

# 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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## The FCC, the EPA and RF Safety Guidelines

In our last issue we mentioned that the U.S. Environmental Protection Agency had discontinued the development and publishing of RF safety guidelines. We spoke this past week to Norbert Hankin, an environmental scientist in the EPA's Office of Air and Radiation and found out that this is not exactly true

He said the project has actually been put on the back burner since Congress has drastically cut their budget. Furthermore, the EPA, like all other federal agencies is in the midst of a major reorganization. Hankin told us that "We will have to wait until things settle down before we can get back on track again."

### Responsibility for RF safety

Theoretically, the FCC's expertise lies in telecommunications and not in the health and safety area. In reality, this is all "legal fiction" since the FCC staff includes Robert F. Cleveland, Jr., Ph.D. Dr. Cleveland is one of the nation's most respected and knowledgeable bio-physicists specializing in the field of non-ionizing radiofrequency radiation. He also headed up a joint FCC/EPA survey of RF fields around amateur radio stations in 1990.

Non-ionizing radiation is a form of electromagnetic energy. It includes ordinary light, which we can see, and infrared radiation which we sense as heat. Another type that we can't detect is RF radiation from natural sources like the sun and man-made sources. These include various navi-

gational, medical and industrial equipment, power lines and radio transmitters.

Ionizing radiation (such as x-rays) are known to have the potential to permanently damage the human body. Much less is known about the health hazards of non-ionizing radiation. But we do know that radio waves can heat living tissue (thermal effects.) A microwave oven is an example. And there is growing evidence of other possible adverse (non-thermal) health effects of radio transmissions.

The FCC relies on other agencies and organizations for RF safety guidance. Federal agencies such as the Occupational Safety and Health Administration (OSHA), their research arm - the National Institute for Occupational Safety and Health (NIOSH) and the Food and Drug Administration (FDA) are involved.

It is generally agreed, however, that the federal responsibility for developing national guidelines for public exposure to non-ionizing radiation rests with the U.S. Environmental Protection Agency. Under the law (42 U.S.C. 2021(h)), one of EPA's duties is to provide "...guidance for all federal agencies in the formulation of radiation standards."

Although the EPA has accepted this responsibility, many years have passed and they have yet to issue RF radiation exposure guidelines. The grounds they have repeatedly given is an inadequate level of funding. An unsaid reason is

the influence of many private interest groups. There is currently no official, legally enforceable federal standard for protection of the public or workers from potentially hazardous exposure to RF radiation.

## FCC uses private RF safety standards

Lacking this guidance, in 1985 the FCC decided to use the non-government ANSI-1982 guidelines because they were scientifically based, widely accepted, and applicable to the general population and workers. The process of compliance with the FCC's environmental rules is generally through a process of self certification.

Now the FCC is proposing to amend and update the ANSI-1982 RF exposure guidelines to the more protective ANSI/IEEE guidelines adopted in 1992. (Notice of Proposed Rulemaking, *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, ET Docket No. 93-62.)

Basically what the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers, Inc., (IEEE) are now saying is that their previous RF safety guidelines are obsolete and should no longer be used. Amateur radio will not be categorically exempt under the new guidelines. Thus, the FCC is planning to regulate RF exposures around amateur radio stations for the first time.

The new guidelines differ significantly from those they replace. For example, two "tiers" of exposure levels are recommended. One is for "controlled" environments (users or workers who are "aware" of the exposure), and another, generally more restrictive, for "uncontrolled" environments involving the public who are usually "unaware" of the exposure potential. Amateur stations get involved in both environments since ham operators are aware of the RF exposure, but their neighbors are not.

The new 1992 ANSI/IEEE guidelines have more restrictions on RF fields below 100 MHz, include previously excluded low-power hand-held radios and cellular telephones, include devices with power levels of seven watts and less and removes the categorical exclusion of certain radio services previously thought as having a negligible environmental impact ...including amateur radio. Amateur stations could be required to complete an Environmental Assessment before going on the air and certify that their transmissions do not exceed the new standard.

Included for the first time would be all hand-held 2-meter (144-148 MHz), 1.25-cm (222-225 MHz) and 70-cm (420-450 MHz) and 23-cm (1240-1300 MHz) transceivers where the antenna is in close proximity to the body. The new standard extends the low frequency range from 300 MHz to 3 kHz to limit the possibility

of low frequency RF shock and burn. It also includes the 60 cycle power line frequencies that have been under biological hazard suspicion for some time. The high frequency range is raised from 100 GHz to 300 GHz.

The joint FCC/EPA survey of amateur radio installations that was completed in 1990 concluded that "For most of the stations visited existing (1982 ANSI) or proposed (1992 ANSI/IEEE) RF protection guidelines would not be exceeded in normally accessible areas."

The report added, "Precautionary measures should be sufficient to prevent exposure of the amateur operator or other persons to RF levels in excess of protection guidelines. Examples of such measures would be:

- (1) Using the minimum power necessary for a transmission;
- (2) Minimizing transmission time so that time-average exposures are acceptable;
- (3) Determining where high field areas exist and restrict access to them during transmissions, and;
- (4) Mounting antennas as high above ground as practical.

## The regulatory aspects of RF exposure

In February 1985, the FCC approved new rules to comply with the National Environmental Policy Act of 1969. Under NEPA, all agencies of the U.S. Government must take into account the potential environmental impact of their activity. It is the FCC's responsibility to decide whether its actions in the licensing or authorizing radio facilities significantly affect the quality of the human environment.

The only reference in the Part 97 *Amateur Radio Service Rules* to NEPA is contained in Sec. §97.13(a). But it says nothing about RF radiation exposure. Actually, there are no radio frequency safety rules mentioned in Part 97 at all. Sec. §97.13(a) mentions only that in instances where amateur station locations are located "on land of environmental importance or that is significant in American history, architecture or culture, the licensee may be required to take certain actions prescribed by Sec. §1.1301 to 1.319 of the FCC Rules." Very few amateurs know what that means.

Have you ever noticed Line No. 6 on the FCC Form 610 amateur radio application? It specifically asks you "Would an FCC grant of your request be an action that may have a significant environmental effect?" If you answer "Yes" to this question, then an Environmental Assessment (EA) must be attached to the FCC Form 610.

Since practically no ham operator has a copy of the FCC's Title 47 (Telecommunication) Part 1 Rules, everyone checks "No" to question No. 6 on the Form 610. Otherwise they would have to complete an

Environmental Assessment: "Whatever that is?" An EA is essentially a written statement about why the planned radio operation will not adversely influence the environment.

While every amateur radio operator routinely answers "No" to this question, not many understand the question. When the public thinks about the adverse environmental effects of amateur radio transmissions, they usually believe it means the biological health hazards of radio frequency radiation. But that is not what the Part 97 Rules refer to! It talks only about "land." Why?

The reason is that the RF radiation safety rules, which took effect on January 1, 1986 do not apply to ham radio. They apply only to certain broadcast and commercial stations. Here is the wording in Sec. §1.307(b). It says an EA is to be prepared when "licenses to transmit or renewals, thereof" are granted: "...if workers or the general public [are exposed] to levels of radiofrequency radiation in excess of the 'Radio Frequency Protection Guides' recommended in 'American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz,' (ANSI C95.1-1982) . . ."

The 1982 ANSI "advisory guidelines" are used by the FCC to evaluate environmental impact from RF transmitters. It recommends frequency-dependent exposure limits covering RF frequencies beginning at 300 kHz with more than seven watts input power.

It appears on the surface that these guidelines apply to all radio services. The fine print in footnote No. 1 to this section, however, says that "Sec. §1.1307(b) shall apply only to certain facilities and operations licensed or authorized under the following parts of the Commission's Rules: 5, 21, 35, 73, 74 and 80." That means that (among other services) there are no government mandated RF exposure limits for the Land Mobile (Part 90), Personal Radio (Part 95), or Amateur (Part 97) Services. They are categorically exempt.

The previous section in Part 1, however, does apply to ham operators and that is what amateur service Rule Sec. §97.13(a) refers to. That section (Sec. §1.307(a)) seeks to protect wilderness areas, wildlife preserves, threatened or endangered species and their habitats, historical and Indian religious sites, flood plains and certain surface features such as wetlands and forests.

Sec. §1.307(a)(8) also requires an Environmental Assessment to be completed when an antenna tower is located in residential areas and is lighted with high intensity white lights. This is to protect residents from the annoyance of the flashing "strobe" lighting. No Environmental Assessment must be completed for any

other amateur antenna structure.

### Exception to categorical exclusions

Just because the rules exempt amateur radio stations from having to comply with the ANSI-1982 radio frequency radiation guidelines does not mean a ham operator can indiscriminately run 1.5 KW of RF with a high gain antenna into a neighbor's bedroom?

Sec. §1.307(c) which went into effect on November 17, 1988 contains a little known appeal process by which the FCC may still take corrective action - especially when a residential neighbor complains. The aggrieved person may submit a written petition to the appropriate FCC Bureau "...setting forth in detail the reasons justifying environmental consideration in the decision making process." For Amateur Radio, this Bureau is the Wireless Telecommunication Bureau.

The WTB would then review the complaint and if it finds that a significant environmental impact exists, will require the applicant to prepare an EA. The Bureau could even require an EA without a petition from the public.

Once the FCC Environmental Assessment is filed, the FCC decides if an "Environmental Impact Statement" is necessary. An EIS is required when the FCC concludes that the radio station would have (or has) a significant effect on the environment.

The result could be that the FCC could deny the amateur station license application or renewal. To the best of my knowledge, no one has ever appealed to the Commission under this process, but they could.

### EPA position on 1992 ANSI/IEEE

The amateur radio community will probably be surprised to learn that the U.S. Environmental Protection Agency essentially disagrees with using the 1992 ANSI/IEEE standard as the federal RF safety guideline. EPA is particularly opposed to the two tier (controlled/aware and uncontrolled/unaware RF environment) concept. In the uncontrolled environment, an additional safety factor is applied.

EPA argues that RF exposure in the 1992 ANSI/IEEE is incorrectly based on the environment instead of on people. The agency says that its research - and that of other organizations - shows that certain groups of individuals (such as infants, the aged, ill and disabled, obese, pregnant women, and people dependent upon certain medication or in adverse environmental conditions such as heat and humidity) are more at risk than others.

The agency further argues that the 1992 ANSI/IEEE standards do not describe the degree of awareness that a person must have to be included in the controlled environment category. That awareness can

vary from complete knowledge to almost no knowledge of RF exposure. And EPA says that "... awareness is not equivalent to protection."

## The EPA recommendations

They believe the FCC should adopt more conservative RF safety guidelines and apply more restrictive exposure limits to any transmitters located in residential areas or locations where the RF source may be accessible to the public.

The EPA says there are "serious flaws" in the 1992 ANSI/IEEE standard "that call into question whether the proposed use of the 1992 ANSI/IEEE is sufficiently protective." The agency disagrees with the two-level approach charging that it is "not directly applicable to any population group [and] ...not well defined."

Rather than use the 1992 ANSI/IEEE RF safety standard, EPA believes the FCC might want to consider using the 1986 NCRP recommendations. The NCRP is the National Council on Radiation Protection and Measurements, a non-profit Congressionally chartered organization to develop RF exposure safety recommendations. NCRP deals primarily with ionizing radiation, but also released proposed criteria for non-ionizing radiation. Their guidelines are listed in NCRP Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields, April 2, 1986."

EPA recommends 1986 NCRP because the RF radiation exposure limits are more protective for the general public at higher frequencies above 1.5 GHz than 1992 ANSI/IEEE. EPA suggests that the FCC might want to ask the NCRP to revise its 1986 report "to provide an updated, critical and comprehensive review of the biological effects on RF radiation and recommendations for exposure criteria." (Both the 1992 ANSI/IEEE and 1986 NCRP are about 5 times more protective of the public than the 1982 ANSI guidelines.)

If, however, the FCC is determined to use the 1992 ANSI/IEEE guideline, then EPA also believes that all users of hand-held devices and amateur radio facilities should be considered the "public" and not "workers." This would make them subject to more protective RF standards.

## Will the EPA issue their own guidelines?

There is reason to believe that they will. But there is no telling exactly when this will be. There is universal agreement that there is a need for federal guidelines to be established by a credible, federal agency with expertise and jurisdiction in the field.

Because of the lack of RF standards, local and state bodies are adopting standards on their own, often without the necessary scientific expertise. The lack of a federal standard or guideline has led to a patch-

work of state and local regulations. This has contributed to public apprehension, controversy over potential risks to public health from existing and developing technology, and expensive litigation.

The Federal Communications Commission depends on health and safety organizations such as EPA for the standards that the FCC would then enforce. FCC has suggested that EPA endorse the 1992 ANSI/IEEE guidelines but they have not. This is probably why the FCC still has not taken final action on their proposal to use the 1992 ANSI/IEEE guidelines. And if the Commission uses these guidelines anyway, EPA wants them modified to include more protective exposure limits at lower and higher frequencies.

Earlier this year, the EPA released a two-volume report on a *Radiofrequency Radiation Conference* it convened in 1993. The conference was attended by 200 of the nation's top scientists, industrialists, doctors and policy makers in the field of human health effects of exposure to RF radiation.

The outcome of the Conference contained two key conclusions:

- (1) that there was sufficient information on thermal exposure/effect on which to base a standard and;
- (2) that the EPA should develop some type of RF radiation exposure guidelines ...even if EPA does so only on an interim basis.

Much of the two-volume report contains the conclusions of various panels and is extremely technical and difficult to understand. But (for what it is worth) here are some of the conclusions by the various panels:

- (1.) There could be a significant cost to the AM/FM broadcast radio industry to comply with the 1992 ANSI/IEEE standards.
- (2.) EPA should develop a standard based on four effects: (a) No physiological harm, (b) Measurable effects but no known consequences, (c) Minimal consequences and (d) Adverse effects on bodily functions/organisms.
- (3.) Various mortality studies of radio operators, telecommunications workers and radio and TV repairmen showed marked increases in blood cancer (leukemia) and brain cancer. A similar MIT study, however, showed no increase in leukemia or brain cancer, but an increase in Hodgkins disease. Human data is currently limited and incomplete but there is reason to believe that RF radiation may be a carcinogen.
- (4.) Animals (mammals) exposed to sublethal RF intensities showed exposure can cause birth defects, cancer, cataracts, and affect the thermoregulatory system, immune system, central nervous system, blood-brain barrier and behavior. Further research is needed to confirm or refute that these laboratory findings apply to human beings.
- (5.) Any RF standard should be in some form of federally mandated or approved maximum exposure limits from a health and safety agency such as EPA. It may need

to be on an interim, phased in basis.

- (6.) The conference expressed full confidence in the ability of the EPA to develop RF safety standards.

## Developing the standards

Last year, EPA convened an inter-agency group composed of representatives from various federal agencies. It included the EPA, FCC, the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH), the National Telecommunications and Information Administration (NTIA), and the Occupational Safety and Health Administration (OSHA.) The purpose of the work group was to address the development of RF radiation exposure guidelines which EPA hoped it would be able to release this year.

It now appears that these guidelines will be indefinitely delayed until the EPA resolves the funding and reorganization issue. The agency still hopes to issue the RF safety guidelines since they have put a great deal of work into it.

"It won't be a standard, since we are not going through the required regulatory development," EPA's Norbert Hankin told us. "We will simply write a report that will address the various issues. Recommended exposure limits will be contained in the report. They would represent our recommendations."

Hankin said that the new guidelines would be an entirely new look at how to establish RF exposure limits. "It would be based on what is understood at this time. And that is that RF radiation absorbed by the body can cause temperature elevation. We do not know really much about non-thermal effects and the report probably will not address non-thermal issues." The EPA said their guidelines would be consistent with their previous position on RF exposure.

## AMATEUR SERVICE INTERNATIONAL RECIPROCAL AND THIRD PARTY OPERATING ARRANGEMENTS

The United States has made arrangement with the following countries to grant a reciprocal operating permit (FCC Form 610-AL) to their citizens who hold amateur service licenses issued by the country of citizenship.

|                               |                      |                         |
|-------------------------------|----------------------|-------------------------|
| Antigua & Barbuda             | Argentina            | Australia               |
| Austria                       | The Bahamas          | Barbados                |
| Belgium                       | Belize               | Bolivia                 |
| Bosnia-Herzegovina            | Botswana             | Brazil                  |
| Canada <sup>1</sup>           | Chile                | Colombia                |
| Costa Rica                    | Croatia              | Cyprus                  |
| Denmark <sup>2</sup>          | Dominica             | Dominican Rep.          |
| Ecuador                       | El Salvador          | Micronesia <sup>3</sup> |
| Fiji                          | Finland              | France <sup>4</sup>     |
| French Polynesia <sup>5</sup> | Germany <sup>6</sup> | Greece                  |
| Grenada                       | Guatemala            | Guyana                  |

|                      |                          |                             |
|----------------------|--------------------------|-----------------------------|
| Haiti                | Honduras                 | Hong Kong                   |
| Iceland              | India                    | Indonesia                   |
| Ireland              | Israel                   | Italy                       |
| Jamaica              | Japan                    | Jordan                      |
| Kiribati             | Kuwait                   | Liberia                     |
| Luxembourg           | Macedonia                | Marshall Islands            |
| Mexico               | Monaco                   | Netherlands                 |
| Netherlands Antilles | New Zealand              | Nicaragua                   |
| Norway               | Panama                   | Paraguay                    |
| Papua New Guinea     | Peru                     | Philippines                 |
| Portugal             | Seychelles               | Sierra Leone                |
| Solomon Islands      | South Africa             | Spain                       |
| St. Lucia            | St. Vincent <sup>7</sup> | Surinam                     |
| Sweden               | Switzerland              | Thailand                    |
| Trinidad & Tobago    | Tuvalu                   | United Kingdom <sup>8</sup> |
| Uruguay              |                          |                             |

**Footnotes:** 1=Canadian amateur service station do not need a reciprocal operating permit while operating in the United States; 2=Including Greenland; 3=Federated States of Micronesia; 4=Including French Guiana; 5=Gambier, Marquesas, Society and Tubuai Islands and Tuarnoru Archipelago; 6=Federal Republic of Germany; 7=And the Grenadines; 8=Including Bermuda, British Virgin Islands, Cayman Islands, Channel Islands (including Guernsey and Jersey), Falkland Islands (including South Georgia Islands and South Sandwich Islands), Great Britain, Gibraltar, Hong Kong, Isle of Man, Montserrat, Northern Ireland, Saint Helena (including Ascension Island, Gough Island and Tristan De Cunha Island).

A reciprocal permit is valid for one year or until the expiration date on the alien's amateur service license, whichever comes first. An alien may apply for the permit by sending a completed FCC Form 610-A application and a photocopy of the alien's license to FCC, 1270 Fairfield Rd., Gettysburg, PA 17325-7245, U.S.A. The form is available from the FCC Consumer Assistance Branch at the same address or, in some cases, from United States missions abroad.

A reciprocal operating permittee is authorized to operate an amateur station in areas where the amateur service is regulated by the FCC. Such operation must comply with Part 97 of the FCC's Rules and the International Telecommunication Union Radio Regulations. Operator privileges are those authorized by the alien permittee's own government, but do not exceed those of the FCC Amateur Extra Class operator.

The call sign transmitted in the station identification procedure is that issued by the licensing country, preceded by an appropriate letter-numeral indicator, separated by the slant mark (/) or any suitable word that denotes the slant mark. (Canadian amateur stations must transmit the indicator after its call sign.) At least once during each intercommunication, the alien amateur station must include, in the English language, the geographical location as nearly as possible by city and state, commonwealth or possession. The station location letter-numeral indicators are:

Alabama W4, Alaska KL7, American Samoa KH8, Arizona W7, Arkansas W5, Baker Island KH1, California W6, Colorado W0, Commonwealth of Northern Mariana KH0, Commonwealth of Puerto Rico KP4, Connecticut W1, Delaware W3, Desecheo Island, PR KP5, District of Columbia W3, Florida W4, Georgia W4, Guam KH2, Hawaii KH6, Howland Island KH1, Idaho W7, Illinois W9, Indiana W9, Iowa W0,

Jarvis Island KH5, Johnston Island KH3, Kansas W0, Kentucky W4, Kingman Reef KH5K, Kure Island, HI KH7, Louisiana W5, Maine W1, Maryland W3, Massachusetts W1, Michigan W8, Midway Island KH4, Minnesota W0, Mississippi W5, Missouri W0, Montana W7, Navassa Island KP1, Nebraska W0, Nevada W7, New Hampshire W1, New Jersey W2, New Mexico W5, New York W2, North Carolina W4, North Dakota W0, Ohio W8, Oklahoma W5, Oregon W7, Palmyra Island KH5, Peale Island KH9, Pennsylvania W3, Rhode Island W1, South Carolina W4, South Dakota W0, Tennessee W4, Texas W5, Utah W7, Vermont W1, Virgin Islands KP2, Virginia W4, Wake Island KH9, Washington W7, West Virginia W8, Wilkes Island KH9, Wisconsin W9 and Wyoming.

No United States citizen, regardless of any other citizenship also held, is eligible for an FCC-issued reciprocal operating permit. Any person, however, except a representative of a foreign government, may apply for an FCC amateur service license upon passing the qualifying examinations. Alien amateur operators who will be in the United States for extended periods of time are encouraged to obtain an FCC amateur service license. An alien holding an FCC amateur service license is not eligible for a reciprocal operating permit. When an alien obtains an FCC license, it supersedes any FCC-issued reciprocal operating permit held.  
*(FCC Public Notice, Sep. 5, 1995, Private Wireless Div.)*

### Amateur Service In International Arrangements

The following arrangements have been made for amateur stations regulated by the FCC to communicate with amateur stations located in other countries:

**PERMISSIBLE COUNTRIES:** Sec. §97.111 of the FCC Rules authorizes an amateur station licensed by the FCC to exchange messages with amateur stations located in other countries, except with those in any country whose administration has given notice that it objects to such radiocommunications. Currently there are no banned countries.

**TYPES OF MESSAGES:** Sec. §97.117 of the FCC Rules stipulates that amateur station transmissions to a different country, where permitted, shall be in plain language and shall be limited to messages of a technical nature relating to tests, and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified.

**THIRD PARTY COMMUNICATIONS:** Sec. §97.115 of the FCC Rules authorizes an amateur regulated by the FCC to transmit a message from its control operator (first party) to another amateur station control operator (second party) on behalf of another person (third party.) No amateur station, however, shall transmit messages for a third party to any station within the jurisdiction of any foreign government whose administration has not made arrangements with the United States to allow amateur stations to be used for transmitting international communications on behalf of third parties.

The following countries have made the necessary arrangements with the United States to permit an amateur station regulated by the FCC to exchange messages for a third party with amateur stations in: Antigua and Barbuda, Argentina, Australia, Belize, Bolivia, Bosnia-Herzegovina, Brazil, Canada, Chile, Colombia, Federal Islamic

Republic of Comoros, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, The Gambia, Ghana, Grenada, Guatemala, Guyana, Haiti, Honduras, Israel, Jamaica, Jordan, Liberia, Republic of the Marshall Islands, Mexico, Federated States of Micronesia, Nicaragua, Panama, Paraguay, Peru, Philippines, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines, Sierra Leone, Swaziland, Trinidad and Tobago, United Kingdom (special event stations with the call sign prefix GB followed by a number other than 3), Uruguay and Venezuela. The United Nations also has arrangements with the United States to permit an amateur station regulated by the FCC to exchange messages for a third party with amateur stations 4U1ITU in Geneva, Switzerland, and 4U1VIC in Vienna, Austria.

No amateur station regulated by the FCC shall transmit messages for a third party to any amateur station located within the jurisdiction of any foreign government not listed above. This prohibition does not apply to a message for any third party who is eligible to be the control operator of the station. *(FCC Public Notice, 9/5/95, Private Wireless Div.)*

### COMMERCIAL RADIO OPERATOR LICENSE EXAM QUESTION POOLS RELEASED FOR ELEMENT 7 & 9

The Commission has revised the Commercial Operator License Examination (COLE) question pools for Element 7 (GMDSS radio operating practices) and Element 9 (GMDSS radio maintainer practices and procedures.) These revisions are the product of industry recommendations and the Commission's ongoing commitment to improving the quality of the COLE test questions and will supersede the current question pools as described above. The questions in each pool were examined for clarity as well as content, and up to 10% new questions were added to each pool. Effective Dec. 1, 1995 for all test sites in the continental United States and Jan. 1, 1996 for all other test sites. Element 7 and Element 9 examinations will contain only questions taken from the newly revised pools.

To obtain a GMDSS Radio operator license, applicants must submit to the Commission, proof of passing Element 7 as well as Element 1 (basic radio law and operating practice). The minimum passing score for Element 7 is 57 correct answers on a 76 question test. To obtain a GMDSS Radio Maintainer License, applicants must submit proof of passing Element 9, as well as Element 1 and Element 3 (general Radiotelephone). The minimum passing score for Element 9 is 38 correct answers on a 50 question test. The Commission intends to revise the question pools for Element 1, 3, 5, 6 and 8 in the coming months.

The questions and answers for Elements 7 and 9 are available through the FCC's duplicating contractor (International Transcription Services, Inc., 2100 M St. NW, Washington, DC 20037, Tel. 202/857-3800 and through the Internet via anonymous FTP at ftp.fcc.gov in the "/pub/Bureaus/Wireless/Informal" directory.  
*(FCC Public Notice, Sep. 1, 1995, Wireless Telecom Bureau.)*

## AMATEUR RADIO CALL SIGNS

...issued as of the first of September 1995:

| Radio District | Gp."A" Extra | Gp."B" Advan. | Gp."C" Tech/Gen | Gp."D" Novice |
|----------------|--------------|---------------|-----------------|---------------|
| 0 (*)          | AA0ZA        | KG0YW (***)   |                 | KB0TVP        |
| 1 (*)          | AA1OJ        | KE1CX         | N1VTZ           | KB1BTW        |
| 2 (*)          | AA2YK        | KG2DW (***)   |                 | KB2VRO        |
| 3 (*)          | AA3MK        | KE3US         | N3WAX           | KB3BKX        |
| 4 (*)          | AE4LW        | KT4CY (***)   |                 | KF4DBD        |
| 5 (*)          | AC5EQ        | KK5SM (***)   |                 | KC5QOW        |
| 6 (*)          | AC6PM        | KO6ZL (***)   |                 | KE6YHD        |
| 7 (*)          | AB7ML        | KJ7QY (***)   |                 | KC7MYR        |
| 8 (*)          | AA8UQ        | KG8TG (***)   |                 | KC8AXZ        |
| 9 (*)          | AA9QB        | KG9DX (***)   |                 | KB9LLB        |
| N.Mariana Is.  | KH0S         | AH0AW         | KH0ED           | WH0ABC        |
| Guam           | WH2Q         | AH2DA         | KH2OQ           | WH2ANN        |
| Johnston Is.   | AH3D         | AH3AD         | KH3AG           | WH3AAG        |
| Midway Is.     |              | AH4AA         | KH4AG           | WH4AAH        |
| Hawaii         | (**)         | AH6OE (***)   |                 | WH6CYA        |
| Kure Is.       |              |               | KH7AA           |               |
| Amer. Samoa    | AH8O         | AH8AH         | KH8CJ           | WH8ABE        |
| Wake W.Peale   | AH9C         | AH9AD         | KH9AE           | WH9AAI        |
| Alaska         | (**)         | AL7QF (***)   |                 | WL7COU        |
| Virgin Is.     | WP2U         | KP2CH         | NP2IK           | WP2AIA        |
| Puerto Rico    | (**)         | KP4ZY (***)   |                 | WP4NBC        |

\*=All 2-by-1 "W" prefixed call signs have been assigned in all radio districts. 2-by-2 AA-AK call signs now being assigned.

\*\*=All Group A (2-by-1) format call signs have been assigned in Hawaii, Alaska and Puerto Rico.

\*\*\*=Group "C" (N-by-3) call signs have now run out in all but the 1st and 3rd call district.

(Source: FCC Licensing Facility, Gettysburg, PA.)

● The FCC will shortly be distributing the new FCC Form 610-R Amateur Radio Station License Renewal application to those amateurs whose license expires in December 1995. Originally this renewal form was to be a return card. But it has now been changed to an 8½"x11" paper form which will be able to be handled by the FCC's existing mailing equipment in Gettysburg. Strangely the form is to renew the station license - not the operator portion which might mean that the FCC is preparing to make the operator portion a lifetime term ticket. (ARRL has already requested this handling.)

The 610-R renewal form will be imprinted with the licensee's name, address, call sign, operator class, station privileges, and effective/expiration date of the current license. The 610-R may be used only where the information has not changed. The applicant simply signs the bottom certification section and returns to the FCC in Gettysburg, PA if all the information is correct. The form states, "...Check the pre-printed information, you may correct misspelled words, but if any other information shown on your license has changed, do not file this form. You must apply for modification of the license by filing [the regular] Application Form 610."

● David Sumner, K1ZZ, ARRL Executive Vice President has formally notified the NCVEC, Inc. (National Conference of VECs) that the ARRL-VEC will not be participate in the organization. In a letter dated July 20, 1995, Sumner directed NCVEC president Don Tunstill, WB4HOK to "...rescind any and all reference to the League's participation in the NCVEC, Inc., and refrain hereafter from any indication in any documents or in any remarks of the officers or directors of the NCVEC, Inc., which would lead anyone to conclude that the League is a participant in the NCVEC, Inc. This would include references to the participants in the NCVEC in FCC pleadings or correspondence."

The exclusion of the League and its representatives from NCVEC activities includes any standing committees that the ARRL-VEC may have served on in the past. In view of the ARRL decision, Tunstill replaced Question Pool Committee member Bart Jahnke, KB9MN (ARRL-VEC Manager) with Walter "Scotty" Neustadter, N4PYD of Huntsville, Alabama.

Scotty is well qualified for the position. He is a graduate of the Univ. of Nebraska, holds a Master of Science degree from the Univ. of Arkansas and has completed graduate work at the Univ. of Maryland, Florida Institute of Technology and Rensselaer Polytechnic Institute. He retired from the U.S. Air Force.

● The ARRL's telephone area code has changed. Their previous "203" area code is now restricted to Southern Connecticut. The northern part of Connecticut is now area code "860." Thus, the ARRL's phone number is now 860/594-0200, FAX: 860/594-0259.

● German cosmonaut, Thomas Reiter, DF5TR is now aboard the Russian space station signing DP0MIR. He will use the 2-meter ham radio rig aboard MIR during the next three months. Frequencies will be 145.8, 145.55 and 145.2. QSLs go via the German DARC QSL bureau.

● Scientists at Caltech's Big Bear Observatory say they identified the first new sunspot in the next sunspot cycle on August 12th. This could indicate an early beginning to Cycle 23 with sunspot maximum appearing in 1998 or 1999 - two years earlier than anticipated. As the sunspots begin to appear, so does improved HF radio communications! [Info via AMSAT BBS]

● The FCC employees union will fight a decision by FCC Chairman Reed Hundt to close several FCC field offices and ax 50 employees. Allen Myers, president of Chapter 209 of the National Treasury Employees Union said the Commission "reneged" on an agreement that would have closed only two field offices and re-assigned employees. An FCC spokesman said "One person's 'reneging' is another person's 'amending'."

### INSIDE STUFF MAKING THE ROUNDS

● **The big question, of course, is "How is Windows-95 doing in the marketplace?"** As near as we can tell, sales have been generally 25% higher than expected ...and so have the requests for help with installation. But it is kind of hard to get a straight answer. It appears, however, that the "professionals" are doing well getting it going, but "consumers" are having difficulty - especially with the disk version. That sort of indicates "operator errors" rather than software "bugs."

But we did see several reports on the Internet about a glitch in one of the installation disks. Some Windows 95 buyers are reporting a blank No. 2 (of 13) disk. There are two versions as to what may have happened: (1) one of the disk manufacturers made a duplication mistake or (2) some PCs have a resident virus that can render this disk unreadable. Microsoft sides with the virus explanation and suggests that users run antivirus software before installing Windows 95 and flipping the little tabs on the corner of the diskette to prevent any information from being written to the disk. So far, there is no panic like there was when someone reported a minor bug in Intel's Pentium chip.

● **But that isn't Microsoft's biggest problem.** Getting hundreds of thousands of users up-and-running a very sophisticated operating system simultaneously is proving to be a challenge.

Windows-95 began selling at midnight, Wednesday, August 23 and by 9 a.m. August 24, Microsoft had received 2,500 calls from users who rushed out to get an early copy. The price of the upgrade version has generally been \$89.95, but we heard reports that Windows 95 was selling as low as \$10 less.

The package is being introduced at 25,000 outlets, the most in software history. More than one million of the eight million Windows 95 packages already in the hands of distributors and stores have been sold! The upgrade market is huge since there are about 100 million PCs "out there" that use Windows 3.1. Some 25 million Win-95 are expected to be sold this year, the majority being installations on new machines. It cost

Microsoft nearly \$400 million to develop the product.

Buyers (who get 90 days of free support) are now flocking to the Microsoft Help-lines and users can now expect to have to wait up to 45 minutes to get through. There are some 1,500 trained technicians taking more than 40,000 (half of them are Windows 95 support calls) a day and they can't keep up. Most questions tend to be on "setup."

Interestingly, Microsoft has made it difficult for the public (and the press) to find out just how Windows-95 installation (and "problems") are going. Many callers think they are getting answers directly from Microsoft in Redmond, WA when they call for help desk support but most are patched through to an overflow support company ...such as Unisys and Digital Equipment Corp. And under the terms of their contract, these outside firms are prohibited from disclosing call volume and conversation content. Only Microsoft gets that information.

Windows-95 is creating a bonanza for hardware manufacturers and computer consultants who are busy upgrading systems ...adding faster processors, memory, motherboards and disk space.

● **Trivia: According to Microsoft, it took 293 "person-years" and 2.3 million cups of coffee to develop Windows-95.**

There are two versions, a CD-ROM package and a set of 13 (3½") diskettes. The CD-ROM version has additional drivers and a helpful computerized tutorial of all features. Most installation questions can be answered by the on-line Setup Help feature. Depending upon your configuration and level of expertise, installation should take less than an hour.

● **Like the Netscape "Navigator," Microsoft's Internet "Explorer" web browser is based on the University of Illinois' "Mosaic" program.** Insiders believe that it is no accident that Netscape went public two weeks before Windows 95 was introduced.

At present, Microsoft's Explorer browser is not part of Windows 95, but it is included in versions installed by computer makers on new machines. Furthermore, the one-button-access Explorer module can be downloaded from

the Microsoft Network which is included in Windows 95. And Microsoft intends to offer a "Windows 95 Plus Companion Pack" version later that includes the Explorer.

Web browsers are considered crucial to electronic commerce on the net and an interesting battle is shaping up between the Explorer and the Navigator. Both the new MCI and AT&T online services will be using Netscape. It is almost like Microsoft against the world ...and so far, they have been equal to the challenge. The bottom line is - the most popular browser could end up being the conduit for the megabillions of business expected within five years to be transacted on the Internet.

We also heard that users who click on the Microsoft Network icon to get to MSN's online or Internet connection will find that they have deleted any existing connections by default. Although there is a way to use your own service provider with MSN, users are routinely switched to Microsoft's Internet access whether they want to or not! Microsoft says it is a "technical glitch" and not meant to steal customers from other services. Online competitors are not so sure! Microsoft says it intends to cut-off MSN membership temporarily at 500,000 so it can check out the system.

● **Now another black cloud is again appearing on the horizon for Microsoft.** You will remember that the U.S. Dept. of Justice received complaints from online service competitors charging that the bundling of the Microsoft Network (MSN) with Windows-95 constituted unfair competition. Antitrust law says you can't use one monopoly business to monopolize another. The online industry accused Microsoft of using its monopoly advantage in operating systems to launch MSN.

The Justice Dept. has now expanded its MSN anti-trust investigation to include web browsers. It seems that local and national Internet service providers are worried that they will be at a competitive disadvantage if Windows 95 carries free Internet access to the masses.

Furthermore, consumer online companies believe that even if the Justice Dept. prohibits Microsoft from offering their MSN Network as part of Windows 95, the service could still be



accessed through a web Home Page posted by Microsoft to the Internet and accessed by their browser.

And both online services and Internet providers are infuriated that Microsoft's new web page design, creation and delivery tool (code named "Blackbird") will best (or only) display its pages on the Explorer browser! A "Blackbird Client Module", resident within Windows 95, lets any online customer activate the content from a "Blackbird Server." "Blackbird" created content also works with interactive TV.

- **The Microsoft Strategy to Harness the Internet.** Make no mistake about it! Bill Gates and Company have big plans for the Internet! In a speech before nearly 3,000 content developers at Microsoft's Interactive Media Conference last month, Bill Gates said his intention is to create a gigantic electronic community of Windows 95 users, connected to the Internet through MSN. "Our goal is to make The Microsoft Network a very large Internet Community with billing, security, guides, a lot of consistency and unique content."

He said Microsoft would create a new web-based offering of MSN services and content and offer a combination of free, basic and extended services, including electronic mail, bulletin board systems, chat areas, library, downloads and reference materials. The extended services will permit any transactional service to "set up your own shop, and have your own way to do branding, and charge for content any way you want."

That is also the goal of most existing and emerging online services. Only they don't have Windows 95 to provide millions of potential customers just one mouse click away. All content developers attending the conference were given a CD-ROM Beta copy of "Blackbird."

- **What is the least expensive consumer online web browser?** America Online (AOL), CompuServe and Prodigy all offer Wide World Web browsers based on "Mosaic." The Sept. issue of Byte Magazine tackled the question.

NetCom, a leading nationwide Internet Service Provider (800-353-6600), charges \$19.95 monthly for 40 prime-time hours and all week-end and off-peak hours. Their NetCruiser for Win-

dows browser is free. No commercial information provider came close to that figure.

According to Byte Magazine, surfing the Internet for 30 hours using AOL (at \$9.95 for the first five hours and \$2.95 for each additional hour) would cost: \$83.70. CompuServe with a more complicated Internet billing arrangement costs \$44.90. Prodigy was the clear winner of the big three. You get 30 hours of connect time under their 30/30 plan for \$29.95.

- We are not sure what this means, but we note **Corporations (such as Kraft Foods and Procter & Gamble) are registering Internet "domain" names for their products.** Believe it or not, there is a cheezwhiz.com, a shakenbake.com, a cheer.com, a spicspan.com and a tide.com. These two consumer product companies alone have registered nearly 200 domain names.

And the presidential hopefuls are also jumping on the bandwagon. There is a bobdole.html and a gramm96.org ...among others. I guess everybody wants to ride a winner. Remember how President Reagan's wife adopted the handle "First Mama" during the high flying CB days of the 70's?

There is no charge to register a domain name which is done through InterNIC, (703/742-4757) the Internet Network Information Center which is funded by the National Science Foundation. E-mail: hostmaster@rs.internic.net

- **Compaq and Fisher-Price are teaming up** to produce a 1996 Christmas toy (but working) computer for youngsters under age seven.

- **A new "Electronic Wallet" for the Internet** is being developed by the partnership of "Checkfree" and "Cybercash," two companies heavily involved in secure electronic funds transfer. The wallet is an add-on program to WWW browsers and allows Internet shoppers to use credit cards and electronic personal checks on the Internet.

- **What happens to books when everything goes online?** That is a question being contemplated by the American Library Association, headquartered in Chicago, Illinois. In 1982, all books loaned by libraries were of the paper variety.

Palm-sized CD-ROMs now contain books and encyclopedias that once took up bookshelves of space and seventy percent of all libraries have CD's for reference purposes. Most must be used on the premises. Libraries are just now starting to allow remote users to dial in from home and download a variety of full text materials. The most wide reaching change for libraries involves the Internet. The smallest branch library can become an international outlet with no storage problems. And technology is slowly replacing the librarian. Still one third of all libraries do not have a computer and only one in five has an Internet connection.

**Another area that is blossoming are "Web-zines"** ...full color, multimedia magazines complete with advertising distributed through the Internet. They are easy-to-produce and cheap-to-distribute since there are no printing, paper or postage costs. And Web-zines have the advantage of being interactive.

- **The Sept. 11th issue of Forbes Magazine has an interesting story on Spyglass, Inc. of Naperville, Illinois.** This company, like Netscape is involved with "Mosaic" browser technology developed at the Univ. of Illinois to explore (and commercialize) the World Wide Web of the Internet. Unlike Netscape, however, they made money last year. (\$1.3 million on \$3.6 million in revenues.) Spyglass went public in June. The background of Netscape and Spyglass is somewhat similar. Tim Krauskopf was a NCSA (National Center for Supercomputing Applications) software development team leader at the Univ. of Illinois. He quit and started Spyglass in 1990. In late 1993, an NCSA team developed the "Mosaic" browser and requests to license it began pouring in. Krauskopf saw an opportunity and secured the exclusive right from the University to license the Mosaic software commercially. Within a year, he signed up all of the software powerhouses. Most of Spyglass' customers pay a 2% royalty. That is, all except Microsoft. They paid a flat (one time) \$2 million fee that allows them to bundle Mosaic with Windows 95. Signing Microsoft allowed Spyglass to secure many other firms that do pay royalties.

## NEW ZEALAND WRC-95 POSITION BELIEVED TO INCLUDE ELIMINATION OF MORSE CODE RULE

The September issue of "Break In," the journal of the *New Zealand Association of Radio Transmitters*, (New Zealand's national ham radio society) contains an editorial by NZART Pres. Jim Meachen, ZL2BHF. It is on the subject of suppressing the international HF Morse code requirement at the upcoming *World Radio Conference* to be held in Geneva next month.

Meachen writes, "At the time of writing this column, the Ministry of Commerce (MoC) is continuing on the path to propose deletion of RR-2735 at WRC-95." (International Radio Regulation No. 2735 requires all amateurs operating at frequencies below 30 MHz to be proficient in manual telegraphy.) Meachen says that a case has not been made "...nor supported by the Association to review the RR-2735 provision."

A copy of a July 7, 1995 letter from NZART to The Hon. Maurice Williamson, New Zealand's Minister of Communication is also printed in the September "Break In" magazine. It asks for assurance that a previous MoC position statement was still in effect. That position was contained in an October 1994 letter from the Ministry which said that New Zealand would "...not actively make proposals for change to the International Radio Regulations, as they affect the amateur service, until such time as there is evidence of significant opinion here in New Zealand, and/or overseas, to support modification of Article 32."

NZART informed the MoC that "the position of the *International Amateur Radio Union*, world-wide, is for the present international regulatory provisions for radio amateurs to continue unchanged." NZART asked for a reply to their July 7th letter from the MoC relative to New Zealand's current position regarding removal of the amateur telegraphy requirement from the ITU rules. NZART said it would publish the MoC response in the Association's journal. The Minister of Communications has now replied to the letter. Here is what he said:

Mr. A. J. Wallace, Acting-President  
New Zealand Association of Radio Transmitters Inc  
P.O. Box 40-525  
UPPER HUTT

Dear Mr Wallace,

Thank you for your letter of 7 July about New Zealand preparations for the *World Radiocommunication Conference* WRC-95 to be held in Geneva in October and November of this year.

I am advised that the Ministry of Commerce informed your President, Mr. Meachen, on 17 March that, after considerable discussion and debate between interested parties, the specific provision relating to competence in Morse code, contained in No. 2735 of the International Radio Regulations, was

no longer appropriate as a treaty obligation for the Government of New Zealand. You will be aware that there are views in that debate which support and promote changes to Article 32 of the International regulations.

The Ministry is firmly of the view that regulation No. 2736 provides the flexibility needed for administrations to take such measures as they judge necessary to verify the operational and technical qualification of any person wishing to operate the apparatus of an amateur station. I share this view.

Furthermore, you will be aware that the agenda for this Conference concerns, in part, consideration of the report of the *Voluntary Group of Experts* (VGE) on the simplified Radio Regulations. Officials from New Zealand have played an important role in the work of the VGE, and are therefore convinced of the need to see the simplification process carried through generally on an ongoing basis.

The draft New Zealand proposals contain elements of this simplification process.... The inclusion of a proposal to suppress RR-2735, which relates to the use of Morse code in the amateur service [is] also part of the philosophy of removing from the Radio Regulations matters which are no longer appropriate in an international treaty.

The New Zealand WRC Preparatory Group, on which your organization is represented, is discussing all elements of the conference agenda, and there will be a number of issues where total consensus is not able to be achieved. Whole the views and aspirations of spectrum users have to be fully considered, it is sometimes necessary for the Ministry to apply its own reasons and philosophy to the final results it has to deliberate in the wider issues that may be equally valid to the discussions.

There is some time before the final New Zealand proposals are forwarded to the ITU in Geneva, and I would trust that your input to the consultative process is both full and frank on the many issues that the group has to deal with. ...If there is little or no support for the New Zealand proposals, then so be it. The Conference itself will of course decide whether there is merit in the New Zealand position.

Yours sincerely,  
Maurice Williamson, Minister of Communications

It thus appears that New Zealand will indeed be proposing to the international community that the ITU regulation that requires Morse code proficiency when operating at the HF level be abolished. We understand that New Zealand (like all other countries) must forward all WRC-95 proposals to Geneva this month.

It does not mean that the Morse Code requirement will be discontinued if the ITU nations approve New Zealand's anticipated proposal ...only that a country could abolish the requirement if it were so inclined. Any regulatory change to our FCC Part 97 Rules would require *Notice and Comment* proceedings. The public and the amateur community could debate the issue at that time. Still, the ARRL and IARU appear inflexibly opposed to any change which would relax the amateur telegraphy requirements.