

Space News Roundup

Vol. 20 No. 14

July 17, 1981

National Aeronautics and Space Administration

Shuttle Update

Last week, power-on testing continued on schedule. Leak and function checks of the Main Propulsion System neared completion. The Remote Manipulator Arm was set in place and the left payload bay door's clearance was successfully tested.

The Thermal Protection System tiles remain ahead of schedule. As of Sunday, 268 were bonded for the week against a goal of 180; 1011 have been completed with 364 to go. The left OMS Pod was installed on the orbiter and 25 tiles remain to be bonded to it.

The STS-2 external tank and solid rocket booster mating operation took 30 percent less time than for STS-1. Engineers expect the operation to take even less time for future missions.

This week, Columbia aerosurface checks will take place. The navigation aids testing started last weekend and is to be completed this week.

The OSTA-1 payload completed its clearance tests with only minor wiring interference. It is scheduled for verification tests starting Monday.

The OSTA-1 payload was recently installed in the Orbiter's payload bay along with the remote manipulator system and will be the first real payload other than engineering instrumentation to be carried to orbit aboard the Shuttle. Its collection of experiments and instruments will, among other tasks, pave the way for new and more useful Earth sensing satellites which provide information on such things as air pollution, ocean fishing grounds and mineral resources.

Monday:

Visitor center dedicated to Olin E. "Tiger" Teague

Officials at the NASA Lyndon B. Johnson Space Center Monday will honor a longtime supporter of the space program when they dedicate the Olin E. "Tiger" Teague Visitor Center.

Newly-confirmed NASA Administrator James M. Beggs will be present for the ceremony along with other agency officials, U.S. Congressmen and former astronauts. Teague's widow, the former Freddie Dunman of Forth Worth, also will attend.

The late U.S. Congressman Teague served from 1959 to 1978 on the House Committee on Science and Astronautics, the last five years as chairman. Before he became chairman of the committee, he headed the subcommittee on manned space flight. He was widely known as one of the most articulate supporters of the space program.

The ceremony will begin at 10 a.m. on the 12th anniversary of the Apollo 11 lunar landing. A marker dedicating the center to Teague will be unveiled.

Elected from the 6th Congressional District of Texas, Teague made his home in College Station. He was a 1932 graduate of Texas A&M University and worked for the U.S. Post Office after graduation.

In 1940 he began service with the Army and commanded the First Battalion, 314th Infantry Regiment, 79th Division. He was wounded six times during World War II and was highly decorated. Among his more prominent decorations were the silver star with

two clusters and the bronze star with one cluster. Teague died Jan. 23, 1981.

The visitor center contains memorabilia and displays tracing the development of rocketry from its earliest origins in ancient China through the work of rocket pioneer

Dr. Robert Goddard and culminating in NASA's activities over the last twenty years. Lunar rocks, a full size lunar lander and the Apollo 17 capsule are among the many items on display.

Well over one million visitors pass through the center's doors each year.

Lovelace leaves NASA for post at General Dynamics

Dr. Alan M. Lovelace, former Acting Administrator for NASA, left July 11 for a position as Corporate Vice President — Science and Engineering at General Dynamics Corp., St. Louis, Mo.

In his new position, he will be responsible for directing and coordinating the company's engineering, research, advanced products and program development and for developing and implementing corporate engineering and research policy.

Lovelace retired as Deputy Administrator of NASA in December 1980 but remained on board through the first flight of the Space Shuttle Columbia and the appointment of a new administrator. He became Acting Administrator after the departure of Dr. Robert A. Frosch in January 1981.

Since entering federal service with the Air Force in 1954, Lovelace has held many research management positions. He served at the Air Force Materials Laboratory, Wright Patterson Air Force Base, Ohio from 1954

through 1972, having been named director in 1967.

From 1972 to 1973, he served as Director of Science and Technology with the Air Force Systems Command, Andrews Air Force Base, Washington, D.C. From 1973 to 1974, he was Acting Deputy Assistant Secretary of the Air Force for Research and Development.

Lovelace joined NASA in 1974 as Associate Administrator for the Office of Aeronautics and Space Technology. He was named Deputy Administrator in June 1976 by President Ford.

His awards include: the Presidential Citizens Medal, 1981; the Air Force Decoration for Exceptional Service, 1973; the National Civil Service Award, 1971; the Office of Aerospace Research Award for Outstanding Contribution to Research, 1970; the Air Force Association/Air Force Systems Command Meritorious Award for Program Management, 1969; the Air Force Commendation for Meritorious Civilian Service,

see Lovelace leaves pg. 4

STS-2 Sim

The first long-duration simulation of the second flight of Columbia was conducted at JSC Tuesday and Wednesday last week.

STS-2 prime crewmen Joe Engle and Dick Truly were on station in the fixed-base Shuttle Mission Simulator in Building 5 during the test.

This 33-hour exercise was a continuous on-orbit run from post-insertion through major crew activities on the second flight day.

Three teams of flight controllers operated consoles in the Mission Operations Control Room in Building 30 working with a variety of simulated anomalies. The simulations give the astronauts and flight control teams realistic training conditions in which to ready themselves for the second flight of the space shuttle, Columbia, presently scheduled for Sept. 30.

Veteran flight directors Neil Hutchinson, Chuck Lewis and Don Puddy were joined by new flight directors Hal Draughon and Tommy Holloway in heading the flight controller teams.

The second long-duration simulation of STS-2 will be a 52-hour session conducted in late-August. Currently, no continuous full-mission simulations are planned for the 5-day STS-2 mission.



New faces in old places

Mission Specialist/Astronaut Sally K. Ride joined the ranks of Capsule Communicators (CAPCOMs) as the first woman to fill that position. Dr. Ride will serve as CAPCOM for STS-2 Astronauts Joe Engle and Richard Truly. Ride's duty at the mission control console will take place during the operation of the Remote Manipulator System, the robot arm in the orbiter's cargo bay. Also pictured is STS-2 CAPCOM Mission Specialist/Astronaut James Buchli.

NASA and Northwest Airlines study how to dodge the ozone

Encouraging initial results were reported from the first operational test to determine the effectiveness of satellite data for helping airlines avoid heavy concentrations of ozone.

The two-month experiment, started last March, was conducted jointly by NASA, the Federal Aviation Administration (FAA), the National Center for Atmospheric Research (NCAR), and Northwest Airlines.

In the test, information from an instrument known as Total Ozone Mapping Spectrometer aboard the experimental Nimbus-7 spacecraft was transmitted to NASA scientists at Goddard who processed the data and relayed it within three hours to Northwest Airlines meteorologists in Minnesota for use in meteorological forecast activities.

Ozone, which can be encountered by airliners at high altitudes, has caused shortness of breath as well as eye, nose and throat irritation among some airline passengers.

Five research aircraft flights were flown in jet stream regions located by the Total Ozone Mapping Spectrometer to determine winds, temperatures, and air composition at as many as 10 different flight levels.

Initial findings from these flights showed that the jet stream axis (pattern) coincides with the area of highest total ozone gradient, and low total ozone amounts are found

where tropospheric air has been carried along above the tropopause on the anticyclonic side of the subtropical jet stream.

Additional research, current or planned, includes estimation of tropopause heights from total ozone data for airline use and for improvement of satellite temperature sounding data, and the quantitative inference of meteorological parameters, such as vertical motions, winds and vorticity, from total ozone maps.

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JSC Exchange Store Bldg. 11

(Store Hours 10:00 am to 2:00 pm)

Plitt Theater tickets - \$2.10 each

General Cinema tickets - \$2.40 each

Astroworld/Six Flags tickets - \$9.50

Postage Stamps - 18 cents - Book \$3.60 each



A new ring

Getting ready for a fast ejection is the purpose of the helmet retention assembly (HRA). This neck ring harness, designed for helmet attachment, was developed by the crew systems division for the first four STS test flights. The HRA was developed to be used with the helmet, retainer assembly, and boots to suit out astronauts for emergency ejection from a shirtsleeve environment in five minutes — two-thirds faster than donning a full pressure suit. During take-off and reentry, astronauts will be properly equipped for ejection, wearing full pressure suits and helmets. The HRA is on hand in case of an emergency where the craft would need to break orbit and reenter immediately. Pictured here wearing the HRA is its designer, Walt Salyer. Salyer retired from NASA in November 1980.

Bulletin Board

NARFE Meets August 7

Chapter 1321 of The National Association of Retired Federal Employees will hold the regular monthly meeting on August 7, at 1 p.m. in the Clear Lake Park Building, NASA Rd. 1. The Garza Travel Agency will present a program of travel in the Northwest. Refreshments will be served. Visitors are invited. For more information about NARFE and the local chapter, call Mary Olsen at 334-3270.

Spaceweek Souvenirs

Spaceweek 81 Promotional items will be on sale in Bldg. 11 Exchange store and at Space

Center Souvenirs (110 Nasa Rd. 1). Proceeds from the sale of these items will help defer the cost of promoting space on a national basis.

Annual Stamp show and bourse

"Two decades of space achievement" is the theme of Spacepex '81, the JSC Space Center Stamp Club's 11 annual stamp exhibition. Over 1500 pages of exhibits will be featured. The show will be held at Clear Lake High School Annex, across from the University of Houston at Clear Lake. Show hours will be 9 AM - 6 PM Saturday, July 25 and from 1

PM - 6 PM Sunday, July 26. Admission is free.

Breast Cancer

Breast cancer occurs in one of every fifteen women. Every woman needs to guard against the disease with regular physical examinations and monthly breast self-examination. When you find breast cancer early, before it has spread, the chances for cure are very high. A film on this vital subject will be shown with a Clinic physician in attendance on Wednesday, July 29 in Building 30 auditorium at 9:00 and 1:00.



Participation winners

The Payload operations division is the participation winner for the 11th NASA Intercenter fun run. Participants from that division are Lou Deluca, Rob Kelso, Cindy Major, Tandy Bruce, Kitty Havens, Mike Hawes, Dan Fennesy, Mariann Alberg, Tommy Keeton, and Gary Renick. Others from the division that did not participate but crowded into the picture anyway are John Hoover and Bill Molnar.

JSC offers smoking clinic

Learning to kick the smoking habit is difficult to say the least. "No one method works for everyone," said Nancy Hudgens, an American Cancer Society Representative planning a Smoking Cessation Clinic for JSC employees.

Hudgens quit smoking two years ago under this same method. "Smoking is a darn hard thing to quit. I want to help others quit; it's a terrific feeling," said Hudgens.

The course involves three major steps; awareness, habit-rehab, and then the final quitting.

In the initial meetings, participants become "aware" of their habit. That is why they smoke, when, and how much.

The next step is the "habit-rehab" stage. The "rehab" stage is transforming a smoker's old habit into a new habit. One "rehab" method is holding a cigarette in the opposite hand that they usually smoke with. Other new "habits" include hiding and counting cigarettes smoked. The theory behind this stage is that newly formed habits are easier to break than old ones.

The last and final stage is breaking or kicking the habit. Hudgens wouldn't go into detail about the workshop's methods so that the effective-

ness of certain techniques wouldn't be spoiled.

"You can quit, maybe not the first time, but the more times that you try, the better the chances for success," said Hudgens.

The class will be offered the first week in August and run for six weeks. The first 30 participant's 20 dollar deposit will guarantee them a slot in the

class. A 20 dollar refund will be given to all who finish the course.

Participants in the class will receive JSC training credit. Classes will be scheduled from 2:30-4:00 on Monday and Thursday during the first two weeks and then just on Monday for the remaining four weeks. Nancy Hudgens' extension is 3681 and mail code BT4.

Cookin' in the cafeteria

Week of July 20 - 24, 1981

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

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

Wednesday: Seafood Gumbo; Catfish w/Hush Puppies; Roast Pork w/Dressing; Chinese 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 w/Onions; Deviled Crabs; Roast Beef w/Dressing; Seafood Platter; Tuna & Noodle Casserole (Special); Whipped Potatoes; Peas; Cauliflower.

Week of July 27 - 31, 1981

Monday: French Onion Soup; Beef Chop Suey; Polish Sausage w/German Potato Salad; Breaded Veal Cutlet (Special); Okra & Tomatoes; Green Peas. Standard Daily Items: Roast Beef; Baked Ham; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Split Pea Soup; Shrimp Creole; Salisbury Steak; Fried Chicken (Special); Mixed Vegetables; Beets; Whipped Potatoes.

Wednesday: Seafood Gumbo; Fried Catfish w/Hush Puppies; Braised Beef Rib; BBQ Plate; Weiners & Beans; Shrimp Salad; Stuffed Bell Pepper (Special); Corn O'Brian; Rice; Italian Green Beans.

Thursday: Chicken Noodle Soup; Beef Stroganoff; Turkey & Dressing; BBQ Smoked Link (Special); Lima Beans; Buttered Squash; Spanish Rice.

Friday: Seafood Gumbo; Broiled Turbot; Liver w/Onions; Seafood Platter; Fried Shrimp; Meat Sauce & Spaghetti (Special); Green Beans; Buttered Broccoli; Whipped Potatoes.

At Gilruth Rec Center

Children's Nature Hike. A one hour hike for children 8 years and younger. An introduction to plants, animals and environment. Parents are encouraged to attend. Hike begins 10:00 AM Saturday, August 1st. Free.

Children's Tennis Lessons. Registration for children's tennis lessons are being held at the Gilruth Recreation Center.

Intermediate Junior Tennis. A class designed to improve basic skills. Class meets from 3:00 PM to 5:00 PM on Mondays and Wednesdays beginning July 20th. The 8 week class cost \$64.00

Advanced Junior Tennis. A class designed to sharpen your game. Class meets from 3:00 PM to 5:00 PM on Tuesdays and Thursdays, beginning July 21st. The 8 week class cost \$64.00.

Beginning Junior Tennis. A class designed for those who have never had a lesson. Class meets from 9:00 AM to 10:30

AM on Saturdays, beginning July 25th. The 4 week class cost \$30.00.

Saturday at the Movies. The next children's movie will be held on July 25th at 10:00 AM. Feature presentation will be "Buck Rodgers in the 25th Century", plus cartoons, coke and popcorn. Cost is \$1.00. Get your tickets at Building 11 Exchange Store.

Men's open and Women's "B" Softball Tournament. Sign up your team now for this tourney to be held the 7, 8, 9 August. Registration is limited to 24 men's teams and 12 women's team. Cost is \$65.00 per team.

Adult Dinner Theatre. Get your tickets at Bldg. 11 for the next performance of the EAA Dinner Theatre. Play will be "Once Upon a Mattress", a delightful musical. Shows will be held on August 7 and 8. Social hour each night is from 7:00 to 8:00 PM. Roast Beef Dinner is at 8:00 PM and

Showtime is 9:00 PM. Cost is \$10.00 per ticket.

Defensive Driving. Learn the art of safe driving and qualify for a 10% reduction in your auto insurance for the next 3 years. Class meets on Saturday, September 19 from 8:00 AM to 5:00 PM. Cost is \$15.00 per person.

3rd Annual Lunar Rendezvous Run. Sign up now for this 5 km race to be held on 25 July at 8:00 AM. Entry fee is \$6.00 per person, with T-Shirts to the first 500 to register. Entry fee is tax-deductible. Call x3944 for more information.

Smoking Cessation Clinic. A class sponsored by the American Cancer Society will teach you how to kick the habit. A 20 dollar deposit will be refunded if you complete the course. For information and registration contact Nancy Hudgens, BT4, x3681. The course is limited to the first 30 people who sign up before the Deadline of July 31.

Contamination monitor will check environment for remaining STS test flights

The Induced Environment Contamination Monitor (IECM), a desk-sized detector containing 10 instruments to check for contaminants in and around the Space Shuttle Orbiter cargo bay which might adversely affect delicate experiments carried aboard, will be shipped from NASA's Marshall Space Flight Center, Huntsville, Ala., to the Kennedy Space Center, Florida, in early July. It is scheduled for flight on the second Shuttle mission, expected to launch September 30.

The IECM, developed by the Marshall Center, is scheduled to fly aboard Shuttle missions two, three and four, and will be a part of Spacelab missions one and two.

Contaminants to be monitored during Shuttle flights might include any outgassing from materials within the Shuttle, as well as gases from the reaction jets which control the vehicle in orbit.

The IECM will operate during pre-launch, ascent, on-orbit, descent and post-landing. The on-orbit measurements include molecular return flux, background spectral intensity, molecular deposition and opti-

cal surface effects. During the other mission phases, dew point, humidity, aerosol content, and trace gas will be measured, as well as optical surface effects and molecular deposition.

These measurements will be made with 10 separate instruments: a humidity monitor, dew point hygrometer, air sampler, cascade impactor, passive sample array, optical effects module, temperature-controlled quartz crystal microbalance, cryogenic quartz crystal microbalance, camera/photometer, and mass spectrometer.

Project scientist for the IECM is Edgar R. Miller, a member of Marshall's Space Sciences Laboratory.

The IECM will operate attached to a release mechanism (also developed by the Marshall Center) in the cargo bay during the second Shuttle mission, but on later flights it will be released and will be moved about and outside the cargo bay by means of the Orbiter's Remote Manipulator System for a closer check on contamination, and then reattached.

NASA began strong manned mission contamination control efforts back during the Skylab missions of 1973-74 and, recognizing the possible limiting effects induced contamination might have on sophisticated observational programs planned for the 1980s, committed to an effort to insure that the induced environment would not be a problem on the Shuttle.

The purpose of the IECM is to measure the actual environment to determine whether the strict controls placed on the Shuttle system have solved the contamination problem.

After each Shuttle flight, the IECM will be returned to the Marshall Center for refurbishment. The flight data will be combined with Orbiter data furnished by the Johnson Space Center for a comprehensive analysis.

With the IECM instrumentation, contaminant sources may be identified and eliminated. The IECM will also provide data on the interaction of the induced and natural environments, and will provide critical data for planning of future Shuttle payloads.



STS-2 crew patch

The official crew insignia for STS-2 was designed by crewmember Joe H. Engle, commander, and Richard H. Truly, pilot. Their spacecraft, Orbiter 102 Columbia, is depicted along with a merged eagle and an American flag. The two stars signify the number of crewmembers as well as the second flight for Columbia and the second in the series of Space Shuttle missions.

Columbia Couplets

*Knock on the door of the threshold of space,
Dick and Joe, with your arm in place!*

*Extend the precision Columbia's hand
For a handshake on behalf of all of our land.*

*And clasp her versatile metal extension
To the spirit of a prolific new dimension.*

*With wings and an arm and technology galore,
What realms are there that we can't explore?*

*But exploration itself is not our sole aim,
As much as a vigil over the orb from whence you came.*

*Our eyes will be watching you follow the Scouts,
Red Ryder and Little Beaver who (in April) blazed your routes*

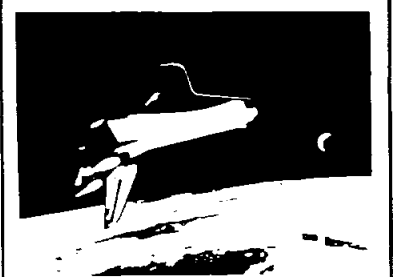
*It's hard to express the thoughts in humanity's head
That celebrate such a conquest with no blood shed.*

Mike Gentry
A-V Service Corp.

They keep comin'

Attendance at JSC is on the increase. On July eighth, the center crossed over the 1,000,000 visitor mark for this year. This is five weeks ahead of last year's 1,000,000 mark on August 16, 1980. Last Sunday, 8,696 tourists flowed into the center topping average Sunday attendance by more than 2500.

Roundup deadline is the first Wednesday after publication.



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.

Editor

Eddy Wittry

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 AP3 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.

Pets

English Setter pups, orange ticked, registered, \$100, 481-3564 after 5.

Cars & Trucks

'81 Renault 18i, 8000 mi., fully loaded, 2-tone black/silver 5 spd. 30/39 mpg, sticker \$10,250; sell \$7800 Ron Cohen x3035.

Honda Civic; 1979; standard; 18,000 miles; excellent cond. 34 mpg; silver colored \$3,150; x4773 new tires.

1980 Chevrolet fleetside pickup, beige, 6 cylinder, standard transmission. Lon x2886 or 5409.

'76 Chevy Cheyenne pickup, 5/8 ton, black, mags w/new tires, am/fm 8 tk \$2500 453-6257 after 6 pm.

1975 Ford van E-150 truck 6-right side window in loading door. Good mechanical cond. Radio avail. Fischer x2131, after 5 476-0257.

For sale: Motorola indash am/fm, cassette, car stereo. 24 watts total power output, auto-reverse. V. Levy x2676.

Wanted

10 speed bicycle, good condition, reasonable price. Call x2708/482-7775.

4x5 view camera in working order, w/lenses & accessories. Terry White, 332-5177.

Property & Rentals

For rent: lakehouse on Lake LBJ. Sleeps 8. Completely furnished except linens. good fishing, swimming, boating. Daily/weekly rates. Steve x2001.

For lease: University Trace Condominium 2 bedroom, 2 bath, 2 carports, fireplace, wetbar, patio, washer & dryer. x3371-482-1228 eve.

For rent: Heritage Park 3-2-2, close to Baybrook Mall easy access to Hwy. 45, \$475/mo plus deposit. 482-6609 after 5.

Rent, Lake Livingston, Cape Royale, 3 bdrm waterfront cottage by marina. Tennis, pool, golf, boat ramp. By week 488-3746.

For rent: Galveston By-The-Sea Condominium. Two bedroom furnished apartment for rent by day, week, or month. Clements 474-2622.

Carpools

From vicinity of Southwest Freeway and Loop 610. Hours 7-3:30 can be 7:30-4 if necessary Al x4158.

Want to join or form carpool from downtown/Allen Parkway/River Oaks area. Call Ron Cohen x3035.

Household

Sofa 100 inch, excellent condition, best offer. Eggleston 482-4239.

20 cu. ft. Sears upright freezer old but in good shape \$100. Ed 471-2542 x6353.

Coffee table, solid wood, colonial style, paint it the color you like, good condition. C. W. x2605.

Stratolounger, deluxe, vinyl, light brown, built-in vibrator, excellent condition, full size \$95. 643-8944.

Beautiful old TV console cabinet. Excellent wood finish, on rollers, extra speakers, your 17" or 19" easily sets inside. 643-8944.

Musical

Drum set-Ludwig, vialite (clear) 5 pieces, Hi-Hat cymbals with stand and stool-excellent condition-\$550 call 471-2578.

Player piano recently reconditioned, lots of rolls, black walnut dressers, kerosene lamps 100 yrs plus old. J. C. Waite x4241-333-2442.

Miscellaneous

For sale: Sears galvanized gymset w/new plastic seats. \$37 firm. Bland 488-5051 after 5:30 p.m.

Aluminum house guttering; 63'; some downspouts. Yours for the taking. 333-3071.

Police/fire scanning monitor radio, Radio Shack Pro-47, VHF-lo/VHF-hi/UHF, 10 channels, hardly used, like new. call Ron Cohen x3035.

Dictation cassette system, also cassette recorder, telephone recorder, made by Craig, includes hand unit. \$40 M.C.W. x4105.

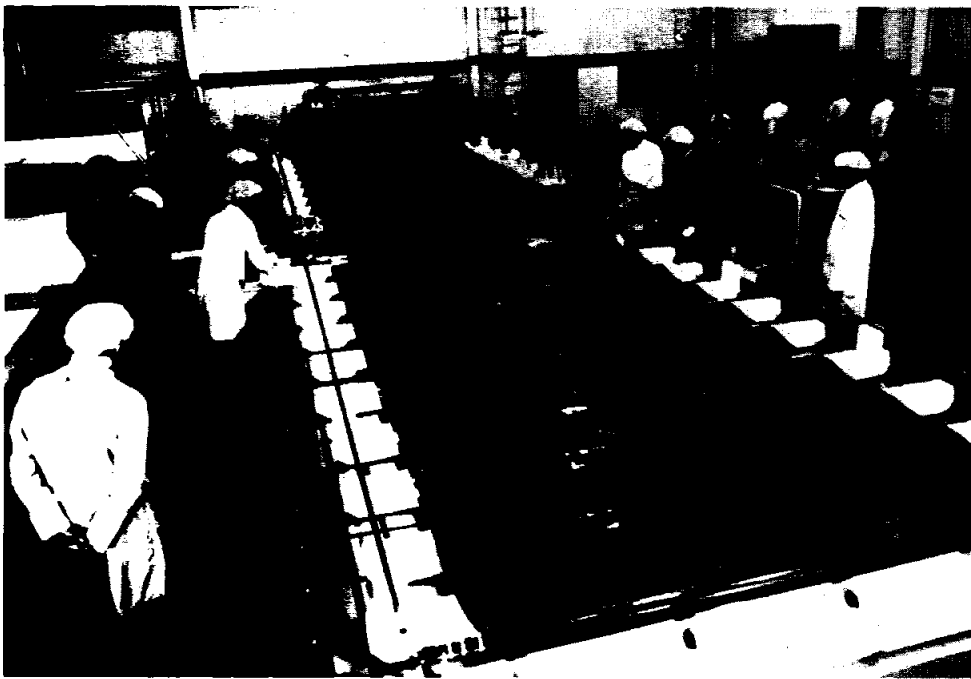
Cycles

'79 Honda Hawk 400, Type I. Custom seat & rack, cover, original seat 48 mpg excellent bike for beginners & commuters big enough for the hiway. \$1200 Mr. Drews x4326.

1980 Honda 750 F 4000 miles, excellent condition, luggage rack, faring, adult owner, just pay off note plus \$150. 460-0236 after 6.



People Helping People
The United Way



Solar wings

One of the two solar wings which will power NASA's Space Telescope undergoes deployment testing on a water table at a British Aerospace Engineering plant in Bristol, England. The company is a prime contractor of the European Space Agency, which is responsible for design and development of the roll-out solar arrays. Electrical power — 4000 watts — will be provided to the spacecraft's electrical subsystem for conditioning, storage and distribution. The Space Telescope, being developed under overall management of NASA's Marshall Space Flight Center, Huntsville, Ala., is scheduled for launch aboard the Space Shuttle in 1985. The two solar arrays contain a total of approximately 48,000 solar cells. Each wing measures about eight feet wide and 18 feet long.

Eight launches of expendable rockets scheduled this year

Eight more launches of expendable rockets from NASA facilities on the East and West coast are scheduled in 1981. As many as five more rockets may be launched by NASA's Kennedy Space Center in 1981 from facilities on Cape Canaveral Air Force Station, and three launches are planned from KSC facilities at Vandenberg Air Force Base, California.

Launches planned from Cape Canaveral are divided between the workhorse Delta rocket and NASA's most powerful expendable vehicle - the Atlas Centaur. Vehicles launched from Vandenberg will include two Delta rockets and an Atlas-F, launched by the Air Force with NASA performing a monitor-only role.

NASA has successfully launched

three rockets this year. The first launch of 1981 occurred on February 21 - that of an Atlas Centaur rocket carrying a COMSTAR commercial communications satellite.

Back-to-back launches followed in May. On May 22, the GOES-E weather satellite was successfully hurled into geosynchronous orbit aboard a Delta rocket. Little more than 24 hours later, Atlas Centaur 56 rocketed away from its launch pad, putting an INTELSAT V communications satellite into orbit some 22,240 miles above the equator over the Atlantic Ocean.

All of the remaining launches scheduled from Cape Canaveral are reimbursable missions - which means the customer reimburses NASA for the cost of the rocket and all related launch services.

Launches planned aboard Atlas Centaur rockets include a FLTSATCOM-E, military communications satellites, and an INTELSAT V commercial communications satellites.

Planned for launch aboard Delta rockets are two RCA commercial communications satellites - RCA D and RCA Prime - and the second in a series of Satellite Business Systems satellites - SBS-B - used for business communications needs.

Each of the five remaining spacecraft to be launched from Cape Canaveral are intended for geosynchronous orbit 22,240 miles above the Earth's equator.

Launches planned for NASA's West Coast facility include a polar-orbiting weather satellite - NOAA-C - aboard an Atlas F rocket, and two NASA scientific spacecraft, the Dynamic Explorer and the Solar Mesospheric Explorer. Both of the NASA scientific payloads will be launched on Delta rockets.

Launch dates listed below are tentative. Final determination of the exact launch date will be made closer to launch.

Lovelace leaves

from pg. 1

1959; the Flemming Award, 1958; and the AFML Clares J. Cleary Award, 1956.

Author of many technical papers, Lovelace is a fellow of the American Institute of Aeronautics and Astronautics, and a member of Sigma Xi, American Men and Women of Science, Phi Beta Kappa, National Academy of Engineering, the Air Force Association and is a fellow of the American Astronautical Society. In 1979, he was elected chairman of the Advisory Group for Aerospace Research and Development (NATO).

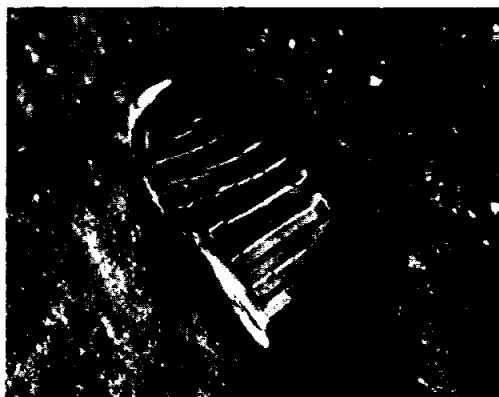
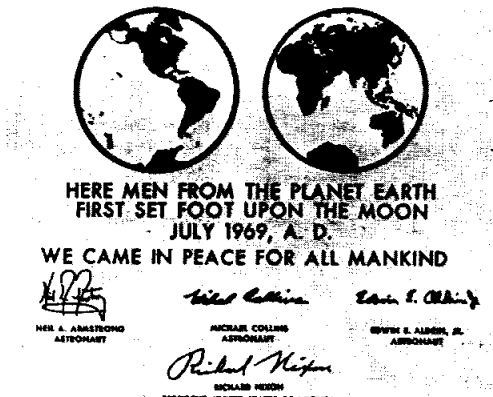
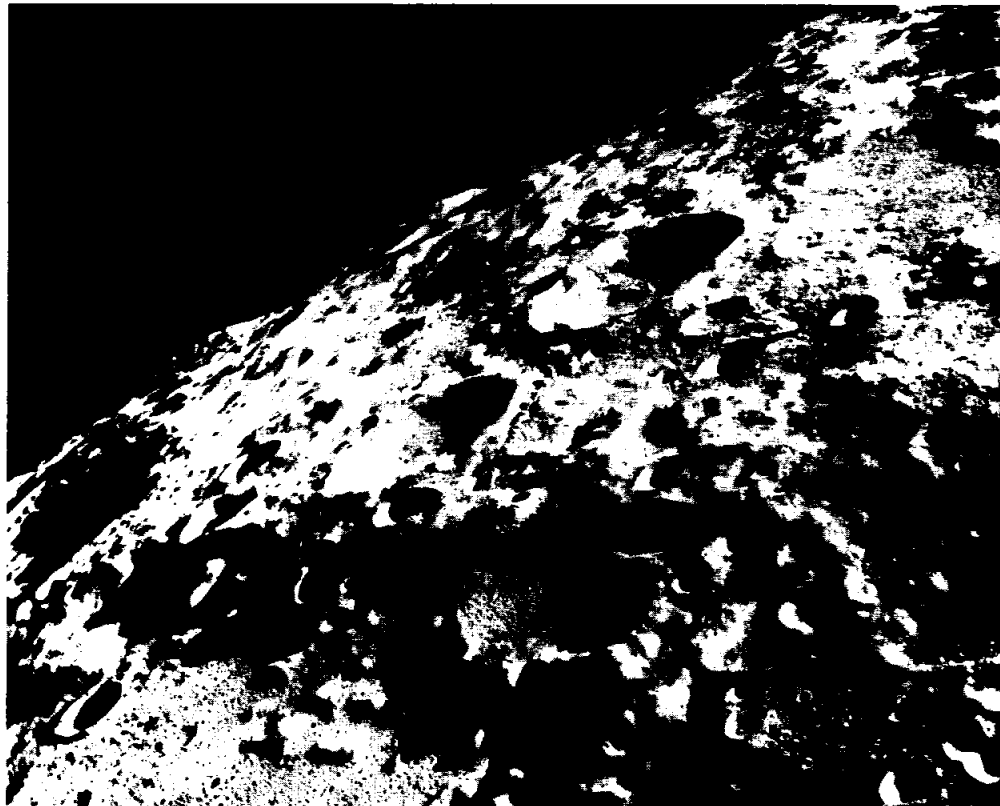
Born in St. Petersburg, Fla., he received his bachelor's, master's and doctorate degrees in chemistry from the University of Florida.

Married to the former Kathryn Logan of Bridgeport, Conn., the couple are the parents of a son William M. and a daughter Denise T.

Payroll Savings.

The cold, hard, calculating way to get a nice, warm feeling of security.

12 years ago...



Footprints and flags

Apollo lunar overshoe tread marks will lie for millenia undisturbed in the grey sand at Tranquility Base. Tech Services' stainless steel plaque on Eagle's talon will become a souvenir for some future moon miner as his ore buggy waddles through the ghost base where Neil Armstrong and Buzz Aldrin made those toddling first steps away from Mother Earth's apron strings. Twelve years ago Monday, unabashed national pride was

swept through Mission Control Center-Houston by flags in the hands of ecstatic flight controllers. Armstrong, Aldrin and Mike Collins have moved on to new careers since carrying the fire to Tranquility Base, but the memory of those events on that July evening will not soon dim for the flight crew or for those back on Earth who made it all happen.