The Ilushin design house began “working in earnest” on the redeveloped Il-76 in 2005, the President of the Russian Federation stated. This happened after “long talks with our partners and friends in Uzbekistan (the final assembly of this machine was set at the plant of the Tashkent Aircraft Production Organization in the Soviet times).” Unfortunately, we did not manage to come to terms, due to economic issues. Hence with, we made this final decision to set up a new manufacturing line at the Ulyanovsk plant”, Putin said.

The II-76MD-90A features a neworked wing and a number of new onboard systems. The II-76MD-90A relies on Aviadvigatel/Per Motos PS-90A-76 high-bypass engines attributed to fourth generation, each producing a thrust of 33,900lbf.

Besides, the modified aircraft has an improved avionics set and a new pilot station featuring large LCD screens. The II-76MD-90A promises a 10 to 15% reduction in lower fuel over the II-76, and greater payload through increase in maximum takeoff weight up to 330,000 lb. First prototype flew on September 22. State acceptance trials of two delivered aircraft should be finished in 2014.

Meanwhile, “classic” II-76 remains popular on the secondary market. China has recently ordered ten used II-76s from Russia’s arms vendor Rosoboronexport. This move seems to be an interim measure to enlarge the People’s Liberation Army inventory of the four-engine heavyweight airlifters before the II-76MD-90A version becomes available.

The media learnt about the fact of this new Chinese order from Sergei Kornev, head of Rosoboronexport’s aviation equipment department. He ran a press briefing at Airshow China 2012, held in the week starting 13 November. The man told reporters that, as of mid-November 2012, his company found seven suitable airframes on the secondary market. These were being targeted at a major overhaul effort. On its completion, these aircraft will be delivered to China and enter service with the People’s Liberation Army Air Force. Touching on the remaining three airframes on order, Kornev said that Rosoboronexport continues looking for them on the market. The search is not limited to within the Russian air force inventory and that of other Russia’s governmental structures, he added.

According to unofficial Russian websites, Rosoboronexport has so far found suitable airframes for overhaul at Staraya Russa maintenance station: three II-76s from Russian air force, two from Belarus air force and three from Transaer airways.

Kornev refused to provide an exact number of II-76s already delivered to China. And yet he noted that not only Rosoboronexport, but also its Ukrainian counterpart Ukroboronexport has been involved in sales of new and used II-76s. According to western observers, during 1990s China received about twenty II-76s new and old from TAO, the Tashkent Aviation Production Organization named after Valery Chkalov. This plant is situated in the capital city of Uzbekistan. In the times of the Soviet Union, TAO served as the manufacturing plant for the II-76.

China placed first order for three II-76MDs in 1990. Deliveries took place next year in order for Chkalov airframe. China ordered more followed in 1992, with shipments in 1993-1994. After several years, deliveries resumed in 1996, deliveries counted four airframes. All of the above mentioned aircraft joined the PAAF 13 Aviation Division. In addition to the fourteen newly built II-76MDs, China procured a small number of used airframes from Ukraine and used some of those for certain specific ground testing. A quantity of used airframes went into China from inventories of independent industrial players, including UI, the Flight Test and Research Institute named after Mikhail Gromov. A couple of II-76 test-beds found their way into China. These are test-beds on the II-76 platform, outfitted with large rotating antennas above the fuselage. Presumably, these were used in the interests of China’s flying radar program.

China received one very special airframe in 2002. The one was employed on flight trials of the Israeli’s Dzio E/M-205 PHALCON (Phased Array, L-band, CONformal, L-band) long-range observation radar. Israel was on contract to supply such equipment but under heavy pressure from the US, the respective contract was cancelled. This, however, did not prevent PAAF from acquiring powerful flying radars.

In November 2003 China sent to the air the flying radar of its own make, the KL-2000. It used the II-76 as a platform. Following tests conducted on several development prototypes, PAAF ordered four KJ-2000s to be produced using II-76MD airframes taken from the 13 Aviation Division. In the new form, all four were designated as a radar station for the 76 Regiment of the 26 Aviation Division. Earlier this century China was seeking to buy some 50-60 new II-76s from Rosoboronexport, and even signed a preliminary agreement on 38 airframes (34 air liners and four tankers) in September 2005. But materialization of that deal has been postponed. Kornev explains. “Indeed, there has been a postponement with fulfillment of that agreement due to the inability of the plant in Tashkent to build that many new
aimed at fulfilling the demand in China. That was the primary cause to a slow-down in II-76 deliveries in.

We put our hopes into the II-76MD-90A model that is being re-launched into production at the Aviastar-SP plant in Ulan-Ude. One such airplane is already flying, and the customers have been following flight-test progress with interest. As stated above, in early October Russia’s president visited Aviastar-SP to inspect the II-76MD-90A [Russian air force version of the II-76MD-90A]. That time Vladimir Putin said that the reworked II-76 is on offer to China and India. Asked to comment on that point, Kornev provided the following statement: “It’s our strategic goal to work with these customers. In our view, the II-76MD-90A has a large export potential, and we are making efforts to explore that potential. This new version features modern avionics, higher payload-range capability, more powerful and economic PS-90A-76A motors. However, flight tests could take a couple of years. Today, the II-76 is the only heavy-duty air lifter type in the inventory of PLA’s Air Force, giving it a strategic lift capability. India has also relied on the II-76 as its only strategic airlift aircraft. But recently New Delhi and Washington signed for a number of C-17 Globemaster aircraft. Their deliveries are expected shortly.

Motors

It is interesting to note that the D-30KP engines powering the II-76 are used in China not only on this aircraft type. Imported motors power China’s indigenous developed Y20 heavy airlifter which began flight tests on 26th of January, 2013. Besides, China is known to have been installing D-30KP to refurbished H-6 bombers (locally made Tupolev-16) in order to achieve a range extension. Russian officials turn a blind eye on this. Furthermore, China attempted production of reverse-engineered copies under the designation of WS-18. So far, however, their usage has been limited due to reliability issues.

In autumn 2012 executive director of NPO Saturn Ilyo Fedorov spoke to press. He confirmed that his company was working on fulfillment of the Chinese order for 184 D-30KP turbofans intended for in-service II-76s. Respective contract was signed in November 2011. It won approval of the Russian government in February 2012. According to Fedorov, the contract value is over US$ 1.3 billion, with deliveries due to be completed by 2016.

On another occasion, Saturn reported that in the middle of October 2012 China accepted a batch of 12 D-30KP2 motors. In a press release the engine maker pictured this act of acceptance as a milestone for the company (otherwise, the production of this elderly engine would have to close down due to weak demand). China placed order for 184 motors in 2011, due for delivery by 2016. This year Saturn plans to assemble 60 D-30KP2s, and starting next year, achieve annual production rate of 72 units. “China is a major overseas customer for Saturn,” the engine maker said in the press release. In the period of 2009-2011 the company delivered 55 D-30KP-2s to China and thus fulfilled its obligations before that customer. Saturn executive director Ilyo Fedorov was quoted as saying that “the experience of operations of the II-76 family aircraft in China has proved reliability of the D-30KP2 motors and simplicity of their maintenance. The Chinese customers expressed their complete satisfaction with the manufacturing quality of our motors and the level of after sales support from Saturn”. Fedorov further stated that the follow-on order awarded in 2011 became “a logical step in further expansion of our cooperation, based on the positive experience of D-30KP2 operations. Successful fulfillment of our contractual obligations in frame of the follow-on order will give a further boost to Sino-Russian cooperation”.

Production

In December 2006 the Russian government made decision for restoration of the II-76 production in an improved version. It was decided to establish a new assembly line for the type at Aviastar-SP in Ulan-Ude. Previously, the II-76 assembly line was at TAPO plant in Uzbekistan capital city of Tashkent. Between nine and ten hundred such aircraft was the type’s production run at TAPO. Of those, one hundred and twenty were exported to eleven foreign countries outside (Soviet Union and Commonwealth of Independent States), not counting those operated under lease or hire deals. During the process of preparations to production restart, Ilyushin design house reworked the old documentation packages into a new, computerized form featuring 3D drawings.

Over forty years of its history, the II-76 saw many improvements introduced to the original model. Worthy of mentioning is the airplane’s version with extended fuselage (two insertions each 3.3m, to increase cabin volume from 326 to 400 cubic meters) and higher-thrust PS-90A-76 motors. The II-76M had its maiden flight in 1995. This interim model was built in small quantities for experimental purposes and for the Jordanian airforce. The above mentioned Perm motors were also employed on the II-76MD-90D commercial cargo planes, a customized version for Volga-Dnepr airline. Several airplanes for the airline were assembled at TAPO earlier this century. Besides, the Russian air force ordered refurbishment of several II-76MDs into the II-76MD-90 variant. The latter also features Perm power plants in lieu of less powerful and far less economical PS-90A-76s. During the press of digitizing the initial drawing of the II-76 wing, the designers introduced corrections so as to retain the wing’s airflow and overall dimensions, yet make the reworked wing more technologically sound. The reworked wing has a new structural layout, the wing panel is now a one-piece made using long panels with riveted frames. The number of the wing spars reduced from three to two. This allowed a meaningful reduction in structural weight and manufacturing expenses. The outdated Kulip-I II-76 system gave way to far more modern Kulip-III-76M(A), which works in conjunction with BPSN-2 satellite navigation. The SAU-1T-28 flight control system was replaced by SAU-76 digital FCS. The place of the elderly TA-6A APU is taken by far more modern TA-12A. The II-76MD-90A had its rollout ceremony on 15 December 2011. In July next year the airplane was handed over from the manufacturing division of Aviastar-SP to the plane’s flight test station. The maiden flight occurred on 22 September 2012, with flyshin test pilots Nikolay Kulimov and
Success story

Vladimir Ilinarkhov at the controls. They were accompanied by navigator Valery Grechko, flight engineer Alexey Zhuravlev, radio operator Sergey Orlav, flight test engineer Vladimir Lysyagin, electric systems operator Alexander Tsvetkov and cargo compartment operator Alexey Mitin.

The same airplane registration 76580 and S/N 0102 flew a second short, but spectacular mission on 4 October, before the eyes of the Russian president. Speaking after the successful completion of that flight, Vladimir Putin said: “I have every reason to thank and congratulate the general designer (Genrikh Novozhilov) and the manufacturing plant general director (Sergey Dementiev) and the whole team who have worked hard to achieve this stage of the development of a new Russian air lifter. Today we witnessed the final stage of that development. Today’s event is not merely a flight of a reworked Il-76. Essentially, this is a considerably reworked, almost new aircraft upgraded by 70%. Now we have an advanced air lifter with outstanding performance and superior qualities in the domains of reliability, payload-range, fuel efficiency and capability to transport various cargoes. I am certain that the aircraft will be in demand in its home country and with our partners abroad”.

Russian vice-premier responsible for military-industrial complex, Dmitry Rogozin, said that the long term procurement plan calls for acquisition of more than a hundred aircraft of the Il-76MD-90A type and its variations such as the Il-78M tanker and A100 flying radar. According to Aviastar-SP general director Sergey Dementiev, three airframes in the initial production batch are under work in the plant’s workshops. Work on these commenced back in 2010. Dementiev said two of those airframes shall be complete in 2013, to enable deliveries in 2014.

In the last week of January the Il-76MD-90A prototype carried out a long-duration flight lasting for 4 hours 25 minutes, as part of the manufacturer’s trials. It originated at the Ulianovsk-Vostochny (East) aerodrome. The airplane was manned by the crew under command of Ilyushin test-pilot Nikolay Kuimov. Most of the flight was at the altitude of 10,000 meters and uneventful. While in the air, the crew checked for would-be flaws in the onboard systems, and assessed the work of automatic flight control system. Besides the pilots assessed airplane’s handling qualities, stability and maneuverability. It is interesting to note that the airplane flew for the first time after painting in a grey livery, after a comprehensive check and tuning of onboard systems and test equipment. Ilyushin ferried the prototype to Zhukovsky near Moscow. The airplane continues flights tests operating from the Ramenskoye aerodrome of Mikhail Gromov’s Flight Test and Research Institute (LII).