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# **Type Acceptance Report**

**TAR 5/21B/12**

**IAI 1124A WESTWIND**



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## Executive Summary

New Zealand Type Acceptance has been granted to the IAI Model 1124 Series based on validation of CAAI Type Certificate A2IL. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(2).

## 1. Introduction

This report details the basis on which Type Acceptance Certificate No.5/21B/12 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

## 2. Foreign Type Certificate Details

Manufacturer: Israel Aircraft Industries Limited

Model(s): 1124A

Type Certificate: A2IL

Issued by: Civil Aviation Administration of Israel

MCTOW 23,500 lb.

No. of Seats: 12

Noise Standard: FAR 36 including Amendment 36-8

**Engine:** TFE731-3-1G

Type Certificate: E6WE

Issued by: Federal Aviation Administration

### 3. Type Acceptance Certificate

The application for New Zealand type acceptance was from Air National Corporate Ltd, dated 14 October 2004. The first-of-type example was serial no. 339, registered ZK-RML. The Westwind is a ten-passenger twin-turbofan mid-wing pressurised business jet.

Type Acceptance Certificate No. 5/21B/12 was granted on 9 June 2005 to the IAI Model 1124A based on validation of CAAI Type Certificate number A2IL, and includes the Garrett TFE731-3 Series engine based on FAA Type Certificate E6WE. There are no special requirements for import into New Zealand.

The IAI Westwind 2 is the final evolution of the original Model 1121 Jet Commander configuration, production of which was transferred to Israel Aircraft Industries on 19 July 1969. The first major development in 1971 was the Model 1123 Commodore Jet, with a 22" fuselage stretch; higher weights and increased engine thrust; two 130 gallon wing tip fuel tanks; high-lift wing with double-slotted flaps and drooped leading edge; APU as standard for battery charging and air conditioning; and new interior. This was further developed into the Model 1124 Westwind, primarily by installation of the AiResearch TFE731 turbofan engine, with weights increased again, various systems improvements and new cockpit arrangement, and additional aerodynamic refinements. The advanced Model 1124A Westwind 2 has winglets on the tip tanks, vortex generators and new leading edge profile, to yield improved specific range and higher subsonic mach number ( $M_d = 0.85$ ).

### 4. Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) Type certificate:

Israel Ministry of Transport CAA – Aircraft Type Certificate Number A2IL  
– Model 1124A approved 11 December 1979  
CAA TCDS Number A2IL at Revision 6 dated 15 February 1981

FAA TC Number E6WE – Model -3 approved September 12, 1974  
FAA TCDS Number E6WE at Revision 17 dated May 9, 2000

(2) Airworthiness design requirements:

The certification basis of the Model 1124A is CAR 4b effective 31 December 1953 including amendments through 4b-11; additional paragraphs at 4b-12; plus some paragraphs replaced by the equivalent FAR 25 paragraph up to Amendment 25-34, as detailed on the TCDS; SR422b (which introduced performance, Flight Manual and weight limitation requirements for turbine-powered aircraft) and SR450A. Some Special Conditions were reviewed and accepted by the CAA. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as CAR 4b is the predecessor of FAR Part 25, which is the basic standard for Transport Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

FAA Special Conditions Letter dated 13 December 1963 (Model 1121)

FAA Letter dated June 2, 1964 amending the Model 1121 certification basis:  
(Permits use of a demand crew system and a constant flow oxygen system for the passengers.)

FAA Special Conditions No. 25-37-EU-8 (Model 1123): Covers requirements for Turbulence Criteria; Out-of-Trim manoeuvring stability and controllability; Vibration and Buffeting; Gas Turbine APU Installation; FAR 25 Fuel System provisions.

CAAI Special Conditions Letter dated 25 November 1975 (Model 1124): Covers requirements to ensure that an In-Flight Thrust Reverser unwanted deployment will not result in uncontrollable flight; and emergency power provisions for in-flight engine restarting.

The certification basis of the TFE731-3 is FAR Part 33 with Amendments 1-3. This is the basic standard for aircraft engines called up under Part 21 Appendix C.

FAA Special Condition No. 33-44-WE-13 for AiResearch TFE731 Engine: Requires guarding of all external lines, fittings, or components that contain flammable fluid because the engine has higher surface temperatures which present an increased risk of ignition of leaking fluids.

(3) Certification compliance listing:

IAI Report No. 4650/19470 – WW 1124A Compliance Check List – 9.2.81  
(Covers substantiation of changes from Model 1124 only.)

Summary and Reference of FAA Certification Tests for the AiResearch Model TFE731-3 Turbofan Engine – Report 74-210835(0) dated August 9, 1974

(4) Flight manual: CAAI-Approved 1124A Westwind Flight Manual  
CAA Accepted as AIR 2884

(5) Illustrated Parts Catalogue:

Included on airframe CD-ROM and engine website – See below:

(6) Maintenance manual and service data for aircraft and engine:

Westwind Maintenance Library 2004-03 supplied, containing:

Aircraft Maintenance Manual	Illustrated Parts Catalog
Wiring Diagram Manual	Phase Inspection Program
Structural Inspection Program	Service Information Letters
Service Bulletins	Maintenance and Operation Letters
Service Letters	Grumman Thrust Reverser 5000 Hour Inspection

The following engine publications are available through the Honeywell electronic publications website [www.honeywell.com/esource](http://www.honeywell.com/esource):

72-00-74 Rev. 22, IPC – TFE-3-ALL/-3D-ALL/-3DR-ALL/-3R-ALL	
72-02-15 Rev. 4, Turbofan Engine Light Maintenance Manual	
20-00-02/70-00-01 Rev. 7, Standard Practices Manual	
Service Bulletins	Service Information Letters
Spare Parts Bulletins	Operating Information Letters

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

CAA 2171 form from IAI Commercial Aircraft Group dated 18 October 2004

(8) Other information:

IAI Report 4650/17334 – Westwind Model 1124A Technical Specification

IAI EO 4361/800206 – Electrical Loads Analysis for Westwind Model 1124A

IAI EO 650/09018 – Westwind 1124 & 1124A Master Equipment/Check Off List

IAI Report No. 2520W/339-4 Avionics & Furnishing Equipment List A/C 339

1124A Westwind – Operational Planning Manual

## 5. Additional New Zealand Requirements

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

### Civil Aviation Rules Part 26

#### Subpart B – Additional Airworthiness Requirements

##### Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements - CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

##### Appendix C - Air Transport Aircraft - More than 9 Pax

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
C.1	Doors and Exits	CAR 4b.354(b) and (e); CAR 4b.362(g)
C.2.1	Additional Emergency Exits per FAR 23.807(b) @ 10.5.93	1124A has emergency exits on both sides of the cabin
C.2.2	Emergency Exit Evacuation Equipment – Descent means	Not Applicable – Exits less than 2m from the ground
C.2.3	Emergency Exit Interior Marking - Size/self-illuminating	<b>COMPLIANCE REQUIRED if used for AIR TRANSPORT</b>
C.3.1	Landing Gear Aural Warning - Automatic Flap Linking	CAR 4b.334(e)(2)

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

### Civil Aviation Rules Part 91

#### Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	<i>Operating Rule – Compliance as applicable</i> – On s/n 339 inertial shoulder harness fitted integral with crew seats
91.507	Pax Information Signs - Smoking, safety belts fastened	N/A – Pilots have direct communication with passengers
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	CAR 4b.603(a) * Item 21.9 CAR 4b.603(j) * Item 21.9 CAR 4b.603(b) * Item 21.3 CAR 4b.603(h) * Item 22.7 CAR 4b.604(f) * Item 10.19 CAR 4b.604(k) * Item 1.18 CAR 4b.604(h) * Item 1.20
91.511 Night	(1) Turn and Slip (2) Position Lights	(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	(3) Anti-collision Lights (4) Instrument Lighting (5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent
	* Fitted as Standard – See EO Report No. 4650/9018 I.A.I. Model 1124/1124A Master Equipment List / Check Off List	N/A – Turbojet powered CAR 4b.604(j) * Item 1.20 N/A – Turbojet powered N/A – Turbojet powered CAR 4b.323(e) * Item 9.14 CAR 4b.334(e)(1) CAR 4b.622(d)
91.519	IFR Communication and Navigation Equipment	CAR 4b.603(f) * Item 21.16 CAR 4b.632 * Item 23.3
91.523 Emrgcy Eqpmt.	(a) More Than 9 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily acceptable to crew (c) More than 61 pax - Portable Megaphones per Table 9	CAR 4b.603(d) * Item 20.1 CAR 4b.603(c) * Item 21.17 CAR 4b.612(a)(5) * Item 24.1 CAR 4b.603(i) * Item 21.5
91.529	ELT - TSO C91a after 1/4/97 (or replacement)	Standard Avionics Package includes dual Collins VHF-20A , VIR-30A, single Collins DME-40 and ADF-60A
91.531	Oxygen Indicators - Volume/Pressure/Delivery	<i>To be determined on an individual aircraft basis</i> <i>To be determined on an individual aircraft basis</i> Not Applicable – Less than 20 passengers Not Applicable – Less than 61 passengers
91.535	Oxygen Equipment for Pressurised Aircraft (1) Flight Crew Member On-Demand Mask; 15 min PBE (2) 1 Set of Portable 15 min PBE (3) Crew Member - Pax Oxygen Mask; Portable PBE 120l (4) Spare Oxygen Masks/PBE (5) Min Quantity Supplement Oxygen (6) Required Supplemental/Therapeutic Oxygen	<i>To be determined on an individual aircraft basis</i>
		<i>Operating Rule – Compliance as applicable</i> The standard oxygen system consists of a high pressure supply system manifold through a pressure reducer/regulator which separates the crew and passenger systems. Pilots are provided with either pressure breathing or diluter demand regulators and quick-donning masks. (On s/n 339 Scott MC-1A-14-100 masks to TSO C89 were fitted.)

	Above FL250 - Quick-Donning Crew On-Demand Mask - Supplemental O <sub>2</sub> Masks for all Pax/Crew - Supplemental Mask in Washroom/Toilet Above FL300 - Total Outlets Exceed Pax by 10% - Extra Units Uniformly Distributed - Automatically Presented Above FL140 - Manual Means of Deploying Pax Masks	A constant flow automatic drop-out oxygen mask is stowed above each pax seat, including the lavatory. (On s/n 339 11 masks were found fitted in cabin and 2 in the lavatory) Oxygen is supplied from one 48 cu.ft. @ 1800 psi cylinder Maximum Operating Altitude of Model 1124A is 45,000 ft. Masks drop when cabin altitude exceeds 13,500 ± 500 ft. An oxygen duration chart is provided in the AFM (Fig. 7-2)
91.541	SSR Transponder and Altitude Reporting Equipment	Standard Avionics Package includes dual Collins TDR-90
91.543	Altitude Alerting Device - Turbojet or Turbofan	Standard Avionics Package includes Collins PRE-80A
91.545	Assigned Altitude Indicator	Not Applicable – Selector/Alerter fitted as standard
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

## Civil Aviation Rules Part 125

### Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
125.355	Seating and Restraints	Pilots' shoulder harness fitted as integral std part of seats
125.357	Additional Instruments (Powerplant and Propeller)	Has all the instruments required by FAR §25.1505
125.359	Night Flight	Landing light, Pax compartment
125.361	IFR Operations	Speed, Alt, spare bulbs/fuses
125.361	SE IFR Requirements – If Applicable	<i>Operating Rule – Compliance as applicable</i>
125.363	Emergency Equipment (Part 91.523 (a) and (b))	Not Applicable – Not a single-engined aeroplane
125.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operating Rule – Compliance as applicable</i>
125.365	Public Address and Crew Member Intercom System	<i>Operating Rule – Compliance as applicable</i>
125.367	Cockpit Voice Recorder - Appendix B.3 requires TSO C84/C123	<i>Operating Rule – Compliance as applicable</i>
125.369	Flight Data Recorder – Appendix B.4 requires TSO C124	<i>Operating Rule – Compliance as applicable</i>
125.371	Additional Attitude Indicator	<i>Operating Rule – Compliance as applicable</i>
125.373	Weather Radar – Appendix B.6 requires TSO C63	Standard Avionics Package includes Collins WXR-300
125.375	Ground Proximity Warning System Appendix B.7 requires TSO C92	<i>Operating Rule – Compliance as applicable</i>
125.377	HUMS	Not Applicable – Not a single-engined aeroplane
125.379	Terrain Awareness and Warning System (TAWS) Appendix B.9 requires TSO C151a or b	<i>Operating Rule – Compliance as applicable</i> Universal TAWS A fitted to s/n 339 per STC #ST01098WI
125.381	Airborne Collision Avoidance System (ACAS II) Appendix B.10 requires TSO C118/119a or C119b	<i>Operating Rule – Compliance as applicable</i> CAS-67A TCAS II fitted s/n 339 per STC #ST00256NY-D

## Attachments

The following documents form attachments to this report:

- Photographs first-of-type example 1124A serial number 339 ZK-RML
- Three-view drawing Israel Aircraft Industries Model 1124A Westwind 2
- Copy of CAAI Type Certificate Data Sheet Number A2IL

## Sign off

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David Gill  
Team Leader Airworthiness

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Checked – AWE3  
Date: 9 June 2005

## Appendix 1

### List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
1124A Westwind 2	Air National Corporate Ltd	5/21B/12	9 June 2005