SOVIET RADIOELECTRONIC COMBAT pdf

1: Outgunned US Army Unprepared for War With Russia | Observer

Deception and use of electronic counter-countermeasures (ECCM) comprise the final REC measure aimed at Soviet C3 self-protection. Reconnaissance and Acquisition. ESM or electronic warfare support measures is a term we use to describe actions taken to search for, intercept, identify, and/or locate sources of radiated electromagnetic energy.

Hut 4, adjacent to the mansion, is now a bar and restaurant for the museum. The first hut, built in [72] used to house the Wireless Station for a short time, [65] later administrative functions such as transport, typing, and Bombe maintenance. The first Bombe, "Victory", was initially housed here. A recreational hut for "beer, tea, and relaxation". Military intelligence including Italian, Spanish, and Portuguese ciphers and German police codes. Cryptanalysis of Naval Enigma. Primarily used to house the engineering department. After February , Hut 3 was renamed Hut In addition to the wooden huts, there were a number of brick-built "blocks". Italian Air and Naval, and Japanese code breaking. Stored the substantial punch-card index. Enigma work, extending that in huts 3, 6, and 8. Incoming and outgoing Radio Transmission and TypeX. It has since been demolished. Traffic analysis and deception operations. Each machine was about 7 feet 2. The German navy had much tighter procedures, and the capture of code books was needed before they could be broken. When, in February , the German navy introduced the four-rotor Enigma for communications with its Atlantic U-boats, this traffic became unreadable for a period of ten months. Messages were sent to and fro across the Atlantic by enciphered teleprinter links. They were only sent in quantity from mid The Tunny networks were used for high-level messages between German High Command and field commanders. With the help of German operator errors, the cryptanalysts in the Testery named after Ralph Tester , its head worked out the logical structure of the machine despite not knowing its physical form. The prototype first worked in December , was delivered to Bletchley Park in January and first worked operationally on 5 February Enhancements were developed for the Mark 2 Colossus, the first of which was working at Bletchley Park on the morning of 1 June in time for D-day. Flowers then produced one Colossus a month for the rest of the war, making a total of ten with an eleventh part-built. The machines were operated mainly by Wrens in a section named the Newmanry after its head Max Newman. When Italy entered the war in an improved version of the machine was used, though little traffic was sent by it and there were "wholesale changes" in Italian codes and cyphers. The exception was the Italian Navy , which after the Battle of Cape Matapan started using the C version of the Boris Hagelin rotor-based cipher machine , particularly to route their navy and merchant marine convoys to the conflict in North Africa. This led to increased shipping losses and, from reading the intercepted traffic, the team learnt that between May and September the stock of fuel for the Luftwaffe in North Africa reduced by 90 percent. When Italy entered the war in June , delays in forwarding intercepts to Bletchley via congested radio links resulted in cryptanalysts being sent to Cairo. However, the principle of concentrating high-grade cryptanalysis at Bletchley was maintained. In â€”40, John Tiltman who had worked on Russian Army traffic from set up two Russian sections at Wavendon a country house near Bletchley and at Sarafand in Palestine. Two Russian high-grade army and navy systems were broken early in Tiltman spent two weeks in Finland, where he obtained Russian traffic from Finland and Estonia in exchange for radio equipment. In June , when the Soviet Union became an ally, Churchill ordered a halt to intelligence operations against it. They succeeded in deciphering Japanese codes with a mixture of skill and good fortune. In , Michael Smith wrote that: By , the site was nearly empty and the buildings were at risk of demolition for redevelopment. The twin sisters worked as Foreign Office Civilians in Hut 6 , where they managed the interception of enemy and neutral diplomatic signals for decryption. Codebreaking in World War One. Intel Security Cybersecurity exhibition. Online security and privacy in the 21st Century.

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2: The Effects of Soviet Army Communications Jamming on the AIM Division Signal Battalion.

Military Review. VOL LXI, NO. 03 -- MARCH - EXTENDING THE BATTLEFIELD: SOVIET RADIO-ELECTRONIC COMBAT IN WORLD WAR II. With daily advances being made in the field of electronics, it can be assumed that the role of electronic warfare will continue to grow in importance and play a larger part in future conflicts.

The electromagnetic spectrum portion of the information environment is referred to as the Electromagnetic Environment EME. The recognized need for military forces to have unimpeded access to and use of the electromagnetic environment creates vulnerabilities and opportunities for electronic warfare in support of military operations. Primary EW activities have been developed over time to exploit the opportunities and vulnerabilities that are inherent in the physics of EM energy. Activities used in EW include: Electronic Attack[edit] Electronic Attack EA previously known as Electronic Counter Measures ECM involves the offensive use of EM energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability including human life. In the case of EM energy, this action is most commonly referred to as jamming and can be performed on communications systems or radar systems. In the case of anti-radiation weapons, many times this includes missles or bombs that can home in on a specific signal radio or radar and follow that path directly to impact, thus destroying the system broadcasting. Electronic counter-countermeasure Electronic Protection EP previously known as Electronic Protective Measures EPM or Electronic Counter-CounterMeasures ECCM involves actions taken to protect friendly forces personnel, facilities, and equipment from any effects of friendly or enemy use of the electromagnetic spectrum that degrade, neutralize, or destroy friendly combat capability EA. So, EP brings with it the ability to defeat EA. Not to confuse the issue, but "jamming" is not part of EP, it is the target of EP. Jamming is an EA capability see above. Flares are often used to distract infrared homing missles to miss their target. Other examples of EP include spread spectrum technologies, use of restricted frequency lists, emissions control EMCON , and low observability stealth technology. EWTRs are equipped with ground-based equipment to simulate electronic warfare threats that aircrew might encounter on missions. Other EW training and tactics ranges are available for ground and naval forces as well. Antifragile EW is a step beyond standard EP, occurring when a communications link being jammed actually increases in capability as a result of a jamming attack, although this is only possible under certain circumstances such as reactive forms of jamming. The purpose is to provide immediate recognition, prioritization, and targeting of threats to battlefield commanders. Analysis parameters measured in signals of these categories can include frequency , bandwidth , modulation , and polarization. The distinction between SIGINT and ES is determined by the controller of the collection assets, the information provided, and the intended purpose of the information. Electronic warfare support is conducted by assets under the operational control of a commander to provide tactical information, specifically threat prioritization, recognition, location, targeting, and avoidance. However, the same assets and resources that are tasked with ES can simultaneously collect information that meets the collection requirements for more strategic intelligence. Russian Admiral Zinovy Rozhestvensky refused the advice and denied the Orel permission to electronically jam the enemy, which in those circumstances might have proved invaluable. The intelligence the Japanese gained ultimately led to the decisive Battle of Tsushima. The battle was humiliating for Russia. The Russian navy lost all their battleships and most of its cruisers and destroyers. As time progressed and battlefield communication and radar technology improved, so did electronic warfare. Electronic warefare played a major role in many military operations during the Vietnam War. Aircraft on bombing runs and air-to-air missions often relied on EW to survive the battle, although many were defeated by Vietnamese ECCM. In December , the Russian army received their first land-based Army operated multifunctional electronic warfare system known as Borisoglebsk 2 developed by Sozvezdie. Development of the system started in and evaluation testing successfully completed in December The Borisoglebsk-2 brings four different types of jamming stations into a single system with a single control console helping the operator make battlefield decisions within seconds. The Borisoglebsk-2 system is mounted on nine MT-LB armored vehicles and is intended to suppress mobile

satellite communications and satellite-based navigation signals.

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3: Controlling the airwaves: Russia's electronic warfare systems - Russia Beyond

Re: Soviet Radio-Electronic Combat Post by Sea SkimmerÂ» pm New digital radios are less vulnerable to jamming and now because they change frequencies very quickly.

Tweet Following rumours â€" never confirmed and possibly false â€" that Russian electronic warfare systems jammed the guidance systems of the 59 Tomahawk cruise missiles the US launched at Syria on 6th April , supposedly causing 36 of the missiles to miss, the Russians have provided an unusual amount of information about their normally highly secret Electronic Warfare EW systems. However that does not really explain why the Russians should be producing this information now, four days after that day. Specifically, the Russians are warning the US not to try the same sort of missile strike that they recently carried out against Syria against Russia. Presumably the delay in publishing details of the systems was caused by the need to obtain permission to declassify some details of the systems for publication, whilst continuing to conceal others. The Russians have also confirmed that their EW systems are present in Syria and have been used operationally there. This should not however be taken as any sort of confirmation that they were used to jam the Tomahawk missiles that the US launched against Al-Shayrat air base. It proved combat-ready and demonstrated the expected tactical and technical parameters. We were able to see for ourselves that all terms of reference we had received from the Defense Ministry have been met. They are as follows: Airborne Systems 1 Vitebsk System â€" carried by SU ground attack aircraft, MI and KA helicopter gunships, and MI heavy lift helicopters amongst others, intended to protect aircraft from surface to air missiles. This system is known to be routinely used by these aircraft operating in Syria. This was the system which was used to jam the radar systems of the US navy destroyer Donald Cooke in a notorious incident which took place during the peak of the Crimean crisis in Ground Based Systems 1 Krasukha-S4 â€" this is the system which is known to have been deployed to Syria. TASS describes its capabilities this way The Krasukha-4 is designed to provide protection for command posts, force groupings, air defense means, important industrial facilities from aerial radar reconnaissance and precision weapons. However this paragraph should not be treated as confirmation that the Russians used the Krasukha-S4 system to jam the guidance systems of the Tomahawk missiles which the US launched against Al-Shayrat air base. For one thing the Tomahawk cruise missile has a range of guidance methods and it is not clear which one was used by the Tomahawk missiles which carried out the attack. The Moskva-1 comprises an intelligence module and a post of control of jamming units stations. The Moskva systems debuted in joint tactical drills of air defense forces and aircraft in the Astrakhan Region in south Russia in March The system, which has been developed by the United Instrument-Making Corporation, provides electronic intelligence and radio suppression, the protection of manpower, armored and motor vehicles against targeted fire from close combat weapons and grenade launchers, and also against radio-controlled mines. The broadband radio intelligence equipment considerably increases the radius of protecting mobile systems from radio-controlled mines. The possibility of creating aerosol screens helps shelter military hardware from precision weapons with video and laser guidance systems. At present, these EW systems mounted on the unified K1Sh1 wheeled chassis based on the BTR armored personnel carrier are serial-produced and supplied to various units of the Russian Army. It is in some respects the most traditional of the systems discussed by TASS and may be the most commonly used EW system in operation with the Russian ground troops. Naval Systems Before discussing these systems I should say that one of the major problems faced by designers of modern weapons systems for surface warships is to ensure that the electronic systems of the various weapons on a warship complement each other and do not interfere or jam each other. As systems become more complex and more powerful this is becoming an increasing challenge given the close proximity of various electronic and weapons systems on a warship. What is known about Russian surface warships suggests that they have very extensive and comprehensive EW systems of various types. The system can simultaneously analyze up to targets and provide effective protection for a warship. Back in the s a senior British army officer told me that Soviet EW systems had the potential to reduce communications in modern battlefields to the level of the war, and that NATO was completely unprepared for this threat. I presume he was exaggerating, but there is no doubt the

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Russians take Electronic Warfare extremely seriously, and there seems to be a general consensus that they hold a wide lead over the West in this area. This is achieved through the use of more powerful transmitters and more effective antenna systems. Obviously, during a time of heightened international tension, with the US having launched a missile strike against Syria, and threatening to launch a further strike against North Korea, someone in Moscow has decided that it is time to send the US a reminder of this fact. Take a second to support The Duran on Patreon!

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4: Modern Russian Electronic Warfare | SITREP

Thomas: Soviet Radio Electronic Combat and the US Navy Published by U.S. Naval War College Digital Commons, Title: Soviet Radio Electronic Combat and the US Navy.

This article examines Soviet use of electronic warfare in World War 11 and speculates about future employment of tactical electronic warfare that has come of age on the modern battlefield. Concermng this topic, the primary responsibility of the field commander is to expand his knowledge of the Soviet EW threat. Accounts of their REC experience on the Eastern Front presents instructive accounts of how commanders may apply REC forces under modern conditions against large armored and mechanized units. They outline the "wide application" of radio reconnaissance, radio- electronic Jamming and radio disinformation by Soviet forces 1 The Soviet army was clearly taken off guard by the massive German EW effort at the beginning of the war, especially their voice intercept operations. Soviet authors cite how some commanders "groundlessly" took "sharp measures" and completely forbade the use of radios. They were fearful of detection by German voice intercept and radio direction tinding and the subsequent posslbllty of artillery or air strikes on their positions Moreover, some commanders placed their communications equipment a considerable distance from command points which?????? The war was well underway before the Soviets would redress their problems and turn the tide of the REC battle against the German forces. Radio voice Intercept was introduced to perform three vital missions against German forces, It was employed to: According to Soviet sources, jamming, which was created "in the course of combat operations," disrupted radio communications of the commands of German army groups, field and tank armies, tank and motorized corps and divisions and also those combined operations with aviation units. The Battle of Stalingrad in late witnessed "the first complete in history use of all three types of radio- electronic combat" Intercept, Jamming and disinformation Employed by Soviet forces. Soviet offensive REC capabilities were well underway. The th, th, st, d and th "Special Radio Battalions" are cited as the "first units of radio- electronic jamming. Each of these special units was equipped for radio intercept, jamming and direction-finding operations with eight to 10 vehicle mounted jammers, 18 to 20 Radio Intercept receivers and four direction. Captured German radios were used for more effective disinformation operationss Primary targets of these special units were "operational- tactical 1inks" of army, corps and division- level communications systems. Operations were designed to expose main and reserve frequencies of radio stations, their locations and also the equipment and activlty of enemy forces. Jamming operations against key radio-nets employed two jammers to cover both main and reserve frequencies. This provided "uninterrupted interference" against the targeted enemy communications system Kurak: The Baptism of Fire The operations of the special radio battalions at the Battle of Kursk in July offer, a unique opportunity to observe Soviet REC operations in highly mobile defensive and offensive combat Initially, radio intercept helped to uncover "completely" the composition of opposing German forces. According to Soviet sources, much of this data was provided by radio reconnaissance up to two weeks before the battle began. During the defensive stage of the battle, the th Radio Battalion conducted jamming against corps and division headquarters of German units attacking toward Kursk, Soviet sources maintain that "the primary mission of the first order was to inhibit or exclude the reception of ciphered radiograms of the enemy. Especially interesting is that: This practice "loaded down" German communication lines. Soviet authorities maintain that, during the course of the Battle of Kursk and the following offensive operations, the d Radio Battalion jammed up to 3, enemy radio messagee. Under jamming conditions, the Germans were capable of transmitting less than 30 percent of their "operational radiograms. In fact, they clalm that "the greatest results" of REC operations "were reached in the suppression of radlo communications of command points in the course of encirclement and destruction of large groupings of the enemy. Jamming the communicatlons of the 9th Army "which was known from intercepted radiograms" to be preparing a breakthrough out of the encirclement In addition the st Radio Battallon conducted jamming operations against headquarters of the 3d Tank and 4th Armys attempting to communicate with sister forces surrounded east of Minsk. Jamming 70 radio nets, the battalion disrupted more than 3, radio messages or up to 90 percent of all radio traffic. Soviet sources maintain

that 30 "highly important operational radiograms" of forces surrounded east of Minsk were jammed.: From January through February , the operations of the th and d Radio Battalions aided in the destruction of encircled German units in Glog6w, Breslau and Posen. The operations of the d are considered "especially instructive" since the battalion successfully jammed communications between the encircled units and between these units and relief forces outside of the encirclement. Commenting on the effectiveness of REC operations against the encircled forces, Soviet authorities maintain that the radio battalions "significantly" interrupted the command and control of German forces and the combined operations between the encircled groupings in Breslau, Glogow and Posen. These units jammed "practically all" radio commumcations of enemy groups of forces, consisting of radio stations in 30 radio nets on various frequencies. Once again, REC is credited with a significant contribution to successful operations. In the preparatory operation, "frontal radio reconnaissance" uncovered enemy radio communications systems and located headquarters of armies, corps and divisions "in spite of limited radio use and fraudulent operations. The jamming operations of the th against Army Group "Vistula," the 3d and 9th Tank Armies and their subordlinate and neighboring units are especially instructive about the objectives of offensive Soviet REC: Not able to establish communications, the army headquarters did not know the situation, was not able to lead its subordinate formations and coordinate its actions with actions of its forces attempting to help the surrounded groups. As a result, divisions were thrown in various directions,and were not able to organizationally conduct combat operations in order to pull out of the encirclement and were "liquidated by Soviet forces. Lower Echelon REC Operations Although the special radio battalions provided essential REC support to frontal combat operations, a more widespread application of offensive capabilities was necessary, especially in army- level operations and in the operations of smaller echelons. With the "increase in the sweep of front and army offensive operations" and the "shortening of the time of their preparation," it was necessary to develop "new ways to receive supplementary Intelligence and to increase the effectiveness of reconnaissance. In July , a group for conducting operational radio reconnaissance was formed in the 61st Army of the 1st Belorussian Force and attached to the th Communications Regiment. This platoon-size formation was called the "group of close reconnaissance with communications means" or, as abbreviated by Soviet writings,the GBRSS. According to Soviet authorities, the operations of the GBRSS and the organization of reconnaissance in the 61st Army "offer special interest" under modern conditions. The GBRSS paid "special attention" to the monitoring of German artillery communications in order to determine Soviet forces targeted for fire. In addition, the GBRSS intercepted units of the 10th SS Tank Division which were transmitting their locations and planned cutoff points,includlng the schedule for their occupation. Soviet authorities claim that ". Although radio intercept and direction finding receive less attention by Soviet authors, this certainly does not minimize their contribution to successful combat operations. The wide application of radio reconnaissance prior to offensive operations established an extensive order of battle data base against German forces not employing proper radio camouflage and protective meaeures. Soviet military writings on REC operations on the Eastern Front are certainly not the definitive source on the organization and operations of offensive Soviet REC units and tactics. Nevertheless, they do provide us with a unique opportumty to view the historical role of offensive REC units and their operations through the eyes of the Soviet commander. Under modern conditions, a more perfected and elaborate REC organization can pose a formidable arm of Soviet ground forces operations against an opposing force not properly utilizing authorized radio procedures and signal security measures. Our operational commanders should never forget what Soviet military writers clearly state:

5: What are Russia's radio-electronic warfare resources capable of? - Russia Beyond

Note: Citations are based on reference standards. However, formatting rules can vary widely between applications and fields of interest or study. The specific requirements or preferences of your reviewing publisher, classroom teacher, institution or organization should be applied.

Russia will deploy electronic warfare EW systems in Syria to counter high-precision weapons. According to him, the means of EW in Syria will be significantly expanded and supplemented in the coming weeks. Integration with air defense According to Mikheev, the strengthened electronic warfare system will be fully integrated with air defense. Currently, the technology is actively developing, creating new complexes for fighting on land, in the air and at sea. Thus, on April 15, , during the artillery shelling by the Japanese squadron of the internal raid of Port Arthur, the radio station of the Russian battleship Pobeda and the coastal post Zolotaya Gora created interference in Japanese radio air, making it very difficult to send telegrams of enemy spy ships. As noted by the Deputy Defense Minister Yuri Borisov, all military conflicts show that the EW funds are the most effective and very popular among the troops in all directions. It is achieved through the use of more powerful transmitting devices and more efficient antenna systems. The technique has advantages both in the number of nomenclature of the objects to be affected and the possibilities for its more effective combat use due to the implementation of a flexible control structure both by EW complexes and by individual pieces of equipment that operate autonomously and in conjugated pairs Yurii Lastochkin Chief of the Russian Armed Forces, General-Major Also considerable attention is paid to the development of equipment with unmanned aerial vehicles. By , it is planned to establish a specialized range of EW troops. Station of active jamming SPA was earlier installed on airplanes, now all aircraft are equipped with on-board defense complexes BKO. Their main difference from SAP is that the BKO is fully integrated and interfaced with all the avionics of the aircraft, helicopter or drones Defense complexes exchange with on-board computers all the necessary information: In case of any danger, the route can be corrected in such a way that the protected object does not enter the fire impact zone, ensuring radioelectronic defeat suppression of the most dangerous air defense and enemy aircraft, while increasing the combat effectiveness of its weapons of destruction. It is designed to protect aircraft and helicopters from anti-aircraft missiles with radar and optical thermal targeting heads. This complex is created. In the conditions of interference from this station, anti-aircraft missile systems, as well as aircraft systems for intercepting the enemy, are deprived of the opportunity to detect any targets and to direct them to guided air-to-air, air-to-ground and air-to-ground missiles, and the combat effectiveness of their aviation significantly increase. In total, the military ordered 18 vehicles. Then on the radar of the ship there was information, which put the crew in a deadlock. The plane then disappeared from the screens, then suddenly changed its location and speed, it created electronic clones of additional goals. At the same time, the information and combat weapon control systems of the destroyer were practically blocked. Considering that the ship was 12 thousand kilometers from the US in the Black Sea, it is easy to imagine the feelings experienced by sailors on this ship. The complex will be able to place active and passive interference to infrared homing heads of modern missiles, as well as modern and prospective radar stations. The characteristics of this complex have so far been classified, the T is the newest fighter and has not yet been adopted by the Russian Air Force. Ground-based REB complexes Modern ground-based EW systems operate in the digital signal processing mode, which helps to significantly increase their efficiency. According to the adviser of the first deputy general director KRET Mikheev, the operator of the EW station had previously had to determine the type of the monitored object according to the characteristics of the reconnaissance signal and select the type of interference to it. Almost complete automation is another advantage of the new system. The main purpose of Krasuhi-S4 is to cover command posts, groupings of troops, air defense assets, important industrial facilities from airborne radar reconnaissance and high-precision weapons. The capabilities of the broadband active interference station of the complex allow to effectively combat all modern radar stations used by various types of aircraft, as well as cruise missiles and unmanned aerial vehicles.

6: Russia claims this bomb can DESTROY the entire US Navy

Radiotechnical Troops (Radio-Teknicheskie Voiska) The Radio-Technical Troops (RTT) is a subdivision of the Russian Air Force.

Military leaders and defense thinkers proclaimed the dawn of new era in warfare. With our advanced technology and precision strikes, everything was different. In hindsight, the Gulf War merely confirmed what military historians always knew, namely that better weaponry and command-and-control habitually crush large numbers of less well-equipped enemies. Through the decade after , the army was busy managing post-Cold War cutbacks and peacekeeping in the Balkans and saw no peer-competitors anywhere. That American strategy-making is flawed is now painfully evident, but until recently the tactical success of our military seemed at least like a safe assumption. It does no more. A generation of down-punching against third-rate insurgents in Afghanistan and Iraq has proved to be poor preparation for combat against enemies who can seriously contest the modern battlefield. In eastern Ukraine, Russian ground forces have demonstrated impressive acumen in electronic warfare, where their ability to rapidly geolocate Ukrainian forces by tracking their communicationsâ€”including the careless use of mobile phones in the combat zoneâ€”has led to the deaths of many Ukrainian troops. However, our weakness in EW, as the Pentagon terms it, does not surprise. Even in the s, Soviet expertise in what they tellingly term radio-electronic combat outpaced the U. Genuinely shocking, though, is how far ahead the Russians have gotten in artillery. That arm is the great killer on the modern battlefield, for over a century now, and Russian gunnery has always been impressive. Our artillery was the guarantor of victory in the Second World War on all battlefronts. Contrary to Hollywood myth making, the U. Army had serious defects in the fight against the Wehrmacht. Outside a few elite units, our infantry was subpar, while our tanks were death traps compared to German models. Our gunnery, however, was world class, and the U. For all his bluster about tanks, General George S. You know our artillery did. In Korea and Vietnam, our field artillery saved the dayâ€”and countless livesâ€”time and again, allowing outnumbered American infantry to prevail in battle, while the U. That vital overmatch has evaporated since In the generation since the Cold War ended, the Russian military has maintained its traditional competence in gunnery, fielding new classes of field artillery, both guns and missiles, while the U. A brief look at the current situation reveals the extent of the problem. In contrast, our heavy brigades possess just a single battalion of no more than 24 mm self-propelled howitzers and in Stryker brigades the howitzers are towed, not self-propelled. The situation repeats above the brigade level, with the Russians having more artillery pieces and, worse, they customarily outrange American models by a good margin, sometimes twice as much. In terms of range and weight of shell, the Russians today possess alarming advantages over the U. Only in target acquisition do we seem to be at an advantage, thanks to drones and better tactical intelligence, but that edge, too, is slipping. Having grown accustomed to drones overhead nonstop, against enemies who cannot shoot them down, the U. Army may be in for a rude awakening in a contested fight. Not only have new weapons not been acquired, basic gunnery acumen has atrophied among officers and NCOs. Current efforts to make good for a lost generation, trying to catch up to the Russians in gunnery, are promising but long overdue. This crisis was years in the making and will be years in the unmaking. Army should therefore face the prospect of doing battle with Ivan with healthy trepidation for a good while yet. Their track record is not encouraging. Historically, our army has a habit of losing opening battles, often badly, due to unreadiness, as at Kasserine Pass in early and with Task Force Smith in the summer of In the past, there has always been time to learn lessons from defeat and catch up. The next time there may not be. Underestimating the Russians, particularly in gunnery, has a long and undistinguished history. Disaster followed, as recounted in my recent book Fall of the Double Eagle , with Habsburg forces being literally blasted off the battlefields of Galicia by superior enemy artillery. Austria-Hungary lost , men in just three weeks, the entire strength of the prewar army, and never recovered. This is the fate the U.

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7: U.S. ISSUE COMMUNICATIONS EQUIPMENT AND RELATED ITEMS | Murphy's Surplus

This study attempts to show that the U.S. Army AIM division signal battalion can not provide reliable communications support when confronted with the current Soviet radioelectronic combat threat.

Radio only goes so far, depending on line of sight, and the time of day -- e. And radios can be jammed -- the Soviets had a fairly comprehensive suite of jammers for every radio spectrum you could think of -- they even deployed special jammer vehicles based on BMPs or BTRs I forget which that were designed to jam VT fuzes so they would not airburst. Colonel Hardluck, commanding the 1st Brigade, 66th Armored Division, desperately wanted to discuss the tactical situation with his task force commanders and their operations officers S3 , but not at the Brigade Command Post CP. There was already too much activity in the area, and, as a precaution, he had ordered the CP to move to a new location in one half-hour. The colonel climbed in his jeep and headed generally toward the forward edge of the battle area FEBA. A quick check of his map revealed a road junction behind the FEBA that could be reached quickly by all his subordinate commanders. The colonel reached back for the radio mike. As usual, his "green machine" was not working, so voice transmission would not be secure. Colonel Hardluck ordered his driver to stop, reached back to his radio set and turned the power to high, and put out another call. The brigade commander told his three task force commanders to meet him in 20 minutes with their S-3s and then dropped his KAL as he started to encode the coordinates of the road junction. He gave them all a "wait one" while he retrieved his KAL Two minutes later, he was back on the air with the encoded location, and all 3 stations acknowledged the order. Since the brigade commander was already moving when he called his task force commanders to meet him, he arrived at the junction before them. While he was waiting, he called to each commander asking for their estimated time of arrival. They all answered, and a few minutes later, all the commanders and S-3s had arrived at the road junction and moved into a concealed area a few feet off the road. The brigade commander spread his map on the hood of his jeep and everyone gathered around, but their conversation was drowned out by the deafening explosions of incoming ordnance. Soviet BM multiple rocket launchers MRL had unloaded a battery volley of missiles on the road junction area. Was it just a lucky shot that, in one instant, killed all the senior officers of an entire brigade? The Soviets are aware of our dependence on electromagnetic communications and noncommunication emitters associated with command, control, and communications C3I. They have targeted our C3I, target acquisition, and fire control systems, with a fully integrated electronic warfare and conventional firepower systems approach. They call it radio-electric combat REC. Through REC, the Soviets believe they can neutralize or degrade 50 percent of our C3I, target acquisition, and fire control capabilities. In order to understand the Soviet REC system and how it is employed, let us trace the events from the time Colonel Hardluck left his CP to meet his task force commanders. The Soviets know that we do not have enough NESTOR secure voice equipment to cover more than 10 percent of our tactical communications equipment. Therefore, those systems that are covered are generally high priority command, control, operations, or intelligence nets. The Soviet intent was to force the American radio operator to transmit in the clear, which Colonel Hardluck did. He also gave the Soviets his future intentions and, in spite of the fact that he encoded the coordinates, the Soviet analyst located several likely areas for the meeting on his map. Soviet RDF and terrain analysis pinpointed the target for a Soviet fire support element. Soviet REC units have direct communication with the nearest division artillery group DAG ; and once information such as the rendevous site in our scenario is given to the DAG, a unit is tasked to fire the mission. In this case, an MRL battalion was directed to fire a battery volley, since this was a soft target in a well-defined, small area. Also, the MRLs would ensure saturation of the entire target area. As a result of this close coordination between REC and artillery, the three task forces took the main Soviet attack several hours later were commanded by less experienced officers. What could Colonel Hardluck have done to preclude his untimely demise? He should have also known that our current fielded encryption equipment has some inherent vulnerabilities in a hostile electromagnetic environment. He should have encoded his message before transmitting so as to keep the message under 15 seconds and should never have transmitted from the rendezvous site command impatience.

How many Colonel Hardlucks are there in the U. In fact, all of us are guilty to a gross degree of the very same mistakes made in the scenario, often as a carry over from Vietnam. But we cannot afford the luxury of improper radio procedure in a high intensity and lethal environment, especially against a sophisticated enemy. Now is the time, during peacetime training, to familiarize ourselves and those under our command with Soviet REC. This will be especially hard in fast-moving armor and mechanized forces, but it must be done. The Soviets have told us in their own military literature that they plan to cut our communications in half and, thus, destroy the control of our maneuver and fire support forces. The question facing us today is whether we help the Soviets make this prophecy come true in any future conflict or deny them their optimistic prediction of an electronic warfare victory. We must win the first battle of the next war and, to do so, we must learn to make the electromagnetic environment assist us and not defeat us.

SOVIET RADIOELECTRONIC COMBAT pdf

8: Soviet Radio-Electronic Combat - www.enganchecubano.com BBS

The battle for control of the electromagnetic spectrum will be the most important battle of any war with the Soviet Union. If we lose that battle then all else is lost as well.

Soviet writings on EW are included under broader topics such as security, command and control, reconnaissance, air defense, and camouflage. This treatment of electronic warfare in the context of routine operations indicated that the Soviets consider EW to be integral to all combat actions. Technical advancements in both electronic warfare support measures ESM and electronic countermeasures ECM have been noted in all Soviet forces. Ground forces continue to introduce new jammers, as well as a new series of improved signals intelligence SIGINT vehicles. The air forces have numerous aircraft devoted to EW as escortand standoff jammer platforms. Also since , there had been increased emphasis on Soviet offensive, penetrating air forces equipped with ECM and accompanied by dedicated EW aircraft. Strategic fixed jammers were located throughout the Soviet Union. REC doctrine added a new dimension to the US view of electronic warfare. REC combined signals intelligence, direction finding, intensive jamming, deception, and destructive fires to attack enemy organizations and systems through their means of control. Communication control points are assigned a priority according to their expected relative impact on the battle. They are selected with the intention of eliminating them by either physical destruction or by jamming. Although REC target priorities are dependent on the command level and may be altered as the tactical situation develops, they generally were: Artillery, rocket, and air force units that possess nuclear projectiles or missiles and their associated control system. Command posts, obsemtion posts, communications centers, and radar stations. Field artillery, tactical air force, and air defense units limited to conventional firepower. Reserve forces and logistics centers. Point targets that may jeopardize advancing Soviet forces, e. Aviation supporting front operations included support squadrons with aircraft equipped to conduct electronic warfare missions. These units can conduct electronic reconnaissance missions and ECM against radar, electronic guidance, and communications systems. The most common air ECM operations were spot or barrage jamrning and dispensing chaff directed against enemy air defense early warning and lire control radars. Frontal aviation bombing operations will be protected or camoutlaged by aircrhfi using ECM in either a stand-off or escort role. Jamming equipment, with an effective range up to kilometers and covering frequencies used by NATO air defense radars, is installed in these ECM aircraft. They also may eject chaff to achieve jamming, deception, and camouflage. Individual aircraft may carry self-screening jammers and chaff dispensers. Various Soviet aircraft have variants that are dedicated to EW activities. The Mi-4 contains multiple antennas projecting from the front and rear of the cabin, and, on each side, communication jammers. Airborne electronic reconnaissance platforms provide a much improved capability to intercept radio and radar signals more frequently and at greater distances than ground-based systems. These airborne electronic reconnaissace platforms are aimed at the detection and location of enemy battlefield surveillance radars, command posts, communication centers, and tactical nuclear delivery systems. They also are used in standoff or escort jamming roles. Naval aircraft are employed in long-range reconnaissance and ocean surveillance, with some aircraft equipped to provide midcourse target data for antiship missiles launched "over the horizon" from surface ships, submarines, and other aircraft.

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9: Russian/Soviet/WarPac Ground Based ECM Systems

Radio Electronic Combat (REC) Electronic Counter-Measures (ECM) For years the Soviets recognized the importance of electronic warfare (EW) and made a major investment in electronic counter.

February 16, Tatyana Rusakova , RIR Russian technology and developments in the field of electronic warfare are among the most advanced in the world and hidden from the public gaze. Press Photo Modern military conflicts involve less and less contact fighting. The wars gradually shift into virtual reality, and opponents often compete not in firepower weapons, but in the effective use of radio electronic warfare that can easily deceive the enemy, blind his radars or guide the fired missiles onto the false targets. RIR decided to lift the veil of secrecy and selected five most effective Russian EW electronic warfare systems. Terror of the destroyers This relatively small container in the shape of a torpedo is mounted on the wingtips of the aircraft and makes the sky machines invulnerable to all modern means of defence and enemy fighters. After the crew receives missile attack alert, Khibiny comes into action and covers the fighter with radio-electronic protective hood, which prevents the missile from reaching the target and makes it deviate from the course. Khibiny increases the survivability of the aircraft by times. This EW system can completely neutralise the enemy radar, but Khibiny are not installed on Su Passive scout The modern radar complex, which Russian troops are about to receive, can see and accompany all airborne targets at a distance of km previous similar radar development Avtobaza could track objects at a maximum distance of only km. Moskva-1 operates on the principle of passive radar. This means that it does not emit any signals, only receives and analyses the outer ones. Therefore, unlike conventional radars, it remains invisible to the enemy. Scanning the airspace, Moskva-1 determines the type of the object and is able to correctly classify it as a missile or an aircraft. The station immediately transmits this valuable information to the command post, and then the operator decides to destroy the object or not. In addition, Moskva-1 can guide air defence system to the target, so that it keeps its radar off, staying invisible to the enemy fire till last. PTRC Iskander and other similar complexes are quite defenceless on the march. Krasukha enables them to easily reach the given destination and deploy the combat crew. Such jamming radio-electronic suppresion makes precise weapon guidance impossible. Another feature of Krasukha is influencing the brain of the fired missiles and changing the flight task. Umbrella against Grads This EW system is one of the most advanced to date. In order to cause irreparable damage to manpower and weapons, proximity fuse must explode at the height of meters. If necessary, it can be used to kill frequencies at which the enemy is radio-communicating. One complex similar to an armoured vehicle with a television antenna is able to protect an area of 50 hectares. President-S is a complex of optical-electronic suppression, which can protect from destruction any aircraft that is being attacked by missiles fired from MANPADS, equipped with heat seekers elements that react to heat produced by the running engine of an aircraft or helicopter. During test firing, the missiles were fired from Igla Needle at a Mi-8 helicopter, fixed up on a special rig. Missiles were fired from a distance of meters, and not a single one reached the target â€” all the missiles deviated away from the helicopter and disbanded:

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