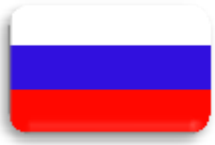

Russian Navy
Voyenno-Morskoy
Flot Rossii

Frigate Neukrotimy © Ary Boender

By Fritz Nusser
Last update: June 2013
www.udxf.nl

Publishing results about military and secret service matters is, by nature, a continuous process of trial and error. If you, who might know it better, note any inaccuracies or mistakes, please send your comments to UDXF.

I predominantly use my own notes of many years monitoring, open sources in the web, *JANE's Military Communications* CD and publications of *"Russia's Arms and Technologies XXI Century, Moscow"*. I could use valuable information from many *WUN* or *UDXF* members, who reported their findings in the respective groups. Many updates of the CIS Navy activities have been possible through the professional inputs of *Jim MPJ*. My thanks go to *Ary Boender*, owner of *Numbers & Oddities* and *UDXF,* who arranged important contacts and always is very helpful. The extensive and topical description of the Russian VLF Network only was possible with help from *Rimantas Pleikys* and *Trond Jacobsen*. The website of *SAS und Chiffrierdienste* deals with the past of the Soviet troops in German Democratic Republic, but the amount of detailed information is overwhelming and much of it is still of interest.

CIS Navy Morse networks

1. Introduction

CIS Navy Morse networks are, to a great part, for training and backup purpose and since many years the same callsigns are used. Some callsigns show up again after years, others are called virtually weekly.
The fleet headquarters, airports, ATCs and aircrafts of the Naval Air Transport can, in many cases, be identified.

Ships sometimes report their position according to FM13-Code Meteorological Data. This is rarely the case and happens around 00, 06, 12 and 18 h UTC, sometimes at 03, 09, 15 and 21 h UTC as well.
Some utility specialists keep track of ship movements, mostly during exercises in the Mediterranean, and try to assign the callsigns. Thanks to **Tom**, who does a great job and shares many of his observations with UDXF, the following list of ships/callsigns, of course it is not confirmed, became possible (as per 06.2013).

Ships/Callsigns

Callsign	Ship	Category	Fleet
RAL46	Vyazma	Tanker	Northern Fleet
RAL65	Kama	Tanker	Northern Fleet
RBES	SB-921	Rescue Tug Sliva Class	Baltic Fleet
RBIZ	PM-138	Floating Workshop	Black Sea Fleet
RCJG	Ivan Bubnov	Tanker	Black Sea Fleet
RFH70	Smetlivy	Destroyer	Black Sea Fleet
RFH71	Novocherkassk	Landing Ship	Black Sea Fleet
RFK99	Steregushy	Corvette	Baltic Fleet
RGZ58	Caesar Kunikov	Landing Ship	Black Sea Fleet
RGZ59	Nikolay Filchenkov	Landing Ship	Black Sea Fleet
RIR96	Azov	Landing Ship	Black Sea Fleet
RIR98	PM-56	Floating Workshop	Black Sea Fleet
RJQ84	SB-406	Rescue Tug Sliva Class	Northern Fleet
RJT22	Moskva	Guided Missiles Cruiser	Black Sea Fleet
RKB91	Kola	Tanker	Baltic Fleet
RKO81	Lena	Tanker	Northern Fleet
RMCW	Donuzlav	Hydrographic Ship	Black Sea Fleet
RMGB	Iman	Tanker	Black Sea Fleet
RMYZ	MB-304	Salvage Tug	Black Sea Fleet

2. Allocation of Call Signs

Headquarters may use several callsigns; RAA and RJE56 for example are used by RIW operators in certain cases. All digital modes are encrypted, therefore other callsigns may be used in that traffic.

The Navy callsigns have the following formats (*L* = letter, *F* = figure):

From	To	User
RAA	RML	High ranking -, HQ - or collective callsigns
RALL	RMLL	Individual or collective callsigns, fix or mobile.
RALFF	RMLFF	Individual or collective callsigns, fix or mobile
FFFFF		Registration Nr., Aircraft of Naval Air Transport
WLHN		Collective callsign: "To all units of the Armed Forces".

3. Special Purpose Callsigns

There is a series of call signs which are used for a certain purpose or by certain stations.

Naval Air Transport

As Aircrafts use 5-figure registration codes, they can, in many cases, be identified.

Collective Call Signs

Collective callsigns not only will address a fleet or task force, but as well certain waters. Warnings or weather forecasts for RGX94 concern French regions, RBE86 the Ionian Sea, RIP90 Turkish regions and the Aegean Sea and RKZ the Mediterranean Sea. REO means the Baltic Sea and RLO the North Sea. If these my assumptions are fully correct, I don't know and am interested in more info.

The RJxxx Series Call Signs

These stations do not use the primary frequencies 8345 and 12464 kHz, but work in Simplex mode on frequencies like 8120, 8128, 10796 or 13469 kHz.

Some callsigns:

RJC66
RJD25, RJD35, RJD36, RJD38, RJD46, RJD52, RJD69, RJD71, RJD77, RJD80, RJD85
RJE56, RJE58, RJE65, RJE67
RJF48, RJF95, RJF96
RJH25, RJH41, RJH57, RJH63, RJH90

Trond for UDXF assigned station RJE56 in Manikhino (Moscow) at 55N53 36E57 to the 301st Central Comms Point, Mil Unit 49383. Other sources said this is home of RIW Navy HQ, which supports the fact, that RJE56 belongs to RIW.

RJE65 is said to be at Boriskova, near Novorossyisk, at 44N44 37E41. This site is possibly abandoned.
RJH45, RJD38, RJF41, RJE73, RJH74 are addressed by ships to drop Sea State and Weather Data.
RJH69, RJH99, RJH66, RJH63, RJH77, RAB99 are NAVY VLF comms stations/Time Signals
RJF94, RJC38, RCH84, RJC48, RCB are Naval Aviation ATCs.

RAL2 and associated Call Signs

1. Introduction

At least since 1997 this simplex network with NCS RAL2 and many outstations is active on several frequencies. The net structure is a Guided Star (no traffic between outstations). Some of the frequencies are shared with CIS Navy networks.
In December 2009 I heard RAL2 calling RLM2 on 4051 kHz immediately after the "P" beacon of Navy HQ Kaliningrad stopped. As this frequency is regularly used by Kaliningrad and RAL2, we may assume RAL2 is a CIS Navy network.
The purpose of RAL2 is not clear however; so far I heard
- radio checks with many stations, normally ending: "ZNN sk sk"
- requests of RAL2 for encrypted voice traffic in MS-5 mode on another frequency
- radio checks on a series of frequencies within a short time, possibly tests of propagation conditions for future use of frequencies.

It seems RAL2 is not a training network nor is it used to send "real messages". RAL2 may be a backup network serving Navy HQs. Due to the short traffic times any attempts to DF the stations failed.

2. Callsigns

RAI2 RAL2
RBL62 RBL66 RBL70 RBY45 RBY46
RDU2
RFH2
RGH2
RHQ2 RHW2
RIB2
RKA2 RKY2
RLM2 RLO2
RMW2

3. Frequencies

3747 4051 4979 5797 6989 7861 10263 10425 13975 kHz

Morse Traffic Examples

1. Introduction

RIW, the Navy Headquarter, can be heard regularly and with good signal quality. RIW allocates frequencies for further traffic, transmits encrypted messages and relays for other stations. Weather forecasts and Nautical Warnings are not disseminated by RIW, xxx Flash Messages very rarely.

Frequently stations ask for link establishment in digital mode or in encrypted voice mode. Well known is *MS-5*, a parallel 12 tone 120 Bd. Voice Encryption System (VOCODER), working at 1440 bps in BPSK mode or at 2880 bps in QPSK mode. The modems used are *AT-3004D* or the newer *AT-3104*. It has replaced the unsecure *Yakhta* Voice Scrambling System (modem T-219 or its successors *AT-3001M/AT-3002M*.).

Quite often a HQ practises all possible tasks with the same station - namely messages in Duplex Morse traffic, *MS-5* traffic and phone patches or online encrypted Morse. This can last for hours if the operator is not skilled. When all messages start with "11111" we can assume it is for training.

In the first example RIW has been asked by RFH70 to allocate frequencies for *MS-5* traffic. Normally RIW and the Fleet HQ are called on 8345 or 12464 kHz.

2. Sample Messages

Frequency	Traffic	Comments
14556	RFH70 de RIW QYT4 QWH 9700/9700 = 12056/12056 QSX 8440/8440 =12414/12414 k	I will use MS-5. I will send on 9700, simultaneously on 12056. I will listen on 8440, simultaneously on 12414.
9700 and 8440	MS-5	Link is established
14556	RFH70 de RIW QYT4 QMO ok? k RIW QLS ok? k	Adjust your MS-5 system. Use alternative frequency.

RIW relays a message from RMP to RFE76:

Frequency		
14556	RFE76 de RIW QTC 411 66 11 1607 411 = sml = fm RMP = (txt)	"sml" = priority code for "Samoljet".

Station RMZW has technical problems with voice communication in MS-5 mode and is going to test it with RIW. This happens quite often or a station does not hear well on the proposed frequency. In this case MS-5 may run for a long time in idling mode (instead of the 12 channels, many lines are visible in an audio spectrogram) until communication is resumed.

Frequency	Traffic	Comments
11000	RMZW de RIW QSA4 QSA? QYT4 k	Your signal strength is good. How do you read me? I will use MS-5 mode.
12464	RIW de RMZW QSA2 QYT4 k	Your signal is weak. Ready for MS-5.
11000	RIW QYT4 QSX 12398 ok? k	RIW will listen on 12398 kHz for MS-5 tfc.
12464	RMZW ok QYT4 QSX 12398 k	RMZW agrees. QSX and QWH is mixed up, because he just repeats. The NCS doesn't care. Both know, what is meant.
11000	RIW QYT4 QCM k	RIW: Your transmission suffers from technical problems.

Fleet Broadcasts

1. Introduction

Fleet HQs regularly broadcast plain Russian Morse messages with weather forecasts and navigational Warnings. Knowing the target area of these notifications may give an idea about the waters, in which the units operate. With a little patience we can read the messages at least partially - unless you are happy enough to speak Russian. In the Fleet Broadcasts the normal CIS preambles are used, see: Standard Format for Morse Messages . All traffic is hand-sent, even the repeats of long weather forecasts.

The following formats can be observed:

2. Message Formats

NAWAREA
These messages are edited by the stations of the worldwide NAVAREA network used for merchant shipping.

NAWIP
"NAWIgaciä Preduprevdenie", Navigational Warnings edited by the CIS Navy. There is always a reference made to the appropriate map, "karta", of the region.

PROGNOZ or PROGNOZ POGODY
Forecast or Weather Forecast

CHTORMOWOE PREDUPREVDENIE
Storm Warning

3. Sample Messages

RBE86 de RCV QTC 733 32 6 0450 733 = NAWIP 038 2320 karty 32311 93240 italiä uönia podwodnyh lodok 06 0700 do 08 0600 dek plawanie zapreqeno rajone s 731 centrom 40/09 s 017/00 w otm étot nr 08 0700 dek +

RBE86 de RCV QTC 733 32 6 0450 733 = Navigational Warning region 038 nr 2320 maps 32311 93240 Italy underwater (works?) at day 06 0700 until day 08 0600 December. Cruising forbidden in area s 731 centered at 40/09 N 017/00 E. Cancellation at 08 0700 +

Remarks: Be careful: Coordinates "S" (sewero) means "N" (north) and "W" (wostok) means "E" (east). The number of NAWAREA and NAWIP messages is reset on December 31. RCV is the Black Sea Fleet HQ in Sevastopol (UKR), RBE86 is a Navy collective callsign.

RBE86 de RCV QTC 519 39 5 1430 519 = NAWIP 038 2318 karta 32213 italiä strelxby torpednye 06 09 i 10 dek 0700 do 1600 rajone 37/00 s 015/25 w 37/11 s 015/25 w 37/11 s 015/38 w 37/00 s 015/38 w otm étot nr 10 1700 dek +

RBE86 de RCV QTC 519 39 5 1430 519 = Navigational Warning region 038 nr 2318 map 32213 Italy torpedo firing on December 6 9 and 10 0700 until 1600 in the area 37/00 N 015/25 E 37/11 N 015/25 E 37/11 N 015/38 E 37/00 N 015/38 E. Cancellation at 10 1700 +

RKZ de RCV QTC 403 20 15 1210 403 = chtormowoe preduprevdenie nr 838 14/17 öasom 15 dekabrä bejrute ovidaetsä sewero wostoönyj weter 12/15 porywy 18 more 3/4 +

RKZ de RCV QTC 403 20 15 1210 403 = Storm Warning nr 838 for 14/17 hours on December 15. Region Beirut easterly winds expected 12/15 in gusts 18, sea 3/4 +

Remarks: Windspeed seems to be in m/s, waveheight in m. RKZ is a Navy collective callsign.

RKZ de RCV QTC 863 17 7 1050 863 = prognoz ot 1800 7 do 1800 9 noäbrä sedizemnoe more wostok tartus wostoönyj üvnyj 6/9 more 2 +

RKZ de RCV QTC 863 17 7 1050 863 = Forecast from 1800 7 until 1800 9 November Mediterranean Sea east of Tartous southeasterly winds 6/9 sea 2 +

Remark: Tartous = Tartus (SYR)

RKZ de RCV QTC 769 35 19 1649 769 = prognoz pogody 1800 19 do 1800 20 dekabrä sredizemnoe more wostok tartus wostoönyj ügo wostoönyj 7/10 noöxü utrom 10/13 more 2/3 noöxü utrom 3/4 utrom dnem 8 ovidx gau 1020 0010 1088 0020 1075 0030 1066 +

RKZ de RCV QTC 769 35 19 1649 769 = weather forecast 1800 19 until 1800 20 December. Mediterranean Sea east of Tartous east/south/easterly (wind) 7/10 in the night/morning 10/13 sea 2/3 in the night/morning 3/4 in the morning/afternoon 8 expected ??? 1020 0010 1088 0020 1075 0030 1066 +

4. Frequencies

10543 kHz	RCV HQ Black Sea Fleet Sevastopol UKR
3192, 4079 and 6873 kHz	RMP HQ Baltic Fleet Kaliningrad RUS
6827 and 11155 kHz	RIT HQ Northern Fleet Severomorsk RUS

Naval Air Transport Units

1. Introduction

Intercepting the Naval Air Transport Units starts with a surprise, as one wouldn't expect to be listening to Ground-Air Morse communications. The most rewarding frequency is 8816 kHz, but there are others as well. All transmissions, so far heard, are simplex networks.

CIS Naval Air Transports use many "X---" Four-Letter-Location-Indicators, which are not ICAO listed. In many cases the leading "U" has been replaced by "X".

Here are some airports often mentioned in Morse traffic:

Location Indicator	Airfield	Country
EETT	Tallinn	EST
UKFA	Kacha, Crimea	UKR
UKFG	Gvardevskoe	UKR
XKFX	Chkalovsky	RUS
XLAA	Arkhangelsk	RUS
XLLP	Pushkin	RUS
XLLS	Smychkovo	RUS
XLLV	Levashovo	RUS
XLMD	Severomorsk-1	RUS
XLMF	Kipelovo/Fedetovo	RUS
XLMM	Murmansk	RUS
XLMN	Severomorsk-2	RUS
XLMO	Olenegorsk	RUS
XLMV	Severomorsk-3	RUS
XLOS	Ostrow/Verete	RUS
XLPB	Petrozavodsk	RUS
XLWF	Kipelovo	RUS
XMKK	Svetlogorsk	RUS
XMWB	Chkalovsk	RUS
XNKL	Yemelyanovo	RUS
XRKA	Andreevskaya	RUS
XRRI	Milerovo	RUS
XSCG	Chelyabinsk	RUS
XUBS	Smolensk N	RUS
XUMN	Klin	RUS
XUMO	Ostafyevo	RUS
XUOI	Buturlinovka	RUS
XUOW	Voronezh	RUS

2. ATC Centers

Five Air Traffic Control Centers are responsible for all operations of Naval Air Transport. RCH84 sometimes is audible in Europe with reasonable signal strength, maybe it is relayed somewhere.

Callsign	Callsign Voice Traffic	ATC Air Traffic Control	Possible region or location
RJF94	PRIBOJ	Air Transports Central Sector	Moscow
RJC38	NOVATOR	Air Transports Northern Sector	Murmansk Region. Airfields of Olenogorsk, Severomorsk or Kipelovo-Fedotovo.
RCB	KRAKET	Air Transports Western Sector	Kaliningrad Region. Airfields may be Chkalovsk, Chernyakhovsk, Donskoe and Khrabrovo.
RCH84	MONOLOG	Air Transports Eastern Sector	Vladivostok Region. Airfield of Knevichi.
RJC48	NORKA	Air Transports Southern Sector	Sevastopol Region. Airfield of Kacha.

3. Sample Messages

This is a typical example of traffic between aircraft and ATCs.

The 5-figure aircraft call sign corresponds to the Aircraft Registration Number which can be found in internet publications.

Frequency kHz and time UTC	Traffic	Comments
8816 1535	RJF94 RCB de 26855 QSA? QTC k	Aircraft with Reg. Nr. 26855 calls RFJ94 and RCB with a message.
8816	26855 de RJF94 QSA2 QRV k 26855 de RCB QSA3 QRV k	Both addressees are ready to copy message.
8816	26855 QTO QTR 1525 QRD XLLS XMKK QRE UMWS 1625 QAH 5700 k	26855 is airborne, the time being 1525z. I am bound for XLLS from XMKK. Estimated time of arrival in UMWS is 1625z. Flight level is 5700 m k
8816	RJF94 QTO QTR 1525 QRD XLLS XMKK QRE UMWS 1625 QAH 5700 k RCB QTO QTR 1525 QRD XLLS XMKK QRE UMWS 1625 QAH 5700 k	RJF94 and RCB acknowledge message
8816 1624	26855 QQL UMWS 1622 QRE ULOL 1720 QAH 5700 QBD 0330 k	26855 has passed UMWS at 1622z. Estimated time of arrival at ULOL is 1720. Flight level is 5700 m. Fuel endurance is 3h 30 min.
8816 1715	26855 QQL ULOL 1710 QAL XLLS 1805 QAH 5400 QBD 0300 k	26855 has passed ULOL at 1710. I estimate to land in XLLS at 1805. Flight level is 5400 m. Fuel endurance is 3 h.
8816 1800	26855 QQM XLLS 1806 k	26855 will land in XLLS at 1806z.
8816 2005	26855 QTO 1950 QRD XMKK XLLS QRE ULOL 2100 QAH 5400 k	26855 is airborne since 1950z on his way back to XMKK.

4. AC Position Reports

Sometimes the aircafts report their position:
QTH 59112140 which means: 59N11 21E40
QTH 56441954 which means: 56N44 19E54
(both samples from a log of MPJ at UDXF group)

5. Air Transport Units

Fleet	Naval Air Transport Unit:	HQ in:
Baltic Fleet	398th Indep. Air Transport Sq.	Khrabrovo
Northern Fleet	403rd Separate Mixed Aviation Rgt.	Severomorsk-1
Black Sea Fleet.	917th Indep. Composite Air Rgt.	Kacha
Pacific Fleet	71st Indep. Mil. Transport Sq.	Nikolayevka, Primorskaya.

6. Aircraft

Two aircrafts, widely used in Naval Air Transport are the *An-24 COKE* and the *Be-12*.

The Navy Fleets

1. Introduction

It is by nature that many information about military bases concerning dimensions and facilities are outdated or not complete. My feeling is that the data provided by the *Center for Nonproliferation Studies* are reasonably well investigated. The same holds for the *Bellona Foundation*. I used - amongst many others - their Websites for background information.

The Russian Navy is divided into the Strategic Nuclear Forces and General Purpose Forces. It consists of the following branches:

- Submarine Force
- Surface Ships Force
- Naval Air Force
- Marines and
- Coastal Defense Troops.

The fleets are:

- the Black Sea Fleet
- the Pacific Fleet
- the Northern Fleet
- the Baltic Fleet
- the Caspian Sea Flotilla

2. CIS Navy Headquarter

For many years Navy Headquarters were in Kremlin Buildings in Moscow. Since October 2012 the Russian Navy ensign waves again on the Old Admirality in St. Petersburg - after years of a dispute. Whether parts of the huge organisation were left behind is not clear.

For the moment, I assume, that most communication facilities of callsign RIW still are operating from several transmitter sites near Moscow; but as there are so many in this region, RIW cannot be pinpointed easily. "Bronzovy" in Alabushevo at 56N 37E6.3 may belong to RIW, other sources suggest "Manikhino" at 55N53.0 36E57.0. For Far Eastern contacts RIW will be relayed by unidentified stations.
Frequencies of RIW are: 7664, 9145//11000//14556, 17468 kHz and many others.

RIW is a function, not a location and that's why RIW operators use several callsigns from the same desk. In certain cases RIW becomes RJE56 (see **3. Special Purpose Callsigns**) or RAA. RIW, RJE56 and RAA are used by the very same RIW operators - notably when they mix-up callsigns in dense traffic periods.

3. Northern Fleet

Headquarter in Severomorsk (Murmansk Oblast), callsign RIT.
The transmitter site "Kortik" is possibly at 69N3.5 33E19.3 or 68N51.3 32E59.1. There are more RDF and radar stations in the vicinity as well as the receiving center "Bukhta".

Main Naval Bases and shipyards in Gremikha, Ura Guba, Zapadnaya Litsa, Severodvinsk (Arkhangelsk Oblast) and Polyarni. The largest submarine base is located in the Gulf of Litsa with four facilities, the newest, Nerpychia, being the home port of *Typhoon* class submarines. Seven *DELTA IV* class SSBN submarines are located in Gadzhiyevo.

Flagship of the NF is *"Pyotr Velickiy"*, a Guided Missiles Cruiser of the Kirov Class. The sole Aircraft Carrier in the CIS Navy, *"Admiral Kuznetsov"*, the Udaloy II Class large ASW ship *"Admiral Chabanenko"* and the Sovremenny Class destroyer *"Gremyashchy"* are other important ships of the NF. The global trend towards an increasing importance of Asia has a strong impact on the NF. Most of the new ships being under construction will be deployed in the Far East region.

Frequencies of RIT: 5343, 7467, 11155, 15812 kHz and many others.
RIT uses the collective callsigns RLO, RKZ, RKS and others for its fleet or for a certain task force.

4. Baltic Fleet

Headquarters are in Kaliningrad, callsign is RMP. The transmitter sites "Yakar" in Kaliningrad and "Lot" in Baltiysk are not identified; there are a few possibilities. Main Naval Base is Baltiysk with small, partly abandond facilities in Kronshtadt and St. Petersburg.

Flagship of the BF is the Sovremenny Class destroyer *"Nastoychivy"*. The BF - as a relativly small unit - mostly include Frigates and Corvettes, only one or two Lada Class conventional submarines remain in Baltiysk.

Frequencies of RMP: 4051, 6873, 9373, 11418 kHz and others.
RMP uses the collective callsigns REO, RMU, RKZ and others for its fleet or for a certain task force.

5. Black Sea Fleet

Headquarters in Sevastopol UKR, callsign RCV.
The transmitter site "Magnit" is at 44N33 33E33.7, the receiving site "Lafet" has not been identified so far. Ary Boender for UDXF mentioned a huge radio site on Karabi plateau at 44N55,2 34E27,7 as home of Sevastopol Navy Beacon "D". Looks like there are more Navy transmitters up there.

Small facilities in Ochakov, Chernomorskoe, Novoozernii, Feodosiya (all UKR) and Novorossijsk (RUS). Logistic supply base in Port of Tartus (SYR)

After the desintegration of the Sovjet Union 1990 a series of agreements settled the partition of the Black Sea Fleet between Russia and the Ukraine in the relation 50:50. 2008, only 18,5 % of the ships sail under Ukrainian flag. Russia will rent all Crimea based facilities until at least 2025, including lighthouses and MARS-75 Radio Navigation stations. The modernization work of Novorossijsk port have started 2012, according to several press releases.

The *Treaty of Montreux* of 1936, which gives Turkey control of the passage of the Bosporus, allows NATO ships to enter the Black Sea. This has led to tensions, as Russia regards the Black Sea within their sphere of influence.
Russia, Ukraine, Bulgaria, Georgia, Romania and Turkey are members of the *Black Sea Naval Cooperation Task Group*. A small Romanian unit is responsible for the lower course of the Danube with its home port Tulcea.

Flagship of the BSF is the Slava Class Guided Missile Cruiser *"Moskva"*. Other ships are the Kashin Class Destroyer *"Smetlivy"*, Krivak Class Frigates and Grisha Class Corvettes. It is assumed, only the *"Alrosa"* , a conventional Kilo Class Submarine, is operational.

Around 2010/2011 some changes must have happened around RCV; its fieldstrength has decreased drastically. Depending of the hour many messages hardly can be decoded; rotatable antennas, less power?
Frequencies of RCV: Primary 10543, others are 4055, 5224, 5312, 11688 kHz.
RCV uses the collective callsigns RKZ, RKS, RJV, RIP90, RBE86, RGX94 and others for its fleet or for a certain task force.

6. Pacific Fleet

Headquarters in Vladivostok, callsign RJS.
Transmitter centers "Zenit" and "Udar" and receiving site "Angar" have not bee identified so far. There are several possibilities, some, including a RDF facility, seem to be abandoned, others may serve for Broadcasters.

Naval Bases in Petropavlovsk-Kamchatskiy possibly uses callsign RCC, but transmitter site "Yadvo" and receiver "Bizon" have not been identified. More facilities are in Magadan (mostly abandoned), Kamchatka (Shipyards), Rybachiy (Submarine Base), Pavlovsk and Razboynik.
A new, and so far largest Submarine Base in the Far East, will be erected in Vilyuchinsky, in the Avacha Gulf, close to Rybachiy Submarine Base. The new *"Borei"* class submarines will be stationed there. This reflects Russias doctrine setting priorities in the Far East to the debit of the Northern Fleet.

Flagship of the PF is Slava Class Guided Missile Cruiser *"Varyag"*. Other important ships are 5 Sovremenny Class and Udaloy Class destroyers. There is a whole series of nuclear powered and conventional submarines. It is not clear, how many still are operational. Contrary to all what's been waffled since 1991, both the Northern - and Pacific Fleet still have a frightening fire-power.

Frequencies of RJS: 4048, 10203, 13636, 7632 kHz.
Unfortunately RJS rarely is intercepted in Western Europe, there is little known about traffic, callsigns etc. RJS might be relayed, but that too is not confirmed.

7. Caspian Flotilla

Headquarters in Astrakhan RUS, callsign RKN
Naval bases in Aktau KAZ, Fort Shevchenko and Aral planned.

Frequencies: 5400.5 kHz, call sign RJD5 (unconfirmed)
Command and facilities are shared with Azerbaijan and Kazakhstan. Communications on shortwaves are rarely reported (weather bulletins and Nautical Warnings).

Russia has beefed up its Caspian military presence recently. The flotilla now (2008) includes 2 frigates, 12 patrol ships and a variety of small vessels for coastal defense, waterway patrol and littoral warfare. In 2004 the 500 tons diplacement Buyan Class Corvette "*Astrakhan*" and the stealth technology Gepard Class Frigate "*Tatarstan*" have been launched.

8. Mediterranean Eskadra

Headquarters: none
The 720th Logistics Support Point in Tartus (SYR) since the 1970s.

The *Warsaw Pact* ceased to exist in 1991 and the powerful 5th Soviet Eskadra with its flagships callsign UAHY withdrew from the Mediterranean. In 1996 battle ships, guided missile cruisers and auxiliary vessels

for the first time again deployed in the Mediterranean to show flag. Since then units of the CIS Navy, mostly of the Black Sea Fleet, take part in naval exercises and anti-terrorist campaigns. Late in 2007 Russia announced it would resume its regular patrols in the Northern Atlantic and in the Mediterranean Sea.

In June 2006 Russian sources made public, that Russia wants to expand Naval presence in the two Syrian ports of Tartus and Latakia. The fully-fledged bases should help to redeploy the naval and supply ships leaving Sevastopol. The bases are to be protected by the Mobile Coastal Missile System (MCMS) *BASTION* and anti-ship missiles *Yakhont*. World Arms Trade Analytic Centre (WATAC) Director in September 2010: "To speak plainly, modern shipborne air defense cannot intercept these missiles."

New docks are reported from Latakia (April 2008).

The long range cruise of an interfleet task force around ACC *Admiral Kuznetsov* from Severomorsk into the Mediterranean Sea from Dec. 2011 until Feb. 2012 with port visits in several countries, including Tartus, spurred many speculations around Russias support for Syria and its tyrannical president Assad. In any case Tartus base is very important for Russia's Navy.

C3 Systems of the CIS Navy

Introduction

Here I'm trying to describe a bit more in detail some systems and communication means of the Navy. The Navy is - mostly through its SSBNs - an important part of the Nuclear Armed Forces and therefore uses systems and equipment, which fits the overall doctrine. This and the fact, that the Russian/CIS Navy still uses some decodable communication modes, opens a keyhole for the inclined listener in order to draw some simple conclusions.

1. C2 Systems of the NSNF

Control of SSBNs on military patrol is conducted by the General Staff of the Russian Federation Armed Forces through the Navy's Main Staff according to the Nuclear Armed Forces Systems and doctrine.

Continuously working transmitting / receiving radio - and space communication centers are deployed throughout Russia. This control system includes permanent stations working on different frequencies: satellite -, aircraft - and ship relays, mobile ground stations and hydracoustic stations and - relays. All elements of the control system are interconnected both by cable and radio waves. Secure transmission of launch order signals to SSBNs on patrol is guaranteed by transmission over a group of frequencies, but not less than 2 on VLF, 5 on HF and 5 via satellite. The transmission sked is continuously adapted for best communication.

1.1. Broadcasts on ELF

Transmitted ELF signals will - unlike shorter wavelengths - penetrate seawater to depths of Hundreds of meters, depending on temperature and salinity. The signals of the Russian ELF station*ZEVS* on the Kola peninsula, may be received by SSBNs around the globe. Due to the low bandwidth of the Morse code, transmission speed is very low. At a fixed sked short orders for all SSBNs are sent, some codes may, for example, tell them to surface, for reception of more orders on higher frequencies in fast transmission modes. In peacetime an „all is normal„ code is continuously transmitted. Any interruption will indicate an alert situation. A more in depth description of *ZEVS* can be found here: **http://www.vlf.it/zevs/zevs.htm**

According to Rimantas Pleikys (06.2013) a transmitter type *Varijatsija - 1* with a power of 2 x 2500 kW is in use at *ZEVS*. Between 2006 and 2010 a new system has been developed which will/which had replaced the former transmitter.

1.2. Broadcasts on VLF

VLF signals will penetrate seawater to depths of around 20 m. Submarines must rise to periscope depth and deploy their floating antenna for best reception. SSBNs can be reached on VLF on great parts of the Oceans (not in parts of the Southern hemisphere, in the Western Atlantic and in the Eastern Pacific) through 5 permanent VLF stations . VLF transmissions carry not only general orders for all or parts of the SSBNs, but also combat control signals.

We can hear quite easely these FSK transmissions in Morse code - or 36/50 Baud modulation around the clock. Mobile ground and airborne VLF stations will relay combat directives, in the case the primary stations have been damaged by an enemy. Since 1985 the Soviet Union made use of the *TU-142 RT* communication aircraft with its transmitting antenna stretching over several kilometers. 1992 seven *TU-142 RT* planes were based at the Pacific Fleet bases and six in the Northern Fleet.

1.2.1. VLF Transmitter Sites

In 2008 VGK's VLF network consisted of 6 transmitters, which are described more in detail here. These stations seem to be involved into the*Signal-A/V'yuga System.* Sincere thanks to Rimantas Pleikys for his corrections and amendments.
Some time ago the following transmitter types were in use at the 6 VLF stations:
Okean 4000 kW, in use at RJH77?
Titan 2000 kW, in use at RJH99?
Prolom 2000 kW, in use at RJH63?
Unknown system 1500kW, in use at RAB99?
Herkules 1000 kW, in use at RJH69?
Rotor 500 kW, in use at RJH66?

There is/was a Wide Spectrum Navy Communication System named *Ruchnist* and *Draga*. I don't know however, where it fits into the other Navy Comms Systems.

Location/purpose	Operated by	C/S
Vileyka/Molodechno (BLR), mostly time/phase synchronisation signal. Maybe modernization is ahead (or closure...). Location is 54N27.8 26E46.7.	31st Communications Hub, radio station nr. 43, nicknamed "Antey", military unit 49390.	RJH69
Kara Balta/Chaldovar (KGZ), time/phase synchronization signal and VGK tfc. Location is 43N1.9 73E36.8.	338th Communications Hub, nicknamed "Prometey".	RJH66
Khabarovsk Vladimirovka (RUS), time/phase synchronization signal and VGK tfc. Location is 48N29.1 134E49.2.	Nickname is "Gerkules"	RAB99
Martanskaya, Krasnodar area (RUS), time/phase synchronization signal and VGK tfc. Station has been modernized with solid state transmitters. Location is 44N46.4 39E32.8.	Nickname is "Gerakl"	RJH63
Druzhny/Nizhniy Novgorod (RUS), time/phase synchronisation signals and VGK tfc. Station has been modernized with solid state transmitters. This is German "Goliath" from WWII. Location at 56N10.4 43E56.	270th Communication Hub, nickname "Golyaf-2MK", military unit 36206	RJH99
Arkhangelsk (RUS), time/phase synchronization signal and VGK tfc. Location is 64N21.5 41E33.6	Nickname "Atlant"	RJH77

Specifications and pictures of the transmission sites:

RJH69, 3 insulated, central masts 320 m, 15 grounded, outer masts 270 m. Vileyka Molodechno (BLR). Pictures show Transmitter site, power amplifier, control room, antenna tuning stage and antenna detail

RJH66, 3 central, insulated, radiating masts, 15 grounded masts. Bishkek, Chaldovar (KGZ) . RJH66 receiving station "Kaktus" at 43N5 74E8.4, a huge site with several Beverage arrays and many other antennas for VLF to HF.

RJH63, 7 masts, central insulated radiator and 6 outer, grounded masts. Martanskaya, Krasnodar (RUS).

RJH99, 3 central, insulated, radiating masts, 15 grounded masts. This in fact is the German built "Goliath" transmitter, which has been dismantled and rebuilt here. Druzhny, N. Novgorod (RUS).

RJH77, 3 central, radiating, insulated masts, 15 grounded masts. Vozhdorma, Arkhangelsk (RUS)

RAB99, a different array with 18 masts. Vladimirovska, Khabarovsk (RUS)

1.2.2. VLF Transmission Skeds and Formats

All transmitters are active 24/7. Their estimated power is 1'000 kW (EIRP 30...50 kW). The frequencies in use are 18,1 - 20,5 - 23,0 - 25,0 - 25,1 and 25,5 kHz. 18,1 kHz is only used for VGKs FSK transmissions in Morse Code or CIS 36/50 (aka T-600 or BEE mode).
Only one VLF station is on the air at any time, the schedule being unknown. Any single station can be used at any time slot.
All other frequencies are used in turn for dissemination of time/phase synchronization signals, the schedule of RJH63 being different from the other transmitters.

A multitude of HF channels parallel to 18,1 kHz allow monitoring the network on higher frequencies too. Some of the HF transmitters might be co-located at the 6 VLF transmitter sites. HF channels constantly change, I haven't found a sked so far, but these frequencies may be worth to listen to: 14411, 14664, 10535, 7657, 6342, 5438 kHz. Non parallel CIS 36/50 traffic may be found on many other frequencies, as this mode is widely used in CIS forces.

General Staffs short CIS 36/50 messages normally are sent at h+08 and h+28, long ones at h+48. Transmissions at h+18, h+38 and h+58 are possible as well. Short and long Morse messages as well as Morse xxx messages can be sent at any time. xxx messages nearly always are disseminated in batches, spaced only a few minutes. Traffic load varies much from day to day, exceptions in the sked are always possible.

The following message formats have been observed so far:
- short routine message CIS 36/50 mode
- long message CIS 36/50 mode, sometimes preceded with „xxx xxx„ in Morse code
- short routine messages Morse code, containing a callsign and 2 5FG (repeated twice).
- long messages Morse code, many 5FG, some with decode key and final group containing day/group count.
- xxx Strategic Flash Messages in Morse code.

CIS is a synchronous FSK mode with 200 Hz shift, which starts idling with 36 Baud and then switches to 50 Baud for synchronization and message. All tfc is encrypted, HOKA states, there is a 5-repetition cycle. Besides the T-600 modem other equipment is in use today as well. CIS 36/50 transmissions start with a synch string and are regularly re-synchronized. So far VLF - and HF transmissions used the same synch strings.

Short routine messages are made up of 3 individual messages, which are repeated during the same day.

Next day another text is repeated. There are exceptions.
Long messages normally start immediately after the h+48 routine message and a 1 min "010101..." 36 Bd idle period. They too are made up of 3 individual messages, which are not repeated. They all are of the same length and end at h+55, but 6 messages are possible as well.
Long xxx messages are sent at any time, again the same text is sent 3 times.

Morse code messages are hand sent. Possible op errors so far observed were: wrong text, wrong message, typos. All messages end with "k", but an acknowledgement of the counterpart never has been heard - obviously other channels are used.
Morse - and CIS 36/50 messages may start with "uuuuu", the number of letters can vary. The meaning is not clear, in the USSR Forces it simply said: "Transmission in your direction starts now," and "bbbbb" translates to: "Transmission in my direction starts now."

1.2.3. VLF Callsigns and Allocation

CIS 36/50 messages are decodable, the text remains encrypted, but the Morse code messages contain callsigns in clear. It is therefore an assumption, that the CIS 36/50 messages will go to the same addressees.
Some 3L callsigns have been used in the past in Morse messages:
- RDL for short routine messages, for long 5FG messages and for Strategic Flash Messages
- REU, RDL, RKS, RED4,RJS, RLO for Strategic Flash Messages

3 letter callsigns are used for the Fleet HQs or for „all units concerned„. It is not clear, who is who. I've noted many changes since 2010: new callsigns came in use, XXX Flash Messages are sent very irregularly - dozens of them one day and next week nothing, new formats as well, with other groups of figures, etc.

Are now - after so many years - major changes of this network ahead soon? Is there a connection with the never ending story about dislocation of the Navy HQ to St.Petersburg or with the Armed Forces new structure since last year? Who knows.

1.2.4. Mobile VLF Stations

A. Mobile containers on floating objects
100 kW solid state transmitters type *Piatidesniatik* with life supporting system and power supply unit in containers are carried by ships. A stationary or air balloon supported antennas can be used allowing communication up to 2000 km.

B. Mobile land stations
30 kW transmitters *Ugor-A*, designed in the 70s, mounted on *Ural-375D* type trucks with air baloon supported vertical antenna.

C. Mobile VLF system *Ugor-AS*
A network of mobile 20 kW stations. Its operation is based on synphase coupling of the electromagnetic fields of the transmitters type *Ugor-A*. The (mobile) command post can operate up to 8 transmitters.

1.3. BC and Communications on HF, VHF, UHF

This network is the most diversified. It includes a multitude of permanent mobile ground radio centers and radio relays. It also uses satellite -, airborne - and ship relays. At the dawn of the Soviet Unions strategic fleet this network was the only mean to communicate with remote submarines off the US coasts. As VHF/UHF signals do not propagate over the horizon and require special antennas, we prefer listening on HF for FSK transmissions in Morse code - or 36/50 Baud modulation, which are disseminated in parallel to the VLF transmissions.
HF and VHF do not travel through water, submarines have to rise to periscope depth and push up a telescopic antenna above sea level. Submarines as well use floating towed wire antennas, which allow

reception down to 100 m below sea level. Metallic antennas are easy to detect and are vulnerable, but in peacetime most of the communication is handled via HF, VHF and UHF because of speed of transmission.

1.4. Acoustic Communications

Sound is propagating in water very well and therefore is used for acoustic detecting system for submarines and even for acoustic communication systems. The submarine may remain submerged all the time and receive information from fixed near-bottom transmitters in a distance up to 30 km. Longer distances give problems, due to the comparably slow acoustic waves and the strong absorption of sound.

2. Equipment and Systems after WW II

Many efforts to provide communication with submarines were embarked and became reality in several projects:

1948: *Pobeda* system, VLF transmitter of 1000 kW, VLF and HF range 6000 km.
1956: Superfast HF channel to SMS, protection against detection and RDF.
1969: Adoption of VLF/HF automated communication lines, MW communication center, upgraded VLF transmitters for reception to a depth of 30 m and sessionless communication.
1985: *Glubina* program with MW transmitter at *Zeus* facility (NF), 5000 kW VLF station at the *DM-8* facility and a 1000 kW VLF transmitter at the *1500 DM* facility.
1995: *Glubina-1* program with 2 MW VLF transmitter at the *DM-10* facility (PF), 500 kW VLF transmitter at *Zeus* facility (NF), 5MW MW station in the Far East, experimental seismic transmission center for the NF, trailing floating emergency information device for submarines submerged to 400 m and others.
1993: Experiments with ELF at *Zeus* facility (NF) with signals recorded in a distance of up to 1500 km and down to 300 m in the sea.
2000: Most of the *Glubina-2* program was approved and funded, the nearest to completion are channels of laser, seismic and ELF.

3. Automated Control Systems

According to the functionality, three types of ACS are known: ACS of the Forces, ACS of combat facilities and ACS of special purposes.

There are five levels of **ACS of the Forces**: strategic, strategic and operational, operational, operational and tactical, tactical.
At strategic level a well protected, stationary ACS is on duty at the base of Navy's Main Staff.
At strategic and operational level ACS is deployed, that represents the common naval control body at specific Marine Theater of Military Operations (MTMO).
At operational level stationary ACS are deployed at the command stations of the Navy's Air Force, Naval Rear Services, some Flotillas and Operational Ship Organization (OSO). These ACS are stationary apart from OSO ACS which is located at the flagship.
At operational and tactical level in some fleets OSO ACS are created. Examples can be the Group of Miscellaneous Forces (GMF) or Operative Squadrons (OPS). ACS of this level are based at a special control ship or on the flagship. ACS of Naval Bases (NBACS) are related to the same level.
At tactical level ACS are created for divisions, Tactical Ship Organizations (TSOACS), Tactical Groups (TGACS), Surface Ships (SSACS) and Submarines (SMACS). All other ACS are mobile and are deployed at the ships.

ACS of combat facilities are assumed to be classified as per six types of weaponry that is controlled by them: Attack Missile Weapon (AMWACS) aboard SMS, missile cruisers, divisions with cruise missiles, Torpedo Weapon (TWACS) installed in submarines, surface ships and torpedo boats, Artillery Weapon (AWACS) aboard surface ships, artillery boats, anti-aircraft defense and artillery units.

ACS of special purposes have been developed for Radio Electronic Warfare (REWACS), for Anti-Submarine Controlled Missile Weapon (ASCMWACS), for Anti-Aircraft Missile Systems (AMSACS).

ACS of special assignment are divided into eight types, namely for: communication subsystems, Shore Surveillance Systems (SSSACS), Radar Information Process Automated System (RIPAS), Sonar Information Process (SIPAS), Radio Technical Information (RTIAS), Underwater Situation Lightning (USLAS), Navigation, Hydrographical and Hydrometeorological Information (NHGGMPAS) and Ship Technical Facilities (TFACS).

4. Combat Information and Control Systems (CICS)

These systems are intended for automation of control procedures of ship weaponry and technical facilities for the purpose of complete use of combat capabilities of the ship.
Around 1980 surface ships of the Russian Navy were equipped with several tens of CICS of 1st and 2nd generation. State trials of 3rd generation CICS *Lesorub*, made by RPA Mars, began in the meantime. Although it significantly improved the tactical and technical characteristics as well as the degree of automation, it could not reach full complexity in automation of combat operations. In further attempts towards a uniform system combat contours of anti-aircraft -, anti-submarine - and attack weapon control first were realized on the aircraft carrier *HACC Admiral Kuznetsov* and the guided missiles cruiser *HMC Pyotr Veliky*.

First ACS of the 4th generation and with it CICS *Tron* appeared. The first CICS for submarines was *Tucha*, which now was a centralized structure for Situation Lightning Contours, ballistic missiles and torpedos control as well as for C2. CICS structure now generally became centralized with independent subsystems, e.g. *Alleya-2* for surface ships. The example of *Alleya-2* indicates, that for ACS of tactical level own subsystems for information exchange can be made. The structure of such subsystems, as a rule, repeated the accepted control organization. In Alleya-2 the information exchange subsystem consisted of three subsystems: *Morye*, *Aist-K* and *Lasur-MK*.

Some systems, of which information was available, are briefly presented following. Technical specifications are not available, apart from some ridiculous statements like the total power consumption, the weight or the resolution of the displays.

Morye/Morye-U
is a CICS for tactical group ships with narrow aperture coded radio communication between up to 10 group members. Developed 1962 ... 1965 by „Morinformasistema-Agat„, OJSC concern (Moscow). It might well be, that upgraded versions of *Morye* still are in use today (2008).

MVU-211
CICS, solving the following tasks:
- acquisition, processing and storage of data about air -, surface - and subsurface situation
- display of conditions and operation of the ships weapon systems
- presentation of recommended procedures for combat use of weaponry, tactical ship operations, direct control in combat
- documentation of the situation

Omnibus
Highly integrated CICS for a wide range of tasks of submarines. Due to the different tasks of submarines their CICS have corresponding layouts.
The group of informational tasks receives information from all ship sources: sonar, non-acoustic sensors, navigation, radiolocation and radio reconnaissance, IPM and signal intelligence.
The group of tactical manoeuvering tasks include the latent forced crossing of anti-submarine forces effective area, the breaking of anti-submarine defense, the submarine avoidance and disengagement and the withdrawal from the survey band of surface ships. *Omnibus* at the same time will recommend parameters of manoeuvering and combat and allows the commander various methods of torpedo firing,

mine standing or communication with other ships of the group.
The group of training tasks allows to perform the training of the crew that operate *Omnibus*.

MVU-133
This is another CICS for submarines. Seems to be more recent than *Omnibus*.

Trebovanye-M
Trebovanye-M is a recent generation CICS for combat actions of surface ships of light and medium displacement. It automates all possible functions of combat control including ship's helicopter, safe pass with surface targets and joint navigation within the group of ships. The whole system has been developed on the basis of LAN Ethernet with 100 Mbs. Interconnection of the various software complexes within the ship's armament is via RS-232/RS-422 or special interfaces. The system provides the display of unprocessed or processed radar information and cartographical information in the C-57 intl. standard in any combination. *Trebovanye-M* is protected against any unauthorized use and incorrect actions.
The software is written in C++ language and the operational environment is a real time application QNX.
Manufacturer is RPF „Meridian„ (St. Petersburg).

5. Automated Communication Systems (ACS)

Modern ACS are designed to provide the following:
- communication channels via satellite and radio from ELF up to UHF
- sounding
- monitoring electromagnetic surroundings onboard
- automatic connection of any workstation to the communication channels
- processing and delivery of messages and signals to the addressees
- interface with the communication subcomplex that provides airborne vehicle control
- etc

Again it is not clear, which of the systems presented here still are in use today (2008). We may assume however, that many still are, but have been, at least partly, upgraded whenever possible. Information about new systems, e.g. for the last generation submarines, is not available.

R-780
Designed to establish communication between submarines, surface ships, aircrafts and coastal command posts of the Navy in telegraphy, telephony and facsimile on HF and VHF. 7 to 15 channels can operate simultaneously. The power consumption is impressive: 65 kW.

R-782-5KE
The successor system provides communication channels between 100 kHz up to 400 kHz for open traffic in the modes telegraphy, telephony and facsimile between surface ships and command posts as well as for homing ship- and ground based aircraft (*Mayak-SV* mode on MW). FSK with 125 or 200 Hz shift up to 100 Bd is possible as well. The statements regarding ELF reception with this system are inconsistent.
Manufacturer of R-780/R-782-5KE is FSUE „Neptun„.

BURAN-6E
Provides open duplex communications with coastal stations, coordinating ships and aviation in voice and telegraphy as well as *Mayak-SV*mode on MW and automatic data link with computer aided action information organization. The frequency range is 100 kHz to 400 Mhz.
BURAN-6E may contain up to 5 transmitters *Fakel P-3*, 8 receivers *Skalyar-K1* and up to 6 VHF/UHF radio stations *R-625 Pikhta, R-669*, etc.

RUBEROID
RUBEROID (*RUBIN* in export version) seems to be the most modern ACS which I found described. It provides reliable communications to surface ships, submarines, aircraft, spacecraft and terrestrial stations.

Channel-forming commutation and distribution systems, radio equipment, remote operation, documentation -, information - and control systems can be configured to suit all requirements. An independent GMDSS is part of *RUBEROID* as well.
Up to 10 duplex communication channels can be operated. Interestingly enough the number of operators is given as one. The time to set-up a communication channel is between 10 and 80 s, the time to change mode within a channel is "not more than 5 s".
Some of the units used for *RUBEROID* are
- workstation (no typenumber)
- communication terminal P-492
- control unit of channelizing equipment
- multifunctional digital switchboard
- switching equipment for radio comms with surface ships P-450
- UPS unit

It is worthwile to note the description of P-492:
„Operating principle is based on specially developed software that enables to automate the process of preparation, storage, processing, recording and registration of messages during radio traffic in discrete data link channels, **to act as a telegraph key and to act as a Morse Code transmitter."**
Manufacturer is RIO CJSC (St. Petersburg).

R-785
Not much information is available about R-785, which seems to provide all possibilities for communication with all sort of addressees. Reference is made to „cryptographic security„ of the equipment.
Up to 60 communication channels can be operated simultaneously.

6. Radio Communication Equipment

Monitoring CIS Navy radio networks might bring up the question of how the equipment at "the other end" may look like. In most cases an identification of ships will not be possible, but at least some short descriptions of Navy radio equipment have been released in *"Russia's Arms and Technologies Vol.XIII"*. I've tried to give the most important specifications and some pictures of what is available today (2008). The description is the one given by the publishers, date of production is nowhere mentioned. Quite often equipment is known with different type numbers, with only minor changes.

R-638-2 Transmitter
Automated solid state transmitter, may be used independently or as part of ACS.
Frequency range 1.5 to 60 MHz, output 4 kW in cont. mode.
Modes: AM/FM/PM, telephony, wideband pulse.
Antenna switch for 3 antennas (whips 6m and 8m).
Tuning time 0.3 s, with transmatch unit max. 55 s.
Local or remote operation via RS-232/RS-485 interface.
Manufacturer: FSUE "Neptun", RIACSC.

R-638-3 Transmitter
Automated solid state transmitter, may be used independently or as part of ACS.
Frequency range 1.5 to 30 MHz, output 1 kW in cont. mode.
Modes: AM/FM/PM, telephony, wideband pulse.
Tuning time 0.3 s.
Local or remote operation via RS-232/RS-485 interface.
Manufacturer: FSUE "Neptun", RIACSC.

R-638-3-4 Transmitter
Automated solid state transmitter, may be used independently or as part of ACS.
Frequency range 1.5 to 30 MHz, output 250 W in cont. mode.
Modes: A1A, F1B, G1B, F3E, R3E, H3E, J3E.

Tuning time 0.03 s.
Local or remote operation via RS-232/RS-485 interface.
Manufacturer: FSUE „Neptun„, RIACSC.

Kompas Transmitter
Automated solid state onboard transmitter for ACS.
Frequency range 1.5 to 30 MHz, output 1000 W in cont. mode.
Modes: A1A, F1B, G1B, F3E, R3E, H3E, J3E, M1B, 5F1B, 15G1B.
FSK shifts 100, 125, 170, 200, 400, 500, 1000 Hz
Programmable channels 100
Time to change channels 50 ms
J3E audio bandwidth 300 ... 3400 Hz
Local or remote operation.

R-631 Transmitter
Shortwave Transmitter for surface ships, includes Mayek-1 exciter and wide-band matching unit.
Frequency range 1.5 to 30 MHz, output 5.5 kW in cont. mode
Modes CW telegraphy, SSB/DSB AM telephony, 2FSK with shifts of 125, 200, 500 and 1000 Hz
2FSK with 15-fold frequency diversity in 2 kHz steps, PSK with 180° shift, PSK with 15-fold frequency diversity in 2 kHz steps, FM telephony.
Ext.forced air cooling.
Manufacturer Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg)

R-635 Transmitter
Shortwave Transmitter for submarines, includes Mayek-1 exciter and automatic wide-band matching unit.
Frequency range 1.5 to 30 MHz, output 250 W in cont. mode, up to 17 kW short-time mode with 2 PA
Modes CW telegraphy, SSB/DSB AM telephony, 2FSK with shifts of 125, 200, 500 and 1000 Hz
2FSK with 15-fold frequency diversity in 2 kHz steps, PSK with 180° shift, PSK with 15-fold frequency diversity in 2 kHz steps, FM telephony.
Manufacturer Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg)

Serdolik PRD-20 Transmitter
Shortwave transmitter 3 to 30 MHz with an output power of 20 kW for stationary use for long-haul communications. Modes are SSB with independent sidebands R3E and J3E between 0.3 to 3.4 kHz, FSK 50 or 100 Hz shift, and telegraphy A1A.. Tuning time is less than 5 s. The unit may be controlled remotely or locally.

R-774 DSK Skalyar receiver rack
19 inch width, for stationary radio centers, the receivers being produced in several versions.
Frequency range 0.1 to 2, 1.5 to 60 or 0.1 to 60 MHz in steps of 10 Hz
Modes A1A, J3E, F3E, F1B, G1B
100 memory channels

Skalyar-S Receiver
Replacement for R-753K sets, for automatic reception, processing and registration of up to 24 communication channels in 8 non-overlapping ranges. Suitable for continous monitoring of codes of the „Splav„ and „Integral„ radio lines. One antenna is connected via a group matching unit to all receivers. FSK with a shift of 200 Hz at 50 or 100 Baud is received. Messages may be automatically decoded and forwarded to the workstation.
Manufacturer is FSUE Omsk Research Inst. of Instrument Building.

R-170P Receiver
For mobile or stationary use in the frequency range from LW to VHF.
Local or remote control, optimized for high power interference of up to 100 V at the antenna input.
Manufacturer is Radio Equipment Plant (Ekaterinburg).

R-680 / R-682 Receiver
For mobile or stationary use in the frequency range 1.5 to 60 MHz.
Power supply is attached to the top of the unit, a rack version with 2 or 3 receivers is available.
Modes A1A. A3, A3A, A3H, F3, FSK with 125, 200, 500, 1000 Hz shift and diff. phase-shift telephony.
Manufacturer is Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg).

R-683 Receiver
For mobile or stationary use in the frequency range 3 to 100 kHz, might be used for VLF broadcasts in T-600 mode onboard submarines. The attached units on top of receiver possibly are the decoders. Modes are CW telegraphy, automatic telegraphy and FSK.
Manufacturer is Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg)

Sapfir (Serdolik PRM-B) Receiver
Designed for use in adaptive radio lines for frequencies of 1.5 to 30 MHz in steps of 10 Hz, DSP, parametric adaption to actual interference conditions, tunable preselectors. Two versions for remote control or for integrated systems. **Sapfir-04 version** covers a range of 0.1 to 30 MHz.

PT-100, PV-100 Radio Set
Designed for simplex and semiduplex shortwave communications between 1.5 and 30 MHz in the modes J3E, J7B, A1A. G1B and F1B with frequency adaption in the telephony band with 10 subchannels spaced at 300 Hz. Output power is 100 W. Digital Signal Processing, tunable preselector, remote control of antenna matching unit, tuning time less than 60 ms.

R-625 Radio Set
LW/MW transmitter/receiver set for stationary or portable use in the frequency range of 100 to 150 kHz and 200 to 400 kHz in steps of 25 kHz.
Output power 20 to 50 W dep. on mode.
Modes A2, A3, A9,F1, F3
Manufactured since 1974 until today by Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg)

R-608N / R-608P Emergency Radio Set
HF transmitter/receiver for use onboard surface ships and submarine on the emergency frequncies of the Navy.
Frequency range 3.6 ... 3.8, 4.5 ... 4.7, 6.1 ... 6.3, 8.2 ... 8.4, 10 ... 10.3, 12.4 ... 12.7, 16.5 ... 16.8, 20.0 ... 22.4 MHz with 10 fixed frequencies.
Output power 20 W (70 W short time)
Modes A1A, R3E, H3E, F1B.
Manufacturer is Russian Inst. for High Power Radio Engineering OJSC (St. Petersburg).

R-023 Voice Scrambler
The device can be used for mobile or stationary use for simplex voice channels with the radio stations: R-163, R-173, R-134 and R-171.
Open or camouflaged transmission within audio bandwidth of 0.3 to 3.4 kHz.

R-168MVE Voice Scrambler/Encryption
The device can be used for mobile or stationary use for simplex voice channels with the radio stations: R-163, R-171, R-173 in several subtypes.
Analogue camouflage is between 0.3 and 3.4 kHz, digital encryption with 2/128 key settings at a speed of 16 kbit/s. Featuring automated key input, urgent key erasing, non-volatile key memory.

MODEM AT-3004D
Designed for transmission/reception in the audio band 300 to 3400 Hz with speeds of 1200, 2400 or 2 x 1200 bps in QPSK mode. Synchronization time is less than 2 s. Keeps synchronized for at least one hour in the absence of channel. Modem can be combined with converters AT-3125 or 3132.
This unit is used for MS-5 (12 tones, spaced 200 Hz, at 75 Bd speed and a pilot tone at 3300 Hz), for CROWD-36 MFSK modes and, under the name "Bulava", as well for the AM modulation of "The Buzzer", Manufacturer is JSC Almaz.

MODEM AT-3104
This is the successor of AT-3004D, it is delivered in 7 variants for different tasks. The manufacturer says, AT-3104 "has considerable advantages in comparison with (....) AT-3004D, owing to the leading of 20-channel regime, the use of high speed microprocessors ....".
The unit is used for MS-5 and CROWD-36 traffic.

Formats of Morse Networks

All CIS Forces - in principle - use the same formats for Morse Code traffic. Most messages do consist of groups of 5 letters or 5 figures. In tactical networks both are used, in Navy networks nearly all messages are 5-figure-groups. Navy - and Fleet HQ use always the same frequencies to contact their outstations.
Tactical networks operate Duplex on 2 day - and 2 night frequencies, which change periodically:
Period 1: 1. March until 5. May
Period 2: 6. May until 31. August
Period 3: 1. September until 31. October
Period 4: 1. November until 28./29. February

Not all figures are sent as such, but are replaced by letters, because they are shorter in Morse Code. CIS Forces use Cyrillic Morse - adding new Codes to the Latin alphabet

Sometimes two stations exchange seemingly endless rows of letters in Simplex traffic, that are online encrypted morse messages.

Important, short instructions are broadcast on all levels of the CIS Forces, comparable with the Emergency Action Messages (EAM) of the US Air Force

There are broadcasts, which are yet not fully understood in its content, one example being the RADIOPROGNOZ messages. .

Some ships do transmit Sea State and Weather conditions to their HQ. They are formatted as WMO Buoy Meteorological Data in FM-13 code.

1.1. Standard Format for Morse Messages

In the former Warsaw Pact (WP) Forces every branch had its own "style" to drop a message. When, e.g. the Black Sea Fleet left Odessa, Morse traffic could be traced until the ships arrived in their operating area. The desastrous, because badly prepared, invasion of Czechoslovakia in August 1968 revealed even more weaknesses of the WP communications. Supplies did not arrive in time and sometimes in despair were ordered in plain language, etc.
As a consequence the WP Radio troops in several steps have been reorganised. A very important measure was the introduction of a standardized format for Morse messages. It is still valid for tactical and strategic CIS Military Morse networks .

In its most basic format, a Morse message will contain these elements:
TU5J 162 30 18 1202 162 = 517 = ppppp 5LGx28 azkbz = 667 + which means:

TU5J	Sender of the message. This is a tactical callsign, it's format is LLLL or FFFF or LFLL or LLFL but not FFLL or LLFF . L = Letter. F= Figure. See Call Signs in Morse Code Networks for their callsigns.
162	Message number, between 1 and 999. Is repeated after the time group.
30	Group count, not consistent. May include *procedure groups*, *traffic mode group* and *service group.*
18	Day
1202	Local time of message preparation (see below).
517	Address, is referred to as *ads* or message priority code (see below). The address specifies the receiver of the message, may be a command post or a person. Sometimes Z-Codes with trigrams.
ppppp	Procedure group for procedure M-125 (see below).
5ALGx28	Text of 28 accentuated five letter groups (30 minus procedure and service group). All messages are encrypted, no exceptions.
azkbz	Service group, indicating day and group count.
667	*sig* (signature) of the sender. Can be a command post or a person. Navy stations sign here with their callsign.
+	*ar (*end of message). Other endings may be: *k, rpt al* or *rpt QLN* (repeat message via landline)

1.2. Preamble Time

The **preamble time** (message preparation time) can tell more about the Time Zone of the sender. Ukraine and Belarus local time for example is 1 hour later than Moscow time, 4 hours later than Kazakhstan and so on. This and Daylight Saving Time (DST) easely can lead to confusion.
Tom, DL8AAM, offered this compilation in *UDXF* about the possible origin of a message.

PT = Preamble Time and UTC = Time of reception in UTC
PT - UTC = 0 up to 2 h: Sender in Moscow Time Zone or in Ukraine
PT - UTC = 2 up to 3 h: Sender in Moscow Time Zone
PT - UTC = 3 up to 6 h: Sender in Uzbekistan or Kazakhstan or Far East Russia, etc.

and during DST:
PT - UTC = 0 up to 3 h: Sender in Moscow Time Zone or in Ukraine
PT - UTC = 3 up to 4 h: Sender in Moscow Time Zone
PT - UTC = 4 up to 7 h: Sender in Uzbekistan or Kazakhstan or Far East Russia, etc.

1.3. Priority Levels

The former WP (Warsaw Pact) Forces used several **priority levels** to specify the time between teletype-message preparation and reception, which depended on the length of the message as well.
Priority level "Monument", for example, meant "at once", but a normal message with 300 words/groups arrived only 2 hours later at the addressee.

Some priority levels - *wzd, rkt, sml* - are used for Morse messages as well and are sent immediately after the preamble or the address.

Abbreviation	**Level**
m	Monument (monument) not used in Morse Code
p	Platinum (pdatina), not used in Morse Code
wzd	Air (wozduh)
cht	Gale (chturm), not used in Morse Code
rkt	Rocket (paketa)
sml	Aircraft (samoljot)
wn	Exception (wneocerednaä)
sr	Urgent (srocnaä)
--	Normal

Level: Monument is the highest priority and Normal the lowest.

1.4. Additional Information

The following part is based on information from "SAS und Chiffrierdienste" Website. It is not clear, how many of the historical information still are valid, but I'm convinced, the basic structure still is in use. Depending of the nature of a message the first few text groups may contain additional information, although they are not easily recognisable.

The first text group can be a **procedure group**, which describes the treatment of this message, most probably encryption/decryption. Procedure M-125 leads to groups like "11111" or "aaaaa". "11111" probably is used for exercises/training.

The following **traffic mode group** specifies, how the network is handling messages. Circular traffic results in groups like "55555" or "ddddd".

The **decode group** specifies the encryption key. In circular traffic this group is looked up in encryption tables, in normal traffic each letter/cipher is sent three times.

1.5. Cyrillic Morse, Cut Numbers and Abbreviations

Non Russian speaking people will make use of some Latin letters in order to copy **Cyrillic Morse** traffic.

Cyrillic Morse	"Translation" I use.
- - - -	**ch**
. - . -	**ä**
. . - -	**ü**
- - - .	**ö**
. . - . .	**é**

1.6. Cut Numbers

CIS forces use **Cut Numbers** in their 5LG messages; long figures are replaced by shorter letters. We can evaluate the final group containing day and group count. Several sets of Cut Numbers are in use, these are the two mostly used:

Figure	1	2	3	4	5	6	7	8	9	0
Set 1	A	B	W	G	D	E	V	Z	I	K
Set2	Ä	W	E	R	T	Y	U	I	O	P

1.7. Special Codes and Abbreviations

CIS Forces use Standard - and special **Q and Z-Codes**. In many cases "Q" is replaced by "Z", hence "ZSA" means "QSA". Even more confusing the codes may have different meanings dependant of the branch. More than 100 special codes are observed - many of them are understood. See the Appendix.
CIS forces use the normal abbreviations, but additionally there are some, which you may be less familiar with (some kindly have been published by UDXF members):

abs	Station not on duty	gr	Group
abv	Repeat / I repeat	guhor	Russian for: Nothing heard from you
ads	Addressee (at command post)	rk	Always use this frequency
bn	Between	sig	Signature (of the sender)
col	Collate	sld	Russian for "sledite": You're listening for my signals
cor	Correction	slv	Russian for "slezhu": I'm listening for your signals
corcol	Russian for group	wkg	"working"

1.8. Online Encrypted Morse Messages

Sometimes CIS Forces use **Online Encrypted Morse**. The plain text is entered manually via a keyboard and will be sent online encrypted by the modem. This is why these messages are at varying speed. A series of dots indicate a completed message. Normally the stations work Simplex.

This following sample shows how RIW transmits an encrypted Morse message to RDND. Other Z-Codes may be used as well in this procedure, ZGR means "I will start Online Encrypted Morse now", and sometimes ZBD or ZBM indicate technical problems.

Frequency	Text	Remarks
11000	RDND de RIW QRR 3 QDW 10388 k	Go to 10388 for online encrypted Morse tfc.
12464	RIW de RDND ok QRR 3 QDW 10388 k	RDND acknowledges.
10388	RDND de RIW ZZD 3 ZNÉ tridewätxtri k	I read you with QSA 3. My authentication is tridewätxtri.
10388	RIW de RDND ZZD 3 ZSL ZNÉ tridewätxtri ZNÉ odindwaodin k	I read you with QSA 3. Confirm your authentication tridewätxtri. My authentication is odindwaodin.
10388	RDND de RIW ZKM? k	Are you ready for Online Encrypted Morse Traffic?
10388	RIW de RDND ZKM k	RDND affirmative
10388	RDND de RIW ZDS gugch ZZT kkvmlllkvmlllvklklvllvkll uwpliasdzhrttzsg...	Machine setting is gugch (normally used), the decryption key is ..... (made up of 25 characters of l, m, k and v), then message follows.

1.9. XXX Strategic Flash Messages

Since many years the Warsaw Pact / Russian / CIS Forces transmit **xxx Flash Messages** on their Morse networks, but voice - and digital mode networks may as well transmit flash messages. They are the counterpart to the EAM voice messages of the USAF on the HF-GCS network.

xxx Flash Messages are rather short and contain the following elements:
- intro: xxx xxx (not always used!!)
- one or several codewords
- identifiers of sender and addressee(s)
- instructions about who is going to act or react.

xxx Messages are initiated by a high ranking station and may be repeated by other stations within 5 to 20 min after the first transmission. Many xxx Messages first are heard on the High Command (VGK) VLF network and then are repeated by the Fleet HQ and even tactical networks. There are, however, Flash Messages being heard **first** on a Fleet HQ frequency and **later** on VLF.

What are these Flash Messages for?
Is their a connection between the number of messages and the activity of the Navy? That may be true for Navy exercises, but during multinational drills or political tensions I never saw increased traffic.

The messages are too short for much information, they are only used to put into force a pre-determined scenario, details of which have been agreed upon in advance or on other comms channels. One good example sometimes can be found with luck: Flash Messages do activate sleeping, tactical networks. These become quite busy with traffic shortly upon reception of a xxx Message, even if you didn't hear them before for many hours.
The "k" after Flash Messages indicate, a reaction of the called station is expected, but only with luck, we can hear outstations repeating a Flash Message.

We only look at a few communication channels of the Navy, but there are many others beyond our technical possibilities. Our findings are very limited therefore, and we even may assume, that xxx Messages don't turn the Navy upside down, there are simply so many of them.
Strategic Flash Messages on the Navy's VLF Network seem to be significant, as they are issued by the General Staff/High Command.

xxx Messages do come in many flavours:
This was a standard Flash Message from RMP on 6873 kHz:
xxx xxx REO REO 90326 brosanje 8616 7037 (repeated) *k*

- *REO* is the addressee, in this case a collective callsign belonging to the Baltic Fleet.
- *90326* probably indicates who should act.
- *brosanje* is the codeword, always a noun.
- *8616 7037* belong to the codeword and this seems to be sort of an "instruction set"
- *k* indicates an acknowledgment is expected on some channel.

There are many exceptions:
Virtually any message format is possible, even this one:
xxx xxx IR43 050: P-16606 niöeskaa prowerka atos-838 chawyrin 838 k.
These are operational/service messages.

The codewords *podarok* and *ustrelina* are used for a special (yet unknown) purpose:
xxx RDL 52378 podarok 01 1030 175 225 1130 k.
1030 and *1130* suggest time, but that doesn't fit always.

This message was broadcast on 18.1 kHz at 12.04.2006 1319z by the General Staff:
xxx xxx RDL RDL 25001 95801 brennyj 5369 1092 k
4 min later, on 11155 kHz, the Northern Fleet HQ RIT in Severomorsk repeats:
xxx xxx RLO RLO 95801 brennyj 5369 1092 k
The "instruction set" did not change, but the message now goes to the collective callsign RLO, which belongs to the Northern Fleet and therefore the group "25001" is void.

Another message on 18.1 kHz at 01.05.2006 0700z issued by the General Staff:
xxx xxx RKS RKS 27342 paraplica 5202 3615 k
5 min later, on 11155 kHz, Northern Fleet HQ RIT repeats:
xxx xxx RKS RKS 27342 paraplica 5202 3615 k

Unit *RMGB*, most probably a vessel, didn't get it and asks on 12464 kHz:
RCV de RMGB rpt xxx k
Now we know, the message has been disseminated by the Black Sea Fleet HQ *RCV* as well and it will now repeat the Flash Message for *RMGB* on the primary 10201 kHz.

Later on RMGB confirms on 12464 kHz:
RCV de RMGB rpt 27342 paraplica 5202 3615 k
RKS is not repeated, because *RMGB* is part of RKZ.

Flash Messages may contain several codewords:
xxx xxx RDL RDL 63191 83795 waloprowod 8067 4649 taikarpin 7436 4920 baläbus 7969 5452 k

Up to five "instruction sets" I have heard in the same Flash Message.

Some codewords may be used again after years, some can be translated, giving results like "banquet", "youth" or "thread", others cannot.

Only once I heard a codeword, which (possibly) made sense:
The codeword *nitka* was used October 27th 2004 by Navy HQ Moscow. One week before, during CIS Navy exercises in the North Atlantic, an emergency was noted onboard the Northern Fleet's Aircraft Carrier *Admiral Kuznetsov*, when a *SU-25 UTG* aircraft made a hard landing and damaged the superstructure. There was much critisism about these exercises, because for 7 years the carrier was not on sea with its air wing for practice. 2004 the pilots tried to keep in trim by flying from a simulated takeoff and landing pad on the Crimea peninsula. This facility, built by the former Sovjet Union, is named *"Nitka"*. *(Source RIA Novosty)*

In fact there are even xxx Messages which can be decoded:
31.12.2008, *RIT* on 7954 kHz sent this message:
xxx xxx xxx RLO RLO weter 2 po belomu morü k (wind 2 over the White Sea)

If appropiate "xxx" is used even for surface weather data.
Crimea: Nitka Air Base Crimea: Nitka Air Base training ramp

1.10. RADIOPROGNOZ Messages

Fleet HQ sometimes broadcast a sort of report/outlook to collective callsigns, but do not use their primary frequencies. These *RADIOPROGNOZ* messages have been heard on 6456, 5753, 7954, 6948 and 6877 kHz.

I don't think these are weather forecasts, because those use the header *prognoz* or *prognoz pogody*, gale warnings are *chtormowoe preduprevdenie*.
The *Sovjet Technical Encyclopedia* offers the following translation:
Radio Prognoz = Forecast of the Ionosphere (Propagation Forecast). And this, most probably, is it.

This is an example:
31.12.2008 1000z 7954 kHz

RLO RLO RLO de RIT RIT QTC 106 40 31 1257 106 = radioprognoz =
31127 63003 42222
00001 01218 30080
00002 01218 30090
00005 01218 60014
00006 01218 50010
00102 01218 40090
00001 01824 30070
00002 01824 30080
00005 01824 60012
00006 01824 40010
00102 01824 30090
00022 01218 50012
00022 01824 40011
+

The **first row** may indicate the region of the forecast,
the **second row** obviously indicates the period of validity (12...18h or 18...24h),
the **third row** may indicate forecast values.
What worries me is the fact, that I haven't seen yet forecasts for the period of 0000...1200z, that doesn't make my nice interpretation too convincing....

1.11. FM13-Code Meteorological Data

Some ships do report Sea State and Weather conditions to their HQ using WMO Buoy Meteorological Data in FM-13 code. As these messages do include a position report in groups 2 and 3, we may find out the ships name, if we compare her way with external information from shipspotters or the Navy's press office.

A message may start like this
(Station identifiers are suppressed):

28121 99259 70859 46/// .....

28121 28th day of the month, at 12 h UTC
99259 25.9° N latitude
70859 85.9° W longitude at globe quadrant:
10 N latitude, E longitude
30 S latitude, E longitude
50 S latitude, W longitude
70 N latitude, W longitude
following meteorological data.

It seems FM-13 coded messages are sent by ships of the Hydrographic Service of the Russian Federation Navy, as well as by certain auxiliary ships. All messages are addressed to certain callsigns. See chapter “Special Purpose Callsigns”

1.12. Short Status Reports

These are short messages of 3 to 6 groups with a CIS preamble, most probably used for routine reports. Their structure was revealed by Tom for UDXF more in detail.

Examples:
... = sml = snaxä iwwrt äoppw = + k will read:
... = sml = snax 182245 19002 = + k
(snax probably adress, 182245 = date/time of report, 19002 = actual time/group count

... = kökyw eäyep weppw = + k will read:
... = köky 231630 23002 = + k

... = sml = 98471 71509 17002 = + k will read:
... = sml = 9847 171509 17002 = + k
Special Q - and Z-Codes of the CIS Navy

Special Q - and Z-Codes of the CIS Navy

Please note:
Obviously these codes are no giveaways of the CIS Forces. They are the result of patient monitoring for many years by myself and by many other listeners. Unfortunately this compilation will never be absolutely correct, because quite a few codes

- used in the former Sovjet Union, are partially outdated today
- are derived from documents of the GDR forces, which used modified codes
- still have not been fully understood so far.

Some codes do have multiple meanings in different branches of the CIS forces, others were used in former RTTY networks only and are obsolete today or can be found in a modified form in digital networks.
Those codes, which are, to my knowledge, not confirmed, are written in ITALIC.

Important: This list does not include regular Q - and Z-Codes.

QAA I receive your signal...
1. with interruptions
2. distorted

QAB Your terminal is occupied.
QAG Your terminal is distorted.
QAK
QAS My power supply has been cut off.
QAV I will call you ... (time).

QBD
QBE I will close down my station at .... (time).
QBL I am using a paper sheet printer.
QBN
QBR Inform ..... (code name, callsign) that you are using frequency ..... (kHz).

QCA You are delaying traffic by answering slowly.
QCB You are delaying traffic, because...
1. it is not your turn
2. you respond too slow
3. you did not answer.

QCC Message has been handed over to ..... (code name).
QCO I cannot receive the message.
QCR Maintain the watch until further notice.
QCS Reception on ... (kHz) is interrupted.
QCT Reception on high frequencies is interrupted..
QCW Answer exactly on my transmission frequency.
QCX Your callsign is wrong. or QCX? What is your callsign?
QCZ You are violating circuit discipline.

QDA I can forward your message to ...
QDC Message nr. .... has been forwarded to the addressee.
QDE You requency is within specification.
QDQ Cease transmission, send c/s and continous mark for DF!
QDW Listen and answer on .... (kHz).
QDX Your terminal does not respond, check!

QEA My radio station will pause until .... (time).
QEC Traffic is delayed by frequent checkbacks.
QED Traffic is delayed by faulty equipment.
QEF The channel is free.
QEH Receptio is poor, change to hand mode.
QEM Traffic is delayed by too many messages.
QEQ Message nr. .... will be answered, please wait.
QEV Connect to .... (code name, callsign).
QEX Transmit test roundslip.

QGJ I will reduce traffic to the minimum amount.

QHL I will search the band starting at the highest frequency.
QHM I will search upper half of the band.

QID My radio equipment is ok.
QIE Your frequency is .... (Hz) off.
QIP Send your ...
1.
2. test tape
3.
4 .message
QIW Automatic reception not possible due to ....

QJB I will change to ...
1. start/stop mode
2. FSK
3. special equipment
QJC I will call back at .... (time) or I will perform selftest of my equipment.
QJD Your ... is faulty.
QJE I will use a shift of ...
1. 500 Hz
2. 250 Hz
3. 125 Hz
QJG Go into ciphers

QJK I receive ...
1. continous spaces
2. continous marks.

QJL I will space between groups ...
1. increase
2. decrease.

QJN Retranslation for .... (callsign) is not possible.
QJO I cannot answer, but can hear you.
QJP I will switch through this channel to the terminal.
QJR I will retranslate the message from .... (callsign).
QJS I will retranslate in Morse code.
QJV I will perform selftest of my equipment.
QJW I will close down my station due to thunderstorms.

QKK Observe spacing of groups!

QLA Group count in message nr. ... incorrect, please rectify.
QLB Beware, transmitter has been changed!
QLH I will search the band starting at lowest frequency.
QLI Forward message nr. .... to the addressee!
QLJ Message nr. .... can not be forwarded, addressee does not exist!
QLK Respond faster!
QLL Message nr. .... has been received at ..... (date,time).
QLM My receiver is defective.
QLN Confirm message nr. ... via landline!
QLO Confirm message nr .... on VHF.
QLP Increase transmission frequency by ... kHz.
QLQ Repeat each 10. group of message nr ....!
QLR Decrease transmission frequency by kHz.
QLS Use higher frequency (also for day/night changes)
QLW Radio check, confirm reception!
QLX I receive from you logical „0“.
QLY I will use ...
1. daytime frequency
2. night frequency.

QLZ Message nr. .... is wrong.

QMC I will use the assigned frequency
QMG Your ..... (equipment) does not work properly.
QMH Change to frequency ... (kHz) for transmit and receive. Use the actual frequency, if no connection is possible within 5 min.
QMK The spectra of your transmission is distorted.
QML Search lower half of band, starting at high frequency!
QMM Send a tone for calibration of equipment!
QMO Adjust your equipment!
QMP I set up data for my terminal.
QMR I can receive you.
QMS You are distorted by an other transmitter in your direction.
QMT Try to send your message! or Check the callsigns!
QMU Test your equipment internally!

QMV Reply in mode ....
1. your equipment
2. Morse
3. fast Morse

Special N-Series (to be used by the Net Control Station only).

QNA Answer in prearranged order
QNB Act as relay between .... and ....
QNC All net stations copy. I have a message for all stations
QND This is a directed net.
QNE Entire net stand by
QNF This is a free net.
QNG Take over as Net Control Station
QNH Your net frequency is high
QNI Net stations report in.(or: I am reporting into the net. (follow with a list of traffic or QRU)
QNJ Can you copy me?
QNK Transmit messages for .... to.....
QNL Your net frequency is low.
QNM You are causing QRM in the net. Stand by.
QNN Net Control Station is ..... (or: What station has net control?
QNO Station is leaving the net.
QNP Unable to copy you.
QNQ Move frequency to .... (kHz) and wait for .... to finish handlingtraffic. Then send him traffic for .....
QNR Answer .... and receive traffic.
QNS Following stations are in the net.....
QNT Request permission to leave the net for .... minutes.
QNU The net has traffic for you. Stand by.
QNV Establish contact with .... on his frequency. If successful, move to .... and send him traffic for .....
QNW How do I route messages for .....?
QNX You are excused from the net. (or: Request to be excused from the net.
QNY Shift to another frequency (or to ....kHz) to clear traffic with .....
QNZ Zero beat your signal with mine.

QPD ..... (designation) is working on frequency .... .
QPP

QOI Your work is finished.
QOR Send reversals ...
1. from your transmitter
2. from your terminal

QQA Repeat message nr ...
QQL I have passed ... (place) at .... (time).
QQM I will land in ... (place) at .... (time).
QQQ I have to cease activities at once, details are to follow.
QQR I have a break down of my ....
1. receiver
2. transmitter
3. antenna
4. power supply
5. remote control
6. terminal

QQS I have received your message of ... (time) from .... (callsign).
QQT Repeat message of .... (time) from .... (callsign) or I correct my message nr. ....
QQX Decode key is not correct, check!

QRA I do not receive in plain language.
QRJ I can receive you ....
1. not at all
2. bad
3. satisfactory
4. well
5. very well
QRR I will use automatic mode in ...
1. scrambled Morse
2.
3. online encrypted Morse.
QRW I will call you later on.
QRY I will send ryryry and test roundslip.

QSF Use transmission schedule..
1.
2. normal
3. alternative
4. none
QSG I will send messages one after the other.
QST Use MS-5 mode (Navy)
QSU Use mode on the agreed frequency in ...
1. USB
2. LSB
3. FM
4. AM
5. USB and LSB
6. 1200 bps
7. 2400 bps.
QSW I will use ....
1. Morse CW
2. FSK 125 Hz shift
3. FSK 250 Hz
4. FSK 500 Hz
9.

QTA
QTD I agree with your group count/word count.
QTW

QUB This station is not manned.
QUC The last message received by you was nr. .... .
QUM Disaster message is finished.
QUT Acknowledgement for message nr. ..... has been ....
1. received
2. not received.

QVK Use correct traffic codes!
QVT Whole text is garbled.

QWC Your transmitter needs replacement, it is faulty.
QWD Confirm, message has been forwarded!
QWG Respond to ..... (station) for me!
QWH I will send on frequency .....
QWI Use transmission mode ....
QWK I listen on frequency ....
QWM Message nr .... has been sent by .... (callsign).
QWN ..... (callsign) is calling you, stand by for reception.
QWO Relay my message nr ....to .... (station) via .....(station)!
QWP Stop transmission and follow instructions of NCS!
QWQ I will use schedule nr ... for watch.
QWR My station did not answer from .... to ..... (time) due to technical reasons.
QWT Relay message nr .... for .... (station)!
QWU Message nr .... has been sent ....times, please confirm!
QWV You may interrupt your work, I will watch your frequency.
QWW Stand by on second frequency ..... (kHz) as well.
QWZ Communication to .... is established.
QWX Transmit message (nr. ....) via landline.

QXA My message consists of ... groups.
QXF I have many messages for you, please allow fluent reception.
QXH I am not connected to ... (station), message is relayed by ..... (station).
QXK The message key is ...
QXQ Please confirm message nr .... is clear and will be carried out.
QXS Observe radio silence. Answer via landline.
QXT Radio silence until .... (time).
QXU Did not receive message nr .....
QXV Repeat message.
QXX Your operator hampers traffic, please relieve.
QXY Message nr .... is ....
1. clear
2. not clear.

QYA Connection to ..... (station) may not be cut off without my permission.
QYB Respond at once to message nr ...
QYD Could not response due to ...
1. faulty transmitter
2. faulty equipment
3. faulty remote control
4. no operator available
5. key not available
6. (Navy)
QYE Frequency will change at ..... (time).
QYF Take over traffic instead of my station.
QYG I did not receive your answer of message nr ....
QYI Urgent message for you, stand by for reception.
QYK Test signal will be ....
1. transmitted
2. switched off.
QYL There is intermodulation between channels.
QYP Change for single channel operation.

QYR Use mode
1.
2. 81-81 (Navy)
3.
5. (Navy)

QYS Use mode
8. plain USB

QYT Use mode ....

1. Bee 36/50		equipment:	T-600, T-206
2.			T-207
3.			T-217 (T-617)
4. MS-5 (Navy)			T-219 (T-817)
5.			T-222
6. MS-5		T-230	
7.			T-226
8.			R-016 w
9. FSK 75 Bd, DUPLEX		T-208	

QYU Change level input transmitter ....
1. decrease
2. increase

QYV Stop transmission and check message nr ..., repeat immediately!
QYW Please assist in establishing connection to .... (station).
QYZ I am calling you, respond faster!

QZA Message is for ....
QZB I will work in DUPLEX mode.
QZD I will switch off; request you take over traffic for my station.
QZE Your frequency is too high.
QZF Your frequency is too low.
QZG Answer to message nr. .... follows.
QZJ Message has been decrypted.
QZK I do not have contact with ... .
QZL Message has no meaning.
QZP My transmitter is faulty.
QZR I will relay to ... .
QZS I have message for ... .
QZT My receiver is faulty.
QZY I cannot hear you.

ZAA I can hear you sporadically or You are not observing circuit discipline.
ZAB I will use online encryption using T-352/353 DUDEK mode.
ZAC I will use online encryption using T-310/50 mode.
ZAP Confirm reception of message nr. ..... .
ZAW Have replaced transmitter, stand by for reception or Send password! *

ZBA Send correction!
ZBB I receive your characters distorted!
ZBD Check your equipment in closed-loop operation!
ZBE Stand by, I will align equipment!
ZBG My receiver is defective.
ZBI Your message nr. ..... is garbled, check equipment!
ZBL Send test results via cable!
ZBM Your transmitter does not work properly, exchange!
ZBR Start transmission on ..... (kHz)! or New alignment, keep sending test signal!

ZBS Signals interfere, check channels!
ZBW Change to back up frequency. or Choosen passnumber is .... *

ZCE I check my station.
ZCF I will check mid-frequency.
ZCK I will check keyer.

ZDF Your frequency is ..... (Hz) off.
ZDO
ZDS My machine setting for online encrypted Morse traffic is ..... (letters).
ZDW = QDW

ZED Your signal pitch is varying.

ZFC Check your frequency shift!
ZFM Password answer is .... *

ZGM Check your transmitting frequency!
ZGR I will start online enciphered Morse traffic.
ZGW The signal is decreasing.
ZFX

ZHC? How are reception conditions?

ZKM I am ready for online encrypted Morse trafic.
ZKQ Notify, when you are ready to continue.

ZLD I receive dots from you.
ZLK Send password. *
ZLL The distorted signal is caused by troubles with ..... .
ZLN = QLN
ZLP I will send password *
ZLT Choosen passnumber is ..... *

ZNB My checksum is ..
ZNC There is no communication with ..... .
ZNÉ My decode key for online encrypted Morse is .....
ZNO Passnumber answer is ..... *
ZNR Not received.

ZOA Have checked, transmitter is working ok.
ZOF
ZOK I receive ok.
ZOR Send reversals!
ZOV This is urgent.

ZRB Your relayed signal is bad, check reception!
ZRN = QRN
ZRO Confirm reception!

ZSA = QSA
ZSL = QSL

ZTC = QTC

ZVB The symmetry of the signal is varying.
ZVF The frequency of the signal is varying.
ZVO
ZVP = QSV (in Digital Modes: Transmit alignment signal!)
ZVS The power of the signal is varying.

ZWC Transmit each word once!
ZWY
ZXP

ZYK Keying on channel nr. ..... is distorted, check!
ZYP Change to one channel mode!

ZZB I will change to Baudot mode
ZZD? How do you receive my characters?
ZZG I will relay for you to ..... (callsign).
ZZH Relay for me to ..... (callsign) in Morse code!
ZZJ Ready, start transmission!
ZZK Relay for me to ..... (callsign)!
ZZL I can not relay for you.
ZZN Change to night frequency.
ZZT My key for online encrypted Morse code is .... . (25LG, consists of M, V, K and L)
ZZU Work on ..... (kHz)!
ZZW Do not hand over message to the addressee!

* These codes are used for authentication in Morse networks.

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