THE DISH

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Voyager 1 Passes Voyager 2

On December 15, 1977 Voyager 1 overtook Voyager 2, 78 million miles out in space on a journey to Jupiter and Saturn. Both are cruising around the 12 to 13 miles per second mark, with one way communication taking approximately 6 minutes.

Voyager 1 was launched September 5, 16 days after Voyager 2, but is moving faster and on a slightly different trajectory.

Voyager 1 will slowly increase its lead as they race through space and will come within instrument range of Jupiter in March 1979, four months ahead of Voyager 2.

All science instruments aboard Voyager 1 are in good condition and operating properly when turned on. Periodic slews of the scan platform to vatious stars and planets continue for the photopolarimeter and ultraviolet spectrometer experiments.

On Voyager 2 satisfactory progress is being made in analzing and solving for spacecraft problems. The photopolarimeter (PPS) analyzer wheel remains stuck in position 2, but resolution of the problem is not urgent. The apparent cause is a failure in the multiplexer chip which selects the wheel position, and is under investigation. The low-energy charged particle (LECP) instument is operating again after being turned off when a higher than acceptable temperature was noted in November. The overheating appears to correspond with turn-on of the X-band antenna, and is under study.

Many people do not realize this may be the biggest space event of our life time. The things these two spacecraft are doing is much greater than the manned space missions and will probably contribute more to our knowledge of the universe than all the space shuttle launches taking place for several years to come.

After passing Jupiter, Voyager 1 will examine all four of the large Galilean satellites. Observations of Jupiter will continue for a month after closest approach, until April 1979.

Voyager 2 will begin its observatory phase of Jupiter about two weeks later, 80 days before closest approach as did Voyager 1. It will observe four satellites during the inbound leg: Callisto, Ganymede, Europa and Amalthea. The spacecraft will make its closest approach to jupiter on July 10, 1979. The first Saturn encounter will begin in August 1980 and will continue through December. On the inbound leg, Voyager 1 will pass within 4,000 km of the major satellite Titan.

Closest approach to Saturn will be 138,000 km and occur on November 12, 1980. The second Saturn encounter will begin in June 1981 with closest approach on August 27, 1981.

Voyager 2 will observe the satellites Titan, Rhea and Tethys in its inbound journey, and Enceladus at at closest approach. Encounter will continue through September.

Tracking and data acquisition will be performed by the Deep Space Network (DSN). At planet encounter, high-rate data will be received through the DSN's 64-m antenna subnet. Maximum data rate at Jupiter will be 115,000 bits per second, at Saturn 44,800.

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General Electric signed a $5.6 million contract with NASA to build a special weather laboratory that will be carried into space by the Space Shuttle and its Spacelab in the early 1980s to study the causes of weather here on Earth. NASA chose General Electric to negotiate a contract for the work in June. The structure will be called the Atmospheric Cloud Physics Laboratory.

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The Peoples Republic of China became the 98th member of the International Telecommunications Satellite organization (INTELSAT).

THE SPACE SHUTTLE AGE HAS BEGUN by Elaine Bruce

After having beome a space mission addict from watching space launches at KSC on TV, the Space Shuttle opened new opportunities for me-this time I could be there in person to see it happen.

Rockwell International was assigned to build the Space Shuttle Orbiter and Palmdale where the construction hanger was located, was within easy driving distance from where I lived. My job limited my explorations to some extent. The day after the big special Roll Out Ceremonies, the public was invited to attend another ceremony. Being able to stand under the wing of the Enterprise was exciting but not as exciting as what came later.

With its crew, Fred W. Haise Jr and Air Force Lt Col Gorden Fullerton, aboard and able to be in communication with Mission Control Center in Houston the orbiter Enterprise was carried aloft, riding piggy-back on the specially converter 747. I was there watching the entire mission, its first manned captive flight.

It was a perfect- or very nearly so June morning. I arrived at the special parking area for the people who had the necessary passes just as the mother ship with its special bird safely attached to it prepared for take-off. The actual take-off was delayed for a short time due to a few last minute "bugs". We were able to hear the crew and Houston flight controllers work out these problems because Edwards AFB had set up special sound trucks which broadcasted the flight communications.

The final command finally came from Houston. It was OK for take off and it was done with the greatest of ease. The big ship was accompanied by three chase planes, mighty jets, small in size compared to the main star of the show but whose roles were very important. In perfect formation they rose in the air, circled almost overhead so that we viewers had a magnificant view of the formation, and then climbed out of sight to around 15,000 feet where the crew worked out the assigned tasks.

Because of some transmission interference from a local broadcasting station some test data was not received by Houston. These tests had to be repeated causing the flight to be extended around 15 minutes beyond its scheduled time.

Many of us die-hard fans so to speak, watched, waited and listened to flight communications throughout the entire mission. Then, out of the eastern sky appeared the mother ship with its escorts. They descended and landed with perfect precision on the alloted runway.

As I was familiar with the lay out of Edwards AFB I decided to try for a close up view-luck was with me. I was able to find the right building at Dryden Flight Research Center and to explain my desire sufficiently well to the guards on duty there. Incidently I did know someone who worked there which was a help. They decided I was harmless and gave me another pass which actually allowed me to go out on the field where the 747 had taxied. I watched the crew disemback from the orbiter via a hugh lift hoisted up by a large fire truck. After the official greetings were over, the crew took off for a press conference.

I took some terrific pictures (I hope) with my Instanmatic camera and left with my own satisfied sense of accomplishment.

When the first free flight takes place I hope to be there again. Who knows what I well be able to see that time.

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A VISIT TO HOUSTON by Gus Salinas

During a months vacation in April, I had a chance to spend a day in Houston, and of course visited the Johnson Space Center of NASA, and had quite an enjoyable tour of some of their buildings. The Visitors Information desk had some cards that visitors could fill out with the name of a friend who is interested in the present and future Space projects, and NASA would then send some brochures. I failed to pick up some of these cards, so on my return I wrote asking for a couple and mentioned about visiting the Space Center. I was rewarded with a nice package with some brochures and some nice

colored 8"x10" pictures of the Shuttle, etc. In their reply to my request, they stated in part: "In response to your letter of May 16th, I have enclosed the material on the space program you requested. As there is no charge for information distributed by the Johnson Space Center, I am returning the self addressed stamped envelope that you so thoughtfully included with your letter. With reference to you friend receiving material also, his request should be directed to the NASA Johnson Space Center, Code AP2, Houston, Texas 77058.

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Voyager-Mission to Jupiter & Saturn by John J. Macco

NASA will launch two Voyager spacecraft in 1977 for extensive reconnaissance of the outer planets. Riding atop Titan-Centaur launch vehicles, the Voyagers will be launched on a 10 year odyssey that could take them to as many as 15 heavenly bodies. These include Jupiter and Saturn and several moons of both planets, probably Uranus and possible Neptune.

Plans call for the first launched Voyager to fly a slower trajectory, allowing the second spacecraft-launched about 12 days later to overtake it and reach Jupiter about 4 months earlier. Jupiter's gravity will slingshot the Voyagers toward Saturn, with the two spacecraft reaching Saturn about 9 months apart. Photography of Jupiter will begin in December, 1978-80 days before first Voyager reaches the planet.

Shortly before closest approach to Jupiter-on March 5, 1979-Voyager 1 will fly about 415,000 km (258,000 miles) from Amalthea, giving scientists their first close look at the innermost of Jupiter's satellites. Closest approach to Jupiter will be 3.9 radii (Rj) from the surface of the planet (about 280,000 km or 110,000 miles). Jupiter will occult the sun and earth as seen by instruments on the spacecraft, allowing scientists to make precise measurements of structure and composition of its atmosphere.

The second Voyager will begin its observatory phase about two weeks later, again 80 days before closest approach. It will observe 4 satellites during the inbound leg: Callisto from 220,000 km (136,000 miles); Ganymede from 550,000 km (340,000 miles); Europa from 201,000 km (125,000 miles); and Amalthea from 550,000 km (340,000 miles). Closest approach to Jupiter of Voyager-2 will occur July 10, 1079, the spacecraft following a more distant path, will pass 643,000 km (399,000 miles) from center of Jupiter.

The first Saturn encounter will begin in August 1980 and will continue through December. On the inbound leg, Voyager will pass within 4000 km (2500 miles) of the surface of the major satellite Titan. Closest approach to Saturn- 209,000 km (130,000 miles)- will occur November 12, 1980. Titan, Saturn and the rings will occult the sun and earth as seen by instruments on the spacecraft.

Second Saturn encounter will begin in June 1981. Closest approach to Saturn will occur August 27, 1981. The spacecraft will observe 6 satellites and Saturn's rings. Encounter will continue through September 1981.

Each Voyager spacecraft will weigh 810 kg (1785 pounds) and will carry a total of 105 kg (231 pounds) of scientific instruments. Each Voyager will use 10 instruments and the spacecraft radio to study the planets, their satellites, rings of Saturn and interplanetary space.

The Voyager trajectories make use of favorable outer planet alignment indentified during proposed Grand Tour mission studies to achieve flybys of both Jupiter and Saturn. The most favorable opportunity for a close approach to Jupiter with relatively short flight time to Saturn (less than 4 years) is the 1977 luanch window.

Voyager program is managed by Office of Space Science. Project management respnsibility is Jet Propulsion Laboratory. JPL designed, developed and built the spacecrafts. Launch vehicle management is Lewis Research Center. Tracking, communications and mission operations are conducted by JPL which operates the Deep Space Network for Office of Tracking and Data Acquisition.

Information for this article was taken from NASA News Release #77-114. I hope this look into Voyager mission was informative and understandable.
(Editor: Since this article was submitted sometime ago, at this time the Voyager 2 has been launched and in a few days Voyager 1 will be on the way.)

Space Covers Reported & Received

Covers other than those listed may be available, but not reported. For some events several different covers exist from servicers or sponsors, but only the event and where cancelled is listed.

WHITE SANDS MISSILE RANGE, NM

9-15-77 See Space Shuttle
9-24-77 PAIUTE-TOMAHAWK AF 10.705-1 to 120/MI. TO MEA DENSITY OF THERMOSPHERIC
9-28-77 STRATCOM VIII B BALLOON LAUNCHED/FROM HAFB OVER WSMR
9-29-77 ASTROBEE F NASA 25.022.MEASURE/VERTICAL ATMOSPHERIC OZONE IN CHAPPUIS
9-29-77 STRATCOM VIII A BALLOON LAUNCHED FROM/HAFB OVER WSMR
11-1-77 See Space Shuttle
11-2-77 See Space Shuttle
11-2-77 AIR FORCE SRAM (SHORT RANGE ATTACK/MISSILE) LAUNCHED FROM B-52
11-2-77 See Space Shuttle
11-10-77 ARIES I A24.609-1 1ST OF 3 MULTI-/SPECTRAL MEA. OF ROCKET EXHAUST
11-15-77 See Space Shuttle
11-16-77 See Space Shuttle
11-17-77 See Space Shuttle
11-18-77 1ST PERSHINE P2 ARTILLERY/BALLISTIC MISSILE, A/O 180
11-18-77 See Space Shuttle
11-21-77 See Space Shuttle
11-22-77 See Space Shuttle
11-23-77 See Space Shuttle
11-29-77 See Space Shuttle
11-30-77 See Space Shuttle
12-1-77 See Space Shuttle
12-5-77 1ST GENERAL SUPPORT ROCKET SYSTEM/LAUNCH BY VOUGHT CORP. IN SHOOT-OFF
12-6-77 See Space Shuttle
12-7-77 See Space Shuttle
12-8-77 See Space Shuttle
12-8-77 2ND PERSHING P2 ARTILLERY/BALLISTIC MISSILE, A/O 181
12-8-77 2ND GENERAL SUPPORT ROCKET SYSTEM/LAUNCH BY VOUGHT CORP. IN SHOOT-OFF
12-9-77 See Space Shuttle
1-5-78 See Space Shuttle

WALLOPS ISLAND, VA (Wallops Flight Center)

8-25-77 US-USSR JOINT EXP/SOVIET FIRING SHIP/AKADEMIK KOROLEV
12-12-77 TAURUS-ORION/T2-9281/2 34PM
1-5-78 NIKE-APACHE/T2-8661/12 01AM

VANDENBERG AFB CA (Western Test Range)

8-11-77 HAWK/US MARINE CORPS/SHORT RANGE/AIR DEFENSE ROCKET
8-19-77 LAUNCH/MINUTEMAN 3
9-4-77 MINUTEMAN-3 LAUNCHED BY AIRBOURNE CREW
9-23-77 UNSCHEDULED/SATELLITE LAUNCH/TITAN 3-B BOOSTER
10-27-77 TRANSAT/NASA SCOUT 200/US NAVY-NASA/LANGLEY RESEARCH CTR.
11-3-77 MINTEMAN-3/ICBM/US AIR FORCE/SYSTEMS COMMAND
11-12-77 MINTUEMAN-1/TECHNOLOGY/DEVELOPMENT/FLIGHT
11-30-77 MINUTEMAN-2/ICBM/LAUNCHED
12-7-77 MINUTEMAN-3/INSTANT ICBM
12-8-77 ATLAS F BOOSTER/CLASSIFIED SATELLITE LAUNCH
12-9-77 BOMARC TARGET/DESTOYED IN FLIGHT/BY THE US NAVY/AIR DEFENSE ROCKET

PALESTINE, TX (Balloon Site)

9-20-77 TO OBSERVE EXTRASOLAR X-RAY SOURCES/IN THE ENERGY RANGE OF 15-180 kev
9-20-77 TO MEASE TRACE GASES WHICH CONTROL/THE PHOTOCHEMICAL BALANCE OF OZONE
9-29-77 TO MEASE SPECTRUM OF HIGH-ENERGY/PRIMARY COSMIC RAY ELECTRONS
10-3-77 A SEARCH FOR GAMMA-RAY LINES
10-25-77 AN INTERCOMPARISON EXPERMENT OF/THE AES STRATOPROBE 4 PAYLOAD
11-11-77 TO MEASE POLLUTION OF/THE STRATOSPHERE BY INTERFERFEROMETER
12-2-77 TO MEASE TRACE GASES WHICH CONTROL/THE PHOTOCHEMICAL BALANCE OF OZONE

EDWARDS, CA (Dryden Research Center)

3-16-77 See Space Shuttle
6-17-77 See Space Shuttle
8-4-77 See Space Shuttle
8-4-77 See Space Shuttle
8-4-77 See Space Shuttle
8-6-77 See Space Shuttle
8-9-77 F-111 #110 SCOBEE/COOPER
8-11-77 See Space Shuttle
9-1-77 See Space Shuttle
9-1-77 See Space Shuttle
9-2-77 See Space Shuttle
9-2-77 See Space Shuttle
9-2-77 F-111 FLIGHT 113/ENEVOLDSON,SCOBEE
9-6-77 See Space Shuttle
9-6-77 See Space Shuttle
9-7-77 See Space Shuttle
9-8-77 YF-12 FLIGHT 74/MALLICK, YOUNG
9-8-77 F-8 DFBW/FLIGHT 99-62-20/GARY KRIER
9-8-77 See Space Shuttle
9-8-77 See Space Shuttle
9-9-77 See Space Shuttle
9-12-77 See Space Shuttle
9-14-77 F-8 DFBW/FLIGHT 100-63/GARY KRIER
9-15-77 F-8 DFBW/FLIGHT 101-64/TOM MCMURTRY
9-16-77 See Space Shuttle
9-19-77 See Space Shuttle
9-20-77 See Space Shuttle
9-21-77 See Space Shuttle
9-22-77 YF-12 SUPERSONIC FLIGHT 76/MALLICK, YOUNG
9-23-77 See Space Shuttle
9-28-77 See Space Shuttle
9-29-77 See Space Shuttle
9-30-77 See Space Shuttle
9-30-77 YF-12 SUPERSONIC FLIGHT 77/MALLICK, YOUNG
10-12-77 See Space Shuttle
10-26-77 See Space Shuttle
11-15-77 See Space Shuttle
11-16-77 See Space Shuttle
11-17-77 See Space Shuttle
11-18-77 See Space Shuttle

KENNEDY SPACE CENTER, FL (Eastern Test Range)

9-29-77 LAUNCH/INTELSAT/F-5/pmk Kennedy Space Center,Astronaut Trail Station Titusville,Patrick AFB FL;US NAVY 09560,St David's(BDA);Rowlesburg WV(ETMAS C-6); Quito Ecuador(QUI)
10-19-77 LAUNCH/8TH TRIDENT/PAD 25C/pmk Kennedy Space Center,Patrick AFB FL
11-8-77 LAUNCH/BRITISH POLARIS MISSILE/PAD TEST/pmk Kennedy Space Center FL
10-22-77 LAUNCH/ISEE A/A/pmk Kennedy Space Center,Cape Canaveral,Astronaut Trail Sta Titusville,Patrick AFB FL;US NAVY 09560,St David's(BDA);Greenbelt MD(GSC)

11-22-77 LAUNCH/METEOSAT-A/pmk Kennedy Space Center,Cape Canaveral,Patrick AFB FL; US NAVY 09560(BDA);Waimea HI (HAW);Quito Ecuador(QUI);AGANA GU(GWM);Goddard Sp Flt Ctr MD (GSC)
12-5-77 LAUNCH/9TH TRIDENT/PAD 25/pmk Kennedy Space Center,Patrick AFB FL
12-11-77 LAUNCH/SECRET MILITARY PAYLOAD/ATLAS AGENA/PAD 13/5:45 PM
12-14-77 LAUNCH/JAPAN CS/pmk Kennedy Space Center,KSC(MIL),Patrick AFB,Astronaut Trials Sta FL;Barstow CA(GDS);St David's Bemuda(BDA);Waimea HI(HAW);Goddard Sp Flt Ctr MD(GSC)

Events Reported Before-Late Covers

9-5-77 VOYAGER 1/pmk Ascension
9-13-77 OTS/pmk Ascension

KIRURA, SWEDEN (ESRO)

10-21-77 LAUNCH/NIKE BLACK BRANT VC/THE GUIDANCE SYSTEM
12-13-77 LAUNCH/SKYLARK 7/TEXUS I

ANDOYA, NORWAY (Andoya Rocket Range)

9-29-77 LAUNCH
11-30-77 LAUNCH

HOLLOMAN AFB NM

9-21-77 TEST/MATERIAL EROSION
9-22-77 See Space Shuttle
9-23-77 TEST/DRAG RUN AT 600 KNOTS
9-27-77 TEST/EXPERIMENTAL/RECOVERY PARACHUTE AT MACH 1.
9-28-77 TEST/STRATCOM(STRATOSPHERIC/COMPOSITION/VIIIB PROGRAM
9-29-77 TEST/B-1 EJECTION SEATS
9-29-77 STRATCOM VIIIA PROGRAM USING/A 22 MILLION CUBLIC FOOT HELIUM/BALLOON
11-10-77 B-1 EJECTION SEAT/AT 150 KNOTS
11-11-77 LANCE ARMA GYRO/QUALIFICATION TEST/OF PRODUCTION GYROSCOPE FOR MISSILE
11-16-77 See Space Shuttle
11-17-77 See Space Shuttle
11-18-77 See Space Shuttle
11-25-77 See Space Shuttle
12-1-77 See Space Shuttle
12-2-77 See Space Shuttle
12-6-77 See Space Shuttle
12-7-77 See Space Shuttle
12-9-77 See Space Shuttle
12-14-77 EJECTION OF 4 SEATS,4HATCHES,AND 4 DUMMIES AT/250 KNOTS PER HOUR
12-16-77 TESTING COMPONENTS FOR/A GUIDANCE SYSTEM
12-16-77 See Space Shuttle

SPECIAL EVENTS/POSTMARKS/CACHETS

5-8-77 PICTURE POSTMARK LINDBERG & SPACE SHUTTLE/pmk Hamburg W. Germany
6-16-77 DR WERNHER VON BRAUN DIES/pmk WSMR; Cape Canaveral FL
8-21-77 PICTURE POSTMARK SPACE SHUTTLE-VIKING/pmk Berlin W. Germany
9-11-77 LISDA-PICTURE SHUTTLE POSTMARK/pmk Uniondale NY
9-12-77 11TH ANNIVERSARY/GEMINI XI/pmk Kennedy Space Center FL
9-16-77 PICTURE POSTMARK-LINDBERG PLANE,ZEPPELIN,VIKING/pmk MWPS&CS Chicago IL
9-17-77 PICTURE POSTMARK-MANS CONQUEST OF SPACE/pmk AEROPEX STA Redondo Beach CA
9-24-77 SPACEPEX 77 SHUTTLE PICTORIAL POSTMARK/pmk Houston TX
9-25-77 4TH ANNIVERSARY SKYLAB III/pmk Astroaut Trials Sta Titusville FL
10-1-77 PICTURE CANCEL/pmk ????Austria
10-4-77 20TH ANNIVERSARY/SPUTNIK I/FMF TRAVEL L.P./pmk Russian Mission AK
10-11-77 9TH ANNIVERSARY/APOLLO 7/pmk Kennedy Space Center FL
10-12-77 VIEWING SOLAR ECLIPSE/pmk Eclipse
10-16-77 WORD POSTMARK -USA SPACE SHUTTLE TRAILS 1977/pmk THAMSPEX STA New London CT

11-6-77 DANEPEX 77 DIRIGIBLE PICTORIAL POSTMARK/pmk Madison WI
11-11-77 11 TH ANNIVERSARY/GEMINI XII/pmk Kennedy Space Center FL
11-13-77 SHUTTLE PICTORIAL POSTMARK/pmk Dortmund Germany
11-14-77 8TH ANNIVERSARY/APOLLO 12/pmk Kennedy Space Center FL
12-4-77 12TH ANNIVERSARY/GEMINI VII/pmk Cape Canaveral FL
12-7-77 5TH ANNIVERSARY APOLLO 17/pmk Kennedy Space Center FL
12-15-77 VOYAGER 1&2 MEET AND PASS/pmk Astronaut Trial Sta Titusville FL
12-21-77 9TH ANNIVERSARY/APOLLO 8/pmk Kennedy Space Center FL

SPACE SHUTTLE EVENTS

3-16-76 NASA 747/CONTINUES WAKE/VORTEX STUDY/pmk Edwards CA
10-21-76 FIRST TEST/SHUTTLE SOLID ROCKET/BOOSTER PARACHUTE/pmk Cape Canaveral FL
10-29-76 LAST DAY OF FIRST SERIES/SRB TESTS/pmk Cape Canaveral FL
11-15-76 SECOND SERIES/SRB TESTS/pmk Cape Canaveral FL
11-16-76 SECOND TEST SECOND SERIES/SRB TESTS/pmk Cape Canaveral FL
11-17-76 THIRD TEST SECOND SERIES/SRB TEST/pmk Cape Canaveral FL
11-18-76 LAST TEST SECOND SERIES/SRB TEST/pmk Cape Canaveral FL
3-3-77 WIND TUNNEL TEST/pmk Moffett Field CA
3-4-77 WIND TUNNEL TEST/pmk Moffett Field CA
3-17-77 WIND TUNNEL TEST/pmk Moffett Field CA
3-18-77 WIND TUNNEL TEST/pmk Moffett Field CA
3-25-77 WIND TUNNEL TEST/pmk Moffett Field CA
3-29-77 WIND TUNNEL TEST/pmk Moffett Field CA
6-17-77 COMPUTERS FAILED/ABORT/TEST FLIGHT SHUTTLE-747/pmk Edwards CA
8-4-77 SPACE/SHUTTLE/"MINI-ALTI"/MODEL TEST/pmk Houston TX
8-4-77 B-52 DROP SHUTTLE BOOSTER FLIGHT/pmk Edwards,El Centro CA
8-4-77 GULFSTREAM II/947/TRULY,GRIGGS/pmk Edwards CA
8-6-77 GULFSTREAM II(2 flights)/HAISE,GRIGGS/FULLERTON,GRIGGS/pmk Edwards CA
8-10-77 GULFSTREAM II/947/MENDENHALL,FULLERTON/pmk Edwards CA
8-10-77 GULFSTREAM II/947/ENGLE,GRIGGS/pmk Edwards CA
8-11-77 GULFSTREAM II(2 flights)/HAISE,GRIGGS/TRULY,MENDENHALL/pmk Edwards CA
9-1-77 GULFSTREAM II/GRIGGS,ENGLE/pmk Edwards CA
9-1-77 GULFSTREAM II/GRIGGS,TRULY/pmk Edwards CA
9-2-77 GULFSTREAM II/GRIGGS,TRULY/pmk Edwards CA
9-2-77 GULFSTREAM II/FULLERTON,GRIGGS/pmk Edwards CA
9-6-77 GULFSTREAM II/MENDENHALL,TRULY/pmk Edwards CA
9-6-77 GULFSTREAM II/MENDENHALL,ENGLE/pmk Edwards CA
9-7-77 GULFSTREAM II/MENDENHALL,TRULY/pmk Edwards CA
9-8-77 SPACE SHUTTLE/CARGO HANDLING ARM/PROTOTYPE LIFTS A/15x30 PAYLOAD/pmk Houton T.
9-8-77 GULFSTREAM II/MENDENHALL,HAISE/pmk Edwards CA
9-8-77 GULFSTREAM II/MENDENHALL,FULLERTON/pmk Edwards CA
9-12-77 GULFSTREAM II(3 flights,1 cover)GRIGGS,TRULY,ENGLE/GRIGGS,ENGLE/GRIGGS, TRULY/pmk Edwards CA
9-15-77 SHUTTLE TRAINING AIRCRAFT/OVER NORTHRUP STRIP/pmk White Sands Missile Range
9-16-77 SPACELAB I SCIENTISTS(PAYLOAD SPECIALISTS)/pmk Marshall AFB AL
9-16-77 WIND TUNNEL TEST/pmk Moffett Field CA
9-16-77 GULFSTREAM II/FULLERTON,MENDENHALL/pmk Edwards CA
9-19-77 GULFSTREAM II(2 flights,1 cover)HAISE,MANSON/FULLERTON,MANSON/pmk Edwards CA
9-20-77 GULFSTREAM II #947/GRIGGS,MANSON/pmk Edwards CA
9-21-77 GULFSTREAM II(2 flights,1 cover)TRULY,MANSON,ENGLE/MANSON/pmk Edwards CA
9-22-77 TEST/MATERIAL FOR SPACE REENTRY VEHICLE/pmk Holloman AFB NM
9-23-77 THIRD FREE FLIGHT/pmk Edwards CA
9-29-77 JET STAR TRAINING/516/MALLICK,YOUNG/pmk Edwards CA
9-29-77 JET STAR TRAINING/518/MALLICK,YOUNG/pmk Edwards CA
9-30-77 MAIN ENGINE TEST 080 ENGINE 002/pmk Bay St Louis MS
10-5-77 MAIN ENGINE TEST 081 ENGINE 002/pmk Bay St Louis MS
10-7-77 ENGINE 004 REMOVED/ENGINE 0103 ARRIVES/pmk Bay St Louis MS
10-11-77 ENGINE 0103 INSTALLED/pmk Bay St Louis MS
10-12-77 MAIN ENGINE TEST 082 ENGINE 002/pmk Bay St Louis MS
10-12-77 FOURTH FREE FLIGHT/pmk Edwards CA;Marshall Space Flight Ctr AL

10-14-77 MAIN ENGINE TEST 083 ENGINE 002/pmk Bay St Louis MS
10-17-77 MAIN ENGINE TEST 084 ENGINE 002/pmk Bay St Louis MS
10-19-77 MAIN ENGINE TEST 085 ENGINE 002/pmk Bay St Louis MS
10-21-77 SPACE SHUTTLE/CANDIDATES/mk Houston TX
10-22-77 MAIN ENGINE TEST 086 ENGINE 002/pmk Bay St Louis MS
10-26-77 FIFTH FREE FLIGHT/pmk Edwards CA;Kennedy Space Center FL
10-27-77 WIND TUNNEL TEST/pmk Moffett Field CA
10-28-77 WIND TUNNEL TEST/pmk Moffett Field CA
10-29-77 MAIN ENGINE TEST 087 ENGINE 002/pmk Bay St Louis MS
11-1-77 GULFSTREAM #946/HAYES/OVERMEYER/pmk White Sands Missile Range NM
11-1-77 MAIN ENGINE TEST 088 ENGINE 002/pmk Bay St Louis MS
11-1-77 MAIN ENGINE TEST 089 ENGINE 002/pmk Bay St Louis MS
11-2-77 FIRST TEST ENGINE 0103/pmk Bay St Louis MS
11-2-77 GULFSTREAM #946 HAYES/HARTSFIELD,PINGREY/pmk White Sands Missile Range NM
11-2-77 ATTITUDE CONTROL ROCKETS FOR SHUTTLE/REACTION CONTROL SYSTEM/pmk WSMR NM
11-8-77 MAIN ENGINE TEST 090 ENGINE 002/pmk Bay St Louis MS
11-9-77 MAIN ENGINE TEST 091 ENGINE 002/100 SECONDS/pmk Bay St Louis MS
11-11-77 MAIN ENGINE TEST 092 ENGINE 002/ENG 2002 REMOVED MPTA/pmk Bay St Louis MS
11-11-77 MAIN ENGINE TESST 002 ENGINE 0103/pmk Bay St Louis MS
11-14-77 MAIN ENGINE TEST 003 ENGINE 0103/pmk Bay St Louis MS
11-15-77 FIRST FERRY/QUALIFICATION FLIGHT/pmk Edwards CA
11-15-77 GULFSTREAM II/946/MANSON,HARTSFIELD,BASSHA,/pmk White Sands Missile Range NM
11-15-77 MAIN ENGINE TEST 093-002/364 SECONDS/ENG 0101 REMOVED MPTA/pmk Bay St Louis MS
11-16-77 GULFSTREAM II/HARTFIELD/pmk Holloman AFB NM
11-16-77 GULFSTREAM II/946/MANSON,OVERMEYER,BASSHAM/pmk White Sands Missile Range NM
11-16-77 SECOND FERRY/QUALIFICATION FLIGHT/pmk Edwards CA
11-17-77 GULFSTREAM II/CRIPPER/pmk Holloman NM
11-17-77 MAIN ENGINE TEST 004 ENGINE 0103/ENG 2001 REMOVED MPTA/pmk Bay St Louis MS
11-17-77 MAIN ENGINE TEST 005 ENGINE 0103/400 SECONDS/pmk Bay St Louis MS
11-17-77 THIRD FERRY/QUALIFICATION FLIGHT/pmk Edwards CA
11-17-77 GULFSTREAM II/946/MANSON,BASSHAM,CRIPPEN/pmk White Sands Missile Range NM
11-18-77 GULFSTREAM II/BOBKO/pmk Holloman AFB NM
11-18-77 MAIN ENGINE TEST 006 ENGINE 0103/400 SECONDS/pmk Bay St Louis MS
11-18-77 GULFSTREAM II/946/MANSON,BOBKO,BASSHAM/pmk White Sands Missile Range NM
11-18-77 FOURTH FERRY/QUALIFICATION FLIGHT/pmk Edwards CA
MAIN ENGINE TEST 094 no covers reported
11-21-77 MAIN ENGINE TEST 095 ENGINE 002/pmk Bay St Louis MS
11-21-77 GULFSTREAM II/946/GRIGGS,BOBKO,WEYER/pmk White Sands Missile Range NM
11-22-77 GULFSTREAM II/946/GRIGGS,HARTSFIELD,WEYER/pmk White Sands Missile Range NM
11-23-77 GULFSTREAM II/946/GRIGGS,OVERMEYER,WEYER/T-38 #920/MENDENHALL,ALLEN/WSMR
11-25-77 GULFSTREAM II/MATTINGLY/pmk Holloman AFB NM
11-25-77 MAIN ENGINE TEST 007 ENGINE 0103/100 SECONDS/pmk Bay St Louis MS
11-26-77 MAIN ENGINE TEST 008-0103/400 SECS/ENGINE 2002 INSTALLED MPTA/pmk Bay St Loui
11-29-77 MAIN ENGINE TEST 009-0103/350 SECS/ENG 0101 INSTALLED MPTA/pmk Bay St Louis
11-29-77 GULFSTREAM II/946/GRIGGS,BOBKO,BLACKSHEAR/pmk White Sands Missile Range NM
11-30-77 ENG 0101 INSTALLED MPTA/pmk Bay St Louis MS
11-30-77 GULFSTREAM II/946/MENDENHALL,GRIGGS,BLACKSHEAR/T-38/YOUNG/T-38 #921/
PETERSON/pmk White Sands Missile Range NM
12-1-77 GULFSTREAM II/CRIPPEN/pmk Holloman AFB NM
12-1-77 MAIN ENGINE TEST 096 ENGINE 002/pmk Bay St Louis MS
12-1-77 GULFSTREAM II/946/MENDENHALL,CRIPPEN,BLACKSHEAR/pmk White Sands Missile Range
12-2-77 GULFSTREAM II/HARTSFIELD,BEAN/pmk Holloman AFB NM
12-2-77 MAIN ENGINE TEST 010 ENGINE 0103/400 SECONDS/pmk Bay St Louis MS
12-2-77 MAIN ENGINE TEST 011 ENGINE 0103/ENGINE DAMAGED BY FIRE/pmk Bay St Louis MS
12-3-77 ENGINE 002 REMOVED/A2 TEST STAND/pmk Bay St Louis MS
12-6-77 GULFSTREAM 946/HAYES,OVERMEYER,PINGREY/T-38 913 MATTINGLY/pmk White Sands MR
12-6-77 GULFSTREAM II/OVERMEYER,MATTINGLY/pmk Holloman AFB NM
12-6-77 ENGINE 2001 INSTALLED MPTA/pmk Bay St Louis MS
12-7-77 GULFSTREAM II/BOBKO TRAINING/pmk Holloman AFB NM
12-7-77 GULFSTREAM 946/HAYES,BOBKO,PINGREY/pmk White Sands Missile Range NM

12-8-77 GULFSTREAM 946/HAYES,HARTSFIELD,PINGREY/T 38 921 PETERSON/916 BRAND/pmk WSMR
12-9-77 GULFSTREAM II/GRIPPEN,HAYES TRAINING/pmk Holloman AFB NM
12-9-77 GULFSTREAM 946/HAYES,CRIPPEN,PINGREY/pmk White Sands Missile Range NM
12-12-77 ENGINE 002 INSTALLED/A-1 TEST STAND/pmk Bay St Louis MS
12-14-77 MAIN ENGINE TEST 097 ENGINE 002/A-1 TEST STAND/pmk Bay St Louis MS
12-15-77 MAIN ENGINE TEST 098 ENGINE 002/pmk Bay St Louis MS
12-16-77 GULFSTREAM II/BEAN,LOUSMA TRAINING/pmk Holloman AFB NM
12-17-77 MAIN ENGINE TEST 099 ENGINE 002/pmk Bay St Louis MS
12-19-77 100TH TEST ENGINE 002/HIGH-LOX TANK TEST/pmk Bay St Louis MS
12-21-77 FIRST ET TANKING TEST/pmk Bay St Louis MS
12-21-77 MAIN ENGINE TEST 101 ENGINEE 002/pmk Bay St Louis MS
12-22-77 WIND TUNNEL TEST/pmk Moffett Field CA
12-23-77 WIND TUNNEL TEST/pmk Moffett Field CA
12-24-77 MAIN ENGINE TEST 102 ENGINE 002/pmk Bay St Louis MS
1-5-78 1ST STATIC FIRING OF SHUTTLE ORBITER'S/PRIMARY & VERNIER THRUSTERS/WSMR NM

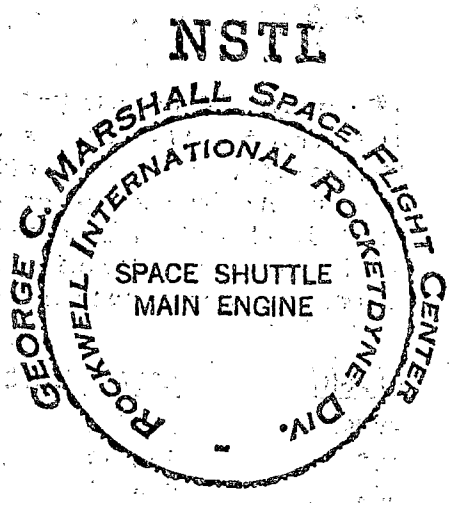
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WHAT'S IN A CACHET ? By Carol Noble

Shakespear wrote that the whole world is a stage. While he certainly did not have the Space Shuttle Program in mind when he wrote it, the Shuttle bears a resemblance to a gigantic play or motion picture. The program spans an entire continent and will soon circle the earth. It has its producers and directors, its stars and plenty of action. That's where the first day cover (FDC) comes in.

The FDC with an attractive cachet, whether printed or applied by rubber stamp, appropriate postage and a timely postmark documents this multi-billion dollar production with a cast of thousands. A production that will insert a space airplane (oribiter) into near earth orbit and return it to be flown again. The cachet details the action of our far flung drama for the eager audience.

Let's look at the story two National Space Technology Laboratories (NSTL) cachets tell. The first and oldest was fashioned by NSTL from a non-collector's point of view. It was simply an attempt to construct a rubber stamp that would fit on an envelope which would list, or possibly give credit to, the participants in the first Mainstage Test of the Space Shuttle Main Engine (SSME).

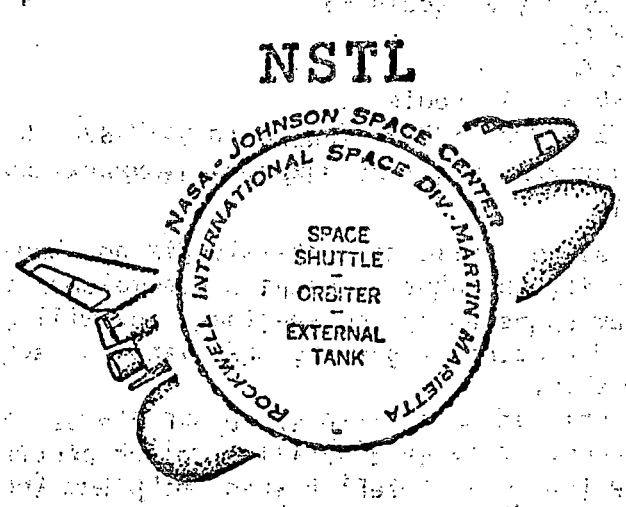


You will note the NSTL at the top of the cachet. It denotes the setting or location. NSTL is the NASA center that hosts the SSME Development Program. The round portion of the cachet tells the story of the participants, the producers and directors, in this NSTL adventure. Circumscribing the outside of the circle is George C. Marshall Space Flight Center (MSFC), the producer and, in this instance, a confusion factor. Collectors of NSTL covers on occasion write requesting MSFC cachets. Marshall is a NASA center located outside of Huntsville, Alabama.

MSFC is charged with the responsibility for developing the 470,000 pound thrust rocket engine. The SSME in a cluster of three, along with the two Solid Rocket Boosters (SRB's) will propel the Shuttle into orbit. Marshall must assist and direct the prime contractor for the SSME, Rockwell International-Rocketdyne Division, in the planning and building of the SSME as well as meeting the schedule and financial goals of the program.

The interior of the circle identifies the prime contractor for the SSME, Rockwell/Rocketdyne. This company manufactures the SSME at its home plant at the exereme west end of the San Fernando Valley in the Canoga Park Section of Los Angeles, Calif. The finished product is shipped to the NSTL by truck to be hot-fire tested. They furnish the engine, the men and know-how steeled by the knowledge gained in the Saturn moon program while NASA/NSTL furnishes the test site and the test stand. The NSTL is

where the action is and is located near Bay St. Louis, Mississippi.
The Space Shuttle Main Engine, the star of the show, rightfully occupies the center of the circle and identifies this part of the Shuttle program, the mighty power supply that can for up to 12 minutes create more power than a dozen Hoover Dams. Thus the cast has been identified.
The drama follows in the form of the lines added at the bottom of the cachet. The particular event, the action part of the picture to be commemorated, is described in as much detail as space will allow or as much data as in important. The test and engine number, the hot-fire seconds, a fire, firsts, all appear as the occur. A living drama replete with milestones, arrivals, departures, a;; played out on the plain white face of a 3 3/4" x 6 1/2" envelope.



The orbiter/external tank cachet was built on the same model as that of the SSME.
The participants differ in this case. The cast involves a 155' long External Tank (ET), a simulated orbiter and three SSME's, all playing their part in this continuing Shuttle spectacular. Each character appears on stage to perform superhuman feats or possibly meet a disasterous end.
The cachet lists the participants: NASA's Johnson Space Center (JSC) which directs the entire Space Shuttle program including MSFC; Rockwell International's Space Division contributes the simulated orbiter; and Martin Marietta the External Tank. The orbiter and the ET are combined with the Shuttle Main Engines to form the Main Propulsion Test Articles (MPTA). Again, NSTL furnishes the test stand, a mammoth 18 story structure that is reputed to be the highest point in Mississippi.
The script calls for a series of cluster firings to be carried out throughout 1978 beginning in February. FDC's with descriptive cachets will depict the action. Better than the stage or movies, each birth (Arrical), birthday (milestone) and tragedy (fire) is commemorated for posterity by a plain white cover (sometimes rimmed in red and blue) with a cachet, a stamp and a post office cancel.

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LAUNCH SCHEDULE

FLIGHT	DATE	VEHICLE	RANGE	STATIONS
EXOS-A	Jan 31			AGO GWM ORR QUI ULA WNK KAG GSC
ISS-B	Feb 11			ORR QUI ULA WNK TASC GSC
DOD	Feb 15		ETR	BDA WLP ETR GSC
LANDSAT-C	Mar 5		WTR ?	ACN AGO BDA ETR GDS GWM HAW MAD MIL ORR QUI ROS ULA WNK WTR ARIA GSC
BSE	Mar 23		ETR	ACN AGO BDA GDS GWM HAW MAD MIL ORR ARIA ETR GSC
HCMM	Apr	Scout F	WTR	ETR GDS MAD MIL ORR ULA WNK WTR GSC
INTELSAT IV-A	Apr 6	Atlas Cent	ETR	ACN BDA MIL ORR ETR GSC
OTS B/U	Apr 20		ETR	ACN AGO BDA GWM HAW MIL ORR ROS QUI ETR ARIA GSC
TIROS-N	May	Atlas F	WTR	ACN HAW ORR QUI SM ULA WNK ARIA SAMTEC GSC
SFASAT-A	May 18	Atlas Agena		ACN AGO BDA ETC GDS GWM HAW MAD MIL ORR QUI ULA ARIA SAMTEC GSC & LASER STATIONS LTF XAA XBB XCC XDD XEE XFF XGG
PIONEER	May 20	Atlas Cent	ETR	ACN BDA MAD MIL WFC ARIA ETR GSC
GOES-C	May 25		ETR	ACN AGO BDA GWM HAW MIL ORR QUI ROS ARIA ETC GSC
SOLWIND	Jun			ETC WTR GSC
ESRO-GEOS-2	Jun		ETR	ACN AGO BDA GWM HAW MIL ORR QUI ETR GSC

Tracking Station Report

Listed below are several observatories with addresses as complete in some and in others a more complete address would be needed in order to send covers.

T Chabot Observatory
4917 Mountain Blvd.
Oakland CA 94619

T Dearborn Observatory
Northwestern University
Evanston, Ill 60201

T Loines Observatory
Maria Mitchell Assoc.
Nantucket Is. Mass 02554

T McCormick Observatory
University of Virginia
Charlottesville, VA 22903

T Warner & Swasey Observatory
Case Western Reserve University
1975 Taylor Rd.
E. Cleveland OH 44112

T Kaunas Observatory
Lithuania

T Vilnius Observatory
USSR

Page 19 Directory cross P-14 out.
T Griffith Observatory
2800 E. Observatory Rd.
Los Angeles, CA 90027

Noumea Satellite Station
Noumea, New Caledonia

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For the 25th anniversary of the Turks and Caicos Island U.S. tracking station(E-101) a set of six stamps was issued.

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Sorry to say no one to service covers from the National Scientific Balloon Facility at Palestine, Texas. Mrs Ward will no longer service covers and a reply from the facility states they do not have the time to get involved in this.

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More complete addresses:

Grand Bahama AAF
P.O. Box 4608
Patrick AFB, FL 32925

Pulantant Earth Station
P.O. Box 3176
Agana, Guam 96910
(This station will apply a 3x3" cachet)

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Several issues ago was mention about the Marisat stations. Not only does the Comsat General Corporation's Marisat system have stations location on shore, but they are also located on ships. The sea going installations are from the May 1977 issues of the Sea Technology and this is courtesy of Kenneth Bieda.

OIL DRILLING SHIPS/PLATFORMS

The following listings indicate vessel name, country of registry and company name.

ALASKAN STAR, USA, North Star Drilling Company, Houston TX.
PACESETTER III, USA, EXXON, USA, New Orleans, LA
OCEAN RANGER, Panama, Atlantic Richfield Co., Dallas(Chartered from Odeco, New Orleans)
BEN OCEAN LANCER, UK, Chevron Overseas Petroleum, San Francisco

OIL EXPLORATION SEISMIC

NIOBE, USA, Shell Oil Co., New Orleans
U.S. OLYMPIC, USA, Dresser Olympic Div., Dresser Industries, Houston TX
JONSSON, Canada, Texas Instrument/Geophysical services, Dallas, TX

OIL TANKERS

ARCO FAIRBANKS, USA, Atlantic Richield Co., Long Beach, CA
ARCO JUNEAU, USA, Atlantic Richfield Co., Long Beach, CA
ARCO RUDHOE BAY, USA, Atlantic Richfield Co., Long Beach, CA

CHEVRON HAWAII, USA, MARAD/Chevron Shipping Co., San Francisco CA
MOBILE AERO, USA, MARAD/Mobile Shipping & Transportation Co., Connecticut
MORMACSTAR, USA, MARAD/Moore-McCormack Bulk Transport Inc., Stamford, CT
ESSO COPENHAGEN, Liberia Exxon International Company, New York
ESSO WILHELMSHAVE, Liberia, Exxon International Company, New York
ESSO BANGKOK, Panama, Exxon International Company, New York
ESSRO MALACCA, Panama, Exxon International Company, New York
ESSRO PHILIPPINES, Panama, Exxon International Company, New York
FERCRAIG, Norway, SDS Norway/Fearnley & Eger, Norway
MESSINIAKI CHARA, Greece, M.A. Karageorgia Shipping Agencies, Piraeus, Greece

PASSENGER SHIPS
ROYAL VIKING SEA, Norway, SD Norway/A-S Goodwill, Lysaker, Norway
QUEEN ELIZABETH 2, UK, The Cunard Steam Ship Co., Ltd., London W1 (IMRC)

CONTAINER/CARGO
AMERICAN ACE, USA, MARAD/United States Lines, New York
GOLDEN BEAR, USA, MARAD/Pacific Far East Line, San Francisco
LASH ATLANTICO, USA, MARAD/Prudential Lines, Inc., New York
LASH ITALIA, USA, Prudential Lines, Inc., New York
LASH PACIFICO, USA, Prudential Lines, Inc. New York
LASH TURKIYE, USA, Prudential Lines Inc., New York
ATREVIDA, Denmark, East Asiatic Company, Ltd., Copenhagen, Denmark(DANNEBROG)
BAMSE DAN, Denmark, Den Koggelige Groenlandske handel, Aalborg, Denmark
ITALICA, Italy, Societa di Navigazione Italia, Genoa (SIRM)
NOPAL BRANCO, Norway, SDA Norway/K-S Benargus v/Oivind, Lorentizen, Oslo
TOYAMA, Norway, SDA Norway/Wilh, Wilhelmsen, Oslo, Noway
INDUS, Sweden, STA/AB Svenska Ostasiatiska, Kompaniet, Gothenburg, Sweden

OTHER SHIPS
CREST, USA, Great Lakes-Dredge & Dock Co. Chicago, IL
JOHN A. MACDONALD, Canada, Dept of Transport, Ottawa, Canada
AL HASA, Panama, Global Transport Organization, San Francisco, CA
DONGHAE-HO, Saudi-Arabia, Hyundai Construction Co., Saudi Arabia
MERCURY, UK, Cable & Wireless, Ltd London
POST ENTERPRISE, UK, Peninsular & Ocean Steam Navigation Co., London (IMRC)

POSSIBLE INSTALLATIONS
The following listings indicate vesel name, type of ship(in parentheses) country of registry and company name:
FRED H. MOORE (Seismic) USA, Mobil Exploration & Producing Services INc. Dallas
KING OSCAR (Tuna Boat),USA, Tuna Fleet Management Inc., San Diego
UNKOWN (Driller Ship), Canada, Eastcan
NAI MARIE AMELIA (Tanker), Italy, Navigazione Alta Italia SPA Italy
KANAKURA MARU, Japan, NYK Line Japan
NEDDRILL II (Drill Ship), Netherlands, Mobil Exploration & Producing Services, Inc., Dallas
GRANADA (Tuna Boat), Panama, Tuna Fleet Management Inc., San Diego
PORTOBELLO (Tuna Boat), Panama, Tuna Fleet Management Inc., San Diego
CABLE VENTURE (Cable), UK, Cable & Wireless Ltd., London
UNKOWN, USSR, MASH/Intermark
INDIAN SEAL (Seismic,Magnavox,USA,Digicon Geophysical Corp., Houston TX
KDD MARU (Cable Ship), JRC-Japan, Japan, KDD/Tokyo
KURAMA MARU (Cargo), S-A, Japan, KDD/NYK Line, Tokyo

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On page 10 under Launch Schedule, two Japanese facilities are listed for the EXOS-A and ISS-B. Here are the addresses and GOOD LUCK.

KAG Kagoshima Space Center
University of Tokyo
Post Office
Uchinoura, Kagoshima, Japan

TASC Tanegashima Space Center:NASDA
Minamitane-CHP
Kumage Gun Kagoshima Pre.
Japan

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Cosmonauts from Poland, Czechoslovakia and East Germany will be launched into space aboard Soviet spaceships. This report is from the Trybunda Ludu, the Communist party newspaper. They will be under the command of experienced Soviet cosmonauts. These and others are being trained in Soviet space centers.

MY COLUMN by Sean Marsar

What ever happened to Astronaut Scott Carpenter? According to a copy righted story in the San Diego Evening Tribune a small group of Americansis seeking to undertake the biggest sunken-treasure hunt in history, the salvage of a Japanese freighter sunk 31 years ago by a U.S. Navy Submarine.
The group estimates the total value of the treasure at 5 Billion Dollars and is seeking salvage rights from China to recover the Japanese freighter AWA NARU, which was sunk in 185 feet of water in the Formosa Straight. The Hong Kong-based concern called SALAVAGE & DIVING includes former astronaut-aquanaut SCOTT CARPENTER; Capt John Bennett former navigation officer of the Navy submarine that sank the freighter; JON LINDERGH, son of aviation pioneer Charles Lindberg and Bill Bunton a former aquanaut who worked with Carpenter on the SEALAB II project in 1965.
The AWA Maru ostensibly was a hospital ship, but she also was a plunder ship. She had been guaranteed safe passage by the United States to deliver Red Cross supplies to allied prisoners of war in Malaysia and the Dutch East Indies and to pick-up wounded Japanese soldiers.
But, instead of-or perhaps in addition to-wounded men, the ship picked up a cargo of strategic metals and treasure plundered from occupied territories.
On April 1, 1945, laden almost beyond her capacity and presenting a low silhouette that resembled a destroyer, she was picked-up on the radar scope of U.S. Navy submarine QUEENFISH. In the dense fog Queenfish mistook her for a warship and fired four torpedoes at her. All of them hit and the AWA MARU sank in less than two minutes. The Queenfish picked up the sole survivor of the 2009 people aboard the freighter.
Queenfish's skipper Commander C. Loughlin, was court-martialed and found guilty of negligence. The United States apologized for the incident, and nothing more was heard about the ship until Salvage and Diving's application to Peking came to light.
Try writing to the U.S. EMBASSY in Hong Kong and ask them to forward your autograph request to Scott Carpenter. Good Luch.

SPACE SHUTTLE NEWS

A C-5 Galaxy from DOVER AIR FORCE BASE, DEL. on a routine mission to Kennedy Space Center recently became the FIRST such aircraft to touch down on the new Space Shuttle Landing Strip, testing the strength of the strip..
"Even the Space Shuttle won't be quite as heavy as we were", said MSgt Denis Recker, flight engineer on the mission. "That's what the Space Center people were interested in, to see how well the strip could stand the stress". Try writting to MSgt Reckner and the other crew members for their autographs on a Space Shuttle cover C/O 512th Military Airlift Reserve Wing at Dover A.F.B. I dont think any covers were serviced for the event as I haven't received any from Kennedy Space Center Servicer.

CENTER TESTING CRITERIA FOR WOMEN ASTRONAUTS.

Johnson Space Center, Houston, Texas. Physicians at the centers Cardiopulmonary Laboratory have begun tests to establish criteria for the selection of the nation's first women astronauts.
Dr. R.L. Johnson said that the current tests (Nov 29-30 Dec 1-2) would seek to determine whether women respond differently than men treadmill exercises and to circulatory system stresses induced by lower body pressures.
On the treadmill tests, the speed and tilt of a moving belt are changed while scientists moniter the heart rate and blood pressure of women volunteers. Special devices encasing the volunteers from the waist down determine their reactions to pressure changes.
MARSHA IVINS is a NASA Engineer who is servering as a medical test subject. If anyone has a list of the female test subjects send to me and I will print it in my next column.
Tests were done in 1974 at AMES RESEARCH CENTER using 12 U.S. Air Force Nurses as Test Subjects.

SPACE SHOE FOR THE SHUTTLE.

Johnson Space Center; The second generation of the suction-cup boots will allow a Spaceman to remove cups on the bottom of boots for normal walking or floating in space. Prototype Evaluation Testing was done Dec 3, 1976 at Johnson for the crew "ORBITER CREW SUCTION-CUP TYPE FOOT RESTRAINTS".

SPACELAB INVESTIGATORS CHOSEN

The first Spacelab flight in 1980 will carry 222 scientists representing the United States and 14 other countries. The participants were chosen by NASA and the European Space Agency from among more than 2,000 candidates who responded to invitations to participate in the jointly planned NASA/ESA mission.

Of the 86 scientists (17 principal investigators, 69 co-investigators) chosen by NASA, 81 are from the United States. The others are from India, Japan, Canada, France, and Belgium. The remaining 136 scientists selected by ESA come from 10 ESA member states, and Austria and Norway. The solar terrestrial division in NASA's Spacelab-1 payload. B.G. Noblitt is the program manager and W.W.L. Talyer is program scientist. The Marshall Space Flight Center will have project management responsibility for Spacelab-1, with R.E. Pace as mission manager and C.R. Chappell a mission scientist. ESA's Office of Spacelab Payload Integration and Coordination at Porz-Wahn, West Germany is responsible for the ESA payload for Spacelab-1.

The principal investigators selected by NASA and their research areas are:

M.R. Torr -University of Michigan
Atmospheric Sciences

S.B. Mende -Lockheed Palo Alto Research Laboratories, Atmospheric Scie.

T. Obayashi -University of Tokyo
Atmospheric & Plasma Physics

S. Biswas -Tata Institute of Fundamental Research (India)
Cosmic Ray Physics

C.S. Bowyer -University of California (Berkeley)
Ultraviolet Astronomy

L.R. Young -Massachusetts Institute of Technology
Vestibular Studies

M.F. Reschke -NASA, Johnson Space Center
Vestibular Studies

S.L. Kimsey -NASA, Johnson Space Center
Blood Kinetics

E.W. Voss -University of Illinois
Immune Responses

F.M. Sulzman -Harvard Medical School
Circadian Rhythms

A.H. Brown -University of Pennsylvania
Plant Growth Studies

E.V. Benton -University of San Francisco
High Enery Particle Dosimetry

J. Hart -University of Colorado
Atmospheric Sciences

C.H.T. Pan -Shaker Research Corporation
Lubrication

K.E. Demorest -NASA, Marshall Space Flight Center, Tribology

C.B. Farmer -NASA, Jet Propulsion Lab.
Atmospheric Sciences

R.C. Wilson -NASA, Jet Propulsion Lab.
Radiation Measurement

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URANUS AND NEPTUNE SPIN

The planets Uranus and Neptune spin at about the same rate the earth does, means their days are about as long as earth days and they were probably formed out of the same debris the earth was.

Saturn and Jupiter are the fastest rotating planets in the solar system. Saturn turns once every 10 hours and 38 minutes while Jupiter rotates once every 9 hours and 55 minutes.

Fresh measurements by Kitt Peak astronomers show that Uranus turns once every 25 hours and Neptune once every 22 hours.

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The Soviet Union and the United States have signed an agreement that could lead to the first international space station. The agreement extends the partnership that resulted in the Apollo-Soyuz project in which Soviet and U.S. capsules linked in space

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It is reported Japan has a satellite tracking station on one of the Christmas Islands. Since these islands are owned by Britain, United States and New Zealand, it is not known which country owns the island the station is on.

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A 1.6 million dollar telescope, the world's largest of its kind is being installed at an observatory on Jelm Mountain in Wyiming. It is an infrared telescope that scientists say is sensitive enough to measure the heat from a warm iron on the moon. The instument uses a 92-inch mirror to collect heat, or infrared, energy that is contained in all celestial objects, visible or not.

TRADING & SELLING CORNER

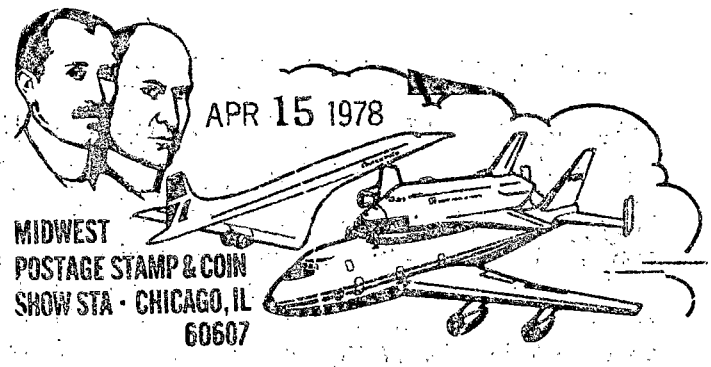
List #19 Winter 1977-78 is available for 25¢. Included are covers of ASTP, Arctic, Oceanography, Inauguration and many others. Art Silhanek, 526 Willow Ave., Piscataway, NJ 98854.

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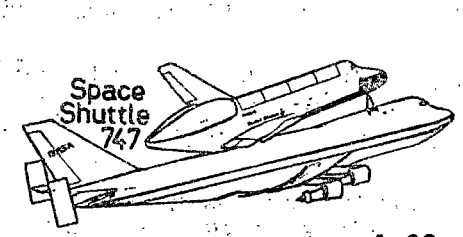
Considering disposing of all my space covers, bulk or individually. Would like to sell to someone in Germany as I am station their. Would appreciate a stamped addressed envelope with you inquiry. Maj. J.E. Hogan, Heidelberg MP Station, APO, New York, NY 09102.

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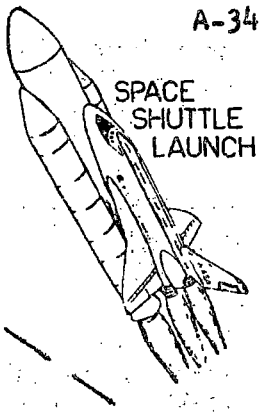
A special postmark will have the portraits of the Wright Brothers the Concorde and the Boeing 747 with the Spa Space Shuttle at the April 14-15, 1978 Midwest Postage Stamp & Coin Show, Palmer House, Chicago, IL. Printed cacheted covers with the 13¢ Solo Transatlantic Lindbergh flight stamp are available from the American Topical Association, 5014-C West Center Street, Milwaukee, Wis., 53216. For the set of three (3) pictorially cancelled and cacheted covers the price is $2.00 per set or eight (8) covers for $5.00.



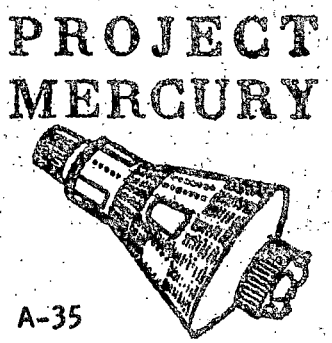
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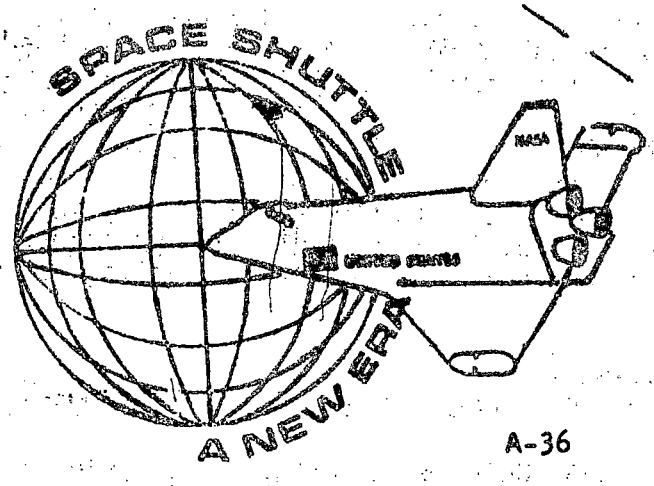
A-33



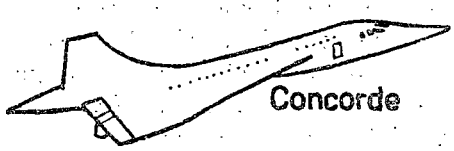
A-34



A-35



A-36



A-37

Have two new rubber stamps at this time and three previous released. The A-36 rubber stamp is by space artist Bill Numeroff and is made available to space collectors by thew International Association of Space Philatelists (IASP) (THANKS Bill & IASP). Prices are delivered by Third Class mail. Stamped addressed envelope for list of others.

A-33 $2.25 A-34 $2.00 A-35 $2.25

A-36 $2.75 A-37 $2.00

Rubber stamps discontinued A-1, A-2, A-3, A-4, A-5, A-9, A-15

Bob Ekas P.O. Box 295 Chicora, PA 16025

Dear Collectors:

The Dish is coming your way once again and hope you enjoy. I hope to put The Dish out four times in 1978. For these four issues I am asking you to send $2.25 which will meet costs. Some of you have already paid this amount and others have a deposit on hand. If a red check appears by your address label, send the full $2.25. If an amount appears by the red check, this is the amount you owe to make the $2.25 figure. If no red check, then do not send anything.

GOOD COLLECTING

Sincerely,

Bob

PAYLOAD SPECIALISTS TO BE SELECTED FOR SPACELAB 1

By Sean Marsar

MARSHALL SPACE FLIGHT CENTER, Ala. -- A promise made years ago to the scientific community by the National Aeronautics and Space Adminisration--that its new Space Shuttle would enable scientists to ride up to earth orbit and actually operate their own equipement--is now in the process of becoming a reality.

The first Spacelab mission, scheduled to fly aboard the Sapce Shuttle soon after it becomes operational in mid-1980, will have among its crew two "payload specialists" selected not by NASA, but by the scientists participating in the Spacelab mission. Since this first mission is a joint venture of NASA and the European Space Agency, one of these payload specialists will be a European.

All nineteen American candidates will be interviewed by Spacelab 1 scientists who will meet at NASA's Marshall Space Flight Center during the week of Sept. 13-16.

Three of these candidates are women. If selected, one could well become the first American woman to venture into space.

The responsibility of flying and maintaining the Space Shuttle vehicle will rest with the astronaut-pilots and astronaut-mission specialists, leaving the payload specialists free to concentrate on the instruments put aboard by the scientific investigators whom they represent.

The scientists developing Spacelab 1's 42 investigations are represented by an international committee known as the Investigators Working Group. A part of this working group--the Payload Specialist Selection Group--is in charge of this week's interviewing process at the Marshall Center. In a short while, the Selection Group will interview canidates in Europe.

In 1978, they will recommend candidates to the entire Investigators Working Group, which will select four payload specialist trainees. All four will be headquartered at the Marshall Space Flight Center during their approximately two year training program. One pair--an American and a European--will fly aboard Spacelab 1 to operate the experiments of the scientists who selected them. The other two will provide support from the ground control center during the mission.

The Spacelab 1 mission emphasizes stratospheric and upper atmospheric research, but research will also be done in plasma physics, biology, medicine, astronomy, solar physics, Earth observations and in technology areas such as thermodynamics, materials processing and lubrication.

The flight will last seven days.

The 19 candidates reprting for interviews are:

Carlene W. Arthur. Born March 13, 1947; Ph.D, UCLA; National Research Council; Huntsville, Ala.

Harry L. Atkins. Born October 20, 1935; MS, Univ. of Georgia; NASA, Marshall Space Flight Center, Huntsville, Ala.

Allan H. Brown. Born September 14, 1917; Ph. D, Univ. of Rochester; University of Pennsylvania; Philadelphis, PA

Michael L. Finch. Born June 10, 1939; MSEE, Stanforn University; Lockheed Missiles and Space Cp.; Palo Alto, Calif.

Craig L. Fischer. Born February 17, 1937; MD, Univ. of Kansas; The Palm Desert Medical Group, Inc.; Palm Desert, Calif.

R. Thomas Giuli. Born January 26, 1936; Filosofic Doktor, Univ. of Stockholm, NASA Johnson Space Center; Houston, Tex.

Frederick G. Huegel. Born March 5, 1952; BSEE Univ. of Cincinnati; MASA, Goddard Space Flight Center; Greenbelt Md.

Mary H. Johnston. Born September 17, 1945; Ph.D, Univ, of Florida; NASA, Marshall Space Flight Center; Huntsville, Ala.

Michael L. Lampton. Born March 1, 1941; Ph.D, Univ. of California at Berkeley; Berkeley, Calif.

Byron K. Lichtenberg. Born February 19, 1948; MS, MIT (Ph.D candidate); Cambridge, Mass

Robert T. Menzies. Born March 31, 1943; PH.D, Calif. Institute of Technology; Jet Propulsion Laboratory; Pasadena, Calif.

James E. Myrick. Born January 10, 1946; Ph.D, Univ of Alabama in Birmingham; National Research Council; Johnson Space Center, Houston,Tex.

Ann F. Whitaker. Born March 17, 1939; MS, Univ of Alabama; NASA, Marshall Space Flight Center; Huntsville, Ala.

Charles M. Oman. Born February 22, 1944; Ph.D, MIT; MIT; Cambridge, Mass

Frederick K. Orcutt. Born December 26, 1936; BSME, Univ of Wisconsin; Ampex Corp.: Redwood City, Calif.

Donald E. Parker. Born April 6, 1936; Ph.D, Princeton Univ., Miami University; Oxford, Ohio

Richard J. Terrile. Born March 22, 1951; Ph.D, Calif. Institute of Technology; California Institute of Technology; Pasadena, Calif.

Leon B. Weaver. Born March 10, 1943; BS, Perdue Univ.; NASA, Marshall Space Flight Center; Huntsville, Ala.

William E. Thornotn. Born April 14, 1929: M.D., University of North Carolina; NASA, Johnson Space Center, Houston, Tex.

(Listing shows name, birthdate, highest academic degree and where received, employer)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

SPACE SHUTTLE CARGO HANDLING ARM

A prototype of the cargo handling arm to be installed in Shuttle Orbiters was tested Sept. 8, 1977 at a Johnson Space Center laboratory, Houston. The arm is made to meve a 32,000 pound "payload" which floats on a cushion of air over the 80 by 100-foot table to simulate weightlessness.

What may be the world's largest remotely controlled manipulator system, this arm has a reach of nearly 50 feet and must provide gentle handling for delicate instruments as whole satellites are removed from Shuttle's payload bay and put in orbit, or are retrieved from orbit, stowed and brought back to Earth for repairs or change of instruments.

In space, the arm will be operated by an astronaut who remains inside the Orbiter cabin and observes the action through windows and by closed ciruit television.

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The United States Air Force has announced that starting in early 1978 women will be assigned to the underground launching crews on Titan 2 intercontinental ballistic missiles, servicing in the same capacities as men.

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THE DISH

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Elaine Bruce	Rudolf Rothgiesser
Pedro D. Sarmiento	Kenneth Bieda
Dr Michael K. Gauthier	Vlad Eismont

A Contributing Editor has contributed something toward this issue. I appreciate this very much hope others will be mentioned in future issues. Am hoping no one has been forgotten.

Remember what the red check means- send $2.25.

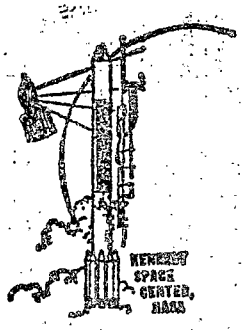
Cachets & Cancels

The following cachets and postmarks have been rearranged in order not to take a lot of room with just a few covers. Each cover is enclosed within broken lines. Several of the covers have colored cachets and at this time will not go into detail. If you have a cover, you feel others should know about or see, send a good copy or the cover with details as to how it was obtained or anyother information you think needed.

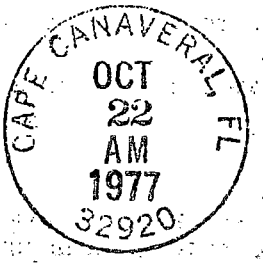
On this and the following pages and in the future a letter will appear with each cover shown. The letter indicates if the cover was sent direct to the facility or by an organization, or serviced by someone. Service details were in an earlier issues and a list is available for a stamped addressed envelope.

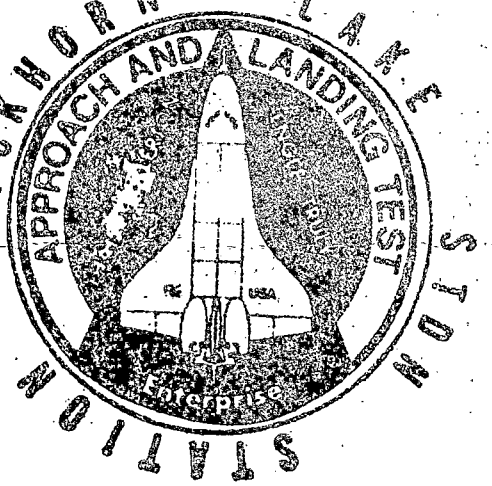
A - Own cover sent or do not know servicer or sponsor.
B - Kenneth Havekotte, 1190 Montego Bay Se. West, Merritt Is., FL 32952
C - Carol Noble, P.O. Box 128, Pearlington, MS 39572
D - NASA Exchange Council, NASA H.L. Dryden Flight Center, Box 273, Edwards CA 93523
E - Philatelic Cover Service, NASA Exchange-MSFC Branch, Marshall AFC, AL 35812
F - J.T. Lovelady, 10249 Bon Aire Dr., El Paso, TX 79924

ISEE A/B
Delta 185



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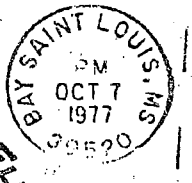




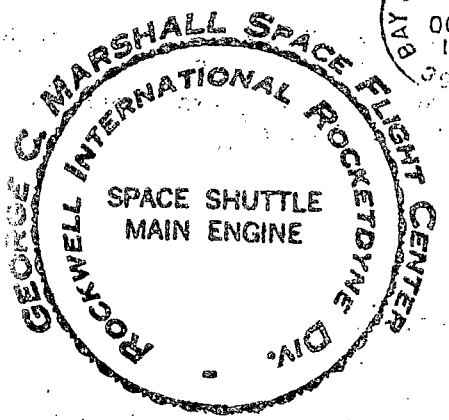
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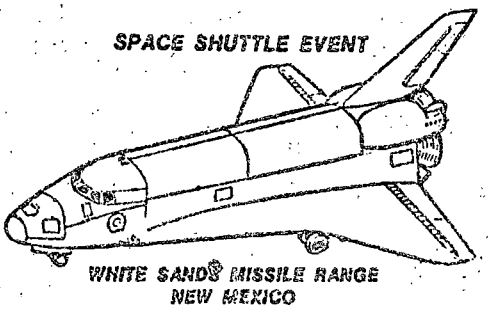
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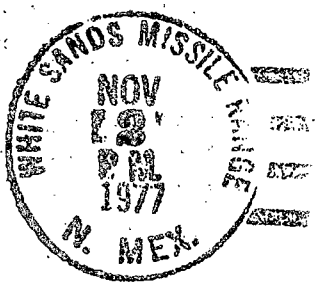


C



ENGINE 004 REMOVED
ENGINE 0103 ARRIVES





F

Attitude Control Rockets for Shuttle Reaction Control System Arrived White Sands NASA Facility for Testing.

LYNDON B. JOHNSON
SPACE CENTER
HOUSTON, TEXAS

HOUSTON, TX
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SPACE SHUTTLE

Cargo handling arm

prototype lifts a 15x30 payload

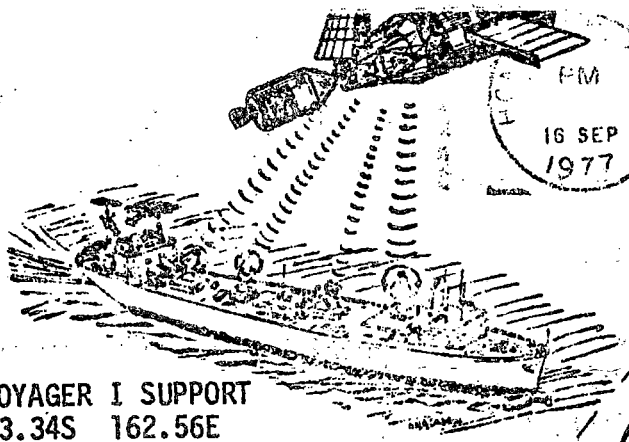
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NASA
BERMUDA STATION
ON THE OCCASION OF

INTELSAT IV-A F-5
International
Communications Satellite

Karen McBride

(A)



PM
16 SEP
1977

VOYAGER I SUPPORT
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E. R. Zink

E. R. ZINK
NASA Station Director
Vanguard Tracking Station

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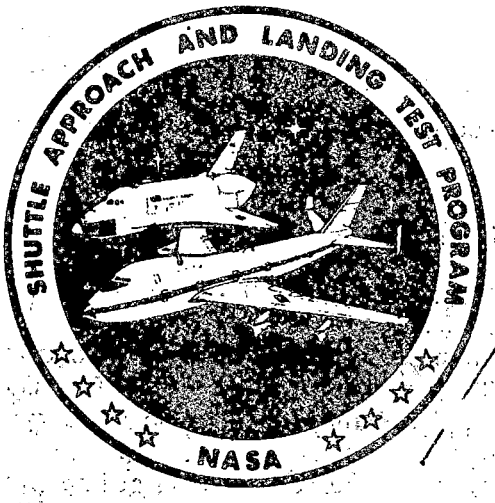
Nike Black Brant VC
the guidance system

Fourth Free Flight

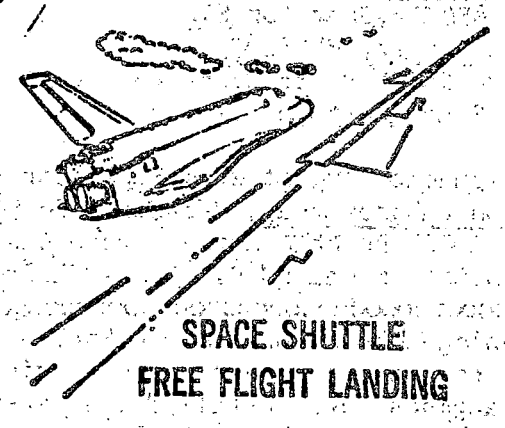
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ENGINES EXPOSED

MARSHALL SPACE FLIGHT CTR.
OCT 12
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SPACE SHUTTLE
FREE FLIGHT LANDING

(E)

DEVELOPMENT / TESTING / PRODUCTION
for SPACE SHUTTLE / SPACE LAB.

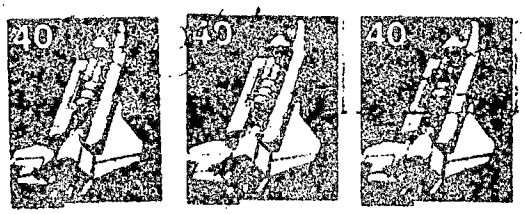
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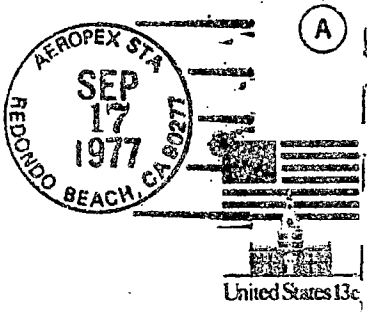
Purp:

Date : 3 3 77

Personnel Involved : Mike Taylor / Nicholas, Fein







TRANSAT



NASA SCOUT - 200

U S NAVY - NASA
LANGLEY RESEARCH CTR.

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FOR THE AUTOGRAPH COLLECTOR By John J. Macco

HEAO-A launched August 12, 1977 Atlas Centaur vehicle #45
Marshall Space Flight Center, Huntsville, AL 35812
Dr Fred Speer-Project Manager;Fred Wojtalic-Chief Engineer;Charles Meyers-Manager of Spacecraft Office;Joseph Jones-Mission Manager
Goddard Space Flight Center, Greenbelt, MD 20770
Dr Frank McDonald-Project Scientist;Dr Elihu Boldt-Principal Investigator Cosmic Ray Experiment (A-2);Ronald Browning-Manager Cosmic Ray Experiment (A-2)
Kennedy Space Center, FL 32899
William Brosier-Project Engineer

SIRIO launched August 25, 1977 Delta #133
Goddard Space Flight Center, Greenbelt, MD 20770
Robert Goss-NASA Manager for SIRIO
Kennedy Space Center, FL 32899
Hugh Weston Jr-Chief Delta Operations;Bert Grenville-Complex 17 Operations Manager;
Dave Brogdon-Spacecraft Coordinater

VOYAGER 1&2 launched August 20 & September 5, 1977 Titan/Centaur
Jet Propulsion Laboratories, Pasadena, CA 91103
Rodney Mills- NASA Program Manager;John Casani-JPL Manager;Dr Milton A. Mitz-NASA Program Scientist;Dr Edward C. Stone-JPL Project Scientist

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

What's happening? Who's confused? - Engines 2001, 2002 and 0101 installed MPTA. The same engines removed, now reinstalled. This seeming random behavior does have some reason. The engines were installed the first time minus many parts so the MPTA's electronics could be checked out. They were then removed to install the missing parts. They are reinstalled to support the ET Tanking test, removed for hot-fire test, re-installed to become part of the cluster test.

SPACELAB By John J. Macco

In the 1980's reasonably healthy men and women of many nations who need to go into space to conduct important scientific and technical experiments will be provided that opportunity through SPACELAB. SPACELAB supplies experimenters with a fully furnished laboratory adapted for weightless enviroment of space and pressurized for working without space-suits. Spacelab development is financed by 10 European nations under agreements with the European Space Agency (ESA). Spacelab will be carried in the cargo bay of the Shuttle Orbiter.

Developed on a modular concept, Spacelab can be varied to meet specific mission requirements. Its two principal components are the pressurized module which provides a laboratory with a shirtsleeve working enviroment and the open pallet that exposes materials add equipment directly to space. The pressurized module comes in two segments. One, called the core segment contains supporting subsystems such as data processing equipment and utilities for both the pressurized module and the pallets. The second, called the experiment segmentis used to provide more wotking lanoratory space. It contains only floor mounted racks and benches. When only one segment is needed, the core segment is used.

Each pressurized segment is a cylinder 4.1 meters (13.5 feet) in diameter and 2.7 meters (9 feet) long. When both segments are assembled with end cones, their maximun outside length is 7 meters (23 feet). A tunnel connects the pressurized laboratory with the pressurized cabin of the Shuttle Orbiter cabin. Five pallet segments each 3 meters (10 feet) long, are available. Each pallet is not only a platform for mounting instruments but also can cool equipment, provide electrical power and furnish connections for commanding and acquiring data from the experiments. When only pallets are used, the essential subsystems for supporting experiments (power, communications, etc.) are protected in a small pressurized and temperature-controlled housing called an igloo. The pallets are designed for large instruments, experiments requiring direct exposure to the space enviroment or those needing unobstructed or broad fields of view. Spacelab not only can be modified but is also reusable for at least 50 space missions.

As noted earlier, Spacelab will be open to healthy men and women of all nations regardless of whether they meet qualifications as strigent as those required for astronaut pilots. The experimenters aboard Spacelab are called payload specialists. They are nominated for flight by the organization sponsoring the payload. They are accepted, trained and certified for flight by NASA. Their training includes zero granity exercises, simulations of operations and emergencies and briefings of flight plans and procedures and space flight housekeeping. From one to four payload specialists can be accomodated for each Spacelab flight. They coordinate their activities in space with experimenters on the ground and with the crew of the Shuttle. The Shuttle crew includes its commander, pilot and mission specialist who is responsible for management of Shuttle resources and equipment supporting Spacelab. Among the experiments that may be performed in space may be the following: earth surveys, astronomy, life sciences, biomedicine and industrial technology.

Spacelab is expected to make significant contributions to science, medicine, industrial processing and many other valuable fields.

I hope this gives you an understanding of the objectives and workings of Spacelab.

(Information for this article is taken from NASA release #77-125/)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

NASA NEWS By John J. Macco

The eighth flight model of the Navy's new long range Trident missile was successfully launched October 19, 1977 at 2:09 PM. EST from Pad 25 at Cape Canaveral and impacted into the target area in the Atlantic Ocean. All three stages functioned as intended.

The ninth flight model of the Trident missile was launched successfully on December 5, 1977 at 9:08 AM EST from Pad 25. All three stages performed as intended.

The European Space Agency's Orbital Test Satellite (OTS) was unsucessfully launched September 13, 1977. The Delta 3914 launch vehicle exploded 55 seconds after its 7:31 PMK EST liftoff from Cape Canaveral. NASA named a panel, headed by Henry Plohr, Associate Chief of the Space Propulsion Division at Lewis Research Center to investigate the failure of Delta launch vehicle #134

Engineers at NASA's Marshall Space Flight Center have found a way to skip one phase of costly air-drop tests schedules for the Space Shuttle's recoverable solid rocket boosters. Instead, they will perform this testing on a sled in the New Mexico desert.

Two successful air-drop tests of this system have been conducted at the National Parachute Test Range at El Centro, Calif., where additipnal drop tests are planned. The air releases are made from a B-52 aircraft operating out of the NASA-Dryden Space Research Center.

Engineers have concluded that a high-speed ground sled test could provide the data they need in a later phase of the testing called "broadside deployment."

Orginally, this test phase called for an air drop of a specialized vehicle configuration. Using the sled test approach, engineers believe the objectives can be better controlled, and at a cost savings.

Royce Mitchell, Marshall engineer in charge of the program, explained that the broadside deployment test are necessary because the solid rocket boosters will "come in flat, or sideways, not like an arrow. The air flows across the nose cone more at right angles and we must be sure that the nose cap will separate and the recovery parachutes will deploy at this reentry angle," he said.
(This is from the December 1977 issue of NASA Activities)

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American Airlines is responsible for maintenance and operations support of NASA's 747 Shuttle carrier aircraft under an $806,000 contract awarded by JSC.

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What began as a dry run would up with the world's most powerful communications satellite being used in July 1977 to transmit disaster-related information from flood inundated Johnstown, Pa., to the American Red Cross headquarters in Washington, DC. The Johnstown events began when the Communications Technology Satellite, a cooperative NASA and Canadian spacecraft launched in January 1976, was being tested by the Red Cross and Comsat Corp. in a simulated disaster situation in Texas. The tests were part of a research program Comsat is working on with the CTS in an experiment that sought to demonstrate and evaluate emergency communications by satellite in the presence of natural disasters. The equipment included a 1.2-meter portable antenna which transmitted and received signals from CTS which is in synchronous orbit, stationed over the equator at an altitude of about 36,000 kilometers at 116 degrees W. longitude, just west of South America. From Johnstown, messages went through CTS to Comsat in Clarksburg, Md., where a 4.6-m antenna was used. Comsat at Clarksburg was connected with the Red Cross headquarters in Washington, DC.

ROBERT D. EKAS
P.O. BOX 295
CHICORA, PA 16025
USA



MAILED

THIRD CLASS

TO---

Mark P. Hreben
156 Bacon Street 3
Rossford, OH 43460