

ARCHIVED REPORT

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Antonov An-70

Outlook

- An-70 formally adopted for service with Ukrainian Air Force in March 2015, but production is on hold
- Deteriorating relations between Ukraine and Russia disrupted development program
- New variants without Russian-made components have been proposed; Antonov is looking for funding

Orientation

Description. Four-engine, strategic heavy airlift transport aircraft.

Sponsor. The Ukrainian Republic and Antonov Design Bureau, Kiev, Ukraine. Originally sponsored by the Soviet Ministry of Defense and Soviet Air Force.

Status. Two prototypes built through 2018.

Application. Strategic and tactical military airlift.

Price Range. Estimated at \$70 million.



An-70

Source: Marianivka/Wikimedia

Antonov An-70**Contractors****Prime**

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Subcontractor

TsSKB Progress, Progress Central Specialized Design Bureau	http://www.samspace.ru, 18 ulitsa Pskovskaya, Samara, Russian Federation, Tel: + 7 8462 55 13 61, Fax: + 7 8462 97 18 86, Email: mail@progress.samara.ru (D-27 Turbopropfan)
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Technical Data

Design Features. High, slightly swept-wing design with conventional swept vertical tail and cruciform horizontal tailplane. Powered by four turbopropfans, each driving counter-rotating propeller systems. Landing gear retracts into large faired areas on each side of the lower fuselage, each main unit having three

two-wheel axles. Airframe constructed of aerospace light alloys, including new aluminum-lithium materials and composites (28 percent of airframe weight). Landing gear is low-surface-pressure design with three main axles, each carrying two wheels, on each side.

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length overall	40.73 m	133.6 ft
Height overall	16.38 m	53.75 ft
Wingspan	44.06 m	144.52 ft
Weight		
Maximum takeoff	130,000 kg	286,600 lb
Maximum payload	47,000 kg	103,615 lb
Capacities		
Cargo volume, to ramp	305 cu m	11,578 cu ft
Cargo compartment area	74.4 sq m	800.86 sq ft
Performance		
Range with maximum payload	3,000 km	1,617 nm
Normal cruise speed	750 kmph	400 kt
Balanced field length	1,800 m	5,905 ft
Short takeoff length	700 m	2,297 ft

Propulsion

An-70T (4) Progress Zaporozhye Machine-Building Design Bureau 10,300-kW (14,000-shp) D-27 turbopropfan engines, each driving six bladed counter-rotating propellers.

Seating

Crew of three to five, including pilot, copilot, flight engineer, and two loadmasters.

Antonov An-70**Variants/Upgrades**

An-70T. Commercial variant; no timetable announced. Volga-Dnepr has signed a Memorandum of Understanding covering five civil model An-70Ts for use as commercial freighters.

An-77. Proposed Westernized variant, possibly with CFM56 engines. Redesignated An-7-X in 1999. The idea never moved past the concept stage.

An-188. Proposed re-engined variant equipped with turbofan engines and a redesigned wing. Announced at the 2015 Paris Air Show without a launch order or development contract in place.

Program Review

Background. Antonov launched the An-70 program in 1990 under the sponsorship of the Soviet Union to provide a replacement for the An-22.

The end of Soviet domination of Ukraine led Antonov to look westward for customers in addition to former Soviet states. When Antonov unveiled the design for the An-70 in 1992, it noted that the four-engine transport would be capable of carrying many vehicles that the smaller Lockheed C-130 could not.

In 1998, Germany proposed acquiring An-70s to replace its aging C-160 Transalls, and promoted the aircraft to its partners in Europe's Future Large Aircraft (FLA) project. In a complex deal, Russia would buy Airbus A320/321 jet transports in exchange for a German purchase of An-70s, which were to be "Westernized" by a Western aerospace company. The Russians would barter raw materials for the Airbus jets, and Germany would forgive debts owed by Ukraine and Russia to pay for the An-70s.

Germany's FLA partners ultimately ruled out the Antonov design as too costly, in addition to involving technical risk and possible economic risk in dealing with financially troubled Russia and Ukraine.

Meanwhile, Russia had emerged as the mostly likely customer for the program, and a necessary one, because the Ukrainian military budget was not sufficient to acquire enough An-70s to justify completing development.

After a period of stagnation in the program, Russia and Ukraine announced requirements for 164 and 65 aircraft, respectively, and were to begin taking deliveries in 2005. However, Russia became increasingly disenchanted with the program, in particular its D-27 engines. No Russian funding was earmarked to continue development in 2004, although talks between Kiev and Moscow reportedly did continue. Russia declared the aircraft too heavy for its requirements and began to evaluate several all-Russian designs for this role.

Talks resumed in August 2009, leading the governments of Russia and Ukraine to announce a plan to revive their long-standing plans to produce the An-70 military transport plane together. Russia's United Aircraft Corporation (UAC) entered into a 50-50 joint venture with Antonov in 2011 to coordinate marketing of and industrial participation in the Antonov product line.

The financial details of the program are not publicly available. Defense press reported in April 2012 that Russia planned to dedicate RUB2.4 billion (\$816 million) to the project by 2013. Ukraine's contribution was reported to be UAH480 million (\$89 million). The new plan called for the An-70 to be produced at a new JSC Gorbunov Kazan Aviation Production Association (KAPO) manufacturing facility.

Flight testing of the An-70 resumed in September 2012 after a two-year period of modernization and correction of the deficiencies identified during the last round of tests. Upgrades included a new engine and propfan control system, an improved auxiliary power unit, and refined propfans that make less noise in flight. Antonov's facility in Ukraine is building the first two production aircraft.

The An-70 passed Ukrainian state acceptance tests in April 2014. The news emerged amidst conflict between the Russian and Ukrainian governments over the status of Crimea and other areas of Ukraine with large Russian-speaking populations.

In January 2015, the Ukrainian government formally approved production of the An-70. Two months later, in March 2015, the Russian government announced that it had dropped plans to order the An-70, leaving the Ukrainian government to fund the project on its own.

In August 2016, the governments of Ukraine and Indonesia signed a Memorandum of Understanding outlining potential cooperation in defense markets. The Indonesian government was reported to be interested in acquiring the An-70 in addition to other military equipment, but neither country announced an order.

Antonov An-70

In early 2018, Antonov was negotiating a deal with Turkey for coproduction of the proposed jet-powered An-188 variant. Turkish procurement officials noted at the time that the aircraft would need to meet NATO

requirements. Antonov had three possible engine choices in mind: the Ukrainian-made Ivchenko-Progress D-436-148FM, the Ivchenko-Progress AI-28, and the CFM LEAP engine.

Funding

Development costs of the An-70 are estimated at \$1.1 billion.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Early	1990	An-70T development launched by Antonov
Apr	1992	An-70T model unveiled in Moscow
Jan	1994	Aircraft rolled out
Dec	1994	Prototype first flight
Mar	1995	Prototype crash
End	1996	Second prototype rolled out
Jan	2001	Second prototype crash; available for repair
	2001	Ukraine orders five An-70s
	2007	Ukraine assumes full program control
Apr	2014	An-70 passes state acceptance tests
Jan	2015	Ukraine approves serial production of the An-70
Mar	2015	Russian government announces abandonment of An-70 plans
Jun	2015	Launch of An-188 variant

Forecast Rationale

The Russian government announced in March 2015 that it no longer plans to order the An-70, placing the future of the program in doubt.

Ukraine and the Putin regime are engaged in an ongoing military and diplomatic dispute over the separatist movement in the Donbass region in southeast Ukraine and over Russia's successful invasion of the Crimean Peninsula. The An-70 program began as a joint effort of the Russian and Ukrainian governments; Antonov sourced major components from Russian manufacturers.

Now, with relations between the nations broken down, Antonov needs to replace the aircraft's D-27 engines and other components with domestic or Western content. This will take substantial development funding, and we continue to doubt that the Ukrainian government will finance a major redesign of the aircraft without an outside partner.

The Ukrainian government placed the country's KiGAZ Aviant plant under Antonov's control in early 2009, and two unfinished An-70 airframes were once reported to be midway to completion. However, it is not clear when, if ever, Antonov will finish these aircraft.

The current diplomatic/political situation in Ukraine will require its government to modernize and upgrade the country's military with limited funding. The Ukrainian military has less need for a new heavy transport fleet than it does for upgraded fighters and better equipped ground forces.

There are no export customers for the aircraft yet. Antonov has unveiled a new turbofan-powered variant of the An-70 that it says is in development. We are not forecasting production of this variant, the An-188. With development funding in short supply, it is highly doubtful the government will pay Antonov to build a new variant of an aircraft it already cannot afford to buy.

Turkey was reported in early 2018 to be interested in a joint effort to design and build the An-188, but we consider this idea to be only preliminary. While Turkey seems to be looking for new sources for defense equipment outside the NATO sphere, Antonov and the Erdogan government in Turkey will need to resolve a number of likely contentious issues first, including funding splits, workshare, control over intellectual property, and the location of the aircraft's future production site. It is too early in the process to project future production of the An-188

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