

W5YI

Nation'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. May be reproduced providing credit is given to The W5YI Report.

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STS-64 Spacecraft Blasts Off Carrying Amateur Radio

The Space Shuttle Discovery roared into the skies from Kennedy Space Center's launch pad 39-B September 9th initiating the fourth Shuttle Amateur Radio Experiment (SAREX) flight this year. The STS-64 mission, delayed by threatening showers and clouds, was launched 1 hour 53 minutes later than originally planned. Liftoff of Discovery occurred at 22:22:55 UTC. (6:22 p.m. EDT)

The six member crew of STS-64 will spend 9 days on-orbit performing and supporting several flight experiments. These include atmospheric studies which will be performed using the LIDAR In-Space Technology Experiment (LITE), deploying and retrieving the Spartan-201-II astronomy satellite, and supporting the Robot Operated Materials Processing System (ROMPS) experiment.

The Space Shuttle is carrying a laboratory laser into space. It will be pointed toward the Earth and beam narrow pulses of laser light that will pass through the atmosphere. Lidar is similar to radar. But instead of bouncing radio waves off its target, lidar uses short pulses of laser light. Some of that light reflects off of tiny particles in the atmosphere. By precisely timing the lidar "echo," and by measuring how much laser light is received by a telescope, scientists can accurately determine the location, distribution and nature of particles. The result is a revolutionary new tool for studying conditions in the atmosphere. The LITE mission is the first to use lasers in space for study of the earth's atmospheric environment. LITE,

which is supported by a world-wide science team, will also observe (suspended particle) aerosols in the atmosphere derived from both human and natural activity.

With the help of Amateur Radio clubs and ham radio operators, astronauts speak over the ham airwaves, while in orbit, directly to large groups of students, showing teachers, parents and communities how Amateur Radio energizes youngsters about science, technology, and learning. NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly youngsters, in technology and the US space program with the help of Amateur Radio.

Three of the STS-64 crew members are licensed ham radio operators. The crew will use SAREX to communicate with various ground ham radio operators and schools. The SAREX-B configuration allows only attended operations and does not require orbiter power but it is probable that the crew will also operate in configuration C.

Shuttle power conservation measures, required to support an extra (10th) day of flight, is expected to result in the packet radio system being turned on later than what usually occurs in a typical SAREX mission. Listen on the downlink frequency (145.55 MHz) for the packet system BEFORE sending packet connects to the Space Shuttle.

SAREX-B consists of the handheld transceiver, I/F module, spare battery set, SAREX headset assembly, personal tape recorder, and the window antenna. It is capable only of exchanging voice communications with amateur stations within LOS of the Orbiter.

SAREX configuration C consists of the handheld transceiver, I/F module, PGSC, spare battery set, window antenna, packet module, SAREX headset assembly, personal recorder, and the required cable assemblies. The packet module contains a power supply and packet TNC. The power supply provides power for the TNC and the handheld transceiver. The TNC interconnects with a radio transceiver so that data to and from the computer is transmitted to and received from other amateur radio stations. Configuration C is capable of operating in either the voice or data mode in communications with amateur stations within LOS of the Orbiter. This configuration can be operated in the attended mode for voice communication and either the attended or automatic mode for data communications.

Amateur radio operators on Discovery include **Dick Richards, KB5SIW**, Commander, **Blaine Hammond, KC5HBS**, Pilot, and **Jerry Linenger, KC5HBR**, Mission Specialist. Primary callsign for planned FM voice communications is KB5SIW; W5RRR-1 will be used for any packet radio contacts.

As usual, all operations will utilize separate uplink and downlink frequencies. It is important that you do not transmit on the downlink frequency! The crew will not favor any specific uplink frequency, so your ability to work the crew will be the "luck of the draw."

Voice Freqs: (Worldwide, except Europe)

Downlink: 145.55 MHz

Uplinks: 144.91, 144.93, 144.95, 144.97, 144.99 MHz

(Europe only) 144.70, 144.75, 144.80 MHz

Packet Freqs: (Worldwide)

Downlink: 145.55 MHz

Uplink: 144.49 MHz

The Goddard Amateur Radio Club station, WA3NAN, in Greenbelt, Maryland will be active and carry SAREX Bulletins and Shuttle Retransmissions on 3860, 7185, 14295, 21395, 28650 KHz and 147.450 MHz (FM). ARRL (Newington, CT) Amateur Radio station W1AW, will air HF news bulletins on 3990, 7290, 14290, 18160, 21390, 28590 KHz and VHF at 147.555 MHz.

The following are the times of the passes for the various scheduled amateur radio stations and school contacts. The times are in MET or mission elapsed time. (You just add the launch time to the MET to get the time of day for the activity. For example: 1/01:29 is

one day, one hour and 29 minutes into the flight.) The first ham radio contact - a test transmission with Australian station VK5AGR - is scheduled for Orbit 15 (21 hours and 43 minutes into the flight).

Orbit School

- | | |
|-----|--|
| 17 | Dwight D. Eisenhower Middle School, Laurel, MD through WA3NAN. MET: 0/23:58 |
| 18 | Francis Howell North High School, St. Charles, MO. MET: 1/01:29 |
| 18 | Middleton Grange School, Christchurch, New Zealand. MET: 1/02:32 |
| 19 | Grizzly Hill, North San Juan, CA. MET: 1/02:58 |
| 29 | Morocco Elementary School, Morocco, IN through PY2BJO MET: 1/19:14 |
| 33 | Central Square Middle School, Central Square, NY. MET: 1/23:55 |
| 34 | Crystal Lake South Elementary, Crystal Lake, IL MET: 2/01:26 |
| 49 | Springfield Plains Elementary, Clarkston, MI. MET: 2/23:49 |
| 78 | STEP/Star Schools - Young Astronauts, Spokane, WA through VK5AGR. MET: 4/19:52 |
| 114 | The Branson School, Ross, CA. MET: 7/00:51 |

Three backup slots have been scheduled in the event the initial scheduled contact can not be completed. These are:

- | | |
|-----|--|
| 128 | Central Square Middle School through WA3NAN. MET: 7/21:42 |
| 129 | Any school through N9AB. MET: 7/23:14 |
| 129 | Middleton Grange School, Christchurch, New Zealand. MET: 8/00:15 |

An interesting side note: NASA TV audio rebroadcasts are being monitored by G3UXO/MM on the Queen Elizabeth II on its voyage from New York eastbound for England. G3UXO will attempt to make a SAREX Maritime Mobile contact from the QE II on its 5-day Trans-Atlantic voyage.

QSLs: ARRL Headquarters

All requests for QSLs go to the following address:

ARRL-SAREX QSL-STS-64
225 Main Street
Newington, CT 06111

Please include the following information in your QSL or report: Shuttle flight (STS-64), date, time in UTC, frequency and mode (FM voice, packet). This documents the contact or listener report. In addition, you must also include an SASE using a large, business-sized envelope if you wish to receive a card. No cards are distributed without the proper postage affixed or sufficient IRCs included. The Nashua Area Radio Club, NH has volunteered their service to handle STS-64 QSL cards. (Information courtesy: Lou McFadin, W5DID, Johnson Space Flight Center, Houston, TX)

HAM APPOINTED CHIEF OF ASTRONAUT OFFICE

Col. Robert D. Cabana, USMC, has been appointed chief of the Johnson Space Center's Astronaut Office. Cabana is KC5HBV. Cabana will replace current chief Capt. Robert L. "Hoot" Gibson, USN, recently named to command STS-71, the first Shuttle mission to dock with Russia's Mir space station. The changes were announced by David C. Leestma, director of Flight Crew Operations. (Dave is also a licensed ham operator: N5WQC.)

"I am confident that Bob will be an effective leader, and his experience and skills are valuable assets," Leestma said. "This move allows Hoot to devote his full attention and time to commanding the challenging STS-71 mission set to launch in 1995."

Cabana is a veteran of three Shuttle flights -- STS-41 in 1990, STS-53 in 1992, and STS-65 this past July. Cabana served as pilot on his first two missions and as commander on the record-setting 14-day International Microgravity Laboratory-2 flight earlier this year.

"I am very pleased to have this opportunity," Cabana said. "I am looking forward to leading the dedicated people who make up the astronaut corps."

Gibson will continue his training as commander for STS-71 leading a crew of seven, including two Russian cosmonauts. The orbiter will dock with the Mir space station, leaving the two cosmonauts on board Mir and returning to Earth with fellow astronaut Norm Thagard and his two Mir crewmates, who will have spent three months at the station.

Gibson is a veteran of four shuttle missions. He was a pilot on STS-41B in February 1984, and commanded STS-61C in January 1986, STS-27, in December 1988 and STS-47 in September 1992.

"I have been honored to work with the talented men and women of the Astronaut Office during my tenure as chief, and I am sure that Bob will enjoy their full support," Gibson said. "Now, I look forward to commanding this very challenging and exciting mission as we begin our cooperative space ventures with Russia."

By the way, the joint Russian - United States "International Space Station" due to orbit in 1995 or 1996 could have a ham station on board. Amateurs at JSC told us that negotiations are underway to include one!

SUPPLY SPACECRAFT DOCKS WITH MIR ...FINALLY!

The PROGRESS-M24 freighter finally docked with the Mir Space Station on the third attempt at 9:40 a.m. EDT on September 3rd. Alexander Malenchenko, the cosmonaut in command aboard the Mir space station, was able to capture the Progress M-24 robotic capsule and its cargo of critical supplies by employing a man-

ual docking maneuver.

The Progress supply spacecraft had failed twice to dock with Mir automatically because its on-board guidance system aborted its final approach maneuver. Launched August 25, the cargo craft attempted its first docking on August 27 and its second on August 30. The crew performed an EVA on Friday, September 9, to inspect the outer surface of Mir near the docking mechanism, where the Progress hit and bounced at least twice during the second failed docking attempt on August 30.

Malenchenko controlled both spacecraft during the manual docking, observing the maneuver via a television camera on the Progress. The television-aided remote control docking maneuver had been rehearsed once before, in 1993, but had never been done in earnest.

Progress M-24 carried enough fuel for the third docking attempt, but had it failed, Mir Mission Control in Kaliningrad had already decided to try again using fuel reserved for de-orbiting the spacecraft after the mission.

In addition to a regular supply of fuel, air, water and food for the three-man Mir crew, the Progress carried more than 600 pounds of equipment for an upcoming visit to Mir by European Space Agency astronaut Ulf Merbold, who is scheduled for launch to Mir on October 4.

Docking M-24 was highly critical for Mir operations because the Russian Space Agency had to skip one scheduled Progress M launch in July. As a result, Mir's food supply was sufficient only until mid-September.

Of 67 launches of Progress and Progress M vehicles since 1978, a similar docking problem has occurred only once. In 1991 the Progress M-7 docked with Mir on the third attempt because of a failure of the antenna at Mir's rear docking port.

Mir has a voice and packet ham station on board, but it has not been heard for some time. The Mir space station complex was visually observed by a large number of hams in the Los Angeles area a couple of weeks ago.

INTERNATIONAL PHASE 3D CONTROVERSY

A controversy was publicly aired on the AMSAT Bulletin Board last week when Russian and German AMSAT officials took issue with a statement made by AMSAT-NA's Dr. Tom Clark W3IWI. Clark had said he helped make the initial contacts to have Russian industry successfully fabricate the Phase 3D spacecraft fuel tanks. Leonid Labutin (UA3CR) and Peter Guelzow (DB2OS) said that statement "...is not correct." W3IWI was very embarrassed!

FINDING GOOD NEIGHBORS...

Ensuring Amateur Access to the 2390-2400 MHz band

In response to a congressional mandate to make spectrum available to new wireless technologies, the U.S. Government on August 10, 1994, gave up their primary allocation in many of the bands in which hams can operate on a secondary basis. This has important implications for continuing ham operations in the 13-cm band, which spans 70 MHz of coveted spectrum from 2300-2310 MHz and 2390-2450 Mhz.

Today, a few parties have already presented the FCC with plans for occupying a 10 MHz sliver of this band running from 2390 MHz to 2400 MHz. The ARRL band plan has allocated these frequencies for fast scan TV, high-rate data, packet, control and auxiliary links.

The FCC is under Congressional constraints that require the government to avoid excessive disruption of existing use of federal government frequencies by amateur radio licensees. The FCC must also consider the extent to which commercial users could share the frequency with amateur radio licensees.

Many of the commercial uses proposed for this band can not co-exist with the Amateur Service. Moreover, some proponents have explicitly asked that the FCC entirely bar amateur operations in this band.

Southwestern Bell has proposed establishment of a Wireless Local Loop Service in this band, but admits that an essential prerequisite would be to bar amateur operations.

A partnership between Loral and Qualcomm expressed a "preliminary view" that the band is useful for Mobile Satellite Service uplinks, but did not say that this use would be compatible with amateur operations.

Similarly, the *Coalition of Private Users of Emerging Technologies* asked that the band be allocated to a two-way private mobile service, but did not discuss the impact of doing so on the Amateur service since it knows that a two-way mobile service is flatly incompatible with co-channel amateur use.

The most promising proposal for continued amateur operation appears to be the one submitted recently by *In-Flight Phone Corporation*, a major provider of in-flight telephone, information and entertainment services. IFPC is proposing to construct an airborne audio/video system (AAVS) which will transmit real-time television and audio programming to aircraft, where it would be displayed to passengers on seat-back video monitors. Transmission would be from the ground to the aircraft, with a network of about 70 terrestrial stations providing full national coverage. IFPC says ground-to-air transmission offers many advantages over satellite-to-aircraft feed such as more efficient aircraft antenna requirements, higher audio quality and

more audio channels. The ABC Radio Network has already entered into an agreement to offer airline passengers up to twelve channels of live news, sports, entertainment and music programming - most of which would be free to airline passengers. Telephone service will be just \$2.00 a minute, video games: \$3 per flight; fax messages: \$1.50 each. Flightlink also supports laptop data transmission at 9600 bps. An airborne paging and car/hotel/airline reservation system is next.

IFPC maintains that its system is compatible with low power, point-to-point amateur operations in this band, and has stated to the FCC that it will work in good faith with the amateur community to develop a band sharing arrangement that is acceptable to amateurs. No other telecommunications company, thus far, has taken that same position.

"We believe that In-Flight Phone and the amateur community can become good neighbors in this band," said Bill Gordon, IFPC's Vice President of Regulatory Affairs. Gordon said that hams would be able to use the entire 10 MHz band in most areas of the country. In areas within 25 miles of a fixed AAVS ground station, hams could use 8.33 MHz of the total band.

IFPC proposes dividing the spectrum into six channel blocks of 1.67 MHz wide. Each base station would be assigned one channel block, and would be placed roughly 250 miles from its closest neighbor. Using compression techniques, IFPC could provide four video channels and 18 audio channels. Base stations would transmit omni-directionally with a maximum power of 1,250 watts ERP from the antenna.

The AAVS transmitting antenna will be mounted only as high as necessary to clear local obstructions. Such a low transmitting antenna height can be used for AAVS since the object is to transmit a signal to receivers in airplanes flying at altitudes between 18,000 and 40,000 feet. Little would be gained by increasing the height of an AAVS antenna.

Given the low antenna height and the line-of-site nature of 13-cm propagation, the AAVS signal is not expected to be receivable on the ground beyond the radio horizon. An antenna mounted at 25 meters AGL would have a radio horizon of only 20.6 km (about 12 miles.) Thus a major portion of the 2390-2400 MHz band would remain free for use by amateurs.

Just as AAVS is not expected to preclude amateurs from the band, under normal conditions, amateur operation is not expected to cause a significant amount of interference to reception of AAVS signals aboard commercial aircraft, since amateur operations in this band are typically made using a low power transmitter and a high gain directional antenna with a narrow beamwidth.

In-Flight Phone Corporation was founded in 1989 by telecommunications pioneer, John D. "Jack" Goeken, who also founded MCI, the FTD Mercury Network, and Airfone. In June, 1994, MCI acquired a 5% stake in *The Goeken Group*, parent to IFPC.

"We intend to continue being very open with the ham community, and hope to elicit your support for this proposal," said Darren Leno, WDØEWI, IFPC Director of Communications, himself a ham of 17 years. "Personally, I'm very concerned about the loss of our ham bands to commercial interests. I was surprised initially to learn of my company's interest in 2390 MHz, but after studying the proposal, I truly believe it is in the best interests of ham radio."

"VEC's SHOULD COMPLY WITH INSTRUCTIONS"

That's the bottom line of a letter received from John B. Johnston, Chief of the FCC's Personal Radio Branch.

The Novice Class examinations came under VEC handling on July 1, 1993. In the *Report & Order* (Docket 92-154) transferring Novice testing responsibility to the VEC System, the FCC said "The Commission believes there is no valid reason to require VEs and VECs who donate their time to absorb the additional cost of providing Novice examinations." Responding to the ARRL's question regarding a waiver of the test fee, the Commission added "The examination-by-examination [computation] method allows the VEs and VECs the option of not recovering out-of-pocket costs from any particular examinee. The annual method [which all VECs use] does not allow such an option." It thus appeared that all VECs were required to charge the standard examination fee for Novice testing as well as to Codeless Technicians who upgrade to HF privileges by passing a telegraphy examination.

Even though directed otherwise, the ARRL-VEC decided not to charge a license examination fee (expense reimbursement) for either the Novice written examination Element 2 or the 5 word-per-minute Morse Code Element 1(A). This appeared to be in violation of the VEC Instructions that require VEC's to charge an equal fee to all applicants regardless of license class.

The ARRL argued that these examinations had been free to applicants prior to being placed under the VEC System. "Our policy is to NOT charge any examinee who takes examination Elements 1(A) or 2." Furthermore, the ARRL adopted a policy that no fee is charged someone who takes the 5 wpm code exam in order to upgrade from Codeless Technician to Technician with HF privileges. This was a new position since a test fee had always applied when a Technician Class applicant upgraded their license.

On August 23, 1993, the W5YI-VEC wrote the

FCC relative to the Novice Class test fees. We said "...the League's failure to charge these examination fees clearly fails to comport with the requirements of the Volunteer Examination System."

The FCC responded to the complaint by conducting an audit of the VEC System. One of the questions asked in the audit letter was "Do the VEs or the VEC or the charge a fee for preparing and administering examinations for some class(es) of license but not for others? Explain in detail with particular reference to the method that is used to determine whether or not a fee will be charged."

On August 25, 1994, the FCC sent a letter to the ARRL-VEC advising them that their "...practice is apparently contrary to Section 3.6.4 of the *Instructions For Volunteer-Examiner Coordinators* which requires a uniform fee when the annual system is used."

The FCC went on to say "...that all VECs should comply with the Instructions. We urged all VECs to comply when the 1992 edition of the Instructions was issued. Section 1.0 of the Instructions, however, permits deviation from the Instructions when justified by special circumstances." The ARRL apparently believes that deviation from the guidelines is permitted by this section since a special situation exists - that being it is not possible for the expense reimbursement money received from examinees to cover examination coordination. The League said that the ARRL-VEC receives a substantial operating subsidy from the American Radio Relay League.

The FCC added "...that a VEC may not require [a volunteer examiner] to forego reimbursements for their out-of-pocket expenses. VE's, in fact, have the option of collecting a fee to reimburse their out-of-pocket expenses for administering an examination even when the VEC has decided not to accept reimbursement for coordinating the session."

ARRL FOUNDATION & F.A.R. SCHOLARSHIPS

Hugh Turnbull, W3ABC (Chairman of the Scholarship Committee for *The Foundation For Amateur Radio*) recently released the names of fifty winners of 1994 F.A.R. Scholarships valued from \$500 to \$2,000 each.

The American Radio Relay League also announced their 1994 academic scholarship awards. These went to twenty-five licensed amateurs and ranged in value from \$500 to \$5,000 each. (The **ARRL \$5,000 Scholarship to Honor Barry Goldwater** went to Stephen K. Gee, AA2GE of Great Neck, NY.)

To apply for a 1995 scholarship, write to: **FAR Scholarships, 6903 Rhode Island Avenue, College Park, MD 20740** or **The ARRL Foundation, 225 Main St., Newington, CT 06111**. Both foundations are non-profit, tax-exempt, 501(c)(3) organizations.

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APRIL VE PROGRAM STATISTICS

<u>April</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
No. VEC's	*18	*18	*18
Testing Sessions	970	930	1173
<u>VEC</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
ARRL	46.3%	49.5%	54.0%
W5YI	38.4	36.6	35.5
CAVEC	3.6	3.3	2.6
WCARS	2.0	2.5	2.0
GtLakes	3.2	0.9	1.3
SunV	1.0	1.1	0.9
Others (12)	5.5	6.1	3.7
Year-to-Date Sessions	3364	3379	3912
Elements Administ.	22349	18651	22892
<u>VEC</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
ARRL	53.3%	55.2%	61.2%
W5YI	29.9	27.3	26.2%
CAVEC	2.8	3.5	2.1
WCARS	2.2	3.0	2.1
SunV	2.0	1.8	1.9
GtLakes	2.6	0.9	1.6
Others (12)	7.2	8.3	4.9
Year-to-Date Elements	74935	65092	71045
Applicants Tested	13360	10996	13035
<u>VEC</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
ARRL	53.1%	54.5%	61.4%
W5YI	30.4	28.4	26.5%
WCARS	2.2	2.8	2.0
CAVEC	2.6	3.3	1.8
SunV	1.9	1.8	1.8
GtLakes	2.9	1.0	1.4
Others (12)	6.9	8.2	5.1
Year-to-Date Tested	44267	38165	41063
April	1992	1993	1994
Pass Rate - All	66.2%	65.9%	65.0%
Applicants/Session	13.8	11.8	11.1
Elements/Applicant	1.7	1.7	1.8
Sessions Per VEC	53.9	51.7	65.2
Administrative Errors by VE's/VEC's			
April	1992	1993	1994
Defect. Applications	0.4%	0.2%	0.1%
Late Filed Sessions	1.0%	1.2%	1.7%*
Defective Reports	0.3%	0.0%	0.0%

(All late sessions were ARRL coordinated.)

Note: The initial surge by newcomers to obtain No-Code Technician ham tickets during 1991 and 1992 caused the number of new ham operators to increase significantly during that period. 1993 statistics showed less examination activity. Now the number of ham exams seems to be increasing again! There were 8%

more applicants taking 9% more examinations at 15% more test session this year than in 1993. The number of applicants taking ham tests is double the amount than before "code-free" hamming. (May 1990: 6594 applicants, 1994: 13,065) The two largest VEC's, (ARRL/W5YI) account for nearly 90% of all April 1994 test sessions, 87% of the exam elements and 88% of the applicants.

[Source: Personal Radio Branch/FCC; Washington, D.C.]

• The FCC has sent out a series of **Public Notices** concerning Commercial Radio Operator examinations and fees:

(1.) The correct fee for a lifetime **Radiotelephone Operator Restricted Permit** is \$45. Use FCC Form 753 and enter "Fee Type Code" is PARR. Send to FCC-Restricted Permit, P.O. Box 358295, Pittsburgh, PA 15251-5295.

(2.) There is no Regulatory Fee for the lifetime **General Radiotelephone Operator License (GROL)**. You must pass Element 1 and 3 before a COLEM examiner who will charge an examination fee. Use FCC Form 756.

(3.) FCC Policy on Private Printing of FCC Forms:

(a) Must use same color and weight paper and ink color. The printed form must be comparable in quality to the original document.

(b) Delete the words "U.S. Government Printing Office (GPO.)"

(c) Do not customize the form by adding other personalized symbols, words or phrases.

(d) To order blank FCC forms, contact the FCC Forms Distribution Center at (202) 418-FORM (3676). This is a new telephone number.

(4.) The FCC has reissued an updated list of COLE (Commercial Operator License Examination) Managers, telephone numbers and their testing fees: **Drake Training & Technologies** Tel. (1-800-401-EXAM)

Fee: \$60 per examination.

Electronic Technicians Association International, Inc.

Tel. (317) 653-4301 or 8262. Tee: \$35 to \$75.

Elkins Institute, Inc. - Tel. 1-800-944-1603. Fee: \$25 per exam. element. (One element license: \$50.)

International Society of Certified Electronics Technicians - ISCET - (817) 921-9101 (Dept. 19) Fee: \$25 to \$75.

National Assoc. of Business and Educational Radio, Inc. - Tel. 1-800-301-EXAM Fee: \$60 per element.

National Radio Examiners (Div. W5YI Group) - 1-800-669-9594 Fee: \$35 per license regardless of number of elements.

Sea School - Tel. 1-800-237-8663 Fee: \$25 to \$55.

Sylvan Learning Systems - Tel. 1-800-967-1100 Fee: \$50 first element; \$25 for each additional.

National Assoc. of Radio Telecommunications Engineers, Inc. (NARTE) Tel. 1-800-89-NARTE Fee: \$40/exam element.

All question pools are available for purchase from **National Radio Examiners**: Credit Card Orders to Tel. 1-800-669-9594.

• We were in London a couple of weeks ago and made it a point to visit the **International Maritime Organization**. The IMO is the worldwide United Nations organization that promotes maritime safety (SOLAS - Safety of Life at Sea) and the prevention of ocean pollution. The first SOLAS Convention took place in London in 1914 and was convened due to the sinking of the *Titanic* on her maiden voyage in April 1912 when more than 1,500 passengers and crew perished.

IMO resolutions are accepted as treaties by countries whose combined ocean-going fleets represent 98% of the world total. The IMO is to maritime shipping what the ITU is to radiotelecommunications.

They are also the ones that (in 1988) agreed to discontinue radiotelegraphy on the high-seas and replace it with a high tech satellite-based automatic distress alerting system called GMDSS, the Global Maritime Distress and Safety System.

Their building which flies the UN flag covers an entire city block on the south bank of the River Thames right across from the British Houses of Parliament. I was given a tour of their facility by Vladimir N. Lebedev, an IMO Technical Officer from Russia.

Captain John L. Thomson heads the Navigation Section in the Maritime Safety Division. We chatted for more than an hour about GMDSS which is just now in the process of being implemented. It will be fully activated in 1999 - at which time Morse code at sea goes the way of the horse and buggy. Radio Officer Unions across the world are not too happy about that! Morse knowledge meant job security.

The IMO's plan for safety at sea is contained in their loose-leaf *GMDSS Handbook* and we have picked up a copy. Basically, radiocommunications go back and forth through the Inmarsat (International Maritime Satellite) and COSPAS-SARSAT (Search and Rescue Satellites.)

Capt. Thompson was quite interested in the question pool and examination system for GMDSS radio operators and maintainers in the United States. We left him copies of the Element 7 (GMDSS Radio Operator) and Element 9 (GMDSS Radio Maintainer) questions - also a copy of Element 8, Ship Radio Endorsement. He thought the question

pool system was all right, but stressed the need for practical training and testing. He told us about computer-modeled GMDSS simulators which are now becoming available.

I asked Captain Thompson how GMDSS was working out. He said portions of GMDSS - the EPIRBs (Emergency Position Indicating Radio Beacons) were in widespread use today. These manual and float-free devices emit a signal that is picked up by the satellite and relayed to coastal stations.

While GMDSS is a far superior system to radiotelegraphy, Thompson told us he was distressed by the number of false alarms that were being transmitted through the satellite. "Radio operators are 'pushing the button' not realizing that they were setting off a very serious international distress alert," he said.

He also told us about a large vessel that sank recently (either from or near South Africa) that was partially GMDSS equipped that did not sound the alarm! This was caused by a securely attached EPIRB that did not automatically send a 406 MHz distress signal to the satellite. The EPIRB is supposed to transmit from the ocean surface. It doesn't work if it goes down with the ship ...which it did. The IMO is very concerned about ships that don't follow the rules. Float-free EPIRB's became mandatory on the high seas a year ago - the first part of GMDSS to be phased in.

• **Changing Face of U.S. Ham Radio** Amateur Radio Growth, Last 10 years:

Class:	1984:	1994:	Increase
Novice	80461	93797	+ 16.6%
Technic.	79950	235484	+ 194.5%
General	116804	124589	+ 6.7%
Advanced	97084	111587	+ 14.9%
Extra	35624	65942	+ 85.1%
Total	409923	631399	+54.0%

[Ten years ago, most amateurs held General and higher class tickets. The majority of amateurs today hold Novice and Technician ham radio licenses.]

• The July 1994 issue of "**Ocean Voice**" the journal of the INMARSAT organization reports that the **U.S. Coast Guard will discontinue all weather and other broadcasts via Morse code** as of July 1, 1995. Last year, the U.S. Coast Guard closed down their 500 kHz CW distress frequency watch which they had continuously monitored for 70 years!

• The FCC and the U.S. Food and Drug Administration met last month to **discuss harmful interference to medical devices**. The FCC has found that heart pacemakers and breathing monitors can malfunction when encountering strong radio waves. FCC asked FDA to consider whether these medical devices should meet sufficient radio frequency immunity standards.

• **Pirate Radio Bust!** The FCC's Honolulu office has closed down an unlicensed FM broadcast station operating on 107.3 MHz. The station was located using mobile direction-finding techniques. It seems the home-brew broadcast station was operated in Kaneohe by twin brothers who admitted to the illegal operation. They referred to themselves on the air as the "station engineer" and "DJ/assistant engineer."

• **The FCC raised some \$214 million for the U.S. treasury** when they auctioned off nearly 600 **Interactive Video and Data Service (IVDS)** licenses in late July. Another \$617 million was bid for nationwide narrowband **Personal Communications Services (PCS)** licenses. Most narrowband PCS channels will be used for one and two-way messaging, data transfer and paging.

IVDS license down payments totaling \$21.7 million was due last month, but two of the IVDS winning bidders defaulted to the tune of \$8 million. One bidder voiced concerns about IVDS technology not being ready.

Eon is the only company that has FCC-approved IVDS 218-MHz equipment. Their two-way (\$200 - \$300) RF modems permit viewers to "talk back" to television stations. A deal to have Hewlett-Packard make the set-top unit for the Eon Corp. (formerly "TV Answer") recently fell through. Several other companies, however, (including AT&T) are trying to get IVDS set-top devices and remote controls approved.

Supposedly interactive broadcast and cable TV is to be available early next year. Theoretically IVDS will allow viewers to change camera angles, play video games, participate in sports and vote, bank or shop at home.

The companies who defaulted will lose their rights to the IVDS spectrum which will be re-auctioned. They will also have to pay the difference between their winning bid and the new auction price plus a penalty.

STATUS: U.S. DIRECT SATELLITE BROADCASTING

Little by little, Direct Broadcast Satellite (DBS) television is creeping across the country. DirecTV, a unit of GM Hughes calls their service "DSS" for Digital Satellite System. They have trademarked both the letters and the name. Everyone (especially nervous cable and land-based television broadcasters) have been waiting to see what sort of reception DBS receives from the public.

So far it has been better than expected! At least that is the information we receive from dealers who are stocking the needed equipment - a \$700 digital receiver, remote control and an 18-inch dish. (Installation can add another \$150.) Retailers are still having a problem getting get enough product and early sell-outs are the rule. No one else is talking! Neither GM Hughes Electronics or Thompson Consumer Products will say how many units have been sold or hooked up. The best estimate is around 100,000.

Thompson (headquartered in France) manufactures the RCA branded DSS equipment under an exclusive arrangement which still has a year to run. They say that they will be turning out 600,000 units a month by year end! They certainly expect the U.S. consumer to turnout in big numbers for DBS.

The national roll-out began in rural America. While DirecTV broadcasts started in April, the first consumer system was sold only three months ago in Jackson, MS. DSS is now available in 12 states: New Mexico, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, South Carolina, North Carolina, Virginia, Tennessee, Kentucky and Indiana.

DiracTV is now entering a more competitive marketing environment. Colorado, Minnesota, Ohio and Pennsylvania get added this month. The average cable penetration in these states is 50% ...Philadelphia, PA (on which DirecTV will concentrate) has 72.4% of its homes wired for TV. DirecTV's broadcast center is in Colorado ...also the home of the nation's largest cable operator: Tele-Communications, Inc. (TCI) and PrimeStar, another DBS entrant. Full nationwide DBS coverage is scheduled by DirecTV at the end of the year.

DBS operates in the 12-GHz "Ku" band with digital compression technology. As a general rule, digital signals should be "picture perfect" but such is apparently not always the case! A rain downpour can cause noticeable signal degradation. At least that is what happened during a recent (and very embarrassing) DBS demonstration in Colorado of which cable operators took particular note.

Cable companies are already drawing battle lines. Consumers who are calling their local cable company for DBS information are being told that the satellite service lacks interactivity ("...you can't hook Prodigy to DBS"), personal customer service and programming

variety ...especially local news and community involvement. Many DBS subscribers are keeping cable.

We were recently in Great Britain and noted hundreds of small satellite dishes on our train ride from Gatwick Airport to Victoria Station in downtown London. The U.K. boasts nearly 3 million "Sky" direct broadcast subscribers. (British Sky Broadcasting, owned by media tycoon Rupert Murdoch) is also carried by U.K. cable television. Cable carriage adds some 750,000 homes to Sky's satellite dish base of 2.8 million.

"Sky" actually was launched some ten years ago as a programming source for cable operators. It went "direct-to-home" in 1988. Now four times more U.K. homes have DBS than cable television. This has U.S. cable operators troubled! We found the "Sky Sports" channel to be of very good quality. Direct satellite broadcasting is firmly entrenched across Europe with some 14 million small-dish installations.

The DSS satellites radiate 120 watts ...twice as much as analog European direct satellite broadcasting. Only America has digital DBS. At least at present. Europe isn't scheduled to have it until next year at the earliest. The Astra 1E and 1F satellites carrying the first digital transponders are not scheduled for launch until 1995 and 1996.

DiracTV and USSB (United States Satellite Broadcasting, a competitor) share the same two satellites. By design, each has entirely different programming. Both can be received on the Thompson equipment, but you have to pay for two sets of programming to get the complete lineup - which can be expensive. Together, they have a 175 channel capacity.

Since both DBS-1 and DBS-2 use CDV (compressed digital video) and digital audio technology, DirecTV and USSB can switch to high-definition-television (HDTV) whenever it is ready for the consumer marketplace. Cable (being analog) can't do that - at least not without a huge rebuilding cost. The future indeed seems to be DBS. Supposedly, there is to be some 4 million American DBS subscribers by the year 2000. We understand that negotiations are also underway to provide DirecTV DBS to Canada next year.

PrimeStar, with its 70 channel capacity, already has 80,000 homes. Add another 100,000 for the combined DirecTV/USSB services. This makes it less than cost effective for national advertisers. Once a million subscribers is reached (which should be in about a year), advertisers will be looking at national DBS advertising. By the way, many cable networks are forbidding their affiliates from carrying ads promoting direct satellite broadcasting. But that doesn't mean that DBS isn't being advertised. It is ...through a \$60 million print and television campaign. We will continue to keep you posted on DBS progress.

UNSOLICITED JUNK FAX IS AGAINST THE LAW!

...unless a prior business relationship exists.

Did you know that the transmission of unsolicited commercial advertisements to private persons and businesses over the telephone (including facsimile machines) is closely regulated by the Government?

Here is what the FCC Rules have to say about junk fax and those irritating "autodialed" computer-voice pitches over the telephone.

(Quoted from 47 C.F.R. - Part 64, Subpart L - Restrictions on Telephone Solicitation.)

§ 64.1200 Delivery Restrictions

(a) No person may

(1) initiate any telephone call (other than a call made for emergency purposes or made with the prior express consent of the called party) using an automatic telephone dialing system or an artificial or prerecorded voice,

(i) To any emergency telephone line, including any 911 line and any emergency line of a hospital, medical physician or service office, health care facility, poison control center, or fire protection or law enforcement agency.

(ii) To the telephone line of any guest room or patient room or a hospital, health care facility, elderly home, or similar establishment; or

(iii) To any telephone number assigned to a paging service, cellular telephone service, specialized mobile radio service, or other radio common carrier service, or any service for which the called party is charged for the call;

(2) Initiate any telephone call to any residential telephone line using an artificial or prerecorded voice to deliver a message without the prior express consent of the called party, unless the call is initiated for emergency purposes or is exempted by §64.1200(c)

(3) Use a telephone facsimile machine, computer, or other device to send an unsolicited advertisement to a [personal or business owned] telephone facsimile machine. [Note: While unsolicited FAXed advertisements are illegal, facsimile transmissions from persons or companies who have an established business relationship with the recipient are deemed to be invited or permitted by the recipient.]

(4) Use an automatic telephone dialing system in such a way that two or more telephone lines or a multi-line business are engaged simultaneously.

(b) For the purpose of §64.1200(a), the term "emergency purposes" means calls made necessary in any situation affecting the health and safety of consumers.

(c) The term "telephone call" in §64.1200(a)(2) shall not include a call or message by, or on behalf of, a caller;

(1) that is not made for a commercial purpose.

(2) that is made for a commercial purpose but does not include the transmission of any unsolicited advertisement.

(3) to any person with whom the caller has an established business relationship at the time the call is made.

[The term "established business relationship" means a prior or existing relationship formed by a voluntary two-way communication between a person or entity and a residential subscriber with or without an exchange of consideration, on the basis of an inquiry, application, purchase or transaction by the residential subscriber regarding products or services offered by such person or entity, which relationship has not been previously terminated by either party.] or

(4) which is a tax-exempt non-profit corporation.

(d) All artificial or prerecorded telephone messages delivered by an automatic telephone dialing system shall:

(1) At the beginning of the message, state clearly the identity of the business, individual, or other entity initiating the call, and

(2) During or after the message, state clearly the telephone number (other than that of the autodialer or prerecorded message player which placed the call) or address of such business, other entity, or individual.

(e) No person or entity shall initiate any telephone solicitation to a residential telephone subscriber (1) before the hour of 8 a.m. or after 9 p.m. (local time at the called party's location), and (2) unless such person or entity has instituted procedures for maintaining a list of persons who do not wish to receive telephone solicitations made by or on behalf of that person or entity.

The Telephone Consumer Protection Act of 1991 (TCPA) requires identifying information be placed on all telephone facsimile transmissions, and that telephone facsimile machines be capable of placing such information on all transmissions. The TCPA prohibits the use of telephone facsimile machines to send unsolicited advertisements.

(Extracted from: Report and Order, Rules and Regulations Implementing the Telephone Consumer Protection Act of 1991. Common Carrier Docket No. 92-90, released October 1992.)

FCC TIGHTENING UP "800" AND "900" SERVICES

Have you seen advertisements for various services (some questionable) that are accessed through an "800" access code and thought that the information provided was free? After all, "800" means "toll free" doesn't it? Then think again! According to the FCC, apparently many are not! The situation has gotten out of hand and Commission is now about to do something about it. Here are some quotes from recently released (22 page single-spaced) Common Carrier proceeding: Docket No. 93-22:

"Telephone subscribers have a right not to be billed for services provided in violation of federal law or regulation and should not have an obligation of determining whether prohibited charges are present on their monthly bills."

"Complaints before us indicate that many telephone subscribers' monthly telephone bills include charges for information services provided over 800 numbers..."

"During the period from January 1, 1994 through June 30, 1994, [the FCC] received 2003 written complaints regarding 800 number information services. Many of these complaints assert that children have unrestricted access to adult-oriented programs."

"...the purpose of the Commission's pay-per-call regulations is to protect consumers from fraudulent and abusive practices associated with information services."

"Since IPs [information providers] are not directly controlled by our regulations, we must seek to curb abusive practices by imposing obligations on common carriers that transmit or bill their services."

The FCC is now taking very firm action to more closely control the activities of both Pay-Per-Call (commonly known as "900" services) and Toll Free ("800" telephone service) providers. FCC rules define a "pay-per-call" service as being a "900" access code [prefixed] number audio service for which the caller pays a per-call or per-time-interval charge.

In a *Further Notice of Proposed Rulemaking* released August 31st, the Commission said that pay-per-call services must be offered exclusively through "900" prefixed numbers unless they are subject to a statutory exemption. The FCC rules that they must not be offered on "800" access codes "...because 800 numbers are widely perceived as being toll free, a perception that Congress clearly sought to maintain... Moreover, even if subscribers realize that charges may be incurred for some 800 number calls, there is no easy way for subscribers to protect themselves from such unwanted charges."

The FCC is proposing to prohibit telephone common carriers from transferring incoming "800" number

calls to an information service for which a charge will be rendered. The Commission said the objective is "...to shield consumers from deceptive practices and to maintain the public expectation that 800 numbers will be toll free."

In spite of objections from various Common Carriers, the Commission said:

- (1) that telephone companies must offer subscribers a reasonably priced "900" access code blocking service, ("800" access code may not be legally blocked since hotels and payphone owners must maintain "800" number access to comply with FCC rules governing [alternate] operator service providers) and;
- (2) telephone companies must separate the charges for information providers on telephone bills from regular telephone services. These separated charges must show the
 - (a) type of service, service provider's name and business telephone number;
 - (b) the telephone number actually dialed;
 - (c) the amount of the charge;
 - (d) the date and time of the call, and, for calls billed on a time sensitive basis, the duration of each pay-per-call transaction.

The Commission said that they had received many complaints from the public whereby IP's (information providers) would automatically read a caller's telephone number via ANI (Automatic Number Identification) and bill a telephone subscriber without ascertaining that the caller was the subscriber to the originating line and legally capable of entering into a contractual agreement. (Disclosure of a credit or charge card number along with authorization to bill that number, however, is considered a binding arrangement.)

"Unless the bill segregates such charges, the subscriber to the originating line may not be aware that charges for information services have been billed. ...a caller cannot legally establish an arrangement that binds the subscriber of the originating line..." FCC ruled.

Furthermore a new proposed Part 64 regulation states that, "No common carrier shall disconnect or interrupt in any manner, or order the disconnection or interruption of, a telephone subscriber's local exchange or long distance telephone service as a result of that subscriber's failure to pay charges for interstate information services provided on a collect basis which have been disputed by the subscriber."

Telephone companies will also be required to "...establish procedures for the handling of subscriber complaints regarding charges for [interstate information services.] *Order on Reconsideration and Further Notice of Proposed Rulemaking*, adopted August 2, 1994. Comments close October 10, 1994.