Type Acceptance Report

TAR 9/21B/9 – Revision 1

BAe 146 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the BAe 146 Series based on validation of both EASA Type Certificate number A.182 and Transport Canada Type Certificate number A-152. 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(c).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.9/21B/9 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.

The report also notes the status of all models included under the foreign type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report. Models which were accepted prior to that under NZCAR Section B.9 are listed in Appendix 1.

2. ICAO Type Certificate Details

Manufacturer:	British Aerospace PLC
TC Holder:	BAE SYSTEMS (Operations) Limited
Type Certificate:	A.182
Issued by:	European Aviation Safety Agency
	A-152
	Transport Canada
Model:	BAe 146 Series 200
MCTOW	40,596 kg. [89,500 lb.] – Basic (Mod. HCM 00021A)
	42,184 kg. [93,000 lb.] – Absolute (Mod. HCM 00021U)

Max. No. of Seats:	118
Noise Standard:	UK BCAR Section N, Issue 2, Chapter N3-1, 3 (EASA) FAR 36 including Amendments 36-1 through 36-12 (FAA/TC)
Engine:	Avco Lycoming ALF502R-3A or R-5
	Type Certificate: E6NE Issued by: Federal Aviation Administration

3. Type Acceptance Details

The application for New Zealand type acceptance of the British Aerospace BAe 146 Series 200 under Transport Canada type certification was from Air National Corporate Limited, dated 23 October 2008. The first-of-type example was MSN E2130, registered ZK-ECO. The BAe 146 is a high-wing regional airliner with four podded turbofan engines.

Type Acceptance Certificate No. 9/21B/9 was granted on 30 January 2009 to the BAe 146 Series 200 based on validation of Transport Canada Type Certificate A-152. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The HS 146 was first proposed in the early 1970s as a quiet short-haul jet transport. The prototype BAe 146 Series 100 first flew in 1981 after a protracted development history, and the first example was delivered to Dan Air in 1983. The Series 200 had the fuselage lengthened by five frame pitches. The Series 300 was a later development with a further 8 feet fuselage stretch, although the maximum passenger capacity is the same unless Type III underwing exits are installed. The aircraft was marketed as the "Whisperliner". (MSN E2130 was originally delivered as a Series 200-11 Model AC2 with a 5-abreast 85-seat passenger layout and the new "wide" cabin interior.) The 146 was succeeded by the RJ family, which used the improved FADEC-equipped LF507 engine and had digital avionics.

The BAe 146 Series 200A and 300A were first introduced into New Zealand in 1988 by Ansett New Zealand, under FAA Type Certificate A49EU. (ZK-NZA through ZK-NZN.) The aircraft were subsequently converted to the Model 200/300 under UK CAA Type Certificate BA16. Later the prototype BAe 146-200QC also operated here. (FAA models use the suffix A. Transport Canada certification is based on FAA type certification, but uses the British model designation.) Service Bulletin SB-01-37-20004B defines the differences between FAA and CAA type certification standards to aid conversion of a BAe 146 from FAA to CAA specification. The minimum modifications specified for the FAA relate to non-metric instrument units and placards, an increased MMo of 0.73, and the Flight Idle baulk setting increased from 60% to 67% N_2. The A-152 TCDS prescribes a list of modifications which must be fitted for all aircraft registered in Canada, which includes: Two position flight idle baulk (optional for JAR/FAR); External fuel capacities markings to include litres; Low friction door seals with vent hole deletion, and modified hydraulic system (for operation below -40º C); Airbrake, throttle and flap control changes (improved reliability); Terminal block shielding (flammability protection); Improved lightning strike protection at wing lower skin; and Modified FDR recording Transport Canada parameters (CAA Spec.10 but with Engine N_1 and TAT frequency increased to 1 measurement/sec.)

4. NZCAR §21.43 Data Requirements

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) ICAO Type certificate:

EASA Type Certificate Number A.182

EASA Type Certificate Data Sheet number A.182 at Issue 1 dated 11 June 2008
– Model 146 Series 200 approved 3 June 1983
– Model 146 Series 300 approved 6 September 1988

Transport Canada TCDS number A-152 at Issue 4 dated August 18, 1998
– Model 146 Series 200 approved April 28, 1987

FAA Type Certificate Data Sheet A49EU at Revision 13 dated March 28, 2007
– Model 146 Series 200A approved June 13, 1983
– Model 146 Series 300A approved October 28, 1988

UK CAA Type Certificate Data Sheet BA 16 Issue 7 December 1989 (superseded)

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:
The EASA certification basis of the BAe 146 Series 100/200 is JAR Part 25 at Change 5, Large Aeroplanes, plus compliance with UKCAA Airworthiness Notices and Specifications, plus Additional Items and Complementary Conditions, all as specified on the TCDS. For the Series 200 MZFW increase some paragraphs of JAR 25 were raised to Change 10, while for the Series 300 some further paragraphs were updated to Change 10 and Change 12, as noted on the TCDS.

The FAA certification basis of the BAe 146 (100A/200A) is FAR 25, effective 1 February 1965, including Amendments 25-1 through 25-43; plus some paragraphs voluntarily complied with at a later Amendment status, as specified on the TCDS. The Transport Canada certification basis is identical, with the addition of some Canadian Airworthiness Manual requirements. There were three equivalent safety findings and one exemption. These have been reviewed and accepted by the CAA.

These are both acceptable certification bases in accordance with NZCAR Part 21B Para §21.41, because FAR Part 25 is the basic standard for Transport Category Airplanes called up under Part 21 Appendix C and JAR 25 is accepted as an equivalent in Advisory Circular 21-1A. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) Special Conditions:
Complimentary Conditions "not covered in JAR which are considered by CAA to be applicable to the BAe 146 aircraft." Reference C1 thru C36 and D1 thru D17.

(iii) Equivalent Level of Safety Findings:
FAA and Transport Canada:
FAR 25.613-615 – The FAA accepted the technical standards that are contained in the BAe 146 supplement to the British Aerospace Design Handbook.

FAR 25.773(b)(2) – FAA criteria for acceptance of the lack of an openable window for forward vision was satisfied by: segregation of electrical supplies to screen heating and windscreen wipers; fitting of an independent rain repellent system in addition to the window wash system; demonstration of resistance to hail damage; and satisfactory flight testing of systems to show the aircraft can be safely landed using any one of four flight deck windscreens available.

FAR 25.1091(e) – To show compliance with FAR §33-77 for the ALF502R-5 Avco Lycoming undertook an analysis which showed the effect of ingestion of a 4 lb. piece of tyre was no worse than a 4 lb. bird. The engine was cleared for bird ingestion as part of the basic certification, and hence it was claimed that compliance with §33-77 was shown. This was accepted by the FAA.

(iv) Exemptions:

FAA and Transport Canada:

Exemption No. 3639 (Regulatory Docket No.23116) FAR §25.807(c)(1) – BAe requested an alternative exit arrangement of four Type I exits in lieu of Two Type I and four Type III exits. BAe contended that the Type III exit was not appropriate to the high-wing underslung engine configuration. Further mitigating factors were the Type I exits were larger than required and were equipped with automatically-deployed inflatable self-supporting slides. The FAA also carried out a parametric analysis as related to the regulatory history of emergency egress size provisions and rates.

(v) Airworthiness Limitations:

HTD-R-462-00/SC.0067 – B.Ae.146 Series 200A Airworthiness Limitations
HTD-R-463-00/SC.0264 – B.Ae.146 Series 300A Airworthiness Limitations
See Also Aircraft Maintenance Manual – Chapter 5

Avco Lycoming Service Bulletin No. ALF502-72-0002

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:

The BAe146 Series 100A/200A have been approved to meet the fuel venting requirements of SFAR 27, including Amendments 27-1 through 27-4, and the noise requirements of FAR Part 36, including Amendments 36-1 through 36-12.

(ii) Compliance Listing:

UK CAA Noise Type Certificate 55 – BAe 146 Series 200

(4) Certification Compliance Listing:

British Aerospace HFD-R-460-5439 – B.Ae.146 Index of C of A Reports (JAR)

HAW.N.463.00.0600 and AW0620 – BAe 146-300/300A Compliance Document

B.Ae.146 Series 200-11 – File No. HC000 H0016 Volumes 1/2 – Type Record
B.Ae.146 Series 300 – File No. HC000 H0018 Volumes 1/2 – Type Record

HAW.D.462.AW0697 – BAe 146-200A NZ Type Certification Compliance Document Against CASO Number 11 Provision and Use of Oxygen in Aircraft

HSY/N/460-35/F.0457 Issue 3 – BAe 146 Oxygen System (description)

HAW.D.462.AW0675 – BAe 146-200A NZ Type Certification Compliance Record and Document References Against NZCAR Volume 1 Section C4

HAW.D.463.AW0726 – BAe 146-300A NZ Type Certification Compliance Record and Document References Against NZCAR Volume 1 Section C4

UK CAA Airworthiness Approval Note 20866 – BAe 146 Series 200: E2090 Mod. No. HCM 60073Z – Introduction of Model ZX1 for a Canadian Operator – Air BC

UK CAA Airworthiness Approval Note 21238 – BAe 146 Series 200: E2130 Mod. HCM 60083Z – Introduction of Model AC2 for a Canadian Operator – Air Nova

(5) Flight Manual: UK-CAA Approved Flight Manual for the BAe 146-200
Document No. BAe 3.9 – CAA Accepted as AIR 3085

EASA-Approved Flight Manual BAe 146/AVRO 146-RJ Series
Document Number BAE 5.1 – CAA Accepted as AIR 3099
(Previous AFM 3.5 and 3.10 are no longer supported.)

(6) Operating Data for Aircraft and Engine:

(i) Maintenance Manual:
The following documents are available on the *iSAPPHIRE* system:

Maintenance Review Board Report	MRB-146-01
Maintenance Planning Document	MPD-146-01
Aircraft Maintenance Manual	AMM-146-*
BAE Systems Components Maintenance Manual	BAE-CMM
Structural Repair Manual	SRM-146-01 and -03
Wiring Manual	WM-146-*
Suupplemental Structural Inspections Document	SSID-146-02
Corrosion Protection Control Programme	CPCP-146-01
BAe 146 Manufacturers Operations Manual	MOM-146-*

* indicates document is customised for the individual operator

(ii) Current service Information:
Manufacturer's Service Bulletins

(iii) Illustrated Parts Catalogue:

Illustrated Parts Catalogue	IPC-146-*

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

British Aerospace has provided CAA with access to the *iSAPPHIRE* system.

(8) Other information:

British Aerospace 146 Series 200-01 Turbofan Airliner – Type Specification for Basic Aircraft 46L – Issue No.4 – June 1986

HC000H1183 Issue 13: BAe 146 Aircraft Master Definition Series 200 Model AC2

HSY/N/146-31/EL2985 BAe 146 Canadian Certification Requirements for Flight Data Recorders and Cockpit Voice Recorders on BAe146 Aircraft – 21 Feb 1979

HSY/N/146-31/EL3351 BAe146 Canadian Cert. Requirements FDR – 9 July 1986

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	***To be determined on an individual aircraft basis***
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

Appendix C – Air Transport Aeroplanes – More than 9 Pax

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
C.1	Doors and Exits	FAR Part 25 §25.809(b) Amdt 25-32 Eff May 1,, 1972
C.2.1	Additional Emergency Exits – per FAR 23.807(b) @ 10.5.93	Meets FAR Part 25 Certification requirements
C.2.2	Emergency Exit Evacuation Equipment – Descent means	FAR Part 25 §25.809(f) Amdt 25-32 Eff May 1, 1972
C.2.3	Emergency Exit Interior Marking – Size/self-illuminating	FAR Part 25 §25.811(e), Amdt 25-32 Eff May 1, 1972 FAR Part 25 §25.812(b) Amdt 25-32 Eff Mar 1, 1972
C.3.1	Landing Gear Aural Warning – Automatic Flap Linking	FAR Part 25 §25.729(e) Amdt 25-23 Eff May 8, 1970

Appendix D – Air Transport Aeroplanes – More than 19 Pax

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
D.1.1	Exit Types – Shall be per FAR 25.807 @ 29.03.93	FAR Part 25 §25.807(g) Amdt 25-15 Eff Oct 24, 1967
D.1.2	Floor Level Exits – Definition	FAR Part 25 §25.807(a) Amdt 25-15 Eff Oct 24, 1967
D.2.1	Additional Emergency Exits – Must meet requirements	BAe 146 has four Type I exits which meet FAR 25
D.2.2	Emergency Exit Access – All Required Exits must have: Passageway unobstructed 500m wide between areas and leading to a Type I or II Exit; Crew assist space; Access to Type III or IV Exit is unobstructed Internal doors must be able to be latched open – placarded	FAR Part 25 §25.813 Amdt 25-17 Eff Jun 20, 1968 *NOTE: AAN 21238 states that there was a non-compliance with FAR §25.813(b) "Assist Space" for E2130, due to the stowage unit in the forward vestibule. Transport Canada accepted this derogation.*
D.2.3	Emergency Exit Operating Handles – Markings/Lighting	FAR Part 25 §25.811(e) Amdt 25-32 Eff May 1, 1972
D.2.4	Emergency Exit Evacuation Equipment – Descent means	FAR Part 25 §25.810 Amdt 25-15 Eff Oct 24, 1967
D.2.5	Emergency Exit Escape Route – Must be slip resistant	FAR Part 25 §25.803(e) Amdt 25-32 Eff Mar 1, 1972
D.2.6	Emergency Lightning (a) Switch Provisions; Uninterrupted Power; Last 10 min. (b) Descent Illumination – Automatic and Independent	 FAR Part 25 §25.812(f) Amdt 25-32 Eff May 1, 1972 FAR Part 25 §25.812(h) Amdt 25-32 Eff May 1, 1972
D.2.7	Emergency Interior Lighting – independent supply; min. Illumination; incl. Floor proximity escape path markings	FAR Part 25 §25.812(c) & (e) Amdt 25-32 Eff May 1, 1972
D.2.8	Emergency Exterior Lighting – in effect 30.04.72 or later	FAR Part 25 §25.812(f) & (g) Amdt 25-32 Eff May 1, 1972
D.2.9	Emergency Exit Interior Marking – Clear; instructions Location signs above routes, by exits, on bulkheads Meet provisions in effect 30 April 1972, or later Minimum brightness 250 microlamberts	FAR Part 25 §25.811 Amdt 25-32 Eff May 1, 1972 Meets FAR Part 25 certification requirements
D.2.10	Emergency Exit Exterior Markings – 2" contrasting band; opening instructions in red or bright chrome yellow;	FAR Part 25 §25.811(f) Amdt 25-32 Eff May 1, 1972
D.3	Lavatory Fire Protection – Placards; Exterior ashtray; Waste Bin – Sealed door; built-in fire extinguisher; smoke detector system with external warning	AD DCA/GEN/7A (FAA AD 74-08-09R2); DCA/GEN/16 FAR Part 25 §25.791(d) Amdt 25-32 Eff May 1, 1972 *See BAe 146 Detailed Specification §26.5*
D.4	Materials for Compartment Interiors – T/C after 1.01.58: (b) Manufactured 20/8/88 – 20/8/90 – Meet heat release requirements of FAR 25 at 20.08.86 increased to 100/100 Manufactured after 20/8/90 – Meet heat release rate and smoke tests of FAR Part 25 in effect 26.09.88 (c) Seat cushions (except flightdeck) must be fireblocked	DCA/GEN/15 [FAR 25 §25.853(c) Amdt 59 Eff 26/11/84]; DCA/GEN/21 [FAR §121.312(a) @ 121-198 Eff 26/9/88] UK CAA Airworthiness Notice 61 – *NOTE: E2130 was delivered with some items not shown to be in compliance with this requirement. (See HAW.R.463.AW0705) BAe advise test results for the items now confirm compliance.*
D.5	Cargo and Baggage Compartments – T/C after 1.01.58: (a) Each C or D compartment greater than 200 cu ft shall have liners of GFRS or meet FAR 25 in effect 29.03.93 (c) Liners shall be separate from the aircraft structure	AD DCA/GEN/22 [FAR §25.855 Amdt 25-32 Eff May 1, 1972 & Part §121.314 Amdt 121-202 Eff Mar 20, 1989] Both underfloor cargo compartments are FAR Class D

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	Seating and Restraints – Safety belt/Shoulder Harness		FAR Part 25 §25.785 Amdt 20 Eff March 18, 1969	
91.507	Pax Information Signs – Smoking, safety belts fastened		FAR Part 25 §25.791 Amdt 25-32 Eff May 1, 1972 *See BAe146 Detailed Specification §33.5.2*	
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR 25.1303(b)(1)/*DS §34.3.1* *See Detailed Spec. §34.3.1* FAR 25.1303(b)(2)/*DS §34.3.1* FAR 25.1303(a)(3))/*DS §34.2.1* FAR 25.1305(a)(2)/*DS §28.6.1* FAR 25.1305(c)(3)/*DS §77.3* FAR 25.1305(a)(4)/*DS §79.3*	(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter	Not Applicable – Turbojet FAR 25.1305(a)(6)/*DS §79.3* Not Applicable – Turbojet Not Applicable – Turbojet *See Detailed Spec. §27.3.1* *See Detailed Spec. §32.6* *FAR 25.1351 (b)(6)/DS §24.7*
91.511 Night	(1)Turn and Slip (2) Position Lights	FAR 25.1303(b)(4)/ *DS §* FAR 25.1389/ *See DS §33.2.2*	(3) Anti-collision Lights (4) Instrument Lighting	FAR 25.1401/*See DS §33.2.2* *See Detailed Spec. §33.3.2*
91.513	VFR Communication Equipment		Two VHF meeting ARINC 566A fitted as Std – *See DS 23.1.1*	
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	FAR 25.1303(b)(5)/*DS §34.2.2* FAR 25.1303(b)(6)/*DS §34.2.2* FAR 25.1331(a) FAR 25.1303(b)(2)/*§34.3*	(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent	FAR 25.1303(a)(1) FAR 25.1303(a)(2) FAR 25.1323(e)/ *DS §30.5* FAR 25.1303(b)(3)/*DS §34.3.1*
91.519	IFR Communication and Navigation Equipment	Standard Avionic Equipment includes: Single Marker System meeting ARINC 406A/2; Dual DME meeting ARINC 568; Dual VOR meeting ARINC 547; Single ADF meeting ARINC 570 – *See Detailed Spec. §34.2*		
91.523	Emergency Equipment: (a) More Than 9 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily accessible to crew (c) More than 61 pax - Portable Megaphones per Table 9		 ***Operating Rule – Compliance to be determined by Operator*** ***Operating Rule – Compliance to be determined by Operator*** ***Operating Rule – Compliance to be determined by Operator*** ***Operating Rule – Compliance to be determined by Operator***	
91.529	ELT – TSO C126 406 MHz after 1/072008		***Operating Rule – Compliance to be determined by Operator***	
91.531	Oxygen Indicators - Volume/Pressure/Delivery		FAR Part 25 §25.1441 through 25.1450	
91.535	Oxygen 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) Minimum Quantity Supplement Oxygen (6) Required Supplemental/Therapeutic Oxygen Above FL250 - Quick-Donning Crew On-Demand Mask - Supplemental O_2 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		 Oxygen Mask provided for each pilot and observer position. One portable breathing set with full-face mask in the cockpit. One portable set of 4.5 cu.ft. provided at each attendant seat. 2x extra 11 cu.ft. sets with continuous-flow masks provided. See Operations Manual Vol .1, §8.1.16 ***Note: To meet FAR 121 for flight up to FL300 with 93 pax two 3200 litre oxygen cylinders are required*** EROS quick-donning masks fitted as std – See MOM 9.45.16 Fitted as Standard – See HSY/N/460-35/F.0457 For aircraft with BAe Mod. HCM 50043A&B the maximum en-route altitude is 31,000 ft. Deployment automatic when cabin altitude 13,250-14,500 ft. Manual deployment by DROP OUT OVRD switches	
91.541	SSR Transponder and Altitude Reporting Equipment		ATC Tx meeting ARINC 572 fitted as Standard – *See §34.2.8*	
91.543	Altitude Alerting Device - Turbojet or Turbofan		Fitted as part of Autopilot system – *See DS §22.2*	
91.545	Assigned Altitude Indicator		Not Applicable – Altitude Alerting Device fitted	
A.15	ELT Installation Requirements		***To be determined on an individual aircraft basis*** (Kanad 406ELT installed under BAe SB 25-493-60693B)	

See BAe 146 Detailed Specification Part I for general requirements, Part II for specific equipment types.

Civil Aviation Rules Part 121

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:
121.355	Additional Instruments (Powerplant and propeller)		FAR Part 25 is a Part 21 Appendix C standard
121.357	Additional Eqpt – Windscreen Wiper, Door, Key, Placard		*See BAe 146 Detailed Specification §30-7.1 and §25.1.3*
121.359	Night Flight - Landing Light, Light in each pax cabin		*See BAe 146 Detailed Specification §33-2.3 and §33-3.3*
121.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***Operating Rule – Compliance to be determined by Operator***
121.363	Flights over water	Liferafts	***Operating Rule – Compliance to be determined by Operator***

121.365	Emergency Equipment	Per §91.523 and EROPS kit	***Operating Rule – Compliance to be determined by Operator***
121.367	PBE	TSO C99 cockpit equipment TSO C115 cabin equipment	***Operating Rule – Compliance to be determined by Operator*** (EROS MC10-06 cockpit oxygen masks fitted as standard.)
121.369	Pax Address, Intercom	Meets FAR § 121.318 and 319.	PA System meeting ARINC 560 fitted as Std – *See DS 23.1.2* Cabin interphone system fitted as Standard – *See DS §23.1.3(i)*
121.371	Cockpit Voice Recorder – Appendix B.5 requires TSO C84/C123 (TC calls up UK CAA Spec. No.11 – CVR)		CVR Meeting ARINC 557 fitted as Std – *See Detailed Spec. §23.1.4* – Part II specifies Fairchild A100
121.373	Flight Data Recorder – Appendix B.6 requires TSO C124 (BAe 146 TC calls up UK CAA Spec. No. 10 – FDR)		Aircraft designed to accept 64 Channel FDR – *SEE DS §31.1* Part II specifies Plessey-Lockheed PV-1584J
	NOTE: The standard PV1584 Plessy/Lockheed FDR meets FAR 37.150 and TSO-C51A, with parameters per CAA Specification 10. To meet Canadian certification requirements the recording intervals of some parameters were reduced.		
121.375	Additional Attitude Indicator		SFENA standby AI fitted as Std – *See DS Part II §34.3.1*
121.377	Weather Radar – Appendix B.8 requires TSO C63		Weather Radar fitted as Std – *See Detailed Spec. §34.2.4*
121.379	Ground Proximity Warning System – Appendix B.9 requires TSO C92 (TC calls up UK CAA Spec.14 GPWS)		GPWS meeting ARINC 594 fitted as Std – *See DS §34.2.6* Part II specifies Sundstrand Mk.2
121.381	Terrain Awareness and Warning System (TAWS) Appendix B.10 requires TSO C151a or b		***Operating Rule – Compliance to be determined by Operator***
121.383	Airborne Collision Avoidance System (ACAS II) Appendix B.11 requires TSO C119b		***Operating Rule – Compliance to be determined by Operator***

Attachments

The following documents form attachments to this report:

Photographs first-of-type example BAe 146-200 MSN E2130 ZK-ECO
BAe Drawing HC000H0007 – BAe 146 Series 200 – Pictorial G.A. of Aircraft
Copy of EASA Type Certificate Data Sheet EASA.A.182
Copy of Transport Canada Type Certificate Data Sheet Number A-152

Sign off

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David Gill — Checked – Peter Gill
Team Leader Airworthiness — Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
BAe146 Series 200/200A (EASA/FAA)		AC 21-1.2/NZCAR Part 21 Appendix A(c)	
BAe146 Series 300/300A (EASA/FAA)		AC 21-1.2/NZCAR Part 21 Appendix A(c)	
BAe146 Series 200 (TC)	Air National Corporate Ltd	9/21B/9	30 January 2009
BAe146/RJ Series (BAE 5.1 AFM)	Air National Corp. Ltd	10/21B/5	14 August 2009