



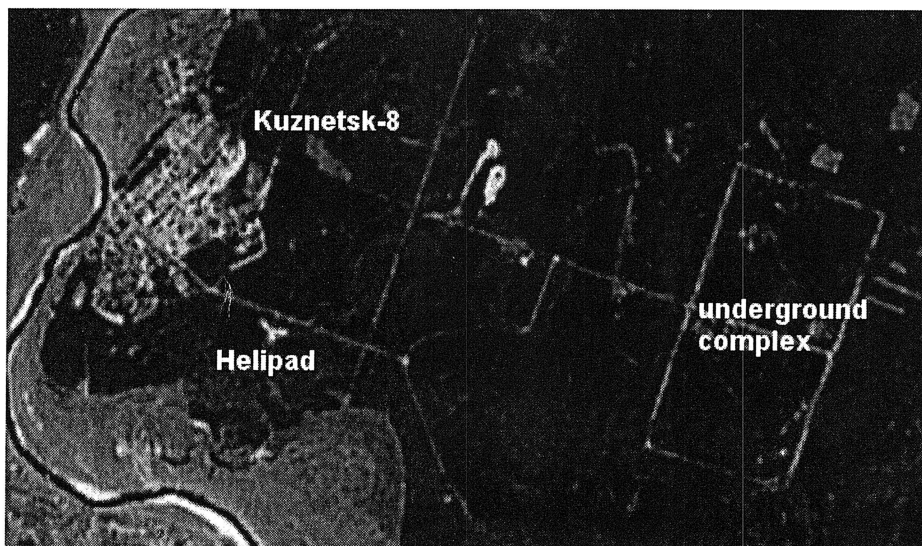
Kuznetsk-8 (Penza Region)

The alternative command post of the General Staff is adjacent to the military town of Kuznetsk-8 in Penza region, 600 kms East of Moscow. Western intelligence named this underground complex Chaadayevka, after a nearby town. Unit 34011, which is based at Kuznetsk-8, is frequently mentioned in orders for key parts of the nuclear command system, along with units in Moscow and in Chekhov. The three main centres of the General Staff nuclear command network are in Moscow (Object 4235), Chekhov-3 and Kuznetsk-8.

Satellite images show that there is a rectangular zone in the forest 4 kilometres East of the town of Kuznetsk-8. This zone measures 1 kilometre by 2 kilometres and contains four distinct compounds, each of a similar size to the compounds in Chekhov-2 and Chekhov-3. High resolution images of this area are not currently available.

There is a military checkpoint for the "General Staff Command Post" on the road South of the complex.³³ This substantial underground complex was built around 1980 as a back-up to Chekhov-3. US intelligence agencies were concerned at the scale of construction taking place.

Underground command complex at Kuznetsk-8



³³ пункта управления генерального штаба

A spur from the main line provides rail access to Kuznetsk-8. In addition there is a helipad on the road from the town to the command centre. Support for the underground complex is provided from Kuznetsk-8 and from Kuznetsk-12, a second military town 8 kms to the North.

9 ЦУМО and unit 87406 placed the following contracts for work at unit 34011 (Kuznetsk-8):

- Maintaining and repairing 4 blast doors and 30 airtight doors
- Installing a new radiation monitoring system (СКПВС)
- Installing remote automated system CA-600
- Rebuilding a sewage plant for Object 221
- Rebuilding a heating system for Object 221
- Rebuilding a natural water purification system

Command, control and communications systems in the Alternative Command Centre at Kuznetsk-8 include:

- Telegraphic Centre for the Monolith/257Ц nuclear command system
- 65c27 control equipment for the Kavkaz-7 (Кавказ-7) nuclear authorisation system
- Regional Switching Centre 6 of the "Centre" automated command system
- Component 65c074 of the "Centre" automated command system
- 83т362 interface between "Centre" and "Signal", the SRF command system

These recent contracts show that the underground complex at Kuznetsk-8 remains a key command centre.

Lopuhovka

The main communications sites supporting Kuznetsk-8 are at Lopuhovka and Penza.

Unit 34011 (Kuznetsk-8) commissioned an upgrade of security at Object 381-1. The contract shows that this facility was the responsibility of unit 62026. Unit 62026 is based near the village of Lopuhovka, 50 kms North of Kuznetsk-8. The contractor built new barriers, 3.3 metres high, and concrete pill boxes with a circular arc of fire. The secure zone has a perimeter of 2.45 kilometers. This is a similar size to the secure zones at Objects 616 (Tarusa) and 617 (Ferzikovo).

New cooling equipment was also installed at Object 381.

High resolution satellite images of this area are not available. Lopuhovka is probably a communications facility supporting the command bunkers at Kuznetsk-8.

Penza

There is a military communications facility East of the town of Penza. Satellite images show that a new security zone, with a perimeter of 1.5 kilometers, has been constructed around this facility. Given its location, the site probably supports Kuznetsk-8.

Communications facility East of Penza



— ?

CIA assessment 1983

In 1983 the CIA produced a detailed assessment of measures taken by the Soviet Union to protect the military and political leadership in the event of nuclear war. This noted that although there were bunkers within Moscow these were not of primary importance. If there was any warning of attack the political and military leadership would relocate to a series of bunkers outside the capital. The report said that in 1983 there were three Category 1 bunkers in the Soviet Union -

“This category is characterised by large, multi-bunkered installations with extensive surface support facilities and accommodations for personnel. Some are also served by rail spurs and helipads. Communications for these complexes is provided by separate communications facilities to which the complexes are linked by underground cable, microwave radio relay, and mobile communications equipment. At present, only three facilities fall within this category: the Sharapovo National Command and Control Complex, the Chekhov National Command and Control Complex, and the Chaadayevka National Alternative Headquarters Complex.

“Sharapovo and Chekhov were constructed in the late 1950s, but have been undergoing modification, expansion, and improvements since the early 1970s. The deep underground facilities at these complexes for the National Command Authority would present a difficult targeting problem.”³⁴

“A recent assessment of the sites at Chekhov and Sharapovo indicates that they are harder, deeper, and much less vulnerable than previously estimated. For more than a decade the Soviets have been expanding and improving these sites, but have concealed the extent of their activities.”

“Recent analysis [redacted] indicates that hardened underground facilities at Sharapovo may be much deeper (circa 100 meters) and more extensive than we had believed”.³⁵

It is possible that the names Chekhov and Sharapovo may have been confused. The site marked as “Chekhov” on the British map is Chekhov-3.³⁶ “Chaadayevka” is Kuznetsk-8. The site marked as “Sharapovo” on both a British map and a US satellite image is Chekhov-2.

Strategic Rocket Forces

³⁴ Soviet Wartime Management: The Role of Civil Defence in Leadership Continuity, Volume II Analysis, December 1983. www.foia.gov

³⁵ *ibid*

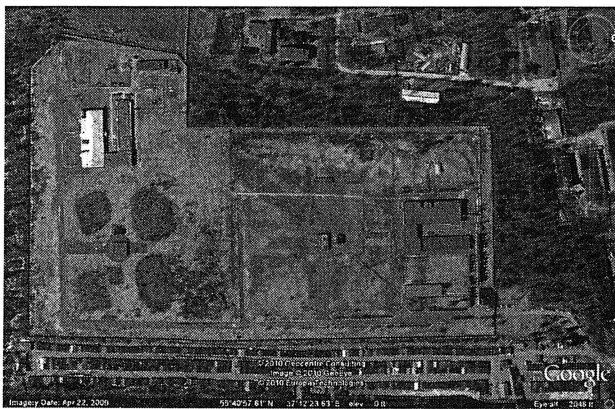
³⁶ There is a village called Sharapovo close to Chekhov-3 and Chekhov-8

Odintsovo-10	Central Command Post
Balabanovo-1	Alternate Command Post
Naro Fominsk 5	Communications Centre
Voscod	Communications Centre
Gagarin	Satellite Ground Station
Kitlim	Command and Control Centre (Kosvnisky Mountain)
??	Perimeter Command and Control Centre(s)

Odintsovo-10

The town of Odintsovo-10, also known as Vlasikha, is 25 kms West of the centre of Moscow. The Central Command Centre for the Strategic Rocket Forces was established in Odintsovo-10 in June 1960. There is a published report of a visit to the headquarters on its 50th anniversary.³⁷ This describes a substantial underground complex controlling Russia's nuclear missiles. In 2009 a contract was placed for fire protection of Object 315/1 in Odintsovo-10. Another contract was for communications equipment for Object 15B221 at Odintsovo-10.

Old bunker complex Odintsovo-10



New bunker complex Odintsovo-10



Wikimapia suggests two possible bunker sites in Odintsovo-10. There may be an old bunker and a newer one, further West. The presence of cars outside the old bunker on satellite images suggests that it is still functioning, possibly housing the Rocket Forces communications centre.

Balabanovo-1

Balabanovo-1 is the alternate command centre [ЗКП] for the missile forces.³⁸ It also houses a training academy for the SRF. The main building in the secure compound at Balabanovo-1 is very similar to two buildings in the old bunker compound at Odintsovo-10 and to Object 201 which is near Chekhov-3.

³⁷ http://www.redstar.ru/2009/12/16_12/4_02.html

³⁸ запасной командный пункт

In 2009 there were surveys of lifts 1 and 2 in YK90B.⁴⁴ A new radiation monitoring system, СКПВС, has been installed. 1100 square metres of floor tiles in the facility have been replaced.⁴⁵

Monino

CPS

Monino is the central communications hub for the Air Force. Monino Air Base, North of Balashikha is home to an Air Force academy. A 1963 CIA report said that a large bunker was built here as the main air defence headquarters.⁴⁶ Later references place the main air defence centre at Balashikha. Monino houses one of five central switching stations for the Basic Data Exchange System. It is a key communications hub for the Air Force.

In 2008 a contract was placed, by 9 ЦУМО, for cooling equipment for Object 57 at Monino. New radiation monitoring equipment, SPKVS, was ordered in 2009. Monino is included in the 2009 contract for the maintenance and repair of bunker doors. The numbering of the doors suggests that in one area there is a blast-proof air-tight door and 5 air-tight doors, and a second area there is a blast-proof air-tight door and 18 air-tight doors.

Kostino

Kostino is an Air Force Communications Facility 115 kms East of Moscow. It is operated by the 37th Air Army, which is responsible for all Russian nuclear-armed bombers. There are two large HF antenna complexes, Object 458. There is also a smaller compound, Object 618, to the South East. Object 618 is probably an alternate command bunker for airborne nuclear forces.



Plotnikovo

There is a substantial bunker in the forest West of Plotnikovo near Novosibirsk. Unit 42083 is based at Plotnikovo. It operates the 7th regional switching post for the automated command system Centre. This facility was included in a contract for the repair of bunker doors at several sites. The contract shows that there are at least 5 outer rooms with blast doors and 25 internal rooms with air-tight doors in the Plotnikovo bunker.

This site is also associated with the Caponier-2 Air Defence system. In addition it is only 35 kilometers from a major ICBM base, the 39th Guards Missile Division which has 36 Topol missile silos.

⁴⁴ <http://zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=361394>
<http://zakupki.gov.ru/Notification.aspx?PurchaseId=361282>

⁴⁵ <http://zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=106152>

⁴⁶ Personalities and location of the PVO of the Country, March 1963
<http://www.foia.cia.gov/SovietandWarsawPact/1963/1963-03-13b.pdf>

*+ AF Coms
N of Monino*

Ground Forces Alternative Command Post - Ilinskoe

Ilinskoe is the Alternative Command Post for the Ground Forces (ЗКП ГШ СВ). It is 60 kms South East of Moscow. The Command Post is within a barracks which also houses a communications training unit. This base is sometimes called Barybino, which is the name of a nearby town. Communications unit 52617, part of 9 ЦУМО, is based at Ilinskoe.⁴⁷ This unit is mentioned in several contracts alongside Chekhov-3, Kutnetsk-8 and Moscow headquarters. One contract was for installing a remote automation system, CA-805. A second was for the maintenance of water supplies. Surplus pumps and other equipment from unit 52617 in Ilinskoe were included in a list of items for sale, next to similar items from Chekhov-3 and Moscow headquarters.⁴⁸

This Alternate Command Post has the callsign "Miner" (Рудокон). The facility with this callsign, ie Ilinskoe, was supplied with П-167 communications equipment. Similar equipment was provided to other command bunkers. The П-167 contract confirms that "Miner" is a Ground Forces establishment.

Lomat
+

Ilinskoe



Egorievsk-6



Logistics Command Post - Egorievsk-6

Object 407 at Egorievsk-6 is the command post for the Logistics (Rear) of the Armed Forces. The secure zone here is 300 metres in diameter and includes a Helipad.⁴⁹ Egorievsk-6 is a closed military town adjacent to the facility.

A contract for work for the Rear of the Armed Forces lists Egorievsk-6 as one of two of their automated command centres and refers to computer equipment in this facility.⁵⁰ It is part of the И-300 communications system.⁵¹

In 2008 an order was placed, by 9 ЦУМО, for converting equipment in Object 407 to a digital configuration. This was for unit 48905 which is based at Egorievsk-6.

⁴⁷ The location of unit 52617 is evident in a list of areas within election ward

⁴⁸ www.birja.ru/VDVI/Arhiv_zayavok/arhiv_06.10.08.xls

⁴⁹ High resolution images of Egorievsk-6 are available at

<http://45f.ru/view/dg/orig/?lat=55.19758536490289&lon=37.614097595214844&z=13>

⁵⁰ The other command post is in Moscow. <http://doc.gostorgi.ru/7/2008-08-01/54529/25.doc>

⁵¹ И-300 is at Egorievsk-6 <http://doc.gostorgi.ru/7/2008-08-01/54529/25.doc>; The development of И-300 is mentioned at <http://www.rusea.info/inj/?lang=rus&id=1314>



The satellite image of Object 616 (Tarusa) shows that a significant security barrier was under construction in 2007. The protected zone has a diameter of 675 meters. The octagonal area at Object 617 (Ferzikovo) has the same diameter.

structure by Sept at 2007

There are four rectangular clearings, for radio antennae, at Object 616. Both sites have far fewer of these clearings than major communications bases such as Luhovistyy-3, Naro Fominsk-5, Voscod and Kostino.

There is a support area on the approach road to each of the two complexes. These administrative zones are significantly smaller than at most of the other sites listed in this report. Unit 92628 is based at Object 616 and unit 34080 is at Object 617. Unit 92628 may coordinate the two sites.⁵⁹

9 ЦУМО, the organisation responsible for nuclear bunkers, commissioned modernisation and repair work at Objects 616 and 617. Lists of contracts issued by 9 ЦУМО make several references to these two facilities, alongside major command posts at Chekhov-3, Chekhov-4, Kuznetsk-8, Moscow (Unit 25766), Ilinskoe and Egorievsk.⁶⁰ In 2008 the Defence Ministry ordered new security systems for 32 sites across Russia. In three cases - Chekhov-3, Object 616 and Object 617 - 9 ЦУМО were responsible for the work.⁶¹

Part of Object 617 (Ferzikovo) has been modernised.⁶² The work involved covering 207 square metres of metal walling, installing 109 square metres of removable metal flooring, adding new doors and replacing wiring. Object 616 (Tarusa) was also renovated. This included refitting 24 metal doors.⁶³ It is possible that these two underground facilities have metal structures to protect electronic equipment from the Electro-Magnetic Pulse (EMP) of nuclear explosions.

9 ЦУМО commissioned repair work on artesian wells at Object 616. In addition a pumping station and reservoir (20 cubic metres) were replaced. The central organisation issued contracts for the repair of diesel generators at Objects 616 and 617. They also ordered an upgrade of air conditioning systems, replacing K – 25C with K – 25CM; at these two sites and at Kuznetsk-8. 9 ЦУМО ordered the replacement of air conditioning systems at Chekhov-3 (ГЯК), Chekhov-4 and Moscow (unit 25766) in the same contract.

There are unconfirmed reports of underground antennae at or near Object 616 and 617.

⁵⁹ A contract for work at unit 34080 was placed by unit 92628.

⁶⁰ Analysis of contracts issued by unit 67265, the finance and administration department of 9 ЦУМО.

⁶¹ The new security systems at these three sites were associated with unit 67265.

⁶² <http://www.zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=117107>

⁶³ This may be either “frames for metal doors” or “metal doorframes”.

<http://www.zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=208494>

Object 407 is a substantial bunker with at least 40 underground rooms. A 2009 maintenance order includes 4 blast-doors, each 3 metres by 3 meters, and 30 air-tight doors for Egorievsk. The order was for unit 92860 which is based in the town of Egorievsk.⁵² A further order was placed, through 9 ЦУМО, for work on a diesel generator for unit 92860. It is likely that both of these contracts are for Object 407.

Space Forces Sites in the vicinity of Moscow

Headquarters	Solhenogorsk
Satellite station	Serpukhov-15
Communications	Kolomna-1

Solhenogorsk-7

This is the headquarters of the 3rd Space Army. It is responsible for early warning of a missile attack on Russia and is the centre of the Crocus system. Solhenogorsk-7 receives data from Serpukhov-15 and a network of other sites.

Kolomna-1

Kolomna-1 is a communications and computer facility operated by the Space Forces. It is also called Pine Forest (Сосновый Бор). It is South East of the town of Kolomna and close to the General Staff transmitters at Luhovisty-3. It is part of the Crocus early warning system.

Kolomna-1 communications complex



Serpukhov-15

Serpukhov-15 is a Space Forces satellite communications complex, 16 Kms South-West of Chekhov-3. It is built on an extension to an old SAM site and contains multiple satellite domes. This site was mentioned in the account of how Russia came close to launching a nuclear attack by accident in 1983. It is part of the Crocus Early Warning system.

⁵² Unit 92860 also has a contingent at Faustovo, the large military test area 30 kms North West of Egorievsk.



Beloreck-16 (Yamantau)

Beloretsk-16, also known as Mizhhiria, is a closed military town near Mount Yamantau in the Beloretsk region, Southern Urals. There are extensive mine workings in the area. There were local rumours in the early 1990s about the construction of an underground bunker for the national leadership. The creation of this complex was reported in the New York Times on 16 April 1996.

Construction work is believed to have started in the 1970s and involved thousands of people. It has been reported that ~~construction work~~ construction work was ongoing in 2001 but may have been completed by 2007.⁵³ Bruce Blair has described this deep underground facility as more of a shelter for the Russian leadership than a command post because of its relatively fragile communications facilities, unlike the Rocket Forces mountain complex at Kitlim.⁵⁴

Unit 71111, ~~which is thought to be~~ part of 9 ЦУМО is based in Beloretsk-16. Beloreck-16 houses one of three 75-bed hospitals which come under the jurisdiction of 9 ЦУМО.

Saint Petersburg

The bunker maintenance list includes a facility operated by unit 83533 in Saint Petersburg. The address for this unit is 6 Access Lane, next to the Saint Petersburg military rear/logistics headquarters. The diesel generator in this facility has recently been repaired.⁵⁵ New cable communications were ordered in 2008.⁵⁶ The ventilation system in the bunker has been upgraded.⁵⁷ Unit 83533 is also responsible for a transmitter next to the Southern Cemetery.⁵⁸

Tarusa and Ferzikovo (Objects 616 and 617)

There are two similar facilities, 23 kms apart, in the forests South of Moscow, between Tarusa and Kaluga. Objects 616 and 617 appear to be command or communications facilities which are intended to play some role in nuclear conflict.

Object 616 Tarusa

Object 617 Ferzikovo

⁵³ ru.wikipedia.org

⁵⁴ <http://www.globalsecurity.org/wmd/world/russia/yamantau.htm>

⁵⁵ <http://www.zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=559595>

⁵⁶ <http://www.zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=189637>

⁵⁷ <http://58cpi.ru/content.php?id=3>

⁵⁸ Committee on tariffs St Petersburg Ordinance 25 December 2009 N 226-p – JSC Petrodvorets

Satellite images show some similarities between these two facilities and the Rear Command Post at Egorievsk. Both are compact secure sites with a number of small buildings and clearings for antennae. The secure compound at Egorievsk is smaller than at Objects 616/617, but the supporting area at Egorievsk is considerably larger.

Objects 616 and 617 look similar to Object 618 at the 37th Air Army communications facility, Kostino, which has a circular secure area with a diameter of 600 metres.

Other communications facilities near Moscow

Meshcherin-1

Meshcherin-1 is a major satellite communications centre. Object 793 is at this location. In 2008 9 ЦУМО commissioned a survey of Object 793 and adjustment work on this facility. A security upgrade of the site was handled by 9 ЦУМО. Object 793 is thought to be a shallow bunker. It is situated between Ilinskoe, Egorievsk, Luhovisty-3 and Serphukhov-13.

Meshcherin -1



Bekasovo



Bekasovo

There is a Reception and Retransmission Centre for the Monolith (257Ц) nuclear command system at military unit 11958. This unit which is based at Bekasovo, East of Naro Fominsk.⁶⁴ The likely site is a military compound in the forest North of Bekasovo. A 1977 US intelligence map shows an underground command bunker in this vicinity.

Whistle

There is a substantial satellite ground station complex 4 kms East of Klimovsk. Nearby there are other communications facilities. It has been reported that this is a central collection point for signals intelligence. The site is operated by military unit 34608 and has the designation "Whistle".

Whistle

Nerastannoe

⁶⁴ <http://doc.gostorgi.ru/7/2009-07-01/423634/2.doc>



Nerastannoe

This is a communications facility 14 kilometres South of Chekhov-2. It is controlled by the FSB, but might also support Command Centres in the Chekhov area.

South of Romantsevo

There is a substantial secure communications facility in the forest 10 kms North of Chekhov-2 and South of Romantsevo. This has HF and satellite equipment. There is a network of large tall masts whose function is unclear. Although this is a significant facility there are no online references that indicate what function it serves. There is also an abandoned communications site nearer the village of Romantsevo



Voronovo

The 1977 US map shows a bunker at a recreation facility between Chekhov and Naro-Fominsk. The likely site was a large Spa resort at Voronovo. There were later reports that a substantial bunker had been built at a site called Voronovo. A US map from 1998 said that this was 74 kms West of Moscow, whereas the identifiable site is 60 kms from the capital.

Until recently there were two military sites near the Spa resort. The 21st Satellite communications centre, unit 48264, was based 3 kilometers South East of Voronovo. This unit was disbanded in December 2009.

In addition, satellite images suggest that there is an abandoned military facility in the forest 800 metres West of the Spa Resort.

Youth-10

In 2009 an order was placed for modernising "Youth-10". The work was commissioned by unit 25555, part of 9 ЦУМО, and unit 87406 which is responsible for automated command systems. Between them these two units placed most of the contracts referred to in this report. A panel of senior officers from 87406 and 9 ЦУМО, including the heads of both organisations, decided which company would be awarded the contract for modernising Youth -10. This suggests that Youth-10 is a significant command facility with automated equipment.

The contract is for initial work to determine a method of modernising the "special object", taking account of the need for survivability and security. There are three aspects of the study.

First, the company must develop a method of ensuring that there is comprehensive protection of the "КБК" when subjected to the damaging effects of "ЯВ". КБК may mean computerised control complex (контрольно-вычислительный комплекс) and ЯВ may mean nuclear explosion (ядерный взрыв). There is a reference to protection from Electro-Magnetic Pulse (EMP), which is consistent with this interpretation of the abbreviations.

Second, the Defence Ministry are concerned that US seismic surveys could find out information about the facility during its reconstruction. One aspect of the study is to develop methods of rebuilding which would not compromising information security (разведзащищённости). Seismic surveys can detect large underground construction projects. This may mean that the location of this facility has been kept secret from US intelligence.

Third, the contractor should assess how to reduce emissions that might be harmful to the environment.

The reconstruction work will involve strengthening building structures in the facility and an improving the protection provided for personnel and for technical equipment. The condition and projected life of the cast-iron lining is to be assessed by non-destructive analysis. The condition of the structure of the facility, the КБК and the "protective devices" is also to be assessed.

The Missile Forces Communications centre at Naro-Fominsk-5 is called "Youth". "Youth" is also the name of the communications centre of the Special Control Group, which is responsible for nuclear intelligence. However it is possible that neither association is relevant to this facility.

It is tempting to suggest that this could be the Perimeter command centre. Perimeter is closely associated with the SRF and the only known contract for Perimeter was placed by an SRF unit. The panel which awarded the contract for Youth-10 did not include any SRF officers. This would suggest that Youth-10 is more likely to be a General Staff command facility than part of Perimeter.

"Youth-10" is probably an underground facility housing a computer system which is an important part of the General Staff command and control system for nuclear war. The location of the facility is not known.



Naro-Fominsk-5

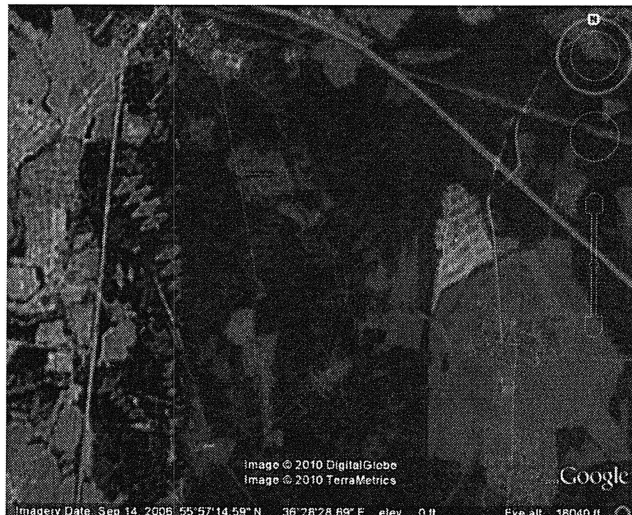
The main communications facilities for Odintsovo-10 and Balabanovo-1 are at Naro-Fominsk-5 (Youth) and Voscod (Sunrise).

Naro-Fominsk-5 is a closed military zone South-East of the town of Naro-Fominsk. It is also known as closed administrative territory "Youth". It operates communications facilities for the Strategic Missile Forces. Only low-resolution satellite images of this site are currently available. These show three HF transmitter networks each with its own security perimeter. The flag for the town illustrates its association with communications. An online photomontage for unit 92555, based here, shows a missile being launched.

One of the facilities in Naro-Fominsk-5 is a missile forces satellite communications centre, Корунд-М1.³⁹ This centre was built in the 1970s and has recently been modernised. It transmits missile targeting and launch instructions through Molniya and Meridian satellites to Рундук stations at missile launch sites.

Naro Fominsk-5

Voscod



Voscod

³⁹ <http://zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=249975>

Voscod (Sunrise) is a closed military village. There are extensive HF antenna in the nearby forest. Repairs to the support facility were ordered by the Strategic Missile Forces. Unit 12407 is based here and is associated with Missile Forces. This is a Missile Forces communications facility.

In 2009 the Strategic Missile Forces placed an order for the modification and repair of command and control equipment at "Youth" and "Sunrise", for units 68527, 12407 and 30113.

Gagarin

The main satellite ground station for the SRF is at Gagarin in Smolensk region, 170 kilometres West of Moscow. The facilities include the automated satellite control system Critic. Work was carried out on Critic in Gagarin as part of the modernisation of the Corund-M system.

Kitlim (Kosvinsky mountain)

This is a deep underground rocket forces command bunker. It is in a granite mountain and is able to transmit radio messages from inside the bunker. This is regarded as a critical survivable part of the SRF system. It should be able to send launch orders even if other command and communication centres have been destroyed or disrupted. The site is known as 1231 Command and Control Centre (1231 ЦБУ).⁴⁰ It is also called Object 1335.⁴¹ *+ wild*

Maintenance work on (military) facilities in the nearby town of Kitlim is commissioned by the Commander of Rocket Forces. There were three recent contracts for command system equipment which mention Kitlim. One is for 15e1841, a system for monitoring communications links.⁴² The second is for 90AY, the Crocus missile early-warning system.⁴³ This shows the Grotto monitors incoming missile trajectories as well as operating control systems for ordering nuclear strikes. The third contract was for long-term memory units for an alert system for Object 1335.

Perimeter Radio Command and Control Centre

There is at least one deep underground command facility with an underground low frequency antenna in the vicinity of the Central Command Post. This is a back-up nuclear command post. It can launch *in VY* Perimeter command rockets, which transmit ~~launch~~ orders to all missile sites. The location of this facility, or facilities, is not known.

Navy

Gorki-25

The Alternative Command Post of the Russia Navy is close to the Navy town of Gorki-25, North West of Moscow. At this site there is a secure compound with a helipad. In 2008 two orders were placed for a Navy facility with the address of Gorki. The orders were for reconstruction work on Object 225 and for a 14 km power supply. The same type of communications complex, 65c074, is installed at Moscow headquarters, Chekhov-3 and Gorki-25. *part of Gorki*

Gorki -25 Navy headquarters and helipad

⁴⁰ "1231 ЦЕНТР БОЕВОГО УПРАВЛЕНИЯ", this is the term used for Unit 20003, based at Kitlim

<http://iskalko.ru/1069617010935>

⁴¹ "объект 1335 - в/ч 20003 - 1231й ЦБУ РВСН" <http://ermak.n-tagil.com/forum/viewtopic.php?f=3&t=842>

⁴² <http://www.mpi.ru/tender690688.html>

⁴³ <http://www.zakupki.gov.ru/Tender/ViewPurchase.aspx?PurchaseId=345653>



VLF Communications

The primary means of communication with submerged submarines is by VLF. The Russian Navy operate six VLF transmitters:

Military Unit	Location	Designation
36026	Nizhny Novgorod	Goliath
20851	Archangel	
40771	Krasnodar	
31043	Khabarovsk	
49390	Vileyka, Belarus	
45682	Bishkek, Kyrgyzstan	Mirage

ELF

Air Force

Balashikha Air Force Headquarters
 Monino Air Force Command Centre
 Kostino Air Force Nuclear Communications/Command Centre
 Plotnikovo Air Defence Facility

Balashikha

+ AF Com

Balashikha houses the Central Command Post of the Russian Air Force. A special town called Dawn (Заря) was built on the Eastern edge of Moscow. The main Soviet Air Defence Headquarters was housed in a bunker nearby. Today this facility is also the headquarters of the Russian Air Force.

In 2008 three contracts for object YK90B at Balashikha were included in a list of work for 9 ЦУМО. One was for the repair of lift 4. The new lift was to have a speed of 2 metres/second and a capacity of 6 tonnes (goods) or 3.2 tonnes (passengers). The order says that its height is 114 metres. This is consistent with reports from visitors to the bunker who have described it as 100 metres below ground with four access lifts. The second order was for rebuilding and waterproofing of YK90B. The third was for a geotechnical investigation into shaft 1 of object YK90B.