

DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

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ABBREVIATIONS

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name	= Name of station.
Loc	= Geographical location. O = west longitude. N = north latitude. S = south latitude.
Call	= Call letters assigned.
System	= Radio system used and sparks per second.
Range	= Normal range in nautical miles.
W. l.	= Wave lengths assigned: Normal wave lengths in italics.
Service	= Nature of service maintained.
	PG = General public.
	PR = Limited public.
	RC = Radio compass station.
	FS = Fog signal.
	P = Private.
	O = Government business exclusively.
Hours	= Hours of operation:
	N = Continuous service.
	X = No regular hours.
F. T. Co.	= Federal Telegraph Co.
I. W. T. Co.	= Independent Wireless Telegraph Co.
K. & C.	= Kilbourne & Clark Manufacturing Co.
R. C. A.	= Radio Corporation of America.
S. O. R. S.	= Ship Owners' Radio Service.
W. S. A. Co.	= Wireless Specialty Apparatus Co.
C. w.	= Continuous wave.
I. c. w.	= Interrupted continuous wave.
V. t.	= Vacuum tube.
FX	= Fixed station.
U. S. L.	= After operating company denotes that the change applies only to the List of Radio Stations of the United States.
Kc.	= Kilocycles.
Fy.	= Frequency.
A. c.	= Alternating current

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NEW STATIONS

Commercial ship stations, alphabetically by names of vessels

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berna Bureau]

Name of vessel	Call signal	Rates	Service	Hours	Owner of vessel	Station controlled by—
Edna	KIPT		PG	X	Sudden & Christenson	
George Washington	WFR		PG	N	Old Dominion S.S.Co.	
Utowana	KFSH				Alison V. Armour	
Tusitala	KFSQ	8	PG	X	Ship Tusitala (Inc.)	

Commercial land and ship stations, alphabetically by call signals

[b=ship station; cl=land station]

Call signal	Name of station	Call signal	Name of station
KFSH	Utowana.....b	KIPT	Edna.....b
KFSQ	Tusitala.....b	WFR	George Washington.....b

Broadcasting stations, alphabetically by names of cities

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

City	Call signal	City	Call signal
Atlanta, Ga.	WBBF	Indianapolis, Ind.	WFBM
Baltimore, Md.	WFBR	Joliet, Ill.	WWAE
Do.	WGBA	Lansing, Mich.	WREO
Beaumont, Tex.	KFDM	Le Mars, Iowa	KFCY
Burlington, Iowa	WIAS	Los Angeles, Calif.	KNX
Beloit, Wis.	WEBW	Madison, Wis.	WHA
Boston, Mass.	WPBU	Marengo, Iowa	KFOL
Bridgewater, Mass.	WFBN	Mooseheart, Ill.	WJJD
Cape Girardeau, Mo.	WSAB	Nashville, Tenn.	WEBX
Conway, Ark.	KFRJ	New Orleans, La.	WBBB
Dayton, Ohio	WEBT	New York, N. Y.	WOBS
De Land, Fla.	WEBU	Oskaloosa, Iowa	KFHL
Denver, Colo.	KFRI	Pitman, N. J.	WFBT
Fort Sill, Okla.	KFRM	Raleigh, N. C.	WFBQ
Fort Worth, Tex.	KPRO	Rosindale, Mass.	WEBY
Grand Forks, N. Dak.	KFRL	Savannah, Ga.	WRBZ
Hanford, Calif.	KFRN	Syracuse, N. Y.	WFBL
Hanover, N. H.	WFBK	Warrensburg, Mo.	KFNJ
Houghton, Mich.	WWAO		

Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call signals

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

Call signal	Location of station	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilocycles)
KFCY	Le Mars, Iowa	Western Union College	50	252	1,190
KFDM	Beaumont, Tex.	Magnolia Petroleum Co.	500	306	980
KFHL	Oskaloosa, Iowa	Penn. College	10	240	1,250
KFNJ	Warrensburg, Mo.	Central Mo. State Teachers College	50	234	1,280
KFOL	Marengo, Iowa, 502 W. Marion St.	Leslie M. Schaffbuch	5	234	1,280
KFRI	Denver, Colo., 1634 Glenarm St.	Reynolds Radio Co.	5	224	1,340

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Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call signals—Continued

Call signal	Location of station	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilo-cycles)
KFRL	Grand Forks, N. Dak.	Men's Club of First Presbyterian Church.	10	340	1,250
KFRM	Fort Hill, Okla.	Lieut. James P. Boland, U. S. A.	50	363	1,140
KFRN	Hanford, Calif.	M. Laurence Short.	5	234	1,340
KFRO	Fort Worth, Tex., 1109 Eighth Ave.	Curtis Printing Co.	50	346	1,220
KNX	Los Angeles, Calif.	Los Angeles Express.	500	337	880
WBBS	Atlanta, Ga.	Georgia School of Technology.	500	270	1,110
WBBS	New Orleans, La.	First Baptist Church.	50	252	1,160
WEBT	Dayton, Ohio	Dayton Cooperative Industrial High School.	5	270	1,110
WEBU	De Land, Fla.	De Land Piano & Music Co.	5	259	1,160
WEBW	Beloit, Wis.	Beloit College.	500	283	1,060
WEBX	Nashville, Tenn., R. R. No. 9 Franklin Pike.	John E. Cain, Jr.	50	263	1,140
WEBY	Roslindale, Mass.	Hobart Radio Co.	10	236	1,230
WEBZ	Savannah, Ga.	Savannah Radio Corp.	5	280	1,070
WFBK	Hanover, N. H.	Dartmouth College.	100	256	1,170
WFBL	Syracuse, N. Y.	Onondaga Hotel.	100	286	1,050
WFBM	Indianapolis, Ind., 519 Guaranty Building.	Merchants Heat & Light Co.	250	268	1,120
WFBN	Bridgewater, Mass., 1 Broad St.	Radio Sales & Service Co.	200	228	1,330
WFBQ	Raleigh, N. C., 226 Fayetteville St.	Wynne Radio Co.	50	232	1,190
WFBR	Baltimore, Md., Fifth Regiment Armory.	Fifth Infantry, Maryland N. G.	100	254	1,180
WFRT	Pitman, N. J.	Gloucester County Civic League.	50	281	1,200
WFBU	Boston, Mass.	Commonwealth Radio Association.			
WGPA	Baltimore, Md.	Jones Electric & Radio Mfg. Co.	50	254	1,180
WGSS	New York, N. Y.	Gimbel Brothers.	1,000	316	950
WHA	Madison, Wis.	University of Wisconsin.	500	275	1,090
WIAS	Burlington, Iowa.	Home Electric Co.	100	283	1,060
WJJD	Monroeville, Ill.	Supreme Lodge, Loyal Order of Moose.	500	278	1,080
WREO	Lansing, Mich.	Reo Motor Car Co.	500	288	1,040
WSAB	Cape Girardeau, Mo.	Southeast Missouri State Teachers College.	100	275	1,090
WWAE	Joliet, Ill.	Lawrence J. Crowley (Alamo Ball Room).	500	242	1,240
WWAO	Houghton, Mich.	Michigan College of Mines.	250	244	1,220

¹ On moving train in western Nebraska.

Government land stations, alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Bureau]

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
Cape Barichef, Alaska ¹	WWEF	256, 297, 345, 400, 600	O	X	Bureau of Lighthouses.
Cape Spencer, Alaska	WWEH		O	X	Do.
Crescent City, Calif. ²	WWEJ		O	X	Do.
Navassa Island, West Indies ³ (Windward Passage).	WWEA		O	X	Do.
Scotch Cap, Alaska ⁴	WWEG	256, 297, 345, 400, 600	O	X	Do.
St. George Reef, Calif. ⁵	WWEI		O	X	Do.

¹ Loc. O 164° 55' 40", N 54° 35' 50"; range, 10; system, Navy v. t. telephone and telegraph.

² Loc. O 124° 12' 08", N 41° 44' 50"; range, 10; system, Army v. t. telephone and telegraph.

³ Loc. (approximately) O 78° 01' 00", N 18° 24' 00"; range, 150; system, Navy, 1000.

⁴ Loc. O 164° 44' 40", N 54° 23' 52"; range, 10; system, Navy v. t. telephone and telegraph.

⁵ Loc. O 124° 22' 28", N 41° 50' 15"; range, 10; system, Army v. t. telephone and telegraph.

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Government ship stations, alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne Bureau]

Station	Call signal	Wave lengths	Service	Hours	Station controlled by--
Argus.....	NABD	130, 143	0	X	U. S. Coast Guard.
CG-100.....	NAUN	130, 143	0	X	Do.
CG-101.....	NAKT	130, 143	0	X	Do.
CG-102.....	NAMP	130, 143	0	X	Do.
CG-103.....	NAPP	130, 143	0	X	Do.
CG-104.....	NARM	130, 143	0	X	Do.
CG-105.....	NABF	130, 143	0	X	Do.
CG-106.....	NAGP	130, 143	0	X	Do.
CG-107.....	NAKZ	130, 143	0	X	Do.
CG-108.....	NAMQ	130, 143	0	X	Do.
CG-109.....	NAPQ	130, 143	0	X	Do.
CG-110.....	NARN	130, 143	0	X	Do.
CG-111.....	NABG	131, 143	0	X	Do.
CG-112.....	NAGQ	130, 143	0	X	Do.
CG-113.....	NALB	130, 143	0	X	Do.
CG-114.....	NAMS	130, 143	0	X	Do.
CG-115.....	NAPX	130, 143	0	X	Do.
CG-116.....	NARQ	130, 143	0	X	Do.
CG-117.....	NATC	130, 143	0	X	Do.
CG-118.....	NAVJ	130, 143	0	X	Do.
CG-119.....	NAXD	130, 143	0	X	Do.
CG-120.....	NAZJ	130, 143	0	X	Do.
CG-121.....	NEBG	130, 143	0	X	Do.
CG-122.....	NEBS	130, 143	0	X	Do.
CG-123.....	NABJ	130, 143	0	X	Do.
CG-124.....	NAOR	130, 143	0	X	Do.
CG-125.....	NALD	130, 143	0	X	Do.
CG-126.....	NANF	130, 143	0	X	Do.
CG-127.....	NAPZ	130, 143	0	X	Do.
CG-128.....	NART	130, 143	0	X	Do.
CG-129.....	NATD	130, 143	0	X	Do.
CG-130.....	NAVK	130, 143	0	X	Do.
CG-131.....	NAXF	130, 143	0	X	Do.
CG-132.....	NAZN	130, 143	0	X	Do.
CG-133.....	NABK	130, 143	0	X	Do.
CG-134.....	NAOT	130, 143	0	X	Do.
CG-135.....	NALF	130, 143	0	X	Do.
CG-136.....	NANG	130, 143	0	X	Do.
CG-137.....	NARV	130, 143	0	X	Do.
CG-138.....	NATF	130, 143	0	X	Do.
CG-139.....	NAVL	130, 143	0	X	Do.
CG-140.....	NAXG	130, 143	0	X	Do.
CG-141.....	NAZR	130, 143	0	X	Do.
CG-142.....	NABL	130, 143	0	X	Do.
CG-143.....	NAGZ	130, 143	0	X	Do.
CG-144.....	NALG	130, 143	0	X	Do.
CG-145.....	NANJ	130, 143	0	X	Do.
CG-146.....	NAQJ	130, 143	0	X	Do.
CG-147.....	NARX	130, 143	0	X	Do.
CG-148.....	NATK	130, 143	0	X	Do.
CG-149.....	NAVN	130, 143	0	X	Do.
CG-150.....	NAXL	130, 143	0	X	Do.
CG-151.....	NABM	130, 143	0	X	Do.
CG-152.....	NAJF	130, 143	0	X	Do.
CG-153.....	NALJ	130, 143	0	X	Do.
CG-154.....	NANK	130, 143	0	X	Do.
CG-155.....	NAQP	130, 143	0	X	Do.
CG-156.....	NASB	130, 143	0	X	Do.
CG-157.....	NATL	130, 143	0	X	Do.
CG-158.....	NAVJ	130, 143	0	X	Do.
CG-159.....	NAXP	130, 143	0	X	Do.
CG-160.....	NAZT	130, 143	0	X	Do.
CG-161.....	NEBK	130, 143	0	X	Do.
CG-162.....	NEBT	130, 143	0	X	Do.
CG-163.....	NECC	130, 143	0	X	Do.
CG-164.....	NEOM	130, 143	0	X	Do.
CG-165.....	NEFM	130, 143	0	X	Do.
CG-166.....	NABN	130, 143	0	X	Do.
CG-167.....	NAJG	130, 143	0	X	Do.
CG-168.....	NALL	130, 143	0	X	Do.
CG-169.....	NANL	130, 143	0	X	Do.
CG-170.....	NAQQ	130, 143	0	X	Do.
CG-171.....	NAEF	130, 143	0	X	Do.
CG-172.....	NATN	130, 143	0	X	Do.
CG-173.....	NAVQ	130, 143	0	X	Do.
CG-174.....	NAXQ	130, 143	0	X	Do.
CG-175.....	NAZV	130, 143	0	X	Do.
CG-176.....	NEVL	130, 143	0	X	Do.
CG-177.....	NEBX	130, 143	0	X	Do.

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Government ship stations, alphabetically by names of stations—Continued

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
CG-179	NABQ	130, 143	0	X	U. S. Coast Guard.
CG-180	NAJM	130, 143	0	X	Do.
CG-181	NALN	130, 143	0	X	Do.
CG-182	NANM	130, 143	0	X	Do.
CG-183	NAQR	130, 143	0	X	Do.
CG-184	NAEK	130, 143	0	X	Do.
CG-185	NATP	130, 143	0	X	Do.
CG-186	NAVR	130, 143	0	X	Do.
CG-187	NAXR	130, 143	0	X	Do.
CG-188	NAZX	130, 143	0	X	Do.
CG-189	NFBM	130, 143	0	X	Do.
CG-190	NEBZ	130, 143	0	X	Do.
CG-191	NECG	130, 143	0	X	Do.
CG-192	NABR	130, 143	0	X	Do.
CG-193	NAJN	130, 143	0	X	Do.
CG-194	NALQ	130, 143	0	X	Do.
CG-195	NANN	130, 143	0	X	Do.
CG-196	NAQS	130, 143	0	X	Do.
CG-197	NASL	130, 143	0	X	Do.
CG-198	NATQ	130, 143	0	X	Do.
CG-199	NAXV	130, 143	0	X	Do.
CG-200	NEBB	130, 143	0	X	Do.
CG-201	NEBN	130, 143	0	X	Do.
CG-202	NEFQ	130, 143	0	X	Do.
CG-203	NACC	130, 143	0	X	Do.
CG-204	NAKB	130, 143	0	X	Do.
CG-205	NALV	130, 143	0	X	Do.
CG-206	NANP	130, 143	0	X	Do.
CG-207	NAQT	130, 143	0	X	Do.
CG-208	NASN	130, 143	0	X	Do.
CG-209	NATR	130, 143	0	X	Do.
CG-210	NAXX	130, 143	0	X	Do.
CG-211	NACF	130, 143	0	X	Do.
CG-212	NAKC	130, 143	0	X	Do.
CG-213	NALX	130, 143	0	X	Do.
CG-214	NANR	130, 143	0	X	Do.
CG-215	NAQX	130, 143	0	X	Do.
CG-216	NASP	130, 143	0	X	Do.
CG-217	NATV	130, 143	0	X	Do.
CG-218	NAVT	130, 143	0	X	Do.
CG-219	NAXZ	130, 143	0	X	Do.
CG-220	NEBC	130, 143	0	X	Do.
CG-221	NEBP	130, 143	0	X	Do.
CG-222	NACG	130, 143	0	X	Do.
CG-223	NAKF	130, 143	0	X	Do.
CG-224	NAMC	130, 143	0	X	Do.
CG-225	NANS	130, 143	0	X	Do.
CG-226	NAQZ	130, 143	0	X	Do.
CG-227	NASR	130, 143	0	X	Do.
CG-228	NATX	130, 143	0	X	Do.
CG-229	NATZ	130, 143	0	X	Do.
CG-230	NAVY	130, 143	0	X	Do.
CG-231	NAZB	130, 143	0	X	Do.
CG-232	NEBD	130, 143	0	X	Do.
CG-233	NEBQ	130, 143	0	X	Do.
CG-234	NECB	130, 143	0	X	Do.
CG-235	NECJ	130, 143	0	X	Do.
CG-236	NECN	130, 143	0	X	Do.
CG-237	NEFJ	130, 143	0	X	Do.
CG-238	NACJ	130, 143	0	X	Do.
CG-239	NAKO	130, 143	0	X	Do.
CG-240	NAMF	130, 143	0	X	Do.
CG-241	NAPB	130, 143	0	X	Do.
CG-242	NARB	130, 143	0	X	Do.
CG-243	NASS	130, 143	0	X	Do.
CG-244	NAVB	130, 143	0	X	Do.
CG-245	NAVX	130, 143	0	X	Do.
CG-246	NAZD	130, 143	0	X	Do.
CG-247	NACK	130, 143	0	X	Do.
CG-248	NAEJ	130, 143	0	X	Do.
CG-249	NAMJ	130, 143	0	X	Do.
CG-250	NARD	130, 143	0	X	Do.
CG-251	NAVC	130, 143	0	X	Do.
CG-252	NAVZ	130, 143	0	X	Do.
CG-253	NAZF	130, 143	0	X	Do.
CG-254	NADC	130, 143	0	X	Do.
CG-255	NAKM	130, 143	0	X	Do.
CG-256	NAMK	130, 143	0	X	Do.
CG-257	NAPC	130, 143	0	X	Do.
CG-258	NAPJ	130, 143	0	X	Do.
CG-259	NAST	130, 143	0	X	Do.

Government ship stations, alphabetically by names of stations—Continued

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
CG-260	NAVF	130, 143	O	X	U. S. Coast Guard.
CG-261	NAXB	130, 143	O	X	Do.
CG-262	NAZG	130, 143	O	X	Do.
CG-263	NEBF	130, 143	O	X	Do.
CG-264	NEBR	130, 143	O	X	Do.
CG-265	NADR	130, 143	O	X	Do.
CG-266	NAKQ	130, 143	O	X	Do.
CG-267	NAML	130, 143	O	X	Do.
CG-268	NAPD	130, 143	O	X	Do.
CG-269	NARK	130, 143	O	X	Do.
CG-270	NASZ	130, 143	O	X	Do.
CG-271	NAVG	130, 143	O	X	Do.
CG-272	NAXC	130, 143	O	X	Do.
CG-273	NARL	130, 143	O	X	Do.
CG-274	NAPF	130, 143	O	X	Do.
CG-275	NAMN	130, 143	O	X	Do.
CG-276	NAKR	130, 143	O	X	Do.
CG-277	NADS	130, 143	O	X	Do.
Miley ¹	WYAJ		O	X	U. S. Army.
Moccasin	NEFX	130, 143	O	X	U. S. Coast Guard.
Pickering	NIQF	130, 143	O	X	Do.
Wayanda	NUXB	130, 143	O	X	Do.

¹ System, Army v. t. telephone and telegraph.

NOTE.—All of the above-named vessels of the United States Coast Guard have a range of 50 miles, system, Western Electric v. t. telephone and telegraph.

Government land and ship stations, alphabetically by call signals

[b=ship station; e=land station]

Call signal	Name of station	Call signal	Name of station
NABD	Argos..... b	NALF	CG-135..... b
NABF	CG-105..... b	NALG	CG-144..... b
NABG	CG-111..... b	NALJ	CG-163..... b
NABJ	CG-123..... b	NALL	CG-168..... b
NABK	CG-133..... b	NALN	CG-181..... b
NABL	CG-142..... b	NALQ	CG-194..... b
NABM	CG-151..... b	NALV	CG-203..... b
NABN	CG-156..... b	NALW	CG-213..... b
NABQ	CG-179..... b	NAMC	CG-224..... b
NABR	CG-192..... b	NAMF	CG-240..... b
NACC	CG-203..... b	NAMJ	CG-249..... b
NACF	CG-211..... b	NAMK	CG-256..... b
NACG	CG-222..... b	NAML	CG-267..... b
NACJ	CG-238..... b	NAMN	CG-273..... b
NACK	CG-247..... b	NAMP	CG-102..... b
NADC	CG-254..... b	NAMQ	CG-108..... b
NADR	CG-265..... b	NAMS	CG-114..... b
NADS	CG-277..... b	NANF	CG-126..... b
NAGN	CG-100..... b	NANG	CG-136..... b
NAGP	CG-106..... b	NANJ	CG-145..... b
NAGQ	CG-112..... b	NANK	CG-154..... b
NAGR	CG-124..... b	NANL	CG-169..... b
NAGT	CG-134..... b	NANM	CG-182..... b
NAGZ	CG-143..... b	NANN	CG-195..... b
NAJF	CG-152..... b	NANP	CG-206..... b
NAJG	CG-167..... b	NANR	CG-214..... b
NAJM	CG-180..... b	NANS	CG-225..... b
NAJN	CG-193..... b	NAPB	CG-241..... b
NAKB	CG-204..... b	NAPC	CG-257..... b
NAKC	CG-212..... b	NAPD	CG-268..... b
NAKF	CG-223..... b	NAPF	CG-274..... b
NAKG	CG-239..... b	NAPP	CG-103..... b
NAKJ	CG-245..... b	NAPQ	CG-109..... b
NAKM	CG-255..... b	NAPX	CG-115..... b
NAKQ	CG-266..... b	NAPZ	CG-127..... b
NAKR	CG-276..... b	NAQB	CG-146..... b
NAKT	CG-101..... b	NAQP	CG-155..... b
NAKZ	CG-107..... b	NAQQ	CG-170..... b
NALB	CG-113..... b	NAQR	CG-183..... b
NALD	CG-126..... b	NAQS	CG-196..... b

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Government land and ship stations, alphabetically by call signals—Continued

Call signal	Name of station	Call signal	Name of station
NAQT	CG-207.....b	NAXL	CG-150.....b
NAQX	CG-213.....b	NAXP	CG-159.....b
NAQZ	CG-226.....b	NAXQ	CG-174.....b
NARB	CG-242.....b	NAXR	CG-187.....b
NARD	CG-250.....b	NAXV	CG-199.....b
NARJ	CG-258.....b	NAXX	CG-210.....b
NARK	CG-269.....b	NAXZ	CG-219.....b
NARL	CG-273.....b	NAZB	CG-231.....b
NARM	CG-104.....b	NAZD	CG-246.....b
NARN	CG-110.....b	NAZF	CG-253.....b
NARQ	CG-115.....b	NAZG	CG-263.....b
NART	CG-128.....b	NAZJ	CG-120.....b
NARV	CG-137.....b	NAZN	CG-132.....b
NARX	CG-147.....b	NAZR	CG-141.....b
NASB	CG-165.....b	NAZT	CG-160.....b
NASF	CG-171.....b	NAZV	CG-175.....b
NASK	CG-184.....b	NAZX	CG-188.....b
NASL	CG-197.....b	NEBB	CG-200.....b
NASN	CG-206.....b	NEBC	CG-220.....b
NASP	CG-215.....b	NEBD	CG-232.....b
NASR	CG-227.....b	NEBF	CG-263.....b
NASS	CG-243.....b	NEBG	CG-121.....b
NAST	CG-259.....b	NEBK	CG-161.....b
NASZ	CG-270.....b	NEBL	CG-176.....b
NATC	CG-117.....b	NEBM	CG-199.....b
NATD	CG-129.....b	NEBN	CG-201.....b
NATF	CG-138.....b	NEBP	CG-221.....b
NATK	CG-148.....b	NEBQ	CG-233.....b
NATL	CG-157.....b	NEBR	CG-264.....b
NATN	CG-172.....b	NEBS	CG-122.....b
NATP	CG-185.....b	NEBT	CG-162.....b
NATQ	CG-198.....b	NEBX	CG-177.....b
NATR	CG-209.....b	NEBZ	CG-190.....b
NATV	CG-217.....b	NECB	CG-234.....b
NATX	CG-228.....b	NECC	CG-163.....b
NATZ	CG-239.....b	NECF	CG-178.....b
NAVB	CG-244.....b	NECG	CG-191.....b
NAVC	CG-251.....b	NECJ	CG-235.....b
NAVF	CG-260.....b	NECM	CG-164.....b
NAVG	CG-271.....b	NECN	CG-236.....b
NAVJ	CG-118.....b	NEFJ	CG-237.....b
NAVK	CG-130.....b	NEFM	CG-165.....b
NAVL	CG-139.....b	NEFQ	CG-202.....b
NAVN	CG-149.....b	NEFX	Moccasin.....b
NAVP	CG-158.....b	NIQF	Pickering.....b
NAVQ	CG-173.....b	NUXB	Wayanda.....b
NAVR	CG-186.....b	WWEA	Navassa Island, West Indies (Windward Passage).....e
NAVT	CG-218.....b	WWEF	Cape Barichet, Alaska.....e
NAVV	CG-230.....b	WWEH	Scotch Cap, Alaska.....e
NAVX	CG-245.....b	WWEI	Cape Spencer, Alaska.....e
NAVZ	CG-252.....b	WWEJ	St. George Reef, Calif.....e
NAXB	CG-261.....b	WWEK	Crescent City, Calif.....e
NAXC	CG-272.....b	WWLH	Bureau of Lighthouses (general call for all stations).....b
NAXD	CG-119.....b	WYAJ	Miley.....b
NAXF	CG-131.....b		
NAXG	CG-140.....b		

Special land stations alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

Station	Call signal	Station controlled by—
Andover, Mass.....	1ZAD	Frederick Weyerhaeuser, 13 Bartlet Hill.
Dayton, Ohio.....	8ZAD	Allen E. Apple, 115 South Euclid Street.
Denver, Colo.....	9XA	General Electric Co., 1370 Krameria Street.
Golden, Colo.....	9XAI	Colorado School of Mines.
Houghton, Mich.....	9XAW	Michigan College of Mines.
New Brunswick, N. J.....	2XAM	R. C. A., 233 Broadway, New York, N. Y.
Schenectady, N. Y.....	2XQ	Union College.

Special land stations grouped by districts

Call signal	District and station	Call signal	District and station
1ZAD	First district: Andover, Mass.	9XA	Ninth district.
2XAM	Second district:	9XAI	Denver, Colo.
2XQ	New Brunswick, N. J.	9XAW	Golden, Colo.
8ZAD	Schenectady, N. Y.		Houghton, Mich.
	Eighth district: Dayton, Ohio.		

ALTERATIONS AND CORRECTIONS

COMMERCIAL LAND STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

- BEAUMONT, TEX.—System, Western Electric v. t. telegraph and composite, 1000.
- DEARBORN, MICH.—W. l., add 1875.
- DULUTH, MINN.—W. l., add 1764.
- EAST MORICHES, N. Y.—System, R. C. A. 1000 and composite arc.
- NEW YORK, N. Y. (KUVS).—System, R. C. A., 1000; w. l., 300, 600, 730; service, P.; hours, N.
- NEW YORK, N. Y. (WNY).—Strike out all particulars regarding spark apparatus.
- PHILADELPHIA, PA.—System, composite v. t. telegraph.
- ROCKY POINT, N. Y.—W. l., add 1760.
- SPRINGFIELD, OHIO.—Loc. (approximately) O 84° 02' 00'', N 40° 01' 00''; w. l., add 1934.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

- ADMIRAL WATSON.—System, add R. C. A. v. t. telephone; w. l., add 870.
- AQUIDABAN.—W. l., add 706; Dutee W. Flint Transpn. Co., owner of vessel.
- ATHENS.—W. l., add 706.
- BAREYTON.—Station operated and controlled by R. C. A. (U. S. L.).
- BACOL.—Mount Hope S. S. Co. owner of vessel.
- CHESTER VALLEY.—Station operated and controlled by R. C. A.
- CITY OF FLINT.—System, Navy—W. S. A. Co., 1000; w. l., add 706.
- COAHOMA COUNTY.—System, Navy—W. S. A. Co., 1000; w. l., 300, 600, 706.
- COMANCHE.—W. l., 300, 600, 706.
- CUPRUM.—W. l., add 706, 2100, 2400.
- DANNEDAIKE.—System, Navy—R. C. A., 1000; w. l., add 706.
- DEERFIELD.—W. l., add 450, 706; station operated and controlled by owner of vessel.
- DIX.—Name changed to Grace Dollar.
- DOCHET.—Station operated and controlled by R. C. A.
- EDENTON.—Station operated and controlled by R. C. A.
- EDGEHILL.—Station operated and controlled by R. C. A. (U. S. L.).
- EDWARD J. BERWIND.—Range, 150; system, Navy—Simon, 1000; w. l., 300, 600, 706; rates, Great Lakes service, 4 cents per word; station operated and controlled by owner of vessel.
- E. T. BEDFORD.—W. l., 300, 600, 706.
- EL CAPITAN (KKH).—Range, 200.
- ELDENA.—W. l., add 706.
- ELMSPORT.—Station operated and controlled by R. C. A.
- EL ORIENTE.—W. l., 300, 600, 706.
- EL SIGLO.—W. l., 300, 600, 706.
- EL SUD.—W. l., 300, 600, 706.
- GRIFFDU.—Station operated and controlled by I. W. T. Co.
- HENRY FORD II.—Range, 200; system, R. C. A. v. t. telephone and telegraph:

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- H. M. FLAGLER.—Station operated and controlled by I. W. T. Co.
 INVINCIBLE.—W. l., add 706.
 IPSWICH.—American Ship & Commerce Navigation Corp. owner of vessel.
 JEFFERSON (KOD).—Station operated and controlled by I. W. T. Co.
 JOHN D. ARCHBOLD.—System, R. C. A. v. t. telegraph and spark, 1000; w. l., add 1800, 2100, 2400.
 JOHN D. ROCKEFELLER.—Name changed to Malabar; station operated and controlled by I. W. T. Co.
 LAKE GADSDEN.—Lykes Brothers S. S. Co. owner of vessel.
 LAKE GALIEN.—Name changed to Hampton Roads.
 LIBERTY LAND.—W. l., add 706; station operated and controlled by I. W. T. Co. (U. S. L.).
 LORAIN.—Station operated and controlled by R. C. A. (U. S. L.).
 LORRAINE CROSS.—W. l., 300, 600, 706.
 LUZON (KPUH).—Name changed to Kaimloa; range, 200; system, Navy, 1000; w. l., 300, 600, 706; service, PG; hours, X; rates, 8 cents per word; Medford R. Kellum owner of vessel; station operated and controlled by owner of vessel.
 MANGORE.—Range, 300.
 MANHATTAN ISLAND.—Station operated and controlled by I. W. T. Co.
 MARACAIBO.—W. l., 300, 600, 706.
 MARS.—Station operated and controlled by R. C. A.
 MATINICOCK.—Station operated and controlled by I. W. T. Co.
 NATIAR.—W. l., 300, 600, 706, 1800, 2100, 2400.
 MISSOURI.—Michigan Transit Co. owner of vessel.
 MOUNT CARROLL.—American Ship & Commerce Navigation Corp. owner of vessel.
 MOUNT CLINTON.—American Ship & Commerce Navigation Corp. owner of vessel.
 MYSTIC.—American Ship & Commerce Navigation Corp. owner of vessel.
 NOVO.—Range, 200; system, Gray & Danielson, 1000; station operated and controlled by owner of vessel.
 O. T. WARING.—Station operated and controlled by I. W. T. Co.
 PACBT.—Station operated and controlled by S. O. R. S.
 PEQUONNOCK.—W. l., 300, 600, 706.
 PERE MARQUETTE 22.—Range, 150; system, R. C. A., 1000; w. l., 300, 600; rates, Great Lakes service, 6 cents per word; station operated and controlled by owner of vessel.
 P. W. SHERMAN.—Range, 150; system, Navy-Lowenstein, 1000; w. l., 300, 600, 706; station operated and controlled by owner of vessel.
 ROTAHIAN.—Grace S. S. Co. owner of vessel.
 SANTA EULALIA.—Station operated and controlled by I. W. T. Co.
 SANTA ISABEL.—Station operated and controlled by I. W. T. Co.
 SOMERSET.—W. l., add 706.
 SUHOLCO.—W. l., add 706.
 SUPENCO.—Submarine Boat Corp. owner of vessel.
 SURGE.—Range, 300; system, R. C. A., 1000; w. l., 300, 600, 706.
 TACHIRA.—Range, 300; system, R. C. A., 1000; w. l., 300, 600, 706; station operated and controlled by R. C. A.
 TOFA TOFA.—Station operated and controlled by S. O. R. S. (U. S. L.).
 WEST CELERON.—Station operated and controlled by S. O. R. S.
 WEST COHAS.—W. l., add 706.
 WEST HANCUVAR.—Station operated and controlled by S. O. R. S. (U. S. L.).
 WEST HARSHAW.—Station operated and controlled by S. O. R. S. (U. S. L.).
 WEST HIKA.—Station operated and controlled by I. W. T. Co. (U. S. L.).
 WEST KADER.—W. l., add 706; station operated and controlled by R. C. A.
 WEST KATAN.—Park C. Hill owner of vessel.
 WEST MADAKET.—Station operated and controlled by R. C. A.
 WESTMORELAND.—Station operated and controlled by R. C. A.
 WEST SELENE.—Station operated and controlled by R. C. A.
 WILLFANO.—W. l., add 450, 706.
 WILLHILO.—System, Navy-R. C. A., 1000.

WILLIAM PENN.—W. I., add 2100, 2400.

ZIRKEL.—Call signal changed to KFUI.

Strike out all particulars of the following-named vessels: Brindilla, City of Seattle, Corning, Hercules, J. H. Sheville, Nacooche, Philadelphia (KDA).

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KFEM, read Grace Dollar; KFUH, read Kaimloa; KOJT, read Hampton Roads; KTO, read Malabar; WREO, call signal changed to KFUI; strike out all particulars following the call signals, KDA, KFLM, KFP, KIH, KOCT, KTZ, WGA.

BROADCASTING STATIONS, BY CALL SIGNALS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924]

KFBE (San Luis Obispo, Calif.).—Power, 50.

KFFY (Alexandria, La.).—Station operated and controlled by Louisiana College.

KPGD (Chickasha, Okla.).—Power, 50; w. l., 252; frequency, kc. 1190; station operated and controlled by Oklahoma College for Women (J. A. Teeters).

KPJF (Oklahoma, Okla.).—Power, 225; w. l., 261; frequency, kc. 1150.

KFIX (Independence, Mo.).—W. l., 268; frequency, kc. 1120.

KFMT (Minneapolis, Minn.).—Power, 100.

KFPG (Los Angeles, Calif.).—Power, 10; station operated and controlled by Oliver S. Garretson, 5118 Maywood Avenue.

KFPW (Cartersville, Mo.).—Power, 20.

KPQE (Colorado Springs, Colo.).—Power, 10.

KPQR (Oklahoma, Okla.).—Power, 50.

KPQX (Seattle, Wash.).—Power, 500.

WABO (Rochester, N. Y.).—Station operated and controlled by Lake Avenue Baptist Church (Hickson Electric Co.).

WBBP (Petoskey, Mich.).—Power, 10 and 100.

WCAJ (University Place, Nebr.).—W. l., 280; frequency, kc. 1070.

WCAO (Baltimore, Md.).—W. l., 275; frequency, kc. 1090.

WCAX (Burlington, Vt.).—Power, 400.

WCBE (New Orleans, La.).—Station operated and controlled by Uhalt Brothers Radio Co.

WCBU (Arnold, Pa.).—Station operated and controlled by Arnold Wireless Supply Co. (F. J. Ambrose).

WCBX (Newark, N. J.).—Call signal changed to WNJ.

WDBI (St. Petersburg, Fla.).—Power, 20.

WEAF (New York, N. Y.).—Power, 500.

WGAQ (Shreveport, La.).—Address, 406 Market Street.

WKAQ (San Juan, P. R.).—Power, 500.

WLW (Cincinnati, Ohio).—Power, 1000.

WMAK (Lockport, N. Y.).—Station operated and controlled by Norton Laboratories.

WNAD (Norman, Okla.).—Power, 100; w. l., 254; frequency, kc. 1180.

WNAT (Philadelphia, Pa.).—Power, 100; w. l., 250; frequency, kc. 1200.

WOAR (Kenosha, Wis.).—Address, Burlington Road.

WRM (Urbana, Ill.).—Power, 500; w. l., 273; frequency, kc. 1100.

WSAP (New York, N. Y.).—Station operated and controlled by The City Temple (Seventh Day Adventist Church).

WSL (Utica, N. Y.).—Power, 100.

WTAZ (Lambertville, N. J.).—W. l., 261; frequency, kc. 1150.

Strike out all particulars of the following-named stations: KFHD (St. Joseph, Mo.); KFOQ (Galveston, Tex.); KFQS (Manitou, Colo.); KUY (El Monte, Calif.); WABE (Washington, D. C.); WCBN (Fort Benjamin Harrison, Ind.); WDBU (Skowhegan, Me.); WEAR (Baltimore, Md.); WFAB (Syracuse, N. Y.); WHAK (Clarksburg, W. Va.); WLAH (Syracuse, N. Y.);

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GOVERNMENT LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

NOTE.—The change in call letters of the light vessels and stations named below will become effective January 1, 1925.

AMBROSE CHANNEL LIGHT VESSEL.—Call signal changed to WWAQ.
 BALBOA, CANAL ZONE.—W. l., 6970 changed to 6663.
 BLUNTS REEF LIGHT VESSEL.—Call signal changed to WWBU.
 BOSTON LIGHT VESSEL (FS).—Call signal changed to WWAQ.
 BROWNSVILLE, TEX.—W. l., 5000 changed to 4997.
 BRUNSWICK LIGHT VESSEL.—Call signal changed to WWBG.
 CAPE CHARLES LIGHT VESSEL.—Call signal changed to WWAY.
 CAPE LOOKOUT SHOALS LIGHT VESSEL.—Call signal changed to WWBA.
 CAVITE, P. I.—W. l., 5280 changed to 5260.
 COLON, CANAL ZONE.—W. l., 1820 changed to 1817.
 COLUMBIA RIVER LIGHT VESSEL.—Call signal changed to WWBQ.
 CORNFIELD POINT LIGHT VESSEL.—Call signal changed to WWAM.
 DIAMOND SHOALS LIGHT VESSEL.—Call signal changed to WWAZ.
 DULUTH RANGE REAR LIGHT STATION, MINN.—Call signal changed to WWEB.
 FRENCH ISLAND SHOAL LIGHT VESSEL.—Call signal changed to WWAQ.
 FIRE ISLAND LIGHT VESSEL.—Call signal changed to WWAN.
 FIVE FATHOM BANK LIGHT VESSEL.—Call signal changed to WWAQ.
 FORT McARTHUR, TEX.—*Read*, Fort McArthur, Calif.
 FRYING PAN SHOALS LIGHT VESSEL.—Call signal changed to WWBE.
 GUANTANAMO, CUBA.—*Read*, Guantanamo Bay, Cuba; w. l., 1395 changed to 1397.
 HEALD BANK LIGHT VESSEL.—Call signal changed to WWBJ.
 KEY WEST, FLA. (REGULAR STATION, NAR).—W. l., 1462 changed to 1463.
 KEY WEST, FLA. (WUBV).—Loc. (approximately) O 81° 48' 00", N 24° 33' 00".
 MARQUETTE LIGHT STATION, MICH.—Call signal changed to WWEB.
 NANTUCKET SHOALS LIGHT VESSEL.—Call signal changed to WWAH.
 NEW ORLEANS, LA.—W. l., 2605 changed to 2607.
 NEWPORT, R. I.—W. l., 2605 changed to 2607.
 NORTH EAST END LIGHT VESSEL.—Call signal changed to WWAQ.
 POLLOCK RIP BLUE LIGHT VESSEL.—Call signal changed to WWAG.
 PUGET SOUND, WASH.—W. l., 2500 changed to 2499.
 RELIEF LIGHT VESSEL No. 72.—Call signal changed to WWBB.
 RELIEF LIGHT VESSEL No. 76.—Call signal changed to WWBW.
 RELIEF LIGHT VESSEL No. 78.—Call signal changed to WWAS.
 RELIEF LIGHT VESSEL No. 85.—Call signal changed to WWAQ.
 RELIEF LIGHT VESSEL No. 90.—Strike out all particulars.
 RELIEF LIGHT VESSEL No. 92.—Call signal changed to WWBR.
 RELIEF LIGHT VESSEL No. 109.—Call signal changed to WWBH.
 SAN DIEGO, CALIF.—W. l., 1540 changed to 1538.
 SAN FRANCISCO, CALIF. (NPG).—W. l., 4835 changed to 4836 and 7240 changed to 7006.
 SAN FRANCISCO, CALIF., LIGHT VESSEL.—Call signal changed to WWBV.
 SAN JUAN, P. R.—W. l., 2852 changed to 2855.
 STANNARD ROCK LIGHT STATION, MICH.—Call signal changed to WWED.
 SUPERIOR ENTRY LIGHT STATION, WIS.—Call signal changed to WVEC.
 SWIFTSURE BANK LIGHT VESSEL.—Call signal changed to WWBO.
 UMATILLA REEF LIGHT VESSEL.—Call signal changed to WWBP.
 WASHINGTON, D. C. (Arlington, NAA).—W. l., 5950 changed to 5949.
 WINTER QUARTER SHOALS LIGHT VESSEL.—Call signal changed to WWAX.

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

NOTE.—The change in call letters of the vessels named below owned by the Bureau of Lighthouses will become effective January 1, 1925.

AMARANTH.—Call signal changed to WWDG.
 ANEMONE.—Call signal changed to WWCD.
 AZALEA.—Call signal changed to WWCE.
 CERES.—Call signal changed to WWDQ.

CYPRESS.—Call signal changed to WWCT.
 FERN.—Call signal changed to WWDN.
 HEATHER.—Call signal changed to WWDQ.
 HIBISCUS.—Call signal changed to WWCA.
 HYACINTH.—Call signal changed to WWDK.
 IVY.—Call signal changed to WWCW.
 KUKUI.—Call signal changed to WWDX.
 LARKSPAR.—Call signal changed to WWCI.
 LOTUS.—Call signal changed to WWCF.
 MANZANITA.—Call signal changed to WWDR.
 MADRONO.—Call signal changed to WWDU.
 MAGNOLIA.—Call signal changed to WWCY.
 MANGROVE.—Call signal changed to WWCU.
 MAPLE.—Call signal changed to WWCN.
 MARIGOLD.—Call signal changed to WWDH.
 MAYFLOWER.—Call signal changed to WWCP.
 ORCHID.—Call signal changed to WWCO.
 ROSE.—Call signal changed to WWDS.
 SEQUOIA.—Call signal changed to WWDV.
 SPEEDWELL.—Call signal changed to WWCQ.
 SPRUCE.—Call signal changed to WWCJ.
 SUMAC.—Call signal changed to WWDL.
 SUNFLOWER.—Call signal changed to WWCZ.
 TULIP.—Call signal changed to WWCH.
 ZIZANIA.—Name changed to Ilex; call signal changed to WWCB.
 Strike out all particulars of the following-named vessels: Arbutus, Lilac.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

NAW, read Guantanamo Bay, Cuba; NUMC (Lamson) correct call signal, NUNC; NZZ, read Ilex; call signal changed to WWCB; WICK, read Fort McArthur, Calif.; strike out all particulars following the call signals NAGM, NITS, NUCF.

The following call signals have been changed:

From—	To—	From—	To—	From—	To—	From—	To—
NABP.....	WWCD	NAJS.....	WWAW	NAQV.....	WWDH	NLS.....	WWAN
NABT.....	WWBO	NAJT.....	WWBQ	NARS.....	WWAQ	NLT.....	WWCO
NABV.....	WWBA	NAJV.....	WWAY	NASC.....	WWAM	NLU.....	WWDR
NABX.....	WWBG	NAKL.....	WWDQ	NASD.....	WWDS	NLV.....	WWDV
NACD.....	WWBW	NAKN.....	WWCA	NASG.....	WWDL	NLW.....	WWDO
NACT.....	WWBC	NAKP.....	WWBB	NITQ.....	WWAZ	NUFM.....	WWCZ
NACV.....	WWBP	NAKS.....	WWBV	NITR.....	WWAS	NXU.....	WWCE
NADB.....	WWBR	NAKV.....	WWCW	NIXD.....	WWCJ	NXX.....	WWCH
NADK.....	WWAP	NALS.....	WWAO	NIZF.....	WWCQ	NZQ.....	WWCP
NADT.....	WWAX	NAMB.....	WWCI	NLA.....	WWAH	WWAB.....	WWBH
NADV.....	WWAR	NAMV.....	WWDU	NLC.....	WWBE	WWAH.....	WWEI
NAFT.....	WWAG	NANV.....	WWCU	NLF.....	WWDX	WWAL.....	WWEJ
NAFV.....	WWDN	NAPS.....	WWCY	NLL.....	WWDC	WWAK.....	WWEK
NAGV.....	WWDK	NAPT.....	WWDG	NLM.....	WWCT	WWAL.....	WWEK
NAJJ.....	WWAF	NAPV.....	WWCN	NLP.....	WWBJ	WWBA.....	WWCF

SPECIAL LAND STATIONS, BY NAMES OF STATIONS

[Abbreviations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924]

BIRMINGHAM, ALA. (5ZAZ).—Address, 1218 Eleventh Court, East.

LANSING, MICH. (8ZR).—Address, 325, North Pennsylvania Avenue.

LOS ANGELES, CALIF. (6XBX).—Address, 2901 Keniston Avenue.

SAN FRANCISCO, CALIF. (6XX).—Address, 28 Geary Street.

Strike out all particulars of the following-named stations, Chicago, Ill. (9XN); Cleveland, Ohio (8XBN); Dover, Ohio (8XBF); Mayville, N. Y. (8ZAD); Morgantown, W. Va. (8XAA); New York, N. Y. (2XBG); Portland, Ore. (7XF); Rogers City, Mich. (8XBJ); Rye, N. Y. (2XH); Toledo, Ohio (8XBS);

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MISCELLANEOUS

COMPASS STATION ESTABLISHED IN GULF OF ADEN

A compass station has been established at Cape Guardafui, Gulf of Aden, Italian Somaliland, located in $11^{\circ} 44' 12''$ N., $51^{\circ} 13' 24''$ E., call signal ISK. The station keeps watch from sunset to sunrise, every day except during the first five minutes of each hour, and will render service as a wireless direction finding station on request during this period. For the first two minutes of each hour the station sends out its own call signal (ISK). The normal wave length used is 600 meters, but bearings may be obtained on other wave lengths up to 3,000 meters on demand. Range, 150 miles.

ADDITIONAL RADIO FOG SIGNAL SERVICE FOR NANTUCKET SHOALS LIGHT VESSEL, MASS.

The radio fog signal on the Nantucket Shoals Light Vessel will be operated every day and night during the second 15 minutes of each hour in clear weather for experimental and test purposes for a period of six months beginning about October 29, 1924. During foggy weather the radio fog signal will be operated continuously except during daily listening-in periods from 10 to 10.15 a. m. and from 4 to 4.15 p. m., seventy-fifth meridian time. Vessels are requested to forward reports to the Commissioner of Lighthouses, Washington, D. C., or to the superintendent of lighthouses, Boston, Mass., as to the effectiveness of this additional service.

LARGE STATION ESTABLISHED IN LITHUANIA

It has been reported to the bureau that the Lithuanian Government is erecting a large station on one of the hills which surround Kovno, Lithuania. It is expected that the station will be ready for operation within the next few months. The antenna will be a fairly large one strung from two towers which will be 492 feet in height. A radio service with all Europe for Lithuania is expected to be the result of this station.

BUREAU OF LIGHTHOUSES GENERAL CALL

Call letters WWLH have been assigned as a general call signal for all radio stations of the Bureau of Lighthouses. This signal is to be used only when all radio stations of the Bureau of Lighthouses or a group of these stations are called. When only one station is to be communicated with, the call letters of that station must be used.

IDENTIFICATION CARD LOST

During the week of September 22, last, George E. Sterling, assistant radio inspector, Baltimore office, lost his identification card, and up to the present time it has not been recovered. Should anyone find this card the bureau would appreciate its return.

CHANGES IN GERMAN COMPASS STATIONS

The radiocompass station at Stolpmunde, located in (approximately) $54^{\circ} 34' 40''$ N., $16^{\circ} 50' 06''$ E., has been discontinued.

Wilhelmshaven third entrance compass control station has ceased operating as the control station for German compass stations in the North Sea. This station was located in (approximately) $53^{\circ} 31' N.$, $08^{\circ} 10' E.$, call letters KAN.

Nordholz, located in $53^{\circ} 46' 51'' N.$, $08^{\circ} 38' 42'' E.$, call letters KBN, has been established as the compass control station in place of Wilhelmshaven, and German compass stations in the North Sea now operate under its direction. Ships requiring simultaneous bearing should first call Nordholz control station in the usual manner. The procedure to be followed in obtaining bearings, except for the change in the control station and the call signal, is the same as heretofore.

HYDROGRAPHIC INFORMATION BY DULUTH (MINN.) STATION

The radio station of the Inter City Radio Telegraph Co., at Duluth, Minn., call signal WME, will broadcast hydrographic information received by the branch hydrographic office at Duluth at 10 a. m. and 4 p. m., ninetieth meridian time, on 600 meters. This station will receive messages from vessels regarding hydrographic information free of charge. All messages should be addressed "Government Hydro, Duluth." A watch is maintained at this station from 7 a. m. to 7 p. m. daily.—*Hydrograph Bulletin, October 8, 1924.*

RADIO FOG SIGNAL ESTABLISHED IN GERMANY

A radio fog signal has been established on Borkum Riff Light Vessel, located in (approximately) 53° 46' N., 06° 04' E., to operate experimentally in conjunction with the submarine bell on the vessel. During fog both signals will be transmitted simultaneously, which will enable a ship fitted with radio direction-finding apparatus to determine her bearing, and by noting the time elapsed between the radio transmission and the coincidence of the two signals her distance from the light vessel can also be calculated.

REGULATION OF USE OF WIRELESS BY FOREIGN WAR VESSELS IN SOUTH AFRICAN WATERS

(a) Foreign men of war and service aircraft accompanying them lying in a naval port, or in any harbor which is close to a naval port, shall obtain permission from the senior naval officer at the naval port to use their wireless telegraphy or telephony apparatus, stating system, wave lengths, and times of transmission proposed.

(b) Foreign men of war and service aircraft accompanying them lying in any harbor which is not close to a naval port shall conform to the following regulations:

I. Transmission on 600 meters is forbidden, except for the purpose of making or answering signals of distress.

II. Interference with naval, army, or air-force signalling, or any fixed shore station must be avoided.

III. Transmission must be discontinued on request from (1) any naval authority, (2) the port authorities, (3) any fixed shore station.

IV. Protracted signalling using apparatus transmitting other than pure continuous waves must be avoided.

V. If there is a British or Dominion fleet or warship lying in the harbor, the senior naval officer should be consulted.

The above regulations were promulgated by the Department of Posts and Telegraphs of the Union of South Africa, under date of September 3, 1924.

Details of time, weather, press, and hydrographic bulletin schedules transmitted by naval radio stations

Name of station	Call signal	Wave length	Type of emission	Time (75th meridian)	Nature of service
Annapolis, Md.....	NSS	17,150	arc.....	1155 1700	Time. Ice report.
Arlington, Va.....	NAA	5,969 2,655	arc..... v. t. c. w..	2155 1030 1155	Time, press. Weather, hydrographic. Time, storm, warnings.
Balboa, Canal Zone.....	NBA	6,663	arc.....	2155 0455	Time, weather, hydrographic, press. Time, press, hydrographic.
Boston, Mass.....	NAD	1,363	v. t. c. w..	1255 1100 1155	Time, hydrographic. Weather, hydrographic. Time, if Arlington fails.
Brownsville, Tex.....	NAY	2,255	spark.....	1700 0000	Weather, hydrographic. Weather.
				1200 1900 1900	Do. Do. Do.
		4,997	arc.....	0000 1200 1900	Do. Do. Do.
Cavite, P. I.....	NPO	5,260do....	0900 0855 1400 2155	Press. Time, weather, hydrographic. Press. Time, weather, hydrographic.
		2,702	spark.....	0855	Do.

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Details of time, weather, press, and hydrographic bulletin schedules transmitted by naval radio stations—Continued

Name of station	Call signal	Wave length	Type of emission	Time (75th meridian)	Nature of service
Charleston, S. C.....	NAO	2, 600	spark	1030 1155 1800	Weather, hydrographic. Time, if Arlington fails. Weather, hydrographic.
Colon, Canal Zone.....	NAX	1, 817	.....do.....	0455 1255	Time, hydrographic, press. Time, hydrographic.
Dutch Harbor, Alaska...	NPR	2, 255	.....do.....	0630 1230	Weather. Do.
Eureka, Calif.....	NPW	2, 205	.....do.....	1200 1455 1700 2030	Do. Do. Time. Weather.
Galveston, Tex.....	NKB	1, 817	.....do.....	1130 1800	Weather, hydrographic. Do. ¹
Great Lakes, Ill.....	NAJ	4, 685	arc.....	1045 1700	Hydrographic. Do.
		1, 590	spark.....	1045 1100 1155 1715 2300	Weather. Hydrographic. Time. Hydrographic. Weather.
Guantanamo Bay, Cuba.	NAW	1, 597	.....do.....		Hurricane warnings as issued and repeated every four hours.
Honolulu, Hawaii.....	NPM	2, 255	.....do.....	0130 1330 1730 1855	Weather, hydrographic. Do. Do. Time.
Jupiter, Fla.....	NAQ	12, 090 1, 305	arc..... spark.....	1855 1130	Do. Weather.
Key West, Fla.....	NAR	1, 433	v. t. c. w..	1800 1155 1200 2300 2300	Do. ¹ Time. Weather. Do. Do.
New Orleans, La.....	NAT	5, 700 2, 607	arc..... spark.....	1100 1155 1700 1030	Weather, hydrographic. Time. Weather, hydrographic. Weather.
Newport, R. I.....	NAP	2, 607	.....do.....	1155	Time, if Arlington fails.
New York, N. Y.....	NAH	1, 540	v. t. c. w..	1030 1165 1700	Weather, hydrographic. Time, if Arlington fails. Weather, hydrographic.
Norfolk, Va.....	NAM	1, 350	spark.....	0830 1045 1165 1600 2000	Weather. Weather, hydrographic. Time, if Arlington fails. Weather, hydrographic. Weather.
North Head, Wash.....	NPE	1, 395 2, 720	v. t. c. w.. spark.....	2030 0630 1230 1455 1630 2030 2330	Do. ¹ Do. Do. Time. Weather, hydrographic. Weather. Weather, hydrographic.
Pensacola, Fla.....	NAS	1, 330	v. t. c. w..	1145 1800	Weather. Do. ¹
Philadelphia, Pa.....	NAI	1, 300	.....do.....	1045 1700	Weather, hydrographic. Do.
Port au Prince, Haiti.....	NSC	2, 255	spark.....		Hurricane warnings as issued and repeated every four hours.
Portland, Me.....	NAB	1, 600	.....do.....	1200 2000	Weather. Do.
Puget Sound, Wash.....	NPC	2, 400	v. t. c. w..	0800 1200 1600 2000 2300 2300	Do. Weather, hydrographic. Do. Weather. Hydrographic. Weather.

Details of time, weather, press, and hydrographic bulletin schedules transmitted by naval radio stations—Continued

Name of station	Call signal	Wave length	Type of emission	Time (75th meridian)	Nature of service	
San Diego, Calif.....	NPL	9,801	arc.....	0500	Press.	
				1455	Time.	
		1,538	v. t. c. w..	0100	Hurricane warnings (also at other times upon receipt).	
				1100	Do.	
				1130	Weather.	
				1400	Hurricane warnings (also at other times upon receipt).	
				1455	Time.	
San Francisco, Calif.....	NPG	4,836	arc.....	1700	Weather.	
				2300	Do.	
				0055	Time.	
		7,906	do.....	0415	Press.	
				1455	Time.	
				2230	Weather, hydrographic.	
			1,330	v. t. c. w..	1250	Do.
					0055	Time.
				0100	Weather, hydrographic.	
				0300	Bonita Channel weather.	
				0415	Press.	
				0700	Bonita Channel weather.	
				1100	Do.	
	1455	Time.				
	1500	Bonita Channel weather.				
San Juan, P. R.....	NAU	4,850	arc.....	1900	Do.	
			spark.....	2230	Weather, hydrographic.	
Savannah, Ga.....	NEV	1,808	do.....	2300	Bonita Channel weather.	
				1945	Weather.	
St. Augustine, Fla.....	NAP	2,100	do.....	2100	Do. ¹	
St. Croix, Virgin Islands.	NNI	450	do.....	1100	Do.	
				1800	Do. ¹	
				1130	Do.	
St. Thomas, Virgin Islands.	NBB	1,685	do.....		Hurricane warnings as issued and repeated every four hours.	
Tutuila, Samoa.....	NPU	2,255	do.....	0230	Do.	
				1430	Hydrographic.	
				1830	Do.	
				2230	Do.	

¹ Hurricane warnings are issued and repeated every two hours.

NOTE.—All naval time signals are made in a standard manner, which is as follows: The signals begins 5 minutes before the hour to be marked and consists of a dot for each second. The dot for the twenty-ninth second of each minute is omitted, and also the last 5 seconds of the first 4 minutes. The last 10 seconds of the fifth minute are omitted, this silence being followed by a 1-second dash, the beginning of which marks the time signal.

LOST COMMERCIAL RADIO OPERATORS' LICENSES

Printed below is a list of radio operators' licenses which have been reported to this bureau as having been lost. Should any of them be found, they should be returned to the bureau for cancellation. Inspectors and others concerned should see that lost licenses are not being used by unauthorized persons.

Name	Class	Number	Date issued	Port issued
Adams, James L.....	First.....	1459	May 26, 1922	Norfolk.
Ashbrook, Roy B.....	Experimental and instructional.	8107	June 14, 1922	San Francisco.
Boeckh, Julius W.....	First.....	21520	Dec. 5, 1919	Washington, D. C.
Bombe, Albert A.....	do.....	10058	Jan. 8, 1924	New York.
Bradford, David.....	do.....	3929	July 21, 1922	Do.
Bradner, Paul K.....	do.....	4048	Nov. 1, 1922	Do.
Buell, C. R.....	do.....	7254	Oct. 17, 1922	San Francisco.
Cheetham, Harry R.....	do.....	467	July 13, 1923	Boston.
Clayton, John C.....	do.....	9268	Apr. 2, 1924	New Orleans.
Dupre, J.....	do.....	10205	Oct. 24, 1923	Atlanta.
Eby, Harold D.....	do.....	3924	Oct. 15, 1923	Chicago.
Fleming, H. A.....	do.....	10613	Mar. 8, 1924	Seattle.

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Name	Class	Number	Date issued	Port issued
Gellarup, Daniel W.....	Second	1556	June 4, 1923	Chicago.
Gross, Malvern J.....	First	9253	Mar. 25, 1924	New Orleans.
Harvey, Harry C.....	do	2906	Nov. 2, 1922	Chicago.
Henry, Arden F.....	do	2960	Feb. 6, 1923	Do.
Hebbett, James Orin.....	do	9227	Mar. 11, 1924	New Orleans.
Horton, Jas.....	do	3496	Sept. 6, 1923	San Francisco.
Jacobson, C. W.....	do	4575	Feb. 16, 1923	Seattle.
Johnson, C. Charles.....	do	4102	Dec. 11, 1922	New York.
Kaulback, Harold D.....	do	836	Sept. 7, 1922	Boston.
Keller, Jesse.....	Second	2813	Dec. 16, 1922	Baltimore.
Lottfield, Hamlet.....	First	7108	Nov. 16, 1923	San Francisco.
Mathewson, E. L.....	do	7227	Sept. 21, 1922	Do.
Miller, Irwin.....	do	9040	Nov. 12, 1923	Boston.
Mource, Wayne W.....	do	3327	June 9, 1923	San Francisco.
Nelson, Paul E.....	do	3984	June 1, 1922	New York.
Peckham, H. K.....	do	10820	May 31, 1924	Do.
Phillips, Charles Walter.....	do	1748	Mar. 28, 1922	New Orleans.
Poy, Henry Jus.....	do	3312	May 25, 1923	San Francisco.
Qulek, Robert H.....	do	7144	Dec. 21, 1922	Do.
Scott, Clarence J.....	do	14682	Nov. 6, 1917	Chicago.
Semrad, Arthur L.....	do	3273	Jan. 19, 1922	San Francisco.
Simmons, jr., Guy.....	do	9279	Apr. 10, 1924	New Orleans.
Simon, Samuel.....	do	6945	Jan. 12, 1922	San Francisco.
Smith, Raymond L.....	do	3095	Oct. 20, 1922	Chicago.
Stanton, William J.....	do	9048	Dec. 6, 1922	Boston.
Stoff, Karl A.....	do	9254	Feb. 28, 1924	New Orleans.
Sullivan, James Roy.....	do	3489	Sept. 4, 1922	San Francisco.
Taylor, Raymond L.....	do	10032	Dec. 20, 1922	New York.
Valenzuela, Wm. J.....	Second	818	Feb. 16, 1922	New Orleans.

SANDHAMN (FINLAND) RADIO STATION TRANSMITS ICE REPORTS

Sandhamn Radio Station (OJA) transmits on a wave length of 5,200 meters, at about 16.58 Finnish time (14.58 Greenwich mean time), ice signals and the effects of ice conditions on navigation. Transmission, according to the following code, follows the weather bulletin and the report concerns the conditions on the morning of the day the message is sent:

Ice Finland AA ininin ininin BB ininin ininin CC ininin ininin DD ininin ininin EE ininin ininin FF ininin ininin GG ininin ininin HH ininin ininin II ininin ininin JJ ininin ininin.

The letter "I" replaced by either a number (0-9) or the letter "x" indicates ice conditions, and the letter "n" replaced by either a number (0-9) or the letter "x" indicates navigational conditions, have the following signification:

I=Ice conditions	n=Effect on navigation
0—Clear of ice.....	0—Navigation unobstructed.
1—Light ice.....	1—Navigation unobstructed for steamer; difficult for sailing vessels.
2—Close sludge.....	2—Navigation difficult for small steamers; dangerous for sailing vessels.
3—Fixed sheet of ice.....	3—Navigation only possible for large steamer without ice breaker.
4—Drift ice.....	4—Navigation only possible for steamers strengthened for ice, without help of ice breaker.
5—Packed ice.....	5—Navigational channel kept open.
6—Close packed drift ice.....	6—Navigational channel kept open with the assistance of ice breaker.
7—Rift in the ice parallel to the coast.....	7—Navigation interrupted.
8—Screwed ice.....	8—Sea mist, fog or snow.
9—Coarse ice masses.....	9—Navigation closed.
x—No information	x—No information.

The double letters AA, BB, CC, DD, EE, FF, GG, HH, II, and JJ divide the message into ten main groups, each one consisting of two subgroups with three pairs of the letters "in" in each. The letters "in" indicate the conditions in a distinct area or fairway, as follows:

Main group	Subgroup	Pair of letters	Fairway or area	
AA	I	First	Bjorkosund.	
		Second	Verkkomotala vicinity.	
	II	Third	The sea westward of Bjorko.	
		First	Fairway Viborg-Trangsund.	
BB	I	Second	Fairway Trangsund-Rodhall.	
		Third	Off Rodhall.	
	II	First	Kotks Harbor and neighborhood.	
		Second	Off Ranko.	
	CC	I	Third	Off Lappi.
			First	The sea westward of Hogland.
II		Second	The sea southward of Hogland.	
		Third	The sea westward of Hogland.	
DD		I	First	Helsingfors southern harbor and neighborhood
			Second	Off Sveaborg.
	II	Third	Off Graskarsbadarna.	
		First	At Porkala.	
EE	I	Second	Off Kallbadan.	
		Third	Barosundsjarven.	
	II	First	The sea off Jusaro.	
		Second	Hango Harbor and neighborhood.	
	FF	I	Third	Vicinity of Russaro.
			First	The outer sea off Russaro.
II		Second	Hango western fjard.	
		Third	The southern part of Gulikrons Fjard.	
GG		I	First	Aho Harbor to Stora Becken.
			Second	Erstan.
	II	Third	Vidskar Fjard.	
		First	Vicinity of Uto.	
HH	I	Second	The outer sea off Uto.	
		Third	Skiftet.	
	II	First	At Ledstund.	
		Second	Eastward of Nyhamn.	
	II	I	Third	The sea off Kobbaklintar.
			First	Vicinity of Mariehamn.
II		Second	Westward of Eckerö.	
		Third	Toward Salakar.	
JJ		I	First	Vicinity of Raumo.
			Second	The sea off Raumo.
	II	Third	The neighborhood of Redandersgrund	
		First	Mantyluoto Harbor and vicinity.	
II	I	Second	Off Kallö and Rafo.	
		Third	The outer sea off Rafo.	
	II	First	Vasklot Harbor and neighborhood	
		Second	Between Storhasten and Ensten.	
	II	I	Third	Ronnskar Fairway.
			First	Norrskar Fairway.
II		Second	Jakobstad Harbor.	
		Third	Ado Roadstead.	
II	I	First	The sea off Masakar.	
		Second	Yxpila Harbor.	
	II	Third	Inner sea at Tankar.	
		First	The outer sea off Tankar.	
	II	I	Second	Brähestad Roadstead.
			Third	Toward Nahkiainen.
II		First	The sea northward of Isokraseli.	
		Second	The outer harbors of Ulesberg.	
II	Third	The channel to the harbors of Ulesberg.		
	First	The sea off Marjanemi Light.		
	Second	The harbors of Kemi		

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The message may be abbreviated as follows:

(a) If the ice and navigational conditions of all the areas of one main group are the same, the message gives after the pairs of letters (AA, BB, etc.) only one pair of symbols "in"; for example, AA 34.

(b) If the ice and navigational conditions of all the areas of several successive main groups are the same, only the pairs of letters followed by only one pair of symbols will be issued; for example, BBCCDD 00.

(c) When there is no need to issue warnings for a whole main group, this group will be omitted.

(d) If the conditions of a whole main group are unknown, this group will not be omitted, but treated as under (a); that is, FF xx.

Approximate position of Sandhamn Radio Station, lat. 60° 08' N., long. 25° 03' E.—*Underrättelser for Sjöfarande 26 (372), Helsingfors, September 20, 1924.*

NOTE.—Hango Radio Station (OJD) will repeat, on request, on a 600-meter wave, the ice report broadcast by the Sandhamn Station. The Hango Station will answer also, on the above wave length, questions regarding the code of the ice report.

FOREIGN RADIO BROADCASTING STATIONS

The following list of broadcasting stations in foreign countries and noncontiguous territories of the United States is compiled from the information in the files of the electrical division. It includes only those stations which broadcast programs for popular reception, though many of the stations included do so only as a minor part of their business.

Location	Operated by—	Call	Wave length	Power
ALASKA				
Anchorage.....	Chevin Supply Co.....	KFQD.....	Meters 280	Watts 100
Juneau.....	Alaska Electric Light & Power Co.....	KFIU.....	226	10
Kuskok Bay.....	Walter Heinrich.....	KNT.....	263	100
ARGENTINA				
Buenos Aires.....	Radio Sud America.....	LOZ.....	{ 375	500
Do.....	Radio Cultura.....	LOX.....	384	
Do.....	Francisco J. Brusa.....	TCR.....	{ 375	100
Do.....	Francisco J. Brusa.....	TCR.....	325	
Do.....	Cia. Radio Argentina ¹	LOR.....	{ 300	500
Do.....	Cia. Radio Argentina ¹	LOR.....	350	
Do.....	Francisco J. Brusa.....	LOV.....	{ 410	500
Do.....	Francisco J. Brusa.....	LOV.....	400	
Do.....	do.....	B-1.....		
Do.....	Grand Splendid Theater.....	LOW.....		
Do.....	Radio Nacional.....	LOY.....		
Tucuman.....	No data.....			
Rosario.....	do.....			
AUSTRALIA				
Sydney.....	Farmer & Co. (Ltd.).....	2CF.....	1,120	1,000
Do.....	Broadcastings Sydney (Ltd.).....	2BL.....	380	500
Melbourne.....	Associated Radio Co. (Ltd.).....	2AB.....	480	250
Adelaide.....	South Australia Broadcastings (Ltd.).....		480	
Perth.....	West Australian Farmers (Ltd.).....	8WF.....	1,250	500
AUSTRIA				
Vienna.....	Technologische Gewerbemuseum.....	"Radio Wien".....	700	100
Do.....	Radio Hekaphon.....	OHW.....	600	
BELGIUM				
Brussels.....	No data.....	SRB.....	405	
Do.....	do.....	BAV.....	{ 900	
Do.....	Radio Electrique.....		1,100	
			265	
BRAZIL				
Rio de Janeiro.....	Praia Vermelha.....	No data.....		500
Do.....	Marcani (Radio Sociedade do Rio de Janeiro). Radio Bondelrantes.....	No data.....		6,000
Sao Paulo.....	National Telegraph Service.....	No data.....		10,000
Belle Horizantes.....	Radio Sociedade do Bahia (projected station). Radio Sociedade do Bahia (projected station).	No data.....		500

¹ Now installing equipment for 1,000 watts.

Location	Operated by—	Call	Wave length	Power
CANADA				
			<i>Meters</i>	<i>Watts</i>
Nova Scotia:				
Halifax.....	Eastern Telephone & Telegraph Co.....	CFCS.....	410	
Do.....	Marconi.....	CFCE.....	440	
Do.....	Radio Engineers.....	CHAC.....	400	
New Brunswick:				
St. John.....	Maritime Radio Corp.....	CJCT.....	400	
Do.....	Jones Electric Co.....	CKCR.....	400	
Province of Quebec:				
Montreal.....	Marconi.....	CFCF.....	440	
Do.....	Northern Electric Co.....	CHYC.....	410	
Do.....	Depuis Freres.....	CJBC.....	420	
Do.....	La Presse Publishing Co.....	CKAC.....	430	
Do.....	Bell Telephone Co.....	CKCS.....		
Do.....	University of Montreal.....	CFUC.....	400	
Do.....	Northern Electric Co.....	CHYC.....	410	
Quebec.....	La Cle de L'Evancement.....	CFCJ.....	410	
Do.....	Canadian Wireless and Electric Co.....	CHCD.....	410	
Bellvue.....	Semmelbank-Dickson (Ltd.).....	CFCQ.....	450	
Ontario:				
Fort Frances.....	International Radio Development Co.....	CFPO.....	400	
Hamilton.....	Wentworth Radio Supply Co.....	CKOC.....	410	
Kitchener.....	The News-Record (Ltd.).....	CJOF.....	420	
Ottawa.....	J. R. Booth, Jr.....	CHXC.....	400	
Iroquois Falls.....	Abitibi Power & Paper Co.....	CFCH.....	400	
Sudbury.....	Laurentide Air Service.....	CFCR.....	410	
Kingston.....	Queens University.....	CFRC.....	450	
London.....	Radio Shop.....	CFOW.....	430	
Do.....	Free Press Printing Co.....	CJGC.....	430	
Do.....	Radio Supply Co. (Ltd.).....	CKQC.....	410	
Do.....	London Radio Shoppe.....	CHCO(?).....	410	
Toronto.....	Canadian Independent Telephone Co.....	CKCE.....	460	
Do.....	Star Publishing & Printing Co.....	CFCA.....	400	
Do.....	T. Eaton Co.....	CJCD.....	410	
Do.....	Marconi.....	CHCB.....	440	
Do.....	Metropolitan Motors.....	CHVC.....	410	
Do.....	Simons Agnew & Co.....	CJCN.....	410	
Do.....	Evening Telegram.....	CJSC.....	430	
Do.....	Bell Telephone Co.....	CFTC.....		
Manitoba:				
Winnipeg.....	Manitoba Free Press.....	CJCG.....	410	
Do.....	G. Melrose Bell.....	CHCF.....	430	
Do.....	Tribune Newspaper Co.....	CJNC.....	400	
Do.....	Salton Radio Engineering Co.....	CKZC.....	430	
Do.....	Manitoba Telephone System.....	CKY.....	430	
Saskatchewan:				
Regina.....	G. Melrose Bell.....			
Do.....	Lander Publishing Co.....	CKOK.....	420	
Saskatoon.....	The Electric Shop.....	CFQC.....	400	
Alberta:				
Calgary.....	G. Melrose Bell.....	CGAC.....	430	
Do.....	Albertan Publishing Co.....	CHBC.....	410	
Do.....	Western Radio Co.....	CHCQ.....	400	
Do.....	Calgary Herald.....	CFAC.....	430	
Do.....	W. W. Grant Radio (Ltd.).....	CFCN.....	440	
Edmonton.....	Edmonton Journal.....	CJCA.....	430	
Do.....	Radio Supply Co.....	CFCK.....	410	
Olds.....	Perceval Wesley Shackleton.....	CJCX.....	400	
British Columbia:				
Vancouver.....	Sprott Shaw Radio Co.....	CJCE.....	420	
Do.....	Daily Province.....	CKCD.....	410	
Do.....	Marconi.....	CFCD.....	440	
Do.....	G. Melrose Bell.....	CGAC.....	430	
Do.....	Vancouver Merchants Exchange.....	CHCL.....	440	
Nelson.....	J. G. Bennett.....	CJCB.....	400	
Victoria.....	Centennial Methodist Church.....	CFCL.....	400	
Do.....	Western Canada Radio Supply (Ltd.).....	CHCE.....	400	
Nanaimo.....	Sparks Co.....	CFDC.....	430	
CHILE				
Valparaiso.....	Señor Placi de Munos Rojas.....	No data.....		
Santiago.....	Radio Corporation of Chile.....	CRC.....	400	
Vina del Mar.....	do.....	ABC.....	400	
CHINA				
Hongkong.....	Hongkong Hotel Co.....			
Do.....	Radio Communication Co. (Orient) (Ltd.).....			
Shanghai.....	The Evening News.....			
Macao.....	(Portuguese).....			

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Location	Operated by—	Call	Wave length	Power
CUBA				
Habana	Cuban Telephone Co.	PWK	Meters 400	Watts 500
Do.	Pedro Zayas	2DW	500	100
Do.	Alberto S. Bustamante	2AB	340	20
Do.	Mario Garcia Velet	2OK	360	100
Do.	Frederick W. Barton	2DY	260	100
Do.	do.	2CX	320	10
Do.	Westinghouse Electric Co.	2EV	220	50
Do.	Roberto E. Ramirez	2TW	230	20
Do.	Heraldo de Cuba	2HC	275	500
Do.	Luis Casas	2LC	250	20
Do.	E. Sanchez Fuentes	2KD	350	100
Do.	Fausto Simon	2MN	270	300
Do.	Manuel G. Salas	2MG	280	20
Do.	Raul Perez Falcon	2JQ	150	10
Do.	Alvaro Diaz	2KP	300	10
Do.	Julio Power	2HS	180	20
Do.	Oscar Collado	2OL	290	15
Do.	Amadeo Saenz	2WW	210	20
Colon	Leopoldo V. Figueroa	3EV	300	100
Tainaco	Frank H. Jones	6KW	340	100
Do.	do.	6KJ	275	100
Cienfuegos	Antonio T. Figueroa	6CX	170	20
Do.	Eduardo Terry	6DW	225	10
Do.	José Ganduza	6BY	300	100
Do.	Valentin Ullivarri	6AZ	290	10
Calbarien	Josefa Alvarez	6EV	225	20
Camaguey	Pedro Nogueroa	7AZ	225	-----
Do.	Salvador Rionda	7BY	350	-----
Santiago	Alfredo Broocka	8AZ	240	20
Do.	Alberto Ravelo	8BY	250	100
Do.	Andrés Vinnet	8FU	225	15
Do.	Pedro C. Andus	8DW	275	50
Do.	Eduardo Maten	8KV	180	75
Do.	Juan F. Chibas	8GT	250	-----
CURACAO, BRITISH WEST INDIES				
Curacao	Department of Finance			
CZECHOSLOVAKIA				
Kbely	Radio Journal	None	1,100	1,000
Prague	No data	PRG	1,800	10,000
Brunn	do.	OKB	1,900	
DENMARK				
Lyngby	Danish Government	OXE	2,400	2,100
FINLAND				
Tamperefors	Amateur Radio Society	3NB	300	20
Skatudden	Nuoren Volman Lütön Radioyhdistys "Radio Division"		450	75
FRANCE				
Paris	Eiffel Tower	FL	2,600	4,000
Do.	Escole Supérieure des P. T. & T.	ESP	450	350
Tours	French Government	YG	2,500	500
La Doua (Lyons)	do.	YN	480	500
Paris	Levallots (Radiola)	SFR	3,100	
Nice	French Government	None	1,780	2,000
Issy-sur-Moulinaux	do.	None	460	-----
Bourges	do.	None	1,600	-----
Abbeville	do.	None	900	-----
Paris	No data	8AJ	900	-----
Paris	No data	8AJ	1,780	-----
GERMANY				
Berlin	Königswusterhausen	LP	2,800	-----
Do.	Vox Haus	None	450	1,500
Leipzig	Mitteldeutsche Rundfunk, AG	None	438	1,000
Frankfurt	Südwestdeutsche Rundfunkanst.	None	460	1,500
Hamburg	Nordischer Rundfunk, AG	None	392	-----
Breslau	Schlesische Rundfunk, AG	None	415	-----
Königsberg	Ostmarken Rundfunk, AG	None	460	-----
Stuttgart	Süddeutsche Rundfunkdienst, AG	None	437	-----
Munich	Deutsche Stunde in Bayern	None	485	1,500
Pharissalda	No data		450	-----

Location	Operated by—	Call	Wave length	Power
GREAT BRITAIN				
			<i>Meters</i>	<i>Watts</i>
Sheffield.....	British Broadcasting Co.....	None.....	303	
Plymouth.....	do.....	None.....	330	
Cardiff.....	do.....	5WA.....	350	1,100
London.....	do.....	2LO.....	385	900
Manchester.....	do.....	2ZY.....	375	1,000
Bournemouth.....	do.....	5HM.....	385	1,100
Newcastle.....	do.....	5NO.....	400	1,100
Glasgow.....	do.....	2SC.....	415	
Belfast.....	do.....	None.....	435	
Birmingham.....	do.....	5IT.....	475	500
Aberdeen.....	do.....	2BD.....	495	1,100
Chelmsford.....	do.....	5XX.....	1,600	
Croydon.....	do.....	GED.....	900	
Glasgow.....	do.....	5SC.....	420	1,100
Leeds-Bradford.....	do.....	2LS.....	346 310	
HAWAII				
Honolulu.....	Marion A. Mulrony.....	KGU.....	260	500
Do.....	The Electric Shop.....	KYQ.....	270	100
INDIA				
Calcutta.....	Radio Club (2BZ) operated by Marooni.....	5AFO.....	425	
ITALY				
Rome.....	No data.....	ICD.....	3,200	
Do.....	Ing. Ranieri.....	None.....	350	
Centocello.....	No data.....	None.....	450	
			2,900	
JUGOSLAVIA				
Belgrade.....	No data.....		1,825	
MARTINIQUE, FRENCH WEST INDIES				
La p. des Carrieres.....	French Marine de Guerre.....	HYV.....	600 2,000	
MEXICO				
Mexico City.....	El Buen Tono.....	OYB.....	360	500
Do.....	El Universal.....	CYL.....	360	500
Do.....	El Excelsior (not now operating).....			
Saltillo.....	Colegio Atense Fuente.....	None.....	450	125
Monterey.....	No data.....			
NETHERLANDS				
The Hague.....	Velthuyzen.....	PCKK.....	1050	
IJmuiden.....	Middelraad.....	PCMM.....	1050	
The Hague.....	Nederlandsche Radio Industri.....	PCGG.....	1050	
Do.....	Laboratorium Heussen.....	PCUU.....	1050	
Amsterdam.....	Smith and Hooghout.....	PA5.....	1050	
Do.....	Van Diaz Press Office.....	PCFF.....	2000	
Hilversum.....	Dutch Radio Apparatus Factory.....	NSF.....	1050	
NEW ZEALAND				
Dunedin.....	Otago University.....	4XO.....	140	
Auckland.....	Auckland Radio Service.....	1YA.....	260	200
Do.....	C. H. Pearson for Newcombe (Ltd.).....	1YL.....	260	500
Wellington.....	Wellington Broadcasters (Ltd.).....	2YB.....	275	15
Do.....	Dominion Radio Co.....	2YK.....	275	15
Gisborne.....	Gisborne Radio Co.....	2YM.....	335	500
Dunedin.....	British Electrical & Engineering Co.....	4YA.....	310	500
PERU				
No data.....	Peruvian Broadcasting Co. (projected).....			
PORTO RICO				
San Juan.....	Radio Corporation of Porto Rico.....	WKAQ.....	360	100
PORTUGAL				

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Location	Operated by—	Call	Wave length	Power
SOUTH AFRICA				
Johannesburg.....	Association of Scientific and Tech. Soc.....	None.....	<i>Meters</i> 450	<i>Watts</i>
Cape Town.....	No data.....			
SPAIN				
Madrid.....	No data.....	EGC.....	2100	
Cartagena.....	do.....	FBX.....	1200	
Madrid.....	do.....	PTT.....	400	
Do.....	Radio Iberica.....		700	
			322	
SWEDEN				
Stockholm.....	Royal Telegraph Radio Office.....	None.....	440	500
Do.....	Svenska Radionettebolaget.....	None.....	470	500
Goteborg.....	Royal Telegraph Radio Office.....	SAB.....	700	200
Do.....	Ingenior Edlassons.....	SMZX.....	450	50
Boden.....	Royal Telegraph Radio Office.....	SAL.....	460	50
Gothenburg.....	Nya Varvet.....		700	
SWITZERLAND				
Lausanne.....	Champ de l'Air.....	HB2.....	1000	
Geneva.....	Station T. S. F. Cointrin.....	HB1.....	1100	

—Compiled by Electrical Division, Bureau of Foreign and Domestic Commerce

REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE

This is a monthly list of references prepared by the radio laboratory of the Bureau of Standards and is intended to cover the more important papers of interest to the professional radio engineer which have recently appeared in technical periodicals. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in A Decimal Classification of Radio Subjects—An extension of the Dewey System, Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. Further information about these lists, availabilities of previous lists, and of the several periodicals is contained in the extended statement preceding the early lists as published in the Radio Service Bulletin prior to April, 1923, and also in May and September, 1923.

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STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones which reached the degree of constancy shown among the stations upon whose frequencies measurements were made in the bureau's laboratory. There is, of course, no guaranty that the stations named below will maintain the constancy shown. As a means of maintaining constant frequency the high-power, low-frequency alternator stations listed below have speed regulators. Most of the broadcasting stations listed use frequency indicators (one-point wavemeters) and maintain a maximum deflection of the frequency indicator throughout the transmission. These broadcasting stations, with rare exceptions, vary not more than 2 kilocycles from the assigned frequency. The transmitted frequencies from these stations can be utilized for standardizing wave meters and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 92, Radio Signals of Standard Frequencies and Their Utilization. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (months)	Number of times measured	Average deviation from assigned frequency	Greatest deviation from assigned frequency since Sept. 20, 1924
NSS	United States Navy	Annapolis, Md.	17.50	14	101	<i>Per cent</i> 0.2	<i>Per cent</i> 0.6
WOG	Radio Corporation of America.	Tuckerton, No. J.	18.85	14	112	.2	.2
WII	do.	New Brunswick, N. J.	22.04	13	65	.2	.1
WSO	do.	Marion, Mass.	25.80	14	91	.3	.2
WWJ	Detroit News.	Detroit, Mich.	580	14	43	.1	.5
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	13	63	.1	.2
WRC	Radio Corporation of America.	do.	640	10	41	.1	.2
WSB	Atlanta Journal.	Atlanta, Ga.	700	13	54	.1	.7
WOY	General Electric Co.	Schenectady, N. Y.	790	16	95	.2	.1
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	890	6	13	.0	.1
KDKA	do.	East Pittsburgh, Pa.	930	13	123	.1	.1

THE STANDARD FREQUENCY TRANSMITTING SET AT WWV

An article of the above title, by H. J. Walls, of the Bureau of Standards, appeared in the October issue of QST. This article describes the special radio transmitting set used to transmit the semimonthly standard frequency signals from the Bureau of Standards. The transmitting set is a 1-kilowatt continuous-wave set of the "master-oscillator power amplifier" type, which is capable of transmitting either telegraph or telephone signals on frequencies from 125 to 2,000 kilocycles. The master oscillator is used to control the frequency of the set, and its output is amplified by four 250-watt tubes in parallel. The set has been designed so that the frequency will remain constant regardless of small changes in antenna constants, and so that the frequency may be readily shifted and accurately adjusted to any value within the range of the set. The circuits used and antenna arrangements are described in detail. Signals from this transmitting set have been received in all United States radio districts, Canada, Cuba, England, and Italy.

METHODS OF RECEIVING THE BROADCASTING STATIONS OF HIGHER FREQUENCY

Some broadcast receiving sets now in use can not be conveniently tuned to stations broadcasting on frequencies higher than 1,000 or 1,200; that is, not below 300 or 250 meters. The Third National Radio Conference recommended that the broadcast band of frequencies be extended to 1,500 kilocycles (200 meters). This emphasizes the importance of the production by manufacturers of sets which will tune conveniently at the higher frequencies and the desirability of information on how to use existing sets so that all stations may be tuned in. The range of receiving sets which employ a single tuned circuit—that is, where the antenna is part of the tuned circuit—may be extended to the higher frequencies without much difficulty. This applies both to crystal and tube sets. It can be done very simply by providing a fixed condenser (about 0.0002 microfarad) in series with the antenna which may be switched in or out of the circuit. The settings of the dials are different when the condenser is in and out of circuit. Shortening of the antenna likewise reduces the capacity and consequently increases the maximum frequency (minimum wave length) to which the set will tune.

In the two-circuit and other more complicated receiving sets the extension of the frequency range may not be so convenient. A general rule, however, may prove useful. The natural frequency of a circuit is determined by the product of the inductance and capacity in the circuit, the larger this product the lower the frequency (higher the wave length). To increase the frequency to which a

or both. The inductance may be reduced by reducing the number of turns, while a reduction in the number of plates or increase in spacing of the plates reduces the capacity of a condenser. The effective capacity in a circuit may also be reduced by using two condensers in series. Changes in receiving sets of this type can, in general, be readily made by radio listeners who construct their own sets.

RADIO TESTING

In order to correct a misapprehension about the radio-testing service of the Bureau of Standards, a statement of the subject is given herewith. The bureau receives many requests for tests of material and apparatus for radio use. There is such a large demand for this testing in comparison with the limited resources available for the work that the bureau has to concentrate on those phases of the work that are of maximum service to the public. This work includes the research required to maintain accurate standards, tests for the Government, tests of instruments which are in turn used as standards for testing considerable numbers of other instruments, tests of importance to the bureau as a matter of research, and a few other tests for which special reasons arise. Consequently, the radio tests made are limited almost entirely to fundamental standards of measurements. No testing service is, in general, given which duplicates service obtainable from commercial testing laboratories. No tests are made the results of which are intended for use in advertising or sales promotion.

A number of laboratories handle commercial tests of radio apparatus and materials. Among these laboratories are the following:

Electrical Testing Laboratories, Eightieth Street and East End Avenue, New York, N. Y.
 J. H. Morecroft, One Hundred and Seventeenth Street and Broadway, New York, N. Y.
 General Radio Co., Massachusetts Avenue and Windsor Street, Cambridge, Mass. Dartmouth College, attention Prof. G. F. Hull, Department of Physics, Wilder Laboratory, Hanover, N. H.
 The School of Electrical Engineering, College of Engineering, Cornell University, Ithaca, N. Y.
 University of Tennessee, attention Dr. Chas. A. Perkins, director, engineering experiment station, College of Engineering, Knoxville, Tenn.
 University of Wisconsin, attention Prof. H. M. Crothers, College of Mechanics and Engineering, Madison, Wis.
 Armour Institute of Technology, Department of Physics, attention Prof. G. M. Wilcox, Chicago, Ill.
 Craft High Tension Electrical Laboratory, Harvard University, Cambridge, Mass.

There are many other laboratories which do radio testing, and their absence from this list is no indication of disapproval by the bureau. No comprehensive investigation of all such testing laboratories has been made.

A method by which individuals may standardize their own wave meters is provided through the standard frequency signals which the Bureau of Standards transmits semi-monthly, announcements of such transmissions being made in advance in the press and in the Radio Service Bulletin.

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