NASA
Lyndon B. Johnson Space Center

Space News Roundup

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In his first official act as the new Director of the Johnson Space Center, Jesse W. Moore addresses about 1,000 employees Feb. 28. "We will continue with a renewed spirit and a strengthened sense of purpose," Moore said.

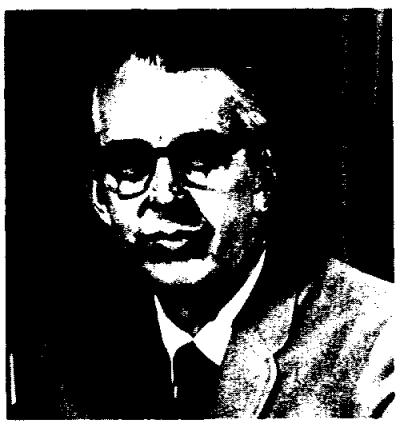
Reagan nominates Fletcher to head NASA

President Reagan has nominated James C. Fletcher to be Administrator of the National Aeronautics and Space Administration. He would succeed James M. Beggs.

Dr. Fletcher is a consulting engineer and also serves as the Whiteford professor at the University of Pittsburgh. He served as the Administrator of the National Aeronautics and Space Administration in 1971-1977. He was the President of the University of Utah in 1964-1971.

He was a founder of Space Electronics Corporation in 1958 and served as President until 1960 when the company merged with Aerojet-General Corporation to form Space-General Corporation. He became President of Space-General Corporation in 1960 and served as Chairman of the Board in 1961-1964.

Dr. Fletcher served as a consultant, then member, of the President's Science Advisory Committee in 1958-1970 and a member of the Air Force Science Advisory Board in 1962-1967. He was made an associate fellow of the American Institute of Aeronautics and Astronautics in 1962 and a trustee of the Aerospace Education Foundation in 1966.



James C. Fletcher

He graduated from Columbia University (A.B., 1940), California Institute of Technology (Ph.D., 1948) and Lehigh University (LL.D., 1978). He is married, has four children and resides in McLean, Virginia. He was born June 5, 1919 in Millburn, New Jersey.

Hutchinson leaves post

Neil Hutchinson, Space Station Program manager, has stepped down from that job for personal reasons effective February 28, 1986. He was named program manager in April 1984 shortly after NASA formed the program office and assigned overall responsibility to JSC.

Hutchinson will remain with JSC as Assistant to the Director of Space Operations. John W. Aaron, currently deputy program manager, will be acting program manager until a replacement is named.

NASA acting administrator William R. Graham said, "Neil has been instrumental in forging the agency's Space Station team and has led the project through its critical conceptual and initial design phases to the point we are ready to move on to final design and construction phases. Neil's successful management of our Space Station effort required considerable personal sacrifice on his part, and I am pleased that he plans to continue in a senior capacity at NASA."

Truly outlines Task Force organization

Rear Admiral Richard H. Truly, Associate Administrator for Space Flight, last week announced assignments to the NASA 51-L Data and Design Analysis Task Force.

The task force is collecting and analyzing information to support a thorough review of all aspects and potential causes of the accident in support of the Presidential Commission assigned to perform the investigation. The task force, designed to parallel the recently announced structure of the Presidential Commission, will facilitate transfer of information from the NASA task force to the commission.

Personnel assigned to the task force include: Truly, chairman; James R. Thompson, vice chairman; Robert Crippen, NASA astronaut; Col. Nathan Lindsay, Commander, Eastern Space and Missile Center; Joseph Kerwin, Director, Space and Life Sciences, Johnson Space Center; Walter Williams, Special Assistant to the NASA Administrator; and the various team leaders and deputies of the analysis teams.

The team leaders, deputies, and responsibilities of those teams are:

Project Analysis Team: Thomas (Jack) Lee, Deputy Director, Marshall Space Flight Center, Leader; Clay McCullough, Manager, Support Equipment and Logistics Office, JSC, Deputy. This team is responsible for information on design, development, test and evaluation, and production and acceptance tests.

Launch Systems and Processing Analysis Team: Thomas Utsman, Deputy Director, Kennedy Space Center, Leader; Col. Robert Bourne, Director, Space Shuttle Operations, Vandenberg AFB, Deputy. This team is responsible for information on Shuttle system processing, launch readiness and pre-launch security.

Failure Analysis Team: Alton Jones, Director of Flight Assurance, Goddard Space Flight Center, Leader; John Thomas, Manager, Spacelab Program Office , MSFC, Deputy. This team is responsible for maintaining the accident data base, and for information on anomaly tree development and scenario development.

Mission Operations Analysis Team: Tommy Holloway, Chief, Flight Director Office, JSC, Leader; Harold Draughon, Manager, Mission Integration Office, JSC, Deputy. This team is responsible for information on Shuttle mission planning, mission operations, schedule pressures and crew safety.

The task force organization also will include two support teams which will not be involved in the actual analysis of information. The two teams are:

Salvage Support Team: Col. Edward O'Connor, Jr., Director of Operations, 6555th Aerospace Test Group, Leader; Edgar Weber, Chief, Project Engineering Office, KSC, Deputy. The team is responsible for debris location and recovery and reconstruction.

Photo and TV Support Team: Daniel Germany, Deputy Manager, Space Station Project Office, JSC, Leader; Lt. Col. Thomas Redmond, Deputy Manager, National Space Transportation System Program Office, JSC, Deputy. This team is responsible for collection, processing and enhancement of photographic and video materials relating to the 51-L accident.

Day-to-day operations of the task force will be supervised by Vice Chairman Thompson.

Concert to benefit Challenger *Fund*

Houston's opera, ballet, and symphony will be joined by singer John Denver for a special evening of entertainment in Jones Hall March 27 to honor the *Challenger* Seven.

"The concert will be an upbeat, special commemoration where all Houstonians can pay tribute to the seven *Challenger* astronauts and show their support of the U.S. space program," said David H. Langstaff, chairman of the Benefit Concert Planning Committee and Senior Vice President of Space Industries, Inc.

Funds from the concert program will go to the *Challenger* Benefit Fund. The theme of the concert is "Houston honors the *Challenger* Seven."

The program marks the first time in recent memory that four of Houston's major art groups have performed in a single event on the same stage.

Participating organizations will include the Houston Symphony Orchestra, the Houston Ballet, the Houston Grand Opera, the Society for the Performing Arts and the Theatre Under the Stars Humphreys School of Musical Theatre.

The Society for the Performing Arts is serving as coordinator and producer for the concert. In addition to performing, Denver will serve as master of ceremonies. None of the performing arts groups nor Denver are charging fees for participating in the benefit.

The concert is being sponsored by the Houston Chamber of Commerce, Space Industries, Inc., the Space Foundation and the Clear Lake Area Economic Development Foundation. Underwriting is being provided by Lockheed Engineering and Management Services Co., Exxon Co. USA, Rockwell International, The Mischer Corp., the Inverness Group, the Houston Post, Johnson & Higgins, Arthur Andersen & Co., Peat Marwick-Bay Area, Eagle Engineering, MBank, Andrews & Kurth, Safeway, KLEF Radio and KTRK-TV.

The *Challenger* Benefit Fund was formed to provide for the proper disposition of public contributions in memory of the 51-L crew, according to Dr. Joseph P. Allen, Executive Vice President of Space Industries, who was asked by the crew families to act as director of the fund. Also serving as trustees are former JSC Director Gerald D. Griffin and Gary Miglicco, a partner in the accounting firm of Peat Marwick & Mitchell.

The fund was set up to provide financial support to dependents of the 51-L crew, as well as to dependents of NASA employees or civilians who are killed or disabled in the future while undertaking manned spaceflight. The fund also will provide financial support for projects undertaken in memory of the 51-L crew.

Tax deductible contributions to the *Challenger* Benefit Fund may be sent to: *Challenger* Benefit Fund, c/o Texas American Bank, Trust Division, P.O. Box 2529, Houston, TX 77252.

Tickets for the benefit concert range from $8 to $30 and are available at the Houston Ticket Center in Jones Hall and from all Ticketron outlets, including Joskes and Showtix. The concert begins at 7:30 p.m.

Bulletin Board

Park named for Challenger *Seven*

Harris County Commissioners have named the 328-acre West NASA Parksite the *Challenger* Seven Memorial Park in honor of the STS 51-L crew. The park, located on Clear Creek, was opened last May and features a bird sanctuary, natural wetlands and a hardwood forest. The park is located at 2301 West NASA Road 1 between FM 528 and I-45. Facilities now include a boat ramp, deck walk, restrooms and a picnic area. Future plans call for a canoe livery, an outdoor education program and a playground. The park encompasses a stretch of Clear Creek where the stream widens from 70 to 150 feet.

AIAA plans spacecraft design lectures

The Houston Section of the American Institute of Aeronautics and Astronautics will offer an Invited Lecture Series on Spacecraft Design in April and May. The lectures will be held from 5 to 7:30 p.m. each Tuesday in April, and on May 6, May 13 and May 21. Speakers will include Dr. Maxime A. Faget, President of Space Industries, Inc., Seymour Rubenstein, Vice President and General Manager for the Shuttle Orbiter, Rockwell International Corp., John O'Neill, Assistant Director for Operations in the Mission Operations Directorate at JSC, and Jon D. Erickson, Manager of the Artificial Intelligence and Information Sciences Office at JSC. Registration is required, and is $90 for members and $115 for non-members. The lectures will be held at the Bldg. 2 Teague Auditorium. For more information, call Dr. J. C. Shadeck at 280-6007.

Stress is topic of presentation

A presentation on managing stress will be given by the Employee Assistance Office from 11:30 a.m. to 12:30 p.m. March 31 in the Bldg. 30 Auditorium. The goal of the talk is to provide participants with an opportunity to examine stress factors in their lives and to examine and enhance their abilities to cope effectively with those factors. The presentation will be made by Dr. Michael Haro.

NARFE meets April 1

The next meeting of the NASA Chapter of the National Association of Retired Federal Employees will be at 1 p.m. April 1 at the Harris County Park Bldg. at 5001 NASA Road 1. The program will cover auto and home fire prevention. For more information, call Dick Jacobs at 532-1075.

Program to explore human role in space

The impact of spaceflight on humanity—and vice versa—will be the topic of a one-day program in July sponsored by the Texas Committee for the Humanities, the University of Houston-Clear Lake and JSC. The program will examine the historical, social and ethical impacts of the space program, and the human values which influence and have been influenced by space technology. Also on the program will be a discussion which is close to home—how has the presence of JSC and the space program affected Houston and the Bay Area? Speakers will include former astronaut Gerald P. Carr and Dr. Roger Bilstein, Professor of History at UH-CL. The program begins at 9 a.m. July 18 and will be part of this year's Spaceweek offerings.

"Great Space Race" to air on PBS

One year after its landmark four part series called "Spaceflight," a history of the U.S. space effort, the Public Broadcasting Service is planning another documentary, this time on the major international space programs. "The Great Space Race," which airs in four parts beginning May 14, will cover the present and future of the programs now being pursued by China, the Soviet Union, the European Space Agency, Japan and the United States. The series will detail plans now being formulated for space stations, lunar colonies and mining operations, expeditions to Mars, advanced space vehicles and other projects. The first episode, "Payload in the Sky," will air at 8 p.m. May 14. The following week, a second episode, "Unlocking the Universe," will air at 8 p.m. May 21. The third episode is "The Earth Below," which airs at 8 p.m. May 28. The final program is "The Next Civilization," which will air at 8 p.m. June 4. The series was produced for PBS by Pacific Productions and the Pacific Mountain network.

Shuttle Program Deputy Manager Richard H. Kohrs, left, speaks informally with three members of the Presidential Commission investigating the 51-L accident. The commission members, here last week, are, left to right, Arthur B. C. Walker, a professor of applied physics at Stanford University; Robert W. Rummel, former Vice President of Trans World Airlines; and Joseph F. Sutter, Executive Vice President of Boeing Commercial Airplane Co.

Bradshaw honored by ABWA

Lois Bradshaw, a program analyst in the Management Integration Office for the Shuttle program, has been elected Woman of the Year for 1986-87 by the Clear Lake Chapter of the American Business Women's Association.

Bradshaw, a JSC employee since 1962, was promoted to her first supervisory position in 1974. She served as Manager of the Program Administrative Office prior to her present assignment in the National Space Transportation System Program Office. In that job, she is responsible for development and operation of information systems and program communications.

In addition to her job duties, Bradshaw is active in employee relations programs and has served on the NASA/JSC Exchange Council. She also is a member of the Loan Review Committee at the JSC Federal Credit Union.

Lois Bradshaw

She has been an active member of the ABWA Clear Lake Area Chapter since 1974, and was Chapter President during the 1980-81 year. She has served on a variety of committees and has represented the chapter at two national conventions and eight regional conferences.

Bradshaw holds an associate arts degree in business administration, and 25 years after earning that degree, marrying and raising a daughter, returned to college, taking night courses at the University of Houston-Clear Lake. She graduated Cum Laude in 1982 with a bachelor of arts in public management and received her Master's in 1984.

She enjoys traveling and has visited eight foreign countries. She recently won a third place trophy in the 5K Chancellor's Cup Run.

Uranus' solar environment monitored in space

For the first time scientists have used a team of two spacecraft in the far outer reaches of our solar system to provide major planetary information.

The two spacecraft, Voyager 2 and Pioneer 11, conducted operations about two billion miles away from Earth. Voyager 2 scientists are studying the planet Uranus' magnetosphere, which is shaped by the solar wind. Pioneer 11, located about 558 million miles outside Uranus' orbit, monitored the planet's solar environment to provide a background for interpreting the findings of Voyager 2.

The cooperative effort of both Pioneer 11 and Voyager 2 may be repeated when Voyager 2 approaches Neptune in 1989.

Both the spacecraft, tiny in comparison to the entire solar system, conducted their team effort in an environment where the sunlight received is only 1/400th that of Earth. This far out, temperatures approach absolute zero. Further, Uranus is about twice as far from Earth as Saturn (about two billion miles) and thus, data transmission to Earth is slow. The round trip communication time from Pioneer 11 to Earth is three hours by radio waves that travel at the speed of light (186,000 miles a second).

Several antennas at NASA's Deep Space Network (DSN) were electronically linked to receive and process more information faster. Both the spacecraft used the stations in Australia, Spain and California.

Voyager 2 made its first approach to Uranus on January 24, 1986, to study the planet's magnetosphere—the region demarcated by its magnetic field which extends far outside the planet's atmosphere.

The electrified solar wind, a stream of ions and electrons emitted by the Sun, interacts with Uranus' 1-million-kilometer-wide magnetosphere. When the solar wind rushes into the magnetosphere, at about a million miles per hour, a resistance is created at the point of contact which deforms certain regions in the magnetosphere. This often causes the magnetosphere to produce a long tail that extends away from the planet.

Scientists want to compare the solar wind-magnetosphere interaction region at Uranus with the pure solar wind at Pioneer.

Pioneer 11 started its monitoring on January 26, 1986 and continued for the next five days in the far outer solar system environment that has been traversed by only two spacecraft before, Pioneer 10 and Voyager 1.

Voyager 2, launched in August 1977, and Pioneer 11, launched in April 1973, formed an eight-degree angle to the Sun and were located about 600 million miles from each other. This position enabled both spacecraft to effectively moniton the solar wind.

The solar wind is monitored by a plasma analyzer. The analyzer uses detectors, with voltages passing through them, and the orientation of the instrument itself to determine the density, energy and direction of the wind.

By the time the two spacecraft reach Neptune, they will be close enough to each other to continue to work as a team, said Dr. Bruce Randall, who works on the Pioneer 11 spacecraft mission.

Although Pioneer 11 only operates on 7 1/2 watts of power, scientists are optimistic about its ability to monitor Neptune's solar environment four years from now.

"Pioneer 11 should be working fine and will have adequate power to provide information," said Richard Fimmel, Pioneer 11 project manager.

Pioneer 11 found that the solar environment around Uranus was very quiet. This is due to the fact that the Sun, at present, is in its inactive phase. The Sun has an 11-year cycle in which it goes through active and inactive phases.

Randall said from the Pioneer 11 findings, Voyager 2 could claim that the environment it saw "was static as far as the magnetosphere of Uranus" was concerned and uninfluenced by the outside environment.

Voyager 2 is on its course to Neptune and Pioneer 11 continued to move away from Uranus to Neptune's orbit at the end of last week.

Gilruth Center News

Call x3594 for more information

Beginning shorthand — Learn the multi-purpose skill in this class which begins March 26 and runs from 5:30 to 8:30 p.m. for 6 weeks. The cost is $85 per person.

Speedreading — Learn the techniques for greater reading speed and comprehension in this class, which meets from 6:30 to 8:30 p.m. beginning March 25. The class meets for 7 weeks and costs $70 per person.

Word processing — Work with several brands of word processors in the 6-week course. The class meets from 5:30 to 8:30 p.m. beginning March 26 and the cost is $190 per person.

Beginning computer — You'll be able to converse in computerese after taking this class, which begins March 24. The class meets from 7 to 9 p.m. and the cost is $20 per person.

Defensive driving — Learn to drive safely and qualify for a 10% reduction in your auto insurance for the next three years. This one day class meets from 8 a.m. to 5 p.m. on April 19. The cost is $20 per person.

Dancercise — Part dance and part exercise, this class gradually gets you into shape. The six-week course begins April 8 and meets Tuesdays and Thursdays from 5:15 to 6:15 p.m. The cost is $25 per person.

Yoga — This 6-week class begins April 15 and meets from 7 to 8 p.m. The cost is $28 per person.

Guitar — You don't need any musical experience to take this beginning class, which meets for 6 weeks starting April 2. The class meets from 7 to 8 p.m. and the cost is $25 per person.

EAA cards — Cards for membership at the Rec Center are now available. Cards are mailed to NASA employees. Contractors should contact Helen Munk at x3594 for registration details.

Notice to Retirees

Retired JSC employees who receive the *Space News Roundup* should contact the Personnel Office, not the Roundup office, for change of address notification. Send change of address information to Personnel Office, Mail Code AH76, NASA Johnson Space Center, Houston, TX 77058. Please allow 60 days for processing.

17th Lunar Science Conference opens next week at Gilruth Center

The Seventeenth Lunar and Planetary Science Conference will be held March 17-21 at the Johnson Space Center.

The conference has been held annually since the first lunar material was returned to Earth after Apollo 11 in 1969.

Highlights of this year's conference include discussions on Mars and Venus. Scientists will discuss what might be learned about the quantity and distribution of subsurface volatiles from a detailed examination of Martian surface geology. In addition, five Russian scientists will conduct sessions on Venus and will present new data obtained from the Soviet Venus Radar Mapper mission.

The Program Committee has constructed 29 technical sessions from a total of 499 abstracts received from scientists from all over the world. The general program structure includes a variety of topics.

A special session will be held from 1:30 to 5 p.m. on Monday, March 17, to discuss Martian geomorphology and its relation to subsurface volatiles. To help address questions, a panel discussion/debate will follow at 7:30 p.m. Guest participants will make up the evening panel.

Tuesday, March 18 sessions will focus on: lunar highlands (samples and meteorites); Martian tectonics/planetary stress and strain; and Mars remote sensing. That evening the Chili Cook-Off/Bar-B-Q will be held on the grounds of the Lunar Planetary Institute.

Wednesday, March 19 sessions will include: presentations from five Russian scientists on the Venera and Vega missions to Venus and Halley's Comet; and other discussions on meteorites and interplanetary dust.

Beginning at 8 p.m. on Wednesday, the public is invited to a special session to be held in the Teague Auditorium. Two speakers will conduct presentations. Mr. Geoffrey Briggs, Director, Solar System Explorations Division, NASA Headquarters, will discuss the status of NASA's planetary exploration program. Dr. Laurence Soderbolm, U.S. Geological Survey, Flagstaff, Arizona, will present data on Uranus, recently obtained by the Voyager 2 spacecraft.

Thursday, March 20 conference highlights include: dynamics of the Earth (early atmosphere, crust, mantle and core); meteorites and the origins of the Solar System; origins of the Moon; and geology of Mars.

On the last day of the conference, Friday, March 21, there will be discussions on planetary physics and the Galilean moons of Jupiter.

Other conference highlights will include posters entered in the Technical Poster Session that will be on display each day in the Gilruth Center. Also, meteorite field trip tours of the Antarctic Meteorite Laboratory at JSC will be offered to conference registrants during the week. Each tour will include opportunities to view freshly cut surfaces of selected chondrites and achondrites, including new slabs of a meteorite believed to have originated on Mars.

All conference activities, technical sessions, exhibits, poster sessions, etc., unless otherwise listed, will be held at the Gilruth Center.

Registration will begin Sunday, March 16, at 6 p.m. with registration and an open house at the Lunar and Planetary Institute. The registration fee for the conference is $35. Registration will continue throughout the conference on the 2nd floor of the Gilruth Center at the Johnson Space Center.

—*Janet Ross*

First hardware prototypes for Station delivered

The first hardware prototypes for the Space Station—advanced Ku-band communications gear for EVAs—were delivered to JSC March 4.

The communications system, built by RCA under contract to JSC, would allow for higher fidelity and more potential in the contacts between the Station or a Shuttle Orbiter and the EVA crew person.

Transmission in the Ku-band would allow the astronauts to send back live television pictures. It would also allow the Station or the Orbiter to transmit construction diagrams, for example, for viewing by the astronaut through a mini-heads up display inside the helmet.

The prototypes—which in final flight form will be the size of a large cigar box—are breadboards which will be tested here for several weeks in Bldgs. 14 and 44.

Ultimately, the Ku-band system will be integrated into a multi-access communications setup linking the Space Station, the Orbiters, satellite factories and orbital transfer and maneuvering vehicles, as well as EVA astronauts.

Dr. William Simone, Space Station Level C Program Manager for Advanced Development, accepted the equipment for NASA.

AIAA inducts Associate Fellows

The Houston Section of the American Institute of Aeronautics and Astronautics has announced new Associate Fellows. The Associate Fellows, among them two members of the *Challenger* crew, were recognized for professional standing and outstanding contributions by the officers and directors of the institute.

The newly admitted Associate Fellows are: Guion S. Bluford, Jr., Sharon Barnes Castle, Owen K. Garriott, David W. Gilbert, Dr. Carolyn Huntoon, Ralph M. Lawton, Dr. Roscoe Lee, David C. Leestma, Dr. Lubert J. Leger, Marian L. Lewis, Dr. Robert E. Lewis, Dr. Riley D. McCafferty, Ellison S. Onizuka, Donald R. Puddy, Dr. Judith A. Resnik, Dr. Kathryn Sullivan, James D. A. van Hoften, Loren J. Shriver, James T. Visentine, and Richard L. West.

Associate Fellows must have at least 12 years of professional experience and must have accomplished or been in charge of important engineering or scientific work, or have done work of outstanding merit, or have otherwise made outstanding contributions to the arts, sciences or technology of aeronautics or astronautics. The 1000-member Houston Section currently has 101 Associate Fellows.

Space Foundation sets up fund

The United States Space Foundation has outlined to NASA plans to provide a central national focal point for a variety of fund raising activities for construction of a replacement Orbiter for the *Challenger*.

The foundation is a private, nonprofit, educational organization established to stimulate international dialogue on the beneficial uses of space and to integrate space education materials into the curriculum of schools at all levels.

As part of its plan, the foundation has established the *Challenger* 7 Fund, which already has received significant contributions and has marshalled the support of a number of individuals and organizations. The foundation ultimately plans to donate the contributions to NASA for its use in financing a relpacement Orbiter should the U.S. Congress authorize a replacement.

Acting NASA Administrator Dr. William R. Graham, after having been advised of the foundation's plans, praised the basic thrust of the plans and said, "I believe that activities of this nature are very responsive to the wishes and the support provided by Americans in response to the *Challenger* tragedy.

"When and if a replacement Orbiter is authorized, and when pending legislation is in place which would permit NASA to accept donations, we will be pleased and honored to accept private contributions through the auspices of the foundation and from other sources," Graham said.

"It would be a fitting way for individuals and organizations to participate in the Space Shuttle program and to honor the *Challenger* crew," he added.

Contributions can be addresed to the *Challenger* 7 Fund, United States Space Foundation, Post Office Box 51-L, Colorado Springs, Co., 80901.

Astronaut Lind to retire

Astronaut Don L. Lind, Ph.D., will retire from NASA and join the faculty at Utah State University as a professor of physics at the beginning of the 1986 fall quarter.

Lind said the change is the result of several months of discussion with the university, dating to late 1985. At Utah State, he will continue research projects he has in progress, in addition to teaching physics classes.

Lind has been a NASA astronaut since 1966. He flew aboard the Orbiter *Challenger* on mission 51-B in April 1985. During that seven-day mission he performed experiments in a variety of scientific disciplines in the Spacelab module.

Utah State has been active in upper atmospheric and space research for some three decades. Its scientific projects on the Space Shuttle have included both professional and student experiments.

51-L ascent timeline

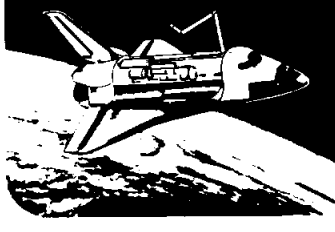
Following is a detailed timeline of the events which occurred on the STS 51-L mission.

The initial timeline, compiled by the Data and Design Analysis Task Force, was released Feb. 14. This chronology also includes updates made possible by further study. The timeline and those updates were presented to the Presidential Commission on the Shuttle accident March 7 by Thomas Moser, Deputy Associate Administrator for Space Flight.

The times expressed are measured in seconds following the command for SRB ignition, or T-minus 0.0, which was 10:38:00.010 CST Jan. 28.

Launch-6.6 seconds: Space Shuttle Main Engines ignition command.
L-0.0: Solid Rocket Booster (SRB) ignition command.
L+0.0587: First movement of the vehicle. Up to this point, all events have been nominal.
L+0.531: Camera 60 provides first evidence of smoke originating from the right hand solid rocket motor in the vicinity of the aft field joint.
L+1.606: Camera 60 shows smoke from the field joint is darkest.
L+2.147: Camera 60 shows smoke extends halfway across right hand SRB.
L+7.724: Initiation of roll maneuver.
L+12-13: Last evidence of smoke seen by camera 217.
L+20.084: Main engine throttle down to 94% begins.
L+21.124: Roll maneuver completed.
L+21.604: Right hand SRB begins thrust decrease for passage through period of maximum dynamic pressure (Max Q.)
L+22.204: Left hand SRB begins thrust decrease for Max Q.
L+36.084: Main engine throttle down to 65% begins.
L+40.0: Vehicle responds to wind.
L+52.084: Main engine throttle up to 104% begins.
L+54.127: End left hand SRB thrust bucket (the thrust "shaping" for passage through Max Q).
L+54.334: End right hand SRB thrust bucket.
L+58.774: Camera 207 provides first indication of smoke from the -Z right hand SRB (the side facing down and away from the Orbiter). The smoke is originating from a point forward of the aft External Tank (ET) attach ring.
L+58.762: Camera 207 shows first evidence of hot gas flow from right hand SRB.
L+59.0: Maximum dynamic pressure.
L+59.249: Camera 207 shows right hand SRB hot gas flow is now a well defined intense plume in the-Z direction.
L+60.004: Right hand SRB chamber pressure begins to diverge.
L+60.497: First evidence of plume deflection by aerodynamic effects.
L+62.484: Orbiter computers command right hand outboard elevon movement.
L+63.924: A right hand outboard actuator delta pressure change is recorded, the first gimbaling action of the main engine cluster to counter slight flight path deviations.
L+64.604: Start of a vehicle pitch rate change.
L+64.664: Photography shows a change in the plume shape; this may be a leak in the ET's liquid hydrogen tank.
L+64.937: The main engines react to the pitch variations by varying their own positions.
L+65.404: End of vehicle pitch rate change.
L+65.524: The left main engine nozzle begins to gimbal.
L+66.174: Camera 207 shows a bright spot on the right hand SRB in the -Z direction and the start of bright spots on the opposite side of the booster.
L+66.484: ET liquid hydrogen tank ullage pressure begins to deviate.
L+66.525: Camera 207 records a bright sustained glow on the +Z side of the right hand SRB.
L+67.650: Camera 207 shows an apparent merging of the plume.
L+67.684: The main propulsion system (main engine) liquid oxygen inlet pressure rise rate begins to decrease.
L+72.141: The vehicle experiences a lateral +Y acceleration of 0.227G.
L+72.201: Divergent minus yaw rates begin between the right hand and left hand SRBs. The right hand SRB is no longer precisely aligned with the rest of the vehicle stack. Investigators believe an aft attach strut has broken loose.
L+72.281: Divergent plus pitch rates begin between the right hand and left hand SRBs.
L+72.40: Last data is received from the Tracking and Data Relay Satellite in the cargo bay.
L+72.564: The ET liquid hydrogen tank ullage pressure drops with two flow control valves open.
L+72.661: The vehicle experiences a lateral -Y acceleration of 0.254G.
L+72.964: Liquid oxygen and liquid hydrogen pump inlet pressure drops.
L+73.044: The right hand SRB chamber pressure is now 24 PSI lower than the left hand SRB.
L+73.137: Photography shows vapors near intertank area; liquid hydrogen spillage is seen at ET aft dome.
L+73.159: Main engines respond to loss of inlet pressure.
L+73.162: Photogaphy shows a sudden cloud alongside the ET.
L+73.191: Cameras 206 and 207 record a sudden flash from the region between the Orbiter and the ET liquid hydrogen tank.
L+73.282: Camera 206 shows an intense white flash near the SRB forward attachment.
L+73.304: The flash increases in intensity.
L+73.399: Main engines approach High Pressure Fuel Turbopump (HPFT) redline limits.
L+73.473: Orbiter forward reaction control system chamber pressure fluctuations are recorded.
L+73.534: Space Shuttle Main Engine No. 1 shuts down due to high HPFT discharge temperature.
L+73.605: The last validated data frame—an Orbiter RCS pressure message—is received on the ground.
L+73.621: Telemetry stops.
L+76.425: The right hand SRB nose cap separates and a drogue parachute deploys.
L+109.604: Range safety destructs right hand SRB.
L+110.266: Range safety destructs left hand SRB.

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

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: Baywind 2-2 condo, FPL, 2nd flr. outside, nice view, 9.25% assume at $39,900. Earl, x6445 or 488-1382.

Sale: 101 acre ranch, Marlin area, old bldgs., tanks, tractors, equipment, fruit trees, oaks, $775/acre, owner finance. (817) 896-3863.

Rent: New Orleans condo in French Qtr., Jazz Festival week, 4-25 to 5-2, "Penthouse," fantastic view, private rooftop sundeck, Faye, 280-3649 or 480-5656.

Sale/lease: Pasadena 3-1-1 with den, large kitchen, breakfast area, fenced, stove, refrig., drapes, carpet, alum. siding & eaves, $400/mo., no pets, or $37,500, 8.5% VA assumable. 941-5908.

Rent: Galveston By-the-Sea luxury condo, completely furnished, 2 BR, sleeps 6, two-day minimum, or by week, month or year. Jay Clements, 474-2622.

Sale: 2-2-2 townhouse, 2-story, leased through December, 3 min. to NASA. Taeko, x2740 or 486-5072.

Lease: El Dorado Way condo, 1 BR, W/D, FPL, covered parking, pool, tennis, fitness room, $300/mo. 488-8026.

Lease: CLC University Trace 2-2.5-2 townhouse, all appliances. 333-4044.

Sale: League City Countryside 3-2-2, fenced, FPL, assume low equity 10.5% VA, no credit check. 333-4044.

Sale: Nassau Bay 3-2-2, 1 min. to NASA, all new in, formals, FPL, new roof/AC/heat, large fenced, trees, assumable 11% FHA. 335-1416.

Sale/lease: Friendswood 3 BR home, bargain priced, ex. cond., $43,000 or $500/mo. Bill, 333-6678 or 367-4562.

Sale: La Porte 4-2-2, new roof, $59,000, assumable. 471-2337.

Sale: Austin/UT condo, 1-1, on pool, 4 blocks to Memorial Stadium, perfect for student, $52,500. B. Craig, x4031 or 420-2936.

Sale: Country living, new 3-2-2 brick, 1 acre, custom built. 337-2680.

Lease: Egret Bay 1-1-2, FPL, W/D, pools, $350. Actkinson, x3781 or 482-7061.

Lease: The Landing 2-1 condo, on Clear Lake, boat slip, $425/mo., bills paid. 488-0545.

Sale/lease: Time share condo, Inverness at Walden on Lake Conroe, avail. April 19-26, includes green fees. Wilkins, x6370.

Cars & Trucks

'78 Buick Regal sports coupe, ex. running cond., $2,000 OBO. Glenn, 488-9005 or 335-1416.

'79 Datsun 310GX, one owner, sunroof, 5-spd., 28 MPG, outstdg. stereo, needs minor repairs, must sell, $2,080. Phil, x6254.

'83 Ford Bronco XLT, 351 V8, 4-bbl., auto, PS, PB, pwr. windows/locks, rebuilt engine and transmission, new shocks, Kenwood stereo, 65K mi., must sell, $9,000. Miller, x2115 or 334-3299.

'68 Chevy Impala 327, 4-bbl., PS, PB, AC, auto, engine needs work; '69 Chevy Biscayne 327, 2-bbl., 3 spd., Michelin X radials, air shocks, AM/FM/cassette, runs well, $1,000 for both cars. Paul, x3801 or 538-1281.

'79 Ford Futura, AC, PS, PB, stereo, 70K mi., 6 cyl., good tires, $1,800. 482-1702.

'84 Thunderbird, V6, white/gold interior, low miles, good condition, $7,850. Helen Klyng, 488-2500 or 534-2314.

'78 Toyota Celica, 5-spd., AC, PS, AM/FM/cassette, service manual, new rear tires, engine great, $2,000. 538-2474.

'63 Falcon Ranchero, 6-cyl., std., good engine, white/red interior, all original, very good condition. Beatty, x2673 or 482-7938.

'84 Chevy Cavalier station wagon, assume note. Jeff, x3696 or 480-6839.

'79 Thunderbird, ex. cond., loaded, 68K mi., $2,500. Dick, x2128 or 482-3989.

'80 Oldsmobile Cutlass Cruiser Brougham wagon, AC, AT, 47K mi., nice condition, $3,100. 488-6549.

'78 Olds Delta 88 Royale, AM, AC, PS, PB, no rust, beautiful cond., low miles, must see, $2,800. Hansen, x2855 or 488-8977.

'60 TR3 Roadster, needs some work, all parts there, including some new ones, $1,800. Hansen, x2855, or 488-8977.

'79 Camaro Berlinetta, needs tune up and some interior work, $1,900. Al, x3803 or 421-2830.

'78 Dodge Magnum, 400 w/Holley Economaster carb, 5 radials, runs well, $500. Doug, x2337 or 486-9196.

'85 Camaro, T-tops, 12K mi., AM/FM/cassette, cruise/tilt, ex. cond., must sell. Don Robison, 486-1345 or 486-1415.

'80 MGB convertible, red, new paint, 33K mi., ex. cond., $4,500 firm. Huey, x3417 or 481-6128.

'77 Camaro, red, 350 4-bbl., Keystone wheels, good paint job, $2,500 OBO. Cheryl, x5161 or 538-3043.

'83 Mitsubishi Starion, 5 spd., stereo, AC, cruise, ex. cond., below wholesale, $6,995. 488-1042.

'83 Toyota 2 door sedan, extra clean, stereo, auto, AC, power. $6,400. Briggs, x5165 or 333-2717.

'77 Chevy Malibu Classic, V8, 74K mi., 2-dr., AC doesn't work, otherwise good cond. Betty, x2811.

'82 Olds Delta Royale Brougham. 482-9773.

'78 AMC Matador, PS, PB, AT, AC, new ball joints and tires, 65K mi., $900. Sanchez, x4028 or 996-0401.

'82 Chevy G-20 cargo van, 6 cyl., auto, AC, PS, PB, aux. fuel gauges, AM/FM/cassette, hi-back seats, security glass, 33K mi., $7,000. Bob, 482-5984.

'78 Pinto sedan, 4 cyl., 4 spd., AM/FM/cassette, very good cond., $995. Wilkins, x6320 or 996-9701.

Campers & Trailers

'69 VW Van/Campmobile, nearly new engine/tires/brakes, good condition, $2,200. Steve, x5111 or 480-9715.

'78 Starcraft Galaxy swingout pop-up camper, AC, refrig., sleeps 8, good cond., $1,750. Lindemann, 488-3300 or 532-2218.

'72 Mobile Scout travel trailer, 16 ft., AC, bath, very clean, $2,250. 532-4784.

'78 Bethany camper, sleeps six, 3-burner stove, icebox, heater, good cond., $1,500. 486-8339 or 486-7156.

'80 Airstream travel trailer, 31 ft., twin beds, ex. cond., $15,900. 482-6714.

'67 VW Van/Campmobile, $100 where is, as is. Glenn, x4231 or 474-3941.

Boats & Planes

'78 Wellcraft Airslot 190, V8, I/O, trailer. 482-9773

'71 Sea King, 55 HP, runs well, tilt trailer, galvanized, spare completely rebuilt lower motor, vests, etc., $1,350. Sanchez, x4028 or 996-0401.

'83 Bayliner 19, 125 HP Volvo I/O, ex. cond., galvanized drive-on trailer, $7,000. Moser, 474-2060.

Ghost 13 sailboat, dacron sails, main, jib, Highlander trailer, $1,050. 486-9335.

'81 Falcon 20 fishing boat, Merc Black Max outboard, 175 HP, center console, live fish and bait wells, bimini top, 50-ch. VHF marine radio, trailer, $7,900. Frank, 524-3111 or 334-4061.

'83 16 ft. Hobiecat, Hawaiian sails, Sportsman trailer, ex. cond., $3,500. Rhonda, 331-0059 or Dick Campbell, 282-3324 or 370-0519.

Gulf Coast 20 sailboat, trailer, good condition, many extras. Larry, 485-7629.

Audiovisual & Computers

Zenith 6000 Camcorder, charger, 2 batteries, adapter, plays direct to TV, $650. 488-1042.

Tron full-size arcade video game, good cond., $125; Space Fury video game, broken, needs resistor, $40. 326-3370.

Panasonic PK-751 VHS color video camera, zoom lens, power adapter and extra long cable, $300. Beth, x5441.

TI55 and SR50A calculators, with chargers, cases and manuals, need battery packs, $10 ea. Trebes, x6313.

IBM PC expansion boards, floppy controller w/parallel port, cable, $60; Quadram quadboard multifunction card, parallel, serial, game ports, clock/calendar, 384K, $225; original IBM 65 watt power supply, $40. Mitch, 538-3150.

RCA 25" color TV console, cabinet excellent, needs picture repair, $35. 488-4069.

Apple II+ computer, disk, Commodore color monitor, Olivetti ink jet printer, disk holder and software, $800. Jim, 280-2226.

Want to buy any Colecovision video games, especially Chess Challenger by Fidelity, or any attachments for the system. Antonio, 280-2113 or 280-9408.

Pioneer CT-F900 cassette deck, three heads, dual motor drive, microprocessor controlled, ex. cond., $175; Panasonic cassette deck, good cond., $80. Joe, x6327.

Apple hi-res green phosphor monitor, 1 yr. old, ex. cond., w/documentation, in original box, $100. Jeff, x5378.

HP 71B hand held computer, new cond., has separate calculator, excel. for basic programming, $345. Joe, x4905 or 944-6513.

Commodore 64 computer, disc drive, star Gemini 10 printer, Cardco interface cable for Commodore 64, all for $365. 481-0468.

National Microtech satellite system, 8 ft. dish, remote drive, digital receiver and tracker, $5,200 new, asking $1,500. 332-1703.

Cycles

'73 Honda CL350 twin, rebuilt engine, good rear tire, new wiring harness, needs some assembly, $50; Bell Star II helmet, 6 3/4, white, $25. Paul, x3801 or 538-1281.

'80 Kawasaki 650, rifle fairing, luggage rack, good cond., $850. Wendel, x4266 or 332-2318.

'83 Honda 650 Silverwing, new condition, 3,600 mi., accessories. Moser, 474-2060.

'80 Suzuki 850 GSL, fairing, luggage rack, ex. cond. Clint, 488-8919.

Household

Brown naugahyde hide-a-bed couch, free for hauling, $20 if I deliver. 538-2474.

Sears full-size washer, 4 yrs. old. $125. Betty, x2811.

Trundle bed, with bolsters, good cond., $50. Glenn, x4231 or 474-3941.

Brown plaid couch and loveseat, $100. Wendel, x4266 or 332-2318.

Kirby vacuum cleaner, all attachments, ex. cond., $150; Magnavox walnut console stereo, good cond., $75; 2 chairs, $20 ea., velvet chair, ex. cond., $75; brass floor lamp, $25. 488-0189.

Aeolian Sting player piano, spruce soundboard, rapper wound strings, electric and foot operation, free delivery and rolls, $2,495. 486-8168.

Matching sofa bed, chair set, good cond., $75. Joe, x6327.

Kenmore heavy duty washer and dryer, like new, $300. Joan, x3057 or 486-1058.

Private collection of Japanese antiques, ivory, lacquer, bronze, etc. H. Sloan, 338-2462.

Super single waterbeds, w/drawers, dark wood, $150 OBO. Pam, x3087.

Two-pc. modular sofa, dark beige, $300; queen size bedroom set, head and foot boards, dresser and mirror, chest, night stand, no mattress, $450. 487-1883.

48" round white formica pedestal table, 4 chairs, $75; Hoover upright vacuum cleaner, attachments, $10. 474-3517.

Like new queen size bed, box springs and mattress, dark pine, Sears Open Hearth collection, $325 OBO. 486-0044.

King-size bedroom set w/mattress, springs, dark oak, $200; Henredon brown chintz sofa, $100; Henredon dark oak coffee table, $100; glass and brass floor lamp, $35. Susan, x6364 or 486-8865.

Wanted

Want to join or start carpool from Stafford/Missouri City area, 8 a.m. shift. Cindy, 240-1674.

Want used encyclopedia for my kids. Sue, 480-5027.

Want roommate for large townhouse near NASA, large bedroom w/private bath, cable, FPL, W/D, extras, $250/mo. Clint, 488-8919.

Want to buy electric trains. Don, x2449.

Want soprano saxaphone and oboe. Ray, x5257 or 554-2908.

Want artist's air brush set; lawn fertilizer spreader. Dick, x5028.

Want ride from Pasadena to NASA, 7:30 to 4 p.m. shift, flexible. Mary Cunningham, x3580 or 475-1992.

Want roommate for 3 BR home in League City, furnished, $210/mo., all bills paid, no smokers please. Keith, x3643 or 332-8251.

Law student/JSC employee seeking roommate to share 2-2 luxury apartment near JSC. Jeff, x5360 or 480-1673.

Pets

Free house cat, male, declawed. Jane, x5930.

AKC registered Pomeranian, one year old blond female, affectionate, loves outdoors, $375. Wil, 332-1703.

Free to good home: part German Shepard female puppy, very intelligent and playful, needs TLC. 486-0830.

Free to good home: mixed breed, small puppies, 4 female, 1 male, 9 weeks old. 480-2650.

20-gallon aquarium, with equipment, $50. Janet, x5111 or 554-5968.

Lost

8" beveled herringbone gold bracelet, about 6 mm wide, lost on site 2-28, $50 reward. Mary, 282-3092 or 280-0377.

$100 reward for return of tri-color diamond solitaire ring, yellow, white and rose gold band, and diamond cluster ring, star shaped, 13 diamond chips on thin gold band, lost in Bldg. 30. Fran, x2004 or 481-5263.

Miscellaneous

Ford 170 6-cyl. engine, no carb/transmission/generator or starter, condition unknown, $60. Beatty, x2673 or 482-7938.

Leer macho pickup cover for 6 ft. small bed, like new, boot connects cover to cab, $250. Al, x3803 or 421-2830.

Trailer hitch for '75-80 VW Rabbit or Scirocco, Valley 1,500 gross wt./150 hitch wt., $62 new, make offer. Bob, 482-5984.

Black & Decker electric sander, dual action, $25. Bob Beyer, x6244.

Four mag wheels and tires for '76 Capri, $100; motorcycle saddlebags and windshield, $60. Jim, 280-2226.

Man's gold clubs, 4 woods/10 irons, bag and cart, $30; Woman's golf clubs, 2 woods/5 irons, bag, $20. 474-3517.

Total gym machine, over 50 exercises, ex. cond., $325 OBO; will pay for maternity clothes in good condition, size 9 and 11. 482-2622.

Coin collection, mostly silver dollars and proof sets. 482-1582.

Zoom telescope with tripod, 15 to 45 power, new, still in box, $55. 280-8796.

Vitamaster rower, like new, frame of welded steel, 34 lbs., stores behind door, $75. Helene, 486-2168.

SCUBA regulator, Pro Mark VII, used once, fins, snorkel, mask, dive bag, $350. 537-0672.

Spa-size massage roller, helps relax and tone muscles after workout, $75. Janet, x5111 or 554-5968.

Coulter optical Odyssey I telescope, 13.1 inch primary mirror, 3 eyepieces, 6 filters, $450. Paul, x5536, 486-6813.

Wedding dress, beautiful, worn once, hand made veil, size 9. Paul, x5536 or 486-6813.

Two Remington 1100 shotguns, SA sket, Ventrib, 12 ga., $275; .410, new, $300. 474-2585.

Chrome wheels for Toyota 4 x 4; 10 HP electric riding mower, batter attachment. 482-9773.

Cookin' in the Cafeteria

Week of March 10 — 14, 1986

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 Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

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

Wednesday — Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Rib, BBQ Plate, Wieners & 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 & Onions, Fried Shrimp, Meat Sauce & Spaghetti (Special) Green Beans, Buttered Broccoli, Whipped Potatoes.

Week of March 17 — 21, 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 March 24 — 28, 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.

Week of March 31 — April 4, 1986

Monday — Cream of Potato Soup; Franks & Sauerkraut, Pork Chop, Potato Baked Chicken, Meat Sauce & Spaghetti (Special); French Beans, Buttered Squash, Buttered Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Navy Bean Soup; Beef Stew, Liver & Onions, Shrimp Creole, Smothered Steak w/Dressing (Special); Corn, Rice, Cabbage, Peas.

Wednesday — Seafood Gumbo; Roast Beef, Baked Perch, Chicken Pan Pie, Salmon Croquette (Special); Mustard Greens, Italian Green Beans, Sliced Beets.

Thursday — Beef & Barley Soup; Beef Tacos, Diced Ham w/Lima Beans, Stuffed Cabbage (Special); Ranch Style Beans, Brussels Sprouts, Cream Style Corn.

Friday — Seafood Gumbo; Fried Shrimp, Deviled Crabs, Ham Steak, Salisbury Steak (Special); Buttered Carrots, Green Beans, June Peas.

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.