

Space News Roundup

Vol. 24 No. 1

January 18, 1985

National Aeronautics and Space Administration

First VAFB shot moved into 1986

NASA and the U.S. Air Force have agreed to delay the first Shuttle launch from the West coast until January of 1986.

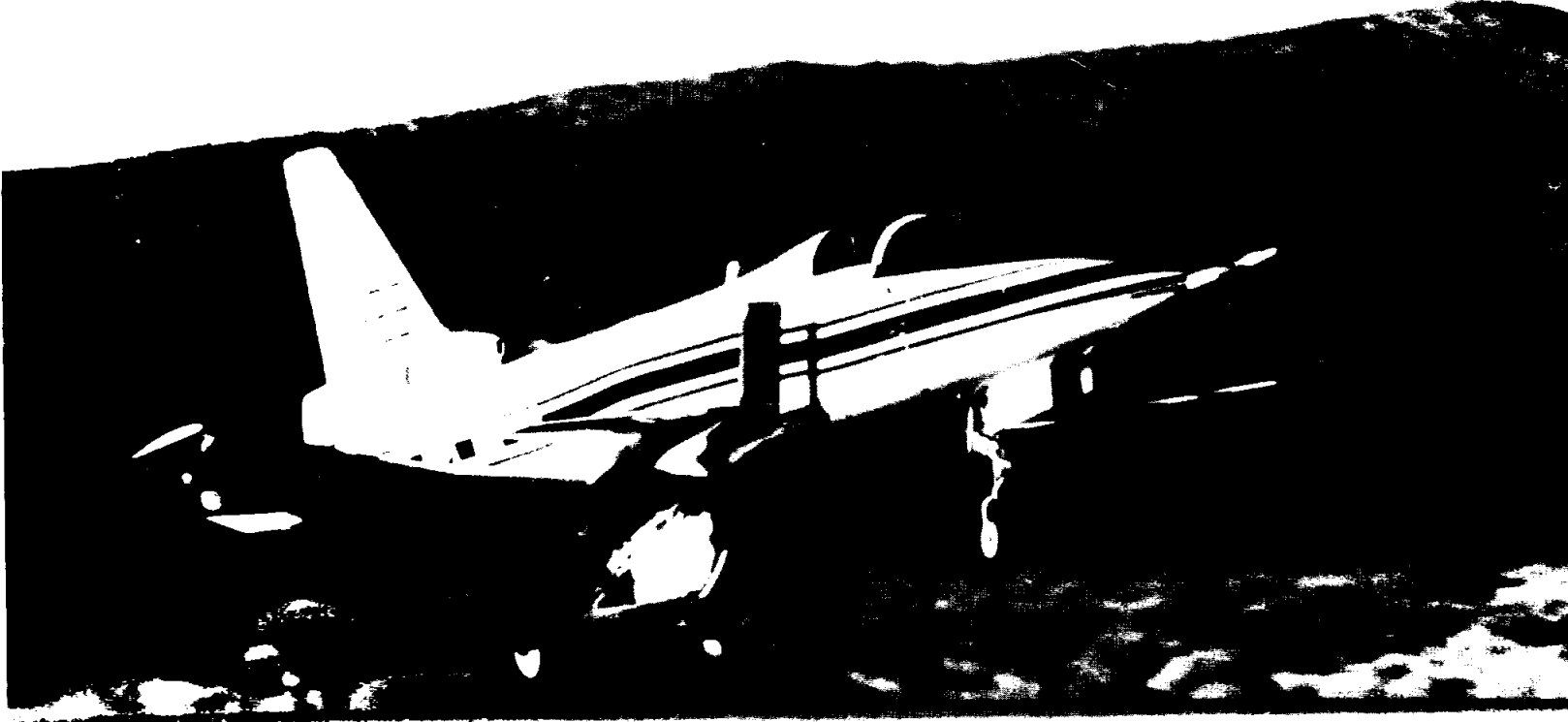
This follows a review conducted in December which focused on the launch schedule for 1985. Elements considered in the decision were the readiness of the Vandenberg Air Force Base (VAFB) launch site, the Department of Defense payload to be flown on that mission, and the recent problem with softening of the screed which underlies tiles on the Orbiter *Challenger*. After the review, both parties jointly decided to delay the launch.

The decision was based primarily on the importance of maintaining the current Shuttle manifest for 1985 and on insuring adequate margin in the development of the DOD payload for the initial VAFB launch.

Work continues on *Challenger* to correct the problems in her thermal protection system. Screed, a substance used to smooth irregularities in the aluminum skin of the spacecraft (it can be likened, in a sense, to bondo used on cars), began to soften due to chemicals used in waterproofing the Orbiter. More than 1,600 tiles had to be pulled, taking *Challenger* out of operational status and impacting the launch schedule. Some 1,622 cavities remained on the Orbiter late last week as this tile work progressed.

Specifically, NASA and the Air Force agreed that:

- *Discovery* will be delivered to Vandenberg early in September (Continued on page 2)



With Grumman Chief Test Pilot Chuck Sewell in the cockpit, the X-29 Forward Swept Wing demonstrator aircraft takes to the sky on its

maiden voyage Dec. 14. The aircraft flew to an altitude of 15,000 feet at speeds up to 235 knots. The first flight lasted about 57 minutes.

Ministers to consider ESA agenda

Ministers from 13 European nations and Canada will meet in Rome Jan. 30 and 31 to consider various proposed space endeavors, and their gathering could set the agenda for the European Space Agency through the rest of this century.

Under consideration will be proposals ranging from the development of a space station program, possibly in conjunction with the U.S. effort, to the eventual entry of the Continent into the field of manned space flight.

"ESA has reached a turning point in its activities with the successful conclusion of major programs such

as Ariane, Spacelab and the telecommunications program," ESA said in a statement issued in December. "The time has now come for Europe to decide in which direction to orient its activities in order to maintain its autonomy in the field and, of particular importance, to enable European industry to remain competitive on the world market."

The meeting in Rome will involve ministers responsible for space matters from the eleven ESA member states—Belgium, Denmark, France, West Germany, Ireland, Italy, The Netherlands, Spain, Sweden, Switzerland and the United

Kingdom—as well as two Associate Member States, Austria and Norway, and Canada.

The last conferences at a ministerial level took place in 1973 and 1977. During the 1973 conference, ESA was created from the old European Space Research Organization and approval was given for the Spacelab program. In 1977, the ministerial conference approved development of the Ariane rocket and a maritime communications project, ESA said.

ESA said it will submit several program proposals to the ministers. "The plan of activities will include a substantial increase in (ESA's)

mandatory activities, in particular the scientific and technology programs, as well as further developments in the fields of Earth observations, telecommunications, microgravity and technology. The development of a new version of the European launcher, Ariane 5, is also included in the plan, as are further developments in the field of manned space activities with the Columbus program, which involves cooperation with the United States in the American space station program," the ESA statement said.

Three basic areas of effort on the part of ESA, areas which are

the culmination of more than a decade of work, have brought the agency to this decision point. These basic areas of effort are the ESA Spacelab program, the Ariane launcher family and the progress in a broad field of other ESA activities, ranging from communications satellites to the Giotto probe which will intercept Halley's Comet in 1986.

With the Ariane 3 launcher now operational—its first flight was in 1984—ESA says it expects to introduce an updated version, the Ariane 4, in March 1986. These vehicles could be followed by the proposed (Continued on page 2)

Galileo may fly by asteroid Amphitrite

NASA Administrator James M. Beggs has approved the addition of an asteroid flyby option to the Galileo mission and to change the Jupiter arrival date from August to December 1988. The option will permit a post-launch decision to fly by the asteroid 29 Amphitrite in December 1986.

The approval follows two years of study by numerous scientific groups, mission designers and program officials to devise a means to include the option. If the option is elected (a decision will be made after launch) it would add a significant scientific "first" into the Galileo mission.

The Galileo mission to Jupiter,

designed to orbit the planet and send an instrumented probe into its atmosphere, is scheduled for a May 1986 launch by the Space Shuttle and a Centaur upper stage.

The National Academy of Sciences, as well as NASA's Solar System Exploration Committee (SSEC), has identified the investigation of the asteroids by spacecraft as an essential element of a balanced planetary exploration program.

The flyby has the endorsement of the Galileo Project Science Group and the Small Bodies Working Group of the SSEC.

The asteroid flyby will be treated as an add-on, not a primary mission

objective, and will not be permitted to compromise the basic mission objectives nor add any risk to the already ambitious planetary mission.

A decision to exercise the flyby option will be made after launch, based on an assessment at that time of the health of the spacecraft, particularly the attitude control system and the mission operations system.

Amphitrite is in a near circular solar orbit in the middle of the asteroid belt at 2.5 Astronomical Units (AU) from the Sun (the Earth's distance is one AU or about 150,000,000 kilometers). Amphitrite, about 200 km in diameter, is

one of the larger of the minor planets.

The flyby distance will be determined by spacecraft safety considerations. A specially convened Hazards Workshop has concluded that with a 10,000 to 20,000 km flyby distance, the hazard to the Galileo spacecraft is no greater than merely flying through the asteroid belt as has been done by two Pioneer and two Voyager spacecraft. Significant scientific objectives can be realized by analyzing measurements and Doppler tracking data obtained from that distance.

From Earth, Amphitrite appears as the twelfth brightest asteroid

and has fluctuations suggesting a rotation period of 5.39 hours. At that rotation rate, most of the surface can be photographed and scanned by Galileo's mapping spectrometer. Analysis of these data will reveal its size, shape, mass and density, its exact rotation rate and pole orientation and its detailed surface morphology and mineral composition. Together, these properties will allow scientists to determine whether Amphitrite is a primitive accumulation of solar nebulae condensates or whether it is an evolved body that is a fragment, or perhaps a core, of a broken-up minor planet.

(Continued on page 2)

Space News Briefs

NASA, Rockwell sign agreement

Commercial Shuttle flight assignments for Rockwell International's materials processing laboratory were the subject of a Memorandum of Understanding signed between that firm and NASA recently. The unique laboratory, called the Fluids Experiment Assembly, is about the size of a television set, and is the first industrially developed equipment to be made available which would permit proprietary research in low Earth orbit. Under the terms of the agreement, Rockwell will develop an industrial space processing program and make the lab available to research institutions and commercial firms for flight aboard the Shuttle. The FEA was successfully flown in space on STS 41-D from Aug. 30 to Sept. 5 and was used to grow a single indium crystal with a lattice structure, all originating from a crystal seed.

India signs for launch

The Indian Space Research Organization signed a launch services agreement with NASA in December for the launch of INSAT 1C in mid-1986. INSAT 1C is a multipurpose satellite which will provide communications and meteorological services to India. A scientist from ISRO will serve as a payload specialist during the shuttle mission.

South Pole data link planned

A six-member team from the Goddard Space Flight Center is working with other agencies to establish the first satellite data link to the South Pole. Currently, data collected at a U.S. research outpost at the Pole, at 90 degrees south latitude, must be stored and shipped out by aircraft during the Austral Summer, which lasts from Nov. 1 to Feb. 1. Data cannot be shipped from the Pole to geosynchronous satellites because the site is too far below their horizon to be acquired. The new system will involve routing signals from the Pole to the McMurdo Sound station, at 77 degrees south latitude, via the polar orbiting Landsats 4 and 5. From McMurdo, data will be sent through Dynamics Explorer 1 and Nimbus 7. A two way back up voice link will also be established between the Pole and Goddard using NASA's 17-year-old experimental Applications Technology Satellite.

Bulletin Board

JSC NMA to meet

The next meeting of the JSC Chapter of the National Management Association, to be held beginning at 5 p.m. Jan. 23 at the Gilruth Recreation Center, will feature a discussion of "Positive Mental Attitude." Lanny Landroop, coach of the Station champion swim team from Clear Lake High School, will discuss a course he teaches on maintaining a positive mental attitude. Social hour for the meeting will begin at 5 p.m., followed by dinner at 6 p.m. Members are requested to contact their boosters as soon as possible as reservations are limited. Guests wishing to attend should contact Don Netzband, x4136.

New golf club forming

A new golf club with open membership for both sexes is forming now for the 1985 JSC Golf Association season. For more information, call Al McIntyre, x4726.

Peters to address Lockheed NMA

Thomas J. Peters, co-author of "In Search of Excellence," will address the Lockheed chapter of the National Management Association Jan. 31. The dinner meeting, to be held at the Hobby Airport Hilton, will begin with a social hour at 4:30 p.m. Tickets are available to the public at \$8 for the speech only and \$16 including dinner. For reservations, call 333-6866 before January 20.

JSC Credit Union has board opening

The JSC Federal Credit Union will hold its annual meeting at 7:30 p.m. on March 7. Applications are now being taken for three Board of Director positions, each for a three year term. Applications are due at 4:30 p.m. Feb. 5 and must include a brief description of the candidates' qualifications and statement of willingness to serve. The election will be held March 7 from 10 a.m. to 5 p.m. in the Credit Union lobby.

Security has lost and found items

The JSC Security Branch provides a lost and found service for all on-site employees. Items found at the center should be promptly turned over to the Security Branch, Bldg. 45, Room 210. Every effort will be made to locate the owner, including advertising in the Roundup, said Branch Chief David Troupe. Owners of the property must be able to adequately describe it by coming in person to the Security office in Bldg. 45. Articles will be disposed of if not claimed within two weeks from the publication date of the Roundup. Employees who have lost items on-site are encouraged to call Security at x4441 and give a complete description. The first installment of a new Lost and Found section appears on page 3 of this issue.

Erickson to address AIAA

Dr. Jon D. Erickson, Chief of the Artificial Intelligence and Information Sciences Office at JSC, will discuss "Space Station Automation and Robotics" at the next meeting of the Houston Chapter of the American Institute of Aeronautics and Astronautics Jan. 24. Erickson is responsible for drafting the Space Station Advanced Technology Advisory Committee automation plan for submission to Congress. The dinner meeting will begin with a social hour at 5:30 p.m., dinner at 6:30 p.m. and the program at 7:30 p.m. The price is \$7 for members and spouses, \$8 for non-members, and a \$2 discount applies for students. For reservations (the deadline is Monday, Jan. 21 at noon), call LaRue at 333-4150, Joanne at 333-0596, Claudia at 488-5660 or Christine at 333-6492.



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First VAFB launch delayed

(Continued from page 1)
of this year, instead of May as originally scheduled;

- *Discovery* will be retained in an operational status at the Kennedy Space Center and manifested for two additional flights in mid-1985 to resolve the schedule impact caused by tile problems on *Challenger*;

- NASA will deliver other Shuttle flight hardware—such as filament-wound solid rocket boosters—to

Vandenberg as soon as possible, a move which would add to launch flexibility there.

According to the Air Force, preparations at Vandenberg for activation of the launch site continue to progress. Problems with pipe welds and cleanliness have been corrected, and ground systems tests are currently underway in preparation for checkouts of the launch pad using the Orbiter *Enterprise*. Deliveries of the exter-

nal tank and solid rocket booster skirt assemblies have been made ahead of schedule.

NASA is continuing discussions with commercial customers and Department of Defense officials to finalize the remainder of the 1985 Shuttle manifest, covering the period from August 1985 through 1989. A recently released manifest for the first seven months of 1985 is reprinted on page 3 of this issue

ESA's agenda to be studied

(Continued from page 1)
Ariane 5, a rocket capable of generating up to 220,000 pounds of thrust and, potentially, launching European astronauts into orbit. The decision point for the Ariane 5, which could be operational by the mid-1990's, is now before the ESA ministers, who must decide whether to proceed with the proposed Large Cryogenic Engine to power the vehicle. Work must begin on the engine soon if the Ariane 5 is to be

operational in this century.

One important outgrowth of the Ariane 5 could be an independent European manned spaceflight capability. France, which plays the leading role in the Ariane program, has been studying development of a mini-shuttle called Hermes. The shuttle, which would be launched by a man-rated version of the Ariane 5, could carry a crew of four into low Earth orbit. The 50-foot-long shuttle would have the ca-

pability for a 10-day mission, or could stay docked for up to 90 days to a space station.

Frederic d'Allest, Director General of CNES, the French space agency, told reporters in Paris Jan. 10 that France would officially lay the Hermes proposal before ESA at the Rome meeting. "In the coming years," the Associated Press quoted him as saying, "a country that wants to play an international role has to be a space power."

Amphitrite may be explored

(Continued from page 1)
Information obtained will make it possible to confirm or refute a hypothesis that Amphitrite and other asteroids are sources of many of the meteorites which fall on Earth.

This first encounter with an asteroid will also supply ground truth for interpreting many previous and forthcoming ground-based observations of other asteroids.

Amphitrite, the 29th asteroid discovered, was detected by Albert Marth, in London, England, at the William Bishop Observatory on March 1, 1854. The asteroid was named by Bishop for one of the mythical god Neptune's wives.

A new trajectory, containing both Amphitrite and Jupiter and constrained by the launch vehicle energy and existing launch window, has been developed. The trajectory will result in a delay in the Jupiter arrival date from August 29, 1988 to December 10, 1988. No mission operations work or added software capability related to the flyby will be accomplished prior to launch other than that required to plan the primary mission based on the asteroid flyby trajectory.

The effect on the Jupiter mission will be minor. Since the flyby requires added expenditure of propellant in the early mission phase, the number of tour orbits of Jupiter would be decreased from

11 to 10. Consequently, the length of the tour has been extended from 20 months to 22 months to permit the achievement of all the major objectives previously encompassed by the 11 orbit tour.

There will be no near-term cost impact due to the incorporation of the flyby option. Major added costs, estimated at \$20-25 million, are attributable to a five month mission extension due to the delayed arrival date and increased tour time.

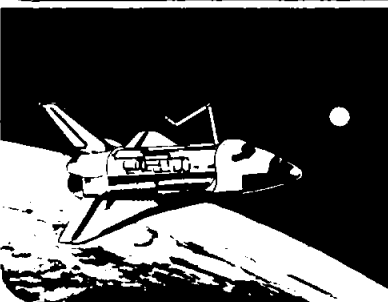
The Galileo project is managed by the Jet Propulsion Laboratory, Pasadena, Calif., under the direction of the Office of Space Science and Applications, NASA Headquarters, Washington, D.C.



STS 41-G astronauts Sally Ride and Jon McBride present a photo of their launch to Congressman Jack Brooks, who visited JSC recently to pin the crew members with NASA's Space Flight Medal. Brooks, whose 9th Congressional District includes JSC and much of the Bay Area, also met with Center Director Gerald D. Griffin during his visit. The rest of the 41-G crew, away on duty during the Congressman's visit, will receive their medals in separate ceremonies.

NASA
Lyndon B. Johnson Space Center

Space News Roundup



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Editor Brian Welch
Editorial Assistant Tina Grieco

Planetary detection effort begun

NASA and the University of Arizona, Tucson, have signed a memorandum of understanding to formulate a program for the detection and study of planetary systems around other stars.

In signing the memorandum at ceremonies at Ames Research Center, NASA and the University have launched a joint project to study, plan and, if approved by Congress, develop an orbiting Astrometric Telescope Facility to be mounted on the agency's planned Space Station sometime in the mid 1990's.

"Astrometric telescopes are used to measure, with extraordinary precision, the positions of stars and other celestial objects against the sky," said Eugene H. Levy, Director of the University of Arizona's Lunar and Planetary Laboratory and head of its Planetary Sciences Department.

Levy and David C. Black, head of Ames' Planetary Detection Project,

will be principal scientists in the collaborative project between Ames' Space Sciences Division and the University's Lunar and Planetary Laboratory.

Black described the project as "the beginning of a new scientific discipline. The results of the search, whether positive or negative, will profoundly alter our view of the universe." Until other planetary systems are found and studied, the researchers say that theoretical models developed to explain the origin of our own solar system, or the formation of stars, cannot be fully tested.

The gravitational pull of planets orbiting around a star cause the star to wobble back and forth as seen against the sky. By measuring this wobble, an astrometric telescope can determine the presence of planets and even determine the properties of such a planetary system. The wobble-measuring technique is commonly used by

ground-based telescopes to measure the properties of double stars in orbit around one another. However, to measure the disturbance in a star's motion caused by objects as small as planets, and to study the systems in detail, more precise measurements are required than can be achieved from telescopes on the ground.

The memorandum signed by Ames Director William F. Ballhaus, Jr. and Henry Koffler, President of the University of Arizona, cited "the development and operation of a Space Station-attached Astrometric Telescope Facility" as a principal objective of the joint program. It will be coordinated with other joint efforts aimed at the detection and detailed study of planetary systems, including development of photometric and spectroscopic techniques and theoretical modeling of planetary system formation.

For more than a decade, Lunar and Planetary Laboratory scientists

have been developing spectroscopic techniques and instruments for the discovery of other planetary systems.

Although NASA and the University will work together on the entire project, Ames will coordinate the first two phases — system definition and implementation — and the University will coordinate the two final phases — the facility operation and scientific program.

While initial study and definition work will begin soon, ultimate implementation of the project will require that NASA obtain Congressional approval and funding several years from now.

Phase one will clarify the final design of the telescope and how it is to be mounted on the Space Station.

Phase two will build the telescope and its instrumentation as well as mount it on the Space Station.

Phase three will establish the operating facilities on the ground. Phase four will include the continuing scientific investigations, which will extend more than a decade. The scientists want the project to include a core program of planet detection and study, along with a program of guest investigations to make use of the unique capabilities of the telescope for astrometric studies of other important celestial objects.

According to the terms of the agreement, the Solar System Exploration Division of the Office of Space Science and Applications, NASA Headquarters, Washington, D.C., will assume overall responsibility for the four-phase project.

Gas cloud seen at Beta Pictoris

Observations with the International Ultraviolet Explorer (IUE) satellite have revealed what appears to be a variable cloud of gas surrounding the star Beta Pictoris, a star thought by many astronomers to be a leading candidate for another planetary system beyond our own.

The observations are the first evidence that Beta Pictoris, in the constellation Pictor in the southern hemisphere, may be surrounded by gas as well as large dust particles and dust as previously reported from observations using the Infrared Astronomy Satellite (IRAS) and ground-based telescopes.

According to Dr. Yoji Kondo, project scientist of the International Ultraviolet Explorer satellite at the

Goddard Space Flight Center, and Dr. F. C. Bruhweiler of Catholic University, who jointly made the observations last month, the IUE findings of co-existing dust and gas clouds are consistent with scientific theories of planetary system formation.

"Many stars like Beta Pictoris show evidence of being surrounded by clouds of gas at ultraviolet wavelengths," says Kondo. "If such data imply that these stars also are surrounded by a protoplanetary gaseous cloud with a disk of dust particles, then many nearby stars may have evolving planetary systems. That's exciting because these stars would offer a unique opportunity

to see the way a solar system might appear in formation."

In general, theories of planet formation predict that planets evolve from large stellar clouds of dust and gas which gradually condense into orbiting planetary bodies. This theoretical argument for planet formation has been strengthened by observations with the IRAS, an international infrared satellite orbited two years ago, which suggested that a number of nearby stars are surrounded by planetary disks. Additionally, astrometric measurements of the movement of several stars have indicated the possible presence about each star of a planetary body several times more massive than Jupiter.

Shuttle manifest through July

Mission Orbiter	Date Duration	Crew	Payload
51-C <i>Discovery</i>	Jan. 23 ?	Thomas K. Mattingly, Cdr Loren J. Shriver, Plt Ellison S. Onizuka, MS James F. Buchli, MS Gary E. Payton, PS (DOD)	DOD
51-E <i>Challenger</i>	Feb. 20 4 days	Karol Bobko, Cdr Donald Williams, Plt M. Rhea Seddon, MS Jeffrey Hoffman, MS David Griggs, MS Patrick Baudry, PS (French)	TELESAT-I (PAM-D) TDRS-B (IUS/2)
51-D <i>Discovery</i>	March 19 5 days	Daniel C. Brandenstein, Cdr John O. Creighton, Plt Shannon W. Lucid, MS John M. Fabian, MS Steven R. Nagel, MS Greg Jarvis, PS Charles Walker, PS	LDEF-1 Retrieval SYNCOM IV-3
51-B <i>Challenger</i>	April 30 7 days	Robert F. Overmyer, Cdr Frederick D. Gregory, Plt Don L. Lind, MS Norman E. Thagard, MS William E. Thornton, MS Lodewijk van den Berg, PS Taylor G. Wang, PS	SPACELAB 3 (LM + MPSS)
51-G <i>Discovery</i>	May 30 7 days	Joe Engle, Cdr Richard Covey, Plt James van Hoften, MS John Lounge, MS William Fisher, MS	SPARTAN-1 (MPSS) TELSTAR 3-D (PAM-D) MORELOS-A (PAM-D) ARABSAT-A (PAM-D)
51-F <i>Challenger</i>	July 9 7 days	C. Gordon Fullerton, Cdr Roy D. Bridges, Jr., Plt F. Story Musgrave, MS Anthony W. England, MS Karl G. Henize, MS Loren W. Acton, PS John-David Bartoe, PS	SPACELAB 2 (IG + 3P)

Gilruth Center News

Call x3594 for more information

Basketball registration — Registration for the new Basketball League begins Jan. 2 and will be accepted until Jan. 28. Play begins the first week of Feb. Leagues will be as follows: Mixed — Mondays; Mens A — Tuesdays; Mens B — Wednesdays; Mens C — Thursdays.

Volleyball registration — Registration for the new Volleyball League begins Jan. 2 and will be accepted until Jan. 28. Play begins the first week of Feb. Leagues will be as follows: Mixed Recreational — Friday night; Mixed Recreational — Saturday afternoon.

Children's movie — Walt Disney's, "The Sword and the Stone" will be shown from 10 a.m. to noon Jan. 26. Cost is \$1 per person. Tickets are on sale at the Bldg. 11 Exchange Store.

EAA cards — Gilruth Recreation Facility membership cards are now available. Cards will be mailed to all NASA employees. Contractor employees will get on their company list to receive cards. Smaller companies can pick up applications at the Recreation Facility. Dependents must be sixteen years of age or older to obtain a card.

Tennis reservation rules — Reservations will only be accepted from those who have paid. You must come in and pay \$.75 per person or pay \$10 for a quarter, \$20 for six months or \$30 for twelve months. This arrangement allows you to call and make a reservation by phone.

Silk flower arranging — Learn the basic principles and techniques of floral arranging. Lectures are followed by demonstrations. Work is critiqued and arrangements are yours to keep. A six week course from 7 to 8:30 p.m. beginning on Feb. 5. \$35 per person.

Lost and Found

Found — Three men's watches, one ladies watch, several pairs of glasses, several camera cases, one man's wallet, one integrated circuit board for a TI printer, one small coin purse. These items may be claimed in person by the owner at JM4, Security Branch, Bldg. 45, Rm. 210. Owners must be able to describe items. The items will be disposed of if not claimed within two weeks of publication of this edition of the Roundup.

Lost — Man's yellow and white gold wedding ring, lost about Jan. 11 in the vicinity of Bldg. 1. Call Gary, x3681, or 482-1290.

Found — One pair of blue-tinted prescription glasses on Xerox machine in Bldg. 32. Call Whitnah, x2258.

Found — Fender skirt for late model Pontiac Bonneville, tan-colored, on corner of Hwy. 3 and Pineloch. Call Harley Stafford x6337.

Found — Set of keys on-site. Call Tim, x2276.

Cookin' in the Cafeteria

Week of January 21-25, 1985

Week of January 28-February 1, 1985

Monday: Chicken & Rice Soup; Wieners & Sauerkraut, BBQ Ham Steak, Steak Parmesan, Beef & Macaroni (Special); Green Beans, Carrots, Au Gratin Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Tomato Soup; Potato Baked Chicken, BBQ Spare Ribs, Mexican Dinner (Special); Squash, Broccoli, Ranch Beans, Spanish Rice.

Wednesday: Seafood Gumbo; Liver & Onions, Baked Turbot, BBQ Ham Steak, Baked Meatloaf w/Creole Sauce (Special); Beets, Brussels Sprouts, Green Beans, Whipped Potatoes.

Thursday: Beef & Barley Soup; Chicken & Dumplings, Corned Beef w/Cabbage, Smothered Steak w/Cornbread Dressing (Special); Spinach, Cabbage, Cauliflower au Gratin, Parsley Potatoes.

Friday: Seafood Gumbo; Pork Chop w/Yam Rosette, Creole Baked Cod, Tuna & Salmon Croquette (Special); Brussels Sprouts, Green Beans, Buttered Corn, Whipped Potatoes.

Monday: Cream of Celery Soup; Braised Beef Ribs, Chicken a la King, Enchiladas w/Chili, Italian Cutlet (Special); Navy Beans, Brussels Sprouts, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Beef & Barley Soup; Turkey & Dressing, Country Style Steak, Stuffed Cabbage (Special); Corn Coblette, Okra & Tomatoes, French Beans.

Wednesday: Seafood Gumbo; Catfish w/Hush Puppies, Roast Pork w/Dressing, Pepper Steak (Special); Broccoli, Macaroni & Cheese, Stewed Tomatoes.

Thursday: Cream of Tomato Soup; Beef Tacos, BBQ Ham Slice, Hungarian Goulash, Chicken Fried Steak (Special); Spinach, Pinto Beans, Beets.

Friday: Seafood Gumbo; Liver & Onions, Deviled Crabs, Roast Beef w/Dressing, Tuna & Noodle Casserole (Special); Whipped Potatoes, Peas, Cauliflower.

AT BUILDING #3

On Wednesday we feature The Reuben: Corned Brisket, Swiss Cheese on a bed of Sauerkraut, Poupon Mustard on Rye and 1/4 Pickle. Delicious! Monday and Thursday check out our French Dip Sandwich.

Roundup Swap Shop

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP 3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads.

Property & Rentals

For sale: Baywind II, 2-2-2, first floor, new carpets, paint, drapes, pool, W/D connect, FPL, reduced to \$38,000. Call Elaine, 334-2402 after 6 p.m.

For sale: Middlebrook II, 4-2-2A, Playa contemporary, excellent condition, lovely master bath, 1,864 sq. ft., \$94,900. Call Ron, x3821 or 488-7387.

For lease: Baywind II condo, 1BR, W/D, FPL, refrig., 2 patios, tennis, pool, \$350/mo. Call 334-3187.

For lease: Forest Bend Townhouse, 2-1.5, ceiling fans, 2-story, patio, \$395/mo. Call Betty Craig, x4031 or 1-420-2396.

For lease: 2-story home, 3-2-2, Seabrook/Miramar, \$480/mo. Call 333-3527.

For sale: 1.8 acres in Friendswood, all utilities, \$29,500. Call Janice, x5867 or 482-6888.

For sale: Tranquility Lake, 1-1, tile fireplace, balcony, microwave, refrig., W/D, ceiling fan, wood area for jogging, close to Clear Lake. Call 482-7694.

For lease: 10 acres (Alvin Area), fenced, on paved road, horses-cattle. Call Damewood, 482-5572.

For sale: 7 acres in Henderson, TX, Long highway frontage, water, gas, electricity available, \$25,000. Owner financed, \$1,000 down. Call 482-3989 after 6 p.m.

For sale: Dickinson 2-1, 1983 mobile home, 14' x 64', adult section of park w/pool. Extras, energy efficient, \$2,000 & assume \$297/mo. Call Jan, x5827.

For lease: Miramar/Seabrook, 2-story home, 3-2-2, \$480/mo. Call 333-3527.

For sale: Bayou Vista, 3-2.5-3, completely remodeled, on water, only \$69,500. Call Sharon, x5212.

For sale: Egret Bay condo, 2-1-2, excellent cond., FPL, W/D, priv. balc., covered parking, pools, security, boat ramp, \$47,900, 11 1/2% assume, low equity. Call 333-4751 after 5 p.m.

For lease: Egret Bay condo, 1-2-2, W/D, FPL, microwave, miniblinds, \$375/mo. Call 333-5354 or 946-2972.

For sale: University Green, 2-2-2 patio home, split bedroom design, extras, reduced price \$83,900. Call 488-0500 or 480-6516.

For sale: Countryside, 4-2-2, 10' x 10' shed, 16' x 12' deck, garage opener, fence, mini blinds, oversized lot, cul-de-sac, more, military move, \$72,500. Call 554-2383.

For sale: 1200 sq. ft. office/living near new Kemah bridge. Fast growth, \$60,000. Call Horton, 332-1309 after 6 p.m.

For sale: Friendswood, 3-2-1, drapes, FPL, large fenced yard, trees, near schools. Assume 9.5% VA loan, low equity. Call 482-7546.

For sale: Countryside III, 4-2-2, fenced, FPL, \$12,000 equity. Assumable 10.5% VA loan. Owner 2nd w/\$5,000 down, \$67,000. Call 486-8130.

For lease: Countryside III, 4-2-2, fenced, FPL, near elem. school, \$550/mo., \$550 deposit. Call 486-8130.

For lease: Bayview/Kemah, brick 3-2-2, new carpet, Clear Creek schools. Apply 100% of rent to purchase, \$425. Call 486-0462.

For lease: El Dorado Trace, 1-1-1, overlooks pool, 2 balc., FPL, icemaker, W/D, ceiling fan, miniblinds, sauna & whirlpool in clubhouse, \$360/mo. Call Mark, x6301 or 554-2358 after 6 p.m.

For sale/lease: CLC, large 1 BR condo, W/D, FPL, burglar alarm, covered parking, upstairs unit, fresh paint, \$100 off first mo. Call Jim Briley, 280-3679 or 488-7901 (home).

For sale: Egret Bay, 2-2-2, W/D, microwave, refrig., fans, FPL, pools, boat ramp. Call 333-9447 after 4:30 p.m.

For sale: Dickinson, 1981 14' x 70' mobile home on fenced, large corner lot. Nice neighborhood, extras, must see. Call 534-2626 after 5 p.m.

For lease: Sterling Knoll/CLC, 3-2-2, FPL, fenced, miniblinds, \$535/dep. Call 486-5621 after 6 p.m.

For sale or lease: Pebblebrook condo (El Lago), 2-2, FPL, new carpet, ceiling fan, appliances include W/D, \$400/mo. Call Laurie, 996-0158 after 4:30 p.m.

For sale: Seabrook, Wildwood, 4-2-2, excellent cond., \$8,000 equity, assume 13% fixed 30-year loan. Call Huysman, x6557 or 474-7020.

For rent: El Dorado Trace Condo, 2-2-2, carport, FPL, all appliances, sauna, pool area, \$425/mo. Call Conway, x4676 or 488-5481 after 5 p.m.

For lease: Wedgewood/Friendswood, nice 3-2-2, carpet, cathedral ceiling, patio, fenced, built-ins, \$500. Call 481-3012.

For sale: 3/4 acre waterfront lot with access to excellent bass fishing in Brazoria County. Call Don before 5 p.m. at 280-6307, M-F.

For rent: Galveston Gulf front condo. Treat yourself to a relaxing 2 day to 1 mo. vacation in this completely furnished condo. Low seasonal rates. Call Nussman, 488-7762.

For lease: Baywind II, 1 BR condo, FPL, kitchen appliances, W/D connections, pool, exercise room. Call Jim White, x5437 or 944-0451 after 5 p.m.

For sale: 8 acres state highway frontage, Alvin area, \$10,000/AC, \$10K down, 10 years at 10%. Call Barr, x4871 or 485-6074.

Cars & Trucks

1981 Datsun 310-GX, 34K miles, 32 mpg, A/C, AM/FM/cassette, good condition, \$4,100. Call Marie, x3905 or x2336.

Must sell: 1981 Ford Granada, \$3,775; 1976 Chevy Nova, \$1,250. Call David, x2983 or 484-6319 after 4 p.m.

1979 Ford 1/2 ton pickup, V8, 302, 3 speed, 1 owner, 67K miles, \$2,500. Call 559-1286 after 5 p.m.

1967 Fairlane, perfect condition, good work car. Call 339-1793 after 5 p.m.

1979 Trans Am, new paint, interior, all options, 403 cam engine, centerline tires, blue, \$5,000. Call Mike, 333-2335 after 5 p.m.

1979 Ford Pinto, 73K miles, auto, A/C, \$2,500. Call Craig, x2691.

lent cond., garage kept, AM/FM/cassette. Call Epps, x4794.

1976 Camaro, good mileage, body needs little work, engine in good shape, \$1,500. Call Tim, x2613 or 280-9774.

1936 Dodge Touring Sedan, 22,500 actual miles, all original, no rust, runs great, see to appreciate. Call 488-2984 after 5 p.m.

1976 Chevy P.U., C-30, 1 ton, LWB, 454 cu. in., dual tires, dual cab, A/C, extra tires, \$3,000. Call 538-1833.

1968 Mercedes 250SE, limited edition, \$7,000 negotiable. Call Kevin at 781-4878.

1979 Chevette, auto, AC, 4-door hatchback, low miles, excellent condition, \$2,100. Call Paul, x2631.

1971 VW Superbeetle, all or part, title, also have misc. VW parts. Call Dennis, x5437 or 554-4233.

1973 Mustang, clean, automatic, good condition, one owner, \$1,195 neg. Call Jim Ginns, x2891.

1976 Chevy 1/4 ton pickup w/camper shell, has oil/transmission leak, low miles, new exhaust, \$1,900. Call 991-7791.

1984 Toyota GTS sports coupe, loaded, \$2,500 & take over payments or trade for pickup. Call Michelle, x5094 or 488-6142.

1975 Ply Window Van, V8, 3 spd std., good running condition, \$1,250; Two van bench seats - each \$150 or

Commodore Vic 20 and Commodore Dataset, used less than 5 hours, all papers, \$95. Call Raymond, x3701 or 534-4839.

Hayes Smartmodem 300, autodial/autoanswer, 300 baud, paid \$279, asking \$150. Call Dave Black, x4361 or 332-7493.

Color printer, CITHO 8510/SCP, 200 CPS, extra ribbons, parallel interface cord, utility software, IBM compatible, \$375. Call Munro, x4905 or 334-2798 after 4:30 p.m.

Pioneer receiver, Akai reel-to-reel deck, Sansui reverb, Panasonic 8-track, many tapes. Call Tim, x2613 or 280-9774.

Altec monitor speakers in custom cabinets, \$1,000 OBO; Revox reel-to-reel, new, \$600. Call Bud Chatterly, x3201 or 480-9363.

Henry radio, Tempo 2000, PEP linear amp, 80-10 mtrs., \$475; Drake R4B receiver, \$225; Hewlett-Packard HP608D signal generator, 10-420 Mhz, as is, \$75. Call Williams, x3547 or 484-0763.

Household

Solid oak pedestal table, 42" round, 4 chairs, \$250. Call Phil, x2541 or 334-5619 after 5 p.m.

Rocking chair, needs upholstery work, \$20 or best offer. Call 334-4894 after 5 p.m.

Speed Queen washer and gas dryer, washer works well, dryer needs minor

house and kitchen privileges, no smoking or pets, no children, 5 miles from NASA, \$230/mo. Call Keith Brown, x3643 or 332-8251.

Roommate to share house, Summit area off Hwy. 59S/Weslayan exit, large 2BR, den, fenced, animals o.k., male/female, \$250/mo. plus 1/2 bills. Call Kelly, x2280.

Female housemate to share large house 2 miles from NASA, \$200/mo. plus share utilities, non-smoker. Call Linda, 474-7481.

Female to rent room, private bath, kitchen privileges, close to NASA, non-smoker preferred, \$195/mo. plus 1/2 utilities. Call 280-9377 after 10 p.m.

Roommates to share large waterfront house, prefer non-smoker, \$250/mo. includes utilities & deposit. Call 538-4219.

Housemate to share 3-2-2 in Middlebrook, no pets, prefer non-smoker, \$300/mo. plus 1/2 utilities. Call Jim, x5378 or 480-5129.

Persons to start vanpool/carpool from northwest Harris County, FM 1960 area to NASA. Call Al, x3643 or 376-4467 evenings.

Small cargo trailer, two wheels, for sports car. Call Ed, 333-6354 or 474-4658 after 5 p.m.

Wish to rent trailer for 22' swing keel sailboat for approx. 2-3 weeks. Call Musgrove, x2851 or 488-3966.

Day care for infant, 3-5 days per week beginning mid-March, references please. Call Huysman, x6557 or 474-7020.

Electric trains. Call Don Jeffers, x2449.

Miscellaneous

1978 Stidham 2-horse trailer, good floor & tires, \$1,100. Call 482-3989 after 6 p.m.

Ski boots, women's size 5.5-6, perfect for children, \$20. Call 538-2082.

Pentax ME Super 35mm camera, Pentax flii 50mm series 'A' lens, small auto-flash unit, never used, \$175. Call Raymond, x3701 or 534-4839.

Rent a mini motor home, self-contained including onboard power plant, roof air, the comforts of home on wheels. Call Dave, x5111 or 480-0202 after 5 p.m.

World War II .31-caliber Japanese rifle with bayonette. Call Dave, x5111 or 480-0202 after 5 p.m.

Table tennis table, official 5'x9', 3/4 in. particle board top, folds for storage and playback, \$50. Call 488-5422.

Ford Pinto RF fender, \$30; Sears garage door opener transmitter, \$10. Call Vincent, x4757 or x5304 or 482-5615 after 6 p.m.

Pool table, bumper pool table, air hockey table, \$175; Nimrod tent trailer, \$350. Call Dan Kadel, x6455 or 280-0439 evenings.

Ceramic equipment including kiln, accessories, greenware, bisque & glazes, \$500 firm. Call 332-0047 after 4 p.m.

Marmink fur stroller, like new, \$650; IBM electric key typewriter, excellent cond., \$175; hand-built sailing vessel model on platform, 3ft. long, \$50; 100 National Geographics, \$25. Call 488-5564.

Trimline rowing machine, used one month, reduced to \$60. Call 486-2188 or 484-0349.

ORS T-shirts still available, limited supply, \$6.50 each. Call Bill, x5437 or 991-0361.

"Bugspray" Holley carburetor, w/intake manifold, set up for VW 1600cc dual port engine, just rebuilt, \$65. Call Chris x6158.

Lowrance Mach 1 chart recorder for structure fishing, brand new, \$200 below retail. Call Don, 280-6307 before 5 p.m.

Crumar Travelers keyboard w/pedal board, 700 watt power amp, speakers, cases included. Call Mike, x2805 or x2806 3:30 to midnight.

350 V8 engine long block, four bolt mains, ran well, \$300 OBO. Call Dennis, x5437 or 554-4233.

Pets

Free puppies: tan with black muzzles and markings, sire is Australian shepard, bitch is black labrador/shepard, pups weaned and ready to go. Call Brian, x5111, or Randy 480-5194.

Pit Bull puppies, brindles, good disposition, males \$75, females, \$50. Call Max, x5425 or 488-4135 after 5 p.m.

AKC registered black Cocker Spaniel, female, sweet-natured, three yrs. old, \$75. Call Joyce, x5293 or 996-9935 after 6 p.m.

Orange Persian cat needs a home, affectionate neutered male, one year old, has all shots. Call Doug, 334-1808 after 5 p.m.

The Form debuts

Beginning with the Feb. 15th issue of the *Space News Roundup*, all ads submitted to the Roundup Swap Shop must make use of a JSC Form 1452, a copy of which is reprinted here. The form is being introduced in an effort to make Swap Shop advertising somewhat easier, not only for advertisers, but for the staff of the Media Services Branch, Public Affairs Office, as well. The branch receives anywhere from 50 to 100 calls a week from people asking for instructions on how to place a Swap Shop ad, even though the procedures have been the same for nearly 20 years. The excessive telephone traffic and the apparent confusion may best be remedied, we hope, by one form which lists all procedures for placing ads, and which also gives instructions on how to estimate deadlines for submissions. You must use this form to submit an ad, otherwise it will not appear in the paper.

The form is available from the Forms Office, Distribution Operations, at Mail Code JM86. You don't need to call the folks in Forms. In fact, please do not call the folks in Forms. Instead, ask your secretary to order this form by filling out a standard requisition on a JSC 614, and sending it to Forms at Mail Code JM86. In a matter of days your branch will be provided with the Swap Shop submission forms. That's all it takes, and we greatly appreciate your cooperation.

1977 Chevy Vega, brown, hatchback, std., body O.K., clutch-engine needs work, \$275. Call Max Kilbourn, x4402 or 482-7879.

1976 VW Rabbit, gas engine, hear it run before you buy, \$325. (Also other parts at reasonable prices). Call Max Kilbourn x4545 or 482-7879.

1978 Ford Fiesta, A/C, AM/FM/cass., \$1,500 OBO. Call Bud Chatterly, x3201 or 480-9363.

1973 Dodge Maxivan, PS, PB, AC. Call Rodney, 480-1340 after 6 p.m.

1970 Dodge Dart, slant 6, AC, auto, good tires, runs well, \$400. Call 538-1728.

1979 Audi 5000S, silver, 47K miles, new tires, AM/FM, power everything, clean, \$5,300. Call 538-1408 evenings.

1981 Buick LeSabre, 4 door, 53,000 miles, diesel, \$3,500; 1971 Mercedes, 220, 4 cylinder, diesel, good condition. Call Cotton Wright, x2211 or 471-5964.

1976 Pontiac Bonneville, PS, PB, A/C, 80K miles, fully loaded, \$1200 OBO. Call Tim, 472-0636 after 5 p.m.

1975 Chevy Vega Hatchback, 109K miles, A/C, 3-speed standard, dependable work car, \$300. Call Owens, x5893.

1977 Monte Carlo, brown/beige landau, AM/FM, 62K, new tires, power sunroof, 40 channel CB/antenna. Call Kimberly, 488-9005, x270 or 480-0244.

1974 Mercury Montego, 351 V8, 90.5K miles, burns no oil, new tires, battery, AC/HTR, works fine. Call Bill Garnett, x3161 or 488-0621.

1975 Pontiac Catalina, runs superb, some rust, needs brake job, \$400. Call Cliff, x3532 or 486-8810.

1979 Olds Toronado, loaded, \$3,900. Call x634, 482-5837.

1976 Monte Carlo, one owner, excei-

NASA Roundup Swap Shop Submission			
Important: All advertisements accepted for free publication in the Space News Roundup MUST meet the rules and procedures as follows:			
1. Keep the ad brief and to the point, around 25 words or less (Length is not as important as clarity).			
2. Two separate ads, maximum per person, per issue are allowed. You may place several items within one ad, just keep the descriptions short. If you send more than two ads, only the top two will be printed. The remainder will be discarded.			
3. Ads are not automatically repeated. If you want an ad to run in three successive issues, you must send it in and meet the deadlines for three successive issues. Do not send three copies of one ad and expect them to be carried over.			
4. No phone-in ads are accepted.			
5. No commercial ads are accepted.			
6. Ads are accepted from NASA civil service employees, retired civil service employees and from on-site contractors. All on-site employees must use JSC Form 1452 to submit ads. Retirees may submit ads by mail as before, using 8 1/2 x 11 paper.			
7. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the Bldg. 2 annex, Room 147.			
8. All advertisements must include full name, work phone, mail code and home phone number. Specify which phone number you want in the advertisement.			
9. Roundup deadline is always close of business the first Wednesday following the date of publication (not the day you receive the paper).			
Submitted By: (Name, print or type)		Signature	
Office Phone Number	Home Phone Number	Employer	Mail Code
Ad #1 (Include only personal information you wish to have published.)			
Ad #2 (Include only personal information you wish to have published.)			

\$275 both. Call John Lo, x4107 or 482-8457 nights.

Boats & Planes

Ericson 27' sloop, sleeps 5, Watergate Marina, best offer over \$22,000, half ownership possible. Call Gene Horton, 332-1309 after 5 p.m.

Pearson 26' sailboat, 10HP elec. start, 5 sails incl. spinnaker, Bimini, VHF, much more, full cruiser/racer. Black book \$22,500 to \$25,000. My offer \$18,000. Call John, 486-9500 or 556-6312.

Piper Lance, 6-place, club seating, \$85/hr wet. Call L. Damewood, 482-5572.

Bayliner, 22 1/2' offshore, 160-hp Volvo I/O, stove, icebox, sink, CB, swim platform, stereo, depth finder, full canvas, EZ loader tandem trailer, \$6500 firm. Call Ron, 488-0131 or J.T., 488-3452 after 5 p.m.

Cycles

1975 Kawasaki 900Z-1, Lester mags, Kerker leaders, 1013 kit, Yoshimira cams, \$1,500 OBO. Call Mike Williamson, 3:30 p.m. to midnight shift, x2805, or x2806.

1977 Kawasaki 650, runs well; 1978 Honda Hawk, low miles, doesn't run, cheap. Call Zack, x6247 or 925-3945.

1981 Honda CM400T, showroom condition, 600 miles, extras, \$1000. Call Epps, x4794.

Audiovisual & Computers

Will buy working or non-working Commodore equipment. Call Anthony, 482-9205.

repair, both \$100 or best offer. Call 488-8796.

Chest of drawers, with mirror, \$30. Call 333-3382.

Full-size bed with matching dresser and mirror, \$350; glass top coffee table, \$75; oriental rug, 9'x6', \$80. Call 538-4219.

Sofa, greenish-gold velvet, \$125; glass top coffee table, \$50; portable typewriter, \$35. Call Donna, x4571 or 479-1004 after 5 p.m.

Hand-carved dining room table, two hand-carved bases, \$350; portable AC/DC black and white TV, \$60. Call 488-5564.

Queen size, hand-made quilt, new, \$300; imported hand-cut crystal stemware, 60-piece service for 8, \$400. Call 559-1286 after 5 p.m.

Trundle bed and linens, \$275; 2 bamboo lamps, \$20 each; ladies western boots, size 7, \$70; king-size electric blanket \$20. Call Bera, x2001 or 486-5119.

Sears 20 cu. ft. freezer, still in warranty, \$300 OBO. Call Dennis, x5437 or 554-4233.

Couch and loveseat, Herculon plaid, \$275; wrought iron bird cage, stand alone, \$15. Call 991-7791 evenings.

Queen size sleeper/sofa, early American style, with matching rocking chair, make offer. Call 334-4894 after 5 p.m.

Fixtures: 5-lamp brass and crystal, \$50; 3-lamp brass and crystal, \$25; brass hanging lamp with glass chimney and shade, \$30. Call 538-3342.

Wanted

Roommates: furnished room with bed, linen, chest, phone, TV & cable, fan,