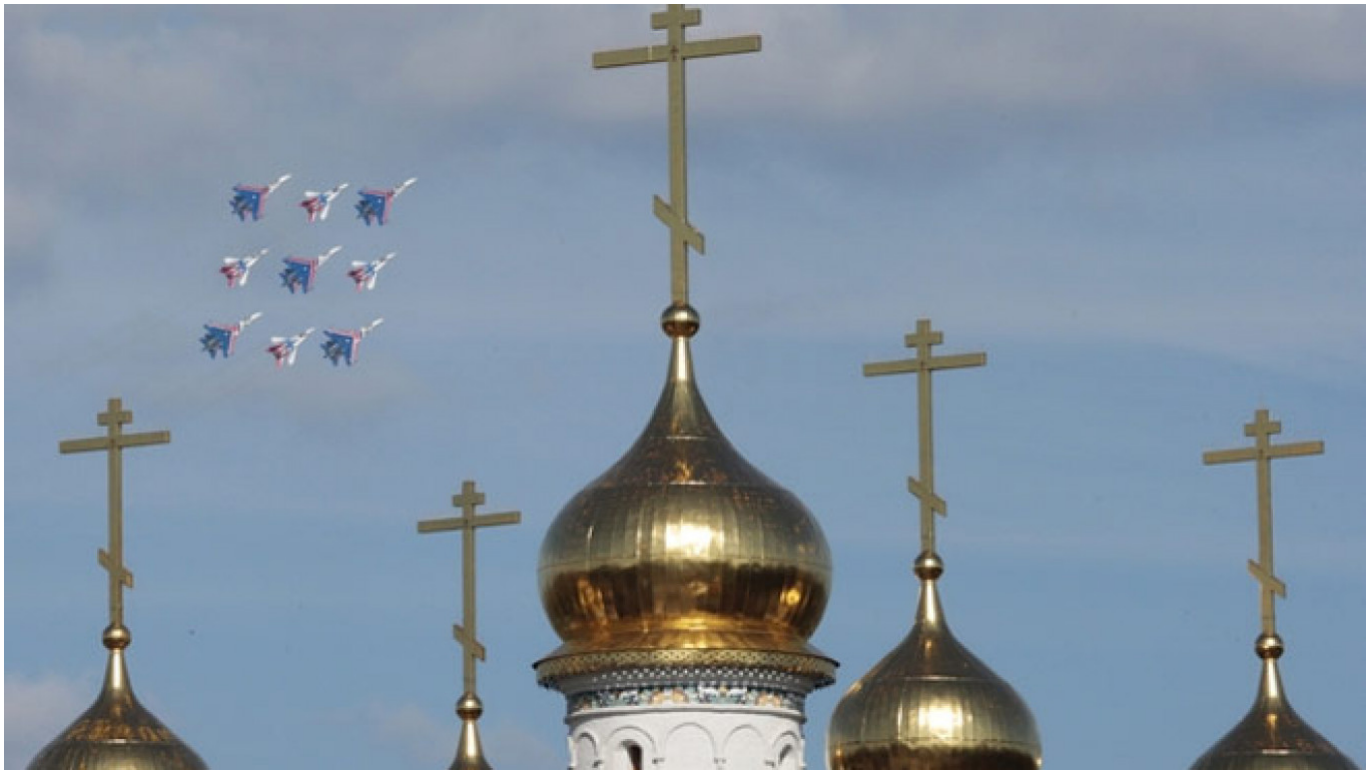
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MAKS Can't Stop the Rot of Aerospace Industry

By Reuben F. Johnson

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I have lived in Russia and Ukraine for almost half of my life — most of the time reporting on the aerospace and defense industry in this part of the world. In that time I have seen the ups and downs of MAKS, the Moscow Air and Space Salon, track with the fortunes of the aerospace sector as a whole in Russia.

The industry struggled in the 1990s and at one point many of us wondered if this air show would just disappear due to lack of interest. After the turn of the century, the aerospace firms in Russia were in a recovery mode, which continued for about a decade.

Russia's aerospace industry is one of the few success stories of the Soviet era. Unlike the perennial disastrous output of communism's centrally-planned, state-managed agricultural sector or the pathetically unreliable and crudely-designed automobile models that were produced for the common citizen, Soviet aerospace could boast numerous achievements and firsts. It was the linchpin that made the Soviet Union a world military power.

However, the build-up to the air show this year and the conversations I have had in the proceeding months with those I have known in this industry for more two decades tell a collectively sad tale. MAKS in 2015 will be to Russia's aerospace industry what the closing years of the Brezhnev era were to the Soviet Union as a whole: an attempt to mask a tragic decline by pasting a glorious and victorious veneer over the top of it and hoping that no one would notice.

A look at some of the major contracts that are expected to be announced during MAKS tell the tale. The 48 Sukhoi Su-35S fighter aircraft to be signed for delivery to the Russian Air Force are the second such order by the Russian armed forces, the first having been at the same MAKS expo in 2009. This is a total of 96 new fighter orders in a six-year period and does not even begin to address the replacement needs of the air force. Russia's armed forces need hundreds of new fighters at present — not just a few dozen.

The aircraft currently in inventory are aging, in need of modernization and increasingly wanting for adequate supplies of spare parts and components that had been produced in Ukraine, but which are now embargoed by Kiev for sale to Russia as retaliation for Russia's involvement in the Ukraine conflict. This partly explains the steady numbers of Russian military aircraft dropping from the skies over the last few months.

In the years since the last Su-35S order, the price for a 48-plane buy has risen from 66 billion in 2009 to 100 billion rubles today, an increase partly due to the freefall in the value of the Russian currency. Given the continued economic bad news in Russia and the continuing slide in world oil prices, the 100 billion ruble figure is almost certain to grow by another 50 percent before these airplanes are delivered, making them very expensive, older-generation weapon systems that cost twice what they should.

If the platform that was planned to be in service already with the air force were on schedule, the Sukhoi T-50/PFI, there would be no need for another Su-35 procurement, but this program is mired in multiple developmental problems. The fifth-generation jet engine and the active electronically scanning array (AESA) radar that are supposed to be installed in the T-50 are nowhere in sight, so the aircraft is being built with the same Saturn 117S engine and NIIP Irbis passive (rather than active) scanning array radar that is already fitted to the Su-35. All of which means its not really a fifth-generation weapon system.

Moreover, the technology of the aerospace industrial base in Russia has been neglected for so many years that producing an aircraft like the T-50 has become impossible. The aircraft appears to have a stealthy shape to it, but Western experts that have looked at its design state that "due to multiple misalignments in its platform configuration and the lack of a ducted inlet that masks the front fan frame of the engine" the aircraft is unlikely to have a radar cross section (RCS) smaller than that of many previous-generation fighters.

Then there is the problem of materials. All modern-day aircraft — both military and commercial — rely on the liberal use of composite materials that are lighter and stronger than the conventional metal and aluminum alloys that they are replacing. But Russia has no highly-developed composites industry, so the T-50's composite panels are literally laid up by hand in a slow and cost-intensive production process.

In other nations with well-developed aerospace sectors like the U.S., the technology that is

needed to build first-rate fighter aircraft is created and sustained by a much larger volume of commercial airline production. Ask a Boeing employee and they will tell you that their company is a "80 percent commercial/20 percent military" enterprise. The unit price tag for an F-15E or an F/A-18E/F is eye-watering, but their sales numbers are small change compared to the orders for 777s and Dreamliners.

Russia has never had — and likely never will have — the economies of scale provided by a large commercial airline industry. In the 1990s Russian airlines switched over from the clunky, fuel-guzzling Soviet-era jets they had inherited to Boeing and Airbus models as soon as they could. Orders for Ilyushin and Tupolev passenger jets have been anemic ever since. Only Russian military aircraft sell well.

The one commercial aircraft produced in Russia, the Sukhoi Superjet, has had no end of problems, has consumed several orders of magnitude more in funding than it had originally been projected to and has had a lackluster record in service. Current production of the aircraft is stalled due to U.S. and EU embargoes on Moscow over Ukraine, which are preventing the delivery of foreign-made components.

These imported parts are in excess of 80 percent of the aircraft's overall configuration, which makes the Superjet an airplane that is "assembled in Russia" more than one that is manufactured in Russia. Overall, it is a program that does little to promote development of technologies in the aerospace sector.

In the meantime, those parts of the aerospace sector most necessary to maintaining a credible military aircraft design capacity are literally disappearing. The ability to design and build an air frame — the "box" that all the bits and pieces of a fighter aircraft are fitted into — is less important than the ability to design and build state-of-the-art subsystems that are those bits and pieces.

One of Russia's most talented designers in this area that I know was told this year that it was time for him to retire. The motivation for his superiors telling him this was not because he had become senile or blind, but because the land on which his design bureau sits is so valuable to Moscow real estate developers.

But, none of these realities will have any impact on the grand spectacle that will be the Tuesday visit to MAKS by Putin. It will be great political theatre, but increasingly further from the truth. Like the fall of the ruble's exchange rate and the oil prices that depress state revenues — the sad ending of Russia aerospace industry is the combined result of Russian government officialdom's willfully criminal neglect internally to support its strategically important industries and unconscionably reckless external aggression.

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