

# ARCHIVED REPORT

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## Aero L-159

### Outlook

- Czech Republic to trade L-159s to EADS CASA in exchange for partial payment of order for four C-295M transports
- Aero Vodochody continues to market the aircraft, but no new aircraft have been produced since 2003
- Surplus aircraft in Czech Air Force inventory available for conversion to trainers, dampening demand for new production

### Orientation

**Description.** Single-engine, two-seat trainer and single-seat light attack aircraft.

**Sponsor.** The Czech Republic government.

**Status.** L-159 production ended in 2003.

**Total Produced.** Through 2003, Aero produced 73 aircraft, including a single L-159B and excluding two prototypes.

**Application.** Basic/advanced training; light attack.

**Price Range.** L-159 estimated at \$13.2 million in 2009 dollars.



L-159 Jet Trainer

## Aero L-159

Source: Czech Air Force

## Contractors

## Prime

<b>Aero Vodochody AS</b>	<a href="http://www.aero.cz">http://www.aero.cz</a> , U Letiste 374, Odolena Voda, 250 70 Czech Republic, Tel: + 420 255 761 111, Fax: + 420 255 75 3225, Prime
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## Subcontractor

<b>BAE Systems Inc</b>	<a href="http://www.baesystems.com/WorldwideLocations/UnitedStates/">http://www.baesystems.com/WorldwideLocations/UnitedStates/</a> , 1601 Research Blvd, Rockville, MD 20850-3173 United States, Tel: + 1 (301) 838-6000, Fax: + 1 (301) 838-6925, Email: <a href="mailto:na.marketdevelopment@baesystems.com">na.marketdevelopment@baesystems.com</a> (Sky Guardian 200 Radar Warning Receiver)
<b>Honeywell Aerospace, Engines, Systems &amp; Services</b>	<a href="http://www.honeywell.com">http://www.honeywell.com</a> , 111 S 34th St, Phoenix, AZ 85034-2892 United States, Tel: + 1 (602) 231-1000, Fax: + 1 (602) 231-5713 (TFE731-4 Turbofan)
<b>Rockwell Collins Inc</b>	<a href="http://www.rockwellcollins.com">http://www.rockwellcollins.com</a> , 400 Collins Rd NE, Cedar Rapids, IA 52498-0001 United States, Tel: + 1 (319) 295-1000, Fax: + 1 (319) 295-5429 (ARC-210 Radio System)
<b>SELEX Galileo</b>	<a href="http://www.finmeccanica.it/Holding/EN/index.sdo">http://www.finmeccanica.it/Holding/EN/index.sdo</a> , Via G B Grassi, 93, Milano, 20157 Italy, Tel: + 39 02 357901, Fax: + 39 02 3567325, Email: <a href="mailto:solange.distefanopozzuoli@selexgalileo.com">solange.distefanopozzuoli@selexgalileo.com</a> (Grifo L Multimode Radar)
<b>Thales Optronics (Vinten) Ltd</b>	<a href="http://www.thalesgroup.com/landjoint/">http://www.thalesgroup.com/landjoint/</a> , Vicon House, Western Way, Bury St Edmunds, IP33 3SP Suffolk, United Kingdom, Tel: + 44 0 1284 750 599, Fax: + 44 0 1284 750 598 (VICON 78-300 Chaff & Flare Dispenser)

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## Technical Data

**Design Features.** Low-wing design; tail section has swept vertical stabilizer and rudder. Wings have double-slotted flaps and conventional ailerons, the latter fitted with trim tabs.

	<b>Metric</b>	<b>U.S.</b>
<b>Dimensions</b>		
Length	12.72 m	41.70 ft
Height	4.77 m	15.65 ft
Wingspan	9.54 m	31.29 ft
<b>Weight</b>		
Empty, equipped, trainer version	4,320 kg	9,524 lb
Max gross	8,000 kg	17,637 lb
<b>Performance</b>		
Max level speed, sea level	936 kmph	505 kt
Max rate of climb, sea level	3,726 m/min	12,220 ft/min
Service ceiling	13,200 m	43,300 ft
Range, max internal and external fuel	2,530 km	1,366 nm

**Propulsion**

L-159 (1) Honeywell/International Turbine Engine Corp F124-GA-100 turbofan rated 28.2 kN

(6,330 lbst).

**Armament**

No built-in armament. Seven external stores stations with max load of 2,340 kg (5,159 lb).

**Crew**

L-159A, one pilot; L-159B and L-159T1 seat two in tandem.

## Variants/Upgrades

**L-159A.** Single-seater derived from the earlier L-59, powered by Honeywell/ITEC F124 engine and featuring multifunction radar, new armored cockpit, more sophisticated avionics, and additional fuel. First flight in August 1997. Czech Air Force has ordered 72 units.

**L-159B.** Two-seat variant of A model. In 2002, the Czech Air Force ordered two of a planned total of 12, funding permitting. Only one aircraft appears to have been delivered. This version was offered to India, which instead bought BAE Hawks.

**L-159T1.** Two-seat model converted/rebuilt from existing surplus single-seat L-159As in the Czech Air

Force inventory. It uses the wing and tail from an existing aircraft but features a new two-seat fuselage. The Czech Air Force contracted in 2006 for four aircraft to undergo conversion as part of an effort to improve its training fleet and make the service's surplus L-159As more attractive to potential customers for used aircraft. The aircraft retains some avionics from the L-159A, but new systems have been installed, including a Mil-Stad-1553B digital multiplex databus and other improvements now standard in advanced trainers.

## Program Review

**Background.** Aero flew a prototype L-29 jet trainer in 1959, subsequently producing 3,600 units through 1974, and followed with the further-developed L-39. The latter first flew in 1968, and 2,854 were built through 1990.

An advanced derivative of the L-39, subsequently redesignated L-59, entered service in 1990. Sixty-three were produced and this model spawned the single-seat L-159A, which flew in 1997. Aero also developed a two-seat L-159B trainer variant of the A model.

The Czech Air Force ordered 72 L-159As, and all were delivered by late 2003. That service also purchased a pair of L-159Bs and noted plans to ultimately acquire 10 more. Only one B model has been reported as delivered, and no further Bs were ordered.

### *Boeing's Investment*

In 1998 Boeing took a 35 percent stake in Aero Vodochody. This proved to be an unsuccessful tie-up, with the U.S. manufacturer becoming disenchanted with what it termed quality control problems with Aero, while the latter claimed Boeing was not sufficiently supporting efforts to promote the L-159 on the international market.

The relationship had apparently hit bottom by February 2004, when the Czech government said it would buy

## Aero L-159

back Boeing's share in Aero, and this was accomplished by the end of 2004. A sale of the company to Oakfield, an affiliate of Penta, a Czech/Slovak private equity firm, was completed in October 2006. The new owners expressed doubts about the prospects for the L-159 on the export market and expressed a desire to focus on other priorities.

Meanwhile, a combination of escalating program costs and across-the-board defense cuts by the Czech government resulted in the Czech Air Force's inventory being cut from 72 to 24 L-159s, six of which are to serve as "reserve" aircraft. The 47 surplus aircraft (one had been lost in a crash) have been put up for sale, and although Aero has reported interest from a number of countries, no sales had been announced at the time of writing.

In June 2006, the Czech Defense Ministry signed a contract with Aero to convert four surplus single-seat L-159 attack jets into two-seat training aircraft. The newly designated L-159T1 trainers were all delivered by November 2007. The trainers are being used to prepare pilots to fly 24 single-seat L-159 attack aircraft in service with the Czech Air Force.

Aero has also offered L-159 licensed-production rights to a number of countries, including China, but has found no takers.

### *Deal with Saab and Gripen International*

Aero Vodochody and Gripen International announced an agreement in 2008 that would cover joint marketing of the L-159, along with ongoing development of upgrades to the aircraft's systems. The Czech Air Force has leased 14 Gripen C/Ds, and the agreement may lead to a common logistics support network for the fighters and the L-159. Aero will also receive additional work from Saab for various projects as a component maker under the deal.

## Funding

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L-159 development costs estimated at \$50 million in 1995 U.S. dollars.

## Timetable

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<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Mid	1960s	Design initiated
Nov	1968	Prototype first flight
	1971	First flight of pre-series aircraft
	1972	Series production begins
Early	1974	L-39 enters Czech service
Sep	1985	L-39MS first flight
Nov	1990	L-39 production completed
May	1993	L-139 first flight
	1994	L-159 announced
Aug	1997	First flight of L-159
	1999	Initial L-159 deliveries
Dec	2003	Final L-159 deliveries

## Worldwide Distribution/Inventories

(As of November 2009)

Operator	Designation	Quantity
Czech Republic Air Force	L-159A	24
Czech Republic Air Force	L-159T1	4

## Forecast Rationale

The Aero Vodochody L-159 has been out of production since 2003, and the manufacturer is unlikely to get orders for new aircraft that will allow it to restart production. Instead, the focus is on the market for surplus aircraft that are no longer needed by the Czech Air Force.

Members of Aero Vodochody's management team visited Baghdad in the fall of 2009 to discuss the purchase of 18-36 L-159 attack aircraft, but it is unlikely that a deal will go through. The aircraft could be acquired relatively cheaply, but the U.S. government has been training and equipping the Iraqi Air Force. It is likely to push for an initial purchase of turboprop-powered attack aircraft, followed by an eventual purchase of a small fleet of Lockheed Martin F-16s.

Canada is also looking at buying surplus L-159s to replace aging CT-114 Tutor aircraft used by the Snowbirds aerobatics team. There are doubts that any deal will actually go through because the Canadian military would face high maintenance and training costs by bringing in a new aircraft in small numbers into the Canadian Air Force.

Aero Vodochody entered into an agreement with Saab and Gripen International during 2008 to help market 47 or so single-seat L-159 attack aircraft on the used market. The agreement also calls for the companies to cooperate on development and upgrade of the L-159 trainer, among other provisions.

Aero Vodochody has completed a project to convert four surplus L-159As into two-seat L-159T1s for the Czech Air Force, but no other orders for the aircraft are on the books.

New-build aircraft have been offered to Greece to fill a requirement for advanced jet trainers, but the

competition for that order is fierce, and the L-159 is going up against aircraft with a more certain long-term future. Greece is unlikely to opt for a training solution without assurance of long-term support and future upgrades for the aircraft.

Indonesia's air force was reportedly firming up an L-159 order in 2006, but a deal did not materialize and now appears dead. The manufacturer has also held preliminary talks with Venezuela regarding the purchase of L-159s stripped of U.S. systems and equipment, but in August 2006 it was announced that the Czech Ministry of Foreign Affairs had refused to permit the proposal to go forward. No explanation was provided.

Nigeria emerged in mid-2007 as a potential buyer of the L-159 to replace its fleet of aging Dassault-Breguet/Dornier AlphaJets, but the African nation is looking for used aircraft from Czech Air Force stocks rather than new-build L-159s.

Bolivia was another potential customer – for 6 to 10 surplus aircraft, but after six months of negotiations talks broke down after it became clear that the Bolivian Air Force could not afford the asking price. Negotiations were conducted through EADS, which was looking to set up a cash/barter deal that would have seen the Czech Air Force trade an undetermined number of L-159As for two new C-295 transports. A similar deal with EADS later went through in 2009, with the Spanish Air Force taking four L-159s in payment for one of four CASA C-295Ms ordered by the Czechs.

We will continue to watch for further orders for the L-159, but we are not currently forecasting new production.

Aero L-159

## Ten-Year Outlook

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No further production is forecast.

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