

NUCLEAR WEAPONS IN RUSSIA

ЯДРЕНИ ОРЪЖИЯ НА ВЪОРЪЖЕНИЕ В РУСИЯ

Chief Assistant Professor PhD eng. Dolchinkov N. T.,

National Military University „Vasil Levski“, Veliko Tarnovo, Bulgaria,

National Research University "Moscow Power Engineering Institute", Moscow, Russia

n_dolchinkov@abv.bg

Abstract: *The main types of weapons in the nuclear artillery are shown. The main types of used controlled and unmanageable ballistic missiles manufactured in Russia are examined. It shows the application of ballistic and winged missiles and their role in the theater of warfare.*

Keywords: *nuclear weapons, Russia, development, intercontinental ballistic missiles, nuclear craft.*

1. Introduction

After detection of radioactivity in the early years of the century, scientists believed that the source of radioactive emissions into the atmosphere are only earth and rocks. Very soon, however, it is noted that with the increase in altitude (in experiments with balloons) the radioactive radiation has increased due to cosmic radiation. Later it was found that cosmic radiation contains two components: primary radiation - of galactic origin penetrating the atmosphere, and secondary cosmic radiation - derived from the reaction of cosmic rays with the nuclei of elements in the air, space dust, which is layered on the planet and others. This activity is mainly driven by the light radionuclides, such as: beryllium, sodium, aluminum, vanadium, etc. Cosmic rays that reach the Earth's surface can create radioisotopes decay but compared to other naturally occurring radionuclides is extremely low and not particularly important [1].

This discovery quickly going into medicine and created the first X-ray machines that led to a revolution in medicine. Subsequently advanced and modernized X-ray machines of the latest generation repeatedly raising the precision of diagnostic activity and allow saving hundreds of lives [3].

At the same time found that radioactive rays are a major polluter of the environment with an extremely strong impact on the life and physiological activity of organisms ranging from incentives to killing.

It is known that everything on our planet it is subjected to constant exposure from the natural and anthropogenic, earth and space sources on ionizing radiation, ie find are in an conditions, created from the natural and technogenic radioactive background. Yonizirashitite lacheniya accompany [2].

2. Development of Russia - NATO relations

Over the last two years, US-Russia relations (as well as Russia's relations with NATO) have reached a dangerously low point - the lowest point since the end of the Cold War. As a result of these developments, the issue of nuclear weapons and nuclear supplies has come to the fore again. Numerous extraordinary government declarations point out that both sides are rehearsing nuclear strikes against each other. Former NATO Secretary General Jens Stoltenberg, for example, said in an annual report that the Russian Air Force had conducted a training mission in 2013, is actually a "simulated nuclear attack" against Sweden. The report revealed that the Tu-22M3 supersonic bombers had been involved in the mission to carry long-range shocks, disguised as Su-27 fighters. Meanwhile, NATO member Turkey was a few steps away from a war with Russia, which in no way alleviates the situation.

In this context, it is useful to assess the state of nuclear weapons of both the US and Russia. How does the current situation affect the strategic balance and is it possible for each party to be convinced of

how unreasonable the start of a conflict is? What are the prospects for the development of the nuclear weapons of these two superpowers?

Both countries are bound by the new START 3 contract.

The contract for the further reduction and limitation of strategic offensive arms signed on April 8, 2010 by Presidents Obama and Medvedev commits their countries to reduce the amount of their nuclear warheads to 1,550 units. Also under the contract, the number of deployed intercontinental ballistic missiles and heavy bombers shall not exceed 700. In accordance with the data published by the US State Department on April 1, 2016, the two countries have reached or are close to specified indicators. The United States has 741 deployable startup facilities equipped with 1481 nuclear-weapon heads while Russia has 521 launchers equipped with 1,735 nodules. The difference is insignificant and does not affect the strategic balance. For now, Russia has fewer run-ups, but this discrepancy is due to the fact that intercontinental ballistic missiles carrying separable heads with independent guidance have a much broader scope of application - an intercontinental ballistic missile can carry up to ten independent heads of war. Here are the available nuclear missiles of Britain and France, which are also members of NATO.

2.1. Russian land-based intercontinental ballistic missiles: emerging anti-missile defense technologies.

Russia currently has a wide range of ground-based intercontinental ballistic missiles including mobile launching facilities. In 2015, the Missile Force with Strategic Purpose of the Russian Federation (RSCN RF) received 24 new missile complexes of the RS-24 "Yars" type (classified as SS-27 Mod 2 in the NATO classification) both in mobile and in shaft variant. These missiles can carry three or four self-directed nuclear warheads capable of penetrating missile defense systems. It can certainly be assumed that the volume of supplies of such missiles in 2016 will not yield to the quantity delivered in 2015. So Russia will be able to replace the Topol missiles (which are basically the equivalent of the LGM-30G Missile III) with the latest generation of missiles specifically designed to overcome enemy missile defense systems.

Russia also has heavy, ground-based, intercontinental liquid fuel missiles. The P-36M2 "Voevoda" (NATO-rated SS-18 Mod 5, Satan), which have been in arms since 1988, are well known. Such a rocket can carry up to 10 nuclear warheads of up to 750 kilotonnes each. This year, tests will be carried out on the latest missiles of the RS-28 type (also known as the "Sarmath"), which are planned to replace Voevoda missiles in 2020 and are equipped with everything they need to deal with missile defense systems. Above all, it is expected that these missiles will have the ability to launch their warheads on a sub-bore trajectory (shorter than the circular orbit banned by international agreements) and strike

virtually anywhere (from anywhere in the globe), even from the South Pole. This will force the likely opponent to build an integrated missile defense system, which is extremely costly, including the United States. Moreover, nuclear warheads will enter the atmosphere at supersonic speed and will move along an extended trajectory, maneuvering at a speed of 7 to 7.5 kilometers per second. The timing of the missile preparation will be reduced to a minimum and will continue for less than a minute after the order is received.

In addition, Russia also has the mysterious missiles RS-26 "Ruby", for which almost no information is available, but it is known that there is obviously some modification of the RS-24 "Yars" for inter-continental and mid-range impact. The minimum range of these missiles is 2000 kilometers, which is enough to break the US missile defense system in Europe. The United States opposes the deployment of RS-26 missiles on the grounds that this is in violation of the Medium-Range Missile Shuttle Intervention Agreement. But such a statement does not resist criticism: the maximum range of action of RS-26 rockets exceeds 6000 kilometers, which in practice means that they are intercontinental ballistic missiles and not mid-range ballistic missiles.

Given the facts, it appears that the United States is largely lagging behind Russia in the development of ground-based intercontinental ballistic missiles. The United States, in fact, has one - to be fair - a very old intercontinental ballistic missile model - the LGM-30G "Minuteman III", capable of carrying only one nuclear warhead, and the prospects for developing a new model for their replacement are very vague. In Russia, the situation is completely different. Intercontinental ground-based ballistic missiles are renewed and modernized on a regular basis - the process of developing new missiles has never stopped. Each new intercontinental ballistic missile model is designed to penetrate missile defense systems, which means that the European missile defense project and the ground missile defense system in the middle of the flight (US anti-missile defense anti-missile defense system capture of approaching nuclear warheads) in the foreseeable future will prove to be absolutely ineffective against Russia.

What are the most terrible Russian weapons endangering the US? The rating was made by American experts on Russian strategic nuclear forces and appeared under the title "The Five Types of Russian Nuclear Weapons, of which the West Should Be Afraid"

2.2. Who are these weapons?

"Borey" separately, "Bulava" separately. First of all, US experts have put Russian Nuclear Strategic Submarines of the Borey type 955, which have 16 ballistic missiles in armament and are the basis for Russian nuclear capability.

Secondly on this list is the intercontinental ballistic missile R-30 "Bulava-30", with which the submarines Borey are armed. This weapon can hit targets at a distance of 11,000 km, each Bulava carrying 10 nuclear warheads.

The third place in the rocket rating is the Yassen multi-purpose nuclear submarine - project 885, armed with anti-missile wing missiles.

Fourth, Americans have set up a Russian tactical nuclear weapon, which is not covered by the Strategic Offensive Arms Reduction Treaty, the HNV 3.

Fifth place, Western experts have set up solid-fuel intercontinental ballistic missiles with a portable, CS-24 combat division, the Yars, which can carry up to four individually targeted warheads.

It is also mentioned the new super-heavy Russian Sarmat rocket-based rocket, which will replace the former "Voevoda" superstar, also known as "Satan".

It is supposed that Sarmat will be liquid fuel and will be able to carry 10 battle blocks with a range of 121,000 km. They will be deployed in Dombarowski - in the Orenburg region, and in Ujour - in the Krasnoyarsk region.

All Russian strategic missiles - both marine and ground-based, including the operational-tactical complex Iskander-M, have all the means to overcome the US missile defense system.

Along with the analysis, another appeared with a list of Russian weapons that the Pentagon should be afraid of. It turns out that it is much longer.

So, among the dangerous Russian weapons is the Su-35 multi-purpose fighter, the Amur atomic submarine, the major new T-90C tank, the supersonic P-800 Onyx anti-missile missile based on the Indian multi-purpose wing rocket Bramos, used for offshore and coastal purposes, both from ships and from submarines, and in the perspective of aircraft.

T-90 tanks are much cheaper than Western Leopard-2 and Abrams tanks. The tank has a modern fire control system and effective protection systems. Its 125 mm caliber can be loaded automatically. He can shoot with traditional shells - armored, cumulative, fugitive and cumulative, as well as reactive missiles "Reflex".

At present, Russian tankers are creating not just a new tank that will be better than the T-90, but also the best army platform. On its base will appear the powerful tank, the armored shell for the crew, the new fire control system, the connection and navigation system, the target computing complex, the onboard information control system and other fire safety systems. For now, Arma is a secret project and is likely to appear in the preparation of the anniversary parade for the 70th anniversary of the victory of the Alabino polygon.

Among the most anticipated new Russian weapons is Su-35, which is a modernized version of the Soviet Su-27, although this is not quite accurate. From Su-27 the new plane took the planer in a highly sophisticated look. The engine of his engines has the ability to change his drawing, to divert up or down or to the left to the right, and to perform wonders of the aerial acrobatics that no American fighter can do. The Su-35 is very fast, it can rise to high heights and has a huge load, ie. combines advanced capability to capture high speed light targets and unique high-powered engines. This was demonstrated in the conflict in Syria.

The P-800 "Onyx" versatility wing is unique in its way of operation. Once it falls into the water trail of the frigate or aircraft carrier, it will not leave it until it strikes the most unprotected spot.

Arms in the Russian Army are still the supersonic anti-missile missiles "Mosquito" and "Granite", of which Western ships have no protection at this stage of the development of the world.

For the first time, the world saw a successful test of the Russian intercontinental missile system of the future "Sarmat".

On March 1, 2018, Russian President Vladimir Putin told Russia and the world that the country had successfully set up and conducted nuclear missile tests from a new era: Sarmat or RS-28. She is loaded with the most devastating warhead in the world.

The new intercontinental missile system replaces its 25-year-old predecessor, known as VC-20C Voevoda. His rocket weighs 200 tons with a payload of 10 tons and is the only one in the world capable of crossing 17,000 km before eliminating everything on his way.

Each rocket will have more than 15 separate heads with individual targeting of battle blocks, each with a 150 to 300 kilotone charge, the impact of which can create a crater with the size of the Grand Canyon.

This is just one of the five most anticipated weapons of the future - see who the rest are!

The manholes built in Russia for the new super-heavy 100-ton ballistic missile "Sarmat" will be in the Orenburg region and Krasnoyarsk region. Thus the heir of the notorious "Satan" comes into the final right.

"Sarmat" is one of the major new puzzles of the Russian military-industrial complex. The rocket will replace the RG 20B "Voevoda" (the western classification "Satan").

Vojvoda is currently the largest and worst strategic missile ever created. It weighs 210 tons and carries 10 nuclear warheads of 750 kilotonnes each.

Once in the USSR, these missiles were 308, now 52 in Russia, and are on duty at Dombarsky and Ujour, in Orenburg and Altay.

Prepared in Dnepropetrovsk, but because of the complicated relations in Ukraine the Russian side no longer relies on this cooperation.

The new missiles, which are due to enter the armed forces by 2022, are likely to appear earlier.

With its characteristics, Satan is unresponsive to the action of any electromagnetic impulse and can start from the shaft even after it has hit a nuclear warhead. The rocket carries a large complex to overcome missile defense, including the promising US. It can deliver to anywhere in the world 10 tons of weight, 10 nuclear warfare units with individually directed megaton class. Only one such rocket is enough to completely destroy New York. It was because of this in the West that it was called "Satan".

No less impressive will be the new missile, the successor to Satan - Sarmath. It will be produced by Makeev, who has experience in creating large ballistic missiles. Some time ago, it was the weapon for the largest nuclear submarines in the world - 941 of the Typhoon project, the RSM-52 rocket. This solid-fuel rocket weighed 100 tons and delivered 10 nuclear warheads to the target. But for financial reasons, both the whole range of the most powerful submarines and the RSM-52 missiles were retired. The last launch of the last such missile was in 2012. The last submarine, Dmitry Donski, still under construction, will also be retired.

The new supercharged "Sarmath" rocket will be fuel-efficient. Unlike solid-fuel rockets, liquid fuel has the highest performance. For example, in the course of the Stability-2008 exercises, the Sineva Marine Rocket has established a world record for a range of 11,500-kilometer rocket flights in this class.

The new Sarmat land-based missile will have a weight of no more than 110 tonnes, it will have a warhead with several nuclear warheads with individual guidance. According to some data, these will be maneuvering hypersonic blocks, such as those with the latest Russian strategic missiles Topol-M, RS-24 "Yars" and Marine Bulava.

Such a set-up gives the rocket almost total invulnerability in overcoming the missile defense system, the one the US is currently building along the borders of Russia and the one it will create in the future. No rocket system can trace the missile or its warheads that fly over individual ballistic curves if they suddenly hide in that arc and start flying with supersonic and even hypersonic velocity, clinging tightly to the relief of the area maneuvering the course and the height. It is impossible to intercept and even destroy such a rocket. The breadth of the Sarmath range will also exceed 11,000 kilometers.

"Sarmath" will be located in shaft launches. This is also testified by the fact that the rocket will be built to the size of the old heavy missiles RS-20 and PC-18.

The new missile sets a number of innovative requirements to overcome any missile defense, which may include a space-strike echelon. At the same time, a deep modernization of the existing rocket launchers is envisaged, which implies their technological transformation and a new qualitative level of security fortification with the creation of passive object missile defense elements. This will allow the life of the launch shafts to be increased by attacking the enemy, both with high-grade weapons and with nuclear weapons.

The missile shaft is a complex engineering facility that not only ensures the launch of the rocket, but also guarantees its storage even when it comes to a nuclear warhead. In the USSR years ago, they experimented with a similar attack on nuclear warfare. It turned out that no more than 7-9 nuclear warheads were to be brought out of the battlefield duty-on-the-shash racquet, which, on top of everything, should fall into the target. Such resilience guarantees Russia a retaliatory blow to the United States. This means that Makejev will make a rocket that will be able to launch after a nuclear explosion and hit the target in the other hemisphere.

Years ago Voevoda became the factor that forced the United States to sit on the table of talks on limiting strategic offensive weapons. Today the story is repeated. Russia is again building a

supercar. "Sarmath" will outperform Satan with its tactical and technical features. It will be a unique weapon that will hardly ever appear in the US.

Military experts in the world are amazed by the Russian novelty - rocket complex with intercontinental ballistic missile RS-26 "Ruby". On the possibilities for further development of the Yars project, analytical televisions even devote special broadcasts.

At the beginning of March, a military expert told a radio station about the uniqueness of the new Russian missiles and the concerns of foreign armies before Russian MBR. The following talk took place on the TV show:

"The new Russian missile RS-26 is flying on a constantly variable trajectory. There is no such weapon in any single army in the world, "the expert notes, and the question of the astonished journalist about the US system of missile defense:" You can forget about PRO. She is powerless to RS-26. "

"Recall the last hint of the Russians, please, do not annoy us. And now, by words, I moved to deeds. This is not even the famous "Topol-M". The PC-26 battle heads fly over and steadily maneuver. Part of them will surely overcome the missile defense system and reach their targets. "

"What is it? Are the trousers out of fear or are they ready to answer? "

"Not only did the US tremble that we in China are not funny. Now Russia is under safe protection that you can not say about the other countries in the world, "sums up the Chinese military analyst.

Why did the RS-26 missiles so scared the world's expert society? Thanks to the use of high-strength polymer materials at temperatures up to 850 degrees, the creation of the Wotkin plant is considerably lighter than its predecessor. For example, the Yars mass reached 120 tons against 80 tons of "Ruby", but the cumulative nuclear power consisted of 1.2 megatonnes (4 x 300 kt).

One of the biggest concerns is the fact that the range of the missile flight reaches 11,000 kilometers. This means that her warhead can strike any object in the US.

Already in December last year, Deputy US Secretary of State for Armaments Control and International Security, Rose Gemehuller, called for new sanctions to be imposed against the Russian Federation, claiming that the Russian side allegedly violated the treaty for the eradication of medium- and low-range missiles (5500-1000 -500 km) since it covered the upper segment of the range.

The PC-26 is characterized by a quick and short start - the missile passes the acceleration start in less than 5 minutes. NATO ground assets in Europe will not even fix the separation of the warheads, which long before the goal "sinks" down is flying almost horizontally. The missiles themselves also constantly change the direction and height of the flight by making false targets.

RS-26 missiles are already ready for mass production, and this year the Rubege complex has to go into arms in the Russian army.

Russia has unveiled its largest nuclear missile that is powerful enough to destroy a country with French territory with one blow, world agencies report.

Russian leader Vladimir Putin wants to replace the arsenal of intercontinental ballistic missiles R-36 (the Nazi name SS-18 Satan) with a new super-missile RS-28 Sarmath.

This class of 5th-generation Russian strategic missile-based rocket complexes is equipped with between 10 and 15 nuclear warheads, depending on their power, according to the graphs revealed online by OAO "GPC Makeyev".

In case of 10 warheads the power is estimated at 750 kilotonnes each. The Hiroshima bomb has a power of 13 kilotons.

Western experts believe two missile options will be designed to hit targets in the United States and Western Europe. For the United States, the missile will have a range of 16,000 kilometers and West European countries 9,000 kilometers.

Hurricane and Nagasaki nuclear bombs thrown over Japanese cities are a "toy" compared to RS-28 Sarmath, which will enter the armed forces in 2018, according to experts.

In June 2011, the Russian Ministry of Defense signed a government contract to set up the complex, which will be part of

Russia's arsenal of nuclear containment and overcoming enemy missile defense.

Weapons experts in Moscow note that the complex will be able to overcome radar and be able to hit London or the East and West Coast of the United States.

2.3. Nuclear craft

The first submarine of the Borey project was listed on the Russian VMF on August 19, 1995 under the name St. Petersburg, but on 1 May 1996 its name was changed to Yuri Dolgorukii. Its construction began on 2 November 1996 and officially left the workshop on 15 April 2007. Its crew was formed in 2003.

On February 12, 2008, it was launched on water and on November 21 of that year its nuclear reactor was launched. Since March 2009, the nuclear submarine has been tested at sea. On December 17, 2010 is scheduled the first test launch from the submarine board of the newest Russian ballistic missiles "Bulava", which is intended to be equipped with all nuclear submarines under the Borey project.

If the Bulava trials on the Yuri Dolgokuriy board pass successfully, in Spring 2011, they will continue with the launch of two Bulava missiles (they start one after another within a few seconds). In the event of success, the underwater cruiser with his planned armament will be immediately admitted to the naval fleet of the strategic nuclear forces of the Russian Federation.

On 28 June 2011, the first experimental launch of the Bulava missile was successfully carried out on board the latest submarine. In mid-May 2018, four missiles were launched from the atomic submarine that hit targets in eastern Siberia. The launch has achieved the set goals.

A giant Russian underwater boat appeared in the Baltic Sea. It is part of the North Russian fleet and is on its way to St. Petersburg where it will take part in the naval parade. Its route passes along the German Baltic coast. The beaches are now full of tourists who have had the impressive opportunity to see how the black giant is in the sea. Against the backdrop of the world's largest nuclear submarine, on its way to Russia, sailboats look like toys.

The length of the Russian submarine "Dmitry Donski" - the heaviest underwater cruiser with strategic purpose, is 172 meters. Its crew consists of 150 to 180 people. The ship is equipped with intercontinental ballistic missiles. In 2015, Dmitry Donski sailed from Severovikvinsk to St. Petersburg for a parade of Russian Navy. In order to reach the ultimate goal, the huge submarine must bypass Scandinavia and pass through the Baltic Sea.

The giant goes through the Big Belt - the most significant Danish Strait that connects the North with the Baltic Sea (Danish Storebælt), under the watchful eye of a Danish ship. He then took to the shores of Schleswig-Holstein and Mecklenburg-Western Pomerania.

Dmitry Donski, as well as the flagship of the North Russian Navy - the cruise ship "Peter the Great", are the largest in their class. The Russian Ministry of Defense has posted in Twitter a short video about the takeover of the submarine from Severovinsk. Residents of St. Petersburg will see this huge ship parade on July 30th.

3. Conclusions:

1. The development of Russia's nuclear weapons over the past decade has seen a significant increase in quality, and its technological level is ahead of the opponents.

2. International treaties and agreements on the development and distribution of this type of weapon are adhered to and progressing to a new class of weapons technology.

3. The development of nuclear weapons has a rather dissuasive effect.

4. Literature:

1. Dolchinkov N. T., N. B. Nichev, Characteristics of radiation, Revista academieii for țelor terestre NR. 2 (82)/2016;

2. Dolchinkov N. T., N. B. Nichev, Radiation background of the atmosphere, soil and water in bulgaria and its monitoring in the contemporary political conditions, Military sciences and national security, Sofia, 2017;

3. Vasilev D., Radioecology, Titus Consult, Sofia 2005;

4. Широкоград А. Б. Атомный щит России, Вече, Москва, 2017;

5. Широкоград А. Б. Энциклопедия отечественного ракетного оружия, АСТ, Москва, 2003;

6. Шунков В. Н. Артиллерия особой мощности, Харвест, Минск, 2004.