EUROPEAN AVIATION SAFETY AGENCY



Operational Evaluation Board Report

ATR 42/72

Flight Crew Qualifications

Revision 3

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European Aviation Safety Agency
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ATR 42/72

Operational Evaluation Board (OEB) - Flight Crew Qualifications



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Revision Record

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Original	ATR 42/72 Initial Evaluation	18 Apr 2005
Draft Rev 1	ATR 42/72 - 600 evaluation added	04 May 2012
Rev 1	Editorial Amendments	05 Jul 2012
Rev 2	ATR 42-600 to ATR72-600 evaluation added (and vice versa)	23 Nov 2012
Rev 3	ATR-500/600 previous experience requirements, additional differences course, editorial amendments, and regulatory updates	23 Aug 2013

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Acronyms

AC ..... Advisory Circular
ACJ ..... Advisory Circular Joint
AFCS ..... Automatic Flight Control System
AMC ..... Acceptable Means of Compliance
AOC ..... Air Operator Certificate
AP ..... Autopilot
APM ..... Aircraft Performance Monitoring
ATO ..... Approved Training Organisation
ATR ..... Avions de Transport Régional
CBT ..... Computer Based Training
CL ..... Condition Lever
CPD ..... Common Procedures Document for conducting Operational Evaluation Boards, dated 10 June 2004
CRM ..... Crew Resource Management
Difference Level ..... a designated level of difference as defined in the CPD for the evaluation of pilot training, checking, and currency
EASA ..... European Aviation Safety Agency
ECL ..... Electronic Check List
EFB ..... Electronic Flight Bag
EGPWS ..... Enhanced Ground Proximity Warning System
EU-OPS ..... Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane.
EVS ..... Enhanced Vision System
FAA ..... Federal Aviation Administration
FAR ..... Federal Aviation Regulation
FCL ..... Flight Crew Licensing
FFS ..... Full Flight Simulator (Level C/D)
FFT ..... Full Flight Trainer
FMA ..... Flight Mode Annunciator
FMS ..... Flight Management System
FSB ..... Flight Standardization Board
GI ..... Ground Instructor
GPWS ..... Ground Proximity Warning System
IEM ..... Interpretative / Explanatory Material
ICP ..... Index Control Panel
JAA ..... Joint Aviation Authorities
JAR ..... Joint Aviation Requirements
JOEB ..... JAA Joint Operational Evaluation Board
LIFUS ..... Line Flying Under Supervision
LPC ..... Licence Proficiency check
LOFT ..... Line Orientated Flying Training
MCP ..... Multifunction Control Panel

MDR .....Master Difference Requirements

MEL .....Minimum Equipment List

MMEL .....Master Minimum Equipment List

NAA .....National Aviation Authority

ND .....Navigation Display

OEB .....Operational Evaluation Board

ODR.....Operation Differences Requirements

ORI .....Operational Review Item

Part-ARA .....Annex VI to Commission Regulation (EU) No 290/2012 of 30 March 2012 amending Regulation (EU) No 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-ARO .....Annex II to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-CAT.....Annex IV to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-FCL .....Annex I to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-ORA .....Annex VII to Commission Regulation (EU) No 290/2012 of 30 March 2012 amending Regulation (EU) No 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-ORO.....Annex III to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

Part-SPA.....Annex V to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)

PCU .....Propeller Control Unit

PEC .....Propeller Electronic Control

PF .....Pilot Flying

PIC .....Pilot In Command

PL .....Power Lever

PM .....Pilot Monitoring

PNF .....Pilot non-Flying

SIC .....Second In Command

TASE .....Training Areas of Special Emphasis

TCAS.....Traffic Alert and Collision Avoidance System
TCCA.....Transport Canada Civil Aviation
VHP .....Virtual Hardware Platform
WBT .....Web Based Training

Note on references and reference texts:
Where references are made to requirements and where extracts of reference texts are provided, these are at the amendment state at the date of evaluation or publication of the report. Readers should take note that it is impractical to update these references to take account of subsequent amendments to the source documents.

Preamble

1. An initial operational evaluation for the ATR 42 and 72 aircraft was conducted by a JOEB during the summer of 2004 to determine the type rating designation and the differences / familiarisation training required. This evaluation was conducted as a “catch-up” process in a series of meetings with the manufacturer. All pilots involved were familiar with the ATR 42/72 series aircraft. Therefore, physical inspections of the aeroplanes or any flight evaluations were not required. The JOEB concluded that the ATR differences / familiarisation training was satisfactory for the purpose. An initial ATR 42/72 type rating training was not part of the scope of this evaluation.

2. A further operational evaluation for the ATR 42/72 Glass Cockpit series, hereunder referred to as “ATR-600” was requested by the manufacturer. This evaluation was conducted in 2011/2012 jointly by the Agência Nacional de Aviação Civil (ANAC), the Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), and Transport Canada Civil Aviation (TCCA) to simultaneously meet the ANAC operational evaluation requirements, the FAA requirements for a Flight Standardization Board (FSB) report, the EASA requirements for the OEB report, and the Canadian requirements for an Operational Evaluation of the ATR-600.

The scope of the EASA OEB evaluation comprises

- pilot type rating designation & license endorsement;
- flight crew training, checking and currency
  - evaluating the differences between
    - the existing ATR 42 series aircraft (with PEC) and the new ATR 42 glass cockpit version; and
    - the existing ATR 72 series aircraft (with PEC) and the new ATR 72 glass cockpit version
  - for an initial ATR-600 type rating course
- Master Minimum Equipment List (MMEL);
- simulator qualification;
- Cabin Crew Training; and
- Electronic Flight Bag.

Not included is the evaluation of other equipment or functions such as EU-OPS Subpart K and L aircraft type compliance, Head Up Display (HUD), Enhanced Vision Systems (EVS), RNP (AR) or Steep Approaches, etc.

3. The L2B1.4 / L2B2.5 Modification which added the installation of the ECL was evaluated on 12 - 13 April 2012. The OEB evaluated the relevant training which is incorporated into the applicable initial and differences courses.

4. Familiarisation training from the ATR 42-600 to the ATR 72-600 and vice versa, was evaluated in November 2012 and accepted by the OEB.

5. The previous experience requirements for ATR-500 pilots undergoing ATR-600 Differences Training were reviewed and an additional differences course was evaluated in June 2013.

6. Each Authority uses the results of the evaluation process to produce a report specific to its particular requirements that, while similar in intent, may differ in detail. This OEB report is applicable to operations under the framework of EASA.

The initial JOEB Operational Evaluation was conducted in accordance with the JAA Administrative and Guidance Material (dated 1 February 2004), the JOEB Procedures Document, JAR-FCL 1 Amendment 3, and JAR-OPS 1 Amendment 8.

The EASA Operational Evaluation was conducted in accordance with the EASA OEB Handbook, the CPD, and applicable JAR-FCL 1 and EU-OPS requirements. Determinations made in this report are based on the evaluations of specific ATR 42/72 aircraft models equipped in a given configuration and in accordance with current regulations and guidance. Modifications and upgrades made to the models described herein, or introduction of other variants may require amendment of the contents of this report.

OEB ATR 42/72 Composition

Name	Organization	Function
Initial Evaluation		
Guy Puech	JAA (DGAC)	OEB Chairman
G G Reid	JAA	Team Leader
Pascal Riondel	JAA (DGAC)	Team Member
Evan Nielsen	JAA	JOEB Coordinator
Jean Baril	JAA	JOEB Coordinator
ATR-600 Evaluation		
Jean-Claude Albert [1) 2) 3) 4) 5) 6) 7)]	EASA (DGAC)	OEB Chairman
Herbert Meyer	EASA	OSD Section Manager
Francis Truchetet [1) 5)]	EASA (DGAC)	Team Member
Michel Levy [1) 5) 6) 7)]	EASA (DGAC)	Team Member
Stéphane Martin [1)]	EASA (DGAC)	Team Member
Asger Mikkelsen [1)]	EASA	Team Member
Pascal Rouvet [2)]	EASA (DGAC)	Team Member
François Denardou [2)]	EASA (DGAC)	Team Member
Joachim Puff [3)]	EASA	Team Member
Daniel Wastesson [2) 3) 5)]	EASA (CAA Sweden)	Team Member
Eddie Wallin [2)]	EASA (CAA Sweden)	Team Member
Gabriel Murta [1)]	ANAC	ANAC Chairman
Ronaldo Cavalcanti [1)]	ANAC	ANAC Team Member
Stacey Anderson [4)]	FAA	FAA FSB Chairman
Stephen Dunn [1) 4)]	FAA	FAA Team Member
Roman Marushko	TCCA	TCCA Team member
Georges Lagacé	TCCA	TCCA Team Member

1) ATR-500 to ATR-600 Differences Training Course (Jun 2011)
2) ATR-600 Initial Type Rating Course (Jan / Feb 2012)
3) ATR-600 Entry Level Training (ELT) (Jan 2012)
4) ATR-500/-600 T2 Test (Mar 2011)
5) L2B1.4 / L2B2.5 Modification (Apr 2012)
6) ATR 42-600 to ATR 72-600 Familiarisation Course, and vice versa (Nov 2012)
7) ATR-500 to ATR-600 Differences Training Review (June/July 2013)

Executive Summary

1. Scope of the evaluation

This report specifies the EASA pilot type rating licence endorsement and identifies the Training, Checking and Currency minimum requirements. The OEB did not evaluate Maintenance Training, or the use of equipment or functions such as Head Up Display (HUD), Enhanced / Synthetic Vision Systems (E/SVS), RNP (AR) operations, Steep Approaches, wake vortex categorization, etc.

The installation of the ECL was introduced through L2B1.4/L2B2.5 Modification and was evaluated as follow-on to the initial and differences course evaluations. The OEB evaluated the relevant training which is being incorporated into the applicable initial and differences courses.

An evaluation of familiarisation training from the ATR 42-600 to the ATR 72-600 and vice versa, was completed in November 2012 and accepted by the OEB.

The evaluation of the ATR 42/72 Cabin Crew Training and Electronic Flight Bag, as well as the MMEL have been performed in separate operational evaluations and are subject to dedicated OEB reports.

All relevant reports are available on the EASA OEB website at
http://www.easa.europa.eu/certification/experts/flight.php

2. Operational Evaluation ATR 42/72

The EASA OEB evaluation was conducted jointly with the Agência Nacional de Aviação Civil (ANAC), the Federal Aviation Administration (FAA), and Transport Canada Civil Aviation (TCCA) to simultaneously meet the applicable requirements. Each Authority uses the results of the evaluation process to produce a report specific to its particular requirements that, while similar in intent, may differ somewhat in detail. This OEB report is applicable to operations under the framework of EASA.

Operational Evaluation Report – Flight Crew Qualifications

1. Purpose and Applicability

This report addresses:

- Aircraft Type Designation and Pilot License Endorsement for the ATR 42/72 series aircraft;
- Master Differences Requirements (MDR) for flight crews transitioning between aircraft variants;
- Operator Differences Requirements (ODR) tables;
- Initial type rating training for the ATR-600;
- ATR-500 to ATR-600 differences training;
- ATR 42-600 to ATR 72-600 (and vice versa) familiarisation training;
- Operations on more than one type or variant; and
- Pilot checking, currency / recent experience.

This report does not address MMEL, Cabin Crew Training, Maintenance Training, or the use of equipment or functions such as Head Up Display (HUD), Enhanced / Synthetic Vision Systems (EVS/SVS), RNP (AR) operations, Steep Approaches, wake vortex categorization, etc.

All relevant reports are available on the EASA OEB website at http://easa.europa.eu/certification/experts/flight.php.

2. Aircraft Categorisation and Pilot License Endorsement

With reference to Part-FCL, FCL.010 ('type of aircraft') and GM1 FCL.700, all ATR 42/72 series aircraft have been evaluated for aircraft categorisation and license endorsement.

The ATR 42/72 series aircraft have been assessed as variants requiring familiarization / differences training as detailed in this report. The license endorsement is established as "**ATR42/72**".

Type Ratings List (Aeroplane) – Multi Pilot

1 Manufacturer	2 Aeroplanes	3	4 Licence Endorsement
ATR	ATR 42 (not PEC equipped)[1]	(D)	ATR42/72
	ATR 42 (PEC equipped) ATR 72 (not PEC equipped)[2] ATR 72 (PEC equipped)		
	ATR 42 (glass cockpit)[3] ATR 72 (glass cockpit)[3]		

PEC = Propeller Electronic Control

[1] A differences training course from the ATR 42 (not PEC equipped) to the ATR 72 (glass cockpit) has not been evaluated. In this case, additional differences training between the ATR 42 (not PEC equipped)

and the ATR 42 (PEC equipped) is required.

[2] A differences training course from the ATR 72 (not PEC equipped) to the ATR 72 (glass cockpit) has not been evaluated. In this case, additional familiarization training between the ATR 72 (not PEC equipped) and the ATR 72 (PEC equipped) is required.

[3] The differences training course is valid from the ATR 42 (PEC equipped) to the ATR 42 (glass cockpit) and from the ATR 72 (PEC equipped) to the ATR 72 (glass cockpit) for crew members previously qualified on the respective ATR 42/72 PEC equipped variants. Differences training from the ATR 42/72 (glass cockpit) to any other ATR 42/72 "classic" variant has not been evaluated. In this case, a full type rating training course is required.

3. ATR Family Concept and aircraft specifics

3.1 Aircraft Design

The ATR family of aircraft are conventional high-wing monoplane passenger aeroplanes, powered by two Pratt & Whitney 120 series turbo-propeller engines. The 42 and 72 variants differ primarily in a fuselage stretch of 4.49 metres for the latter, although significant product improvements over the years means that there are a number of variants within each model.

The flight controls are all mechanically actuated and are conventional in arrangement, comprising two elevators, one aileron on each wing and a single rudder; roll assistance is provided by one spoiler on each wing. Engine maximum power ratings vary from 2000SHP for the ATR 42-300 to 2750SHP for some ATR 72 models. The maximum operating altitude for all aircraft is 25,000 ft.

3.2 Customization of Procedures and Checklists

The OEB evaluated standard ATR procedures and checklists. Any customization should be evaluated by the Competent Authority.

3.3 Aircraft Approach Category

With reference to Part-CAT, CAT.OP.MPA.320(b) the approach category for all ATR 42/72 variants is as follows:

Aircraft	Category
ATR 42/72	B

The approach category can be higher dependent on the operation. The determination should be made by the operator based on approach speed calculations in accordance with applicable regulations.

4. Master Differences Requirements (MDR)

4.1 MDR Tables

MDR tables for the ATR 42/72 variants are shown below. Definitions of the various levels for Training/Checking/Currency are those used in the CPD.

Master Differences Requirements (MDR)							
		FROM AIRPLANE					
TO AIRPLANE		ATR 42 (not PEC equipped)	ATR 72 (not PEC equipped)	ATR 42 (PEC equipped)	ATR 72 (PEC equipped)	ATR 42 (Glass Cockpit)	ATR 72 (Glass Cockpit)
	ATR 42 (not PEC Equipped)	---	C/B/A	C/B/A	C/B/A	(1)	(1)
	ATR 72 (not PEC Equipped)	C/B/A	---	B/B/A	B/B/A	(1)	(1)
	ATR 42 (PEC Equipped)	C/B/A	B/B/A	---	A/A/A	(1)	(1)
	ATR 72 (PEC Equipped)	C/B/A	B/B/A	A/A/A	---	(1)	(1)
	ATR 42 (Glass Cockpit)	(1)	(1)	D/C/C	(1)	---	A/A/A
	ATR 72 (Glass Cockpit)	(1)	(1)	(1)	D/C/C	A/A/A	---

(1) has not been evaluated for the time being.

4.2 Levels of Training, Checking and Currency (excerpts from the CPD)

Level A Training*. Level A difference training is applicable to aircraft with differences that can adequately be addressed through self-instruction. Level A training represents a knowledge requirement such that, once appropriate information is provided, understanding and compliance can be assumed to take place. Compliance with level A training is typically achieved by methods such as issuance of operating manual page revisions, dissemination of flight crew operating bulletins or differences hand-outs to describe minor differences between aircraft. Level A training is normally limited to situations such as the following:*

a. *The change introduces a different version of a system/component for which the flight crew has already shown the ability to understand and use;*
b. *The change results in minor or no procedural changes and does not result in adverse safety effects if the information is not reviewed or is forgotten; or*
c. *Information highlighting a difference that, once called to the attention of a crew, is self-evident, inherently obvious, and easily understood.*

***Level B Training**. Level B difference training is applicable to aircraft with system or procedure differences that can adequately be addressed through aided instruction. At Level B aided instruction is appropriate to ensure crew understanding, emphasize issues, provide a standardized method of presentation of material, or to aid retention of material following training. Level B aided instruction typically employs means such as presentations, tutorials, Computer Based Training (CBT), stand-up lectures, videotapes, or DVDs.*

***Level C Training**. Level C differences training can only be accomplished through use of devices capable of systems training. It is applicable to variants having "part task" differences that affect skills or abilities, as well as knowledge. Training objectives focus on mastering individual systems, procedures, or tasks, as opposed to performing highly integrated flight operations and manoeuvres in "real time." Level C may also require self-instruction or aided instruction of a crewmember, but cannot be adequately addressed by a knowledge requirement alone. Training devices are required to supplement instruction to ensure attainment or retention of crew skills and abilities to accomplish the more complex tasks, usually related to operation of particular aircraft systems. While Level C systems knowledge or skills relate to specific rather than fully integrated tasks, performance of steps to accomplish normal, abnormal/non-normal procedures/emergency or manoeuvres related to particular systems (flight guidance control systems/flight management systems) may be necessary. Typically, the minimum acceptable training media for Level C would be interactive computer based training (ICBT), cockpit systems simulators, cockpit procedure trainers, part task trainers (e.g., inertial navigation system (INS), flight management system (FMS), or traffic collision avoidance system (TCAS) trainers or similar devices.*

***Level D Training**. Level D differences training can only be accomplished with devices capable of performing flight manoeuvres and addressing full task differences affecting knowledge, skills, and/or abilities. Devices capable of flight manoeuvres address full task performance in a dynamic "real time" environment and enable integration of knowledge, skills and abilities in a simulated flight environment, involving combinations of operationally oriented tasks and realistic task loading for each relevant phase of flight. At Level D, knowledge and skills to complete necessary normal/ abnormal/emergency procedures are fully addressed for each variant. Training for Level D differences requires a training device that has accurate, high fidelity integration of systems and controls and realistic instrument indications. FFS or aircraft training may be specified for the conduct of specific manoeuvres or handling differences, such as HUD training or a single manoeuvre.*

***Level A Checking**. Level A checking indicates that no check related to differences is required at the time of differences training. A pilot is, however, responsible for knowledge of each variant flown. Differences items should be included as an integral part of subsequent proficiency checks.*

***Level B Checking.** Level B checking indicates a "task" or "systems" check is required following transition and recurring differences training. Level B checking typically applies to particular tasks or systems such as INS, FMS, TCAS, or other individual systems or related groups of systems.*

***Level C Checking**. Level C checking requires a partial check using a device suitable for meeting Level C (or higher) differences training requirements is required following transition and recurrent differences training. The partial check is conducted relative to particular manoeuvres or systems designated by the OEB. An example of a Level C check would be evaluation of a sequence of manoeuvres demonstrating a pilot's ability to use a flight guidance control system or flight management system. An acceptable scenario would include each relevant phase of flight but would not necessarily address manoeuvres that do not relate to set up or use of the FGCS or FMS.*

***Level A Currency**. At Level A currency is considered to be common to each variant. Thus, assessment or tracking of currency for separate variants is not necessary or applicable. Maintenance of currency in any one variant or a combination of variants suffices for any other variant.*

***Level C Currency**. Level C currency is applicable to one or more designated systems or procedures, and relates to both skill and knowledge requirements. An example would be establishment of INS currency, FMS currency, flight guidance control system currency, or other particular currency that is necessary for safe operation of a variant. Establishment of Level C for a variant with a flight management system (FMS) would typically require a crewmember to fly that variant within the specified period or re-establish currency. Currency constraints for level C typically are 90 days. However, some systems or procedures may require shorter time limits while others may be longer than the normal interval for proficiency checks, if the pertinent items are not always addressed by these checks. When level C currency applies, any pertinent lower level currency must also be addressed. Examples of methods acceptable for addressing level C currency are:*

a. *Crew scheduling practices resulting in a crewmember being scheduled to fly a variant with the pertinent system/procedure within the specified period;*
b. *Tracking of an individual crewmember's flying of variants to ensure that the particular system/procedure has been flown within the specified period;*
c. *Use of a higher level method (level D or E currency); or*
d. *Other methods as designated or found acceptable by the OEB.*

5. Operator Differences Requirements (ODR)

ODR tables are used to show an operator's compliance method. Acceptable ODR tables for the initial ATR 42/72 evaluation were provided to the JOEB. ATR generic ODR tables concerning differences between the ATR-600 and previous variants are on file with EASA.

These ODR tables are provided as ATR generic and therefore may not include items that are applicable to particular operators. The ODR tables assume that pilots are current and qualified on the base aircraft.

The ODR tables have been developed in accordance with applicable EU regulations for civil aviation aircrew and air operations. These ODR tables have been found acceptable by EASA. They represent an acceptable means of compliance with MDR provisions for the aircraft evaluated, based on those differences and compliance methods shown. These tables do not necessarily represent the only means of compliance for operators with aircraft having other differences.

Operators using more than one variant must have approved ODR tables pertinent to their fleet.

6. Specifications for Pilot Training

With reference to Part-ORA, AMC2 ORA.ATO.125(b), additional familiarisation training for variants may be included in the theoretical knowledge training of the initial type rating course. Flight training should be conducted on a single ATR 42/72 variant.

6.1 ATR-600 Initial Type Rating

The OEB reviewed the ATR-600 Standard Transition Course for initial pilot type rating and found it to be compliant with JAR-FCL 1. The OEB recommends this course as a baseline for the ATR-600 type rating training and checking.

The ATR generic course used the FFT for part of the practical training. The FFT is an approved device in accordance with JAR-FSTD A Level 2 and FNPT Level II MCC. It can be substituted with an FFS Level C or D (no motion required).
In accordance with Part-FCL, Annex VII, AMC2 ORA.ATO.125 (Training programme) (i)(2) "… *A successful pass of the theoretical knowledge course and final examination should be a pre-requisite for progression to the flight training phase of the type rating course, unless otherwise determined in the OSD established in accordance with Regulation (EC) 1702/2003."* The footprint of the evaluated course which includes the course duration and training devices used (as described in Appendix 1) has been found suitable to meet this requirement.

6.2 Entry Level Training (ELT)

The OEB reviewed ELT for pilots who do not meet the knowledge and skills for initial type rating training, as determined by the ATO. The OEB recommends this course where needed for currency and proficiency.

The ELT uses Ground and SFI Instructors and Web Based Training and the training devices (VHP, FFT, FFS), as needed.

6.3 ATR 42/72 non-Glass Cockpit Differences / Familiarisation Training

The Differences/Familiarisation Training Courses are designed to provide the ATR qualified pilot with the theoretical (Differences/Familiarisation Training) and practical skills (Differences Training) necessary to safely and competently transition between the various non-Glass Cockpit models in the ATR 42/72 range. Only training modules offered by the manufacturer in June 2004 have been reviewed and endorsed by the JOEB.
Differences training between the ATR 42 (not PEC equipped) and the ATR 42 (PEC equipped) or familiarization training between the ATR 72 (not PEC equipped) and the ATR 72 (PEC equipped) typically lasts one day.
It should be noted that no initial JOEB evaluation of the ATR 42/72 range took place and thus no assessment of the Initial Type Rating Course has been conducted.

6.4 ATR-500 to ATR-600 Differences Training

6.4.1 Pilot Pre-Requisites

The ATR-500 to ATR-600 Differences Training shown in Appendix 2 requires the trainee to be current and qualified on the ATR-500 and have a minimum experience on ATR aircraft of 500 hrs. total or 100 hrs. in the last twelve months.

Pilots not meeting the above pre-requisites of ATR-500 experience should follow the ATR-500 to ATR-600 Differences Training shown in Appendix 3.

6.4.2 Training

The maximum level of differences between the ATR-500 and ATR-600 is Level D as shown in the MDR table.

ATR-500 to ATR-600 Differences Training has been assessed and found acceptable to meet the training requirements. The training is based upon clearly defined objectives and addresses all items as identified in the ODR tables and validated by the OEB.

Differences training is valid from the ATR 42 (PEC equipped) to the ATR 42 (glass cockpit) and from the ATR 72 (PEC equipped) to the ATR 72 (glass cockpit) for pilots previously qualified on the respective ATR 42/72 PEC equipped variants.

The footprint of the evaluated course, including the minimum course duration and training devices used is shown in Appendix 2 and 3, as applicable for pilots with and without the ATR-500 experience requirements described above.

6.5 Differences Courses other than ATR-500 to ATR-600

Differences training from the ATR 42/72 (glass cockpit) to any other ATR 42/72 "classic" variants has not been evaluated. In this case, a full type rating training course is required.

Differences training from the ATR 42 (not PEC equipped) to the ATR 42 (glass cockpit) has not been evaluated. In this case, additional differences training between the ATR 42 (not PEC equipped) and the ATR 42 (PEC equipped) is required.

Differences training from the ATR 72 (not PEC equipped) to the ATR 72 (glass cockpit) has not been evaluated. In this case, additional familiarization training between the ATR 72 (not PEC equipped) and the ATR 72 (PEC equipped) is required.

6.6 ATR 42-600 to ATR 72-600 Familiarisation Training (and vice versa)

The ATR 42-600 to ATR 72-600 Training (and vice versa) is designed to provide an ATR 600 current and qualified pilot with the knowledge and skills necessary to safely and competently transition between the ATR 42 and ATR 72 Glass Cockpit models. Training modules offered by the manufacturer in October 2012 have been reviewed and endorsed by the OEB. Familiarisation training between the ATR 42-600 and the ATR 72-600 consists of Level A training and typically lasts 4 hours (see Appendix 4).

6.7 Training Areas of Special Emphasis (TASE)

Part-FCL, FCL.710(a) and FCL.725(a) address training requirements for type rating, differences and familiarization training to include the relevant elements as defined in the operational evaluation. Part-ORO, ORO.FC.145(b) addresses operator requirements to include the relevant elements as defined in the operational evaluation when establishing the training programmes and syllabi.

6.7.1 The following items should receive special emphasis at the appropriate point during the ground and flight training (e.g. during CBT, VHP, FFT and/or FFS training) in all referenced initial and differences training courses:

- Engine malfunctions during take-off;
- Use of avionics in normal and abnormal / emergency operations, including FMA annunciations, caution and warning messages on the Engine & Warning Display (EWD), and associated human factors issues;
- Use of Flight Management System (FMS);
- Use of Electronic Checklist (ECL);
- Ice detection and management systems and displays (including APM); and
- Crew Resource Management (CRM) with regard to the new functionalities.

6.7.2 The following differences should be included in the ATR 42-600 to ATR 72-600 Familiarisation Training (and vice versa):

- aircraft dimensions and design;
- system and equipment;
- aircraft limitations and flight envelope; and
- go-around procedures.

6.7.3 Operators may add additional elements as required by their operation, and these will vary. Training organisations should review their training courses when applicable aircraft modifications occur. Training organisations may add additional elements as required by the operator.

6.8 Special Events Training

Special events training to improve basic crew understanding and confidence regarding aircraft handling qualities, options and procedures as these relate to design characteristics and limitations may include the following:

- recovery from unusual attitudes;
- manual flight with minimum use of automation, including flight under degraded levels of automation;
- handling qualities and procedures during recovery from an upset condition (e.g., wake vortex encounter, loss of control incident);
- high altitude high and low speed buffet margins and flight characteristics;

- Controlled Flight Into Terrain (CFIT), TCAS, EGPWS (emphasis on avoidance and escape manoeuvres, altitude awareness, TCAS / EGPWS warnings, situational awareness and crew co-ordination, as appropriate).

Special events training is not considered as required additional training.

6.9 Alternative Training and Qualification Programme (ATQP)

Part-ORO, ORO.FC.A.245 addresses the alternative training and qualification programme. Where an ATQP has been approved by the Competent Authority, the programme should be consistent with the requirements and recommendations of this evaluation, taking into account any training areas of special emphasis and ODR tables, as applicable.

6.10 Recurrent Training

Recurrent training must be compliant with EU regulations for civil aviation aircrew and air operations, as applicable, and include the Training Areas of Special Emphasis as identified in this report. These requirements should be considered as a minimum and expanded, as appropriate, for pilots who have had only limited exposure and/or who do no longer fulfil the currency requirements.

Operators must establish an approved recurrent training and checking programme which is relevant to the aircraft variant flown and its intended operation. The recurrent training programme may vary with several factors which have a significant influence. Some of these factors are: actual exposure of the flight crew member(s), specific routes and aerodromes used by the operator and new developments in technology. These factors and/or a combination thereof will determine the required recurrent training.

Recurrent training should incorporate special events training as described in this report on a rotational basis.

7. Specifications for Checking

License skill tests and operator proficiency checks must be performed in accordance with applicable EU regulations for civil aviation aircrew and air operations.

ATOs and operators should ensure that the knowledge and skills received in differences training are validated appropriately.

7.1 Recurrent Training and Checking

Recurrent training and checking is addressed in Part-ORO, specifically in ORO.FC.130, ORO.FC.220, ORO.FC.230, AMC1 ORO.FC.230, GM1 ORO.FC.230, ORO.FC.240, and AMC1 ORO.FC.240.

When operating the ATR 42/72-600 series together with any other ATR 42/72 variant(s), the recurrent training and checking should be conducted on an alternating basis between an ATR 42/72-600 FFS and any other applicable ATR 42/72 FFS of the variant(s) flown, also addressing the differences.

Differences between the ATR 42/72 series aircraft are identified in ODR tables. The ATR 42/72-600 differences to other ATR 42/72 variants have been assessed at Level C for recurrent training, i.e. these differences must be addressed in a VHP (or higher device).

When operating a mixed fleet of PEC and non PEC variants, checking should encompass both groups such that all pilots are checked in each group at least once per year.

7.2 Line Checks

With reference to Part-ORO, AMC1 ORO.FC.240(a)(4)(vii), the OEB has determined that a line check performed on either ATR 42/72 variant is valid for all variants.
This does not relieve operators from line check requirements specific to route and airport qualifications.

8. Specifications for Recent Experience and Currency

8.1 Recent Experience

Recent experience requirements are contained in Part-FCL, FCL.060.

With reference to Part-ORO, ORO.FC.140(a), full credit is granted for recent experience requirements when operating any ATR 42/72 variant.

8.2 ATR-600 Currency

Flight crews operating the ATR-600 together with any other variant should perform at least one sector (as PF or PNF) in an ATR-600 and one sector in any other variant(s), within the previous 90 days.

9. Line Flying Under Supervision (LIFUS) / Familiarization Flights

9.1 LIFUS

LIFUS should be performed in accordance with ORO.FC.220 and AMC1 ORO.FC.220(e). Furthermore, GM1 ORO.FC.220(d) provides guidelines for operators to use when establishing their individual requirements.

Where there is a change of operating conditions or route structure this should also be taken into account and may need the addition of sectors to cover these elements.

9.2 LIFUS following ATR 42/72 Type Rating

In the case of an initial type rating onto the ATR 42/72, a minimum of 10 sectors including a line check is recommended for Line Flying Under Supervision (LIFUS), meaning 8 sectors plus 2 sectors line check.

In accordance with Part-FCL, a supervised exterior inspection on the aircraft must be part of the training course or LIFUS following the ATR 42/72 full type rating course. An unsupervised exterior inspection is not permitted until this requirement has been fulfilled.

9.3 Familiarization Flights Following ATR-500 to ATR-600 Pilot Differences Training

9.3.1 Familiarization Flights between ATR 42/72 non-Glass Cockpit variants

In the case of conversion to the original ATR 42-200/300 series, a minimum of two sectors should be flown under supervision as illustrated below.

Number of sectors for familiarization flights				
FROM / **TO**	**ATR 42 (not PEC equipped)**	**ATR 72 (not PEC equipped)**	**ATR 42 (PEC equipped)**	**ATR 72 (PEC equipped)**
ATR 42 (not PEC equipped)	--	0	0	0
ATR 72 (not PEC equipped)	2	--	0	0
ATR 42 (PEC equipped)	2	0	--	0
ATR 72 (PEC equipped)	2	0	0	--

9.3.2 Familiarization Flights following ATR-500 to ATR-600 Differences Training

Pilots who have met the previous experience requirements for differences training in accordance with Appendix 2 as described in para. 6.3.1 of this report, should receive familiarization flights ranging from 6 to 10 sectors flown as PF or PNF, taking into account overall ATR and/or glass cockpit experience.

Pilots who have not met the above previous experience requirements for differences training should receive familiarization flights ranging from 25 to 30 sectors flown as PF or PNF.

10. Specification for Operations of More Than One Type or Variant

Requirements for operations on more than one type or variant are contained in Part-ORO, ORO.FC.140, ORO.FC.240 and AMC1 ORO.FC.240.

10.1 Crewing of inexperienced flight crew members

Crewing of inexperienced flight crew members and consolidation periods are addressed in Part-ORO, ORO.FC.200(a) and AMC1 ORO.FC.200(a) – Composition of flight crew.

Following completion of ATR-500 to ATR-600 differences training, a flight crew member should be considered inexperienced, until he/she has achieved on the new variant, 30 sectors and a minimum of 30 flight hours, as PF or PNF (including any Familiarization Flights).

An inexperienced flight crew member should not operate the ATR-600 together with any other ATR 42/72 variant.

Appendix 1

ATR-600 Initial Type Rating

Day 1	Day 2	Day 3	Day 4	Day 5
Introduction (3:00) **WBT** (4:00) **VHP A** (1:00)	**GI** (1:00) **WBT** (4:00) **VHP B** (1:00)	**GI** (1:00) **WBT** (4:00) **VHP C** (1:00)	**GI** (4:00) **GI - Icing** (1:30) **GI - Safety (1:00)**	**FFT 0** (2:00) **FMS 1/2 - VHP** (4:00)
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
GI - CRM (7:00)	**VHP 1** (3:00) **WBT** (2:00)	**VHP 2** (3:00) **WBT** (2:00)	**VHP 3** (3:00) **WBT** (2:00)	**VHP 4** (3:00)
Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
VHP 5 (3:00)	**VHP 6** (3:00)	**FFT 1** (3:00)	**FFT 2** (3:00)	**FFT 3** (3:00)
Day 16	**Day 17**	**Day 18**	**Day 19**	**Day 20**
Theoretical Knowledge Test (3:30) **GI - TEM Briefing** (2:00) **FAL Visit** (1:30)	**FFT 4** (3:00)	**FFS 1** (3:00)	**FFS 2** (3:00)	**FFS 3** (3:00)
Day 21	**Day 22**	**Day 23**	**Day 24**	
FFS 4 (3:00)	**FFS 5** (3:00)	**FFS 6** (3:00)	**Skill Test - FFS** (4:00)	

Notes:

FFS = Full Flight Simulator (ATR-600 FFS Level C or D)

FFT = Full Flight Trainer (JAR-FSTD A Level 2 and FNPT Level II MCC)

GI = Ground Instructor

VHP = Virtual Hardware Platform Trainer

WBT = Web Based Training

FFS, FFT and VHP sessions DO NOT INCLUDE time for briefing and de-briefing.

This table reflects the Full Type Rating course evaluated by EASA, which was found to be compliant with applicable requirements. Any variations to this course should be evaluated by the Competent Authority or through an OEB evaluation. This serves to ensure that an equivalent level of training and safety are reached, and may lead to variations to the table above.

Appendix 2

"ATR-500 to ATR-600" Differences Training for pilots meeting the ATR-500 previous experience requirements described in para. 6.4.1

ATR 42 (PEC equipped) to ATR 42 (glass cockpit)
ATR 72 (PEC equipped) to ATR 72 (glass cockpit)

Day 1	Day 2	Day 3	Day 4	Day 5
Introduction, Description of the Colour Code (0:30) **CRM Module** (3:00) **VHP Introduction** (0:30) **WBT** (3:00)	**Review** (0:30) **WBT** (2:00) **ATR 500/600 Systems** (2:30, with GI) **Training Devices (DU, IESI, VCP)** (1:00, with GI) **VHP 1** (1:30)	**Briefing** (0:30) **WBT** (2:00) **VHP 2** (1:30) **FMS Ground Course** (1:30, with GI) **VHP 3 FMS** (1:30)	**Briefing** (0:30) **Abnormal-/Emergency Briefing** (1:30) **WBT** (1:30) **VHP 4** (1:30) **VHP 5** (1:30)	**FFT *** (4:00 per crew)

Notes:

GI = Ground Instructor

VHP = Virtual Hardware Platform Trainer

WBT = Web Based Training

VHP sessions DO NOT INCLUDE time for briefing and de-briefing

*** or higher device, such as FFS, Level C or D**

This table reflects the Differences Training course evaluated by EASA, which was found to be compliant with applicable requirements. Any variations to this course should be evaluated by the Competent Authority or through an OEB evaluation. This serves to ensure that an equivalent level of training and safety are reached, and may lead to variations to the table above.

Appendix 3

"ATR-500 to ATR-600" Differences Training for pilots not meeting the ATR-500 previous experience requirements described in para. 6.4.1

ATR 42 (PEC equipped) to ATR 42 (glass cockpit)
ATR 72 (PEC equipped) to ATR 72 (glass cockpit)

Day 1	Day 2	Day 3	Day 4	Day 5
Welcome **Daily Briefing** **Systems Differences** **LMS** Glass Cockpit Familiarisation **VHP 1** (3:00) Flight Instruments / AFCS / VCP	**Daily Briefing** **FMS Course** **LMS** VCP / Flight Instruments **VHP 2** (3:00) SD ENG / CABIN / ELEC / HYDRAULIC / EWD	**Daily Briefing** **LMS** IMA / FWS Abnormal / Emergency Procedures Briefing **VHP 3** (3:00) FMS / INIT / NAV / PERF / COM / Failure Management	**Daily Briefing** **LMS** AFCS / Navigation / Communication **VHP 4** (3:00) Use of all means for normal flight planning	**Daily Briefing** **Review** **VHP 5** (3:00) LOFT
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
FFT 1 or FFS 1 (3:00) Normal Procedures	**FFT 2 or FFS 2** (3:00) Emergency Procedures	**FFT 3 or FFS 3** (3:00) Emergency Procedures and severe icing conditions	**FFT 4 or FFS 4** (3:00) LOFT	**FFT 5 or FFS 5** (3:00) LOFT
Notes: **GI = Ground Instructor** **VHP = Virtual Hardware Platform Trainer** **VHP sessions DO NOT INCLUDE time for briefing and de-briefing**				

This table reflects the Differences Training course evaluated by EASA, which was found to be compliant with applicable requirements. Any variations to this course should be evaluated by the Competent Authority or through an OEB evaluation. This serves to ensure that an equivalent level of training and safety are reached, and may lead to variations to the table above.

Appendix 4

"ATR 42-600 to ATR 72-600" and "ATR 72-600 to ATR 42-600" Familiarization Training

Day 1
Differences Familiarization Self-Study / Ground Instructor (4:00)

This table reflects the Familiarization Training evaluated by EASA, which was found to be compliant with applicable requirements. Any variations to this course should be evaluated by the Competent Authority or through an OEB evaluation. This serves to ensure that an equivalent level of training and safety are reached, and may lead to variations to the table above.

Appendix 5

Virtual Hardware Platform (VHP) Trainer

Description of the VHP device used in the ATR Pilot Training Courses and recommendations.

1. Description of the device used

The three dimensional type specific device consisted of graphically simulated, interactive touch panels, instruments, switches and controls in a spatially correct position.

Instruments and panels were computer generated, interactive touch activated graphics displayed on multiple screens, however aircraft panels requiring intensive manipulation such as Flight Guidance Control Panel (FGCP), Index Control Panel (ICP), MCDU, MCP and Electronic Flight Bag (EFB), if installed; consisted of replicated aircraft panels with physical controls, knobs and switches. The throttle box was displayed on a computer generated graphics display.

Airplane systems were operative for flight and ground conditions. Simulated aircraft systems were fully integrated to ensure correct interaction, especially between the FMS, ECL, flight instrument displays and EFB, if installed. The device was able to simulate the different approach modes. Warning and caution sounds were simulated.

Computer generated schematics to visualize aircraft system operation were provided.

The device incorporated the necessary malfunctions to accomplish the training of Normal, Supplementary Normal and Non-Normal operating procedures.

The device incorporated the necessary navigational databases to complete the defined training scenarios.

An instructor facility was available to allow the modification of flight and environmental conditions (wind, temperature, pressure, etc.). It permitted repositions (flight and ground), freezes, system resets, airport selection, aircraft services (doors, ground power, virtual circuit breaker, etc.). Lesson plan tools were provided.

The computer(s) had sufficient capacity and capability to ensure an accurate and reliable operation, with realistic responsiveness and aliasing free graphics.

The device was located in a suitable quiet room, free of training distractions, with adequate temperature and lighting conditions.

2. Recommendations

2.1 The device should allow airline specific options.

2.2 The competent Authority approving the Training Organisation should review the device for suitability to complete the customer specific training programme.

2.3 The training organisation operating the device should have a Compliance Monitoring System in place to cover, at least, the following training device aspects:

- Recording, monitoring and rectification of failures and discrepancies;
- Failure analysis and reliability figures;
- Link with the aircraft manufacturer to ensure the device continues to reflect the real aircraft;
- Link with the training device manufacturer for the incorporation of updates and modifications;
- Configuration control processes to ensure adequate tracking and recording of software and hardware modifications; and
- Resources and personnel training to support its operation.