

№ 5. 2009

# *aerospace technologies review* **AIR FLEET**



MAKS 2007 × 2 =  
MAKS 2009 10

AN-148 aircraft  
contrary to all rules 16

**INTERVIEW WITH GENERAL DIRECTOR  
OF THE RUSSIAN LEASING COMPANY  
ILYUSHIN FINANCE CO.**





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## Editorial



Striving of people for communication, exchange of viewpoints and experience is a peculiar kind of implementation of the law of equilibrium in connected vessels, which is well known to us from physics course. Exchange of information forms the basis for development both of civilization in general and individual nations, as well as communities, no matter what the principle of their creation has been or what ideals are inspiring them. Aviation branch is no exception. At present it is very difficult to imagine a situation when developers of an individual country design aircraft, transfer them to domestic manufacturers, which are building aircraft intended for flights exceptionally by their fellow citizens. International integration is gaining momentum in the segment of design, as well as in production, maintenance and trade segments. Naturally, this process is requiring ever more active information exchange and business interaction. Specialized international expositions make up ideal platforms for that.

Among them are two large-scale Asian events, namely, Asian Aerospace International Expo & Congress and Aviation Expo / China, the specificity of which is the fact that they make it possible to search for mutually acceptable cooperation formats, teamwork with quickstepping Chinese companies, which are ever more making themselves known on the world market of aviation technology and component parts. We would like to wish the participants and visitors of both expositions that they will bring about new fruitful contacts and large contracts, just as MAKS-2009, which has recently completed its work in the Russian city of Zhukovskiy. We have devoted extensive review to this event. The International Aviation and Space Salon quite deserves that: despite the global economic crisis the tenth MAKS Salon has achieved a unique financial record. The cost of agreements signed in the course of this event amounted to about US\$10 billion, which constitutes 200 percent of that in 2007. The work of Salon involved 711 companies from 34 countries. Furthermore, almost 40 percent of the overall number of participants were non-Russian organizations. By the way, comparison of events and results achieved at MAKS Salon, Asian Aerospace 2009 and Aviation Expo / China enables us to make sober estimate of the dynamics and present day level of development of Russian aviation industry. Besides the news items about MAKS-2009, other articles of this issue also merit attention, including review of leasing services in Russia, as well as detailed and multifaceted review of the world market of multi-mission fighters, which conducts analysis of economic crisis impact on this segment of aviation market. The article about the first new generation short range serial aircraft An-148-100 is of great interest. We hope that the information you get from the articles of this issue of Airfleet will initiate new ideas and enhance effectiveness of your business contacts.

Yours faithfully,  
Alexander Gudko

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osk.ru, testpilots.ru, flickr.com

Circulation: 8000

The magazine is registered in the Committee for Press of the Russian Federation. Certificate № 016692 as of 20.10.1997. Certificate № 77-15450 as of 19.05.2003.

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WILL BE WEARING DIFFERENT HATS  
FOR THE SAME OCCASION.**



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Ilyushin Finance Company, the biggest aircraft leasing company in Russia, has plans for Asian markets, and China specifically. We interviewed Aleksandr Roubtsov, general director of the company, who is enthusiastic about its future.

■ **Question:** Please tell us about results of the MAKS'2009 air show.

■ **Answer:** We are satisfied with the MAKS'2009 since we won many new orders and commitments from the airline customers, and signed some more letters of intents (Lols) which, hopefully will soon turn into firm orders. In September we start deliveries of the new generation regional jetliner, the Antonov An-148. This will be a worthy addition to the continuing deliveries of the Tupolev Tu-204 narrow body mainline airliners: in the time being we continue deliveries of the Tu-204-100 version and is prepare shifting onto more advanced Tu-204SM version. Our customers continue taking from us the Ilyushin Il-96 wide body quads, the -300 and -400T versions. All of those aircraft types are president in the new pack of agreements signed during MAKS'2009.

The primary contract we won at the show is the firm order from Atlant-Soyuz, the airline of the Moscow City government. It calls for 15 Tu-204SM narrow bodies



## OUR STRATEGY IS TO INCREASE OUR PRESENCE IN THE MARKETS OF ASIA

and 30 An-148 regional jets. Importantly, our new client is a large airline heavily supported by the administration of a huge urban area. Atlant-Soyuz operates out of the fast-developing Vnukovo airport, which was recently rebuilt using Moscow city funding. For us it is very important that all the airplanes Atlant-Soyuz signed for, are customized. They are tailored to the specific requirements of this particular customer.

For the first time in Russian practice, these airplanes will come equipped with

Internet connections, as well as modern communications systems, including GSM-phoning, and the new in-flight entertainment system. In addition, the An-148 series aircraft will, for the first time, come equipped with the synthetic vision system that would use a head-up display (HUD) and thermal imagers. This will allow landings in adverse weather conditions using poorly equipped airstrips as observed in some provincial airports. We offer all of these options to our customers,

and Atlant-Soyuz is the first who chose all of those innovations.

Speaking of other agreements, I would draw your attention to the contract with Aviastar-Tu airline (ATu). According to it, we shall deliver two Tu-204 mainline airliners in cargo version later this year. ATu is a prominent airline that has long been operating Tu-204 series aircraft on cargo routes.

By the time of MAKS'2009 opening, we had handed over three Il-96-400T



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large freighters to Polet ("Flight"). This airline is the first user of this new aircraft type that evolved from the baseline Il-96-300. Let me stress that this fall these aircraft will commence regular cargo services into China. They will fly inside Russia linking the European part of the country with cities in Siberia, and, from there, continue into Chinese territory. Then back into Russia, via Moscow into Western Europe. Thus, Polet will soon interconnect China, Russia and Western Europe with its regular services. We believe that this new cargo transportation project will be very beneficial for our Chinese partners. Polet will support regular flights to largest Chinese airports, - Beijing, Hong Kong, and others, - using the unique capabilities and the performance of the Il-96-400T quad. The Chinese cargo traders will benefit a great deal from it. They now can forward their cargoes to Moscow and further on to Western Europe by the shortest air route, using world's most modern and capable freighter aircraft.

Of other deals signed at MAKS, I shall mention a bunch of preliminary agreements with airlines that set major parameters of our future deals. One of those is with Vladivostok Avia, our long standing customer. It calls for delivery of six An-148 jetliners. Another such agreement, also on the An-148, was signed with Saratov Airlines, for five aircraft.

Separately, agreements were made with Latin American customers. They call for deliveries of Russian airplanes to Ecuador, Brazil and Peru. Specifically, Cielos of Peru is looking for Il-96-400Ts.

The grand total of aircraft for which we signed at MAKS'2009 comes to 90. Immediately after the show drew to a close, we added two more aircraft. On Monday, 24 August, two Tu-204s were signed for with Syrian Air. That brings the number of aircraft sold in the second half of August up to 92.

■ **Q:** Wire services reported that an airline based in Brazil is interested in the Il-96-300. Is this so?

■ **A:** Clean Air, a start-up airline from Brazil, has expressed interest in used aircraft owned by Ilyushin Finance. The Brazilians are in the process of establishing



## We are primarily interested in raising capital in the Chinese markets because they suffered less from the world-wide crisis

their new airline. They are talking about five Tu-204s - three passenger and two freighters - and a pair of Il-96-300s. We have got two Ilyushin quads, - those were previously operated by KrasAir. Today they are undergoing maintenance and repair at the manufacturing plant in Voronezh. Earlier, Venezuela signed for these two particular airplanes. Unfortunately, because of the world-wide economic crisis, the materialization of that deal has slowed down. So, we had no choice but to put these aircraft back on the market again.

■ **Q:** There were also reports about North Korea's interest in a Tu-204-100. North Koreans were recently seen on a tour of Voronezh plant. Are you involved in talks with the North Koreans?

■ **A:** Yes, we are engaged in the negotiations. A preliminary agreement was signed a month ago. There is no firm order as of yet, though. A new round of negotiations is scheduled for September. As per their visit to Voronezh+ I may guess that they might probably be interested in the An-148.

■ **Q:** Considering geography of your sales, one might notice that we have been gradually nearing China, - but not yet entering. Ilyushin Finance has delivered six Tu-204-300s to Vladivostok Avia, and three Il-96-400Ts to Polet, - those two

airlines fly into China. Besides, you are talking to North Koreans, who already operate a Tu-204-300. When are you going to cross into China?

■ **A:** This region is of much interest to us. The best propaganda in favor of our products is the real operations of the recent Russian aircraft on commercial cargo and passenger services. And this is what happens. As you said, Vladivostok Avia, based in Vladivostok, a large Russian city near North Korea and Japan, flies regular passenger services into China on their Tu-204-300 jetliners. Polet airline is about to open regular cargo services into China using their brand-new Il-96-400T freighters. Importantly, Air Koryo of People's Democratic Republic of Korea operates Tu-204-300 into China.

I think that this is the best sort of agitation for the new Russian aircraft, and for our services. These services I just mentioned show to the Chinese, both passengers and airline personnel, how airlines of their neighboring countries work using Russian equipment. In that situation, an interest is naturally sparked up, sometimes out of mere curiosity, in the economics and various features of the new airplanes made in Russia.

That is why it is so important to us to see successful start of Il-96-400T regular services into China. To see Chinese

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cargoes actually getting onboard of these new Russian airplanes, to be carried far away from their country of origin.

As far as regional jets are concerned, the An-148s that are ordered by Vladivostok Avia, have sufficient range to reach quite a few of Chinese airports. I am sure the airline will operate this type into China. And other airlines will. Certain airlines based in Siberia are negotiating with us on An-148s. Recently, Ilyushin Finance signed a provisional agreement with a prominent Russian airline, which asked us not to disclose its name until they award us a firm order. This airline operates out of Siberia, just from the geographic center of the Russian Federation. This airline intends to fly its new aircraft both on domestic and international routes, including those to Chinese airports.

■ **Q:** Do you have plans for India?

■ **A:** Some time ago we looked into this, trying to identify markets for the Il-

96 freighters. I think the type will draw some interest from the side of the Indian airlines after it commences flights on long haul international routes. We hope to find customers in India.

■ **Q:** Broader speaking, what is your strategy of penetration into Asia?

■ **A:** We will participate in various shows and expositions that are held in the Asian countries, especially China. In particular, Ilyushin Finance exhibits at the exposition in Hong Kong in order to hold talks with the interested parties there. We invite many of the local airlines to visit our stand and have talk to us. I hope these talks will bring about some commercial outcome.

■ **Q:** Do you consider attracting Asian financial resources for your aircraft financing programs?

■ **A:** We have been looking into this issue, trying to place our papers in the equity markets of China. In particular, we consider the stock exchange of Hong

Kong. I do not exclude possibility that the leadership of our company represented by the members of the control board will make decision to enter the Hong Kong exchange with a rider that respective offers are made by large Chinese banks, investment funds and other financial institutions. As per our myself and my colleagues in the management, we do have interest in attracting Asian capital into our aircraft financing programs. And we are most interested in the financial markers of China.

■ **Q:** It seems that Chinese banks would demonstrate more interest in your company in the case you find industrial partners in China.

■ **A:** Chinese aircraft manufacturers have been introducing new products. Some of their new designs are of interest to us. Especially airplanes for regional routes. The Chinese manufacturers produce the Modern Arc 60 (MA-60) turboprop passenger aircraft. It is difficult to mark





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it as the best product in the given class. Still, the MA-60 has been operational for some time, it carries out passenger services satisfactorily. Its performance is good enough. Therefore, Ilyushin Finance is interested to talk to our Chinese colleagues on possible collaboration in marketing efforts pertaining to this airplane. It is important to notice that the MA-60 does not compete with the products of Russia's United Aircraft Company (UAC).

As a matter of fact, UAC does not have turboprops in its product range. Admittedly, Ilyushin has developed the Il-114, but this aircraft is being produced at Tashkent plant situated in the Republic of Uzbekistan. Besides, there is the Antonov An-140 in production at Aviacor plant in Samara. Neither Aviacor, nor the Tashkent plant is a member in the United Aircraft Corporation.

Bearing in mind the all said, I do not exclude the possibility that we find some mutual interest with the Chinese manufacturers. We may help them in marketing efforts.

■ **Q:** The Chinese central government in Beijing provides funds for special programs on development of remote territories, notably provinces in the north-east part of the country. Much money is pumped into construction of railways and airports. Airplanes similar to the An-148 are not produced by the local manufacturers. Yet, this type, with its high-positioned engines and strong undercarriage, can operate from poorly prepared airstrips such as those in the remote provinces of China. Do you think so?

■ **A:** Well, the An-148 is a very competitive design. Certainly, the Antonov designers were in luck when they were developing this airplane. The An-148 can find a niche in the Chinese market. We believe this airplane will sell in China and operate with Chinese airlines.

Promotion of this airplane is one of the goals we set before ourselves during the exposition in Hong Kong. I think our participation in this event will help us spark interest in this machine with Chinese carriers. The An-148 is a very advanced design and, therefore, very competitive.

Some people might think the ARJ21, which has similar seating capacity, could



be a competitor. But it is not that way at all. The An-148 won type certification in 2007 and has been mastered in series production at the plants in Voronezh (Russia) and Kiev (Ukraine). At the same time, the ARJ21 is on its way to certification. It is not clear today, when it would actually achieve it. Meanwhile, our Ukrainian friends are already operating An-148 made in the Ukraine on regular passenger route linking Kiev and Kharkov. The first Russian-made An-148-100B is ready for delivery to GTK Rossiya, the first airline customer in Russia for airframes assembled in Voronezh. The delivery is to take place in September.

Admittedly, the backlog of orders for Voronezh-made An-148s is rising. Now, we can offer new customers delivery slots only in 2013 (all slots in 2009-2012 have been allocated, yet some orders are "soft", and need to be firmed up). Cancellations are highly unlikely. In plain words, all new airplanes to be assembled in Voronezh are already booked by our existing airline customers.

■ **Q:** And is what about the Tu-204? Is it also popular with the airline customers?

■ **A:** When we speak of the Tu-204, we speak about backlog of between two years and two years and a half. This is somewhat less than that for the An-148.

Leaders of the United Aircraft Corporation have recently expressed their opinion that the Tu-204SM program shall be developed

faster, even though this might require premature closure of the Tu-204-100 (current mainstream model) production run at Aviastar-SP plant in Ulianovsk.

I am supportive of this idea. In my opinion, the Tu-204SM development shall go at full speed achievable. But close attention shall be paid to the depth of additional (complimentary) certification – so that Tupolev developers make the Tu-204SM available for the airlines as early as possible. The developers of this aircraft must be very careful in determining what innovations they introduce and what they take from the current production Tu-204-100. Besides, the manufacturing plant in Ulianovsk needs to have a clear understanding when they terminate production of Tu-204-100 so as to shift completely to the Tu-204SM. I think that the year of 2011 is good target for first delivery of Tu-204SM to airline customers. To me, this timeframe seems achievable. Let me remind you that Ilyushin Finance holds firm orders for Tu-204SM aircraft placed by two airlines. Iran Airtour and Atlant-Soyuz expect deliveries to commence in 2011. Meantime, we have enough orders to support production of Tu-204-100 passenger jets and Tu-204C freighters throughout the rest of 2009 and the whole of 2010. We have enough interest from the side of airline customers in aircraft of these models.

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■ **Q:** Why you are so interested in the exchange of Hong Kong? There are some other prominent exchange sites in the world.

■ **A:** Well, the exchange of Hong Kong is quite active these days, as well as the whole of the Chinese market. We are primarily interested in raising capital in the Chinese markets because they suffered less from the world-wide crisis. This makes them attractive. Besides, the size of the Chinese financial market permits raising really large financial resources.

■ **Q:** How are you going to raise capital in the Chinese market? Are you going to issue debt papers or sell company's shares, including those to be produced by means of additional emission?

■ **A:** The question you asked is something that we are thinking on right now. The answer, if found, may require some serious changes in our corporate strategy. It is a matter of strategic importance to us. At this time I have no certain answer, as we continue looking for a proper solution. I think that as soon as we get first replies from our intended Chinese partners, notably those based in Hong Kong, we will come closer to making a decision on that matter.

■ **Q:** At one time, Ilyushin Finance negotiated on deliveries of Il-96 airplanes with a Chinese airline. Did you manage to make it into a deal?

■ **A:** We held negotiations with a Chinese customer and even signed a memo of understanding (MoU). But it has not yet developed into a firm order. The airline that was going to take Il-96 aircraft from us was meant to be a start-up, developed from scratch. But this airline is still being established. Until it is up and running, we can not move further than MoU. Besides, the most important for us right now is to commence commercial operations of the Il-96-400T, to give this new type a good try in real everyday life of a general cargo airline. Polet is the airline that chose to be first operator of the Il-96-400T. We must try the new aircraft type in real service with the Russian airline. And only then offer it to customers outside Russia.

■ **Q:** You mentioned the name of Polet several times. The airline has

## I do not exclude the possibility that we find some mutual interest with the Chinese manufacturers. We may help them in marketing efforts

accepted three Il-96-400Ts by the time of MAKS'2009. Is Polet going to firm up the option for three more such airplanes?

■ **A:** The airline has approached us on the matter of firming up their soft order for three more aircraft. We are already discussing terms on fourth airframe which is in a high degree of readiness at Voronezh aircraft plant.

■ **Q:** The UAC and Ilyushin Finance have asked the Russian government for additional measures of state support. What have you asked for?

■ **A:** The government has given some positive reply to what we asked for, but the issue is not yet completely settled. The government has agreed to increase subsidies by 50% to airlines that operate newly airlines made in Russia under financial lease agreements with leasing companies. This is something that the government has done already in reply to the plea of UAC and Ilyushin Finance. Now, we await another measure, the extending of the duration of subsidies from five to ten years. We have been urging the government to make such a move since it is very important to our business. One more thing we asked for is some changes in the Law of leasing. They changes are aimed at better protection of investors' interests and those of creditors. If accepted, the respective amendments to the Law will enable leasing companies take aback their aircraft from airlines that do not pay rentals timely and do not care much about technical condition of leased aircraft.

■ **Q:** The government of Cuba became first customer outside Russia for the Il-96-300 and Tu-204-100C airliners. One of the reasons the Cubans took these airplanes from Ilyushin Finance was that the Russian government and largest Russian banks offered an attractive financial package for this deal. Now, in the time of the world-wide economic crisis, can Russia offer attractive terms to foreign buyers of Russian aircraft?

■ **A:** I think that the Russian government should consider one more time the terms on support of the high-tech export. Today, our export agencies offer us terms that are not always suitable. The resulting costs of hired capital available to us as a Russian company is rather high. Sometimes our foreign competitors can borrow money in their home markets at much lower rates. It is advisable that the Russian government would consider higher pay-backs to leasing companies that hire money from Russian commercial banks (as you know, the respective practice of "slashing" banking interest rates is in use in Russian and other countries).

■ **Q:** Do you see a situation in which a prominent Chinese airline awards Ilyushin Finance a large order for newly made Russian airplanes?

■ **A:** This is something we strive for.

■ **Q:** It seems that the Chinese banks would be more willing to lend money to Ilyushin Finance if you manage to win an order from a Chinese airline. Would you agree?

■ **A:** I think Chinese airlines will award us orders for new Russian aircraft at some point in future. Today, we are focusing on Russian inner market. Logic requires this. Historically, we started working on export of new Russian jetliners with Cuba and neighboring countries in Latin America. The government of Cuba became our first foreign customer. Ilyushin Finance is much interested in strengthening its positions in the markets of that region, since we are already present there with our products. Our next target was the Middle East. We signed contract with Iran Airtour on five Tu-204SMs. More recently, we won Syrian Air commitment for two Tu-204C freighters. Our third step on expanding the sales geography will be than in the directions of Asia and Africa.

Also, it seems that the Russian products can generate sales in China only when their manufacturers streamline production of new competitive designs.



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Certainly! The Chinese tend to buy in large quantities at a time, and they prefer well-tried, reliable products that are popular in the markets of other countries. We understand this and other peculiarities of the Chinese market. Therefore, we will enter it only when we can offer suitable products. We have been preparing ourselves to this.

■ **Q:** As of this time, Ilyushin Finance offers a number of aircraft models to its airline customers. You offer the An-148 in the class of regional airplanes, the Tu-204 and its freighter version, and the further development of this narrow body jetliner in the form of Tu-204SM. And, on the top of the range, there is the Il-96-300 passenger quad and its derivative, the Il-96-400T freighter with extended fuselage. Which will sell better in China?

■ **A:** I think that of the aircraft models that are already certified and mastered in series production, the Il-96-400T has the most chances in China. He hope that, as soon as Polet starts regular cargo services into China using this type, the Chinese airlines will also get interested in it. The Tu-204SM comes next, but this machine is still in development.

Airbus has set up a local assembly line for A320 series aircraft, which are similar in size (yet a bit smaller) to the Tu-204. However, we believe there is a niche for the Tu-204SM, too. And, of course, there is a niche for the An-148 regional jet.

Speaking of a more distant future, I shall mention the MS-21, a next-generation narrow body airliner. The MS-21 shall become the key product of the Russian aviation industry. It shall enter service in 2015-2016 timeframe. The MS-21 is meant to be produced in large numbers. It is important to us to make MS-21 popular with airlines, get them interested well before this aircraft enters mass production. In that sense the sales of Tu-204 create a beach head for the MS-21. When selling Tu-204s, we build up our client base and customer support system. These seem necessary to support sales of the MS-21.

Among other perspective projects I would mention a "trunk liner", a conceptual wide body airliner that is optimized for short and medium routes, up to 4-5 thousand kilometers. It is fairly possible that China and Russia would join forces in development and production of such a

"trunk liner". To me, this project seems very interesting to be developed as a joint effort.

■ **Q:** Russian-made jetliners are already in Chinese service. One Tu-204-120C was delivered last year. Earlier, China procured a number of Tu-154M and Yak-42D tri-jets, some of which are still in service. The armed forces operate Il-76 air lifters and Il-78 tankers. Obviously, China has amassed some experience of using Russian aircraft and built up support system for them. How are you going to explore this?

■ **A:** We try to talk the Chinese into replacing ageing Tu-154Ms and Yak-42Ds by newer Russian designs. We attempted this before, and we attempt this today. But our desire is not enough. It is mandatory that the operators of these airplanes get interested in finding a replacement. We are going to activate negotiations with these operators later on. First, we want to establish a connection with Chinese investors. Let me repeat that our strategy calls for a larger presence in the Asian markets, which we aim to achieve using all means. Hong Kong is likely to be our main base, using which we will penetrate into Asia further and further.





# MAKS 2007 $\times 2 =$ MAKS 2009

**The price of contracts concluded during the Russian air show is USD 10 billion**

The main result of the ended MAKS-2009 Russian air show is contracts as of USD 10 billion that are twice more than in 2007. This fact confirmed again that the event was successful notwithstanding bad forecasts and crisis. 711 companies from 34 countries, including 436 Russian entities among that 120 ones presented military output, have participated in MAKS 2009.



## Ilyushin Finance Co.: contracts concluded at the MAKS-2009 Airshow

Leasing company "Ilyushin Finance Co." concluded more than 50 contracts and pre-contract agreements for the delivery of 90 aircraft Il-96, An-148 and Tu-204 of total sum exceeding \$2 billion.

The backlog of the Company at the MAKS-2009 Airshow was supplemented by 30 considerable contracts from the Air Company "Atlant-Soyuz" for the An-148 aircraft (including the elongated version of that aircraft - An-148-200 and business-version - Antonov Business Jet "ABJ"). The first sample of series An-148-100 manufactured in Voronezh was demonstrated at the Airshow. The deliveries of these aircraft are planned for 2010-2011.



## "Sukhoi" contracts

Russian MOD and "Sukhoi" company agreed upon supplies of fighters to the amount of more than 80 billion rubles. Russian Air Force will take 48 Sukhoi-35 fighters, 12 Sukhoi-27 fighters and 4 Sukhoi-30.

The contract on supply of 18 Sukhoi-30 MKM fighters to Malaysia is fully complete. Russia shall supply 28 Sukhoi-30 fighters

to Algeria, and 22 ones are already delivered, and other 6 fighters will be delivered in September this year.

"Rosoboronexport" advised that Russian-Indian contract on modification of Sukhoi-30 MKI for BrahMos supersonic missiles installation might be signed by the end of this year. By 2010 the Russian Federation will complete the Contract on supply of 8 Sukhoi-30 MK2 aircraft to Vietnam.





# Worldwide Shows

## Suppliers for MC-21 are designated

Candidates for engine supply for MC-21 civil aircraft – the main perspective project of OAK – were designated at MAKS-2009. “Two best companies were chosen. They are Pratt&Whitney and Rolls Royce. Technical details are being confirmed now, and all decision will be taken in the near future” – Oleg Demchenko, “Irkut” President said.

Besides, there were designated other suppliers of certain systems:

- Gear system – “Hydromash” (Russia);
- Auxiliary power unit – Hamilton Sundstrand company (USA);
- Complex air-conditioning system – “Nauka” (Russia) in cooperation with Hamilton Sundstrand company (USA) and “Hamilton Sundstrand – Nauka” entity;
- Electrical power system – ECE company (France), (it is included into Zodiac Aerospace Corporation (France) and Hamilton Sundstrand company (USA);
- Interior, fuel, oxygen systems and indifferant gas system – Zodiac Aerospace Corporation (France);
- Fireproofing system – L’Hotellier (France) proposal was chosen; it is included into Kidde Technologies Corporation (USA) and Hamilton Sundstrand Company (USA) respectively;



- Hydraulic system – Eaton Corporation (USA). At the same time Eaton Corporation will place orders on manufacturing of 50% spares and assembly units of hydraulic system between Russian entities such as “Voskhod” PMZ, “Teploobmennik” PKO, “Znanya” MIZ and “Tekhpribor”;
- wing de-icing system – Hamilton Sundstrand Company (USA).

MC-21 development is performed by “Irkut” and “Yakovlev” OKB starting from 2007. This aircraft will be manufacturing in 3 types: MC-21-200, designed for trans-

portation of 150 passengers, range is up to 3.5 thousand km, MC-21-300 - 180 passengers, range is up to 5 thousand km and MC-21-400 – 210 passengers, range is up to 5.5 thousand km.

Implementation of advanced manufacturing sciences will ensure 25% improvement of fuel efficiency, 15% decrease of running charges as well as a new level of environmental safety. First flight of this aircraft is scheduled in 2015, lot production – in 2016. The project costs amount USD 8 billion.





## Worldwide Shows



### Contract to the amount of RUR 6 billion for the Russian Air Force

Russian Air Force and "Tactical Missile Armament" Corporation have concluded contract to the amount of RUR 6 billion; the Contract is on supply of the newest missile system that include 14 types of armament including K-31 missile and its modification K-35 "air-to-air" missile. New armament will be used for termination of aircraft – manned as well as unmanned. Alexander Zelin, Colonel-General, Air Force Commander-in-Chief, said "supplies will take place within 2 years." "Purchased armament differs with advanced jamming protection, enforced combat unit as well as all weather conditions and day-night operability" – Boris Obnosov, "Tactical Missile Armament" Corporation General Director said.



### Aviation Industry will receive state support

State support that will be delivered to the Russian aviation industry will amount to dozens billion RUR, Alexey Fyedorov, OAK Head said after ended meeting on aviation industry chaired by Vladimir Putin, Russian Prime-Minister.

"Resources received under the state support will be spending on 10 new projects that OAK has. Particularly, they are such as MiG-35, Yakovlev-130, Ilushin-112, Antonov-148, and Sukhoi Superjet 100. No one company in the world commenced so many new projects simultaneously. All these projects are strategically important for us" – Alexey Fyedorov, OAK Head noted.

# Worldwide Shows



## "Ruslan" manufacturing will commence in Ulyanovsk

OAK, "Volga-Dnepr" Company and ANTK named Antonov have concluded the agreement on technical specification for development of Antonov-124-100 "Ruslan" modified cargo aircraft.

Airlift will be increased from 130 to 150 tons. Flight range will be increased and will be 4 thousand km with maximum loading or 15 thousand km with "0" loading. The aircraft will be equipped with Ukrainian engines manufactured by "Motor-Sich". The issue of development of the aircraft equipped with foreign engines and foreign avionics is being considered also.

## Russia and Ukraine have decided to resume operation on Antonov-70 development

Military agencies of Russia and Ukraine have agreed on resumption of joint operations under the program of development of medium range Antonov-70 military cargo aircraft. The appropriate protocol was signed by Anatoly Serdyukov, Russian Minister of Defense, and Valery Ivaschenko, Ukrainian acting Minister of Defense. The project will be financed at the expense of Russia.

Antonov-70 military cargo aircraft is capable to take off from weakly ready soft-surface runway of 600 m length. It is capable to carry up to 20 tons. Any existing analogue cargo aircraft is not capable to perform such mission. By developer's data this aircraft is capable to deliver 35-47 tons at range as of 3000-5100 km.





## Ministry of Transportation and "Boeing" – for Flights Safety

On August 19th the Russian Federation Ministry of Transportation and "Boeing" company signed Memorandum on expanding cooperation in the sphere of flights safety. The Memorandum has determined directions of joint activities, such as ensuring high quality training of flight and maintenance personnel of Russian airlines; development of the required training infrastructure on the territory of Russia; integration of Russia into international flight safety system. Besides, in order to ensure safe operation of aviation equipment the parties intend to undertake joint actions aimed at introduction of the Global Flight Safety Road-Map in the interests of implementation of the "Government Program for Flight Safety of the RF Civil Aviation Aircraft". Working group will be set up by late 2009 in order to achieve the purpose in view.

Says Valery Okulov, Deputy Transportation Minister of the Russian Federation: "Ministry of Transportation has undertaken a series of measures for improvement of the situation with flight safety. This Memorandum is one of the important steps in this direction".

Says Sergey Kravchenko, President of "Boeing" company in Russia and CIS: "Flight safety is the issue of priority for "Boeing" company. Being a long-term partner of Russian aviation branch, we will actively cooperate with the RF Ministry of Transportation and other interested parties in order to implement the designed joint program of action with the involvement of all international experience accumulated by "Boeing".



## MAKS 2011

Taking into account the statement of Vladimir Vlasov, "Cargo Exhibition Complex" General Director, MAKS might exceed the limits of the exact air space show. "By 2011 the Cargo Exhibition Complex plans to build a hall for a constantly acting exhibition of land armament in the territory of exhibition complex in Zhukovsky, Moscow region" – Vlasov said.

Land armament exhibition will be placed in one of new halls of 18 thousand square meters, which one is to be opened by 2011. "Progress of Russian land technical equipment will be demonstrating on a constantly basis, and a special range will be built also for its dynamic demonstration" - "Cargo Exhibition Complex" General Director said.



# AN-148

## AIRCRAFT CONTRARY TO ALL RULES

### BECAME AN OBJECT OF SERIES MANUFACTURE

Flights of the short range AN-148-100 aircraft were shown during the Moscow International Air and Space Show MAKS-2009. Series manufacture of the aircraft was started in the aircraft enterprise VASO in Voronezh city. AN-148 has got credits for all flight and predelivery tests. The industry experts consider that the joint Russian-Ukrainian project has good future.

We would remind you, that the presentation of AN-148-100, the first short range production airplane of a new generation, took place on the 29.07.09 in Voronezh city. It is designed for delivering up to 85 passengers to a distance up to 5000 km. About 200 Russian and Ukrainian enterprises take part in the construction of AN-148. An airplane for 60% is composed of OEM components made by Russian airspace complex enterprises and about 30% of the OEM components are delivered by Ukrainian side. Series manufacture of the aircraft is taking place in two places: the first one is OAO (Open Joint Stock Company) VASO in Voronezh and the

second one is in the "Aviant" enterprise in Kiev.

It is necessary to mention, that AN-148 aircraft was constructed by using the equity of all the participants of the project. This fact was more than once underlined by Alexander Rubtsov, the leasing company "Ilyushin Finance Co." president, during the presentation of the aircraft. He said that no budgetary funds were allocated for the construction of AN-148 aircraft. So, AN-148 is the bright example of common work, when all the participants of the project made a part of some job using their own account and risk their money to develop new systems and equipment. After that the project became a reality.





The tests for AN-148 are started since 19.07.09 and they could be done according to the formula 6+9+6. The press release representatives of the Social Information and press centre of the Open Joint Stock Company "VASO" explain that it means 6 predelivery tests, 9 certification tests and 6 acceptance flights are planned to be accomplished. The AN-148, in space of time during the tests, will participate in the MAKS-2009. It is planned that on 19.08.09 the aircraft will make there demonstration flight and in September, the first aircraft will be sent to its first starting customer – GTK "Russia".

Two more AN-148 aircrafts are in the final assembly shop in Voronezh. According to Vitaliy Zubarev, Open Joint Stock Company "VASO" general director, 4 aircrafts will be constructed by the end of the year and 3 of them will be sent to the customer after predelivery and certification tests. The plans of the air enterprise are: to construct 7 aircrafts in the year 2010; 14 – in 2011; 20 – in 2012; 32 – in 2013. And starting since 2014 up to 36 aircrafts will be constructed at the VASO during a year. Aleksey Fyedorov, OAK president, told "AM" reporter that it is necessary to carry out quite scaled re-equipment of the enterprise in order to construct yearly such amount of aircrafts. And this re-equipment has already started. According to Fyedorov 1 billion roubles have already invested for the technical re-equipment of the Voronezh enterprises. And the general programme of investment during 5 years will be 5 billion roubles. It will be quite enough to arrange efficient and high-technology production.

### All matter is in price and reliability

Up to 500 AN-148 aircrafts could be constructed at Voronezh and Kiyev enterprises. It is quite possible, that supplementary capacities, both from Russia and Ukraine, will be used in the frames of cooperation for accelerating and reduction in price of manufacture. That was Alexander Rubtsov's, "Ilyushin Finance Co." general director, opinion. It is necessary to optimize production partnership in order to bring down

production cost. The main thing is that the aircraft must be safe and cheap.

Originally it was supposed that the price for an aircraft would be about \$25-27 millions. But now aircrafts are sold to the starting customers with big discount, even below cost, about \$21-22 millions. Such move has already attracted a lot of customers. So, the biggest transaction of late we could consider the contract between "Ilyushin Finance Co." and "Atlant-Soyuz" airline for purchasing 30 AN-148 aircrafts. First aircrafts will come to the airline by the beginning of 2010 year. According to Evgeniy Bachurin, "Atlant-Soyuz" airline general director, at present perspective route net is already

calculated for them. Most probably AN-148 will flight from Moscow to Samara, Nizhniy Novgorod, Sankt-Peterburg, Rostov, Ufu. The delivering of the AN-148 aircrafts to the airline will be completed by the year 2012.

But "Polyet" airline, that signed a reliable contract for delivering 10 AN-148 aircrafts, took an interest in the Russian-Ukrainian aircraft at the design stage. According to Anatoliy Karpov, "Polyet" airline general director, AN-148 aircraft attracted their attention by its technical characteristics. For example, this is a high wing aircraft with the engines installed under the wings. In this case the engines are protected from being damaged by small stones while operating

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We remind you, that the designing of the passenger's aircraft AN-148 (that time the name of the aircraft was AN-74-68) has begun at the O.K. Antonov's OKB (experimental design office) under the leadership of Pyetr Balabuyev chief designer. But the projecting of the aircraft has begun only in 2001. The transport aircraft AN-74TK-300 was used as the base of the construction. But the wing was designed from the start; the length of the fuselage was increased; zaporozhskiye engines D-436-148 equipped with electronic digital control system with full responsibility (FADEC) were installed. In 2003 preparation for series manufacture of AN-148 aircrafts has begun at the Khar'kov and Voronezh air enterprises.

The first samples of the AN-148 aircrafts made their flights in the years of 2004 and 2005. Certification tests were accomplished 2 years. During that period of time 2 experimental aircrafts made 682 test flights. General endurance of those flights was 1200 hours. The aircraft has proved requested aerodynamic and strength properties also under the conditions of high mountains, high and low temperatures (from -55° up to +45°C), natural and critical ice formation rate and under the various conditions of runways.

In 2005 the license contract about delegation of the rights for using of trademark, technical documentation and for manufacturing AN-148 aircrafts to the voronezhsky air enterprise was signed between (VASO) and Ukrainian ANTK O.K. Antonov. That contract enabled Russia to start series manufacture of AN-148 aircrafts. The most important event in the existence of AN-148 aircraft took place in 2007. Certificates of Aviation register of Russia's intergovernmental aviation committee and Ukraine's state aviation administration were given to aircraft, its engine D-436-148 and its auxiliary power unit AI-450-MS.

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# Trace in the Air



## AN-148 for 60%

**is composed of OEM components made by Russian airspace complex enterprises and about 30% of the OEM components are delivered by Ukrainian side**

are: "KavminvodyAvia", "VldivostokAvia", "Angara", and also Latin America and Africa countries. It is possible that some of the aircrafts will be needed for the president administration. And if before it was supposed to order Tu-334 aircrafts for the president, so now the administration

is going to order AN-148 aircrafts" – general director of the special flying detachment of Russia told the "AM" reporter. – First AN-148 aircrafts will be intended for lifting governmental executive staff. We have to test the aircraft for at list 2years before we will be able to lift first

on soft-surface runways. "The AN-148 aircraft arrangement does perfectly for Russian aerodromes as opposed to recently purchased Swedish SAAB-2000 aircrafts. Composite propellers of those aircrafts are permanently out of order" – in such way Anatoliy Karpov explains his choice. Besides, it is not possible to make a flight without landing from Voronezh to Egypt, Spain, Italy, and Turkey by SAAB. The dimensions of Swedish aircrafts are also not big enough. Now AN-148 with the flight range up to 5000 km and seating capacity up to 100 passengers will easily occupies this niche.

The representatives of "VolgaAviaekspres" airline of Volgograd also pay attention to the appearance of a new regional aircraft on the market. "We purchase medium range CRJ-200 aircrafts made by Bombard'ye company and AN-148 is able to add to them on the Russian routes" – Nikolay Ulanov, the owner of Air Volga company told the "AM" reporter.

The "OAK" stock of orders till now includes 60 AN-148 aircrafts. Among the customers there are: "Moscoviya" airline, GTK "Russia", "Polyet", "Atlant-Soyuz". Among the not-yet-users there







parties. If the aircraft satisfy everybody, it will be ordered for first parties of the state – for the president and prime-minister”.

## An-148 or «Super jet»?

Experts consider that AN-148 is quite promising aircraft. It needs to pay attention to. An aircraft which has the dimensions like Tu-134 but with completely different characteristics on fuel consumption, noises, economics and easy to operate, the one which has 2 crew members and the newest avionics attracts everybody’s attention, - Oleg Panteleyev chief of the “Avia Port” analytical agency explains. – More over the AN-148 can be transformed into transport, ramp, and military and military transport aircraft. And the most important thing is that the aircraft is certificated”.

“Antonov’s ANTK has its own history, its own culture for creation of transport passenger aircrafts, that is why AN-148 was created on the good base. Antonovtsy ( the company contingent) just could not make a bad plane”, - Anatoliy Sitnov, colonel-general, president of ZAO “DVIGATELI “Vladimir Klimov-Motor Sich” considers.

“Taking into consideration the fact that all Superjet programs are delayed and keeping in mind the quality of our airfields, I suppose that AN-148 aircraft is the best version for development of regional transportation”, - Sergey Gavrilov, deputy chairman on transport committee of RF State Duma, is sure.

When the “AM” reporter asked whether the Russian-Ukrainian AN-148 interfere

with the Russian-European Sukhoi Superjet 100, Aleksey Fedorov, OAK president, responded that each one of the aircrafts would take its own niche, both in the world, and in the internal markets. According to pricing policy the AN-148 will make noncompetition clause to the similar types of foreign producers, such as Bombardier and Embraer than to Sukhoi Superjet 100. Besides, Superjet aircraft will flight between regional centers, where airdrome infrastructure is developed quite enough, and the quality of runways is very high. But AN-148 will flight in out-of-the-way places where the runways have worse quality. Alexander Rubtsov from the “IFK” supports Fedorov, who considers that AN-148 and Sukhoi Superjet are two mutually complementary and not compete projects. AN-148 has maximum number of seats-100, Sukhoi Superjet – 130. AN-148 is more oriented towards Russia and developing countries, and Sukhoi Superjet has higher export potential, it can flight in Europe. It is interesting that some airlines which visited the AN-148 presentation, took a decision to choose exactly this regional aircraft. They are not satisfied , that Sukhoi Superjet is not certified yet, and the aircraft has lost a lot of flight and predelivery tests. Besides due to low location of the engines some transporters will have to revise transportation net. It is not a secret for everybody that there are only about 15 aerodromes in Russia with quality runways, where the aircraft can land.



The truth is that, those airlines which want to purchase AN-148 now must wait for 2 years for sure. “From the other side, if the number of reliable contracts will be big enough then it will receive with high rate of probability the expected financing for constructing the other aircrafts” – Oleg Panteleev, chief of “AviaPort” analytical agency, considers. It is important to gain the production temp in order to bring down the cost price and labor input, reach the efficiency (50 aircrafts must be produced), and than we must reach profits. (250 aircrafts must be produced).

**Svetlana Komagorova**

# Cooperation

Cooperation of SAFRAN international group with Russia is going on since 1990 and incorporates a number of important programs, including in the sphere of aviation and rocket propulsion systems and avionics. In the course of the International Aviation and Space Salon MAKS we decided to ask Emeric d'Arcimoles, Deputy General Director for International Cooperation of SAFRAN group about his vision of the partnership with Russian side in the period of crisis.

■ **Question:** Mr. D'Arcimoles, could you please tell us about your impressions of the International Aviation and Space Salon MAKS-2009?

■ **Answer:** I have the impression that the aviation salon is becoming ever more professional. Despite the crisis, Russian aviation industry is maintaining the development dynamics and is ready to launch new projects. And since at present not a single country has enough possibilities, including financial capacity to work all alone in civil aviation, this is a certain chance for us to develop our cooperation. However, on this stage of partnership relations a very complicated work is in store for Russian engineers, since they have never had the experience of cooperation of such scope and scale.



## COMPETITIVE PRODUCE IS IMPOSSIBLE WITHOUT COOPERATION

■ **Q:** Do you mean some specific projects, for instance, SaM146 engine?

■ **A:** It is related to the entire Russian industry, which has previously been working for itself, for domestic market. At present it evinces the desire to enter the international market and supply competitive produce to the market. Along with that, three obligatory components should be taken into account. First of all, as Mr. Putin said, it is necessary to create competitive produce, secondly, to borrow all the

best available in this or that direction, not obligatorily abroad, and thirdly, to organize cooperation and integration of all of these components in order to create high quality end products.

■ **Q:** What difficulties are encountered in the joint work with Russian side? There are a lot of programs and there surely are some underlying potential problems?

■ **A:** It is so. The phase of present day cooperation requires engineering experience, besides, each side has to

create and develop certain technologies for cooperation. It means that on the one hand, one must be able to share what has been achieved in cooperation, and on the other hand, it requires courage to realize and accept the fact that the solutions of partners may turn out to be better than yours due to economic or other reasons. After all, the objective is to create competitive product.

The other difficulty is that the new system of cooperation requires changes in the



approach to understanding the capabilities and priorities of economy. Some journalists, ignorant in the technologies of industry and situation on the market, are nostalgic about the past. In the era of the USSR all

**Specialists know that in the whole world, be it in China or in America, there are no aircraft created without cooperation**



the products were manufactured in Russia, for Russian customers. And now, they say, not a single purely Russian aircraft is manufactured at present. However, specialists know that in the whole world, be it in China or in America, there are no aircraft created without cooperation. True, there is one exception — in military sphere.

■ **Q:** What can you say about the future of the SAFRAN Company in the Russian market?

■ **A:** As far as you know, we began our cooperation in 1991, that was the rocket engines programme, but nowadays we have other big industrial and near industrial programmes. First of all new engines for the Ka-226 helicopter, and also for the Mi-34 and

Ka-62 helicopters (it is under discussion now). What is more we have interesting projects in avionics in the field of inertial systems and new equipment for the infantry personnel. By the way the Minister of Defence of the Russian Federation had a great interest for it. And, of course, the most serious project is the SaM 146 engine.

■ **Q:** What future do you see for the development of the aviation market in Russia?

■ **A:** Prospects are significant. Since the country is enormous, the need for the aircraft industry production is great; and the market of helicopters is especially capacious and promising. But one weak component exists: it is necessary

to convince your young people to work in science and technology. This is the international problem. Young people more willingly go into the art, literature, fashion and other spheres. But everybody understands: it is impossible to provide the development of industry without young scientists and technicians.

■ **Q:** It seems as if in France this problem is solved better?

■ **A:** No, this problem in France is very serious too. The less the young people go to study in this field, the less instructors it is required, and teaching staff is to be reduced also, and at the same time the instruction cycle is sufficiently big. The only country that doesn't face that problem is China.



# **RUSSIAN AIRCRAFT INDUSTRY IS BEING CENTRALIZED**

## **CREATION OF INNOVATIVE-TECHNOLOGICAL PARK STARTED IN ZHUKOVSKY, MOSCOW REGION**

On February 20, 2008 Dmitry Medvedev, the President of Russian Federation, issued the Decree on foundation of the "National aircraft industry center" in Zhukovsky, Moscow region. The purpose of such scale project is "development of national science and educational system in aviation as well as in aircraft industry and in favor of a military-technical cooperation of Russian Federation and foreign countries". In the beginning of August 2009 "National aircraft industry center" Non-commercial Partnership and Administration of Zhukovsky City district held the conference in Zhukovsky; it was dedicated to commencement of Creation of "Zhukovsky" innovative-technological park, which would be a first stage of foundation of "National aircraft industry center".



Representatives of Moscow Government, "Russian Technologies" ("Rossijskiye Tekhnologii") GK, Russian MOD and Chamber of Commerce and Industry, more than 60 small and medium-sized enterprises of the city focused on innovative technologies, major aircraft industrial companies such as: "United Aircraft Corporation" OAO (UAC), "TcAGI named prof. N. E. Zhukovsky" FSUE, "LII named M. M. Gromov" FSUE, "Almaz-Antey" OAO, "Zhukovsky machine-building plant" OAO, etc. participated in the conference.

The conference was a kind of presentation: there was said about concept of the "National aircraft industry center"; its major mission is concentration of aircraft industry resources, related and high-tech industries in Zhukovsky for maximum effect with minimum expenditures. Participants considered the concept of innovative-technological park (ITP) development as the first stage of implementation of NCA project. There are several major tasks against founders. They are such as building of HQ and engineering and cargo exhibition hall. Work is in progress in this direction already and it is supposed to complete it by 2012. It is declared that a new part of the city would be built on the left side of Moscow-river by 2015. It is necessary to concentrate all resources in Zhukovsky by 2016-2017. So, 8 years are for the creation of "National aircraft industry center" in Zhukovsky.

It was also declared in the conference that it was supposed to attract all enterprises that would wish to participate in the project.

### Backscratching...

Creation of the "National aircraft industry center" in Zhukovsky will ensure new conditions for development of aircraft industry. The key objects of NCA development concept is UAC industrial units such as: its training, corporate research, flight-test and engineering centers as well as after sale service, tests and certification. "Zhukovsky" innovative-technological park, NCA



## Creation of the "National aircraft industry center" in Zhukovsky will ensure new conditions for development of aircraft industry

sole research educational center as well as social living, transport and other necessary infrastructure will be created around NCA core. City of Zhukovsky as NCA will pass into a modern territorial research industrial innovative complex where business structure components will play not as separate elements but as inter-working and complementary objects. New system of internal "UAC" cooperation will provide long term conditions of competitive advantage of organization at the account of consolidation of engineering and technical potential, provision of perspective human and technological resources, process optimization, corporation reorganization and system reconstruction, complex teamwork with all concerned parties as well as release of manufacturing facilities in Moscow.

Besides it is supposed to create close cooperation and integration of industry, research and education and conditions for implementation and demonstration of national production and innovative decisions. NCA participants will achieve synergistic effect at the account of

complex territory development and creation of innovative complex. At the same time state financing of the project is focused on the exact creation of engineering and transport infrastructure and other expenditures will be covered by project participants and investors as well as profits received during project implementation.

### What are we going to build?

During the conference I. Kuznetsov, "NCA" NPA, Project Supervisor, informed on ITP NCA concept that was created during implementation of the Decree of Russian President. "UAC" OAO, "Russian Technologies" ("Rossijskiye Tekhnologii") GK and Government of Moscow region are engaged in its development. Main directions of project implementation are such as aircraft industry development, international exhibition activity, national research, innovative environment development, education, logistic, city development (support of living, social and transport infrastructure). Sole united engineering center will be created that would be a design center of the future

# Schedule of Aerospace and Defence Exhibitions

## 2009

September

### JET Expo 2009

September, 17-19



Moscow, Russia

The 4th Russian International Exhibition of Business Aviation

www.jetexpo.ru

Tel.: +7 (495) 739-55-22

Fax: +7 (495) 690-16-15

E-mail: info@jetexpo.ru

### HeliTech

September, 22-24

Duxford, Great Britain

International Exhibition of helicopter hardware (helicopter technique and equipment)

www.helitech.co.uk

Tel.: +44 (0) 20 8271 2155

Fax: +44 (0) 20 8334 0740

### Aviation Expo / China 2009

September, 23-26



Beijing, China

The 13th Aerospace Show in Beijing

www.cpexhibition.com/aviation/

Tel: +852 25117427

Fax: +852 25117427

Office in Beijing: +86 10-

87730641/42/43

October

### LAVEX 2009

October, 5-8



Tripoli, Libya

The 4th Arab-African Aircraft Exhibition, Conference and Air Show

www.lavex.com.ly

Tel.: + 218 21 360 6082 /83

Fax: + 218 21 361 9736

Anwar El Mezagh

E-mail: info@wahaexpo.com

### Aerospace Testing Russia 2009

October, 6-8

Moscow, Russia

International Exhibition of testing facilities, systems and technologies of Aerospace Industry

www.aerospace-expo.ru

Tel.: +7 (495) 935-73-50 (доб. 4155)

Fax: +7 (495) 935-73-51

E-mail: aero@ite-expo.ru

### INTER AIRPORT Europe 2009

October, 6-9

Munich, Germany

The 17th International Exhibition of airport equipment, technologies and services

www.interairport.com

Tel.: +44 (0) 1727 814 400

Fax: +44 (0) 1727 814 401

E-mail: europe@interairport.com

### NBAA 2009

October, 20-22

Orlando, USA

The 62nd Annual Exhibition of the US National Association of Commercial Aviation

www.nbaa.org/events/amc/2009/

Tel.: +1 (202) 783-9000

Fax: +1 (202) 862-5552

E-mail: info@nbaa.org

### Seoul Airshow 2009

October, 20-25

Seoul, Korea

The 7th Aerospace and Defence Exhibition in the Republic of Korea

www.seoulairshow.com

Tel.: +82 2 761 1105

Fax: +82 2 761 1544

E-mail: promotion@seoulairshow.com

November

### Dubai Airshow 2009

November, 15-19



Dubai, United Arab Emirates

The 11th International Aerospace Exhibition in Dubai

www.dubaiairshow.aero

Tel.: + 44 208 391 0999

Fax: + 44 208 391 0220

December

### LIMA

December, 1-5



The Langkavi Island, Malaysia

The 10th International Exhibition of Air-Space and Navy technique and equipment

www.lima2009.com.my

Tel.: + 603 4142 1699

Fax: + 603 4142 2699

## 2010

January

### Royal Bahrain Airshow 2010

January, 21-23

Bahrain

International Air Show

www.singaporeairshow.com

Tel.: +44 (0) 1252 532800

Fax: +44 (0) 1252 376015

E-mail: amanda.stainer@farnborough.com

### AEROEXPO MARRAKESH 2010

January, 27-30

Marrakesh, Morocco

The 2nd International Air Show in the Northern Africa

www.aeroexpo-morocco.com

Tel.: +212 (0) 22 47 06 00

Fax: +212 (0) 22 47 06 01

E-mail: flehenaff@eme-morocco.com





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February

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### Singapore Airshow

February, 2-7

**AIR FLEET**

Singapore

International Exhibition of civil (commercial) and military aviation  
[www.singaporeairshow.com](http://www.singaporeairshow.com)

Tel.: +65 6542 8660

Fax: +65 6546 6062

E-mail: [dannysoong@singaporeairshow.com.sg](mailto:dannysoong@singaporeairshow.com.sg)

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March

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### UVS – TECH 2010

March, 1-6

Moscow, Russia

The Fourth International Forum and Exhibition "Unmanned multipurpose systems" in Moscow

[www.uvs-tech.ru](http://www.uvs-tech.ru)

Tel.: +7 (495) 331-2333, 332-3601

Fax: +7 (495) 331-0511,

E-mail: [elena@expoecos.com](mailto:elena@expoecos.com)

### FIDAE 2010

March, 23-28

**AIR FLEET**

Santiago, Chile

International Aerospace Exhibition

[www.fidae.cl](http://www.fidae.cl)

Tel.: + 56 2 8739752

Fax: +56 2 8739779

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May

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### HeliRussia-2010

May, 20-22

**AIR FLEET**

Moscow, Russia

The 3rd Helicopter Industry International Exhibition

[www.helirusia.ru](http://www.helirusia.ru)

Tel: +7 (495) 958 92 28

E-mail: [info@helirusia.ru](mailto:info@helirusia.ru)

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June

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### ILA 2010

June, 8-13

**AIR FLEET**

Berlin, Germany

International Aerospace Exhibition  
[www.ila-berlin.com](http://www.ila-berlin.com)

Mr Zoltan Ivan

Tel.: +49 (0) 30 3038-2276

Fax: +49 (0) 30 3038-2213

E-mail: [z.ivan@messe-berlin.de](mailto:z.ivan@messe-berlin.de)

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July

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### Farnborough International Airshow

July, 19-25

**AIR FLEET**

London, England

International Aerospace Show

[www.farnborough.com](http://www.farnborough.com)

Tel.: +44 (0) 1252 532800

Fax: +44 (0) 1252 376015

E-mail: [enquiries@farnborough.com](mailto:enquiries@farnborough.com)

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September

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### Hydro-aviation air show 2010

September, 9-12

**AIR FLEET**

Guelengique, Russia

The 8th International Hydro-aviation Exhibition and Scientific Conference  
[www.gidroaviasalon.com](http://www.gidroaviasalon.com)

Tel. /Fax: +7 (86141) 28004

Tel.: +7 (86141) 28091, 28094

E-mail: [gas@beriev.com](mailto:gas@beriev.com)

### Africa Aerospace and Defence

September, 21-25

Capetown, SAR

International Exhibition of Aircraft (Air Force) Technique and Armaments

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# One plus One



and base on new practice, new HR and new conditions with taking into account rich experience in creation of new aircraft. It's also necessary to rehabilitate "Ramenskoye" airfield as modern testing facility by performance its reconstruction in such a way that it would allow to carry out tests of aircraft of all generations in full value. It's planned also to build "Russia" cargo exhibition complex that is modern logistic structure providing opportunity of additional use of runway and reach a new quality level of aircraft maintenance.

Besides a Governmental Research Center will be created in NCA; it will become a center of aviation research and coordinate activities of state research institutes in respect of aircraft development. It will also incorporate a united educational complex of NCA.

In interests of NCA innovative infrastructure development specialized complexes are being created; they may maintain process of creation of innovative technique and research. That is the "Zhukovsky" Innovative-Technological Park is designed for. ITP creation was chosen as one of first directions for implementation and it already got support of different enterprises. Idea of NCA creation is not only in aircraft industry but

## **Main directions of project implementation are such as aircraft industry development, international exhibition activity, national research, innovative environment development**

also in satisfaction of interests of high-tech industries. Small corporations will meet many difficulties during entering ITP because there are a lot of certain requirements that shall be met. In this connection small corporations shall establish laboratories for creation of quality systems and get certificates in accordance with Western standards.

### **Start without money**

The ITP budget is RUR 0 for today. Management team plans creation of the Park starting not from capital investments but from development of organizational structure that would incorporate existing enterprises. This structure is designed for assistance for finding of own market, creation of certain system of cooperation and achieve new quality characteristics at the account of consolidation of efforts of all participants of ITP (first of all with support of "UAC" OAO that plays the leading role in this project implementation).

Organization of infrastructures, human resources potential of enterprises incorporated in ITP, creation of sole business environment would allow to each separate element not to create own infrastructure from "Greenfield" level. In such a way a sole complex infrastructure for each project will be created that would allow to achieve synergistic effect.

### **Stimulators for business**

I. Kuznetcov, Project Supervisor, informed on the program of business stimulation during the conference. Task on innovative environment stimulation is planned to perform not by means of state financing or other investments but by coordination of centralized marketing activity of enterprises. Other ways of

saying, enterprises, which really have necessary competence, will receive assistance in getting access to customer. Second stage of business support is a presentation of companies' interests in external environment, i.e. in governmental structures and other entities. Next stage is decrease of production cost at the account of input of sole organizational base and centralized services provision: for example, at the account of creation of centralized laboratory which would allow increasing of production quality and assist in its certification.

### **Not bad to everybody**

Main value of ITP is a territorial closeness of residents to each other, to customers and comfort business environment. Here is also attached a high grade of business organization achieved by definition of functions related to business management and conducting of agreed marketing policy. Creation of a sole business area means not only interest for small and medium-sized corporations but also for major companies because in this case the target function is a big business that is supported, in general, by small and medium-sized corporations. An integrated partner will be formed in the ITP territory; it will ensure stability of small enterprises. Major corporations will get opportunity to plan direction of the Technological Park development.

Creation of centralized services will result in cost saving. Franchising will be possible for this business. Igor Kuznetcov said that although a direct state financing franchise is not considered, these issues were discussed with the Administrations of Zhukovsky and Moscow region. "We are not refused from benefits that are allowed under the legislation of the country" – he said.





## I have a right!

The scheme of management of the Technological Park was defined as "democratic centralism". It's supposed hard and fast management of the Park on behalf of NP NCA and should ensure "transparency" of ITP operation.

Each resident of the Park will participate directly in decision making in regard of ITP management. "Regulation on the Park" as well as ITP Gradational Council are being created which would include representatives of management of each enterprise incorporated in the Technological Park besides of NP NCA representatives.

So, any participant may deliver own proposals to the Gradational Council, i.e. may get opportunity influencing on ways of ITP development. In own return any meddling in enterprises business on behalf of the Gradational Council shall be in the form of application.

## Step by step

It is supposed to create ITP into 3 stages. In the first stage the corporate structure

## The scheme of management of the Technological Park supposed hard and fast management of the Park on behalf of NP NCA and should ensure "transparency" of ITP operation

will be created by attraction of small and medium-sized enterprises that are ready for development in the certain direction. Key directions that are necessary for development of ITP will be worked out within activities and cooperation of the Small and Medium-sized Association with major companies. Accordingly, it's necessary to start the process not from project creation but from actual adjustment of functioning of the created structure by phased development of interlocking of small and medium-sized corporations. In the second stage – in 2010-2011 – it is planned to start building of such Technological Park complexes that would play the key role in satisfaction of the aircraft industry needs. ITP

will start functioning in full value in the final third stage.

## They were the first

Appropriate certificates were issued to the first ten firms that became residents of "Zhukovsky" innovative-technological park. These firms are entities that manufacture profile products and render services in aircraft industry. The are "Tupolev-Service" OOO, KONVED-6 LII ZAO, "Dinamika" CNTU ZAO, "Konstanta-Design" ZAO OOO, etc. The exactly these companies founded an initiative team regarding development of ITP concept.

**Tatyana Volodina**



# FIGHTERS

## FROM BOOM TO GLOOM?

Global fighter aircraft market faces some difficulties. There is no doubt about it. Our observer Vladimir Shvariov has studied the impact of the economic downturn on the fighter aircraft market. In his study Vladimir Shvariov compares the market development in the first part of 2009 to 2008 and to the previous 8 years. The author believes half-year results cannot speak for the whole year but this period is enough to arrive at preliminary but well reasoned conclusions.



Total value of the identified contracted obligations concluded for export of multi-purpose fighters for the first part of 2009 is estimated at 1.21 billion US dollars. However, it is too early to speak about the contraction of the fighter market and to give forecast. There are reasons why. The economic recession has clashed first with the necessity of upgrading the available fighter fleet in almost twenty nations and then with an arrival of the fifth generation fighter F-35 to the market.

Today, reduction of procurement and putting-offs have only been announced for three programs. Vietnam reduced its orders of SU-30MK2 fighters from 12 to 8 and adjourned the contract talks on procurement of weapons for these fighters.

Sri-Lanka has announced its intention to postpone the program of purchasing 5 MiG-29 fighters in Russia. Moreover, the Sri-Lanka's decision is more based on political than on economic reasons. The Sri-Lanka's government planned to conclude an agreement on MiG-29 to enhance the national Air Force abilities before beginning the wide scale combat actions against Liberation Tigers of Tamil Eelam (LTTE) group. However, after the government forces in the Northern part of the country have successfully accomplished the operation and completely destroyed all LTTE bases, procurement of the fighters has no longer become the first priority and it may be postponed for some time. Nevertheless, despite the accepted decision to postpone the Russian fighters procurement they should become the primary candidates to replace aircraft Kfir and MiG-27 in the long view, Sri-Lanka AF experts say.

Thailand has called off for a minimum period of two years its decision to purchase the second lot of JAS-39 fighters Gripen. In general, world order backlog for the multi-purpose fighters formed up during 2001–2008 makes 77.737 billion US dollars. During the considered period cost value of the orders kept varying a great deal. The minimum backlog of of 1.829 billion US



### **Due to extremely big contracts on the purchase of multi-purpose fighters in 2007–2008 years, this year the market will undoubtedly go down.**

dollars was registered in 2004 whereas the local minimum of 3.778 billion US dollars was registered in 2006. For the last two years orders for the exported fighters has grown up considerably. The biggest backlog of \$22.769 billion was formed in 2007, which resulted in 29,3% of entire backlog for the exported fighters formed during the considered 8-year period. In 2008 the figure amounted to 20.623 billion US dollars (the second result in respect of the cost). All in all, the number of orders placed during 2007-2008 resulted in 56% of the entire volume of orders made during the whole period of 8 years.

Due to extremely big contracts on the purchase of multi-purpose fighters in 2007–2008 years, this year the market will undoubtedly go down. In 2009 the weakening of the market will probably be considerable, especially taking in

account the world economic downturn. However, the recession in the market of multi-purpose fighters will be short because along with the improvement of the economic situation more than twenty nations will resume the great scale programs related to the fighters purchase. Most likely the sharp growth of the world market will take place in 2011 and considerable orders increase compared to 2009 is already expected in 2010.

There is a number of contacts made in the first half of 2009 that are worth paying attention to.

The USA have concluded two extremely important contracts, which in respect of the future prospects have a key importance for the state, of delivery of pre-production trial prototypes of F-35 fighters of the fifth generation. A \$252 million contract of delivery of two fighters F-35 Lightning-2 was awarded the UK.

# View of analyst

## Contracts and intentions declared in the first half of the year of 2009 (multi-purpose fighters)

Exporter	Importer	Aircraft type	Orders	Year of order	Deliveries
Belgium	Jordan	F-16AM/BM	9	2009	9**
The Netherlands	Chili	F-16A/B "block-15" "Fighting Falcon"	16	2009	16**
Russia	Vietnam	Su-30MK2B	8	2009	4** 4**
The USA	The UK	F-35B "Lightning -2"	2	2009	2**
The USA	The Netherlands	F-35A "Lightning-2"	1	2009	1**
The USA	South Korea	F-16C/D "block 52" "Fighting Falcon"	35*	2009	5** 15** 15**
France	India	"Mirage-2000H"	51*	2009	12** 24** 15**
Sweden	Thailand	JAS-39C/D "Gripen"	6	2009	3** 3**

\* upgrade is placed in the column "Orders"

\* estimated contract cost is placed in the column "Value"

\*\* estimated supplies are in the column "Deliveries"

Another \$120 million contract of delivery of 1 fighter F-35 Lightning-2 was made with the Netherlands.

In the beginning of July Israeli Air Force sent an official request to the US Department of Defense to purchase 25 F-35 Lightning-2 aircraft. However, the negotiations held to fix the final price of the aircraft and integration of Israeli produced systems on them will continue.

Initially, the Israeli Ministry of Defense planned to purchase some one hundred F-35 aircraft to replace the biggest part of F-16 fighters" fleet, the delivery of which is planned for 2014 or 2015. However, in the Defense Procurement Draft for 2008-2012, made public in September, 2008, envisages allocations only for the purchase of 25 fighters F-35.

Besides, in the first part of 2009 the USA and South Korea concluded a big contract worth 250 million US dollars to upgrade 35 fighters F-16C/D block-52 Fighting Falcon.

The total cost of the three contracts is \$622 million gives the palm to the USA in competition for the results of the first part of 2009.

The second place goes to Russia with its delivery contract of 8 SU-30-MK2V aircraft for Vietnam (estimated at \$320 million).

The Netherlands ranks third with \$ 270 million delivery contract of 16 fighters F-16A/B from the national Air Force block-15 Fighting Falcon signed with Chili. The aircraft shall be upgraded by Lockheed Martin prior to their supply.

The results of the first part of 2009 are likely to mark a considerable improvement in talks between France and India on a long-expected agreement on the upgrade of 52 Mirage-2000H fighters. By July 2009, the Sides have arrived to the final stage of the negotiations. The cost of the agreement is estimated at 100 billion rupees (\$ 2.05 billion).

India and France have been in talks on 51 multi-mission Mirage-2000H fighters upgrade for more than two years. The major obstacle was the price. The French Contractor Companies, Dassault Aviation and Thales insisted on the price of 140 billion rupees necessary for the upgrade whereas the Indian Defense Ministry estimated the program at 100 billion rupees. The contradictions were reportedly cleared off and the French manufacturers accepted the conditions of the Ministry of Defense of India.

From 4 up to 6 first Mirage-2000H aircraft are planned to upgraded in France, the rest are to be upgraded in "HAL" Company. The modernization made for the on-board equipment, engines, structural elements and weapons system will enable to extend the operation of 51 Mirage-2000H aircraft of the Indian Air Force for the period of 20 to 25 years.

Besides, Belgium has reached an agreement with Jordan to deliver 9



## View of analyst

Year of supplies	value (mn US dollars)	Type of an agreement	Remarks	Source
2010	83,5	Intention	From AF, 2 F-16BM	"Forecast International", 21.01.09
2009	270	Contract	From AF, upgraded prior to supply by Lockheed Martin	"Jane's Defense Weekly", 15.05.09
2010 2011	320*	Contract	Initial order for 12 aircraft is reduced up to 8 aircraft (no weapons), for aircraft are optional	"Commerzant", 17.05.09
2014	251,9	Contract	Pre-production trial prototype	US Department of Defense, 02.06.09
2011	119,6	Contract	Pre-production trial prototype	US Department of Defense, 02.06.09
2011 2012 2013	250	Contract		DSCA, 26.05.09
2010 2011 2012	2050	Contract		IANS, 08.02.09
2013 2014	300*	Contract	The program accomplishment is postponed for 2 years	"Jane's Defense Weekly", 24.02.09

F-16AM/BM fighters from the national Air Force. The presumed deal is estimated at \$83.5 million.

Such a modest result of the first part of 2009 is not quite objective as many countries either have announced or are going to announce international tenders for the purchase of multi-purpose fighters. Besides, some countries have reported their intentions to purchase fighters directly from the country of production.

Since the fighters segment is the most significant among all categories of the aviation equipment, the further analysis of the market development will be made in four major stages, namely: current programs related to the fighters upgrade (2009 and so on); new fighters supply in 2009 and further based on the contracts concluded before January 1, 2009; current and scheduled tenders; an overall balance in respect to the fighters supply for the previous and subsequent 5 years (2004 – 2013).





## FIGHTERS UPGRADE PROGRAMS

The market of fighters' upgrade as per the contracts at the stage of execution by January 1, 2009 makes \$8.5 billion. This amount incorporates the orders which are going to be executed in 2009 and later as well as contracts that were in progress before January 1, 2009 and talks on which will continue during the period under review.

The UK will complete a longstanding program of upgrade of 84 Tornado fighters for the Saudi Arabian Air Force in 2009-2011 (the program was launched in 2005, the planned budget was \$1.847 billion).

Israel will complete a long-term program of upgrade of 46 F-5E Freedom Fighter for the Brazilian Air Force. The program was started in 2005. The total value of the

contract amounts to \$230 million. Besides, from 2009 to 2011 Israel is going to upgrade 31 F-5E "Tiger-2" fighter aircraft for the Air Force of Thailand. The sum of the contract is \$90 million.

Russia is launching the biggest – in monetary terms – program of upgrading 63 MiG-29 fighters for the Indian Air Force. The total cost of the program for 2010-2014 is estimated at \$964 million.

Besides, in 2009 – 2011 Russia will upgrade 19 MiG-29 fighters of the Peruvian Air Force (the sum of the contract is 106 million US dollars).

The upgrade program of MiG-31 interceptors of Kazakhstan Air Force is going on as scheduled. At the same time Russia is involved in some smaller upgrade programs carried out with some countries.

The USA signed \$300 million contract for the upgrade of 14 F-16A/B block-15 Fighting Falcon fighters for the Air Force of Pakistan.

On request from Turkey, in 2009 – 2016 a great scale program of upgrading 216 F-16C/D Fighting Falcon fighters for the Air Force of Turkey (the sum of the contract is \$635 million) will be performed.

A two-stage upgrade of 64 F/A-18C/D Hornet fighters is carried out on the basis of two contracts with Finland). The total sum of two contracts is \$706 million.

On request from the Air Force of Switzerland in the course of 2009 – 2011, 33 F/A-18C/D Hornet fighters will be upgraded for the total sum of \$535 million.

Turkey signed contracts on carrying out two programs of modernization. Thus, in 2009 – 2010, for the Air Force of Jordan a four-year program implying the modernization of 17 fighters F-16A/B block-15 Fighting Falcon – the program worth \$87 million – will be fulfilled. And for the Air Force of Pakistan in 2009 – 2012 another program estimated at \$650 million (the upgrade of 42 F-16A/B block-15 Fighting Falcon fighters) will be implemented.

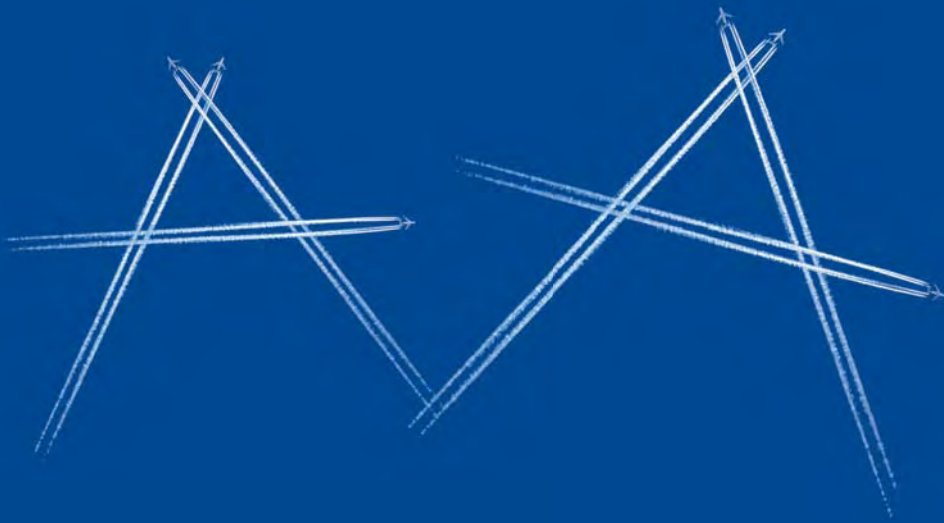
France has three operating contracts to upgrade fighters. In 2010 – 2012, 51 Mirage-2000H fighters will be upgraded for the Indian Air Force – the value of contract amounts to \$2.05 billion (in the middle of 2009 the contract was at the final stage of talks and was almost ready to be signed).

France has received a request from the Air Force of Libya to upgrade 12 Mirage F.1 fighters in 2010 – the contract is estimated at \$180 million.

On request from the Air Force of Morocco three-year program of modernization of 27 Mirage F.1CH/EH fighters worth \$420 million will be completed in 2009.







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## NEW FIGHTERS DELIVERIES

The total value of contracts for fighter aircraft deliveries starting from 2009 and later is estimated at \$40.5 billion.

**EF-2000 Typhoon.** In 2009 the final lot of 5 EF-2000 fighters out of 15 ordered aircraft will be delivered to Austria (the contract value is \$1.7 billion). The Typhoon modification is delivered to the Austrian Air Force in terms of "tranche-1" of the German Air Force. Later on, the quantity in the composition of the German Air Force will be restored by procurement on the basis of "tranche-2".

The greatest export program implies the supply of 72 aircraft EF-200 to the Air Force of Saudi Arabia (the contract amounts to \$8.86 billion). The deliveries are scheduled for 2009-2014.

**JAS-39C/D Gripen.** In terms of the contract with Thailand, in 2011-2012 the Air Force of this country will receive 6 aircraft (the deal amounts to \$420 million including options). Besides, at the beginning of 2009, the sides agreed to transform the option into an purchase of 6 additional fighters in terms of a fixed contract. The aircraft deliveries are set for 2012 – 2013. (This summer, the supply of the second lot was said to be shifted for a minimum of two years).

Deliveries of JAS-39C/D to the Republic of South Africa in terms of \$1.8 billion contract continue. Starting from 2009 and up to 2012, 22 aircraft should be delivered out of total order of 26 units. (4 aircraft were supplied in 2008.).

**F-16.** In 2009-2030, 30 fighters F-16C/D block-52 Fighting Falcon are to be delivered to the Air Force of Greece (the contract amounts to \$2 billion). Order placed by the Air Force of Morocco for supply of 24 F-16C/D block-50/52 Fighting Falcon fighters is to be completed in 2009 – 2011 (the contract amounts to \$2.4 billion).

In 2009 – 2011, 18 F-16C/D block-52+ Fighting Falcon fighters will be supplied to Pakistan in terms of \$498 million contract.

In 2011-2012, 30 F-16C/D block-50 Fighting Falcon fighters are to be delivered to Turkey in terms of \$1.78 billion contract.

**F-15.** In accordance with \$1 billion contract signed in 2005, 12 F-15T Strike Eagle fighters should be supplied to Air Force of Singapore during 2009 – 2010, and in terms of contract 2007 they will be followed by additional 12 F-15T Strike Eagle fighters.

Order worth \$2.4 billion place by the South Korea implies the delivery of 12 F-15K Eagle in 2010-2012.

**F/A-18E/F.** Today, Australia is the biggest customer of F/A-18E/F fighters. Due to \$3.517 billion contract 24 F/A-18E/F Super Hornet fighters are to be supplied to the Air Force of Australia during 2010-2012.

**JF-17 Thunder.** The only export program of a Chinese fighter is its manufacture under license in Pakistan. The total order amounts to 150 aircraft at the total value of \$2.3 billion. In 2009-2014, 133 JF-17 aircraft should be produced. In terms of the said contract China has supplied initial lot of 15 accomplished aircraft (2 aircraft were manufactured under license).

**MiG-29K/KUB.** In 2009 the contract on the basis of the order placed for 16 aircraft by the Indian Navy (the contract amounts to \$700 million) will be completed. In the nearest future an option for supply of 29 fighters MiG-29K/KUB is expected to be transformed into a fixed order.

**Su-27SKM.** In 2009 – 2010, 3 Su-27SKM aircraft is to be supplied to Indonesia (the order amounts to about \$150 million).

**Su-30.** In compliance with the schedule, the last lot of 10 SU-30MKKA out of the total order of 28 aircraft is to be supplied to Algeria in 2009 (the order is estimated at \$1.5 billion). Russia anticipates a possibility to sign a contract for additional Su-30MKKA.

The program on license agreement for manufacturing 140 Su-30MKI fighters launched with India is still going on. In terms of the contract during 2009 – 2013 (most likely this program will be extended up to 2015) 98 aircraft are to be manufactured (42 are already assembled).

In terms of direct supplies based on the contract of 2007 for 40 aircraft, the remaining 34 Su-30MKI aircraft will be delivered to the Indian Air Force in 2009-2010.







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## TENDERS DECLARED AND SCHEDULED



### Romania

The Ministry Of Defense of Romania considers a possibility to procure 48 multi-purpose fighters (40 combat single-seater and 8 twin-seater combat/training aircraft) in compliance with the NATO standards. The estimated program cost is 4 billion Euros (\$6 billion). Depending upon the form and terms of payment, financial conditions the expenses may grow up by 50 % – up to 6 billion Euros.

Tender results are expected in 2009. Supply of the new fighters is to be completed by 2014. However, the world wide economic crisis may have an impact on the time terms and quantity of the aircraft purchased.

SAAB (JAS-39 Gripen), Boeing (F/A-18 Super Hornet), Lockheed Martin (F-16 Fighting Falcon), Dassault Aviation (Rafale) and Eurofighter (EF-2000 Typhoon) have sent their responses to the Ministry of Defense of Romania. In accordance with the available data JAS-39 Gripen, EF-2000 Typhoon and F-16 Fighting Falcon are preferable for the purchase.

It is not impossible that the financial problems will bring Gripen to the leading position during the tender as the least expensive aircraft. At the same time

Consortium Eurofighter announced its readiness to deliver the aircraft to the Ministry of Defense of Romania within the allocated budget and to propose a concurrent off-set program.

Eurofighter is planning to propose a supply of restored and upgraded Typhoons from the second market to the Romanian Air Force if the financial situation makes the Romanian Ministry of Defense purchase a combination of new and second-hand aircraft.

F-16 fighters have also great chances to be a success, mostly because of the deployment of a wide-scale infrastructure for support of American bases situated in the territory of Romania.

### Norway

The Ministry of Defense of Norway in November of 2008 announced its selection of F-35A Lightning-2 as a winner of the tender for supply of new generation fighters for the National Air Force (the decision was approved by the Government of the State but it is still subject to approval from the Parliament). The program's preliminary budget is equal to \$3.5 billion.

The aircraft inventory of the Air Force of Norway incorporates 57 F-16AM/

BM aircraft, the operational life of which is going to expire in 2015. In 2007, to replace these aircraft the Ministry of Defense of Norway called for a competition. Apart from Lockheed Martin Company, SAAB with Gripen NG and Consortium Eurofighter with EF-2000 Typhoon took part in the competition. In December, 2007, Eurofighter said it was leaving the tender.

Within the framework of F-35 manufacture Norway considers a possibility to produce composite material and other components and software for the aircraft.

Official talks with Lockheed Martin on the contract will begin in the second half of 2009. Deliveries of new aircraft and removal of F-16 from the inventory are expected to be performed by phases. In case if the contract is signed, in compliance with the agreement reached in 2007, the first 8 F-35 aircraft may be delivered in 2015. If the development and deliveries schedules are observed all 48 fighters may be passed over to the Air Force of Norway by the end of 2019.

### Croatia

In February, 2009, due to the economic crisis the Ministry of Defense of Croatia decided to adjourn a tender for 12 multi-purpose aircraft scheduled for the second half of 2009 for two-five years. The fighters that were planned to be put into service for the Air Force within 2011-2015 should replace the remaining 12 MiG-21 operated by the Croatian Air Force, as their operational life expires between 2011 and 2013.

In compliance with the last assessment performed by the Ministry of Defense of Croatia the procurement program cost is about 5 billion Croatian kunas (\$844 million). The project has been estimated at 2.64 billion Croatian kunas before. In the long view the number of the procured aircraft may increase up to 16 or 18 units (12 – 14 single-seater and 4 two-seater aircraft).



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# View of analyst



Lockheed Martin (F-16 block-52 Fighting Falcon), SAAB (JAS-39C/D Gripen), Dassault (Rafale), Eurofighter (EF-2000 Typhoon) and RSK MiG (MiG-35) have intentions to participate in the competition.

Procurement of restored aircraft F-16, Gripen, Mirage-2000-5 and MiG-29M from the Air Forces of various countries is among alternative options.

According to the Croatian Legislation, contracts for weapons supply envisages an offset program performed with the volume not less 100 % of the contract cost.

## Japan

At the end of 2008 the Japan Defense Agency re-postponed the date of tender for deliveries of fighters for the Air Force of the National Self Defense Forces in accordance with program F-X. The final decision on participants must be taken in 2009. The primary cause of such an adjournment is the persistent intention of the Defense Agency to include F-22 Raptor fighter as a participant of the tender. Their export is forbidden by the American Legislation.

## Total value of contracts for fighter aircraft deliveries starting from 2009 and later is estimated at \$40.5 billion.

Earlier, the Japan Defense Agency had some grounds to expect the permission from the US Administration to procure F-22 Raptor fighter. However, the statement made by US Secretary of Defense Robert Geitz (after Barack Obama came to power as new President) on the termination of this aircraft productions ruined hopes of Japan to receive F-22 as a new generation fighter (nevertheless, this issue is not closed, yet). Under these conditions F-35B Lightning-2 becomes the primary pretender to win in the scheduled competition.

The total value program for supply of new fighters (up to 100 units) is estimated at 1 trillion yens (\$8.5 billion US).

Eurofighter (EF-2000 Typhoon), Dassault Aviation (Rafale) and Boeing, which offered aircraft F-15FX and F/A-18E/F Super Hornet, are considered among the other potential winners. But it is doubtful that Japan will select a "not-American" aircraft apprehending to spoil relations with Washington. The only real alternative for F-35B may be an upgraded version of F-15SE "Silent Eagle" fighter (the aircraft construction includes technologies applied in the fifth-generation aircraft) proposed by Boeing not long ago.

Nevertheless, the chances of F-35 are considerably greater. Moreover, Lockheed Martin expressed its readiness to consider a possibility for manufacture of F-35 under license in Japan, which is one of the conditions of the competition. But supplies of F-35 for the foreign customers may start not earlier than in 2012, and Japan will be able to get these fighters only in 2016.

As a temporary measure to maintain combat readiness of the Air Force, in December, 2008, the Japan Defense Agency decided to upgrade, in general, 48 F-15 fighters. In 2009, the Government allocated 89.2 billion yens (\$988.3 million) for the upgrade of 22 F-15 and for purchase of onboard radars for 38 F-15.

The Japanese Administration has also taken a decision that Mitsubishi company will work out a demonstrator of technologies of a new national fighter ATD-X. All in all, till 2015, the Japan Defense Agency plans to allocate 39.4 billion yens (\$441.5 million) for the program. The first flight tests of the new aircraft are scheduled for 2014.

Today, the Air Force of Japan is equipped with about 150 F-15 "Eagle" aircraft, about 90 F-4EJ fighters, needed to be replaced, as well as outdated F-1 and F-2. F-4EJ is expected to be removed from inventory in 2012 or 2013.

## Brazil

At the end of 2007 the Air Force of Brazil decided to resume execution of the program for the purchase of fighters (the program was named FX-2). The Brazilian Ministry of Defense intends to purchase 36 fighters (supply in 2014 – 2016) at the first stage. The estimated cost is \$2.2 billion (by 2020 the total number of fighters purchased by Brazil may grow up to 120 units). To win in the competition the supplying company should transfer the aircraft manufacturing technology to the Brazilian industry.

Within the program F-X2 framework the Brazilian Air Force sent information request to Lockheed Martin, Boeing, Eurofighter, SAAB, Dassault Aviation and ANK Sukhoi in June 2008.

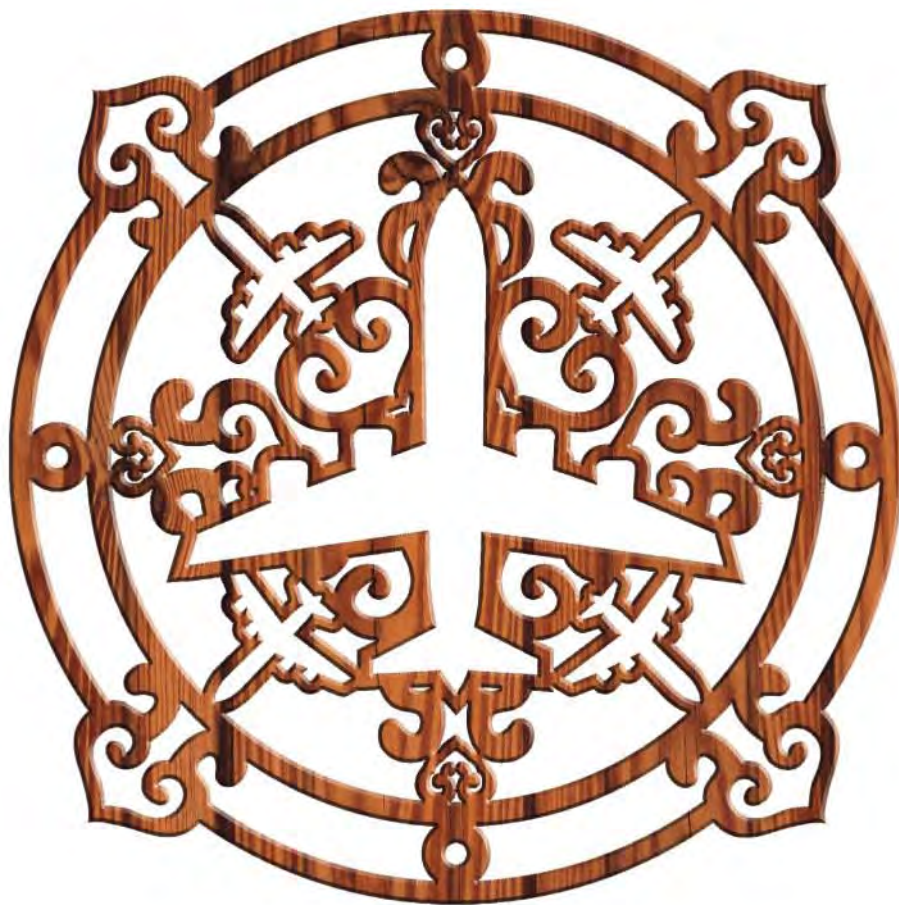
On October 1, 2008, after the assessment performed, the Management Commission of F-X2 project announced the participants in the final stage of the competition. Among them are the following: Boeing (F/A-18E/F Super Hornet) – Brazil is offered the most update version of F/A-18E/F block-2, – SAAB (Gripen) and Dassault (Rafale). Su-35 fighters of Sukhoi, EF-2000 of Eurofighter and F-16 of Lockheed Martin were excluded from the list of pretenders.





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**Total value of the identified contracted obligations concluded for export of multi-purpose fighters for the first part of 2009 is estimated at 1.21 billion US dollars.**

All three runner-ups passed their final proposals to Brazil in February of 2009. In April, 2009, the Air Force of Brazil announced the beginning of flight tests and assessment of technical properties. The winner is expected to be named in summer, 2009 whereas the contract is to be signed in October.

Despite the announcement made by the Brazilian Air Force the general situation around this program is still completely unclear. In particular, in February, 2009, during a visit to Brazil on behalf of Sukhoi company, the delegation of Rosoboronexport offered the Ministry of Defense of Brazil to present Su-35 aircraft for reassessment .

On the basis of the available information, Brazilian Minister of Defense Nelson Jobim accepted the proposal and informed the Air Force would perform the tests. On behalf of

Eurofighter a similar proposition was made by Italy in terms of EF-2000 aircraft.

The Minister's statement put the Brazilian Air Force which was not aware of the changes in the tender's procedures, in an awkward situation. If all initial participants come back to the tender (obviously, if Alenia Aeronautica and Rosoboronexport are permitted to present their proposals, the same will be done by Lockheed Martin) the final decision on the purchase will be put-off.

At the same time due to the world economic crisis the Brazilian Ministry of Finance proposed to freeze up to 50 % of investment part of the state defense budget. Besides, in 2010 president election will take place in Brazil and if the procurement procedures are extended till that time, the new Administration may require more time to arrive to any decision.

### Denmark

The Ministry of Defense of Denmark is engaged in a tender to replace available 48 F-16 Fighting Falcon fighter of the Air Force. Approximately equal chances belong to F-35 Lightning-2 and JAS-39 Gripen. In March of 2008 Boeing reported its intention to present F/A-18E/F Super Hornet for the tender. It is remarkable, that today Boeing performs a very aggressive promoting program and plans to win the tender with F/A-18E/F Super Hornet (Denmark is offered F/A-18E/F block-2 version, which is supplied to the US Navy today). Earlier, EF-2000 Typhoon took part in the competition but in December, 2007, Eurofighter reported to leave the competition.

The Ministry of Defense of Denmark will have to carry out a detailed assessment and by the middle of 2009 to present its suggestions on the aircraft purchase to the





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# View of analyst

## Denmark participates in F-35 "Lightning-2" program but its delays raise chances for the other pretenders.



Danish Parliament. Although the information request envisages deliveries of 48 fighters, the quantity may either be reduced or increased. The aircraft is expected to be supplied in 2016-2020.

Despite the fact that Denmark participates in F-35 "Lightning-2" design program the delay of its implementation raises chances for the other pretenders. Nevertheless, it is necessary to take into account that although participation in development and demonstration of the F-35 aircraft is not mandatory for the aircraft purchase, the share of Denmark as the third level partner at the stage amounts to \$125 million.

### Switzerland

The Ministry of Defense of Switzerland has put-off the tender summation held for the purchase of fighters aimed at replacing F-5E Tiger. The final decision will be taken only after the Nation Security Maintenance Strategy is considered in December of

2009. It means that the winner will be named in 2010 (before it was July of 2009).

Selection of a new generation aircraft in two stages for the Air Force of Switzerland started in January, 2008 when the Swiss Agency for Defense Procurements Armasuisse sent requests to four producing companies. Only aircraft in service were allowed to participate in the tender.

The following companies gained invitations: Dassault Aviation (Rafale), Gripen International (JAS-39 Gripen), EADS (EF-2000 Typhoon) and Boeing (F/A-18E/F Super Hornet). At the end of April, 2008, Boeing officially announced its refusal to participate in the competition. The remaining pretenders sent their propositions by summer of 2008.

It ought to be noted that to make its proposal more attractive, in April of 2009 SAAB proposed Switzerland a counterpurchase of 50 RS-21 by Pilatus at the estimated cost of \$870 million.

Before the end of 2008 the Ministry of Defense, Air Force of Switzerland and Armasuisse assessed the received proposals and performed aircraft ground and flight tests.

In January, 2009, Armasuisse sent a renewed request for deliveries of 22 aircraft to the tender participants – the total cost of the deliveries should not exceed 2.2 billion Swiss francs (\$2 billion).

Due to the earlier approved schedule the assessment should have been completed till the end of this May. The proposal to choose the winner should have been sent to the Minister of Defense of Switzerland in July, 2009. After that the selection was to be approved by the Federal Council and the Parliament of Switzerland. The program was expected to be approved by the Parliament in 2010 and then the contract should have been signed with the winner. Now all these procedures are put off for 6-12 month

Deliveries of the fighters and their acceptance for the AF inventory are to be completed till the end of 2012 (but taking into account the delay in the winner selection, deliveries are likely to be put off to 2013).

### Finland

By the end of the current decade the Ministry of Defense of Finland plans to call for multi-purpose fighters competition. Today, the Ministry of Defense develops the list of requirements for the next generation aircraft. In this context there are two options under consideration: either procurement of a new aircraft or upgrade of F-18C/D (64 units) which are in service. The decision is expected to be taken after 2011.

Today the Air Force of Finland initiated the second stage of the upgrade program for F/A-18C/D Hornet. The cost of the equipment which is to be purchased within the framework of the stage is estimated at 1.3 billion Euros.

In accordance with the plans the upgrade of F/A-18C/D Hornet aircraft in the course of the second stage will be completed by 2015. The upgraded aircraft will come in service by 2020 – 2025.



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# View of analyst



of Eurofighter and Rafale of Dassault. The list of pretenders for procurement includes F-22 "Raptor" but the American Legislation and the high cost of the aircraft will likely prevent Seoul from purchasing the fighter.

The Ministry of Defense of South Korea is expected to name the winner for aircraft supply within the third stage of F-X program in 2011. At this stage 60 aircraft will be purchased. The cost of the fighters procured within the framework of F-X program will be not less than 4.5 billion US dollars. They are scheduled to be supplied for the Air Force of the country during 2014-2019.

## The Netherlands

The Netherlands. The Government of The Netherlands is considering to adjourn its decision to procure F-35 Lightning-2 fighters till the next elections due in 2011, despite that

## South Korea

In April, 2008, the Ministry of Defense of South Korea reported its decision to procure a lot of F-15K fighters within the framework of the second stage of program F-X. The aircraft are aimed at replacing outdated F-4 and F-5, which are still in service today.

Contract envisages deliveries of 21 new fighters including one additional aircraft to replace F-15K crashed in June, 2006. \$4.2 billion contract for supply of the first 40 units of F-15K was signed by South Korea and Boeing in 2002. The first part of the project was named FX1. The first two fighters F-15K entered service in the Air Force of South Korea in October, 2005. By the end of December, 2007, 30 aircraft were delivered including 12 units in 2007. Supply of the remaining 10 fighters was completed in 2008.

Initially, within the second stage of the contract the Air Force planned to purchase 20 fighters F-15, which were to be supplied during 2010-2012. The total cost of the agreement amounted to 2.3 trillion wons (\$2.3 billion). By adding some changes to the offset program carried by Boeing additional aircraft will be supplied.

Third phase of F-X program expected to begin in 2011 envisages the purchase of the fifth generation fighters. In March,

## If Alenia Aeronautica and Rosoboronexport are permitted to present their proposals, the same will be done by Lockheed Martin.

2009, the Ministry of Defense of South Korea started to study aircraft tactical and technical properties within the framework of the third stage of F-X program.

F-35 Lightning is considered as the primary candidate. According to Lockheed Martin representatives deliveries of F-35A fighters to South Korea may start in 2014, providing that the contract is signed before 2010.

The Ministry of Defense of South Korea is considering a possibility to purchase F35B, fighters of the fifth generation, with reduced take-off and vertical landing ability to be deployed on a landing/helicopter dock ship of Docto-class along with purchasing F-35A aircraft with normal take off and landing ability for the Air Force. Decision to equip the dock within the Docto project with F-35B will increase chances of Lockheed Martin to win the tender.

Options under consideration by the Ministry of Defense of South Korea include upgraded F-15SE aircraft of Boeing and F-16 of Lockheed Martin, EF-2000 Typhoon

in December, 2008, the Ministry of Defense of The Netherlands stated that F-35 fully meets the requirements determined by the Air Force for replacement of operating F-16.

The Ministry of Defense made such a decision by comparing the information provided by the potential candidates. F-35 Lightning-2, upgraded version of F-16 block 60 of Lockheed Martin and JAS-39 Gripen-NG were considered as possible pretenders for the aircraft of the new generation deliveries.

The aircraft valuation was carried out in terms of the agreement between the Ministry of Defense and The Parliament of The Netherlands on approval of the State financial support and participation in the stage of the initial operational tests and the fighter's valuation (IOT&E), which was designed within the framework of F-35 program. The Dutch Ministry of Defense agreed to perform a full scope comparative assessment of all alternative options to enable the Parliament to arrive to the final conclusion on the possible



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Russia considers a possibility to deliver 12 multi-purpose fighters Su-35.

For its part Dassault Aviation is preparing a proposal to supply 14 multi-purpose fighters Rafale to Libya. Today, the final decision about procurement of aircraft is not taken and the estimated date of the final negotiations is not determined. Paris and Tripoli are still engaged with the negotiations and information exchange. Fully functional multi-mission F3 fighters – similar to those used by the Air Force of France – are expected to be supplied to Tripoli.

#### Taiwan

Taiwan. In 2008 the USA delayed the program to supply 66 F-16C/D block-50/52 fighters to Taiwan worth \$4.9 billion to avoid deteriorations in relations with China (in 2007 Taiwan Parliament voted for assignment of funds to procure these fighters).

For its part, Taiwan keeps reporting its readiness to purchase F-16C/D fighters in

## Russia to launch the biggest – in monetary terms – program of upgrading 63 MiG-29 fighters for the Indian Air Force. The total cost of the program for 2010-2014 is estimated at \$964 million.

participation in this stage envisaging the purchase of two prototypes.

The dispute about the purchase of F-35 have become more aggressive recently. The opinions on the issue have divided. The Ministry of Defense of The Netherlands planned to allocate 6.2 billion Euros for the purchase of F-35. But due to the fact that at this time Lockheed Martin is unable to announce the final cost of the production aircraft the number of fighters which may be purchased with this amount is still unclear. Formally, The Netherlands planned to purchase 85 F-35 fighters but in 2011 the government may approve the procurement only of the first lot of 55 aircraft.

Since joining F-35 program in 2002, the Netherlands, as the second-level partner assigned more than 1 billion Euros for the project development, (initially the expenses

were estimated at \$800 million).

If the Dutch Parliament approves the procurement of the prototype the Dutch pilots will be able to participate in initial operational tests and IOT&E assessment of F-35 fighters starting from 2013.

Despite the "political debates" two F-35 prototypes are likely to be purchased. The first aircraft is expected to be purchased in 2009 and the second one – in 2010.

Two production F-35 aircraft are expected to join the Air Force in 2014. But to have the fighters delivered by the date the Government of The Netherlands should place the order in 2011 and sign official contracts not later than in 2012.

#### Libya

Libya plans to buy from 18 up to 24 new fighters. Russia and France are the major competitors.

the USA and to restore the funds meant for their procurement as soon as Washington permits to sell them. Finally the supply is likely to be accomplished.

In 1992 Taiwan purchased 150 F-16 aircraft in A/B version in the USA and its intention is to procure additional quantity of F-16C/D to upgrade its Air Force.

Taiwan has also expressed its interest to procure fighters F-35B over the long term.

Today, the Air Force of Taiwan is equipped with about 136 fighters F-16 in A/B version, 89 F-5E/F-5F Tiger-2, 10 Mirage-2000-5D fighters and 47 Mirage-2000-5E fighters. Besides, Taiwan has 130 fighters of its own manufacture which is F-CK-1/IDF.

#### Translation: Vyacheslav Smirnov

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