

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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January 15, 1995

RUSSIAN AMATEURS ORBIT RS-15 HAM SATELLITE

On December 26, 1994 at 03:00 UTC, the RS-15 Amateur Satellite was launched into space from the Baykonur space center in Russia on a "Rokot" rocket booster. The first two stages of Rokot are the RS-18 ICBM. A new third stage carried the RS-15 spherical amateur radio satellite. The 1-meter diameter, 70 kilogram payload uses a similar bus to the RS-3 to RS-8 satellites, and ended up in a 1884 x 2165 kilometer x 64.8 degree orbit

The RS-15 was launched to commemorate the 100th anniversary of the discovery of radio by Russian engineer, Aleksandr Stepanovich Popov. Popov, a science teacher, was the first to conduct research aimed at detecting approaching electrical storms. He erected high wire antennas and, in 1895, observed electromagnetic waves radiating from lightning discharges. His work is the basis for the controversial Russian belief that Popov discovered radio. He may have discovered radio, but not radio communications. In 1901, Popov became a professor at the Electrotechnical Institute in St. Petersburg, Russia.

The western world generally accepts Italian inventor, Guglielmo Marconi as the discoverer of wireless radio communication. In the same year, 1895, Marconi transmitted and received signals through the air from one end of his home to the other ...and then from his home to his garden.

The ROSTO (Russian Society for Military Sport and Technique) acts as the coordination

office for the Russian radio amateur space effort. This organization works in close cooperation with Russian Space Agency and other aerospace organizations.

There is a Mode A transponder and two CW beacons on board the satellite, one of which consists of a broadcast bulletin board with 2 kilobytes of storage space. A remote control system and telemetry system also are on board the satellite. The RS-15 lacks orientation or attitude stabilization systems. It is orbiting the earth every 127.45 minutes.

All the electronics on board the RS-15 analog satellite were designed and built by a group of Radio Amateurs at the Tsiolkovskiy Museum for the History of Cosmonautics in Kaluga (about 100 miles southwest of Moscow) under the leadership of V. Samkov and Aleksander Papkov. The RS-15 (as well as RS-10/11 and RS-12/13 satellites) are commanded by the RS3A control station at Moscow which is headed up by Leonid Maksakov, RA3AT.

RS-15 transponder data

Uplink: 145.858 - 145.898 MHz
(Approx. 100 Watts EIRP)

Downlink: 29.354 - 29.394 MHz
(Up to 5 Watts)

CW Beacon 1: 29.3525 MHz - 0.4/1.2 Watts

CW Beacon 2: 29.3987 MHz - 0.4/1.2 Watts

The antennas are dipoles.

Above information from: RS3A Control Station, P.O. Box 59, Moscow 105122, Russia - who wish comments and reception reports. Their address:

Internet E-mail: rsgroup@olymp.msk.su
Packet: RS3A@RS3A.MSK.RUS.EU

Getting the correct Keplerian Elements (orbital tracking information) seemed to be a problem ...at least at first. At one point, there were about 20 different sets of "Keps" for RS-15. Everyone seemed to have their own idea where the satellite was located. This prevented many frustrated AMSAT enthusiasts from being able to use the bird since they could not determine when RS-15 was within range. (The "official" place to get satellite tracking data is from NASA's Orbital Information Group located at Goddard Space Flight Center at Greenbelt, Maryland.)

Jim, N2NRD reports that his first QSO on the new Russian satellite was with K6GZ at 22:25z on December 26. Jim noted that the time between passes is just over 2 hours and comments that it can be confusing with RS-10/11 going over at the same time, working the West Coast on RS-15 when the Midwest and East Coast are in the window on RS-10/11. RS-15 is a small satellite (70 kg) with limited DC power. (RS-10/11 and 12/13 are 2000 kg. with twice the power.)

Oscar, DJØMY, reports monitoring RS-15 over eastern Europe between 13:41 UTC (AOS) until 14:10 UTC (LOS) on the same day of RS-15's launch. The signal strength comparable to that of RS-10/11 and RS-12/13. Oscar reported hearing CW on the main 29.352 MHz beacon during this pass. DJØMY reports making the first European SSB QSO via RS-15 on 26-Dec-94 at 16:07 UTC on 29.375 MHz with EB8CHG, Werner on the Canary Islands from his QTH near Hanover in Northern Germany. Both stations were the only ones using SSB at that time. There were two other stations operating CW in the lower portion of the transponder passband.

Richard, G3RWL points out that the orbit of RS-15 is not sun-synchronous. As such, passes will not occur around the same time everyday. The result is that in about three weeks time, the passes will come up about four hours earlier than they do at present.

G3RWL also reports that RS-15's telemetry seems to be composed of sixteen groups with the callsign RS15 as a separator. The groups consist of three letters and two figures. He has also heard high-speed telemetry which "might" be the 1100 baud speed that fits the cassette port on some Russian computers. High-speed data appears to be sent up by ground command.

(Story developed from several packet, e-mail, AMSAT Bulletin Board and amateur radio reports.)

IARU APPOINTS BRUCE LOCKHART, SMØTER, AS SATELLITE FREQUENCY COORDINATOR

Bruce Lockhart, SMØTER, has been appointed as the IARU Satellite Frequency Coordinator. His main task as an IARU volunteer will be to provide a service to enable any group to coordinate frequencies and emissions of a planned amateur satellite with existing and any other planned amateur satellites. The appointment was made after consultation with major AMSAT groups in Europe and North America.

Bruce's work will also include the maintenance of records of all frequencies and emissions of all operating and planned amateur satellites and to provide advice as to suitable frequencies and modes for all planned amateur satellites, having regard to existing and planned usage of the amateur satellite bands and the IARU band Plans.

While this is a technical position, the IARU Satellite Frequency Coordinator has an important role in assisting in the protection of bands allocated to the amateur satellite service. He will work closely with the IARU Satellite Adviser, Hans van de Groenendaal, ZS5AKV.

Bruce brings extensive experience to the appointment. Trained as an engineer, professionally he is self employed as an international consultant in the process control industry, doing hardware and software development. He was first licensed as K3ZAZ in 1963 and has operated on all bands from 1.8 MHz to 2.4 GHz. He is a member and Technical Secretary of AMSAT-SM, is a member of AMSAT-UK and AMSAT-NA, and in the amateur satellite community is known as the original designer of the TrakBox.

SMØTER's address is: Bruce C. Lockhart, Rydgatan 56, S195 55 Marsta, Sweden.

Internet E-mail: blockhart@ccontrol.se

V.O.I.C.E.S. ...AN ANTI-AMATEUR RADIO GROUP

The following letter to the editor appeared in the *Asbury Park Press* newspaper on December 10, 1994. The tone of the letter, written by New Jersey resident, Frank F. Effenberger, was decidedly anti-ham radio and anti-ARRL. Here is the unedited letter:

"A series of well-orchestrated articles featuring amateur radio operators recently appeared in local and national newspapers. The articles portray the amateur as a well-meaning individual standing by to provide emergency communications in times of disaster.

A well-kept secret is that for every amateur broadcasting from his home, there are several neighbors whose household electronics are made unusable by radio interference. The Federal Communications

Commission, which receives thousands of complaints against amateurs, will not release the complainants' identities, thus preventing any effective action against this intrusion.

When the FCC receives a complaint, it turns it over to a field office. This initiates the usual charade: The field office explains that the amateur operates within the FCC standards and then the American Radio Relay League - which is the union of members - offers to help. The upshot: The complainants' home electronics equipment and wiring are declared deficient. End of story.

A recent case brought in New Jersey civil court against an amateur resulted in the amateur agreeing to sell his home (with assistance from his homeowner's insurance) to one of the complainants. This exemplifies the damages that one amateur radio operator (meeting FCC standards) can cause to neighbors' property rights and home valuations, and the extraordinary lengths to which ordinary homeowners must go to rid themselves of this horrendous nuisance.

The ARRL tacitly recognizes the validity of complaints against its members by constantly bombarding Congress with proposals to release them from regulations that commercial operators must abide by - all on the pretext of being a "national resource" in times of emergency. Yet, amateurs are not necessary in this role, as emergency governmental organizations funded by our taxes are well able to provide for their own communications. In fact, amateurs may well interfere with these local services.

The time when radio communications was an arcane art known to few is long past. The skill to operate modern radio communications equipment is easily learned. The FCC recognized this fact long ago by greatly reducing technical knowledge requirements for obtaining an amateur license. This in turn resulted in the ability of the ARRL to increase its membership to the point at which it feels it can sway Congress to its way of thinking - aided and abetted by the manufacturers of amateur radio equipment.

The ARRL had better wake up to the damages and ill will its members cause. The public is becoming increasingly aware of health hazards caused by nearby radio transmitting antennas. Homeowner resistance is mounting to installation of large, unsightly antennas fifty feet from their homes, radiating several thousands of watts.

Municipalities are questioning the installation of 200-foot antenna towers in the midst of their communities. They are questioning the radio interference effects and the impact on property values, which go largely unaddressed. If the ARRL policies do not change, the amateur could very well go the way of the

dinosaur. The myth of the amateur as a skilled technologist extending the state-of-the-art is already extinct."

The letter was signed: Frank F. Effenberger, Point Pleasant Beach, NJ. We decided to call him to obtain more information. I represented myself as a professional writer in the field electronics - which is true. I did not tell Frank that I was also a ham operator - and he did not ask.

Frank said that he was a retired electrical engineer, previously with the U.S. Army's Communications Electronics Command at Ft. Monmouth, New Jersey. His specialty is electromagnetic compatibility.

He said that he was also a consultant for a group known as the Victims Of Interference Caused by Electronic Signals - or V.O.I.C.E.S. That organization is headquartered in Tuckerton, New Jersey. Frank gave me their telephone number and I spoke to them also.

V.O.I.C.E.S. president is Michael Morris. They claim 150 members who are plagued by electromagnetic interference. Morris said their group also published a newsletter and that he would send me a copy.

V.O.I.C.E.S. has a promotional campaign underway to reach people who are bothered by two-way radio communications interference so that they may form a more powerful lobby for the rights of homeowners. He said they were not only concerned about interference, but unsightly antenna structures, RF safety and decreasing property values.

FCC RELEASES END OF FISCAL YEAR STATISTICS

The FCC operates on an October 1 to September 30 fiscal year. We usually get the end-of-year statistics about November 1st, but not so this year.

The FCC is in the process of implementing a new amateur service data processing system (complete with electronic application filing) and the change over from the old 1970's vintage Honeywell mainframe computer to a new PC-based system has caused a delay in getting accurate data. We still do not have information on upgrades or first time licensees by month.

We did, however, just receive the 1994 end-of-Fiscal Year amateur radio census by state and license class and we are publishing this information on the next page. Also listed are the comparable figures from a decade ago (1984).

The figures are kind of startling! There are 62% more amateurs than ten years ago. (175,000 of the 250,000 increase - or three-quarters - are accounted for by one class: Technician. Nearly 40% of all amateurs are now Tech or Tech Plus - double the 1984 share) And there are also more code proficient Technicians (Tech Plus) than No-Code Techs. Another surprise.

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AMATEUR SERVICE GROWTH REPORT - SEPTEMBER 1984 TO SEPTEMBER 1994

STATE	EXTRA		ADVANCED		GENERAL		TECHNICIAN / PLUS			NOVICE		TOTAL		INC. %
	1984	1994	1984	1994	1984	1994	1984	1994	+ 1994	1984	1994	1984	1994	
Alabama	507	1031	1295	1702	1577	1769	1181	2130	+ 2055	1118	1019	5668	9706	71%
Alaska	189	311	474	551	566	641	332	515	+ 528	386	444	1947	2990	54%
Arizona	633	1359	1920	2491	2085	2596	1634	3065	+ 2677	1078	1254	7350	13442	83%
Arkansas	253	669	747	1012	895	1031	555	1415	+ 1163	605	624	3055	5914	94%
California	4628	8297	14249	16088	14747	16657	13147	21241	+21909	9835	17199	56606	101391	79%
Colorado	661	1153	1636	2062	1935	2160	1141	1990	+ 2144	1173	1333	6546	10842	66%
Connecticut	662	1079	1417	1562	1863	1959	835	1096	+ 1717	1496	1680	6273	9093	45%
Delaware	106	192	206	232	257	295	197	218	+ 279	220	214	986	1430	45%
Dist. of Col.	54	82	100	101	134	137	46	64	+ 64	78	83	412	531	29%
Florida	1885	4096	5823	7762	6890	9105	4458	5700	+ 7443	4722	6839	23778	40945	72%
Georgia	717	1446	1857	2498	2125	2600	1496	2526	+ 2871	1337	1526	7532	13467	79%
Hawaii	173	301	473	524	543	567	285	488	+ 665	334	691	1808	3236	79%
Idaho	168	303	456	585	630	714	314	749	+ 640	386	401	1954	3392	74%
Illinois	1514	2515	3880	4183	5123	4868	3616	3921	+ 4711	3455	3587	17588	23785	35%
Indiana	709	1451	2130	2407	2654	2780	2193	2670	+ 3245	2186	2079	9872	14632	48%
Iowa	393	698	1321	1445	1607	1525	736	978	+ 1159	1033	1066	5090	6871	35%
Kansas	372	721	1035	1150	1554	1574	653	1378	+ 1297	965	1039	4579	7159	56%
Kentucky	331	797	947	1187	1300	1424	932	1675	+ 1622	1028	1223	4538	7928	75%
Louisiana	452	795	1219	1356	1387	1424	796	1336	+ 1375	886	915	4740	7201	52%
Maine	208	476	534	689	865	1040	329	626	+ 747	457	563	2393	4141	73%
Maryland	852	1454	1992	2270	2018	2281	1183	1982	+ 2064	1371	1512	7416	11563	56%
Mass.	1145	1995	2518	2800	3398	3356	2255	2079	+ 3194	1856	2287	11172	15711	41%
Michigan	1216	2091	3204	3629	4236	4320	2737	3572	+ 4145	2996	2657	14389	20414	83%
Minnesota	670	1115	1762	1986	2216	2349	1079	1666	+ 1911	1501	1318	7228	10345	43%
Mississippi	197	462	637	814	773	848	423	929	+ 792	476	544	2506	4389	75%
Missouri	687	1316	1904	2236	2514	2625	1370	2052	+ 2251	1694	1545	8169	12025	47%
Montana	145	294	371	442	545	586	177	498	+ 411	346	362	1584	2593	64%
Nebraska	166	371	714	790	981	980	390	548	+ 724	513	496	2764	3909	41%
Nevada	168	376	408	663	579	807	345	821	+ 662	371	365	1871	3694	97%
N.Hampshire	276	618	585	736	787	975	477	726	+ 945	489	588	2614	4588	76%
New Jersey	1346	2112	3160	3211	3532	3491	2667	2360	+ 3584	2253	2671	12958	17429	35%
New Mexico	314	564	683	919	821	888	436	1044	+ 797	403	385	2657	4597	73%
New York	2232	3665	5681	5864	6925	6892	4929	5594	+ 6985	6229	7069	25996	36069	39%
N. Carolina	692	1676	2039	2820	2351	2982	1417	3329	+ 3120	1448	1965	7947	15892	100%
North Dakota	65	153	210	246	387	375	92	270	+ 294	247	254	1001	1592	59%
Ohio	1599	3000	4394	4967	5514	5589	4887	5406	+ 7316	4073	4139	20467	30417	49%
Oklahoma	378	884	1320	1479	1357	1500	1015	1748	+ 1786	915	1127	4985	8524	71%
Oregon	613	1164	1721	2130	2272	2654	1325	2118	+ 2279	1582	1622	7513	11967	59%
Penna.	1542	2921	3900	4505	4974	5168	3190	3655	+ 4913	3617	3670	17223	24832	44%
Rhode Island	153	314	294	362	499	534	361	318	+ 565	306	428	1613	2521	56%
S. Carolina	318	636	836	1070	1182	1330	589	1027	+ 1215	570	688	3495	5966	71%
South Dakota	81	165	281	322	362	378	134	230	+ 252	207	175	1065	1522	44%
Tennessee	647	1405	1882	2321	1865	2277	1738	2505	+ 2947	1412	1493	7544	12948	72%
Texas	2147	4440	6084	7377	7054	7728	4853	7301	+ 7990	3986	4409	24124	39245	63%
Utah	192	444	603	794	607	736	596	2082	+ 1547	444	756	2442	6359	160%
Vermont	107	234	243	323	344	427	126	379	+ 379	195	232	1015	1974	94%
Virginia	1009	1972	2318	3005	2694	3081	1466	2778	+ 2968	1682	2074	9169	15878	73%
Washington	1085	2223	2932	3706	3642	4472	2320	4354	+ 4536	2404	3140	12383	22431	81%
West Virginia	224	522	580	731	837	945	489	1386	+ 1158	851	876	2981	5618	88%
Wisconsin	533	1084	1539	1812	2147	2199	1059	1818	+ 1821	1310	1288	6588	10022	52%
Wyoming	75	173	187	239	301	283	117	334	+ 272	211	222	891	1523	71%
Guam	13	51	42	53	26	56	19	85	+ 86	32	173	132	504	282%
Puerto Rico	103	251	293	559	280	701	787	466	+ 2157	1635	4400	3098	8534	175%
Virgin Islands	12	53	36	55	37	81	21	61	+ 59	58	44	164	353	115%
Other	7	92	12	65	10	83	5	248	+ 62	10	56	44	606	***
Total:	35624	68062	97084	114888	116804	128843	79950	119550	134498	80461	98809	409923	664650	62.1%
% of Total	8.7%	10.2%	23.7%	17.3%	28.5%	19.4%	19.5%	18.0%	+20.2%	19.6%	14.9%	100%	100%	
% Increase	+91.1%		+18.3%		+10.3%		+217.8%			+22.8%		+62.1%		

(*** = Other includes U.S. possessions and in 1994, APO/FPO addresses. Figures not comparable.)

Ham Census - Where the ham operators are located! - The ten most populated states

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1. California	56606	59960	58400	59944	61432	66130	71895	79031	87304	95126	101391
2. Florida	23778	24518	25476	26242	27094	28856	30755	33128	35991	38547	40945
3. Texas	24124	24408	24930	25495	25992	27750	29261	31699	34487	36929	39245
4. New York	25996	25833	26030	26001	25505	26878	28202	30073	32472	34436	36069
5. Ohio	20467	20276	20370	20783	21010	22179	23317	24944	27002	28798	30417
6. Pennsylvania	17223	17153	17309	17525	17531	18439	19391	20584	22159	23584	24832
7. Illinois	17588	17384	17446	17548	17509	18286	19070	20183	21567	22798	23785
8. Washington	12383	12600	12997	13436	14016	15034	16046	17492	19185	20847	22431
9. Michigan	14389	14212	14158	14259	14258	15052	15670	16690	18091	19392	20414
10. New Jersey	12958	12924	12910	12932	12823	13482	14068	14835	15869	16757	17429

The top ten states account for more than half of the U.S. amateur population. (53.7%)

The ten states with the fewest amateurs are:

Delaware 1,430, South Dakota 1,522, Wyoming 1,523, North Dakota 1,592, Vermont 1,974, Montana 2,593, Rhode Island 2,521, Alaska 2,990, Hawaii 3,236 and Idaho 3,392

Amateur Census Since 1984 by License Class:

FY	Extra	Advan.	Gen.	Tech.	Novice	Total
1984	35624	97084	116804	79950	80461	409923
1985	37968	97825	117340	83117	76337	412587
1986	40768	98195	116864	86148	79107	421082
1987	43214	98147	114424	91633	82779	430201
1988	46152	98354	112989	99603	79667	436828
1989	49545	101514	116496	112631	84614	464800
1990	52847	105365	119158	125217	91705	493292
1991	56487	107127	121971	150069	96418	532072
1992	60692	109537	124727	187281	98569	580806
1993	64490	112225	126938	221849	100486	625988
1994	68062	114888	128843	254100	98809	664650

[FCC Licensing Division, Gettysburg, PA]

IARN DEMANDS FCC NOTIFICATION OF EMERGENCIES

Glenn Baxter, K1MAN of Belgrade Lakes, Maine heads up the *International Amateur Radio Network*. He is furious with the FCC's *Field Operations Bureau* (now renamed the *Compliance and Information Bureau*) since the written instructions contained in their CIB Policy Manual is to notify only the American Radio Relay League - and not IARN - when a Voluntary Communications Emergency is declared.

Beverly G. Baker, Chief, CIB responded to Baxter's request that his organization be notified of communications emergencies by saying "The ARRL voluntarily performs that function in order to simplify procedures during emergencies and they may use several methods to accomplish that goal, including the alerting of established amateur networks to assist in the distribution of emergency information. That single point of contact procedure has been effective in the past and make multiple calls unnecessary for the Commission."

Baxter fired back a letter calling Baker's response

"...bureaucratically arrogant and totally incompetent. ...Not only are you a waste of taxpayer's money, you are hindering the public's best interest. I am happy to say that your jobs are not secure..."

By certified mail, Baxter then sent a "*Freedom of Information Act Demand*" directing that the *International Amateur Radio Network* be notified in writing by immediate FAX of communications emergencies. He also sent the *Compliance and Information Bureau* a \$25.00 U.S. Postal Money order to establish an account to pay for the faxed notifications. "We demand that you advise us in writing of your intent to comply and also provide us with copies of modified [policies] indicating that your procedures to comply have been appropriately implemented." (Excerpted from a November and December 1994 exchange of letters between IARN and the FCC.)

FOUNDATION FOR AMATEUR RADIO TO ADMINISTER ACADEMIC SCHOLARSHIPS

The non-profit Washington, DC based *Foundation for Amateur Radio* will once again coordinate the distribution of fifty-six scholarships from various donors for the 1995-1996 academic year.

Licensed Radio Amateurs may compete for these awards if they plan to pursue a full-time course of studies beyond high school and are enrolled in or have been accepted for enrollment at an accredited university, college or technical school. The scholarships range in value from \$500 to \$2,000 each. Some have area restrictions.

Additional information and an application form may be requested prior to April 30, 1995, from:

FAR Scholarships, 6903 Rhode Island Avenue,
College Park, Maryland 20740.

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PACKET FORWARDING RULES

DON'T CHANGE FOR TCP/IP, FCC SAYS

The FCC amended its message forwarding rules last year (see Rule §97.219, and *W5YI Report* for May 1, 1994). That Rule finds the control operator of the originating station primarily responsible for any violation occurring in the message. The control operator of the first station to forward the message must either authenticate the identity of the originator or accept accountability for any violation in the messages it retransmits.

Many hams were relieved that at least the Commission had made clear how it expects packet operators to conduct their communications. But it was not clear how the FCC's scheme would accommodate popular digital modes such as TCP/IP, used in the Internet as well as amateur packet networks; and personal bulletin-board systems, which are built into most packet Terminal Node Controllers.

Well-known digital and OSCAR operator and spread-spectrum engineer Phil Karn, KA9Q, petitioned the FCC to reconsider its new policy. "The requirement that the first forwarding station either authenticate the identity of the originating station or take responsibility for message content is unworkable," wrote Karn. "The Commission has implicitly assumed a specific architecture for the message forwarding system that is rapidly being overtaken by new systems that render the concept of 'first forwarding station' largely meaningless."

He pointed out that the control operator of an IP router would be required to discriminate between traffic from end-users and traffic from other routers. "This discrimination is wholly impractical and unacceptable; it may even be impossible," he wrote.

The FCC disagreed and issued the following statement: Report No. DC-2700

ACTION IN DOCKET CASE, December 29, 1994

COMMISSION DENIES RECONSIDERATION OF ORDER CONCERNING MESSAGE FORWARDING SYSTEMS IN THE AMATEUR SERVICE (PR DOCKET NO. 93-85)

The Commission has denied Phil Karn reconsideration of its decision concerning message forwarding systems in the Amateur Service. Karn sought reconsideration of the Commission's decision that requires the licensee of the forwarding station to either authenticate the identity of the station from which its accepts communications on behalf of the system, or accept accountability for the content of the message.

On March 30, 1994, the FCC adopted an Order which provided that in contemporary message forward-

ing systems, the control operators of intermediate forwarding stations, other than the first forwarding station, would not be held accountable when their stations retransmitted improper communications inadvertently. The purpose of the Order was to relax the amateur service rules to enable these systems to operate at high speed while retaining the minimum safeguards necessary to prevent misuse.

Denying reconsideration, the Commission said the Order did not address, nor was it intended to address, what accommodations should be made for message forwarding systems that may be developed in the future. This issue appeared to be the main concern of Karn's request for reconsideration. The Commission said that if the present accommodation becomes unworkable in a system using a different architecture, the managers of that system can request necessary rule changes at the appropriate time.

AES LOSES SEXUAL HARASSMENT CASE APPEAL

A federal appeals court has rejected claims that an employer's crude behavior is not sexual harassment because it would be as offensive to men as to women, saying that the conjecture is "...neither relevant nor a defense."

The Seventh Circuit refused to reverse a jury finding that Greta L. Hutchison was sexually harassed during the years she worked for Amateur Electronic Supply Inc. (Milwaukee, Wisconsin) and that she was fired for complaining about the demeaning work environment. The jury awarded her \$80,000 in back pay.

The court says the case centers around boss Terry Sterman's (W9DIA) behavior. "Sterman did not force men to brush against him to get past, nor did he look them up and down and express his pleasure at their appearance. The evidence was more than ample to support the jury's finding of sexual harassment," the court says. On appeal, a district court had denied her request for a new trial on damages and reinstatement but did award her \$67,538.88 in attorney's fees.

Ms. Hutchison began work at AES as a file clerk in 1968 and at the time of her termination in 1989 had progressed to office manager. While she enjoyed her work and the increasing responsibility, she considered AES owner Terry Sterman "...a formidable obstacle to her professional contentment...."

According to documents from the U.S. Court of Appeals for the Seventh Circuit, "Sterman regularly quizzed female employees about the frequency and nature of their sexual relations." Sterman was also accused of engaging in numerous sexually explicit telephone conversations with his brother which could be overheard by Hutchison and other female office workers. There were other charges of comments with

vulgar sexual overtones including retaining what Ms. Hutchison termed an unproductive worker solely because of her looks.

Hutchison was fired the last working day before Christmas 1989. Two years later, Hutchison brought suit against AES initially claiming that she was fired because of her age and on the basis of her sex. She also charged sexually harassment and that she was fired because she opposed Sterman's behavior. On September 17, 1993, a jury awarded her \$80,000 in back pay on the sexual harassment and retaliatory discharge.

AES appealed to the U.S. District Court for the Eastern District of Wisconsin challenging the jury's finding that AES was a "...hostile environment."

The court records show that Sterman is on indefinite medical leave but remains the sole owner. His brother now runs the business. The court concluded that Hutchison's reinstatement would not be appropriate because AES is a small, closely-held organization and reinstatement would be difficult to administer because of "...the degree of interaction required among employees." The court also cited the friction and animosity which has developed between Hutchison and AES management

The appeals court said that Hutchison worked at AES for over 20 years and spreading the complained-of conduct over this period negated its severity. "She did not define the environment she worked in for years as hostile until after she was fired." Her compensation while employed at AES was determined by the appeals court to be "...far above the market rate." Testimony was presented that Sterman's 'generosity' in the form of high salaries and large bonuses was meant to buy tolerance for his behavior. (*Decision U.S. Court of Appeals for the Seventh Circuit, December 5, 1994.*)

INDUSTRY TO FCC: "PREEMPT LOCAL RF AND ANTENNA LAWS"

Local and state governments hindering wireless communications, associations say; Importance of amateur radio "dwarfed" by commercial needs

Two influential trade associations - the Cellular Telecommunications Industry Association (CTIA), and the Electromagnetic Energy Association (EEA) - claim that state and local laws are blocking realization of a wireless America and must be preempted by the FCC. The Commission preempts some restrictions on Amateur Radio antennas, but ham radio is not as important as commercial service vendors, according to CTIA.

CTIA represents the politically-powerful cellular carriers. When the term "cellular" lost its cachet to the buzzword "wireless," CTIA began to claim to represent

the "wireless" industry as well. CTIA became famous in radio circles for its successful lobbying to ban coverage of cellular frequencies in scanning receivers.

CTIA is concerned that state and local regulation of antenna sites, such as unfavorable zoning laws, will put the brakes on construction of more cellular and other wireless facilities such as Personal Communications Services (PCS). Cellular, PCS and paging operations are now in the category of "Commercial Mobile Radio Services (CMRS)," the new catch-all term for services that charge fees for use by the public.

On December 22, CTIA filed a petition with the FCC asking the agency to preempt such state and local regulations of CMRS. It pointed to the FCC's rules that limit state regulation of Amateur Radio antennas, for example, but apparently believes its needs are more pressing.

CTIA wrote, "Although an important service with a long and honored tradition, the economic and broader social importance of amateur radio is dwarfed by the present and prospective significance of CMRS. ...The statutory and policy bases for preemption of zoning and other similar regulations that have the purpose or effect of barring CMRS are much stronger."

Bell Laboratories scientist Jesse Russell, chair of the Electromagnetic Energy Association, argued that new and improved communications services are on a "collision course" with increasing state and local activity in the area.

EEA is concerned about RF exposure laws intended to protect the public but which may threaten federal supremacy in radio communications. It gave examples of the alleged legal obstacles it says must be "cleared away":

- Stamford, Connecticut, requires approval from the city health department before constructing a transmitter providing more than 5 watts input into the antenna. Applicants must fund a review and hearing by a panel of experts.
- Wilmette, Illinois regulates RF emitters at a standard more stringent than the 1992 ANSI standard being considered by the FCC. In addition to limits on transmitter power density, the village prohibits installation of a proposed facility within 500 feet of schools, pre-schools and daycare centers.
- Portland, Oregon; Seattle, Washington; and King County, Washington; laws specify maximum RF levels. The limits are the same as the more stringent "uncontrolled" ANSI standard limits without a provision for "controlled" (more power permitted) environments.
- San Francisco, California prevented a local TV station from expanding its transmission facilities, due

to "substantial public concern surrounding the issue of electromagnetic radiation."

- Eureka, California forced a TV station to relocate its antenna based on the amount of RF energy. The city planning commission reportedly said that FCC approval of the facility would make no difference.
- Rancho Palos Verdes, California, permitted a cellular company to transmit from a site, but only if it limited the power and number of channels it used, even though the power and channels were authorized by the FCC.
- Massachusetts requires "all" sources of RF radiation to comply with intricate registration and notification procedures.
- Puerto Rico requires "all Commission licensees" to obtain a Commonwealth certificate and to perform complicated engineering studies, not required by the FCC, before using the transmitter.

"As long as state and local governments have the authority to engage in their own individualized evaluations of FCC-approved RF transmitters, they will have the power to undo what the Commission has authorized," EEA argued.

The association asked the FCC to preempt all state and local statutes, guidelines and policies that are inconsistent with the FCC's RF radiation standards or that impede, delay or preclude FCC-licensed transmitting facilities because of RF concerns, where the Commission has found that the station complies with FCC guidelines for RF radiation.

COMMERCIALIZATION OF THE WORLD WIDE WEB

First it was over-the-air broadcast, then wireline cable. Now the mass media communications future is the computer and the digital highway. The rush is on by major online services, cable operators and long distance telephone carriers alike to offer the Internet to the public on a national basis. Their goal is to replace local access carriers as the way people hook up. "ChannelWorks" uses high speed interactive cable TV hook ups to bring the information highway to the public. All others pipe the net in over phone lines.

The once non-commercial "network of networks" that served the defense, academic and hacker community is now rapidly turning to business. Its enormous installed base of 20 or 30 million users (no one really knows) is a very big asset. And an estimated one million new "netizens" are connecting to the Internet each month!

Internet traffic consists primarily of e-mail, transferring files, exchanging information, participating in

special-interest Newsgroups and now ...conducting business. Internet volume more than triples every year.

It used to be that advertising on the Net was frowned upon. But no more. Half of the estimated 44,000 "domains" sprawled across more than 100 countries now belong to businesses. Some provide customer support, many sell products, information and other services. Even virtual automobile showrooms are now available. Home shopping services like the Internet Shopping Network and CommerceNet are popping up. Most of them weren't there six months ago!

The World Wide Web graphic service of the Internet is fast heading toward becoming the mass market vehicle for the sale of goods and services, as well as the targeted delivery of advertising. On line magazines are setting up "home pages" and advertisers are flocking to their door. The cost to reach the public through a global communications link is very low when compared to traditional direct mail, print advertising or fax.

The Prodigy Online service has been testing its new World Wide Web propriety browser. A browser - also known as a "client" - allows you to search for, retrieve and display Internet documents. With special reader software you can even get full motion video.

Prodigy's new redesign (code-named P2) will be programmed entirely in HTML (Hypertext Markup Language), the lingo of the Internet. Full access to the World Wide Web will be introduced to Prodigy subscribers about mid-January. (We are one of Beta testers and find it very entertaining and useful! Among other things, we have been using it to access the FCC's Washington, DC file server for news releases.)

Prodigy says that it is possible that they might migrate to another commercially available browser interface later. Prodigy will not charge extra for the new full Internet access gateway. But it is a "plus" charge which counts against a subscriber's base usage.

CompuServe and America Online will also be offering Web browsers. Their commercial WWW servers will permit commercial clients to establish "electronic storefronts." IBM offers a Global Network browser with its new operating OS/2 operating system. Novel is beta-testing "Ferret." No one wants to be left out of the public's certain migration to the Internet. Even Tandy/Radio Shack is in the process of establishing a marketing presence on The Web.

Microsoft is in the process of remodelling its "Microsoft Word" word-processing program to reach the Web. The free "Internet Assistant" upgrade will turn "Word" into a browser. Furthermore, Word users

will be able to create Web documents in the HTML from their PC. Microsoft's new Windows-95 upgrade (expected in August) will also include Internet access.

Just what is the World Wide Web?

In a sentence, the World Wide Web (also known as W3, WWW ...or just "the Web") is a global client-server interface system that supports a keyword or index number linking technology called "hypertext." It was developed by CERN, a Swiss physics research center located in Geneva. You simply find an Internet publisher's "home page" and click on its table-of contents-like "hyperlink" and get the information you want. More than one WWW server a day is being added to the Internet.

Hypertext are electronically presented documents that are linked to other "hypermedia." You can seamlessly switch from one information server to another ...even if the data you seek is located in a different country ...or continent!

The protocol used on the web is the hypertext transfer protocol (http). "Browser" client software is used to look at hypertext stored on the same or different servers. Due to the amount of data accessed, high speed (14.4-Kbps and higher) modems are recommended.

Now it appears certain that "The Web" is about to hit the streets "big time!" Netscape Communications Corp., (Tel. 800-638-7483) is a Mountain View, Calif. start-up company formed by the same people that developed the "Mosaic" graphics viewer software at the University of Illinois at Champaign-Urbana.

Mosaic is based on the concept of hypermedia: electronic links (underlined text) embedded in pages of an online interactive "book." You gain access to related information located anywhere in the world by clicking on the link.

The original NCSA Mosaic is still offered free by the National Center for Supercomputing Applications. It is estimated that more than a million people now use Mosaic to find their way through the Web. The latest windows-based version in compressed format can be downloaded via anonymous ftp from: ftp.ncsa.uiuc.edu.

NCSA was founded and funded by the U.S. government through its National Science Foundation a decade ago to provide expensive supercomputer resources to universities and research centers. As part of their mission, NCSA created many free programs to enhance the Internet. The federal government will stop subsidizing the Internet in 1995. This means that businesses will have to find a way to fund the Internet.

Most viewers can control only text, but Mosaic can handle many information formats including colorful pictures, video clips, animation and sound. It makes

the Internet more lively, fun and easier to use.

NetScape has now created a commercial "point-and-click" version of its NCSA Mosaic browser system that is secure enough to permit credit card purchases and bank fund transfers on the Internet. NetScape produces better looking documents and is easier to use than its predecessor.

The NetScape "navigator/client"/NetSite "Commerce/server" works through a system of encryption and authentication. This "bullet-proof" handshaking procedure gives merchants the power to sell goods and services on the Internet. For transactions to be secure, the "Commerce" server requires NetScape client encryption which is based on the RSA public-key algorithm.

Like the original NCSA Mosaic, the NetScape browser is free to non-commercial users. So how will the company make any money? By selling NetScape secure and non-secure servers! The "Commerce" (secure) server costs \$25,000. Although listing at \$5,000, the NetScape "Communications" (Non-secure) server has an introductory price of \$1495.

The electronic marketplace

MCI is the first long distance phone company to go into the Internet access business. MCI, by the way, already carries 40 percent of the Internet traffic. MCI Senior Vice President Vinton Cerf is head of the Internet Society - a technical group formed in 1992 to support the growth of the Internet.

Effective this month, MCI will begin selling their own Internet communications software and Windows-based "point and click" NetScape WWW browser program. The package carries a one time cost of \$49.95.

In addition, MCI has started selling Internet connections to the public. Two types of access are offered. Both types require a one time registration charge of \$18.95 per account. Local telephone access will be available in major cities. Cost is \$19.95 per month for the first 7 hours and \$3.00 for each additional hour. "800" toll-free access costs \$19.95 for the first 3 hours and \$7.00 for each additional hour. InternetMCI requires at least a 386 PC, Windows version 3.1, DOS version 5.0, 14,400 bps speed modem, 25 Mb of available hard disk space and 4 Mb of Random Access Memory (RAM.)

MCI is also establishing a NetSite server on the Internet that will allow merchants to set up "electronic storefronts."

Electronic money schemes

You will be hearing of many ways to pay for products and services bought on the Internet!

- "Digicash" is a binary electronic cash system.

Consumers download cash from their credit card onto their PCs hard drive.

- **"CyberCash"** has a public/private key system to purchase items on the net using your credit card with instantaneous bank account debit.
- **First Virtual Holdings** (800-418-1370 in Cheyenne, Wyoming) receives consumer credit card information by telephone after being notified by e-mail. Credit card payments are processed off line.
- **Mondex** lets users carry up to \$1,000 in a digital "purse."
- The **Internet Shopping Network** (which was recently acquired by the Home Shopping Network) requires customers to submit their credit card information by phone or fax.
- The **"Downtown Anywhere Cybermall"** uses **"Personal Payment Passwords"** obtained from online shoppers with a credit card and a touch tone phone.
- **"WalletPC"** will enable Windows users to charge encrypted VISA transactions.
- **"NetCash"** supports currency transfer between secure servers.
- **"Open-Market"** is a secure, real-time credit card authorization/payment system.

One thing is certain! The global flea market will shortly be upon us.

FCC RENEWS SPREAD SPECTRUM AUTHORITY

Digital Community Prepares for Rule Changes

The FCC has just renewed the *Special Temporary Authority* (STA) that allows unrestricted use of spread spectrum emissions from six meters and up in the amateur bands. This STA was originally granted three years ago to Robert Buaas K6KGS, and has been renewed each year. This latest renewal is significant as it has no expiration date.

Spread-spectrum technology can multiplex many low-power QSOs by hopping among frequencies in a list and by combining the data to be transmitted with fast codes. QSOs can be distinguished by their unique codes. Much of the world's commercial mobile and military communication systems are embracing spread-spectrum, especially for cellular systems.

Phil Karn, KA9Q (see separate story) promotes self-organizing amateur spread spectrum packet systems as well as low-power unlicensed systems using this mode, as a way of greatly expanding communications capacity on existing spectrum.

The STA authorizes work with spreading schemes and codes, power levels and various hardware implementations not otherwise permitted by Part 97. Much of the development has been performed with direct-sequence and frequency-hopping systems in the heavily populated 2 meter band in Southern California, demon-

strating robustness and lack of significant interference. K6KGS plans more experiments in the six meter band.

Amateurs from the digital community have long been interested in revising Part 97 to permit more choices for hams in the spread spectrum technologies and codes they may use. We understand that a *Petition for Rulemaking* to that effect is in preparation.

We asked Dewayne Hendricks, WA8DZP of Fremont, Calif. to comment on the FCC's action. Dewayne, an active spread-spectrum amateur and commercial developer, chairs the TAPR FCC Regulatory Committee and is a member of ARRL's Future Systems Committee. He said, "I'm happy to see that this time, the FCC choose to issue the STA with an open-ended completion date. It has taken up to six months each time to have the FCC process the renewal as it has been necessary to clear each renewal with the Interdepartment Radio Advisory Committee (IRAC).

"This new STA will now allow the amateur community interested in spread spectrum to continue their experimentation until an effort is made to change Part 97 to allow more flexible use of spread spectrum in the amateur service. I offer my thanks to the FCC for taking this step to eliminating all of the administrative time and effort of the STA renewal process and allowing a more flexible framework for experimentation. Interested amateurs may participate and operate under this STA by contacting Robert Buaas and getting his approval."

[Text of STA renewal:]

Federal Communications Commission
Washington, DC 20554

December 27, 1994

Dear Mr. Buaas:

This is in response to your request date April 30, 1994, for extension of the special temporary authority (STA) and waiver of the Commission's Rules that you were granted on May 26, 1993. That STA and waiver permitted certain amateur stations to conduct experiments involving Code Division Multiple Access (CDMA) spread spectrum (SS) emissions.

Your request was presented to the Interagency Radio Advisory Committee, which expressed no objection to an extension. Accordingly, the STA and waivers granted May 26, 1993, are extended until completion of your data communications experiments. All other conditions of the May 26, 1993, authorization will remain in effect.

Sincerely,

Robert H. McNamara
Acting Chief, Private Radio Division