W5YI

America's Oldest Ham Radio Newsletter

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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In This Issue...

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Shuttle Mission Carries First Ham Radio Station to ISS

The space shuttle Atlantis and its seven-man crew enjoyed a smooth launch September 8th from the Kennedy Space Center. A short, two-and-a-half-minute launch window opened and shuttle mission STS-106 lifted off right on schedule as it headed toward its docking berth on the International Space Station. This flight is SPACEHAB's third resupply mission to the ISS and its 10th space logistics mission.

As Atlantis inched closer, the station revealed itself to be an interesting collection of modules and nodes some 13 stories high. The docking maneuver was successfully completed without incident and "was textbook" according to NASA officials. This was the third time a U.S. shuttle had docked at the orbital construction site.

Plans called for the STS-106 five astronauts and two cosmonauts to spend 11 days in orbit ...but there is enough fuel aboard STS-106 for an additional day if an extension is needed. Once they arrive at the ISS, the crew will open the doors to the International Space Station's newest component, the Zvezda Service Module, for the first time. Zvezda is the Russian-built space station unit that provides living quarters for the astronauts and cosmonauts. It will become home for the orbiting outpost's first permanent residents.

The purpose of the STS-106 flight is to outfit and upgrade the orbiting complex ...and to prepare the space station for its first long-duration crew.

Before the mission would end, the astronauts and cosmonauts would cart some 4,300 pounds of supplies into the space station from Atlantis and another 1,300 pounds of gear from a docked Russian "Progress" cargo ship that arrived at the ISS in August.

The seven-member crew also were to prepare the Zvezda living quarters for the Expedition One crew due to arrive in November. Zvezda has a galley, staterooms, lavatory and a stationary bicycle directly in front of a porthole.

Although three of the Atlantis mission specialists hold ham tickets (Edward Lu, KC5WKJ, Dan Burbank, KC5ZSX, and Richard Mastracchio, KC5ZTE) no Amateur Radio operation took place during the STS-106 shuttle mission.

Ham radio on the International Space Station

When astronauts, cosmonauts and payload specialists from many nations fly on the International Space Station, they will have Amateur Radio as a constant companion.

On board Atlantis was the initial amateur radio station for ISS consisting of the U.S. provided ARISS 5-watt VHF (2-meter) and UHF (70-cm) hand-held transceiver, a TNC for packet, a specially developed headset and signal adapter module plus power adapters and interconnecting cables.

The equipment, part of the multi-national ARISS project, was not set up by the STS-106

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crew. Instead it was stored in the Russian-built Zarya Control Module (also known as the Functional Cargo Block or FCB) until the resident crew arrives next month, the first that will live and work aboard the ISS.

The Expedition 1 crew consists of Astronaut William M. Shepherd KD5GSL (Capt., USN), Expedition commander; Cosmonaut Sergei Krikalev U5MIR, Flight engineer and Cosmonaut Yuri Gidzenko (Col., Russian Air Force), the Soyuz vehicle commander. Yuri has also been licensed to operate ham radio, but his call sign is not yet available.

This first permanent crew will spend four months on the station, ushering in a new era of permanent human presence in space. From that point on, the ISS will be continuously inhabited.

Once the ISS is occupied, the initial ham station gear will be installed temporarily aboard the FCB module. It will use an existing antenna that will be adapted to support 2-meter FM voice and packet. The externally mounted antenna was originally used for telemetry during the launch of the FCB. The Amateur Radio station probably will not be activated until a month or two after the ISS crew moves in.

The ARISS equipment will get a more-permanent home aboard the Zvezda Service Module in 2001 where cabinet space has been provided for the ham gear. Permanent VHF and UHF antennas will also be installed at that time during a space walk. The Russian team has provided four extra ports so that antennas can be mounted outside the Service Module. Only 2-meter operation will take place during the first year.

The Italian team designed and built the ISS tri-band and other antennas. And a German team has provided a sophisticated repeater that will allow crews to make recorded reports on their daily activity and permit hams on earth better contacts with the men and women aboard the station. U.S. and Russian teams have trained the astronauts and cosmonauts to operate the equipment.

Plans call for the eventual deployment of amateur TV, both slow scan and fast scan ATV, a digipeater and relay stations. Frequencies and operating plans will be announced well in advance of their use.

Planning for Amateur Radio communications aboard ISS has been an international effort coordinated by NASA's Goddard Space Flight Center in Greenbelt, Maryland. The effort began in 1996 with the formation of the Amateur Radio International Space Station organization to design, build and operate the equipment. (Check out the ARISS web site at <http://ariss.gsfc.nasa.gov>.)

ARISS is made up of delegates from major national amateur radio organizations, including AMSAT -- the Radio Amateur Satellite Corporation in eight nations involved in ISS. Frank Bauer KA3HDO, chief of the Guidance, Navigation and Control Center at Goddard, and AMSAT's vice president for human spaceflight spearheaded the initial ISS development effort.

"In the United States, the American Radio Relay League (ARRL) and AMSAT provide leadership and consultation," said Bauer. "They donate and build hardware and make sure safety and qualification tests are successfully completed so the equipment can fly." Bauer said about a dozen Goddard employees and hundreds of amateur radio enthusiasts around the world volunteered their time and expertise to the project.

The United States *National Aeronautics and Space Administration* and the Russian space organization *Energia* have signed agreements outlining how amateur radio will be used on the station, while a Technical Team, called *ISS Ham,* has been established to serve as the interface to support hardware development, crew training and on-orbit operations.

Since its first flight, in 1983, Ham Radio has flown on more than two-dozen Space Shuttle missions. Dozens of astronauts have used SAREX (The Space Amateur Radio Experiment) to talk to thousands of kids in school and to their families on Earth while they were in orbit. They have pioneered space radio experimentation, including television and text messaging as well as voice communication.

The Russians have had a similar program for the cosmonauts aboard the Russian space station "Mir." When US astronauts were aboard Mir in preparation for the long duration missions of the International Space Station, they used amateur radio for communication, including emergency messaging.

A Russian call sign, RZ3DZR, has been issued for the ISS ham station. A German call sign, DL0ISS, also has been granted, and a U.S. call sign will be applied for.

Dark cloud on the horizon!

The ISS is already two years behind schedule due to Russian financing problems. And more problems lurk for the years 2001 and 2002 as Russia's Ministry of Finance has not yet come up with the funding needed. So far, only the first three modules are in orbit - the U.S. Unity node and Russia's Zarya propulsion module and Zvezda command module.

Next year, six Progress resupply ships, two Soyuz crew transfer missions and a docking compartment are required from the Russians. The outlook is also cloudy for major downstream Russian modules like the science power platform solar arrays and a universal docking module. NASA is developing contingency plans to keep the station supplied and in the proper orbit using the space shuttle if Russia is unable to deliver. Progress supply ships deliver both dry cargo and the propellant needed to keep the station at a safe altitude.

[Contributors to this story include ANS, ARISS, NASA-GSFC, ARRL, WF1F, KA3HDO, KC6ROL, K6DUE, N7HPR, SpaceDaily, Spaceflight Now and Florida Today.]

CUTTING EDGE TECHNOLOGY

■ **"Is this resistor open?" Depending upon the application, perhaps not.** Resistors with values in kilohms (thousands of ohms) and megohms (millions of ohms) have been made for decades. You don't run across resistors with values in the tera-ohm range (billions of ohms) very often, but they are still made for, and used in, a few applications. Radiation detectors, charge amplifiers, and high- resolution electrometers require tiny currents and such tera-ohm resistors will measure as being open on most multimeters (most of which don't register on any resistors higher than 20 megohms).

■ **Transparent electrical covers are showing up in streetlights and traffic signals in several cities.** They replace the metal panels that cover the internal wiring of light poles in their bases near the ground. The new see-through covers, about the size of a dinner plate, replace metal panels that are often stolen by vandals and thieves on street corners to be sold at junkyards and scrap-metal dealers.

■ **Roll your own chip!** At least one of the latest microcontrollers lets you not only program software into it, it also lets you determine the chip's physical pinout. Ordinarily, electronics engineers are locked into using the pinouts and functions built into a microcontroller. But the E5, from Triscend, can have any input or output signal assigned to just about any pin on the chip. This makes life easier for printed circuit board designers.

■ **RF-based inspection.** Automated inspection equipment in factories often uses touch probes to record lengths, widths and heights of manufactured items. Precision can be recorded down to hundredths of thousandths of an inch. But the inspection hardware can still be too bulky to reach deeply into recessed areas, especially holes. A new RF-based inspection probe eliminates a lot of superfluous gear, streamlining the measurement process and allowing the thinner probe greater access to troublesome areas. A tiny RF transmitter is embedded inside the probe itself, sending measurements back to the control head. Different frequencies can be chosen so multiple inspection machines in one plant won't interfere with each other.

■ **A new technique called Magnetic Pulse Welding literally squeezes metallic objects into new shapes by using induction.** A powerful electric pulse from a coil discharges through the metal, creating an eddy current. That current causes the metal object (workpiece) to physically move away from the coil with great strength. The resulting compression reshapes the workpiece in just microseconds, and no heat is generated.

■ **Antennas you can see through.** RF antennas made out of conductive transparent film that's been deposited onto the surface of glass substrate can therefore be made to fit a variety of surfaces. The film can be cut to any shape, thus changing its radiation pattern, to form a variety of propagation applications.

■ **A prototype superconducting high-voltage cable that works at high temperatures has been built by Pirelli.** Though only 20 meters long, the prototype boasts electrical losses of less than one watt per meter. It's estimated that at least half of the nation's generated electricity is wasted through transmission losses. (It remains cheaper to ship rail cars full of coal from Montana to Texas, than to generate the electricity on-site and transmit it across the country.)

■ **"Remember where we parked."** If you've ever seen the parking lot of an automobile factory, you can understand how intimidating it is to find one particular car amidst a sea of identical vehicles. Ford Motor Co. temporarily clips a radio transmitter into each car as it rolls off the assembly line, transmitting a unique signal to tell the staff precisely where it is when it's time to deliver the car. Rather than search up and down acres of asphalt parking lot, drivers can go right to a particular automobile.

■ **"Smart audio mixers."** Rather than continuously "ride the board" and keep watch on audio levels and adjust each and every microphone channel during a live performance, computerized audio mixers keep watch over each channel and analyze the one that's most active at any given time. A channel that's louder and more active than the others for a certain length of time will more likely than not stay that way, so it is heard in the final mix more prominently than the others.

■ **You will be hearing a lot about "Bluetooth" enabled electronic products.** The wireless technology permits communication between computers and all sorts of wireless hand-held and portable gadgets. It was originally developed to replace cabling between computers and peripherals.

Bluetooth is a personal area wireless networking standard designed for local area voice and data communications. The system operates in the license-free 2.4 GHz ISM band.

Bluetooth uses a short-range low-power radio link built into a microchip. The protocol enables the wireless exchange of information between many devices, including mobile telephones, PDAs, notebook PCs, handheld PCs, associated peripherals, consumer electronics, point-of-sale transaction terminals, cell phones, pagers, Internet devices and home hubs.

The Bluetooth protocol is a combination of circuit- and packet-switching, making it suitable for both voice and data. The nominal link range is up to 10 m, but links can be extended to more than 100 m by increasing the transmit power. Motorola has big plans for Bluetooth. Check out: <http://www.mot.com/bluetooth/>.

■ **New method of bonding wires to connectors.** Sonic Connections uses ultrasonic welding technology to bond cables to printed-circuit boards. It eliminates soldering and insulation- displacement connectors. Once a wire or other conductor is mechanically crimped, ultrasonic (high-frequency) energy welds the electrical connection.

■ **Are paper-based catalogs dying? They sure aren't growing.** Instead of printing and delivering a heavy catalog at $10 each, it's easier, quicker and cheaper to "burn" all of that information onto a small, lightweight CD-ROM that costs less than a dollar to mail. Surfing the Internet for said goods makes even a CD-ROM obsolete in certain applications.

■ **How do you steer a laser?** The same way you tune a transmitter. On optical benches, where tiny mechanical adjustments can mean huge changes in laser performance downstream, mirrors are moved by means of piezoelectric tilting platforms. The piezoelectric effect, as you may remember, is at the heart of quartz-crystal oscillators. A voltage applied to a piezoelectric junction creates a mechanical force. A computer can command a tilting platform to turn left, right, up or down. Very precise positioning can be accomplished with this means.

■ **Doing prospecting on other worlds?** Ask Jet Propulsion Laboratory in

Pasadena, CA. They're stockpiling a database full of pictures they've taken from airplanes all over the world, using films that are sensitive to particular elements. This makes certain geographic features show up better. When space probes reach distant planets, their cameras will be able to pinpoint particular features to help scientists know what they're looking at.

■ **High-tech VOX.** Certain radio applications require hands-free operation. You often can't hold a microphone and fly a helicopter at the same time. How about if you're trying to hold a weapon and answer a call? Law enforcement agencies keep transceivers that use push-to-talk switches that can be mounted onto a gun stock, so an officer won't have to jeopardize his safety to talk on the radio. Earpieces contain acoustic holes through which the user can hear the outside world, as well as the over-the-air radio signal from the tiny embedded speaker. Whispers can be amplified to normal voice level automatically.

■ **Painting with metal.** Vacuum deposition is a method of coating an object with a thin layer of metal, such as aluminum. A piece of metal is placed in a chamber with the air pumped out, and the metal is heated to its melting point. The metal turns into tiny droplets; it can be "sputtered" onto the surface of almost any object. It effectively coats the entire surface, no matter how many edges and turns it might have. The resulting coating is electrically conductive and continuously even.

■ **How do you look into an RF-proof box?** Any physical break in the outer shield will let stray RF out or in. You can make a see-through window without jeopardizing radio-wave integrity by using wire mesh that's bonded between layers or glass or plastic. Even certain metallic coatings will work. The amount of space between each wire in the mesh will depend upon the wavelengths of the radio signals you're working with.

■ **Yelling "Danger!" in bird talk.** Birds just love to roost in large, open buildings, and the mess they make can best be described as "indescribable." Chasing them away can be a full-time job. But the Super BirdXPeller PRO, from BirdX, is an electronic device that plays back digitally recorded bird calls of distress from several species, at strong volume. Geese, pigeons, starlings, crows and other birds can be frightened off by random blasts of "Fly away!" cries in their own language.

■ **Too much RF? Try wearing an RF suit.** Holaday Industries makes clothing that shields a person against strong electromagnetic fields. The suit contains tiny stainless-steel fibers woven into the cotton and polyester. It keeps out RF from 2 MHz to 10 GHz, providing up to 60 dB of protection.

■ **Springs and shocks.** The latest shock-absorber technology in cars changes the damping characteristics of the suspension while the car is in use. Sensors determine the weight and mass distribution of the passengers, and how well the car takes corners at particular speeds, and a microcontroller activates a valve to make the shock-absorbing system more or less damping to road conditions.

■ **Here comes the sun!** The Model LS-1000 Large Area Solar Simulator (from Solar Light Co.) simulates the sun in the laboratory. It lets engineers test paints and dyes for fading under high temperatures, plastics for UV breakdown, protection factors of cosmetics and sunscreens, and biological behaviors. The Solar Simulator accurately reproduces the sun's properties across the solar spectrum with a xenon lamp. (And you can turn it off when you want to, rather than wait for dusk!)

■ **Excerpts from the book, Bad Predictions ($15.95 Elsewhere Press, 2000) by Laura Lee!**

"Inventions have long since reached their limit, and I see no hope for further developments." *[Roman engineerJulius Sextus Frontinus, A.D. 20]*

"That's an amazing invention, but who would ever want to use one of them?" *[Pres. Rutherford B. Hayes to Alexander Graham Bell]*

"It doesn't matter what he does, he will never amount to anything." *[Albert Einstein's teacher to his father.]*

"Heavier than air flying machines are impossible." *[Physicist William Thompson, Lord Kelvin, 1895.]*

"In 1901, I said to my brother Orville that man would not fly for 50 years." *[Wilbur Wright, 1901.]*

"I anticipate radio's complete disappearance — confident that the unfortunate people, who must now subdue themselves to 'listening in' will soon find a better pastime for their leisure." *[H.G. Wells in 'The Way the World is Going," 1925.]*

"The problem with television is that the people must sit and keep their eyes glued on a screen; the average American family hasn't time for it." *[The New York Times, after a prototype television was demonstrated at the 1939 World's Fair.]*

"It would appear, we have reached the limits of what is possible to achieve with computer technology, although one should be careful with such statements; they tend to sound pretty silly in five years." *[Computer scientist John von Neumann, 1943.]*

"The Japanese don't make anything the people in the U.S. would want." *[Secretary of State John Foster Dulles, 1954.]*

"Man will never reach the moon, regardless of future scientific advances." *[Radio pioneer Lee DeForest, 1957.]*

"Despite the trend to compactness and lower costs, it is unlikely everyone will have his own computer any time soon" *[Reporter Stanley Penn, the Wall Street Journal, 1966.]*

"But what is the microchip good for?" *[Engineer at the Advanced Computing Systems Division of IBM, 1968.]*

"By the turn of the century, we will live in a paperless society." *[Roger Smith, Chairman of General Motors, 1986.]*

"I predict the Internet ...will go spectacularly supernova and in 1996 catastrophically collapse." *[Bob Metcalfe, InfoWorld, 1995.]*

■ **Futurist and inventor Raymond Kurzweil has some amazing things to say about what computers will do in the next half-century,** and he's got some impressive credentials to back him up. The principal developer of the first print-to-speech reading machine for the blind and the first large-scale voice-input word processor, Kurzweil says in his book *The Age of Spiritual Machines* that the advancing technologies of 3-D chips, quantum computing, optical computing, and even DNA computing will create computers that will equate the processing power of the human brain within the next 20 years. By the year 2055, he says, a thousand dollars' worth of computing power will buy you the equivalent processing power of all human beings on Earth combined!

EMERGING COMMUNICATIONS

■ **Tired of paying high cellular-phone prices?** Take heart; they may come down. Here in America, most users pay by the minute. In Europe and Japan,

users pay a flat rate. Some market experts think that the pricing structure here may change in the near future. How? Cell phone users may not pay any monthly fees at all -- their calls will be free, with costs paid for by advertisers and businesses that specialize in selling items over the Internet. Cell phones are so prevalent now that it's becoming economical to surf the Internet with them.

■ **Does your microphone automatically retract into the ceiling when not in use?** Probably not, but it can be done. Professional music halls, sports arenas and other venues use such "reeled" mikes for specialized applications such as choirs and crowds, when it's impractical to set up dedicated microphones. When the music's over, a sound technician presses a button and the mikes are reeled back up to the ceiling. A fleet of such mikes can be controlled by computer, too.

■ **"Where did the speakers go?"** Loudspeakers can be disguised and hidden so well that they may be impossible to relocate if people forget where they were installed. The latest-technology loudspeakers can be flush-mounted into walls, painted, decorated to blend in with the rest of the room, and therefore become invisible. As people move or change jobs, new employees of museums may not know where the speakers are located and must ask the original installers where they put the speakers!

■ **Audio delivery by infra-red light.** Where RF transmissions are too tricky to use, infra-red (IR) light can deliver audio or data with no license required. IR-emitting diodes are far more efficient than visible-light-emitting diodes, and driving a batch of IR diodes in parallel offers a powerful beam of carrier waves. To avoid confusion from ambient light, IR-audio delivery systems often use a 95 kHz - 3 MHz carrier. IR receivers detect the beam and retrieve the desired audio or data. Arrays of IR emitters can be mounted in ceilings or walls, in home theaters or conference rooms.

■ **Stereo for your seat.** The Intensor fx Gaming Seat from Imeron Immersive Technologies lets you literally sit on a pair of speakers. Connect the Intensor to any audio source -- TV, VCR, computer, game system, etc. -- and you literally feel the sound through your body. It's said to greatly intensify the experience of high-powered video games.

■ **Having trouble reading your phone bill? Does it include a lot of "mystery" charges?** PhoneFree.com is launching an Internet-based telephone service that provides unlimited "phone-to-phone"domestic local, regional and long distance calling for $49.95 per month. Local access will be available in 152 metropolitan areas, covering approximately 65% of the US population. There is only one payment each month and it's always the same. <http://www.phonefree.com>

■ **Where's the bus?** Residents of San Francisco can use their cellular telephones to find out exactly when the next bus will arrive. GPS receivers mounted on buses and trains let a master computer keep track of their locations, and NextBus.com tells riders when to expect the next pickup.

■ **REACT wants a "calling channel" for FRS (Family Radio Service) radios.** It suggests channel one (462.5625 MHz) without tones be the official call channel which could be used during emergencies. These non-licensed short-range two-way radios are being carried everywhere. See <http://www.reactintl.org>.

COMPUTER INFO

■ **Start your car with a credit card? Yep. It is on the way. Be on the lookout for the new "Smart VISA" card.** VISA USA is launching a credit card with an embedded microprocessor and 32 kilobytes of memory. It will be free to VISA's 350 million cardholders. With it, customers will be able to download information from the credit card to their home computers via special card readers.

Eventually, customers will be able to use the personalized smart cards for all sorts of functions including accessing website content, making online payments, downloading enhancements ...and through a personal identification number (PIN) feature, the card can even serve as the keys to automobiles and houses.

■ **Not to be outdone, American Express has already introduced its new "Private Payments" option** which allows card holders to make online purchases without transmitting their actual card numbers over the Internet. The option allows customers to buy online using a private, "disposable" number that is used once and then invalidated after the transaction. That means if the number is stolen, it can not be reused.

■ **The title of the "Word's Richest Man" may soon change from Microsoft's Bill Gates to Oracle Corp's Larry Ellison.** Oracle's share price has skyrocketed (up nine-fold during the past two years) while Microsoft (thanks in part to their anti-trust problems) has plummeted. MSFT shares are down 50 percent from their 52 week high. Ellison owns 24 percent of Oracle which has a market capitalization of $223 billion.

His new compensation package grants him options on 20 million shares at a strike price of $13.75 in lieu of receiving a salary. ORCL shares currently sell for aboout $80, much higher than their 52 week low of $18.28. Ellison is gaining net worth while Gates is slipping. He is now worth more than $55 billion ...and lags archival Gates' $60 billion by less than ten percent.

■ **Hang on to your motherboard!** Microprocessors that run at 6 GHz may be on the shelves by the end of the decade, if not sooner.

■ **The down side of computerized databases.** Late last year, a man in New Jersey confessed to buying new compact discs from record clubs through the mail for very low, introductory prices... and then reselling them on the street for a great deal more (though less than store prices). He was able to do this by taking advantage of computerized address lists, which often do not differentiate between misspellings of the same name, street address, or even apartment numbers or different punctuation marks. In essence, by fiddling with the order sheets' address forms, he created over 1,500 fake names and addresses to buy CD's at rock-bottom prices... and the computers happily sent them. The record companies lost almost a quarter of a million dollars to one person because their computers couldn't tell the difference.

■ **For every person in the world, there are at least 10 microprocessors.** More than 70 billion processors have been sold in the past 30 years, handling everything from automobiles to microwave ovens to stereo receivers to ham radios.

■ **Microsoft released (on September 14th) its latest Windows operating system upgrade of its consumer-oriented Windows 98.** It is called "Win-

dows Me" for Windows Millenium Edition -- List price $59.99 (street price about $10 lower.) The code is still based on Microsoft's aged MS-DOS from 1981.

Unlike other upgrade releases, this one was low-key indicating a modest improvement. A review of the upgrade system concluded that it should be fine as the operating system of a new computer, but upgrading an existing computer is risky and may not be worth the benefits: faster boot-ups and some improved multimedia capabilities. Microsoft also warns that some older antivirus and Internet software may not work under Me.

The good news is Microsoft is working on a new consumer operating system based on its Windows 2000 business operating system code. It is expected late next year and should be a much better upgrade than Me. <http://www.microsoft.com/windowsme/> *[Reported by Associated Press]*

■ **Lost on a new college campus?** Columbia University engineers have developed a prototype "augmented reality" system people can wear with a head-mounted display. A computer in a backpack connects to a small GPS receiver, and whenever the user queries the system with a "What building is that?" command, a menu pops up in the user's field of vision -- on top of the building in question. Items such as the name of the building, classes taught in it, faculty roster and more can be relayed instantly. Other uses include museum tours and outdoor tourism.

■ **Embedded microcontrollers getting more powerful.** Such devices operate electronic toys, appliances, TVs and VCRs, you name it. Just 15 years ago, the average program in one of these devices was only 13,000 lines long. Today, an average microcontroller program can easily contain a million lines of code. What's next?

■ **From plastic models to computer models...** Just a decade ago, special-effects houses for TV shows and movie studios used teams of model builders to construct space ships, planetary landscapes, and whatever else was necessary to simulate the movie experience. But it's now cheaper to create the starship _Enterprise_ totally with computer graphics, thereby eliminating the need for physical model technicians. A "ship" can be flown literally millions of times without wear and tear; replacement lamps and repainting are no longer necessary; and changes can be done (such as battle scars) in seconds instead of days. Even artists who specialized in painting detailed backgrounds on glass for matte shots have had to shift into computer graphics.

■ **Competition for Intel.** Advanced Micro Devices (AMD) is working on its own 64-bit microprocessor, code-named "Sledgehammer," which they expect to release in 2001. It will be a competitor against Intel's 64-bit chip, Itanium, which is also to be released next year. AMD has already released specifications about Sledgehammer to hardware and software developers.

■ **Baiting the trap.** One common method to trap computer hackers and gather evidence against them is the "honey pot." It's a slang term for software that makes the hacker think he's broken into a computer system and all of its sensitive files, but in fact it's a dummy. The honey pot contains no real information crucial to a company's operation; it just lures the criminal element into a noose by presenting interesting-looking files.

■ **How critical is electric power to high finance?** At least one large bank -- First National Bank of Omaha -- does not depend on commercial electricity to run their computer systems; they create their own power on site. Considering the millions of credit-card transactions their data center must handle, the bank feels they cannot rely solely on one source of electricity. They use fuel cells, each with a backup. Diesel generators back up the primary system, and the local power utility is the backup after that.

INTERNET NEWS

■ **Nokia, known best for their tiny cellular telephones, is embarking on a new venture called "Nokia Home Communications."** The mission of the new unit is to enable all types of Internet-delivered entertainment and media content which will soon be a part of millions of households. Nokia Home Communications is creating three major product lines:

1. **Home Gateways;** home servers that provide a link between the Internet and different devices in the home, as well as providing local data storage.
2. **Media Terminals** that permit digital TV and the Internet to merge and create a platform for totally new services, and
3. **Applications Software** and services developed especially for the home environment.

■ **Nokia brings Internet to the living room with Linux-based set-top box.** The Finnish telecoms equipment maker is launching its Media Terminal next year. The new infotainment center for the home combines fast, interactive Internet media with digital TV broadcasting technologies.

The Nokia Media Terminal allows broadcasters to provide "push-type" services over TV networks as well as services such as interactive advertising, and "click and buy" home shopping and banking.

Consumers can also watch digital TV and record programs on a hard disk, play network games, view interactive video magazines, download movies on demand, send and receive e-mail, listen and store MP3 files, as well as connect such peripherals as printers, digital cameras or other devices, Nokia said. The technology was developed in collaboration with U.S. chip maker Intel.

■ According to an Associated Press report out of Australia, **Microsoft CEO Bill Gates said that the English language will dominate the Internet until computers talk and listen.** Acknowledging that China will have the world's largest online population ten years from now, Gates said that because of the limits of conventional keyboards, English will continue to dominate the Internet until computerized translation capabilities become more advanced."

When asked about the future, Gates said, "People ask where do you go from here -- have we finally hit the peak, have we finally hit the limit? ... My answer, as you might predict, is absolutely not."

■ **Olympic athletes post their own Web pages.** Competitors from over 200 countries are meeting in Sydney, Australia for the 2000 Olympics. The official Web site (http://www.olympics.com) is expected to record at least one billion "hits" during the course of the Games. You can send fan mail to particular athletes at: http://www.fanmail.olympic.ibm.com, and also view athletes' personal Web pages.

■ **Nielsen Media Research, the ratings people, has released a Global Internet Trends study** which says that 295 million people have residential Internet access in certain developed countries in

Europe, Asia Pacific and North America.

Number of People (In Millions) With Internet Access Via Home PC			
US	136.9	Sweden	4.5
Japan	26.3	Belgium	2.7
UK	19.4	Switzerl.	2.4
Germany	14.8	Denmark	2.3
Canada	13.1	Norway	2.2
Italy	11.1	Austria	1.7
Australia	7.6	Singapore	1.7
Netherl.	6.8	Finland	1.6
France	6.5	New Zeal.	1.3
Spain	4.6	Ireland	0.8

■ **"Portals" are perishing!** -- Last year the Walt Disney Company planned to make its Go.com website a competitor to America Online and Yahoo. It is now in the process of being redesigned. Instead of being a general purpose Web "portal," offering a search engine and links to news, weather and such, the new Go.com will concentrate on leisure and entertainment and will more prominently feature Disney's other sites, including the top-rated ESPN.-com, ABC.com and Disney.com. The new site is being introduced as "your guide to a better time." Go.com, launched in January 1999 after Disney bought the search engine Infoseek, will still serve as a general search engine. <www.go.com>

■ **AltaVista is another well known site that is giving up its fight to become a web "portal."** It is laying off a quarter of its workforce to refocus on its search engine. AltaVista had spent hundreds of millions of dollars over the past two years to transform itself from a search engine into an Internet portal. There are just too many "start pages" on the Internet <www.altavista.com>

■ **Where do you Yahoo!? How about in a taxicab.** The first ten yellow and purple-splashed New York City taxis have been outfitted with Palm VII handheld computers tucked into the back seat pouch. Each Web-outfitted taxicab has a purple Yahoo! sign splashed on the sides and top. Inside, the usual black passenger seat has been replaced with an eye-popping purple. The Palm computers (which have wire leashes so they won't disappear) allow riders to look up weather, sports reports, news and soon the latest stock prices.

WASHINGTON WHISPERS

■ **"Napster"digital music piracy impacts video taping.** To protect against the widespread taping of movies, the FCC has enacted new rules to prevent recording of digital cable TV shows. The next generation VCRs and set-top boxes will contain new copyright protection technology to prevent digital "video piracy."

Consumer electronics makers, who oppose copyright protection say they may take the FCC to court to block the new rules. In any event, it will take electronics manufacturers six to nine months to deliver equipment with the new piracy-prevention technology.

The objective of the new rules is to prevent copying of video content unless a broadcaster chooses to make it available for copying. Broadcasters are slowly moving into digital TV which offers better resolution a nd sound. While all TV stations are expected to offer digital television by the end of the next decade, it has been slow to catch on. Ninety-nine percent of all U.S. households still receive analog (NTSC) TV signals.

■ **Through the FCC, the U.S. government is trying to do something about the "digital divide" that exists between Native American (Indian) communities and the telecommunications services and access available to the rest of America.** The *Indian Telecom Training Initiative 2000* will bring together government representatives as well as representatives from over 100 tribes, over 40 private sector groups, and over 50 telecommunications experts to focus on the issue of improving modern telecommunication services for tribal communities. The FCC also announced the creation of a scholarship program to assist the participation by tribal community leaders in ITTI 2000. Scholarships are available for two representatives from each applying tribal government on a first-come, first-serve basis. See FCC Indian Initiatives website at: <http:// www.fcc.-gov/Indians>

■ **The FCC has denied reconsideration of a $7,000 fine** levied against The Two Way Shop of Kennewick, Washington. Posing as members of the general public, The Two Way Shop had offered to sell illegal linear amplifiers to FCC undercover agents. The "Forfeiture Order" was issued on April 7, 2000. Payment must be made within 30 days or the case will be referred to the Dept. of Justice. *[FCC Order released September 14, 2000.]*

■ **The Pentagon and the White House are at odds over the proposed reallocation of military frequencies to private industry for the next generation of wireless devices.** The Clinton administration wants to let the telecommunications industry use spectrum currently reserved for Air Force communications, intelligence-gathering and global positioning satellites for new wireless technology.

Officials say that failure to make the frequencies available could adversely impact the economy and slow down the thriving Internet. Analysts expect that new wireless telecom devices will eventually be a $500 billion business.

The *National Telecommunications and Information Agency* has asked the Pentagon to look into the implications of letting private industry use 1.8 GHz frequencies now allocated for Government use. The NTIA is the White House advisor on telecommunications matters.

The Defense Department says that it will cost hundreds of millions of dollars and take decades for military users to be relocated to different spectrum. The U.S. military also believes that the loss of spectrum could adversely impact national security. They want the administration to use what was previously UHF television channels or frequencies in the 2.1 to 2.2 GHz band.

The 1.8 GHz band is particularly coveted by industry because it is adjacent to spectrum already used by existing domestic wireless phone services and includes frequencies that the World Radio Conference designated in May for next-generation wireless phones. The administration is also considering a sharing arrangement between Government and non-Government users.

There are now over 100 million wireless phone subscribers which could balloon to 400 million users globally within five years as the wireless Internet becomes a reality. The next generation of wireless phones and high speed wireless Internet devices are expected to transfer data up to twenty times faster than today.

■ **The FCC hzs declared all out war on telephone "slammers"** ...the unscrupulous practice of changing a consumer's telephone carrier without authorization. The Commission has adopted aggressive new liability rules that takes the profit out of slamming and has imposed more rigorous verification rules.. Some very large carriers have had to pay huge monetary payments to the U.S. Treasury to settle Enforcement Bureau slamming investiga-

tions. The total collected so far this year exceeds $10 million!

AMATEUR RADIO

■ **Seeing the handwriting on the wall, Germany's *Deutscher Amateur Radio Club*** has disclosed that it will now accept a regulation within M-AOQ (the draft Mandatory - Amateur Operating Qualifications) that "certain" (but not all) HF bands could be accessible without passing a Morse code examination. It is the goal of the *International Amateur Radio Union* to have the M-AOQ be a part of the ITU regulations covering the Amateur Service.

The DARC is the national ham radio society in Germany. They claim 65,000 members and over 1,000 affiliated clubs.

■ **A new independent Amateur Radio frequency coordinating group has been formed to provide 10-meter/ VHF/UHF frequency coordination in and around New York City, Long Island and Northern New Jersey.** The Metropolitan Coordination Association, Inc. ("MetroCor") was organized by a volunteer group of concerned Amateurs to address spectrum usage issues in one of the most densely populated areas of the country, which has been without such services for several years.

MetroCor has notified the FCC, the National Frequency Coordinators' Council, Inc., the ARRL, and the spectrum management councils in adjacent states of its intention to voluntarily provide coordination services on frequencies above 29.5 MHz. The group's president, Stephan Anderman, K2SMA of Sussex, New Jersey is also is the developer and host of the weekly "This Week in Amateur Radio" satellite program.

The organization was recently incorporated as a not-for-profit corporation. Representatives of MetroCor outlined the new council to those attending the ARRL Hudson Division Convention on Saturday, September 16th.

Anderman stressed that MetroCor is a totally new organization and that it will take some time to bring Amateur Radio frequency coordination back up to speed in the region after many years of neglect. In fairness to those who had been granted coordinations by other entities, MetroCor has declared a moratorium on the issuance of new coordinations until June 30, 2001. This "grace period" will provide Amateurs in MetroCor's service area an adequate opportunity to renew or re-register previously coordinated spectrum usage through MetroCor. It will also give MetroCor the time to carefully build an infrastructure, put a staff in place, develop resources, and to develop coordination procedures.

Other organizers of the new council include Secretary Larry Lutzak WA2CNV, of Bellerose, New York; Treasurer Richard Gelber K2WR, of New York City; Mario Sellitti N2PVP, of Keansburg, New Jersey; Ray Makul K1XV, of Wharton, New Jersey, and Tom Raffaelli, WB2NHC, of Thornwood, New York. Additional information can be found on MetroCor's web site at <http://www.qsl.net/metrocor>

■ **Mitsunobu "Nob" Koiso JH1UNS (he also holds the U.S. call sign KK6EJ) of Japanese CQ Ham Radio (magazine)** reports that the U.S. produced ham radio Movie "Frequency" is to be released in Japan early next year under the Japanese title of "Beyond the Aurora." He says the Gaga Communications Co., Ltd. presented screened portions of the movie at the recently concluded JARL Ham Fair 2000. They also distributed a poster and blank QSL cards promoting the movie.

■ **"If you can pass the examination, you are old enough."** That's the new thinking regarding the minimum age restriction for ham operators in the United Kingdom. After consultation with the RSGB *(Radio Society of Great Britain)* the UK's *Radiocommunications Agency* has removed the minimum age requirement needed to hold a full privilege Amateur license.

To be eligible previously you had to be 14 years of age or over, or to have held a Novice license for a least a year. "Recognizing that talented youngsters should be actively encouraged and nurtured...," both parties felt that, in view of the increasing technical and operational ability of youngsters today, the restriction should be discarded.

■ **Herb Schoenbohm KV4FZ is still on the Amateur air waves pending final appeals.** Citing questionable character, the FCC says it will not renew his ham ticket due to his felony conviction for illegally making long distance phone calls using stolen access codes. He still holds a lifetime General Radiotelephone Operator license, however, and is employed by the Virgin Islands government where he responsible for site management of radio relay sites.

Although his 20 meter IARN broadcasts on 14.275 MHz are off the air, Glenn Baxter K1MANis also still licensed. The FCC turned up at his station while it was automatically broadcasting without a control operator some time back. Baxter says he is "...still waiting for a decision from the Court of Appeals in Boston regarding my appeal of the $10,000,000 lawsuit against the FCC which was heard during the August/Sept term." He added "We do not presently plan to bring back the IARN bulletin service until this suit is completely adjudicated and/or after the trial in Portland."

■ **Amateur Radio Enforcement News. Dana T. Roper, KE6HDD of Roseville, CA** has been advised that the FCC has information "that someone using your call sign" has operated transmitting equipment on the 20-meter ham band on the frequency 14.165 MHz. "That band is not licensed to you under your Technician license," FCC warned. Roper was cautioned that such operation could lead to license revocation, a fine and also jeopardize future attempts to obtain an upgraded Amateur Radio license.

Gerald G. Dugan N5OGD of Abilene, TX was also warned that the FCC has information concerning threats made to individuals over the Key City Amateur Radio Club repeaters and failure to properly identify. Additionally, Dugan allegedly has not heeded requests to not use the repeater. The FCC said that additional incidents of this type will not be tolerated and will result in a fine and revocation proceedings.

John A. Green KD4TTE of Mobile, AL has had his General Class license canceled by the FCC due to failure to appear for re-examination. He had been required to appear for re-examination on or before August 30, a date subsequently extended to September 13, 2000.

Cornell Howard KØRNY of New Carlisle, OH has been ordered to retake his Technician Class license examination by October 30, 2000.

Michael S. Takahashi NH6QZ of Honolulu, HI has been warned that he may be interfering with communications on the WH6CZB repeater operating on 148.88/28 MHz. He was directed to respond in writing to this allegation within 20 days.

IARU ADMINISTRATIVE CCOUNCIL DECLINES TO ACT ON MORSE CODE EXAMINATION POLICY

The Twenty-First meeting of the Administrative Council of the International Amateur Radio Union met in Darwin, Australia on September 3 and 4. It was convened after the IARU Region 3 Conference ended on September 1st.

Delegates to the IARU Region 1 meeting (held a year ago in Lillehammer, Norway) had already agreed that Morse code testing should not be a part of the international requirements to operate Amateur Radio on any ham band. Delegates to the IARU Region 3 meeting also agreed to that same premise and recommended that the IARU Administrative Council adopt this position as IARU policy.

Interestingly, both the IARU Region 1 and 3 conferences had the Radio Society of Great Britain's President Don Beattie G3OZF making passionate pleas that a mandatory Morse testing requirement was not consistent with a modern day Amateur Service. The RSGB had a vote at the Region 3 Conference on the basis that tiny Pitcairn Island lies within the IARU Region 3 boundaries.

According to Jim Linton, VK3PC, IARU Region 3 Media officer, the IARU Administrative Council declined to act on that policy recommendation until after the IARU Region 2 conference which will be held in Guatemala next year.

In all probability, the RSGB will be attending and voting at the IARU Region 2 Conference next October (2001) also since the United Kingdom has several possessions in North and South America. Among them are [North America] Anguilla, British Virgin Islands, Bermuda, Cayman Islands, Domenica, Grenada, Montserrat, Turks & Caicos Islands, and [in South America] Falkland Islands, South Georgia Island, South Orkney Island, South Sandwich Island and South Shetland Island)

FCC WORKING ON EASIER PUBLIC ACCESS TO AMATEUR SERVICE LICENSING INFORMATION

The FCC is actively working on two enhancements to their online Amateur Service information and license filing system. These enhancements will permit the public to easily access FCC license information that previously was available only by calling the FCC's Customer Service (1-888-225-5322) telephone number.

The first *"Basic Search"* enhancement will allow the public to quickly and efficiently access Amateur licensing information using a new Internet-accessible interface that is currently in development.

The FCC Amateur license database will be able to be searched by call sign, TIN (Taxpayer identification number, your Social Security Number), Licensee ID (the 9-character number that the FCC assigns to all licensing transactions which may be used in place of a SSN), Federal Registration Number (FRN is the new CORES number) and Licensee Name. Users will also be able to narrow the search by accessing only certain states or zip codes.

A second *"Advanced Search"* function (which is linked from the basic search screen) further allows users to narrow their search by license type (individual, Club, military, RACES), operator class, Vanity call signs issued and by date (license granted, effective, expired, cancelled or last changed) ...or by date range.

The *"Results Screen"* displays a table of columns of licensing information. Users will be able to customize the columns displayed on the table by opening the *"Results Options"* page. The customized table format is saved in a "cookie" file on the user's PC. Specific license details can be accessed by clicking on the call sign link on the results screen.

The *"Amateur Query License"* screen then displays licensee FRN number, name, address, previous call signs, action dates, special conditions and any FCC comments on an Amateur's record are then displayed.

A third search *"Batch File Results"* tool has been requested by the VECs that would provide a one page online report of the licensing handing of each license candidate listed in a specific exam session (batch file.) For example, a VE team (or an applicant) would be able to access a particular exam session held in a specific city/state on a specific date and determine the licensing handling of all applicants in that particular test session.

The other enhancement (which will come later) involves a change in the timing of the processing of the test session "batch file" data that is transmitted by the VECs to the FCC. This enhancement will permit *"Real Time Processing"* of the licensing information rather than have the file wait for the FCC to later recall and process the licensing information. This will greatly speed up the granting of new, renewed and modified Amateur Service licenses.

No time table has been determined for release of the new Amateur Service Internet enhancements. Best guess is the public should have access to the new interface in a matter of weeks ...or a few months. It is being programmed now.

Two conference calls have already been held between FCC Gettysburg, PA and Washington, DC staffers and VEC representatives. The VECs were shown what the new proposed search and results screens will look like and have commented on them. We will let you know how to access the new Amateur Service Licensing Interface once a Beta copy has been posted to the Web.

GAY HAM CLUB ASKS ARRL TO RENOUNCE BOY SCOUT POLICY REGARDING GAY SCOUTS AND SCOUTMASTERS

The Lambda Amateur Radio Club (LARC) is a Philadelphia-based ARRL-affiliated ham club for gay and lesbian radio enthusiasts. On September 12th, LARC sent a letter to the ARRL president Jim Haynie, W5JBP (with a copy to League Executive VP Dave Sumner, K1ZZ) which reads as follows:

Dear Mr. Haynie,

Our membership has asked me to contact you to request that the ARRL officially and publicly distance the League from the policy of Boy Scouts of America to dismiss and exclude gay scouts and scoutmasters. As an ARRL Affiliated club in good standing with the League, LARC members would like public confirmation that the closer cooperation that the League wishes to foster with the Scouts organization does not include support for their anti-gay discriminatory policy. We are concerned that the League not be seen as endorsing this policy by default.

As you may know, in a recent decision the U.S. Supreme Court ruled that the Boy Scouts of America is a private organization and therefore they it set discriminatory membership standards that bar gay boys and men from scouting.

It should be noted that the Girl Scouts have no such policy. This BSA policy has resulted in a significant backlash and loss of support for the BSA and its anti-gay policy as reported in the New York Times and elsewhere.

Hopefully, the Boy Scouts organization will soon re-evaluate their policy, however, this will happen only if the BSA is pressured to end its discriminatory policy.

As more and more state and local authorities, companies, organizations and groups sever ties with the BSA or publicly distance themselves, those who DO NOT will be seen as endorsing the BSA's discrimination. And since the BSA's anti-gay exclusionary policy has run afoul of the anti-discrimination laws of the state in which the League is headquartered, we are sure that the League will not want to be seen as endorsing discrimination.

I look forward to hearing from you soon on this important matter. 73,

/Signed/ Art Joly, N1RPN, President, LARC

The above letter was released to the Amateur Radio media by LARC's Jim Kelly,KK3K.

LAUNCH OF P-3D HAM RADIO SATELLITE "IMMINENT..."

The Amateur community is excited about the approaching liftoff of the Phase 3D next generation Amateur communications satellite. This time it is real!

AMSAT-DL Vice-President Peter Guelzow, DB2OS, had recently announced the Phase 3D satellite "...will be launched at the end of October or beginning of November." AMSAT now advises that based on the successful launch of AR-506 on September 14th, AR-507 could come as early as November 3rd. AR-506 contained two commercial broadcast satellites, the Astra 2B and GE-7 satellites. The AMSAT Phase 3D communications satellite is manifested on AR-507. The launch comes a year after a contract accepting Phase 3D as a payload for the first suitable Ariane 5 launch vehicle was signed.

The P-3D launch team, headed up by AMSAT-DL Executive Vice President Peter Guelzow, DB2OS, are already at the launch site. They have checked the ham satellite and have declared that it is handled its ten month "clean room" storage in good shape. The satellite was transported from Orlando, Florida (by way of Paris) to the launch site last January. Liftoff will be from the European Spaceport in Kourou, French Guiana, located in the northeast corner of South America . The launch countdown has already started as we go to press. It will be launched as an auxiliary (secondary) payload along with three other commercial satellites.

The orbiting of Phase 3D was delayed earlier this year when the Ariane 5 series of booster rocket launches were postponed after an upper stage defect was discovered which required the re-examination of several critical components. The European Space Agency *Arianespace* later cleared the Ariane 5's to resume launching.

In development since the late 1980s, the Ariane-5 heavy lift vehicle has had a turbulent past. Its first test flight in 1996 exploded 37 seconds after launch destroying satellites worth $500 million and the first commercial flight only took place late last year. Ariane 5 rockets can carry a payload of nearly 7 tons worth of satellites into space. The P-3D satellite is not insured.

Weighing in at 650 kg (1,430 lb), AMSAT Phase 3-D will be injected into a geostationary transfer orbit. It will then use its own propulsion system to reach elliptical orbit (4,000 x 47,000 km, inclined at 60 degrees), where it will be used as a relay by the international community of amateur radio operators for up to ten years. Arianespace, which currently launches 60 percent of the world's commercial satellites, has orbited some 27 auxiliary payloads since 1980.

While its primary focus is on improved worldwide satellite communications, the Phase 3-D satellite will also have a very positive influence on the very future of Amateur Radio. Most importantly, it will enable long-distance communications on several ham bands including the popular 2-meter (at 145 MHz) and 70-cm (435 MHz) bands.

Built primarily from donated resources, the International Phase 3-D team includes participating AMSAT groups from Austria, Great Britain, Japan, Canada, Finland, Russia, Belgium, the Czech Republic, Slovenia, France, New Zealand and Hungary - in addition to the primary groups from AMSAT-Germany and AMSAT-North America.