Text of VK6RCW

During the past month Meteor 3 4 has remained in service with daily transmissions on 137.300 MHz. Currently early afternoon passes are available with good visible mode imagery. Unfortunately the status of the spacecraft during early morning passes has not been verified here recently.

During some of the late afternoon passes this month the spacecraft was observed to go from light to darkness and back to light again as it skirted the terminator. On those occasions the spacecraft would switch from visible to IR then back to visible mode during a single south to north pass.

Pravda Izvestiya and others are extra exaggerated while proceeding along western press channels. The cosmonauts hear a lot from western news agencies and from radio amateurs around the world and sometimes do not believe their ears.

On February 17th Moscow TV relayed a direct TV session with MIR and the viewers could see how healthy and active the cosmonauts were. I myself know by day to day observations that the crew has a very good health and a high morale. Of course they meet problems technical failures even serious ones.

But they always keep good hearth and in cooperation with experts on the ground they resolve problems by repairing or replacing equipment or systems. Radio amateurs who have the possibility to communicate with the crew or to exchange information via Packet Radio certainly will share my opinion. I advise you all to take all press reports about MIR not with a pinch but with some pounds of salt.

Ionospheric F2 critical frequencies at Sydney on 3rd were depressed by up to 30 per cent 0000 to 0800 UT and 1600 to 1800 UT and enhanced by up to 20 per cent 1100 to 1400 UT and from 2000 UT on the same day. F2 frequencies were up to 30 per cent enhanced early on 4th returning to near normal until 7th.

Then there was some enhancement of up to 20 per cent 1700 to 2000 UT with up to 15 per cent enhancement on the following day returning to near normal for 9th. There was some sporadic E obscuring the F layer at 1000 and 2100 UT on 7th December. The geomagnetic storm on the 8th December was unexpected and its cause is unknown.

Apart from the use of GPS technology the US military forces are introducing what are known as EPLRS digital radios. This is the Enhanced Position Location Reporting System. These handi talkie sized units send out a coded signal to other units and to base stations so that their location can be identified exactly.

This allows each soldier vehicle etc to know where his mates are so they do not shoot at each other. It also tells the commander the overall troop positions. At the command base the signals are shown on a computer screen as little dots on a map of the area. They can be identified on the screen by shape colour etc according to the signal code.

The EPLRS can be interfaced with the radio equipment being used by the US forces Single Channel Ground Air Radio System radios operating in the low VHF military band so that the commander can give troop movement orders. The EPLRS sounds pretty nifty does it not? The price is 50 thousand US dollars each. I can hardly wait till they are on the surplus market for 5 dollars.

Because they are really caring non violent people at heart the US Military is

looking at non lethal weapons to neutralise an enemy but not harm them permanently. John Wayne would be devastated. Devices under development include Laser Dye Rods in 40mm diameter shells.

In military terms these are low cost items which emit an intense flash of light on impact. They could be used to saturate an enemy position and while the enemy is blinded physically and its optical electronic sensors disabled the marines can climb all over them and convince them of the errors of their aggression.

The planned launch of the Space Shuttle Colunbia was scrubbed at T minus 31 seconds. The countdown had been held for almost 2 hours at the 9 minute mark due to unfavorable weather conditions at Kennedy Space Center. A Command Processor in one of the 2 computer consoles that are required for a safe launch failed. These computers are located at the Range Safety Office at Cape Canaveral Air Force Station.

After 10 days in space and over 160 orbits and 4.1 million miles of space travel the Space Shuttle Columbia successfully completed its SAREX mission this week with a landing at Edwards Air Force Base in California. With over 300 packet contacts and numerous school contacts the SAREX payload on this mission was kept very busy at times.

One of the major highlights of this mission from a SAREX stand point was the testing of the shuttle bay mounted quarter wave vertical antenna on Orbits 61 and 62. From the ground station signal reports it was observed that the signals appeared to be 10 to 12 dB stronger compared with the shuttle window mounted antenna. This information is being compiled by the SAREX Working Group and is being forwarded to NASA officials.

Weigh out the correct quantities of the chemicals and grind them together in a mortar and pestle for 20 minutes to get them thoroughly mixed. Be careful not to loose any material. If you have not got a mortar and pestle then put all the powders into a test tube or small container with a lid and shake them together until you can not see any clumps of the white oxides.

The best technique is to use a die which makes a small disk or pellet of material. Put the mixture into the die and add a drop or two of alcohol. The die is made from steel and consists of 2 small pistons and a tube. To make a die drill a 30 mm piece of round steel with a 10 mm hole.

The pistons are 2 pieces of 10 mm steel rod wich are instered into each end of the tube. Once you have added the mixture to the die press the system to a few tonnes per square inch. You can do this by using a press or vice or even using a jack under the family car will do well.

After more than 450 orbits of aerobraking the Magellan spacecraft continues to successfully circularize its orbit around Venus. This week Magellan is passing through a phase in which the local gravity field changes. This phase is causing the spacecraft at its closest point to the planet to drift upward instead of toward the planet.

To keep the orbit change on course for achieving a 102 minute orbit by July 27 project officials plan to perform a maneuver today. The end game will begin to place Magellan in the desired orbit for collecting gravity data in the higher latitudes of Venus. The systems on Magellan remain in normal with temperatures well within expected ranges.

Nick Marshall W6OLO dreamed up the idea of putting an Amateur Repeater on the moon in 1965 during the APOLLO manned lunar exploration program when he met Owen Garriott W5LFL astronaut in training. Garriott was scheduled to go to the

moon on forthcoming APOLLO 18 or 19 or 20.

Nick used Project MOONRAY short for Moon Relay as an identifier for this concept. The idea was to build a package that could fit under the seat of the Lunar Rover vehicle. Nick had contacted NASA with this concept and they agreed to accept a package.

It would fit a space vacated by the exchange of batteries when fuel cells would be installed in the Lunar Rover vehicle. Hopefully Owen was to be the driver and would have been the astronaut to erect the MOONRAY package on one of the Lunar Rover excursions.

An arrangement was to be made to allow a special connector that would mate with space suit headphone and microphone connectors so that Garriott could plug into the MOONRAY package and make a few contacts with hams on Earth. He would then leave the package and continue on his routine assignments.

It is hoped that the results will provide an incentive to NASA to have an outside shuttle bay mounted antenna to be included on all SAREX missions. Although the bay mounted antenna was not expected to be used after its initial test it did unexpectedly find further use late in the STS 55 mission when an N connector was pulled loose from the window mounted antenna.

Astronauts quickly obtained permission to reconnect back to the quarter wave vertical antenna in the shuttle bay. Again SAREX officials reported that packet signals were booming into packet ground stations. The SAREX payload was finally stowed away on 5th May 1993 around 21 hours UTC after working flawlessly during the 10 day STS 55 mission.

A team of astronomers reports that recent NASA Hubble Space Telescope observations of a class of active galaxies further support the theory that they are fueled by a massive black hole at the center. The researchers say the HST results rule out vigorous star formation as the alternative explanation for the mysterious power source behind quasars and extremely bright galactic nuclei.

Alexei Filippenko Professor of Astronomy at the University of California in Berkeley said that our observations provide perhaps the most direct evidence to date that normal Seyfert galaxies and quasars are not powered by a burst of star formation. He also said that the most likely alternative is the standard model in which the energy is provided by matter falling into a black hole.

Seyfert galaxies are nearby galaxies with extremely bright central regions that often obscure the much dimmer stars in the surrounding galaxy. Quasars are among the most distant objects in the universe and are visible from Earth only because they are so bright.

Quasi stellar radio sources are called Quasars for short. Both types of objects are collectively referred to as active galactic nuclei or AGN and give off prodigious amounts of energy. Much of the radiation is in the form of high energy X rays and gamma rays.

Circa 1954 some geniuses in the Australian Government and their advisers in the PMG now Telecom decided that the new Australian TV network should go on VHF starting with a first channel on around 45 MHz and with others spaced out in 10 later 13 channels.

To accommodate this the 50 MHz amateur band was to move to 56 MHz. Some operators in VK6 in 1955 offered very strong opposition to this proposition by lobbying the Commonwealth Government to overturn the decision.

Plenty of supporting argument was put forward including the claim that TV stations below 100 MHz could cause problems overseas through the ionospheric propagation of VHF signals into other countries. The Minister for Communications at that time wrote back refusing to accept the arguments put forward telling us that his advisers had assured him TV signals in the 45 MHz and up region were most unlikely to be picked up outside of Australia.

Vain words since the Hon Min had hardly signed the letter before JA W and many other countries were worked in Australia and Russian TV was being copied loud and clear. Since those years of course the world has been worked from Australia. So much for a band that was held by the experts in 1955 to be only line of sight.

When Voyager 2 flew past Uranus in January 1986 it sent back images of a largely featureless orb. Now astronomers find that the atmosphere of the planet might not be so bland after all. Walter Wild and colleagues from the University of Chicago and the University of Arizona obtained near infrared images of Uranus that show a dark smudge about 35 degrees south of the equator.

It is reminiscent of the Great Dark Spot detected by Voyager 2 during its encounter with Neptune in 1989. Wild used an adaptive optics camera and one of the six 1.8 meter mirrors that make up the Multiple Mirror Telescope on Mount Hopkins in Arizona.

The instrument compensated for image motion induced by atmospheric turbulence yielding an angular resolution of about half an arc second. In addition to the dark spot the images show a bright region and a subtle irregular dark band near the pole.

The technological advances of the last few years particularly in electronics and informatics have led to the development of real time imaging and more recently to the advent of virtual reality.

The simulation unit at the European Space Agency Space Research and Technology Centre ESTEC in the Netherlands has since 1991 been investigating virtual reality which is recognized as a new simulation technique of undoubted interest for space applications.

The benefits of this new technology will be presented at the Paris air show at the ESA pavilion where 3 demonstration programmes will offer an opportunity to journey into virtual worlds. Exploring our solar system using semi autonomous craft as part of a mission to Mars for example would obliviate the need to expose astronauts to hostile conditions.

Using virtual reality techniques it will be possible to control from the Earth or from an orbiting spacecraft the movements of a rover on the surface of the red planet. This technique is known as telepresence and involves the operator receiving the information needed to feel immersed in this distant environment using stereo vision and able intuitively to control the movements of the vehicle.

One of the earliest aviation pioneers airmail pilot research engineer and aircraft designer is dead at 93. Fred Weick whose genius touched virtually every aeronautical discipline in a career which spanned a half century died July 8 in Vero Beach Florida.

Weick was a contemporary of aviation legends Charles Lindbergh and Amelia Earhart but did not receive the same attention as his more glamorous colleagues yet the contributions he brought to the struggling aircraft industry arguably outstripped any of his peers.

One of the first university graduates to apply his degree to a career in aeronautics Weick was also one of the first engineers hired by the original US Air Mail Service. His efforts in the early 1920s to establish emergency fields for night flying mail pilots were a pioneering challenge of the first order.

In advancing aeronautical technology he helped design the first wind tunnel devoted to full scale propeller research and wrote a textbook on propeller design now considered a classic.

In that period Weick worked for the predecessor of the NASA organization the National Advisory Committee for Aeronautics NACA at its Langley Aeronautical Laboratory in Hampton Virginia. This too was a pioneering endeavor as the Langley facility was the very first of its kind.

It was also at Langley that Weick reached another pioneering plateau. He headed the development of streamlined low drag engine cowling technology which was to advance aircraft performance dramatically. The NACA cowling first revolutionized civil air transport by making aircraft faster and more profitable.

It also found application on the bombers and fighters which played a prominent role in the air battles over Europe and the Pacific during World War 2. For this engineering breakthrough he won the prestigious Collier Trophy for NACA in 1929.

Another effect of his engineering versatility was the increasing reputation for excellence in aeronautical research which NACA earned among its supporters in Congress. Modest funding for the Langley Aeronautical Laboratory was sustained through the lean Depression years thanks in part to his work.

His passion for safety was evident when he built an experimental airplane in the early 1930s aimed at making flying as easy and safe as driving the family car. In addition to the integrated controls for ease of flying he incorporated the tricycle landing gear arrangement which is now the standard for virtually all aircraft including the space shuttle.

Later in the decade he improved on that design with the now famous Ercoupe the 2 seat all metal low wing aircraft which was so easy and safe to fly that many students mastered it in five hours or less. Half of the 6000 Ercoupes built are still flying today which is a tribute to his engineering foresight.

His prevailing goal was to make aviation directly accessible to middle class Americans. His work with Piper and Cessna aircraft companies set safety standards of lasting benefit to both the agricultural airplane cropdusters and general aviation industries.

His own words characterize his dedication to that pursuit. I feel very fortunate to have been alive throughout the early ventures of atmospheric flight and to have been one of the multitude working to further them. My activities in aeronautics have enriched my life greatly. It gives me satisfaction to find that many of the improvements that we worked on more than half a century ago are still in general use.

Services will be held Sunday 11th July 3 pm at the First Presbyterian Church in Vero Beach Florida. Weick requested that donations in lieu of flowers be sent to the Fred E Weick Scholarship Fund at the Embry Riddle Aeronautical University in Daytona Beach Florida.

Weick is survived by his 3 children Donald V Weick of Camden South Carolina Mrs

Elizabeth J Weick of Greenbelt Maryland and Richard F Weick of London Ontario Canada. 9 grandchildren 11 great grandchildren 2 great great grandchildren and 2 brothers Arthur Weick of Winterhaven Florida and George Weick of Fort Lauderdale Florida.

To help foster technological assistance in the private sector members of Section 353 are working with the Innovative Science and Technology office of the Ballistic Missile Defense Organization formerly the Strategic Defense Initiative and Palo Alto based Space Systems Loral in testing performance and operating life of a Russian made thruster.

The Stationary Plasma Thruster SPT 100 which is manufactured by Fakel Enterprise in Kaliningrad is also being tested at the NASA Lewis Research Center which will run performance evaluation and characterization of the exhaust plume.

Dr John Brophy supervisor of the Electrical Propulsion and Plasma Groups Section 353 explained that the hardware was supplied by Space Systems Loral under a JPL Affiliates Program agreement. Loral needed a facility to test the thruster which it intends to use as a stabilizing device on its communication satellites he explained.

The thruster essentially ensures that the satellite is in a geosynchronous orbit Brophy said which means that it stays in one place. As forces try to move it the thruster pushes the satellite back into its orbit.

It is more difficult to keep the satellite in its north south direction because it contends with a variety of forces including the moon and other disturbances. So such effort at stabilization requires more propulsion capacity Brophy added.

Loral representatives believe that the Russian made thruster has superior performance over the more widely used arc jet which General Electric will employ for north south station keeping on the Telstar 4 communication satellite. Loral is counting on the thruster to give it a competitive edge.

However Loral understood that the SPT 100 had not been as well tested as have the arc jets. Tests will take approximately eight months by which time the 5 kilogram thruster will have been tested for 5000 hours. This length of time explained Brophy is equal to about 10 to 15 years of thruster operation in orbit.

The engines will run for 50 minutes and be turned off for 20 minutes and then turned on again. The life test will begin on 1st July. Brophy also pointed out the importance of the exhaust velocity EV which indicates how fast propellant is pushed away from the thrusters.

The faster it is pushed away the less propellant the spacecraft uses. That is where financial benefits can be realized. If we can make the spacecraft lighter we save money on the launch and use those savings to add additional transponders for example.

He noted that conventional ion engines have an EV of more than 30000 metres per second while the SPT 100 has an EV of 16000 metres per second which seems to be the optimum for communication satellites. The SPT 100 offers a unique combination of performance and efficiency.

No other propulsion devices produce this combination of efficiency and impulse said Brophy. Performance test results have been so impressive that a second thruster this one with an Anode Layer called TAL which was developed at the Central Research Institute for Machine Building near Moscow has been purchased

by JPL.

Speculation is that thrust density performance and lifetime characteristics of the device are superior to those of the SPT said Brophy. Yet the purchase by JPL of this model was a Herculean test of patience according to Charles Garner task manager for Russian Hall thruster testing at JPL.

Garner had to deal with a limited number of international phone lines into Moscow fax machines without paper and pre sunrise phone calls but he forged ahead and helped ink the deal. The TAL will also undergo a series of tests at JPL beginning in September.

The countdown for the launch of Discovery continues without problem at the KSC pad 39 B. No technical or hardware issues are being worked. Yesterday the aft engine compartment and the payload bay were closed for flight.

The primary operation at the pad today features the loading of the onboard cryogenic tanks with the liquid oxygen and liquid hydrogen reactants. These reactants provide electricity to the orbiter while it is in space and a byproduct of drinking water. The pad was closed to all non essential personnel at about 8 am today for this operation.

Cryogenic flow began at about 9 30 am and will continue for about five hours. Following this operation the orbiter mid body umbilical unit will be demated. Communications activation and final vehicle and facility closeouts will begin. Also preparations will be made to retract the rotating service structure to launch position at about 11 am tomorrow.

Moon rocks will be auctioned off at the Sotheby auction house in New York on 11th December 1993. The moon rocks are part of a collection of 200 artifacts from the Soviet space program that will be available at the auction.

The moon rocks were obtained from a Luna spacecraft in the 1970s that had scooped them up from the surface of the Moon and returned them to Earth. They are being sold by the family of Sergei Korolev.

Korolev was the mastermind of the Soviet space program and died in 1966. The Moon rocks are expected to sell for around 50 thousand dollars. This will be the second time that lunar material has been available at an auction.

The first time was in January 1993 when Moon dust was sold at an auction house in Berverly Hills California. That Moon dust was collected by a NASA technician onto a 2 inch piece of transparent tape from the spacesuit of astronaut Dave Scott after his Apollo 15 trip to the Moon in July 1971. It sold for 46750 dollars.

El sistema IRIDIUM que debe su nombre a la coincidencia entre el numero de satelites que lo constituyen y el numero de electrones que tendria el iridio segun el modelo atomico de Bohr fue dado oficialmente a conocer en 1987 por la firma estadounidense Motorola Inc.

La concepcion y diseo del IRIDIUM es sustancialmente diferente al actual sistema de comunicaciones INMARSAT presentando en sintesis las siguientes caracteristicas diferenciales con respecto a este. Empleo de satelites no geoest acionarios en orbita circular polar.

Concepto de sistema de telefonia celular. Procesado de las comunicaciones a bordo de los satelites. Enlace entre satelites de la red. Utilizacion de frecuencias 20 a 23.5 GHz aprox en la banda K ademas de la ya habitual banda L 1.6 GHz.

El IRIDIUM es un sistema global de comunicaciones moviles que utiliza una estructura de red celular cuyas estaciones se encuentran en el espacio bajo la forma de 77 satelites en orbita con una altitud orbital de 765 km los cuales haran uso de enlaces inter satelites ademas de los tradicionales tierra espacio y viceversa.

Los satelites estan distribuidos en siete planos orbitales con una separacion de 27 grados excepto en los extremos en los que esta separacion se reduce a 17.5 grados con objeto de contrarrestar la perdida de cobertura resultante del solapamiento de se$ales procedentes de satelites girando en sentido contrario.

El sistema propiciara el uso de terminales moviles y portatiles de dimensiones y caracteristicas analogas a los utilizados en los sistemas celulares terrenales siendo capaces de trabajar en cualquier punto del planeta en tierra mar o aire.

IRIDIUM emplea un acceso combinado FDMA TDA TDMA telegrafia y datos a baja velocidad con acceso por division de tiempo. Dentro del espectro atribuido se situa un determinado numero de portadoras que soportan la transmision multiplexada TDA TDMA.

No se precisa emplear frecuencias emparejadas como es el tradicional caso de INMARSAT. La misma banda se utiliza para la emision de uno y otro sentido de forma aleatoria en el tiempo. El enlace de subida trabaja en acceso multiple por division temporal TDMA sobre una portadora unica.

Los instantes de transmision se controlan de modo que el movil emita en el momento preciso en la correspondiente trama TDMA. En cuanto al enlace directo trabaja en TDM. El sistema presenta una gran flexibilidad en cuanto a la trama TDM TDMA a emplear que le permite optimizar la longitud duracion de trama en funcion del ancho de banda atribuido.

QTH is California. Have been an AR operator for 1 year but am new to Packet. Am 34 married and an engineer. Tell me about yourself and your country or city. 73 Bud KD6NOF at W6JW.SOCA.CA.USA.NA on 14th August 1993.

Voss 44 who has a master of science degree in aerospace engineering sciences and is a USA Lieutenant Colonel is Payload Commander on the STS 9 SPACEHAB 04 and the Shuttle Pallet Satellite 3 scheduled for early 1995 aboard Discovery.

SPACEHAB is a complement of commercial experiments flown in a pressurized module in the cargo bay as a supplement to the middeck area of the orbiter and SPAS 3 is a group of instruments which will measure the atmosphere around the orbiter and the background clutter in the atmosphere calling for a complicated flight plan.

Voss was a Mission Specialist on STS 44 in November 1991 a mission to deploy a Defense Support Program satellite and to conduct Military Man in Space experiments radiation monitoring experiments and numerous medical tests to support longer duration Shuttle flights.

Voss also was a mission specialist on STS 53 in December 1992 a mission to deploy a classified Department of Defense payload DOD 1 and to conduct Military Man in Space and NASA experiments.

September 1993 Amateur Station Statistics. Spectrum Management Authority SMA statistics on active station licenses to the 30th of June show that there were 18242 amateur licenses issued to that date an increase of only 20 in the three months from the 31st of March.

This indicates that amateur radio growth which tapered off in the past year remains sluggish likely affected by an increasing rate of silent keys together with losses of those who give up an interest in the hobby and let their licence lapse. However the SMA statistics do indicate there were 16 licences pending at 30th June.

Overall there were 10685 Full licences on issue an increase of 51 on March figures while there were 3390 Limiteds a decrease of 21. There were two fewer Novices as of June compared to March with 2631 licences issued and Combined licences were down by seven to 1531. It seems a few people upgraded. Repeater licences were up by four to 338 at the end of June while beacon licences were down one to 26.

Anyone who has watched the Sun change shape as it approaches the horizon has seen a mirage. Most of the Sun has set below the horizon but it all remains visible because the light coming from the sub horizon Sun is bent around the curvature of the Earth by the thick lower atmosphere.

Light is just that small part of the radio frequency spectrum which is detectable by the two receivers in our heads. All radio signals transitting through a variable density atmosphere will be bent.

So it is no surprise that when geometry says RS12 has gone below your horizon you can still hear it perhaps for 2 or 3 minutes provided you have an unrestricted zero degree elevation clear horizon.

This bending of signal is sometimes due to atmospheric anomalies it may be local or it may form a long duct hugging the ground. Thin ducts propagate only high frequency signals.

High ducts propagate much lower frequencies i.e. 29 MHz. The above generalisation results in duct propagation and bending being most common when the surface of the Earth is smooth and unobstructed.

So tropical stations have an advantage over stations in the latitude belts 40 to 70 degrees N or S because seas are calmer and winds are lighter. DX paths across tropical seas can extend for thousands of kilometres particularly on calm humid evenings.

This is particularly true for terrestrial microwave signals. The trick is to get your antenna right down on the water surface or on the height adjustable periscope of a nuclear sub.

On Friday August 13th the Ariane 49 launch vehicle was rolled out of the assembly building and moved to its launch pad. On Monday August 16th the ITAMSAT spacecraft was mated on the ASAP platform in its final flight configuration.

The bolt cutter and separation spring was installed and the umblical cable connected to the launch vehicle bus. Due to the uncertainly of the launch date the team decided to launch ITAMSAT in an off configuration with the battery fully charged but not connected to the payloads until after separation.

Thus no trickle charge is required and on J0 a full battery charging will be performed on J5 the fairing containing the ASAP and the Spot 3 will be closed and moved on the top of the Ariane launcher. The Ariane launch has been delayed and has now been set for 24th September 1993. Further short term delays are also possible.

Credit for the mission that has visited the most planets would have to go to the JPL Voyager Project. Launched in 1977 the twin Voyager 1 and Voyager 2 spacecraft flew by the planets Jupiter 1979 and Saturn 1980 and 81.

Voyager 2 then went on to an encounter with the planet Uranus in 1986 and a flyby of Neptune in 1989. Early in 1990 Voyager 1 turned its camera around to capture a series of images assembled into a family portrait of the solar system.

Both Voyagers are continuing to speed out into interstellar space and are expected to communicate information about the energy field of the Sun until perhaps the second decade of the 21st century.

A trio of new missions were launched in 1989 and 1990 with the help of the NASA Space Shuttle. The first of these was called Magellan while the second and third were named Galileo and Ulysses respectively.

Magellan travelled inward to Venus but Galileo went in the opposite direction going outward to Jupiter. Ulysses was also sent towards Jupiter but used that planet to swing out of the ecliptic so it could be used to observe the poles of the Sun.

Magellan is currently in orbit around Venus and uses a sophisticated imaging radar to pierce the cloud cover enshrouding Venus and map the surface of the planet. Magellan was carried into Earth orbit in May 1989 by Space Shuttle Atlantis.

Released from the cargo bay Magellan was propelled by a booster engine toward Venus where it arrived in August 1990. It completed its third 243 day period mapping the planet in September 1992.

It is currently being used to map variations in the gravity field of Venus. The Galileo mission to Jupiter began in October 1989 when Space Shuttle Atlantis lofted the craft into Earth orbit.

A booster engine then sent Galileo on a complex 6 year flight path to Jupiter that took it first by Venus and Earth for gravity assist boosts. Along the way Galileo also flew by the asteroid Gaspra in October 1991.

On 8th December 1992 Galileo made a second Earth flyby. It will encounter the asteroid Ida on 28th August 1993. When it arrives at Jupiter in 1995 a probe will descend into and study the atmosphere of the giant planet.

Galileo will remain in orbit around Jupiter and will fly by the major moons for about two years. The NASA Space Shuttle fleet again launched a probe bound for other parts of the solar system when the shuttle Discovery carried aloft Ulysses in October 1990.

A joint mission between NASA and the European Space Agency this project has sent a spacecraft out of the ecliptic. This is the plane in which Earth and other planets orbit the Sun. Ulysses will study the north and south poles of the Sun which have never been properly observed before.

Ulysses first flew by Jupiter in February 1992 where the gravity of the giant planet flung it into an unusual solar orbit nearly perpendicular to the ecliptic plane. The mission will continue until September 1995.

Unfortunately there is very little known about the modulation of the ARSENE beacon on 2446.470 MHz. So I tried FFT spectrum analysis on this signal using my DSP computer and found out that the main modulation spectrum lobe bandwidth

is twice as much as expected for 128 bps.

The signal to noise ratio may peak 20 dB in the information bandwidth of this signal so there should be no problem in writing DSP software to decode the telemetry if the transmission format were known. It might be Manchester encoding or convolutional error correction coding to get the double bandwidth.

Also the signal spectrum sidelobes look strange. There are several sidelobes visible below the main lobe but at most one single sidelobe above the main lobe. The reason for this strange signal filtering is not known either.

Meanwhile several new crews have been selected for 1994 missions. Of particular interest is the crew for STS 63. It includes the first woman to fly as a pilot on an American space mission Eileen Collins.

She is thus likely to become the first woman ever to command a spaceflight crew on a later mission. Pilot astronauts usually fly one or two missions in the pilot seat before being given the command seat.

Also on the crew is Vladimir Titov who will become the second Russian to fly on the Shuttle and the first serving Russian military officer to do so. On the Mir complex the Expedition 14 crew of Vasiliy Tsibliev and Aleksandr Serebrov continue in orbit.

Aviation Week reports that a Perseid left a visible hole in one of the solar panels. There was no damage to the pressurized sections of the station.

The Progress M19 cargo ferry and the Soyuz TM17 transport ship remain docked to the station. On 2nd September 1993 Progress M17 was still in orbit almost a month after its undocking from the station in a test of the longevity of its onboard systems.

ARLX020 JAPAN EASES RULES. JAPAN HAS MADE IT EASIER FOR AMATEURS FROM OTHER
COUNTRIES TO OPERATE THERE. ON JUNE 16TH JAPAN REVISED ITS RADIO LAWS TO ALLOW
FOREIGN NATIONALS WHO HOLD JAPANESE AMATEUR RADIO OPERATOR LICENSES TO
ESTABLISH AND OPERATE THEIR OWN RADIO STATIONS IN JAPAN.

THIS WILL BE SO EVEN IF THEY ARE FROM COUNTRIES NOT HAVING A RECIPROCAL OPERATING AGREEMENT WITH JAPAN. AMATEURS OPERATING UNDER THE NEW ARRANGEMENT
WILL BE ISSUED 7J PREFIXED CALLSIGNS. THESE WILL BE VALID FOR FIVE YEARS. APPLICATIONS ARE TAKEN BY THE INTERNATIONAL SECTION OF THE JAPAN AMATEUR RADIO
LEAGUE JARL.

The WAADCA BBS project is making progress. The 19 inch rack mount will be repainted this coming weekend and will be installed soon after in the Eric Smith Room at the Wireless Hill Museum.

The committee has decided to procure a commercial dual band 2 metre and 70 cm antenna rather than to home brew this item. The 2 metre Philips 828 and TNC for the forwarding channel are finished and bench tested.

A 70 cm transciever and TNC for the UHF link are available but will take a little more work to get going. The HF side of the station has been set back by the inability to get the ex commercial rig going on 20 metres.

However we expect to take delivery in the near future of a Collins synthesised commercial unit which will be placed into service in its place. 20 metre forwarding is expected to utilise a yagi antenna. The 12 Volt power supply still also needs some refurbishment before it can be placed into service.

The Ariane 40 Launch Vehicle is a 3 stage liquid fueled launcher with no strap on boosters. The first stage L220 is built by Aerospatiale and is powered by 4 liquid fueled Viking 5 engines. The second stage L33 is built by MBB Erno and is powered by a single Viking 4 engine.

Both the Viking 4 and 5 engines are manufactured by SEP. The 1st and 2nd stages use a biliquid UH25 N2O4 fuel. The third stage H10 is built by Aerospatiale and is powered by a cryogenic H2 O2 fueled HM7B engine built by SEP. The fully assembled launch vehicle stands 55 meters high on the pad and it is equipped with the Ariane payload fairing type 01.

In 1958 when Dr John Kraus W8JK director of Ohio State University Radio Observatory noticed that terrestrial beacon signals were enhanced when low altitude satellites passed by. Perry Klein W3PK and Ray Soifer W2RS carried out experiments to see whether they could communicate via these short lived ion trails which the satellites were generating. They proved they could communicate.

But the significance of the fact that these ion trails were being generated not by any rocket but by the hardware of the satellite as it bashed into the solar wind was ignored to their cost by the professional community until the early 1990s. At which point the professionals were forced to change their tune but gave no credit to the original discoverers.

This might be old hat to the satellite buffs but tonight 280993 while in the shack downloading some bulletins my Kenwood which was scanning came alive with the voice of Alexander from the Russian space station Mir.

He reported that the packet setup they have on board had failed and as they require assistance from ground to repair it he was calling CQ by voice instead. Of course hands on assistance from the ground is a bit difficult to obtain.

He reported that he was feeling very tired because at 3 pm Moscow time and he had completed a 3 hour space walk so was relaxing a bit with amateur radio. He said that this was his 4th stint in space and this was his 90th day this trip. Signals were good for the 10 minute QSO after which he asked to be excused to make contact with a VK3 who was calling him.

MY NAME IS NAKANO AND I AM AIR TRAFFIC CONTROLLER AT THE AIRPORT. QRV ON 6M FM
AND 10M FM MOBILE. PLEASE O WRITE TO ME A LETTER SO WE CAN GET KNOW EACH OTHER
THROUG THE RADIO I CAN WRITE BACK TO YOU ASAP. BEST DX AND NICE TO HAVE YOU ON
THE AIR. JI1CJJ AT JA1GPQ.10.JNET1.JPN.AS

From the New York Times dated Sunday 12th September 1993. Austin G Cooley was a telecommunications pioneer who helped develop the facsimile machine. He died Tuesday at his home in Sequim Washington at the age of 93.

NOBEL PRIZE WINNER ATTRIBUTES SUCCESS TO HAM RADIO. THE WINNER OF THE 1993
NOBEL PRIZE FOR PHYSICS IS DR JOSEPH H TAYLOR K1JT FROM PRINCETON UNIVERSITY.

ACCORDING TO PUBLISHED NEWS ACCOUNTS HE ATTRIBUTES HIS SUCCESS IN SCIENCE TO
HIS EARLY INVOLVEMENT IN AMATEUR RADIO. TAYLOR TOLD REPORTERS THAT HE DEVELOPED
HIS SCIENTIFIC SKILLS AS A HAM WHILE A STUDENT AT MOORESTOWN FRIENDS ACADEMY IN
NEW JERSEY.

The cause of death was a stroke said his wife Helene. As a student at the Massachusetts Institute of Technology in the 1920s Mr Cooley designed and engineered transmitters that translated a photographic negative into electrical signals that could then be transmitted by radio or telephone and later by satellite.

Mr Cooley held more than 75 patents on methods and equipment for the transmission of weather maps medical X rays and facsimile material as well as pictures. The origin of the modern day facsimile machine dates from his experiments in the 1930s with the transmission of news pictures over ordinary telephone lines.

The present crew members of MIR Vasily Tsibliyev and Aleksander Serebrov do not have personal amateur radio licenses. Thus they do not have their own call signs while manning MIR.

However they do have permission to use the amateur radio station in MIR using the general MIR call sign R0MIR for speech and R0MIR dash 1 for the onboard packet radio Personal Message System. All Russian cosmonauts will now be given amateur radio training by Sergei RV3DR as a fixed part of their cosmonaut training.

So we may confidently expect the amateur radio station in MIR to be active continuously as long as cosmonauts are on board the space station. Future trained cosmonauts include Valeri Poliakov U3MIR Viktor Afanasyev U9MIR and Yuri Usachov R3MIR.

30th September 1993. The Magellan spacecraft is now in a gravity mapping orbit around Venus with altitudes of 197 to 541 kilometers 122 to 336 miles. This orbit was achieved by aerobraking which is an experimental operation carried out between May and August.

The condition of Magellan is very good and precision tracking is providing desired data on the gravitational field of the planet. Magellan was launched 4th May 1989. It radar mapped more than 98 percent of the surface of Venus from September 1990 to September 1992 and will survey parts of the gravitational field for the next eight months.

30th September 1993. The two Voyager spacecraft are continuing their interstellar mission having recently detected possible evidence of the heliopause which is the boundary between the solar magnetosphere and interstellar space.

Voyager 1 was launched 5th September 1977 and is currently 8 billion kilometers 5 billion miles from the Sun after flying by Jupiter and Saturn in 1979 and 1980. Voyager 2 was launched on 20th August 1977 and flew by Jupiter in 1979 Saturn in 1981 Uranus in 1986 and Neptune in 1989. It is now almost 6.2 billion kilometers 3.9 billion miles from the Sun.

Faraday rotation occurs on any signal transiting up or down through the ionosphere. What starts from the Shuttle as a vertically polarised signal often emerges from the ionosphere as a horizontally polarised signal.

Worse still as the Shuttle comes closer to us or goes away from us the place where the signal crosses the ionosphere changes and the inclination of the signal path through the ionosphere alters causing what starts as good reception on vertical to become best on horizontal after a couple of minutes indeed changing from one to the other every couple of minutes or so throughout the Shuttle pass.

While last but not least the physical alignment of say a shuttle vertical antenna starts tilted 30 degrees towards changes in mid pass to pointing nearly directly at you then goes to tilting 30 degrees towards at the end of the pass. Put factors together and you can see why the Cosmonaut you hear loud and clear one minute is often inaudible the next.

The crash of the Shoemaker Levy comet onto Jupiter should be quite spectacular but it looks as if it will occur on the Jupiter night side out of sight of Earth watchers. The event is due in June or July 1994.

Doubtless astronomers will be tracking the Shoemaker Levy bits carefully from now on and we should get a clearer prediction of whether collision is inevitable and where it will occur some time before the actual event. But what ever happens we will eventually get an enormous amount of data about this type of massive rare collision.

Beware of the lightning that lurketh in an undischarged capacitor lest it cause thee to be bounced upon thy bottom in a most undignified manner.

Causeth thou the switch that supplies large quantities of juice to be opened yea turned firmly off and thusly tagged so thy days may be long in this world.

Proveth to thyself that all circuits that radiateth and upon which thou worketh are grounded lest they lift thee to high frequency potential and cause thee to radiateth also.

Take care thou useth the proper method when thou doth take the measure of high voltage circuits so that thou doth not incinerate both thee and thy meter for verily I say unto you though thou art worthless having no account number and canst be easily replaced the meter doth have an account number which will bringeth much woe upon the inventory.

Tarry not among those who engage in intentional shocks for they are surely unbelievers and are not long for this world.

Take care thou tampereth not with interlocks and safety devices for this incurreth the wrath of thy seniors and bringeth the sound and fury of the safety officer down upon thine head and shoulders.

Worketh thee not upon energised equipment for if thou dost thy buddies wilt surely be buying beer without thee and thy space at the bar will be filled by another.

Verily I say unto thee never service high voltage equipment alone for electric cooking is a slothful process and thou mayst sizzle in thine own fat for hours on end before thy Maker see fit to end thy misery and drag thee into his fold.

Trifle thee not with radioactive devices and tubes lest thou commence to glow in the dark like unto a lightning bug.

Commiteth thee to memory the works of the prophets which are written in the instruction manuals for they wilst giveth the straight dope and consoleth thee

and thou wilst maketh no boo boos.

Be thou not afraid to asketh stupid questions for verily they are cheaper than stupid mistakes.

NASA managers today set 7th April 1994 as the official launch date for Shuttle Mission STS 59. Space Shuttle Endeavour with a 6 person crew will conduct the first flight of the Space Radar Laboratory payload which will provide scientists around the world with a unique vantage point for studying how the global environment is changing.

The GOES I weather satellite scheduled for launch next month reached a milestone toward that goal today when it was mated to an Atlas 1 rocket at Launch Complex 36 on Cape Canaveral Air Force Station.

The spacecraft has been undergoing prelaunch checkout at the Astrotech payload processing facility in Titusville since it arrived in Florida on January 21. This past weekend the spacecraft was encapsulated into the Atlas 1 payload fairing by General Dynamics launch vehicle personnel in preparation for the trip to the launch pad.

A new thermal protection tile developed at NASA Ames Research Center in Mountain View California for the Space Shuttle may prove more efficient and less costly than tiles currently being used. The new tile is known as Toughened UniPiece Fibrous Insulation or TUFI.

The TOPEX POSEIDON satellite is healthy and the scientific instruments are collecting scientific data on schedule. The mission is to map global sea level changes reflecting seasonal warming and cooling and winds. TOPEX Poseidon was launched on 10th August 1992.

Plans for the International Space Station are maturing rapidly and the orbiting research facility is on track for assembly to begin in 1997 as scheduled program managers said today after completion of the system design review.

Ken Ernandes N2WWD reports that a PBS tape crew spent a very productive day on Sunday March 19th at the QTH of John Gordon KD2JF preparing material for a forthcoming program segment apparently featuring the transition of military systems to other endeavors.

During the taping Ken and John made 5 contacts on AO10 which was doing quite a good job at the time. Stations worked via the satellite included HB9OBR IK8MRD IW5CNU EA6SA and N8TDL in Ohio. A live capture of AO13 telemetry was accomplished with Ken doing some voiceovers explaining the purpose of the telemetry.

Some video footage of satellite tracking software was also recorded as well as nice background footage of the antennas in motion. QSL cards were shown off including some for SAREX and MIR contacts as well as contacts via OSCAR. Ken was also interviewed concerning his personal views regarding amateur satellites.

On Armed Forces Day KO4GS will operate from he fast attack submarine USS Newport News SSN750 celebrating and comemorating the hard work and dedication of the women and men of the armed forces. A certificate QSL will be issued to all stations contacting KO4GS.

The station will transmit from the boat on May 20th 1995 from 1400Z to 2100Z. Look for KO4GS on 10m around 28340 kHz and 20m around 14240 kHz and 40m around

7240 kHz. USS Newport News SSN750 is a 688 Class fast attack submarine homeported at Naval Station Norfolk Virginia.

Newport News is the number 1 submarine in Submarine Squadron Eight which is the largest submarine squadron of the US Navy. USS Newport News was built by the Newport News Shipbuilding and Drydock Company in Newport News Virginia. Thus SSN750 carries a name synonymous with naval tradition and excellence.

At 0900Z on 28th March a Russian START rocket based on the TOPOL SS25 intercontinental ballistic missile roared into space carrying 3 satellites. TECHSAT1 was an Israeli amateur radio satellite built at the Technion Israel Institute of Technology in Haifa.

Another was a Mexican built MICROSAT called UNAMSAT1. It was built at the Autonomous University of Mexico under the direction of XE1TU. The 3rd satellite was a Russian constructed spacecraft the purpose of which is unknown to AMSAT. After several passes of these 3 satellite no signals have been reported from any of them.

ANS will report further as information is received. The rocket for this project was built by the Moscow Heat Technology Institute specialists who originally designed the military TOPOL. These experimental launches are designed to demonstrate the possibility of the large scale conversion of strategic missiles to civilian uses.

The SS25 rockets which are subject to arms reduction are due to be scrapped within 2 to 3 years of ratification of the treaty. However it is obvious right now that the TOPOLs are capable of placing light satellites in orbit at altitudes of up to 1000 km.

The Votkino machine building plant which produced the SS25 missiles is prepared to convert them to civilian use. According to further information from ITAR TASS it is most likely that all 3 satellites including Israeli TECHSAT and the Mexican UNAMSAT launched with the SS25 rocket on March 28 burned up during re entry.

It was said that the launcher may not have reached the final orbit. A committee is currently investigating the launch failure. This is only the second time that we have lost an amateur radio satellite due to a catastrophic launch failure like AMSAT Phase 3A nearly 15 years ago.

Ideas and suggestions are being put forward on how Australian amateurs can mark the 50th anniversary of the recommencement of amateur radio here after the end of World War 2. As many amateurs know amateur radio was banned during World War 2.

At the outbreak of hostilities radio amateurs received telegrams directing that they surrender their transmitters. The equipment was locked away for the duration of the war. When the war ended in August 1945 there was considerable effort to get amateur radio established once again.

The government of the day was busy with postwar activities including soldier resettlement and amateur radio took a back seat. However new regulations for amateur radio were gazetted on 24 November 1945. Preparations for the 50th anniversary of this important milestone in amateur radio history are in hand with research being conducted by Herb Stevens VK3JO.

Herb is researching the events leading up to and immediately subsequent to the postwar recommencement. Not a great deal of information and detail is available at present. Herb would like to hear from anyone with information

or recollections. His address is QTHR in the 1995 callbook.

In the meantime a number of possible ways of celebrating the recommencement have been put forward including commemorative callsigns or a special prefix and a nationwide period of reunion on air by those immediate postwar radio amateurs. Ideas should be put to your Divisional Council for consideration of both state activities and possible Federal WIA sponsored events.

Scientist Dr Ken McCracken VK2CAX was the founding chief of the CSIRO Division of Mineral Physics. He has shared the 1995 Australia Prize awarded to researchers who have made outstanding contributions to science and technology promoting human welfare.

The 300 thousand dollar international award was shared with Dr Andrew Green and Dr Jonathan Huntington of the CSIRO Division of Exploration and Mining and Dr Richard Moore who is Emeritus Professor of Electrical and Computer Engineering at the University of Kansas. The award was announced in February by the Minister for Science Senator Peter Cook.

Senator Cook said Dr McCracken Dr Green and Dr Huntington were an outstanding research team which had pioneered satellite based remote sensing in Australia. In the late 1970s Dr McCracken coordinated a propagation study Project ASERT for the Federal WIA. WIA News for April 1995 From the WIA Media Liaison Officer Roger Harrison VK2ZRH Released 10 March 1995.

The March hunt was held on the evening of the 17th. The fox was Mark VK3JMD who led 11 teams of hounds a merry chase through the Southern and South Eastern suburbs of Melbourne. This month all hounds were hunting on 2m only.

From their starting point at Clayton railway station the hounds could just hear a nearby QRP transmitter which was hidden in a milk carton within the Clayton shopping centre. Despite the short distance involved only 2 teams managed to find this transmitter amongst the other RF hash generated within the shops.

Victory went to VK3YQN ahead of VK3GMZ. The hounds next had to travel to a freeway easement in Cheltenham where the transmitter was hidden up in a tree. It was halfway through this event that this writer discovered that another team member had performed long awaited modifications to the 2m beam resulting in it having been mounted back to front before the first event.

The VK3CRA team became more competitive from that point on. Despite hunting on his own VK3WWW took first place ahead of VK3YQN. The good taste of the fox next led him to an old tip site in Heatherton. VK3YQN took a stranglehold on the event with his 2nd victory this time ahead of VK3CRA and VK3PW.

Our intrepid fox next hid himself on the rail bridge over Mordialloc creek. This event was a very close one with VK3YQN winning very narrowly from 4 other teams. The fox then moved a few 100 metres upstream but the hounds found that they had to drive much further than that to reach the area.

VK3CRA took first place ahead of VK3YQN. As the fox called in the hounds on the 6th and final event. All the VK3CRA team could hear was the sound of air rapidly escaping from the left rear tyre. In the meantime VK3WWW flying solo again took out the hunt to a Braeside industrial estate this time ahead of VK3VT.

Supper was held at nearby Dingley Village where the results showed a very comfortable win by VK3YQN with VK3PW and VK3WWW taking the minor placings. The next hunt will be held on the evening of the 21st. Hounds should gather

at Chirnside Park shopping centre at 8pm.

The fox for the evening will be VK3BLN. For further information on fox hunting please contact Craig McMillan VK3CRA on 03 551 5635 or via packet at VK3KSK or use your phone modem to contact the bulletin board on 03 888 7741.

The orbiter Columbia riding atop the modified 747 Shuttle Carrier Aircraft departed Ellington Field in Houston Texas today at about 9 a.m. EDT. It arrived at the KSC Shuttle Landing Facility. Operations to demate Columbia from the 747 Shuttle Carrier Aircraft are now underway and the vehicle will be towed to the Vehicle Assembly Building for temporary storage late tonight.

Following the move of Atlantis to the VAB next week Columbia will be moved into Orbiter Processing Facility bay 3 where preparations will begin for the next mission STS 73 a 16 day flight targeted for launch in September. Columbia has spent the last 6 months undergoing structural inspections and modifications at the Rockwell facility in Palmdale California.

A packet station with the special callsign VK2IMD will be on air during the period 0000 to 2359 hrs UTC on Sat 22nd April to celebrate the International Marconi Day. So if you would like to try your hand at packet DXing and win a fine QSL card from the Wahroonga Amateur Historical Radio Association then try for a connection with us through an internet wormhole.

Silent key VK3BBM. The Victorian Federal Councillor Alan Noble VK3BBM of Glen Waverley in Victoria passed away unexpectedly sometime yesterday 15th April. Alan was found in the backyard near his tower. The cause of death has not yet been determined. Our sympathies go to his family and friends.

HI MY NAME IS SARAH. I AM SENDING THIS MESSAGE FROM GRANITE MOUNTAIN MIDDLE SCHOOL IN PRESCOTT ARIZONA. I AM DOING A COUNTRY REPORT ON LITHUANIA AND AM LOOKING FOR ANYONE FROM LITHUANIA. PLEASE SEND ALL INFORMATION IN CARE OF OUR TECHNOLOGY TEACHER KB7TRE. THANK YOU FOR READING THIS AND I HOPE TO HEAR FROM U SOON. 73 DE SARAH.

HELLO FROM SOUTHERN CALFORNIA. NAME IS RICHARD. I AM TALKING ON MY CASH
REGIGTER AT MY LIQUOR STORE IN STANTON CALIFORNIA USA. IF YOU READ THIS AND WOULD LIKE TO SEND A MESSAGE SEND IT TO WA6NOL AT W6VIO.CA.USA.NA. I WILL QSL. 73

Busco desesperadamente un receptor antiguo de galena para coleccion para reemplazar el mio que tenia y que me robaron. Si alguno posee une receptor de este tipo ruego me envien un mensaje para oferta a Manu F5VAF @ F6ABJ.FRPA.FRA.EU

New Scientist reports via the Sydney Morning Herald the latest innovation to combat the spread of intraveneous drug use. In order to prevent IV drug users pursuing their habit in restaurant and public lavatories a cheap simple measure is to replace the existing lights therein with BLUE lights. Under the blue light the veins which are also blue become invisible making it very difficult to apply the needle.

The Toronto Globe and Mail reports that a commercial jet carrying 72 pigs and 300 human passengers had to make an emergency landing after its fire

alarms were triggered by excessive levels of methane ammonia and body heat in the cargo hold where the pigs were traveling.

Apparently excessive flatulence urine droppings and the heat generated by the bodies of the pigs caused the automated fire extinguishing system to flood the cargo hold with halon killing 15 of the very valuable hogs. The risks of flying pigs are evident.

According to the Japanese Posts and Telecommunications Ministry the number of mobile phone users in Japan doubled in the year ending 31 March. Mobile phone users now outnumber Radio Amateurs in Japan by four to one. It is not known if anyone has worked out the ratio for Australia.

A short note to let you know that AO10 and AO13 are working very well under the 25000 km range to about 10000 km. Over 25000 km the signals are very week and under 10000 km the satelite is hard to track and spin modulation can make it hard to copy the station you are working.

ZL1MT VK6KCH VK4GP VK5DI NH6YK in KH6 ZL4TGH VK6PFI VK8KTC on Groote Eyland. The last two days at 11 and 13 thousand kms I worked LU8EBH at Buenos Aires and LU9FDG at Rosario in Argentina R5 S8 both on AO13 after mode S had finished.

The gear I am using is very modest. TX is IC402 by ICOM 3w SSB to a PA with 2 MRF646 tubes in parallel 50W at the antenna to a 13 element looped quad with wire mesh reflector. RX 14 7 left hand right hand switchable Yagi mast head an old FET preamp to a very old FDK MULTI 2000. 73 Murray ZL3TIB at ZL3AC.

Functional development tests of the beta gimbal deployment transition structure BGDTS have been successfully completed at Rocketdyne. The structure deploys the solar array and beta gimbal assembly about eight feet clearing the PV module and allowing for a full 360 degree rotation of the solar arrays.

The test demonstrated the capability of the BGDTS passive spring and damper mechanism to control the speed and path through which the solar array and beta gimbal assembly travels during deployment. The BGDTS is being delivered to Marshall Space Flight Center to support PG2 neutral buoyancy testing in April and May 1995.

The orbiter Columbia arrived at KSC at 1152 a.m. Friday and operations commenced to demate the vehicle from the modified 747 Shuttle Carrier Aircraft. The vehicle was then towed to the Vehicle Assembly Building at 630 a.m. Saturday.

It will remain in temporary storage until Friday. Following the move of Atlantis to the VAB next week Columbia will be moved into Orbiter Processing Facility bay 3 where preparations will begin for its next mission STS 73.

Evidence that clouds absorb more solar radiation than previously believed should improve our ability to predict climate change according to NASA scientists. A scientist did not say that the clouds studied were at between 16490 and 59110 feet.

The work resulted from simultaneous flights of ER2 and DC8 aircraft above and below cloud decks. By using identical instruments on the aircraft scientists were able to measure solar radiation as it reached the clouds and after the clouds had scattered it.

The team found conclusive evidence that existing computer models significantly underestimate the amount of solar energy absorbed by clouds. Theoretical estimates of cloud solar absorption are substantially smaller than what actual measurements show.

This finding directly impacts our understanding of present climate and therefore our ability to predict future climate said atmospheric physicist Peter Pilewskie of NASA at Ames Research Center Mountain View California.

Existing global climate models are unreliable when it comes to predictive capability said Pilewskie. One of the primary reasons is that the amount of solar energy absorbed and scattered by clouds a key determining variable in such models is very poorly understood.

For almost 40 years atmospheric physicists have tried to estimate solar absorption by clouds. Several studies have suggested that clouds absorb more radiation than prevailing models have indicated. Now for the first time our research aircraft have provided consistent evidence that clearly supports this contention Pilewskie concluded.

The cloud absorption study embodies the ultimate goal of the NASA Mission to Planet Earth. To increase our knowledge of how large scale phenomena such as cloud cover and solar energy influence the global environment. One of the least understood areas of climate change is the role clouds play.

This study represents one piece of a very large puzzle that Mission to Planet Earth will address over the next 20 years. Previous attempts at direct measurement of solar absorption have been hampered by an inadequate number of aircraft or a lack of identical instruments to make consistent measurements.

In this study a NASA ER2 flew at approximately 12 miles altitude. Simultaneously a NASA DC8 aircraft or a Learjet flew at altitudes between approximately 5 to 7 miles. Each aircraft carried identical instruments for simultaneous measurement of solar radiation at both flight levels.

Estimates developed by Pilewskie and Francisco Valero of the Scripps Institution of Oceanography in San Diego California using the improved data sets showed a considerable variance with the predictions of theoretical models.

Their findings were consistent with other recent studies and for the first time demonstrated that measured cloud absorption consistently exceeds theoretical estimates. The reason for this high absorption is unclear and scientists say further study is required. While several factors are being considered there are hints that it may be due to the structure and dimensions of clouds.

TOPEX POSEIDON MISSION STATUS as at 1st April 1995. The satellite and sensors continue to operate as expected and ground system computers are performing well. The satellite tape recorders have been played back and the daily science and engineering data products are being produced.

On Monday the satellite begins its 94th 10 day data collection cycle. The science data team reports it is now processing the data for cycle 93 and that the interim geophysical data records for cycle 92 have been shipped to the Physical Oceanography Distributed Active Archive Center PODAAC at the Jet Propulsion Laboratory for distribution to scientific investigators.

A NASA instrument that will measure ocean winds from space was integrated

this week into the Japanese host spacecraft called the Advanced Earth Observation Satellite in preparation for launch and 3 year mission beginning in February 1996.

The instrument was delivered to the Japanese National Space Development Agency last December for reassmbly and extensive testing before full integration work began this week.

James Graf project manager of the NASA Scatterometer at the Jet Propulsion Laboratory said the collaborative effort to put a NASA instrument aboard a Japanese satellite represents one of the 1st times the United States and Japan have carried out a joint Earth observing mission.

The agreement which was signed in 1989 calls for launch of the instrument laden satellite on an H11 rocket from Tanegshima Space Center which is located about 1000 kilometers 625 miles southwest of Tokyo in Japan.

The measurements of the winds over the oceans by radar will be used by JPL for climate research helping scientists better understand ocean circulation and the role of air sea interactions in the global ecosystem.

Data from the scatterometer will be transmitted to JPL in real time and be incorporated by the National Oceanic and Atmospheric Administration into their weather models to improve weather forecasting. The NASA Scatterometer will complement the measurements of 2 other instruments onboard the spacecraft.

The 1st is a Japanese instrument called the Ocean Color and Temperature Scanner which will look at the biomass of the oceans. The other NASA instrument is the Total Ozone Mapping Spectrometer which will provide daily maps of global ozone levels.