

STS-2 insignia



Here is the official crew insignia for the STS-2, the second Space Shuttle orbital flight test mission.

Plans for the STS-2 mission are virtually complete but are still susceptible to change until the flight plan has been finalized. Current plans call for the launch of STS-2 from Kennedy Space Center no earlier than Sept. 30. The first window for that date opens at 8 a.m. EDT and closes at 11:53 a.m. EDT. A second and shorter window opens at 12:18 p.m. EDT and extends for one hour, 38 minutes, to 1:56 p.m. EDT. The nominal mission length is 124 hours, 55 minutes (5 days, 4 hours, 55 minutes). There will be 83 orbits of the Earth with the landing taking place on the 84th orbit at Dryden, California, at 12:55 p.m. EDT on October 5th.

Following the shutdown of the Orbiter's main engines and jettison of the external tank just under nine minutes after liftoff, a series of five Orbital Maneuvering System burns will be performed to place Columbia in a circular 252 kilometer (137 nautical mile) orbit inclined 38 degrees to the equator.

Prime crew members are Joe Engle, commander, and Richard Truly, pilot. Back up crew members are Kenneth Mattingly and Henry Hartsfield.

Saturn fly-by this month

The Voyager 2 spacecraft will reach Saturn August 25 with closest approach occurring at (8:25 pm PDT, 10:25 pm CDT, and 11:25 pm EDT) as the robot explorer passes 63,000 miles (101,000 kilometers) above the cloudtops.

Voyager 1 flew past Saturn last November 12 and is now moving up and out of our solar system searching for evidence of the limit of the solar wind.

Voyager 2, launched in August of 1977, from Florida, is only midway through its planned explorations. Following the Saturn encounter are planned encounters with Uranus in January 1986, and, using that planet for an additional gravitational slingshot, with Neptune in August 1989.

Based on the extensive list of discoveries made by Voyagers 1, Voyager 2's on-board computers have been virtually entirely reprogrammed to enable scientists at NASA's Jet Propulsion Laboratory to capitalize on the second visit. The Voyager 2 encounter will concentrate on studies of the intricate and dynamic ring system, on the Saturn satellites and on additional studies of the Saturn cloud structure.

Because the ring system is composed of literally hundreds of discrete ringlets, Voyager 2 will use an occultation technique to assist in the definition of the ring structure. The spacecrafts photopolarimeter, an extremely sensitive light meter, will be aimed at the star Delta Scorpii 989 light years away on the other side of rings as the spacecraft approaches the planet. By measuring the successive dimming and brightening of the starlight, scientists expect to gain the best information

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Co-op employee likes to clown around on job

For over six-and-a-half years, Colleen Quinn, a co-op student in code 225 from the University of Maryland Baltimore County, has been clowning around on her federal job. Isn't it a shame? As a matter of fact, she even clowns around in her spare time. With a bag of tricks and a self-made costume, she gives performances that uplift the sick and generate ear-to-ear smiles on the faces of kids of all ages.

But its not really a shame that Quinn likes to clown around, for she is a member of the Social Security Clown Club, which performs free around Washington, DC and vicinity.

Her best act as clown is with her hand puppets, which dipict characters from "Sesame Street." Her favorite, although not a member of the Sesame Street gang, is a soft and fury Koala Bear. However, "Big Bird" is most liked by the kids. Quinn plans to enhance her hand puppet show by practicing voice variations with her different puppet characters.

Just recently, she brought her funny face to Goddard for the Personnel Peer Award picnic, in which she presented "Gag Awards" to Personnel employees. In addition, her clown face, which she plans on registering in the future, is the face you see on Safety posters around center.

An original clown face can be registered just as an artwork or literary piece is copyrighted. "I receive a lot of compliments on my clown face," she said. "And I haven't seen one exactly like it."

Nearly eight years ago, while employed at Social Security, she embarked upon a taxing but highly rewarding avocation of clowning around for different occassions. Now, she's hooked! Every chance she gets, she can't help clowning around and trying to make someone laugh.

But its not all fun and games for Colleen. It takes one and a half hours just to get into a complete costume. Moreover, professional clowns, especially members of the Social Security Clown Club, have to adhere to strict rules. For instance, SS clowns cannot eat, drink, or curse while in their costumes.

"We always have to be conscious of our image," said Quinn. "To kids, the clown's world is one of awe and mystique, and we try very hard not to shatter any dreams or expectations."

I'm talking strictly business



Colleen Quinn, working out of the Work Injury Office in the Personnel Division, reveals her dual identity and appears here as Pookie the clown. Quinn recently made presentations of "Gag Awards" to Personnel employees.

Pookie (pronounced like cookie) the clown, as she is called, explains a mistake that should never be made by a true clown. "Never approach a child from behind," she said. "The resulting shock could be a harrowing experience for him."

Quinn said that summer and Christmas are the busiest times for her club, with annual engagements at the White House for the Easter Egg Roll and the Foreign Diplomats' children's Christmas party. She looks forward to these events.

The most rewarding aspect of being a clown for Quinn is the reception from the kids. "Making kids happy makes me happy," continued Quinn. "And thats enough reason for me to 'clown around' for years to come."

NASA employee describes move from Goddard to White Sands

Mrs. Reckard began working at Goddard in 1969 in code 235, the Property and Supply Branch. She is currently secretary to the TDRSS Station Director, Virg True, at the White Sands NASA Ground Terminal, White Sands, New Mexico. The following is her story depicting the transition from Goddard to White Sands and what it is like working there; and her involvement with NASA for over ten years.



Joan Reckard

"My first visit to the southwest was in 1967 and I wanted to live here ever since. I had doubts about leaving Maryland -- my family and friends were there and I wasn't sure I wanted to give up working with the space program. I really enjoy being part of it. Fortunately, I was able to transfer into the Networks Directorate to the Tracking and Data Relay Satellite System (TDRSS) Project at White Sands NASA Ground Terminal in New Mexico. I am still with Goddard but in a new and exciting environment that promises to be very challenging throughout the 1980's, 90's and beyond.

I knew little about Las Cruces beforehand. Some of the scientists and technicians I worked with in the Sciences Directorate come out here regularly to launch sounding rockets at White Sands Missile Range. They told me it was a nice little town but I was pleasantly surprised when I arrived! Las Cruces is the second largest city in New Mexico, located on two interstates: I-10 and I-25. We're about 50 miles north of El Paso, Texas. New Mexico State University is here. We have a large civic center (PAN AM) that hosts concerts, symphonies and special events

like Kenny Rogers and Broadway productions such as "Chorus Line."

Las Cruces is known for its farming and some of the major crops produced here are onions, chile peppers, apricots, cotton, and pecans. The valley is rich and green, certainly not what you might think the desert southwest to be.

Las Cruces is the county seat of Dona Ana county and has a population of about 50,000-60,000. We are surrounded by mountains and its a picturesque place especially in the morning or when the sun sets, everything you have heard about those western sunsets is true!

The area has many cultural attractions and historic places--Old Mesilla is close by and its a historic landmark. Billy the Kid spent a lot of time there. Its a lovely place with a town square, old church and is surrounded by art galleries, shops and fine restaurants. Its a great place to spend the day.

Of course, the Missile Range is close by and has so many projects that I'm sure I can't mention them all. Also, a telescope facility at Corrilotos north of town is getting lots of attention. Its been closed for some time and local scientists are trying to generate interest and funding to open it again. I understand it is a fine observing site and with so many people using telescopes in this area of the country enthusiasm is running high about its future.

I've been involved in the space program since 1964. I grew up in Florida and I remember when the tracking station opened in Fort Myers. I was thrilled that the space program was right in my home town! After a visit there I knew I wanted to be a part of it. When the opportunity to work at Cape Kennedy came about, I jumped at the chance.

In 1968 we moved to Greenbelt, Maryland where Lee (my husband) and I had jobs at Goddard. I was happy to be able to continue with NASA. While at Goddard, I learned as much as I could about all the areas in which I worked. I am still amazed at the variety of projects we're involved in.

I heard about TDRSS for the first time back in 1970 when it still was in the early stages. TDRSS was quite impressive to me.

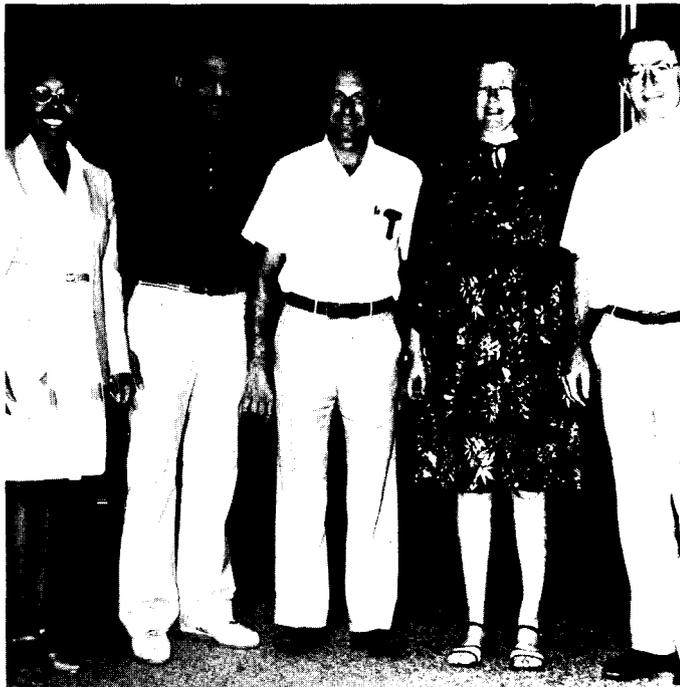
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Goddard Computer Club gives demonstration for junior school girls

Five members of the Goddard Computer Club demonstrated the use of home computers to 35 eighth grade girls participating in the Summer Institute in Science and Technology on July 15.

The demonstration was sponsored by the Federal Women's Program and introduced the youth to some of the practical uses of home computers.

Chuck Mason, club president, started the demonstration by describing the uses of computers in the home, followed by group sessions in which the girls received hands on experience with Apple II computers.



From left to right are: Valerie Thomas, K.C. Shah, Chuck Mason, Babara Lowrey, and Jim Williamson.

Word processing, tutorial, home finances, and computer music programs were run on the computers, with the highlight of the demonstration being the arcade type games like Space Invaders.

Each of the girls had the opportunity to type on the computer keyboard and work with the more serious programs as well as the games. For some, this was their first interface with a computer, and it gave them a preview of the future as computers continue to pervade the manner in which people carry out their daily activities.

Those present with their computers were: Chuck Mason, Babara Lowrey, Jim Williamson, K.C. Shah, and Valarie Thomas.



Chuck Mason, Club president, demonstrates to a student some of the uses of home computers.

Voyager Flyby at Goddard

Live transmissions from the Voyager 2 flyby of Saturn can be viewed in the auditoriums of buildings 3 and 8 on August 24, 26, 27, 28 (8 p.m.-9 p.m.) and August 25 (8 p.m.-9:30 p.m.) The transmission will include interviews with experimentors, among them Drs. Hanel and Ness of Goddard.

Reorganization and Appointments

Effective July 19, 1981, Mr. Charles R. Newman is appointed Head, Orbital Mechanics Section, Systems Development & Analysis Branch, Mission Support Computing and Analysis Division (code 582.2).

Effective July 19, 1981, Mrs. Helen M. Newman, formerly Assistant Chief, Space Technology Division, is appointed Associate Chief, Space Technology Division, replacing Mr. Norman Martin, recently appointed Chief, Engineering Services Division.

Effective August 9, 1981, the Technology Applications Center, Missions Utilization Office (code 902.2) is abolished. Its functions have discontinued.

NASA to launch second Satellite Business Systems spacecraft

The second of three synchronous altitude, geostationary spacecraft, that will further expand the use of outer space for business communications will be launched on board a two-stage Delta 3910 launch vehicle from NASA Launch Complex 17, Pad-A, on the Cape Canaveral Air Force Station, Florida, no earlier than September 3.

The Delta will place the Satellite Business Systems-B (SBS-B) spacecraft into a transfer orbit having a high point (apogee) of 36,619 km (19,773 nm) and a low point (perigee) of 167 km (90 nm), at an inclination of 27.7 degrees to Earth's equator. Later in flight, its orbit will be circularized at an altitude of about 22,300 nautical miles.

SBS-B, like SBS-A launched in November 1980, is designed and built by Hughes Aircraft Co., and owned by Satellite Business Systems, McLean, Virginia. The company is a partnership of the Aetna Life and Casualty Insurance Co., COMSAT General Corp., and International Business Machines (IBM). Life span of the spacecraft is expected to be seven years.

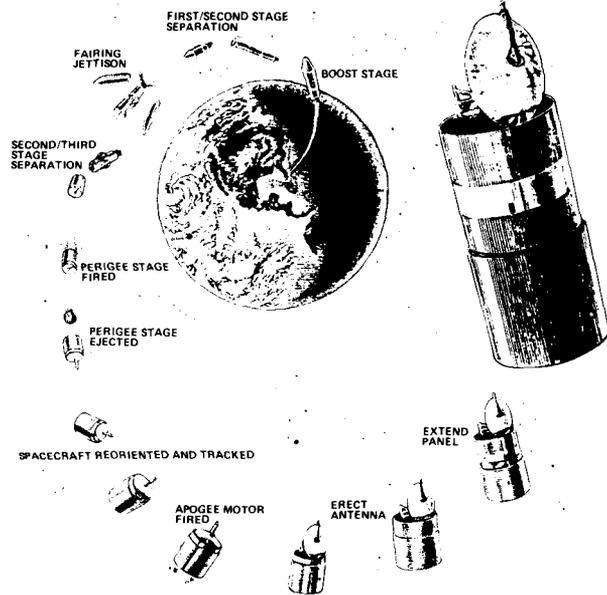
The Delta 3910, chosen to launch the second SBS spacecraft, is the latest and most powerful in the Delta family of expendable launch vehicles. For 20 years, Deltas have launched communications, weather, military, and scientific satellites for the U.S. and foreign customers. Through July 1981, 156 Deltas had been launched, with a mission success rate of about 94 percent.

Designed and manufactured for NASA under the management of Goddard, the Delta has become NASA's "workhorse" launch vehicle.

The Delta family has involved many configurations since the initial launch on May 13, 1960. The first mission was for Echo-I, a pioneering communications satellite. The Echo-I payload, weighed 100 pounds. The SBS payload weighs 7,361 pounds, more than 70 times that of its earliest predecessor and is the largest geosynchronous payload to date for a Delta.

The first and second stages of the Delta 3910's to be used for the SBS launches are conventional. However, instead of a conventional third stage, a payload assist module (PAM) will be used on each vehicle. The PAM, for use with either a Delta or the Space Shuttle, will inject the spacecraft

into an elliptical transfer orbit. The basic components of the PAM are a spin table, a solid fuel motor, and a payload attachment system.



This artist's concept depicts the stages of the SBS-B spacecraft mission.

ATTENTION:

Several incidents have been reported recently of able bodied persons parking in spaces reserved for the handicapped. Remember: just because a space marked for the handicapped is empty for the moment, it does not mean it is available to others. It can be quite an inconvenience---sometimes an impossibility---for someone in a wheelchair to gain access to a building from a spot far removed in the parking lot. Be considerate of your fellow workers and of visitors to the Center and do not park in handicapped persons' parking places.

Reckard

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I didn't realize then that I would have the chance to be a part of it all.

There is a lot of excitement and energy here regarding TDRSS. Many of the people have been around the space business for some time and some have never been involved in it. Of course, there are problems, its to be expected in an effort like this. But I see a lot of hard working people solving those problems. No R&D program has ever been easy. Somehow though, all the hard work pays off in the end when you see the fruits of your labor result in a successful mission.

I'm very excited about TDRSS and I'm happy to be a part of it. The entire project is going to be one of the biggest and best things to happen to NASA, at least in my opinion. From what I have observed, there are a lot of very qualified and enthusiastic people here so I know we'll have a success...As long as we keep going, the accomplishments will have no end."



Above is an arial view of TDRSS in White Sands, New Mexico. This angle is looking south.

NASA research offers odor-free sewage treatment

NASA research over 10 years has led to a simplified natural biological sewage treatment process which is odor free and costs less than half as much as a conventional system to operate and maintain. The system, developed at the National Space Technology Laboratories, has been approved by E.P.A. for treating municipal sewage. It combines the oldest of wastewater treatment systems (septic tank and trickling filters) with space-age technology in anaerobic filter and vascular aquatic treatment.

The result is that the odorous substances normally produced with domestic sewage during the anaerobic digestion phase is converted into plant biomass at the end of the filtration column.

Students complete activities in Summer Sciences Program

Forty middle, junior, and high school students from Maryland counties have completed activities at Goddard in the annual Summer Sciences Program for the Talented and Gifted.

The program is sponsored by the Division of Instruction, Maryland State Department of Education and coordinated by Goddard's Educational Programs Office. It provides Physical Science and Engineering internships for high school students, and introduces middle and junior high school students to the Space Sciences, with emphasis in the following areas:

- Computer Programming
- Geological Science
- Atmospheric Science
- Planetology
- Comets and Meteorites
- Stellar Evolution
- Cosmology

The latter group participated in a ten session programming course in FORTRAN, taught by Eugene Washington, (code 603) and took two geological field trips. In addition, they had afternoon study sessions in the Earth and Space Sciences listed above.

Each group was on center for two weeks and was counseled by Indgrid Wu, from the University of Maryland.

The University of Maryland also provided housing and transportation and conducted additional activities for the students on campus.

Voyager

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yet on the number of ringlets, their densities and widths as well as the size of the gaps between them. Another star occultation will be used after closest approach, with the Voyager 2 photopolarimeter looking back through the rings at the star Beta Tauril, 180 light years away in the opposite direction. This second occultation will help resolve questions about the outer ring sections.

Using a similiar technique, but with radio waves instead of light, the Voyager 2's radio signal will be tracked as it recedes behind the planet from the near-north equatorial region to the near-south equatorial region. By monitoring how the signal fades out and then fades back as the spacecraft emerges from behind Saturn, scientists can measure atmospheric components in the lower cloud layers.

Special photographic techniques will be used to allow for a computerized three-dimensional reconstruction of Saturn's strange, braided F-ring. This is expected to provide sufficient information for determining whether this ring structure is actually braided--implying at least three components--or is twisted or twined--implying only two components.

Additional close-up photographs of the Saturn moons, some only barely captured by the Voyager 1 visit, will be taken to help better define what is now believed to be a new and important class of solar system moon, nearly all ice and of an intermediate size to those of Jupiter.

Because of the opaque nature of Titan's thick nitrogen atmosphere, surface photographs of the second largest moon in our solar system won't be taken. Titan was discovered to have an almost unbelievably thick nitrogen and methane atmosphere with a high hydrogen haze above the nitrogen layer. The atmospheric pressure at Titan's surface is nearly two and a half times that here on Earth. Various speculation about surface conditions on Titan have included the possibilities of liquid nitrogen seas with methane snow or rain falling.

Voyager 2, along with Voyager 1 and Pioneers 10 and 11 are all on a trajectory taking them out of our solar system. The Pioneer 10, now over two and a half billion miles from Earth, will be the first to actually leave the solar system--in 1986.

Center Exchange

Headquarters:

June Gibbs Brown was sworn in as Inspector General July 27 by NASA Administrator Mr. James M. Beggs at Headquarters. Brown, who will be NASA's second Inspector General, previously had been Inspector General, Department of the Interior from May 1979 to January 1981. At Interior she directed audits and investigations of the Department's programs and operations to promote their economy and effectiveness and to prevent and detect fraud and abuse.

Langley:

A possible assembly line in space is being studied at Langley that would allow astronauts to construct large platforms or antennas in Earth orbit from the Space Shuttle.

The concept uses a mobile work station to position a pair of pressure-suited astronauts so they can move horizontally and vertically within a prescribed area to build space systems that are too large or complex to fold up and transport aboard the Shuttle.

The mobile work station, a large scale experimental version of which is now being tested at Langley, is designed to be located inside the Shuttle Orbiter's payload bay or to be a free flyer, operating near the Orbiter.

Ames:

The Quiet Short-Haul Research Aircraft (QSRA) was a major attraction at the 1981 Moffett Field Air Show on June 6 and 7. Pilots made a maximum performance takeoff and then a series of maneuvers to demonstrate the capabilities of this versatile aircraft. A 15-knot wind blowing down the runway allowed the pilots to make a STOL landing in less than 300 feet. A crowd estimated at more than 100,000 cheered and applauded.

Dryden:

Dryden has awarded a grant to the University of Kansas for the investigation of the internal and external aerodynamics of cattle trucks for one year. The grant will provide research to improve the ventilation and temperature control within livestock haulers. The research also is expected to reduce economic losses due to Bovine Respiratory Disease which amounts to some \$500 million per year.

Milestones -- METEOROLOGICAL APPLICATION FOR NIMBUS NIMBUS-7 TOMS

PREFACE: For years, interest in variations in the total global ozone content has grown as scientists have sought to determine the possible depletion effects of man-made pollutants such as chlorofluoromethanes. Yet the work has been complicated by uncertainty as to what extent ozone variations can be attributed to tropospheric weather systems. Atmospheric investigators at NASA's Goddard Space Flight Center in Greenbelt, MD, are trying to better determine the nature of the ozone/weather system correspondence through suitably dense, worldwide measurements of the ozone layer by the Total Ozone Mapping Spectrometer (TOMS) now flying aboard the Nimbus-7 satellite. Interpretation of the spatial structure of total ozone has only begun, but it is apparent that the TOMS, with its high resolution compared with conventional meteorological data sources, will become an important tool not only for observing the ozone structure but also for inferring other properties of the atmosphere.

SIGNIFICANT RESULTS: Daily, global maps of total ozone from TOMS exhibit large scale (1,000-5,000 km), coherent wavelike features which generally move eastward at extratropical latitudes. By comparison with meteorological charts, a close correspondence is found between total ozone maxima and upper tropospheric troughs. Similarly, ridges correspond to ozone minima. The total ozone field apparently is responding to dynamic processes in the upper troposphere. As a result, the ozone gradients could be useful for estimation of winds. In fact, the jet streams are clearly delineated in TOMS maps.

PRACTICAL USES: An immediate practical benefit will result from rapid distribution of TOMS maps to aviation meteorologists for use in flight routing. A new FAA regulation specifies limits on allowable cabin ozone concentrations. The information in

TOMS maps will allow the airlines to route their flights to avoid high ozone regions. A second benefit to aviation is in avoidance of clear air turbulence regions which can be inferred from TOMS maps. In the future, improved resolution of the structure of planetary waves will eventually lead to better theoretical understanding of their properties and improved mid-range weather forecasting. For further information, please contact Dr. Arlin J. Krueger, code 963, GSFC (301-344-7129/6358).

NASA, Deere and Co., to study effects of low-g

A technical Exchange Agreement, the first of its kind, has been signed between NASA and Deere and Co., Moline, Ill., to study the effects of low-gravity on various iron alloys.

One of the new technologies which has emerged from the space program is the processing of materials in an environment where the effects of gravity are greatly reduced or eliminated. This reduced gravity is sometimes called low-gravity or micro-gravity. Early work done in the field has shown that low gravity eliminates or greatly reduces the effects of buoyancy, sedimentation, and convection on materials processes. This opens a new frontier into the pervasive role of gravity on materials properties and process mechanisms.

Under the agreement signed with Deere, NASA's Marshall Space Flight Center, Huntsville, Ala., will use low-g facilities available to it, including drop tubes, KC-135 and F-104 aircraft, and possibly sounding rockets, to substantially reduce gravity conditions during alloy solidification experiments. Deere and Company will do sample preparation, ground-based characterization of the sample, extensive sample analyses and data reduction, as well as thermal characterization of the furnace used for melting and solidifying samples.

The technical Exchange Agreement represents one of several new concepts NASA has developed to involve the private sector in the definitive stages of a low-g research program where technological advancement is needed and there is a potential commercial application.

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