

MX – Russian HF Beacons

a.k.a. Single Letter Beacons, Single Letter High Frequency Beacons, Radio Beacons, Cluster Beacons, Channel Markers

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The beacons and markers are on the air since the late 1960s. Until the late 1980's these beacons could be heard on numerous frequencies throughout the SW spectrum. After the disintegration of the Soviet Union, many of them disappeared and only a few survived. Some of them were very active, especially station "P" but that marker also disappeared in 2011.

HF beacons

What is their purpose? you might ask. Well, there are a number of theories; amongst them are several weird ones. Some say that they are river beacons, others state that the beacons are in fact UFO homing beacons. One person suggested that the beacons are part of the Russian strategic missiles network. He thinks that the Russians activate their nuclear missiles using the beacons.

These so called "cluster beacons" are however propagation beacons. When I visited Russia's frigate Neukrotimy on 22 April 1997 in Rotterdam (see picture), its radio officer told me that the cluster beacons indeed belong to the Russian Navy. That was the confirmation of a theory that many dxers had for years.



The beacons that we hear today are either propagation beacons or channel markers. "Cluster" beacons because they transmit in clusters, groups of frequencies only a kHz apart. The current frequencies have been used for a very long time. See the frequency list for further details.

The majority of the other beacons are channel markers. Their purpose is to keep a frequency occupied. The purpose of several beacons is a mystery for me. For instance "V", believed to be located near Khiva. What is the purpose of it? Is it used for propagation purposes or is it a channel marker after all? In the many years that this beacon is on the air, no-one ever reported a message from this station. Therefore it is most likely used for propagation purposes. It is of course possible that it really is a channel marker. After all, the buzzer was also on the air for years before the first voice transmission was heard.

The solitary beacons and/or channel markers also belong to the Russian military. Most, but not all of them. In the 1970s beacon "W" from Cuba was frequently reported. In August 2004 a beacon from Albania popped up. It used "L" just like the one in St. Petersburg (Leningrad). It disappeared in March 2006.

Channel marker "L" from St. Petersburg had a distinct chirpy sound and typical Russian military Morse transmissions were sent on the same frequencies. Before and after the Morse messages the "L" marker was sent. Later the channel marker disappeared between the messages. Since 2011 "L" is only used as propagation beacon on 5156.8, 6917.5 and 8497.8 kHz. Sometimes also on other frequencies.

Another beacon, transmitting callsign "F" has been reported in 2004 and 2005. Several DFs from Central Germany, Norway and Estonia pointed to a location in the Gdynia area. The station was only on the air for a couple of days, on 10 and 11 June 2004 and 9 and 10 June 2005. Could it be a special event beacon?

Kaliningrad, with marker "P", was the most active station. It uses a large pool of frequencies and from time to time Morse and RTTY transmissions are sent. The first time I had a close encounter with the "real" station was in December 1990, when I noticed the first RTTY broadcasts on 3807//4043 kHz. It started with the "P" marker, followed by 75bd RTTY, then back to the marker and into 50bd RTTY and back to the marker again. I monitored the frequency for another hour or so and after ca. 30 minutes "P" stopped and 75bd RTTY began again. The messages consisted of 5 letter groups. No other callsign was used, just the letter "P". Then on 22-1-1995, I finally had a positive id of channel marker "P". On 3262 kHz at exactly 2100 UTC Kaliningrad started its transmission: 3 groups of 5 P's followed by "RMP" (= Navy Kaliningrad), then into the weather forecast for the Baltic area in plain text, and after that the "P" marker came back. Nowadays, the marker is no longer used and the only "P" around is the cluster beacon.

In 2014 beacon "U" popped up again. Probably transmitted from the Murmansk area. It was only audible in Northern Europe. I copied it via the remote receiver in Finland. This beacon is not related to the cold war "U" stations (see below).

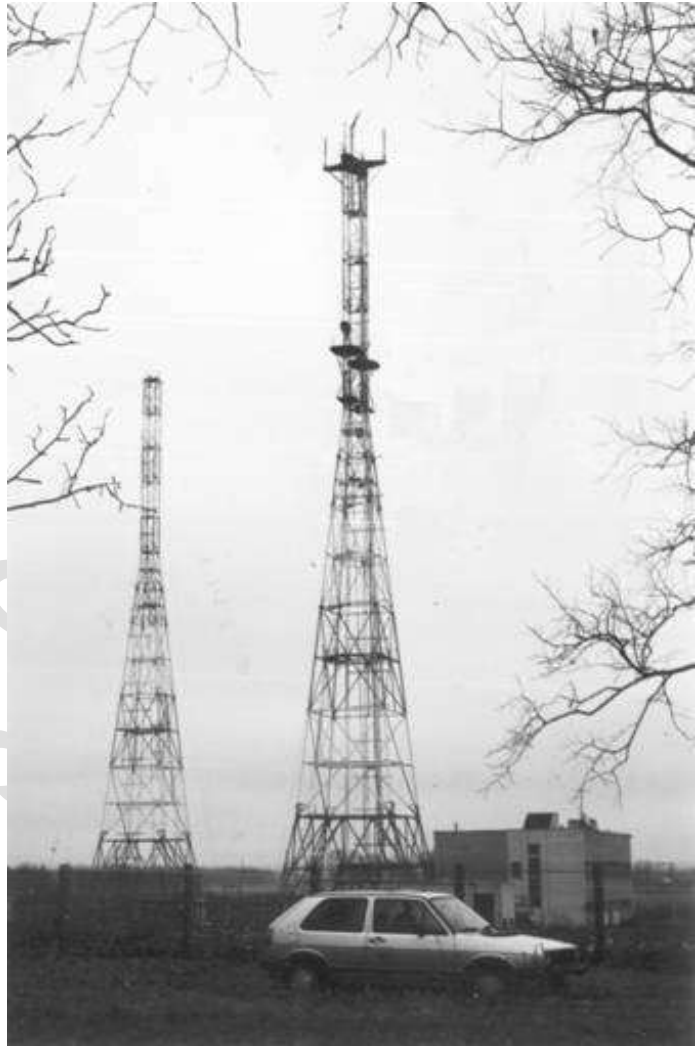
Jammer station "U"

Used to be active on many frequencies. The beacon was transmitted in FSK and the traffic on the frequencies was in RTTY.

In his excellent book "Jamming", Rimantas Pleikys writes:

"The data from the archive was found by long-time Ministry employee, Mr. A. Stelingis, who at one time was responsible for the operation of jamming objects. During one conversation a secret came to light about a long time mystery regarding the Soviet 'U' channel marker. I was able to monitor the work of this marker at 16 frequencies. The 'U' marker disappeared from the airwaves in the spring of 1990. I have recorded an occasion when the 'U' marker ran on 13 frequencies simultaneously! My colleague, A. Stelingis, confirmed that these channels were continuously monitored at the jamming correction and control posts. The 'U' channels were used to transmit orders to the jammers -most likely to issue jamming frequency times and schedules. It must have been that 'U' channels were used as backup instead of the teletype link to Moscow. (It is also believable that the 'U' marker was on the shortwave bands was used also for civil defense and other purposes). It is worthwhile to note that when the USSR ceased its jamming on 30-11-1988, the 'U' marker transmitters continued to operate for almost another 18 months! This would indicate that throughout most of the USSR jamming systems continued to be kept ready to start again."

Panevėžys local radio jamming station (10x5 kW) in Lithuania. (from Rimantas' book "Jamming")



<http://www.radiojamming.info>

<http://www.zilionis.com/jamming/index.php?e>

The Russian Air Force, to be more precise the Tu-95MS Bear H net, also transmits markers. Usually every 20 minutes during 2 minutes. The meaning of these markers is still not clear. They might indicate the urgency or something like that. The markers are: C, G, K, L, N, R, Ü, V, W, Z.

FREQUENCY LIST

The beacon list that I have compiled is far from complete. My logs go back to 1980 and I have hardly any logs from the period 1960-1980. DXers who were active back then confirmed the presence of several beacons. I have included them as well.

ACTIVE CLUSTER BEACONS

The current cluster center frequencies are 3594, 4558, 5154, 7039, 7608, 8495, 10872, 13528, 16332, 20048 kHz. Note that the Asian beacons are using 7039 and the European beacons moved to 7508 kHz in 2015. A typical cluster looks like this:

Cluster beacon slots:	Example of a cluster:
.7 D, Sevastopol (RCV)	D - 8494.7
.8 P, Kaliningrad (RMP)	P - 8494.8
.9 S, Severomorsk (RIT)	S - 8494.9
.0 C, Moscow (RIW)	C - 8495.0
.1 A, Astrakhan	A - 8495.1
.2 F, Vladivostok (RJS)	F - 8495.2
.3 K, Petropavlovsk Kamchatskiy (RCC)	K - 8495.3
.4 M, Magadan (RTS)	M - 8495.4

Cluster beacons are sometimes heard on spurious frequencies:

7000	D Sevastopol	Spurious frequency
7000	F Vladivostok	Spurious frequency
7000	K Petropavlovsk Kamchatskiy	Spurious frequency
7000	P Kaliningrad	Spurious frequency
7000.2	F Vladivostok	Spurious frequency
7077.4	D Sevastopol	Spurious frequency
7078	K Petropavlovsk Kamchatskiy	Spurious frequency
7078.4	F Vladivostok	Spurious frequency

ACTIVE BEACONS & CHANNEL MARKERS

Frequency	Callsign	Location	ITU	Remarks
3335	V	Khiva	UZB	
3523	V	Khiva	UZB	
4084	V	Khiva	UZB	
4150	V	Khiva	UZB	
4250	V	Khiva	UZB	
4325.9	R	Izhevsk	RUS	Central Military District
4392	V	Khiva	UZB	
4961	V	Khiva	UZB	
5055.5	V	Khiva	UZB	
5155	L	St Petersburg	RUS	
5156.8	L	St. Petersburg	RUS	
5157	L	St Petersburg	RUS	
5465.9	R	Izhevsk	RUS	Central Military District
5466.1	R	Izhevsk	RUS	Central Military District
5620	W		RUS	Tu-95MS Bear H net marker
5817	V	Khiva	UZB	
5835	W		RUS	Tu-95MS Bear H net marker
6463.5	V	Khiva	UZB	
6529	Z		RUS	Tu-95MS Bear H net marker
6917.5	L	St. Petersburg	RUS	
7000	V	Khiva	UZB	
7029	V	Khiva	UZB	
7039.2	L	St. Petersburg	RUS	
7041.8	L	St. Petersburg	RUS	
7603.4	U	Unid		heard in Oct 2014
7737	V	Khiva	UZB	
8007	A	Astrakhan	RUS	Unusual frequency
8029	G		RUS	Tu-95MS Bear H net marker
8029	L		RUS	Tu-95MS Bear H net marker
8029	N		RUS	Tu-95MS Bear H net marker
8029	R		RUS	Tu-95MS Bear H net marker
8029	W		RUS	Tu-95MS Bear H net marker
8029	Z		RUS	Tu-95MS Bear H net marker
8112	G		RUS	Tu-95MS Bear H net marker
8112	V		RUS	Tu-95MS Bear H net marker
8112	W		RUS	Tu-95MS Bear H net marker
8162	N		RUS	Tu-95MS Bear H net marker
8162	W		RUS	Tu-95MS Bear H net marker
8170	C		RUS	Tu-95MS Bear H net marker
8170	C		RUS	Tu-95MS Bear H net marker
8170	K		RUS	Tu-95MS Bear H net marker
8170	K		RUS	Tu-95MS Bear H net marker
8497.8	L	St. Petersburg	RUS	
8895	G		RUS	Tu-95MS Bear H net marker
8895	W		RUS	Tu-95MS Bear H net marker
8995	Ü		RUS	Tu-95MS Bear H net marker
9116.2	A	Astrakhan	RUS	Unusual frequency
9883	V	Khiva	UZB	
10307	F	Vladivostok	RUS	
14220.8	A	Astrakhan	RUS	Unusual frequency
14372	C	Moscow	RUS	Modulated Beacon "C" 18.1//14372//14450 kHz
14450	C	Moscow	RUS	Modulated Beacon "C" 18.1//14372//14450 kHz
20127	F	Vladivostok	RUS	
2330.9	P	Kaliningrad	RUS	

HISTORIC, FAULTY AND IRREGULAR BEACONS & CHANNEL MARKERS

Frequency	Callsign	Location	ITU	Remarks
	Ch (---.)	Unid location		
	Yu (..--)	Kizyl Orda	URS	
18.1	C	Moscow	RUS	Modulated Beacon "C" 18.1//14372//14450 kHz
420	P	Kaliningrad	RUS	
436	P	Kaliningrad	RUS	
448	P	Kaliningrad	RUS	
474	P	Kaliningrad	RUS	
490	P	Kaliningrad	RUS	
583	P	Kaliningrad	RUS	
2321	R	Izhevsk	RUS	Central Military District
2330.8	P	Kaliningrad	RUS	
2391	V	Khiva	UZB	
2485	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
2547.8	F	Gdynia		Operates only during daytime. Irregular. Possibly event driven
2742.2	F	Gdynia		Operates only during daytime. Irregular. Possibly event driven
2813	N	Unid		
2842.8	F	Gdynia		Operates only during daytime. Irregular. Possibly event driven
3036	OB	Unid		
3043	OB	Unid		
3070.5	X	Unid location; not Prague		
3088	L	St. Petersburg	RUS	
3090	L	St. Petersburg	RUS	
3092	L	St. Petersburg	RUS	
3167	P	Kaliningrad	RUS	
3170	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
3171	P	Kaliningrad	RUS	
3175	V	Khiva	UZB	
3179	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
3192	P	Kaliningrad	RUS	
3195	R	Izhevsk	RUS	Central Military District
3199	R	Izhevsk	RUS	Central Military District
3202.8	L	Tirana	ALB	
3203.6	L	Tirana	ALB	
3204.2	L	Tirana	ALB	
3208	P	Kaliningrad	RUS	
3234	P	Kaliningrad	RUS	
3256	P	Kaliningrad	RUS	
3262	P	Kaliningrad	RUS	
3264	P	Kaliningrad	RUS	
3291	P	Kaliningrad	RUS	
3317	V	Khiva	UZB	
3322	R	Izhevsk	RUS	Central Military District
3327	P	Kaliningrad	RUS	
3334.9	L	St. Petersburg	RUS	
3335.7	L	St. Petersburg	RUS	
3335.7	LT	St. Petersburg	RUS	Defective "L"
3336.2	L	St. Petersburg	RUS	

3339.6	L	St. Petersburg	RUS	
3345	L	St. Petersburg	RUS	
3415	A	Astrakhan	RUS	
3415	OB	Unid	RUS	
3508	T	Dash. Unid location		
3533	W	Cuba	CUB	
3534	V	Khiva	UZB	
3564	C	Moscow	RUS	
3569	P	Kaliningrad	RUS	
3594	AANNM	Unid		Defective cluster beacon?
3594	E	Unid		Defective cluster beacon?
3594	T	Unid		Defective cluster beacon?
3594	TEEEEE	Unid		Defective cluster beacon?
3594.8	M	Magadan	RUS	March-July 2004
3628	V	Khiva	UZB	
3632.2	V	Khiva	UZB	
3635.5	U	Kholmsk and other locations	URS	Jammer related
3649	P	Kaliningrad	RUS	
3650		'Yelper'	RUS	
3658	V	Khiva	UZB	
3686	R	Izhevsk	RUS	Central Military District
3699.5	P	Kaliningrad	RUS	
3772	P	Kaliningrad	RUS	
3798.5	F	Gdynia ???		Operates only during daytime. Irregular. Possibly event driven
3807	P	Kaliningrad	RUS	
3814.8	I	Unid location		
3837	P	Kaliningrad	RUS	
3840	P	Kaliningrad	RUS	
3842		'Buzzer', Povarovo	RUS	Russian Western Military District (per 1 Sept 2010, ex Moscow District)
3857	P	Kaliningrad	RUS	
3954	C	Moscow	RUS	
4018.7	P	Kaliningrad	RUS	
4031	P	Kaliningrad	RUS	
4039	P	Kaliningrad	RUS	
4043	P	Kaliningrad	RUS	
4049	P	Kaliningrad	RUS	
4051	P	Kaliningrad	RUS	
4069.6	L	St. Petersburg	RUS	
4079	P	Kaliningrad	RUS	
4091.5	L	St. Petersburg	RUS	
4206	R	Izhevsk	RUS	Central Military District
4210	P	Kaliningrad	RUS	
4301	S	Severomorsk	RUS	
4302	C	Moscow	RUS	
4315	F	Gdynia ???		Operates only during daytime. Irregular. Possibly event driven
4325		'Buzzer', Povarovo	RUS	Russian Western Military District (per 1 Sept 2010, ex Moscow District)
4331	P	Kaliningrad	RUS	
4387	P	Kaliningrad	RUS	
4424.5	L	St. Petersburg	RUS	
4437	P	Kaliningrad	RUS	
4441.2	P	Kaliningrad	RUS	
4446	V	Khiva	UZB	
4447.5	U	Kholmsk and other locations	URS	Jammer related

4469.1	L	St. Petersburg	RUS	
4469.6	L	St. Petersburg	RUS	
4474.9	P	Kaliningrad	RUS	
4476	P	Kaliningrad	RUS	
4498.5	V	Khiva	UZB	
4504	B	Khiva	UZB	Defective "V"
4504	V	Khiva	UZB	
4510	V	Khiva	UZB	
4545.3	K	Petropavlovsk Kamchatskiy	RUS	
4555.8	F	Gdynia ???		Operates only during daytime. Irregular. Possibly event driven
4557	CH	Unid location		
4558	AAINNM	Unid		Defective cluster beacon?
4558	E	Unid		Defective cluster beacon?
4558	H	Unid		Defective cluster beacon?
4558	R	Izhevsk	RUS	Central Military District
4558	T	Unid		Defective cluster beacon?
4558	TEEEEE	Unid		Defective cluster beacon?
4575	V	Khiva	UZB	
4635	P	Kaliningrad	RUS	
4644	V	Khiva	UZB	
4646	V	Khiva	UZB	
4775.5	U	Kholmok and other locations	URS	Jammer related
4828	R	Izhevsk	RUS	Central Military District
4848	P	Kaliningrad	RUS	
4878	V	Khiva	UZB	
4878.9	P	Kaliningrad	RUS	
4899	P	Kaliningrad	RUS	
4964	P	Kaliningrad	RUS	
5041	F	Vladivostok	RUS	
5068	V	Khiva	UZB	
5076	P	Kaliningrad	RUS	
5080	P	Kaliningrad	RUS	
5111	P	Kaliningrad	RUS	
5122	V	Khiva	UZB	
5137.9	S	Sevoromorsk	RUS	
5141	V	Khiva	UZB	
5154	E	Unid		Defective cluster beacon?
5154	R	Izhevsk	RUS	Central Military District
5154	TA	Unid		Defective cluster beacon?
5154	TW	Unid		Defective cluster beacon?
5154.8	M	Magadan	RUS	March-July 2004
5155.8	M	Magadan	RUS	Off frequency
5200	R	Izhevsk	RUS	Central Military District
5203.6	L	St. Petersburg	RUS	
5213	P	Kaliningrad	RUS	
5225	P	Kaliningrad	RUS	
5237.8	P	Kaliningrad	RUS	
5243	V	Khiva	UZB	
5260	P	Kaliningrad	RUS	
5306	C	Moscow	RUS	
5308	O	Moscow	URS	
5308.5	L	St. Petersburg	RUS	
5309.5	Z	Mukachevo (Ukraine)	URS	
5340	V	Khiva	UZB	
5342	V	Khiva	UZB	
5358	V	Khiva	UZB	

5376.0	U	Kholmsk and other locations	URS	Jammer related
5383.5	V	Khiva	UZB	
5422	R	Izhevsk	RUS	Central Military District
5471	E	Unid		
5568.5	U	Kholmsk and other locations	URS	Jammer related
5691	P	Kaliningrad	RUS	
5698.3	P	Kaliningrad	RUS	
5731	R	Izhevsk	RUS	Central Military District
5807.7	V	Khiva	UZB	
5860	P	Kaliningrad	RUS	
5862	P	Kaliningrad	RUS	
5873	V	Khiva	UZB	
5888.9	P	Kaliningrad	RUS	
5920	K	Petropavlovsk Kamchatskiy	RUS	
5922	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
5982	P	Kaliningrad	RUS	
6203	P	Kaliningrad	RUS	
6245.5	U	Kholmsk and other locations	URS	Jammer related
6258	S	Sevoromorsk	RUS	Unusual frequency
6389.9	R	Izhevsk	RUS	Central Military District
6430	V	Khiva	UZB	
6498	V	Khiva	UZB	
6550	D	Sevastopol	UKR	
6671	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
6672.4	L	Tirana	ALB	Harmonic
6703	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
6735	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
6802.5	J	Unid location		
6803.5	G	Unid location		
6806	Q	Unid location	RUS	
6809	V	Khiva	UZB	
6861	V	Khiva	UZB	
6864	U	Kholmsk and other locations	URS	Jammer related
6873	P	Kaliningrad	RUS	
6879	V	Khiva	UZB	
6925	V	Khiva	UZB	
6928	V	Khiva	UZB	
6934	T	Dash. Unid location		
6944	T	Unid		
6985.5	U	Kholmsk and other locations	URS	Jammer related
6996.5	V	Khiva	UZB	
7002	V	Khiva	UZB	
7027	V	Khiva	UZB	
7027.5	V	Khiva	UZB	
7038.8	V	Khiva	UZB	Harmonic?

7039	AAINNM	Unid		Defective cluster beacon?
7039	E	Unid		Defective cluster beacon?
7039	T	Unid		Defective cluster beacon?
7039	TEEEEE	Unid		Defective cluster beacon?
7064.4	H	Unid location		
7102	V	Khiva	UZB	
7383	N	Unid		
7395	U	Kholmsk and other locations	URS	Jammer related
7395.5	U	Kholmsk and other locations	URS	Jammer related
7423.0	U	Kholmsk and other locations	URS	Jammer related
7440	V	Khiva	UZB	
7452	R	Izhevsk	RUS	Central Military District
7550	R	Izhevsk	RUS	Central Military District
7569.5	U	Kholmsk and other locations	URS	Jammer related
7630	V	Khiva	UZB	
7677.5	U	Kholmsk and other locations	URS	Jammer related
7825	V	Khiva	UZB	
8000	C	Moscow	RUS	Unusual frequency
8103.5	V	Khiva	UZB	
8136	U	Kholmsk and other locations	URS	Jammer related
8165	T	Dash. Unid location		
8183	L	Tirana	ALB	Harmonic
8306	F	Gdynia		Operates only during daytime. Irregular. Possibly event driven
8442	AS (-...)	Unid. AS sent as one character		
8492	P	Kaliningrad	RUS	
8495	AAINNM	Unid		Defective cluster beacon?
8495	E	Unid		Defective cluster beacon?
8495	T	Unid		Defective cluster beacon?
8495	TEEEEE	Unid		Defective cluster beacon?
8543	V	Khiva	UZB	
8669.5	U	Kholmsk and other locations	URS	Jammer related
8670.5	U	Kholmsk and other locations	URS	Jammer related
8682	M	Magadan	URS	
8698	B	Arkhangelsk	URS	
8810	C	Moscow	RUS	Unusual frequency
8810	D	Sevastopol	UKR	Unusual frequency
8810	S	Sevoromorsk	RUS	Unusual frequency
8918.0	U	Kholmsk and other locations	URS	Jammer related
9001.6	Y	Unid location		
9057.5	U	Kholmsk and other locations	URS	Jammer related
9090	I	Unid location		6 + 16 January 2004
9111	W	Unid location		probably not related to the old 'W' stations
9160	Ya (-.-)	Unid location		
9161	V	Khiva	UZB	
9188.5	I	Unid location		6 + 16 January 2004
9225	V	Khiva	UZB	
9250		'Buzzer', Povarovo	RUS	Russian Western Military District (per 1 Sept 2010,

				ex Moscow District). Harmonic
9313.5	U	Kholmsk and other locations	URS	Jammer related
9322	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
10008.6	L	Tirana	ALB	Harmonic
10126.5	EO	Unid		
10171.9	S	Sevoromorsk	RUS	Unusual frequency
10202	V	Khiva	UZB	
10215.0	U	Kholmsk and other locations	URS	Jammer related
10272.2	F	Vladivostok	RUS	Unusual frequency
10285.0	U	Kholmsk and other locations	URS	Jammer related
10308	C	Moscow	RUS	
10420	V	Khiva	UZB	
10470	T	Dash. Unid location		
10528	S	Sevoromorsk	RUS	Unusual frequency
10612	C	Moscow	RUS	
10743.9	S	Severomorsk	RUS	Off frequency; heard on 16-5-2006
10871.6	U	Kholmsk and other locations		Jammer related
10872	AAINNM	Unid		Defective cluster beacon?
10872	E	Unid		Defective cluster beacon?
10872	MMMAMA	Unid		Defective cluster beacon?
10872	T	Unid		Defective cluster beacon?
10872	TEEEEE	Unid		Defective cluster beacon?
11000	D	Sevastopol	UKR	Unusual frequency
11073	V	Khiva	UZB	
11290	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
11406	V	Khiva	UZB	
11526.0	U	Kholmsk and other locations	URS	Jammer related
12149.5	I	Unid location		
12158	T	Dash. Unid location		
12184.5	U	Kholmsk and other locations	URS	Jammer related
12329.0	U	Kholmsk and other locations	URS	Jammer related
13201	X	Prague	CZE	X + 5FGs. Transmitted in 1990 on 2485, 3170, 3179, 5922, 6671, 6703, 6735, 9322, 11290, 13201 kHz
13527	Y	Unid location		
13528	AAINNM	Unid		Defective cluster beacon?
13528	C	Moscow	RUS	
13528	CK TNK	Unid		Defective cluster beacon?
13528	E	Unid		Defective cluster beacon?
13528	MMMAMA	Unid		Defective cluster beacon?
13528	T	Unid		Defective cluster beacon?
13528	TEEEEE	Unid		Defective cluster beacon?
13539	V	Khiva	UZB	
13636	C	Moscow	RUS	
13871	D	Sevastopol	UKR	Unusual frequency
13872	C	Moscow	RUS	Unusual frequency
14078.3	F	Vladivostok	RUS	Unusual frequency
14262	V	Khiva	UZB	

15064.7	V	Khiva	UZB	Harmonic?
15655.0	U	Kholmsk and other locations	URS	Jammer related
15700.5	U	Kholmsk and other locations	URS	Jammer related
15705.0	U	Kholmsk and other locations	URS	Jammer related
16332	E	Unid		Defective cluster beacon?
16332	MMMAMA	Unid		Defective cluster beacon?
16332	TEEEEE	Unid		Defective cluster beacon?
16932	P	Kaliningrad	RUS	
16989.8	S	Sevoromorsk	RUS	Unusual frequency
17015.9	S	Severomorsk	RUS	Old cluster frequency
17016	C	Moscow	RUS	Old cluster frequency
17017.2	F	Vladivostok	RUS	Old cluster frequency
17017.2	TA	Unid		Old cluster frequency, Defective cluster beacon?
17017.2	UE	Unid		Old cluster frequency. Defective cluster beacon?
18115.0	U	Kholmsk and other locations	URS	Jammer related
20126.5	EO or J	Unid location		
20428.5	U	Kholmsk and other locations	URS	Jammer related
21070.6	V	Khiva	UZB	
23921.9	C	Moscow	RUS	Unusual frequency
24371.0	U	Kholmsk and other locations	URS	Jammer related
24409.5	U	Kholmsk and other locations	URS	Jammer related
24657.0	U	Kholmsk and other locations	URS	Jammer related
24982.0	U	Kholmsk and other locations	URS	Jammer related
25250	R	Izhevsk	RUS	Central Military District
26170	L	Possibly Leningrad	RUS	

All information in this document was submitted by independent radio monitors or has been obtained from public available sources and public sites on the web. Wherever data was obtained via the web or elsewhere, references and/or links to these sources have been noted.

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