554-6450.

'86 Scamp 13' travel trailer, aerodynamic, ultralight, sleeps 4, stove, potty, heater, AC, \$4,600 OBO. Call 326-2835.

Boats & Planes

'80 Catalina 30, ex. cond., roller furling Genoa, flasher, working jib, Bimini, dodger, well equipped, July bottom, \$32,500. Call 729-8321 or 280-2234.

Ultralight airplane, all-aluminum, 28 HP motor, 5 1/2 + 5 1/2-Gs, cruise 60 mph, VNE 95 instruments, ballistic chute, trailer, 24-hr. t.t., \$4,400. Frank Kowis, 486-8815 or 477-6178.

14.5' Gastron ski boat, needs electrical system and minor repairs, rebuilt 80 HP Merc, new direct-drive steering, new trailer, \$1,500 OBO. Alan, x4030 or 334-7814.

'81 Hobie Cat w/galvanized trailer, 16', like new, fully rigged, vest, manuals, \$1,800 OBO. Charlie, x3421 or 480-3260.

Audiovisual & Computers

Technics SLB5 turntable with cart-ridge, was \$225, asking \$100; motorcycle theft-proof lock, was \$125, asking \$80; Escort radar detector, was \$300, asking \$200. Kevin, 482-3033.

Olympus VX-402 VHS camcorder, battery pack, accessories, perfect condition, \$950 OBO. Call 326-2835. AM-FM stereo, 8-track, turntable, \$25.

Kevin, 482-3033.

Dokorder Model 1120 stereo 10 1/2" reel-to-reel, 4-track, 2-channel, 3 motors, 3 heads, sound on sound, sound with sound, dual speed, dual bias, echo, auto shut-off, used 100 hours, \$135. 334-1934.

Cycles

'83 Fuji 12-speed "professional" bicycle, suntour, superbly outfitted, was \$1,295, asking \$650. Bruce, x4691 or 333-5888.

'78 Suzuki GS550, backrest, luggage rack, cover, manual, new exhausts and battery, \$550 OBO. Kent, x5561 or 332-2451.

'82 Kawasaki KZ1000J2, low miles, Kerker header, oil cooler, very fast, \$1,250. Forest, x2256.

Household

Double bed, box springs, mattress, frame, good cond., \$50. Gail, x5338.

GE refrigerator, 18 cu. ft., \$100. Call 332-7035.

Tomlinson tailored chestnut sofa, Drexel pecan lamp/coffee tables, hickory celery armchair, ex. cond., BO. Connie, x5565 or 333-2271.

Couch, Earth tones sectional, \$70; Chair, yellow stripes, \$30. 486-0020.

Westinghouse washer and gas dryer, ex. cond., \$175. Rick, x6364.

Wanted

Want to buy left-handed softball mitt. Pat, x5348 or 486-5278.

Want non-working refrigerators, air conditioners, freezers, free removal. Ike x4920.

Want to rent boat trailer for 22' swing keel sailboat, need 4-6 weeks. Musgrove, x3566 or 488-3966.

Want word processor set-up and Atari 800 or 400. Bill, x5083 or (409) 756-8097.

Want non-smoking female to share 2 BR condo at El Dorado Way, \$225 plus 1/2 electric, \$100 deposit. Linda, 282-4189 or 488-0766.

Want to carpool from Conroe, 7:15 a.m. - 3:45 p.m., dependable, reliable, backup transportation available. Bill, x5083 or (409) 756-8097.

Want oxygen-acetylene field unit-size. Ike, x4920.

Want lead trumpet player and aux. percussionist for Contraband, 18-piece volunteer big band. Ray, x6327 or 554-5434.

Want to buy electric trains. Don, x2449.

Want responsible person to share 3-2-2 house, W/D, garage door opener, fenced, Sycamore Valley subdivision off FM 1959/Choate Road, non-smoker, \$295/mo. and 1/2 utilities. Sarahjane, 658-3408 or 481-3717.

Photographic

Pentax KX camera, fully manual, Sigma high-speed 80-200mm f/3.5 zoom, Velbon tripod, electronic flash, rarely used, was \$497, asking \$250. Phil, x6254.

Nikon FM 35mm camera, 50 mm lens and case. Don, x3078 or 484-4261.

Musical Instruments

Digital organ, WERSI DX350T portable; 2 keyboards, pdlbrd, bench; onboard-pgrmmable 1-button voice/

rhythm changing, full coupling; MIDI, RS232, data/audio-tape interfaces; registration presetting tapes/disks; C64 pgms., user/tech books; tape unit, \$6,000. 474-3695 after 7 p.m.

Ivanez electric guitar, \$100. 482-3043.

Baldwin '67 Acrosonic piano and bench, ebony black contemporary, original owner, \$750. Mike Lake, 523-2137.

Glaesel violin, bow and case, 2 yrs. old, good cond., was \$500, asking \$200. 480-9921.

Pets & Livestock

Free cat and kittens, available end of October. Karla, x6521.

Free 7-month-old long-haired calico kitten, good disposition, will have her spayed. 554-7735.

Two free Siamese cats, 1 1/2 years old. Wendy, x6461 or 534-4233.

Miscellaneous

6' railroad ties, 150 available, \$3.50 each. Alan, x4030 or 334-7814.

Harlequin romance novels, some oldies, packaged in lots of 10 for \$2, some Harlequin magazines, best offer. Bob, x4734.

Golf clubs, irons, woods, putters, wedges, many to choose from, priced to sell. Jerry, x6250 or 333-5181.

Tires for lifted Chevy 4x4, new condition, 36" x 15", were \$1,000, asking \$500 with free lift kit. 332-7035.

T-top for 280ZX, driver's side, \$100. Forest, x2256.

BARC family tennis membership, \$300. Vic Booth, x5231 or 432-4260.

Cookin' in the Cafeteria

Week of October 20 — 24, 1986

Monday — Beef & Barley Soup; Beef Chop Suey, Breaded Veal Cutlet w/Cream Gravy, Grilled Ham Steak, Wieners w/Baked Beans (Special); Buttered Rice, Brussels Sprouts, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Celery Soup; Fried Shrimp, Pork Chop w/Applesauce, Turkey a la King, Pepper Steak (Special); Au Gratin Potatoes, Breaded Squash, Buttered Spinach.

Wednesday — Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Ribs, Mexican Dinner (Special); Spanish Rice, Ranch Beans, Buttered Peas.

Thursday — Green Split Pea Soup; Corned Beef w/Cabbage & New Potatoes, Chicken & Dumplings, Tamales w/Chili, Hamburger Steak w/Onion Gravy (Special); Navy Beans, Buttered Cabbage, Green Beans.

Friday — Seafood Gumbo; Deviled Crabs, Broiled Halibut, Liver & Onions, BBQ Link (Special); Buttered Corn, Green Beans, New Potatoes.

Week of October 27 — 31, 1986

Monday — French Onion Soup; BBQ Sliced Beef, Parmesan Steak, Spare Rib w/Kraut, Chili & Macaroni (Special); Ranch Style Beans, English Peas, Mustard Greens. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Split Pea Soup; Meatballs & Spaghetti, Liver & Onions, Baked Ham w/Sauce, Corned Beef Hash (Special); Buttered Cabbage, Cream Style Corn, Whipped Potatoes.

Wednesday — Seafood Gumbo; Cheese Enchiladas, Roast Pork w/Dressing, BBQ Link (Special); Pinto Beans, Spanish Rice, Turnip Greens.

Thursday — Beef & Barley Soup; Roast Beef w/Dressing, Fried Perch, Chopped Sirloin, Chicken Fried Steak (Special); Whipped Potatoes, Peas & Carrots, Buttered Squash.

Friday — Seafood Gumbo; Fried Shrimp, Baked Fish, Beef Stroganoff, Fried Chicken (Special); Okra & Tomatoes, Buttered Broccoli, Carrots in Cream Sauce.