

Russia

I. Current National Security Situation¹

As Russian conditions have evolved since 1991, Russian defense officials have consistently articulated several key aspects of their nation's evolving security situation for the coming decades:²

- The first category of concern encompasses international forces and powers that may nurture long-term policies aimed at depriving Russia of its independence and at subverting its economic interests. This category also includes forces that are designed to isolate Russia, that attack it internally by inciting terrorism, separatism, and international conflict situations, as well as other, external actions that infringe upon Russian national interests. The appearance of significant, sustained interethnic and inter-religious violence is another element in this category, which also includes the growth of “fundamentalist forces” in certain countries and regions.
- The second and, according to some Russian commentators, the most dangerous category of national security problems, is the targeting of the Russian state by those countries possessing nuclear weapons and advanced long range conventional weapons, as well as the spread of nuclear weapons and other types of weapons of mass destruction.
- The third category is the continuing global trend in qualitative arms improvements and the apparent desire by some technologically advanced nations to create qualitatively new types of weaponry, thereby attempting to achieve a dominant, military-technological superiority in military affairs.

In 1993, Russian officials responded to the dramatic changes in its security situation with a draft of a new military doctrine.³ Politically, the draft doctrine stated that no state is an enemy of Russia. The rationale for the development of the armed forces is to protect the sovereignty, territorial integrity and vital interests of the new Russian state, conduct peace-keeping operations, and terminate conflicts (either along the border or internally) that undermine Russia's vital interests. The main state tasks for safeguarding military security are to: (a) maintain necessary defense potential and improve qualitatively the armed forces; prioritize funding for promising S&T developments; (b) ensure rational conversion of defense industrial base production; maintain national mobilization readiness; and (c) suppress provocations on the security of citizens, national sovereignty, and Russia's territorial integrity.

Since 1993, there have been continuous attempts within Russian to refine their appreciation of their own national security situation and to develop a revised military doctrine to deal with that situation. It was not until the year 2000 that an official new

national security concept⁴ and new military doctrine⁵ actually emerged. The current documents recognize that Russia is in a transition state, with a broad range of security issues that could affect that transition: economic, domestic, political, international, informational, military, border, and ecological. The condition of the Russian economy, and the technological state of Russia's industry, are two classes of issues. There are also a broad spectrum of military conditions that are viewed as threatening.

To be able to deal with these problems, a wide range of political, economic, and social actions are required. Additionally, the Russian Armed Forces need to be able to provide reliable defense against aerospace attack, to repel aggression in regional conflicts, to carry out strategic deployments in large-scale war, and to perform peacekeeping functions. Given the current weakened condition of the Russian Armed Forces, and the financial condition of the Russian economy that directly influences the rate at which the forces can be modernized, Russia's doctrine calls for the use of nuclear weapons as an offset. These may be used not only in response to the use of nuclear and other types of weapons of mass destruction against Russia, but also in response to large scale conventional aggression in situations critical to the national security of the Russian Federation.

Russia's defense budget

In 1997, the Russian military expenditures were \$41.7B (1997\$US), compared with \$ the Soviet budget of \$295B (1997\$US) in 1991.⁶ This placed Russia 3rd globally.

By comparison with the Soviet era, the Russian government has much smaller financial resources to spend on defense issues. The Russian armament budget in 1997 was about \$13B.⁷ Even more importantly, the Russian government has consistently had problems meeting budget commitments due to tax shortfalls.

II. National Defense Industrial Base

The Russian defense industrial base is the direct descendant of the large and all encompassing Soviet defense industrial base, although it is smaller. As it was in the Soviet era, the defense industry is key player in the economic makeup of Russia. In the Soviet era, the defense industrial base, including all of the Soviet republics, constituted about 6000 enterprises/institutes. The Russian defense industrial base currently consists of about 1700 enterprises and 900 research institutes. A 1992 World Bank study estimated that about 5.4 million people in the Russian Federation (about 7.5 percent of total employment) were employed in jobs associated with the defense industrial base.⁸ A 1995 Russian estimate, however, identified about 35 million Russians as receiving their income from enterprises either in or supporting the defense industrial base. The industry is concentrated in 12 regions, where about one-third of the labor force works in defense-related occupations.

Russian legacy initiatives from the Soviet Union

The Russian defense industrial base, acquisition process, and armament strategy have inherited three key initiatives for change that actually started in the Soviet era, but which Russia is also trying to execute.

One Soviet carry-over initiative focused on acquisition flexibility. In 1968, the Soviets initiated a major program designed to significantly modify the defense planning, budgeting, and procurement process for their command economy.⁹ The intent of that change was to make the command process act as though it had much greater flexibility by implementing a stage-wise adaptive process of planning and decision making. The planning cycle of the Gorbachev era was probably the first one scheduled to use the new process. By this time, Soviet appreciation for the need for revolutionary military change was also in full swing.¹⁰ The Russian government is trying to continue the flexible approach in the context of a market economy. This approach to flexibility has a strong impact on the sustainability of individual defense industries under conditions of a market economy. It implies that funding can be shifted between programs mid-stream without necessarily guaranteeing replacement funds to the enterprise.

During the Gorbachev era, there were also two additional significant developments that bear on the current Russian defense industrial base: the recognition of the need for “military reform,” and the initiation of the defense conversion program. Both were started to deal with specific strategic problems, both resulted in long-range programs that, once executed, would have major impact on the Russian acquisition process and its supporting defense industrial base, and both have encountered a continual set of problems in execution associated with the magnitude and difficulty of the Russian strategic transformation.¹¹

“Military reform,” in Russian history, denotes a major strategic change in the nature of the armed forces, its relationship to the state and society, its organizational structure, its technical base, its operational concepts, and, as a derivative, its force posture and its supporting industrial base. This is so sweeping a concept that, according to the Russians, it had happened previously only five times in all of Russian history.¹² Diagnoses within the General Staff concluded that the requirement for qualitative change encompassed virtually every facet of military science. Needs for changes included: (a) the qualitative characteristics of Soviet weaponry; (b) the qualitative dimension of Soviet military art; (c) qualitative improvements in force structure, organization, and troop control; (d) qualitative advances in unit training; (e) qualitative changes in military leadership methods and standards; (f) improvements in the quality of professional education; and (g) advances in the quality of military logistics.¹³

In 1989 a special commission on military reform created a plan for strategic change, which would result in deliberate downsizing and restructuring of the Armed Forces while at the same time providing significant improvements in qualitative military capabilities for modern warfare. The results of that effort created the first program for the achievement of true comprehensive military reform, and a three-stage timetable starting in 1991 and ending in 2000.¹⁴ The latest plan calls for a three-stage execution (1998-2001, 2001-2005, and 2005-2025). The substantive details of military reform have also

been under continuous change, with the current plan being to reduce the armed forces to 1.2 million troops which are, by 2005, to be concentrated in three Services compared with the current five.¹⁵

Defense conversion was also initiated in 1989. As the program began to take shape, three distinctly different views emerged from within Russia as to the expected results from the program. One view saw the program as a way to significantly reduce Cold War defense expenditures and the size of the defense industrial base. A second view saw the program as a way to guarantee funding for key residual defense enterprises and to preserve priorities for access to supplies. A third saw the program as a way to modernize the defense industrial base and share the cost with commercial markets. The first (of what has turned out to be many) defense conversion plans was set in motion. Very few in Russia or the West understood the magnitude of the difficulty of defense conversion in the context the Russian strategic transformation.

Current state of the defense industrial base

Because of the general problems associated with the strategic transformation underway in Russia, the defense industrial base is in a state of decline and disarray. The majority of Russian defense enterprises would be considered bankrupt in Western terms. Russian defense plants have lost nearly 80 percent of their funding from the Russian government in the past 10 years. Defense orders dropped markedly and production dove by 50 percent in the mid-1990s alone. At the same time, defense plants lost export earnings due to the loss of Soviet bloc markets, reductions in aid to states such as Libya and Iraq, and decline in the size of the global arms market. Arms exports dropped about 70 percent by the latter half of the 1990s. From 1991 to 1992, Russia's defense industry output fell almost 50 percent, and by 1994 output amounted to one-fifth of its 1991 level. By 1997, defense industry output was approximately one-tenth what it was in 1991, although it remained steady in 1998.¹⁶ In the first half of 1999, however, defense production reportedly increased by fifteen percent, and there was a planned 50 percent increase in the defense ministry's procurement budget for 2000.¹⁷

In 1999 a study of the Russian Academy of Sciences concluded that it will cost \$15B to restructure the defense industrial sector, which will require reducing the number of enterprises in the sector from 1700 to about 500-600. There are currently about 1700 defense enterprises.¹⁸ Of these, 41 percent are state owned, 32 percent are partially state-owned, and 27 percent are privatized.¹⁹ About 60 percent of the defense sector currently relies on state funding, and about 400 companies are currently insolvent. Since the Russian economy does not provide state funding of the magnitude needed for restructuring, the latest plan (of the many which have been enacted in the decade) is to create a special conversion fund. The conversion fund will contain the state-owned shares of the defense sector, part of the high-liquidity state-owned stock of the fuel and energy sector, and part of the tax revenue from arms exports. One possibility is to issue hard-currency bonds against this fund for sale abroad.²⁰

The general situation in Russia has created several problems with the defense workforce. Wage arrears is probably the most serious, but there are others associated with the entire concept of defense work in light of opportunities presented by the commercial sector. The brain drain of talent abroad is real. According to one recent estimate, between 1991-1997, more than 100,000 scientists, academicians, doctors and candidates of science emigrated, and the overall number of workers in scientific research institutes and design bureaus has decreased 53-60 percent.²¹

Additionally, younger scientists and engineers are in increasingly short supply in defense industries. The average employee age is now 50 years (55 in the design bureaus²²), and younger skilled personnel are not interested in working in the industry when compared with the attractiveness of the commercial sector. For example, V.V. Tikhomirov, General Designer of one of the leading Scientific Research Institutes, bemoans that “there are simply no replacements for today’s 50-60 year old leading workers. The vast majority of young specialists are going into business or commerce, or they are going abroad.”²³ Talented and entrepreneurial senior scientists and engineers are also motivated to create commercial spin-offs where possible. The rationale for being in the defense industry is being challenged by many, and overcoming that challenge is an issue for both the government and the residual defense industry. The government is creating new compensation programs to try and attract and retain younger talent.²⁴

A Ministry of Defense inspection in 1999 also concluded that about two thirds of the defense enterprises were not able to carry out their wartime mobilization tasks.²⁵

Russian Global Top 100 Defense Industries

In 1991 Russia had no defense industries listed in the Global Top 100.²⁶ By 1999 Russia had four listings for a combined annual defense revenue of \$4.2B (1999\$US).²⁷ Those four are Rosvooruzheniye, AVPK Sukhoi, Severnaya Verf, and Concern Antei. Annual defense revenue for the largest Russian defense company in 1999 was \$2.8B. The largest German company (in terms of annual defense revenue) ranked 12th globally in 1999. The Russian statistics are deceptive, however, since the revenue being reported by these specific companies is almost certainly only the revenue from exports, and not what may also be received from Russian defense expenditures. Additionally, Rosvooruzheniye is a government company that coordinates defense export orders that are fulfilled by the entire Russian defense industrial base.

II. National Armament Strategy

During the Cold War, the Soviet Union was one of the few nations that maintained a comprehensive indigenous research, development and acquisition capability for modern conventional and nuclear weaponry across all the services of the armed forces. Despite the dramatic changes that have affected the Russian defense industrial base since that time, Russia’s state armament program still articulates a comprehensive effort to develop basic types of armaments for cross-service use.²⁸

Russia's armament priorities

Current Russian priorities for armaments development and production began in the Soviet era. Soviet military-technical policy of the 1980's placed high priority on the development of a several new capabilities. These included: (a) a new generation of mobile intercontinental systems; (b) highly accurate weapons and reconnaissance strike systems; (c) substantial increases in conventional firepower and ammunition; (d) increased range and stealthiness of strategic non-nuclear forces; (e) significant increases in physical and electronic survivability of all armament systems; and (f) improvements in many operational aspects of weaponry, including size-weight ratio, mobility, controllability, habitability, and repairability.²⁹ The Soviet armament plans of the 80's, designed to field weaponry through 2000 or so, focused on these areas.

Following these trends, and in light of the Russian conclusions about the Gulf War, Russian military-technical policy continued to emphasis developments associated with modern weaponry, and areas in which Russia was particularly weak. Several critical technologies were identified for further development within the defense establishment. The initial Russian Federation Scientific-Technical Program for Basic Military Technologies (10-15 Years) focused, as priority directions, on the following areas: microelectronics, computer technology, optronics, radar, passive sensors, signal/image processing, electronic warfare systems, stealth, aero/hydro dynamics, engines, electric power, new materials, fuel, high temperature superconductors, nuclear technologies, and cryogenics.³⁰

The decade of the 1990's has done little to improve Russia's global technological position. In late 1998, Nikolay Mikhaylov, first Deputy Minister of Defense and former General Director of the large defense enterprise Vympel, compared Russian technological capabilities to global standards, focusing on what he considered essential to the Revolution in Military Affairs as it is currently defined by the United States.³¹ He identified fifteen different technology areas which he considered important to Russia's future military power, and rated Russia on a scale of one to four against the global leaders (who were at a level of 4). Only in two areas (nuclear technology and laser technology) did he rate Russia with a 4. He assigned ratings of 3 to Russian capabilities in engine platforms, unique experimental and testing facilities, and new materials technology, ratings of 2 to Russian capabilities in biotechnology, energy and energy conservation, industrial equipment, micro and nano electronics, and optoelectronics, and a rating of 1 to Russia's capabilities in information technology and in environmental technology. According to Russian estimates, only about thirty percent of Russian armaments are currently at the level of modern international standards.³²

The Kosovo conflict also provided the Russians with new incentives to develop a new generation of high-precision weaponry, to include fixing the underlying difficulties with the Russian defense industrial base that are inhibiting that development.³³ The internal conflict in Chechnya has also surfaced needs for armaments development, especially the improvement of individual soldier protection systems, high-precision weapons, and satellite reconnaissance.³⁴

In 1999, the Russian government also adopted a new program to further develop its microelectronics industry, judged to be seven years behind the West. The program, designed to run through the year 2008, will be managed by the Federal Agency of Control Systems. Microelectronics developments are needed not only for the Russian Armed Forces, but also to allow Russian arms exports to remain competitive on the world market.³⁵

In addition to the need for technological developments, an over-riding concern is the pending block obsolescence of Russian armaments. Most of the armaments of the Army and Navy will reach their guaranteed service lives between 2005 and 2008, of the Air Force by 2010-2015, and the strategic nuclear forces by 2008. About two-thirds of Russia's military satellites are already beyond their guaranteed lifetime.³⁶

Armament funding

In 1999, Prime Minister Stepashin stated that since 1991 the government has only provided the defense industrial base with 20-30 percent of the planned funding, and the state debt to the enterprises currently equal's the defense sector's annual budget.³⁷ In 1999, the budget submitted by the president to the Duma included about 28.5 percent for national defense. This was the second largest expenditure, only slightly less than that for serving the national debt.³⁸ As a part of this, Russia intends to accelerate developments of armament systems based on "new physical principles"³⁹ (a Russian euphemism that in the past has been used to designate speed-of light systems based on technologies such as lasers, particle beams, microwaves, and optronics).

The draft Russian budget for 2000 exhibited increased concern for the state of Russian armaments. It included an increased armaments budget of about \$1.8B, of which about one third will be spend on research and development, and about 60 percent on procurement. The structure of the program will also change to include a doubling of the effort focused on conventional armaments.⁴⁰ Within the overall budget, funding for the increase will apparently come from a reprogramming of funds originally scheduled to help retire Russia's foreign debt.⁴¹ Recently, Col-Gen. Anatoly Sitnov, Armaments Director for the Russian Ministry of Defense, argued that this amount needs to be multiplied by five to modernize the Russian Armed Forces. He called for replacing five percent of Russian weaponry per year, which would significantly increase the production level of conventional armaments for domestic use.⁴²

Arms import level

In 1997, Russia's arms imports amounted to only \$30M (1997\$US). In 1991 the Soviet Union import level was zero.⁴³ This placed Russia 77th globally.

These low import levels reflect the Russian/Soviet preference for domestic armaments development and production. Russia has historically striven for indigenous production capabilities, except during periods in which she clearly felt the need for help from abroad

to modernize her defense industrial base. During those eras of time, Russia turned to imports of technology, or licensed production, to help modernize the defense industries to point that indigenous development could proceed. Today Russia is pursuing the same path. At the same time, Russia views this path as a matter of expediency, and is committed to eventual scientific, technological, information, and resource independence in the production of the main types of armaments.⁴⁴

Foreign imports play a key role in current Russian armament strategy. They provide vehicles for joint R&D with foreign states to create (modernize) armaments and dual-use equipment and components, for organizing and developing joint production of armaments and dual-use equipment and components, and for exchanging military-technical information. Russia is also considering the buying of foreign companies as an alternative to cooperative programs.⁴⁵

IV Perspectives on International Arms Export Markets

The Soviet Union viewed arms exports to be a major component of Soviet foreign policy. Russia today has a much more pragmatic view—that of strategic economics. Armaments are among the few Russian commodities that have hard-currency value on the world market. Hence arms sales are a deliberate source of strategic revenue to help in the Russian transition. They also provide a key source of finance for Russian defense industries during the process of defense conversion and industrial restructuring. They serve as a means to establish business channels for both armaments and, subsequently, commercial products.⁴⁶ Russia also intends to capitalize on the technical achievements and revenues from export sales to provide new technical capabilities and funding to help modernize the Russian Armed Forces.⁴⁷ Recently, arms sales are also viewed as a means to expand Russia's influence globally, as well as to provide funds to help the financially-strapped Russian military.⁴⁸

Commercial sales

In the early 1990's the Russian government deliberately took initiatives to promote commercial arms sales abroad. This led to freelancing, with poor results. The Russians quickly discovered that a true commercial arms market is a tough sell, and Russian enterprises were ill prepared. The traditional government agency that supervised arms exports in the Soviet era, Oboronexport, also did not prove effective under the new market conditions. To try and deal with this situation, in 1993 arms exports were consolidated under a central organization Rosvooruzheniye that began accelerated efforts to sell Russian arms abroad. Russian specialists also carefully analyzed the requirements for competitive arms sales under market conditions.⁴⁹ Since then, the government has gone through numerous rounds of organizational designed to facilitate commercial arms trade, with mixed success, and has even selectively delegated direct authority to individual enterprises to conduct separate marketing and sales activities with foreign clients.

In spite of the difficulties, commercial arms sales have been productive. Exports now account for 60-70 percent of total production, and by 1997 they have become the main source of revenue for many enterprises, and for some, the only source.⁵⁰ Because of its critical economic situation, Russia has been offering even the most advanced systems and technologies for sale globally. Examples include radar for advanced fighters, air-delivered precision guided munitions, long-range air-air missiles, and advanced small arms.⁵¹ In 1999, about 80 percent of the production of armor, artillery, and small arms was for the export market.⁵² Many observers believe that Russia is generally ahead of many other leading supplier nations in offering state-of-the-art weapons (e.g., the ramjet-powered, supersonic Yakhont antiship missile). General Aleksandr Kotelkin, the former director of Rosvooruzheniye, stated that, unlike the past patterns of the Soviet weapons trade, Russia is focused now on selling its most advanced, high-tech systems, and deliveries occur simultaneously with, or even prior to, the introduction of similar weapons into the Russian Armed Forces.⁵³

In late 1999, Rosvooruzheniye reported that it had booked \$9.1B in outstanding orders through 2005, although the counting rules and delivery schedules were not specified.⁵⁴ About half of the sales are aircraft and helicopters, with the rest distributed between land, naval, and air defense systems. Besides the direct sale of armaments, Russia is also offering support in licensed production, research and development, and training.⁵⁵ Russia is moving to establish aircraft and maintenance facilities abroad, with specific facilities being planned for India, China, and Ethiopia.⁵⁶ In 1999 Russia announced a new strategy for arms exports, which offers not only the supply of armament systems, but also a comprehensive modernization of the client country's weaponry with the most advanced upgrades.⁵⁷ Russian estimates of the Russian share of the global arms market range from \$3.6-\$5B/year.⁵⁸

Russia's customers

Russia's largest customers are China and India. However other significant clients include Vietnam, Greece, and Algeria. In 1996, fifty one countries purchased Russian-made weapons, with the largest sales totals involving China, India, Syria, and the United Arab Emirates (UAE). Together with lesser customers Algeria, Cuba, Kuwait, Malaysia, Turkey, and Vietnam, those countries accounted for 75 percent of arms sales in early 1996.⁵⁹ Within the last five years, Russian clients also include Colombia, Malaysia, Bangladesh, Sri Lanka, and Singapore, with active discussions underway with many other countries, including Brazil, Chile, Libya, the Philippines, and Australia. Russia-Ukrainian cooperative development is expanding.⁶⁰

China

Arms sales and military technology transfers to China expanded rapidly in the mid-1990s, although some Russian defense authorities had strong reservations about sharing advanced technology with such an unpredictable neighbor. For China, Russia is a source of sophisticated, reasonably priced armaments unavailable from the West. For Russia, China is a source of hard currency. Among China's key purchases in recent years were

Su-27 fighter-bombers, MiG-31 fighters, heavy transport aircraft, T-72 tanks, and S-300 anti-aircraft missile launchers. China has also recently agreed to buy fifty Su-30 fighters, and has a license to build an additional 200 Su-27s.⁶¹ Recently Russia agreed to deliver new turbofan engines to upgrade the Chinese F-10 fighter.⁶² In 1994 and 1995 agreements, China bought a total of ten Kilo-class diesel submarines, the first four of which cost US\$1 billion altogether. Arms trade is occurring as one element of an expanded strategic relationship between Russia and China. In 1996 Boris Yeltsin and Jiang Zemin declared that the two countries intended to establish a strategic partnership for the next century. Although the reasons for the partnership are based in short term economic needs of both countries, and the mutually beneficial advantages of border stability, the scope of the partnership that has developed since then includes expanded agreements for military-technical cooperation. Currently China comprises over half of the arms export market for Russia, and Russia is China's largest single supplier nation.

India

India, long a Soviet client state, is Russia's second largest arms export market, comprising about one quarter of Russian sales. Russia and India signed a defense agreement in November 1994 during a state visit by then-Prime Minister Viktor Chernomyrdin. This agreement marked the end of the strained relations that had resulted from India's loss of access to generous Soviet credit terms and low prices when cash-strapped Russia demanded hard currency after the fall of the Soviet Union. During a related visit to India in March 1995, First Deputy Minister of Defense Andrey Kokoshin made a sale of ten MiG-29 aircraft for US\$200 million. At the time, Kokoshin asserted that this and future defense deals with India would save several hundred thousand jobs in the Russian defense sector.

In 1997, Russian and India signed a ten-year agreement for further military-technical cooperation. That agreement encompassed a wide range of activities, including the purchase of completed weaponry, joint development and production, and joint marketing of armaments and military technologies.⁶³ The Russian-Indian relationship is focused on broad modernization objectives for the Indian air force, air defenses, naval submarine, surface, air and missile forces, main battle tanks, and tactical air defense.⁶⁴ Russia plans to supply Su-30 fighters to India and to modernize India's MiG-21 fighters. In 1999, Russian T-90 tanks underwent summer trials in India, as a prelude to outright purchase of two hundred tanks.⁶⁵ Russia has also agreed to produce five aircraft equipped with the most advanced Sea Dragon anti-ship warfare avionics system.⁶⁶ In 1999, faced with severe budget constraints within India and stiff price competition from Israel, Russia also offered to lease Taganrog-produced AWACS-50 aircraft to India. Russia may also offer to lease advanced TU-22M3 bombers.⁶⁷

Other markets

Besides its traditional clients, Russia is also trying to penetrate other markets. Rosvooruzheniye actively promotes Russian armament sales in international arms

exhibits, offering high technology systems and sub-systems, and specialized upgrades for previously supplied Soviet weaponry. In 1999 Rosvooruzheniye participated in thirteen international arms exhibitions.⁶⁸ Russian displays at the international Ural Expo Arms 99 exhibition, besides the S-300, included the T-90S advanced main battle tank, the Ka-5 helicopter with advanced optical-electronic targeting and navigation system, and the MSTA-s artillery piece with its automatic fire control and targeting system.⁶⁹ At the MAKS-99 air-show in Zhukovsky, Russia showed eight different kinds of modern combat aircraft, and over ten other advanced military aircraft.⁷⁰

Asia

Russia has heavily targeted the Asian market. At the IMDEX-Asia-99 arms show, Rosvooruzheniye featured diesel submarines (including not only the older Kilo, but also the new AMUR), a variety of destroyers, frigates, corvettes, and missile patrol boats, and many naval upgrades, including anti-ship missile systems, missile and gun air defense systems, and anti-submarine and mine warfare systems.⁷¹ At the LIMA-99 exhibition in Malaysia, thirty Russian enterprises demonstrated a wide range of air-defense, naval, and aircraft systems, including the advanced Su-30 fighter, the Su25-UBK attack aircraft, the Mil Mi-8 and Mi-17 helicopters, the Amur-class submarine, the Neustrashimy-class frigates, and the Molniyya-class missile boats.⁷²

Moscow and Seoul have also reached an agreement on Kilo submarine purchases.⁷³ Seoul will buy three submarines and all necessary equipment for about \$1 billion. Moscow will also transfer certain know-how and submarine technologies to South Korea, and the joint manufacture of three more Kilo submarines will be organized at the Hyundai docks in Ulsan.

Europe

In the European market, Russia has agreed to repay part of its trade debt to Finland with its modern SA-11 air defense missile system in a deal worth US\$400 million. Experts predicted that Finland would employ the SA-11 as its national air defense system. The SA-11 also is in service in India, Poland, Syria, the Federal Republic of Yugoslavia (Montenegro and Serbia), and several former Soviet republics. In yet another debt reduction arrangement, Russia is furnishing Hungary 200 BTR-80 wheeled armored personnel carriers (APCs) as replacements for the thirty-year-old Hungarian-manufactured FUG APC. In the mid-1990s, the Russian defense industry was anticipating the end of the arms embargo against Serbia as an opportunity to generate hundreds of millions of dollars in sales. Russia's long association with the Serbs has established a traditional Russian arms market in the Federal Republic of Yugoslavia (Montenegro and Serbia). However, after the economic embargo and subsequent NATO military actions, the Serbians have changed these plans. Russia has also participated recently in arm procurements from the NATO countries (e.g. Greece and Turkey).⁷⁴

The United States

Russia also is now seeking opportunities for sales to the United States, or joint sales with US industry on the world market. Recently, Rosvooruzheniye and General Dynamics initiated discussions to install the Arena active defensive suites on the Abrams tank as a specific design for the Turkish Main Battle Tank competition, in which General Dynamics is a finalist.⁷⁵ Russia has also recently offered the licensed production of its Nakidka anti-PGM camouflage system for armored vehicles to General Dynamics in the United States if the arrangement is likely to produce enough revenue so that Russia can develop a new generation of the system for the Russian Armed Forces.⁷⁶

The post-Kosovo windfall

The Kosovo conflict has heavily stimulated Russian arms sales, especially for fighters and air-defense systems (e.g. the Mig-29 and the S-300). For example, in the aftermath of the conflict Vietnam, Syria, and Iraq sought lower cost Russian systems. Russian discussions with Syria have included the sale of Mig-29s, Su-27, T-80 tanks, and anti-tank weapons. Syria also planned to purchase spare parts for its Soviet-made equipment. Vietnam is “immensely interested” in arms purchases from Russia, including Su-27s, MiG-29s, and MiG trainers. It also was reported that Russia was planning to sell Libya several Mig-31 fighters, and modernized Libya’s Mig-25s. Earlier, Bangladesh contracted to purchase eight Mig-29s.⁷⁷ Russia also reportedly is in discussions with Iraq to help upgrade the Iraqi air-defense systems, perhaps in collaboration with Belarus and Yugoslavia.⁷⁸

Russian export strategy

Russian systems offered for export are now focused on deliberately trying to develop a competitive advantage in world markets. For example, several new naval platforms are being offered with advanced anti-ship cruise missiles: a new multi-purpose corvette, incorporating stealth elements, is equipped with the Uran system and eight Kh-35 missiles; a new missile boat is fitted with four Moskit missiles; and the new Amur diesel electric submarine is armed with the Yakhont missile. Russian advertisements argue that in terms of combat parameters (silence, survivability, habitability, and weaponry), the Russian submarines are more effective, and less costly, than systems offered by France, Great Britain, Germany, Italy, and Sweden.⁷⁹

Several Russian advanced air-to-air missile systems are also being promoted, with the most advanced being a new 300 km range export version of the KS-172 from the Novator Design Bureau in Yekaterinburg. The KS-172 is being offered for export in advance of deployment into the Russian Armed Forces, with hopes that export sales will generate sufficient revenue to finance further production for deployment of the system within Russia.⁸⁰ Similarly, a new stealth corvette, the Skorpion, is being developed for export in the year 2000, with eventual production of similar ships for the Russian Navy after the export version is completed.⁸¹ The Skorpion has a range of 2,000 miles, a top speed of 40 knots, and is equipped with artillery, missiles, and anti-ship cruise missiles.⁸²

Russia is also exploring the option of leasing weaponry to nations. For example, facing stiff competition from Israeli arms sellers over a sale of AWACS to India, Russian arms exporters reportedly have offered Indian officials what is characterized as a “new and attractive form of [weaponry] cooperation based on leasing.”⁸³ Specifically, Russian would offer the Indian Air Force its own variety of the AWACS-50 aircraft to India on a lease basis. Sources also indicate that Russia might raise the stakes further by offering its sophisticated TU-22M3 bomber on a leasing arrangement as well. This arrangement is viewed by some observers as unusual; nevertheless it has been permitted in principle by President Yeltsin in September 1999, decree guiding Russian defense cooperation with foreign nations.

The Russians are also trying to anticipate the implications of global events on the prospects for Russian arms exports. For example, former secretary of the National Security Council, Andrei Kokoshin, Kokoshin noted that modifications in the ABM treaty will spark “a chain reaction” in changing attitudes among countries that currently have other armament priorities. China, India, Pakistan, Iran, the Gulf states and Israel, according to Kokoshin, will probably be drawn into a new arms race.⁸⁴ This situation, according to Ruslan Pukhov, Director of the Strategies and Technologies Analysis Center in Russia, “will nevertheless give the Russian military-industrial complex a unique chance” to line its own pockets handsomely in the “inevitable buying spree” that the aforementioned nations will be moved to undertake.⁸⁵ In Pukhov’s words, “[Russia] will be able to sell missiles with ranges up to 300 kilometers and combat weights of up to 500 kilograms. I mean, the Yakhont and the Iskandr-E, Tochka, and Luna complexes. In other words, systems that are not on the black list of the Missile Technologies Control Regime.”

According to Deputy Premier Klebanov, the new Russian President Putin has no intention of defining a new arms export policy, or of prohibiting the sale of technology or armaments to China or India.⁸⁶

Arms export level

In 1997, Russia’s arms export level was \$2.3B (1997\$US), down from the 1991 Soviet level of \$7B. (1997\$US).⁸⁷ In 1995, Russian arms sales peaked at about \$3.8B.

Aircraft and armor sectors declined significantly in sales that year, but sales of air defense systems and submarines were strong.⁸⁸ According to Russian sources, 1998 arms sales were about \$2.7B.⁸⁹ Russia anticipated a 1999 sales level of about \$3B, with Rosvooruzheniye sales accounting for about 80 percent of the sales with the remaining coming from independent Russian military industrial groups.⁹⁰

V. Transformations in the Defense Industrial Base

In most countries, defense-industrial transformations occur at the level of mergers, acquisitions, alliances, and diversification. In Russia, the transformation is a strategic one, and an integral part of the strategic transformation underway in modern Russia since

1991. The Russian defense-industrial complex is viewed as a stabilizing factor in the development of Russia's economy, and hence the successful transformation of this base to a sound economic footing is also viewed as one of the most important factors in the development of the new economy.

Toward strategic change

With the legacy of acquisition reform initiatives from the Soviet era as a backdrop, the Russian Federation government, starting almost immediately and under the prodding of Andrei Kokoshin,⁹¹ began an aggressive process of detailed acquisition and defense industrial reform. The main focus was on improving efficiency and responsiveness and setting the stage for operations within a market economy.⁹² Another explicit objective was to restore control of the acquisition process to the Ministry of Defense, and to wrest control from the defense industries and their government representative organizations.

This impetus for acquisition reform was codified via an elaborated and unprecedented discussion, within the first Russian military doctrine statement (November 1993), about priorities and directions for military-technical change and acquisition reform.⁹³ That doctrine included mandates to restructure the defense industrial base, to improve the management process to accommodate the considerations of private as well as public ownership of defense enterprises, to introduce new economic incentives, to introduce true contracting and competition in the system of state defense orders, to organize the scientific research, development, and production process (NIOKR) of competitive/advanced technologies (including dual use), and to develop cooperative relationships with other countries to facilitate restructuring of the Russian defense enterprises and to maintain export potentials for conventional weaponry.

Additionally, efforts were initiated to provide better prioritization and substantiation of missions, systems, and S/T research, to conduct more experimental work to establish actual combat capabilities, and to reduce duplication in the number of weapon types being produced. NIOKR was also restructured. It now focused on reorganization and reduction of the number of scientific research institutes, elimination of duplicate efforts, emphasis on dual use technologies, restructuring series production to concentrate on critical priorities, and finally, and the transition to a true contract system of funding.

While the Russian government worked to develop more efficient armament procedures, there was growing turbulence within the defense industrial base. For many enterprise leaders used to Soviet command economic approaches, the initial years of the Russian Federation introduced massive confusion which in many respects is yet to be resolved.⁹⁴ Specific problems in the 1992-94 period that created confusion in the defense industry included the lack of a clear foreign policy, national security criteria, military doctrine, reform plan for the Armed Forces, and armaments program, compounded by the continuous shifting of personnel in key government positions.⁹⁵ Many of these same problems have continued throughout the 1990's.

Defense conversion

The program theoretically orchestrating defense-industrial change was the Russian defense conversion program. It has not yet produced the results which were intended by either the Russian government or the individual enterprises. From a government perspective, the intent of the program was to create a new defense industrial base with three different components: a core set of key defense enterprises/institutes (perhaps as few as 100-200, the number has varied over time); a set which would split their efforts in a major way between defense and commercial work; and a set which would either fully commercialize or would go out of business. Government conversion plans focused on a small number of priority areas, and pledged funding to support those areas as a transition mechanism to much more selective state support.⁹⁶ Priority funding, at least for planning purposes, was to concentrate funds on national infrastructure and import substitution areas, and to facilitate gradual transition to self-financing. A key and deliberate aspect of the defense conversion strategy has also been to preserve key technological design/production chains.

But the conversion programs have fallen far short of expectations. This has been partially because of the general difficulties of defense conversion and dual-use enterprise operations.⁹⁷ But mostly it has been because of the magnitude of the strategic transformation in Russia, the centrality of the former defense industrial base to that transformation, and the fact that the original goals established for defense conversion were developed based on incomplete appreciation of the extant limiting conditions that would inhibit success. The Russian budget has also been too weak to fund the (several) conversion programs as planned, and even to fund those enterprises which are considered to be a key part of the residual defense industrial base.

Commercial diversification

Another important part of Russian acquisition reform was the deliberate encouragement of defense enterprises to participate in commercial ventures (even those enterprises which were to probably remain within the residual defense industrial base). Spurred on by Western governmental technical assistance programs and private marketing initiatives from several countries,⁹⁸ a large number of Russian defense enterprises almost immediately attempted to enter the commercial market. The enterprises were forced to flexibly interpret their capabilities in terms of innovative products that might be sellable commercially. They had difficulty with this approach.

Problems

There are also problems associated with residual procedural legacies from the Soviet era. One is the approach to establishing requirements and securing funding. The government has been trying to establish a market-based process to provide the funding for defense enterprise operations. Yet many associated with the residual defense industries are still thinking of the process as a command-economic process in which goals are set, funds allocated, and enterprises then operate in a stable way, as opposed to continuously competing for new funds.⁹⁹ This tension has not yet been resolved.

Some of the problems of transition to a market basis are intended to be offset by Russian industrial policy, which theoretically provides preferential treatment to defense enterprises considered most critical. Russian interest in industrial policy development began in 1992, and has continued unabated since then.¹⁰⁰ But there has been a lack of consensus as to what that policy should be and how to best implement it under the transition conditions, and a continuous retrenching as Russia has encountered various internal economic difficulties.

Several industrial policies that have been articulated and set in motion. These include: selected concentration on key enterprises (“locomotives of industry”) that have both military and commercial potential; heavy promotion of foreign economic activity; and the creation of cross-cutting industrial structures (“financial industrial groups”) to provide a complete vertical cross section of economic assets (research, production, trade, banking, legal, etc.) to allow the key enterprises to function in a market economy. But as in other aspects of the Russian transition, the execution has faltered in the political and economic turmoil within Russia.

Continued attempts to restructure and downsize

Russia continues to revise and search for more effective ways to deal with the overall situation in the defense industries. Once again there are calls for new policies and new organizational structures to manage the process.¹⁰¹ But the basic problems still remain those described above. A recent argument by a government economist points out that the current State Armaments Program (1996-2005) is only planned to use 25-30 percent of the capacity of what is currently considered to be the defense industrial complex.¹⁰² The continual tension is how this gap is to be closed—by market processes, by state funding (if it becomes available), by a deliberate dual-use strategy, or by further consolidations—considering the full set of factors associated with the Russian transition.

The current draft government program for defense conversion (1998-2000) revolves around 670 key enterprises which are intended to become the core of Russia’s defense industry by the year 2000.¹⁰³ In order to avert further social collapse, priority will also be given to those key enterprises (of the 670) which are also the core industry for a Russian city.¹⁰⁴ There are also plans for a total of 530 financial-industrial groups to unite defense enterprises for improved operational effectiveness.¹⁰⁵ Additionally, it is planned to fund the enterprises via competitive contracting. It is anticipated that as a result of this process, not more than 1000 enterprises will remain that are at least partially funded by state defense orders.¹⁰⁶ As a result of the changes, it is expected that by 2000, 30 percent of the remaining enterprises will be wholly state owned, 60 percent will be partially state owned, and only 10 percent will be fully privatized.¹⁰⁷

Military-industrial groups

The Russian government has vacillated heavily in the approach to be taken to Russia’s eventually-restructured defense industrial base. Russia plans to retain state control, and

perhaps even complete ownership, of key military enterprises, and to create additional larger military-industrial groups from collections of smaller research institutes and production enterprises that are viewed to be the most market-competitive. There is also the possibility that there would be further privatizations. The most successful military-industrial groups are explicitly targeted to the export market.¹⁰⁸

One military-industrial group with a prominent place in the international arms market is VPK MAPO, a large group that was created from twelve enterprises, including a commercial bank and a design bureau, specifically for export purposes. It designs and produces a variety of military aircraft, including its flagship export product the Mig-29 fighter and the Ka-52 Alligator helicopter. VPK MAPO operates separately from the state-owned Rosvooruzheniye, which controls 90 percent of Russia's arms exports. In addition to the export orders received through Rosvooruzheniye, MAPO can also independently sell its products abroad. Large VPK MAPO sales of Mig-29's went to Malaysia and India. In 1996, VPK MAPO had \$100M in sales, with objectives of over \$7B in export contracts by the year 2000.¹⁰⁹ However in 1997, VPK MAPO sold no aircraft and had to rely on spare parts sales to survive.¹¹⁰

In the post-Kosovo era, the prospects for MAPO have improved significantly. More than fifty countries have MAPO products, but the principal customers are India, Malaysia, Slovakia, and Hungary. An attempt to create an equivalent kind of military industrial group around the capabilities of the Sukhoi Design Bureau and the enterprises that produce the Sukhoi fighter had not been as successful due to internal conflicts, and disagreements between Sukhoi leadership and the Russian government.¹¹¹

Further consolidations and mergers

Further consolidations are also imminent. One large team scheduled for privatization is AVPK Sukhoi, which currently accounts for about half of Russia's arms sales. A new joint stock company will be created, owned by both the federal and also regional governments. The privatization will include not only the Sukhoi design bureau, but also all of the associated production plants distributed throughout Russia. This will provide a more coordinated approach to research, development, and sales, and is also intended to attract private investment to fund new export products. There is not consensus among the production facility leadership that this should be done, fearing additional loss of revenue to the new company headquarters.¹¹²

Recently a pending merger was announced between the Tupolev Design Bureau, Aviastar, which produces Tupolev civilian aircraft, and the Kazan Aviation Production Association that produces the Blackjack strategic bomber. After the merger, the intent is to transform the conglomerate into a joint stock company. Improved competitiveness is the rationale for the merger, to include competition within Russia for the follow-on to the Blackjack.¹¹³

New defense industrial entities are also being formed in response to rising global competition in the arms markets. For example, in early October 1999, it was announced

that the Russian Duma will soon consider the ratification of an international financial-industrial group called “Granit,” which is planned to play a key role in a proposed treaty on the CIS United Anti-Aircraft Defense System.¹¹⁴ The “Granit” group is an effort to consolidate almost 120 Russian factories and institutes that participate in the production of Russian anti-aircraft complexes, thereby providing support to struggling firms and confidence to foreign buyers of Russian systems.

Another proposal involves the Almaz Design Bureau, a major designer of anti-aircraft complexes (including the S-300), and whose controlling interest belongs to the state. The intent is create a new scientific production association involving about twenty research institutes, design bureaus, and production enterprises, in order to both improve profitability and also to preserve the scientific-technical teams.¹¹⁵ Recently the Russian government also announced that it will unite all Mil helicopters design bureaus and production enterprises into a single holding company to mitigate competition and promote efficiency and strengthening the Mil brand name in the international market. This will require the approval of the private shareholders of four of the individual production enterprises.¹¹⁶

Cabinet-level attention

The transformation of Russia’s defense industrial base has undergone multiple administrative phases. The administrative system of the Russian DIB is in its eleventh restructuring. (The defense industry has been supervised over the last seven years alone by the Ministry of Industry (1991), the Russian State Defense Industrial Committee (1992), the State Defense Industry Committee (as of 1993), the Ministry of the Defense Industry (as of 1996), and, finally, since 1997, the Ministry of Economics.)¹¹⁷

To provide better coherence, in 1999 a new Cabinet-level post of Deputy Prime Minister was created to focus on the problems of the defense industrial base, and was given to Ilya Kelbanov, Deputy Governor of St. Petersburg. This was the first time that a Cabinet-level position has been created to focus specifically on the problems of the defense industrial base. Russia also created the latest version of a new Commission for Military-Industrial Affairs, headed by Klebanov. The purpose of the Commission is to influence the development of Russia’s DIB by providing proposals to advance the nation’s military-industrial potential (e.g., military-technological cooperation with other nations, issues pertaining to high-precision weaponry development and space technologies) while developing its comprehensive capability in accordance with key defense and security priorities. Recommendations on enterprise restructuring and conversion are also a part of the Commission’s charter.¹¹⁸ Four main agencies are subordinate to the Commission: The Russian Shipbuilding Agency, the Agency for Conventional Arms, the Agency for Communications Systems, and the Russian Space Aviation Agency.

These agencies have also been given the authority to organize development and production of pilot armament systems both domestically, and also in collaboration with other countries—a departure from previous Russian practice in which all Russian military equipment was produced domestically.¹¹⁹ A subsequent Governmental Commission for

Military-Economic Problems reaffirmed the importance of new military military-technical cooperation with foreign countries as an essential element of solving the problems of the Russian defense industrial base.¹²⁰ A new presidential decree is focusing on the simplification of export procedures, reducing to two the number of government ministries involved in export decisions (Foreign Ministry and Ministry of Defense), and shortening the approval timelines.¹²¹ Shortly after his election, the new Russian President Vladimir Putin also disbanded the ministries of Economics and Trade and created a new single Ministry of Industries, Science, and Technology to oversee the defense industry and arms exports. Its new chief is Alexander Dondukov, general designer of the Yakovlev Design Bureau.¹²²

Tighter government controls

Since 1996, twenty one Russian companies have been given permission to export directly (without going through Rosvooruzheniye). However in spite of (or perhaps because of) the success of some of these companies on the international market, this freedom has become an issue. In July 1998, the Russian parliament passed a new law on defense exports that prohibited companies with less than 51 percent state ownership from bypassing Rosvooruzheniye. That law has not been fully enforced, and is a serious point of contention within Russia.¹²³ Individual enterprises do not want to pay a commission to Rosvooruzheniye. The government does not want to see a repeat of the early 1990's, when individual enterprise marketing led to unhealthy competition and price dumping.¹²⁴ The pricing of Russian systems on the international market has been a constant source of tension, with the Russian government recently moving to exercise tighter control over the prices offered by the independent offers from Russian companies.¹²⁵

In 1999, the Duma passed legislation that prevents bankruptcy proceedings from being initiated against Russian defense and space industries unless their short-term liabilities exceeded their assets. A subsequent law prohibited privatization of space industry monopolies, and allows "deprivatization" of those that have already been privatized. Both laws are designed to reassert state control over the industries and help insure that they retain their key technologies, which could be abandoned in favor of short-term profits.¹²⁶

VI. Risks and Concerns

- The Russians are most concerned about the overall strategic transition underway in Russia, and the critically of the successful transformation of the Russian defense industrial base to the accomplishment of that transition.
- According to Russian estimates, only about thirty percent of Russian armaments are currently at the level of modern international standards.
- The government is concerned that the technological state of the art in Russian systems, in many areas (especially microelectronics) is not up to world standards, and

as a result the competitiveness of Russian products on the world export market is being hampered.

- The Russians are concerned about block obsolescence of their Armed Forces across the board by about 2010.
- The Russian government is moving to reassert state control over the industries and help insure that they retain their key technologies, which could be abandoned in favor of short-term profits.
- Russia is concerned that center-regional tensions are inhibiting the coordinate actions of the defense industrial base in international markets, and Rosvoorozheniye has taken special steps to improve its relations with the regions in 2000, including opening additional branch offices.
- Russia is concerned with the decrease in new talent into the defense industrial base. The average age of the workers in the defense industrial base is 50, and younger workers are not attracted to the industry. The government trying to create new compensation packages to attract talented scientists and engineers to enter and stay in the defense industries.
- The Russian government, as it has for the last decade, is still concerned that a net impact of privatization on defense industries will be the loss of key technological capabilities as the companies turn their efforts to products that will be more profitable in the short term.
- The payments problem from arms sales to defense enterprises is a real and recurring one. Defense industry products sold under contracts negotiated by the central Rosvooruzheniye do not receive prompt payments from the government once the foreign customer pays for the order delivered. As a result, the enterprises do not have funds to pay either their suppliers or their taxes. This situation exacerbates the already bad condition in which the central government has also been chronically incapable in the last several years of paying for the armaments produced for the Russian Armed Forces. Individual defense enterprises that are destined to remain a part of the residual Russian defense industrial base are caught in the middle, since significant diversification to commercial markets is not planned for those enterprises.

VII. Some Observations

- In most countries, defense-industrial transformations occur at the level of mergers, acquisitions, alliances, and diversifications to commercial markets.. In Russia, the transformation is a strategic one, and an integral part of the strategic transformation that has been underway in modern Russia since its creation in 1991. There are also parallel and directly related strategic transformations at work within Russia—the change to a market economy vs. a command economy, the change to a democratic vs. autocratic form of government, the change to an individual vs. state responsibility for

social services, and strategic military reform. All of these must be completed in a coherent fashion for the stability and success of any one of them. This is going to take a long time.

- In most countries, revenues from arms exports are important sources of income for the defense industrial base, but not in a broader context. Russia views arms exports as an important source of strategic revenue to fund her strategic transformation. In distinct contrast to other countries, Russia views successful arms exports to be a matter of strategic survival during the period of the Russian transition.
- Russia is offering at least some advanced systems for sale on the export market prior to their introduction in to the Russian Armed Forces, with hopes that external sales will generate sufficient revenue to allow further production for Russia's internal needs.
- Russian export control initiatives are not motivated by proliferation concerns. The central government is concerned that independent actions of Russian enterprises will undercut prices on the world markets and will also decrease the arms sales revenue flowing directly into the Russian government.
- Because of the strategic character of its defense industrial base in Russia's current economic situation, Russia's urgency to sell armaments abroad is probably higher than that of any other country. This creates the situation in which smaller nations can acquire advanced Russian systems and technologies at relatively low costs, and Russia is very hungry to make that happen.
- Russia's main arms export customers, which are funding a significant part of the Russian defense industrial base, are China and India—two countries in opposition on many issues. This does not create a stable market situation in the long term.
- Russia has recently authorized four armament agencies to organize development and production of pilot armament systems both domestically, and also in collaboration with other countries. There is a strong precedent in Russian history for this approach during periods in which Russia was technologically behind world standards. However this is a departure from post World War II standards in which all Soviet/Russian military equipment was produced domestically.
- A new presidential decree is focusing on the simplification of export procedures, reducing to two the number of government ministries involved in export decisions (Foreign Ministry and Ministry of Defense), and shortening the approval timelines.
- Foreign imports also play a key role in current Russian armament strategy, which is counter to the Russian/Soviet predilection for indigenous development and production. Today, imports provide vehicles for joint R&D and production with foreign states to create (modernize) armaments and dual-use equipment and components and for exchanging military-technical information. At the same time,

Russia views this path as a matter of expediency, and is committed to eventual scientific, technological, information, and resource independence in armaments production.

ENDNOTES

¹ Portions of this chapter have been adapted from: "Russia: Selected Aspects," in Dr. J. Battilega, et al, *An Introduction to Global RDA Processes*, Science Applications International Corporation, SAIC-96/6006&FSRC/B, Denver, November 18, 1996; J. Battilega, *Innovation in the Russian Defense Industrial Base and Acquisition Process*, paper prepared for the CIA Conference on Russian Military Innovation, January 1999; and Bruce Jackson, J. Battilega et al, *Trends in Foreign Perspectives on Foreign Military Operations and Associated Space Dependencies*, Science Applications International Corporation, SAIC-99-6014&FSRC, Denver, November 1999.

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- ⁹² *Development and Production of Armaments and Military Equipment in Russia*, Science Applications International Corporation, SAIC-95/6010&FSRC, Denver, 1994.
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- ⁹⁴ Many Russian defense industry leaders who assume they will remain in the residual defense sector after conversion still appear to be waiting for a return to Soviet-style normalcy as it affects their enterprise.
- ⁹⁵ Shulunov, op. cit., pp. 4-5. Shulunov, a leading defense industry advocate, criticizes government actions in the 1992-94 period as being too dependent on the market to sort everything out.
- ⁹⁶ For example, the 1995-97 conversion plan singled out civilian aircraft development, Russian Navy revival, production of equipment for the fuel-energy complex, new kinds of medical equipment, electronics development, communications equipment and information science, sophisticated home appliances, conversion of MINATOM enterprises, and equipment for agriculture/ light industry as priority subprograms. (Note that several of these areas also have direct military applications in priority areas if the conversion program should succeed in producing commercially viable enterprises able to compete in these areas at world standards). See "On the Federal Special Program for Defense Industrial Conversion for 1995-1997," FBIS-UMA-055-5, March 20, 1996, p. 58.
- ⁹⁷ Both defense conversion and dual-use production and operations are very difficult, even in advanced market economies. Studies in the West that have looked at defense conversion after WWII, the Korean War, and Vietnam have concluded that successful defense conversion occurred where the companies involved appealed to market forces, and acted accordingly. Those that didn't for the most part failed. In Russia, of course, there was no market backdrop to create the forces to appeal to.
- ⁹⁸ Especially the US, Germany, Japan, Italy, and the UK.
- ⁹⁹ For example, two new arguments for revising the force planning processes both converge to the same bottom line: guaranteed and stable armament funding. See Col. General V.M. Barynkin, Chief of the Main Operational Directorate of the General Staff, "The Planning of Military Organization: Experience and the Present Day," *Voyennaya Mysl'*, Vol. 3, 1995, and Col. V.I. Ostankov, Doctor of Military Sciences, "Force Development Planning: Basic Principles," *Voyennaya Mysl'*, Vol. 7, 1998.
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