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Flight Standardization Board (FSB) Report

Revision: 7
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Manufacturer
ATR – GIE Avions de Transport Régional

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
A53EU	ATR42-200 ATR42-300 ATR42-320	ATR42-300 ATR42-320	ATR-42, ATR-72
A53EU	ATR42-500	ATR42-500 ATR42-600	ATR-42, ATR-72
A53EU	ATR72-101 ATR72-201 ATR72-102 ATR72-202 ATR72-211 ATR72-212	ATR72-200 ATR72-210	ATR-42, ATR-72
A53EU	ATR72-212A	ATR72-500 ATR72-600	ATR-42, ATR-72

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1 RECORD OF REVISIONS

Revision Number	Sections(s)	Page(s) Affected	Date
1	9.2.4	17–27	01/10/1994
2	All	All	02/01/1996
3	Various	Various	07/01/1997
4	Various	Various	07/15/2002
5	All	All	12/05/2014
6	All	All	10/14/2016
7	All	All	08/30/2018

2 INTRODUCTION

Aircraft Evaluation Groups (AEG) are responsible for working with aircraft manufacturers and modifiers during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine: 1) the pilot type rating; 2) flightcrew member training, checking, and currency requirements; and 3) operational suitability.

This report lists those determinations for use by: 1) FAA employees who approve training programs; 2) FAA employees and designees who certify airmen; and 3) aircraft operators and training providers to assist them in developing their flightcrew member training, checking, and currency.

3 HIGHLIGHTS OF CHANGE

The purpose of Revision 7 is to comply with a new format for the Flight Standardization Board (FSB) report. Major modifications include the deletion of currency levels depicted in the Master Differences Requirements (MDR) table, renaming of Operator Differences Tables to Differences Tables, and deleting regulatory repetitive information.

4 BACKGROUND

The Transport Aircraft Seattle Branch formed various FSBs that evaluated the ATR42 and ATR72 aircraft variations as defined in FAA Type Certificate Data Sheet (TCDS) # A53EU. The evaluations were conducted between the years 1985 and 2013 using the methods described in the current edition of FAA Advisory Circular (AC) 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

The ATR42-500 “600 version” designation does not correspond to a model designation. This is only a commercial designation for an ATR42-500 on which major modifications 5948, 6521, 6230, and 6233 have been incorporated during production.

The ATR72-212A “600 version” designation does not correspond to a model designation. This is only a commercial designation for an ATR72-212A on which major modifications 5948, 6521, and 5977 have been incorporated during production.

5 ACRONYMS

14 CFR	Title 14 of the Code of Federal Regulations
AC	Advisory Circular
ACFT	Aircraft
ACS	Airman Certification Standards
ACW	Alternating Current Wild Frequency
ADC	Air Data Computer
ADU	Advisory Display Unit
AEG	Aircraft Evaluation Group
AFM	Airplane Flight Manual
AFCS	Automatic Flight Control System
AFT	Rear/Aft
AHRS	Attitude and Heading Reference System
AOA	Angle of Attack
APM	Aircraft Performance Monitoring
ATC	Air Traffic Control
ATP	Airline Transport Pilot
ATR	ATR – GIE Avions de Transport Régional
AUX	Auxiliary
AV	Audiovisual
BUL	Bulletin
CAP	Crew Alerting Panel
CBT	Computer-Based Training
CCAS	Centralized Crew Alerting System
CL	Condition Lever
CM1	Captain or Left Seat
CONFIG	Configuration
CPT	Cockpit Procedures Trainer
DA	Decision Altitude
DU	Display Unit
EADI	Electronic Attitude Director Indicator
EADS	European Aeronautic Defense and Space Company
ECL	Electronic Checklist
EFCP	EFIS Control Panel
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System
EHSI	Electronic Horizontal Situation Indicator
EMER	Emergency
EWD	Engine and Warning Display
FAA	Federal Aviation Administration
FFS	Full Flight Simulator (Level A or Higher)
FGCP	Flight Guidance Control Panel
FMA	Flight Mode Annunciator

FMS	Flight Management System
FSB	Flight Standardization Board
FSTD	Flight Simulation Training Device
FTD	Flight Training Device (Level 4–7)
FWD	Forward
FWS	Flight Warning System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GS	Ground Speed
HYD	Hydraulic
IAS	Indicated Airspeed
ICBI	Interactive Computer-Based Instruction
ICP	Index Control Panel
IESI	Integrated Electronic Standby Instrument
IMA	Integrated Modular Avionics
MCDU	Multifunction Control Display Units
MDR	Master Differences Requirements
MFC	Multifunction Computer
MFD	Multifunction Display
MFF	Mixed Fleet Flying
MOD	Modification
MPC	Multipurpose Computer
NAS	National Airspace System
NAV	Navigation
ND	Navigation Display
OAT	Outside Air Temperature
OEI	One-Engine Inoperative
Pb	Push Button
PEC	Propeller Electronic Control
PF	Pilot Flying
PFD	Primary Flight Display
PL	Power Lever
PTS	Practical Test Standards
PTT	Part Task Trainers
PWR	Power
QTY	Quantity
RA	Radio Altimeter
RMI	Radio Magnetic Indicator
RMU	Radio Management Unit
SAT	Saturated Air Temperature
SD	System Display
SLF	Supervised Line Flying
STBY	Standby
SU	Stand-Up Instruction
TAS	True Airspeed
TAT	Total Air Temperature
TAWS	Terrain Alert and Warning System

TCBI	Tutorial Computer-Based Instruction
TCAS	Traffic Alert and Collision Avoidance System
TCDS	Type Certification Data Sheet
TO	Takeoff
TOLD	Takeoff and Landing Data
TRU	Transformer Rectifier Unit
V ₁	Takeoff Decision Speed
VCP	Virtual Control Panel
VHF	Very High Frequency
VSI	Vertical Speed Indicator
XFEED	Cross Feed
VIS	Visibility

6 DEFINITIONS

These definitions are for the purposes of this report only.

- 6.1 Base Aircraft.** An aircraft identified for use as a reference to compare differences with another aircraft.
- 6.2 Current.** A crewmember meets all requirements to operate the aircraft under the applicable operating part.
- 6.3 Differences Tables.** Describe the differences between a pair of related aircraft and the minimum levels operators must use to conduct differences training and checking of crewmembers. Difference levels range from A to E.
- 6.4 Master Differences Requirements (MDR).** Specifies the highest training and checking difference levels between a pair of related aircraft derived from the Differences Tables.
- 6.5 Mixed Fleet Flying (MFF).** The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.
- 6.6 Operational Evaluation.** An AEG process to determine pilot type rating, minimum crewmember training, checking and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).
- 6.7 Operational Suitability.** An AEG determination that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 133, 135).
- 6.8 Qualified.** A crewmember holds the appropriate airman certificate and ratings as required by the applicable operating part.
- 6.9 Related Aircraft.** Any two or more aircraft of the same make with either the same or different type certificates that have been demonstrated and determined by the Administrator to have commonality.

- 6.10 Seat Dependent Tasks.** Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.
- 6.11 Special Emphasis Area.** A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time, specialized training devices, or training equipment.
- 6.12 Specific Flight Characteristics.** A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.
- 6.13 Variation of a particular type airplane.** Aircraft model designation and/or commercial version designation as per the applicable TCDS.

7 PILOT TYPE RATING

- 7.1 Type Rating.** The ATR42 and ATR72 type rating designation is ATR-42, ATR-72.
- 7.2 Common Type Ratings.** Not applicable.
- 7.3 Military Equivalent Designations.** Military aircraft that qualify for the ATR42, ATR72 can be found on the faa.gov website under Licenses and Certificates, Airmen Certification, Online Services, Aircraft Type Rating Designators. This webpage is kept up-to-date and can be found at http://www.faa.gov/licenses_certificates/airmen_certification.

8 RELATED AIRCRAFT

- 8.1 Related Aircraft on Same TCDS.** The ATR42-200, ATR42-300, ATR42-320 and ATR42-500 (and 600 version) are related to the ATR42. The ATR72-101, ATR72-201, ATR72-102, ATR72-202, ATR72-211, ATR72-212 and ATR72-212A (and 600 version) are related to the ATR72. The ATR42 models and version are related to the ATR72 models and version.
- 8.2 Related Aircraft on Different TCDS.** Not applicable.

9 PILOT TRAINING

- 9.1 Airman Experience.**

Airmen receiving initial ATR42 and/or ATR72 training should have prior experience in multi-engine and multi-crew transport category turboprop aircraft, advanced aircraft systems, high altitude operations, new generation avionics, as well as flight guidance system (FGS) and flight management system (FMS). Pilots without this experience may require additional training.

Airmen receiving differences, upgrade, and/or transition ATR42 and/or ATR72 training are assumed to have, for differences and upgrade training, previous experience in ATR42 and/or ATR72.

For airmen receiving differences and/or transition training without experience in ATR aircraft, the assumption maintains previous experience in multi-engine and multi-crew transport category turboprop aircraft, advanced aircraft systems, high altitude operations, new generation avionics, as well as FGS and FMS. Pilots without this experience may require additional training.

9.2 Special Emphasis Areas.

9.2.1 Pilots must receive special emphasis on the following areas during initial, upgrade, transition, differences and recurrent ground training.

- i)** Applicable to the ATR42-200, ATR42-300, ATR42-320, and/or the ATR72-101, ATR72-201, ATR72-102, ATR72-202, ATR72-211, ATR72-212:
 - a) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4, ATR-42/ATR-72 Special Training for Winter Operations, for detailed information).

- ii)** Applicable to the ATR42-500 and/or the ATR72-212A:
 - a) Powerplant and Propeller differences.
 - b) Propeller Electronic Control (PEC).
 - c) Automatic condition lever (CL) control (notch).
 - d) Automatic power lever (PL) control (notch) with power management.
 - e) Automatic ignition with power loss.
 - f) Air conditioning packs operations during single engine ground operations.
 - g) Higher single engine service ceiling.
 - h) Multifunction computer (MFC).
 - i) Transformer Rectifier Unit (TRU).
 - j) Stick pusher logic.
 - k) Inner wing deicing system.
 - l) Additional counter-rotating vortex generators on the wing.
 - m) Anti-icing cycle override.
 - n) Flap settings.
 - o) Electric pitch recoupling.
 - p) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4 for detailed information).

- iii)** Applicable to the ATR42-500 (600 version) and/or ATR72-212A (600 version):
 - a) Cockpit design and layout.
 - b) CRM and human factors applicable to new generation avionics operation.
 - c) New generation avionics system.
 - d) Navigation system.
 - e) Performance system.

- f) FGS.
- g) Communication system - Virtual Radio Management Unit (RMU).
- h) Abnormal and emergency operations (indications and procedures).
- i) Electronic checklist (ECL) operations for normal and non-normal operations.
- j) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4 for detailed information).

9.2.2 Pilots must receive special emphasis on, and perform the following areas during, initial, upgrade, transition, differences, and recurrent flight training.

- i)** Applicable to the ATR42-200, ATR42-300, ATR42-320, and/or the ATR72-101, ATR72-201, ATR72-102, ATR72-202, ATR72-211, ATR72-212:
 - a) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4 for detailed information).
- ii)** Applicable to the ATR42-500 and/or ATR72-212A:
 - a) PL and CL operation during approach procedures, all phases.
 - b) Additional approach flap setting for the ATR42-500.
 - c) TRU operation.
 - d) Bleed(s) operation during takeoff (ATR42-500 and 72-212A bleeds are automatically tripped OFF in the event of engine failure during takeoff).
 - e) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4 for detailed information).
- iii)** Applicable to the ATR42-500 (600 version) and/or ATR72-212A (600 version):
 - a) Cockpit familiarization (avionics, navigation, and FGS) during preflight preparation and setup as well as normal, abnormal, and emergency flight operations.
 - b) Effect of Type II and Type IV deicing fluids on the flight characteristics (see Appendix 4 for detailed information).

9.3 Specific Flight Characteristics.

Maneuvers/procedures required to be checked as referenced in the airline transport pilot (ATP) and aircraft type rating practical test standards (PTS) or Airman Certification Standards (ACS), as applicable, and/or part 121 appendix F.

There are no specific flight characteristics.

9.4 Seat Dependent Tasks.

Nose wheel steering (left seat) during initial, upgrade, transition, differences, and recurrent training.

9.5 Regulatory Training Requirements which are Not Applicable to the ATR42 and/or ATR72.

- a) Tuck and Mach buffet (no substitute available).
- b) Operation of systems and controls at the flight engineer station (no substitute available).
- c) Fuel Jettisoning (no substitute available).

9.6 Flight Simulation Training Devices (FSTD).

There are no specific systems, procedures, or maneuvers that are unique to the ATR42 and/or ATR72 that require a specific FSTD for training.

9.7 Training Equipment.

There are no specific systems or procedures that are unique to the ATR42 and/or ATR72 that require specific training equipment.

9.8 Differences Training Between Related Aircraft.

Pilots must receive differences training for mixed fleet flying (MFF) between the ATR42-200 through the ATR42-500 (600 version) and/or the ATR72-101 through the ATR72-212A (600 version) as applicable.

Pilots conducting MFF should alternate recurrent training every 12 months, at minimum, between the variations operated. The level of training is specified in Appendix 3, Differences Tables.

10 PILOT CHECKING

10.1 Landing from a No-Flap or Nonstandard Flap Approach.

The probability of flap extension failure on the ATR42 and/or ATR72 is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification or a 14 CFR part 61, § 61.58 proficiency check, part 91, § 91.1065 competency check, part 121, § 121.441 proficiency check, part 125, § 125.287 competency check, or part 135, § 135.293 competency check is required.

Refer to FAA Order 8900.1, Volume 5 when the test or check is conducted in an aircraft versus a full flight simulator (FFS).

10.2 Specific Flight Characteristics.

Maneuvers/procedures required to be checked as referenced in the ATP and aircraft type rating PTS or ACS, as applicable, and/or part 121 appendix F.

There are no specific flight characteristics.

10.3 Seat Dependent Tasks.

Pilots must be checked in these seat dependent tasks:

Nose wheel steering (left seat), initial, transition, upgrade, differences, and recurrent checking.

10.4 Other Checking Items.

Pilots must be checked in these tasks (when applicable):

Steep approach, initial, and recurrent checking.

10.5 FSTDs.

There are no specific systems, procedures, or maneuvers that are unique to the ATR42 and/or ATR72 that require a specific FSTD for checking.

10.6 Equipment.

There are no specific systems or procedures that are unique to the ATR42 and/or ATR72 that require specific equipment.

10.7 Differences Checking Between Related Aircraft.

Pilots must receive differences checking for MFF between the ATR42-200 through the ATR42-500 (600 version) and/or the ATR72-101 through the ATR72-212A (600 version) as applicable. Pilots should alternate full checks every 12 months, at minimum, between the variations operated. The preflight and equipment examination portion of any initial and recurrent checks must address each variation operated. The level of checking is specified in Appendix 3.

11 PILOT CURRENCY

11.1 Pilots must maintain currency in the following (when applicable):

Steep approaches. Six steep approaches within 6 months.

11.2 Differences Currency Between Related Aircraft.

Pilots must maintain the following differences currency for MFF between the ATR42-200 through the ATR42-500 (600 version) and/or the ATR72-101 through the ATR72-212A (600 version) as applicable:

Every 90 days, in each aircraft variation operated, either two operating cycles, as defined in § 121.431(b), or a single session in an approved Level C or D FFS during either a Line-Oriented Flight Training (LOFT), a Line-Operational Simulation (LOS), or a Special Purpose Operational Training (SPOT) session.

12 OPERATIONAL SUITABILITY

The ATR42 and/or ATR72 are operationally suitable for operations under parts 91, 121, 125, and 135. The list of operating rules evaluated is on file at the Transport Aircraft Seattle Branch.

13 MISCELLANEOUS

13.1 Forward Observer Seat.

The forward observer seat on all ATR42 and ATR72 variations meets the requirements of §§ 121.581(a), 125.317(b), and 135.75(b).

13.2 Emergency Evacuation.

The ATR42 and ATR72 emergency evacuations were successfully demonstrated by simulated emergency evacuations credited under § 121.291 for configurations and passenger capacities which may be specified in FAA Order 8900.1, Volume 3, Chapter 30, Section 7. The maximum demonstrated seating capacity is 60 for the ATR42 and 74 for the ATR72. Accordingly, a § 121.291 full capacity evacuation is not necessary for future ATR42 and ATR72 aircraft variations in configurations consistent with previous demonstrations. Passenger capacity less than or equal to the previously demonstrated capacity may be authorized. A partial demonstration is required unless the particular certificate holder is operating or has previously operated ATR42 or ATR72 variations with the same or similar interior and exit configuration.

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	<ul style="list-style-type: none"> • Operating manual revision (HO) • Flightcrew operating bulletin (HO) 	<ul style="list-style-type: none"> • Crew has already demonstrated understanding on base aircraft (e.g., updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g., different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	<ul style="list-style-type: none"> • Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU) 	<ul style="list-style-type: none"> • Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit procedures trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuvers Devices	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Motion, visual, control loading, audio, and specific environmental conditions are required. • Significant full task differences that require a high fidelity environment. • Usually correlates with significant differences in handling qualities.

Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None	None
B	<ul style="list-style-type: none"> • Oral or written exam • Tutorial computer-based instruction self-test (TCBI) 	<ul style="list-style-type: none"> • Individual systems or related groups of systems.
C	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit procedures trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control loading, and specific environmental conditions may be required.
E	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Significant full task differences that require a high fidelity environment.

APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables in Appendix 3. Differences levels are arranged as training/checking.

Related Aircraft ↓	Base Aircraft →	ATR42 -200/300	ATR42 -500	ATR42 -500 600 version	ATR72 -100/200	ATR72 -210	ATR72 -212A	ATR72 -212A 600 version
ATR42 -200/300		Not applicable	B/A*	Not evaluated	B/A*	B/A*	B/A*	Not evaluated
ATR42 -500		B/A*	Not applicable	D/C*	A/A*	A/A*	A/A*	D/C*
ATR42 -500 600 version		Not evaluated	D/C*	Not applicable	Not evaluated	Not evaluated	D/C*	A/A*
ATR72 -100/200		B/A*	A/A*	Not evaluated	Not applicable	A/A*	A/A*	Not evaluated
ATR72 -210		B/A*	A/A*	Not evaluated	A/A*	Not applicable	A/A*	Not evaluated
ATR72 -212A		B/A*	A/A*	D/C*	A/A*	A/A*	Not applicable	D/C*
ATR72 -212A 600 version		Not evaluated	D/C*	A/A*	Not evaluated	Not evaluated	D/C*	Not applicable

Supervised Line Flying (SLF)

* Specifies a requirement for SLF for both crew positions prior to being qualified for specific crew position, pilot in command (PIC) or second in command (SIC), without the supervision of a qualified and current line check pilot.

Pilots must complete a minimum of three SLF flight segments in the specific ATR aircraft variation.

Pilots must also complete six SLF flight segments for transition “to or from” an ATR “600 version” aircraft variation “to or from” any other ATR aircraft variation.

SLF, as well as other required Operating Experience (OE) pertinent to each pilot, must be obtained while serving as the pilot flying (PF).

All SLF segments must be under the supervision of a line check pilot qualified and current on the applicable ATR aircraft variation.

A proficiency flight/check profile in the actual aircraft (applicable ATR aircraft variation) with a check pilot, in which at least three takeoffs (power manipulations) and landings, at least one of which is made out of either a precision or non-precision approach, may be substituted for the two SLF segments.

Provisions of this SLF section do not preclude additional and separate requirements which otherwise may be necessary, such as compliance with 14 CFR part 121, §121.434 “OE, operating cycles, and consolidation of knowledge and skills” and § 121.445 regarding operations in special areas or into special airports.

APPENDIX 3. DIFFERENCES TABLES

This Design Differences Table, from the ATR42-500 and ATR-72-212A to the ATR42-500 and ATR-72-212A 600 versions, was proposed by ATR - GIE Avions de Transport Régional and validated by the Flight Standardization Board (FS)B on June 11, 2011, and May 23, 2013. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions						
	Aircraft General	Multifunction Display (MFD) DOORS - Display Unit (DU) indications LIGHTS & SIGNS - DU indications MEMO PANEL - DU indications	NO	YES	D	C
	Integrated Systems	Integrated Modular Avionics (IMA) Multifunction Computer (MFC) Multipurpose Computer (MPC)	NO	YES	D	C
	Flight Warning System (FWS)	Cockpit colors philosophy FWS description Alert window EMER audio cancel and TO config test Aural alarms	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Air	Pneumatic system display Air conditioning display Avionics ventilation display Pressurization display	NO	YES	D	C
	Automatic Flight Control System (AFCS)	Flight Mode Annunciator (FMA) Flight Guidance Control Panel (FGCP) Index Control Panel (ICP) Multi Control Display Unit (MCDU)	NO	YES	D	C
	Communications	VHF control TCAS and ATC control box Virtual Control Panel (VCP) Multipurpose Control Panel (MCP) Multi Control Display Unit (MCDU) Integrated Electronic Standby Instrument (IESI) AUDIO SEL pb	NO	YES	D	C
	Electrical Systems	DU System Display page (SD)	NO	YES	D	C
	Emergency Equipment	Oxygen panel and display (MFD)	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Fire Protection	Avionics FWD and AFT smoke Detection (SD Cabin) Engine and Warning Display (EWD) Condition levers fuel light Compartment smoke panel (SD Cabin)	NO	YES	D	C
	Flight Controls	Gust lock - AIL LOCK LIT (EWD) Stick Shaker/Stick Pusher pb and display (FMA) Trim position indicator (EWD) Pitch trim asym light (EWD) Flaps position indicator (EWD)	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Flight Instruments	Primary Flight Display (PFD) Airspeed indicator Altimeter Index Control Panel (ICP) TCAS Vertical speed indicator (VSI) Multifunction Display (MFD) EFIS Control Panel (EFCP) Engine and Warning Display (EWD) Navigation Display (ND) Source failure alert (local alert) Switching panel Multipurpose Control Panel (MCP) Weather radar control TAT/SAT indicator TAS/GS and wind direction indicator Clocks Flight time indicator - lapsed time pb STBY instruments - integrated electronic Standby instrument (IESI)	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Fuel System	Fuel system display (SD engine) Fuel XFEED (memo panel and SD) Fuel low level (SD and FWS) Engine fire procedure Fuel QTY indication	NO	YES	D	C
	Hydraulic System	SD ACW and hydraulic pressure indication (MFD)	NO	YES	D	C
	Ice and Rain Protection	Ice detector panel and icing AOA (FMA) Aircraft Performance Monitoring (APM on FMA and IAS Tape) Deicing/anti-icing indication (memo panel display)	NO	YES	D	C
	Landing Gear	Landing gear position indicators Brakes temperature and antiskid (FWS)	NO	YES	D	C
	Navigation System	Nav control (MFD, MCP, VCP, MCDU) TAWS panel, pb and alert modes ND overlay AFCS AHRS ADC GPS Radio Altimeter (RA)	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A 600 versions	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Flight Management System (FMS)	System overview Operational principles Pilot interface - description of the pilot interface on the MCDU including hierarchy and detailed description of the pages Flight phase related procedures Multiphase related procedures Abnormal procedures - description of the alarm messages, operational checking procedures and analyzing status Maintenance procedures - description of the maintenance procedures and technical Information.	NO	YES	D	C
	Powerplant	Power and propeller controls Engine indication (EWD)	NO	YES	D	C
	Electronic Checklist (ECL)	Operations for normal and non-normal Operations.	NO	YES	D	C

This Design Differences Table, from the ATR42-500 and ATR72-212A 600 versions to the ATR42-500 and ATR72-212A, was proposed by ATR - GIE Avions de Transport Régional and validated by the FSB on June 11, 2011, and May 23, 2013. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A 600 versions TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Aircraft General	DOORS - Panel indications LIGHTS & SIGNS - Panel indications MEMO PANEL - Panel indications	NO	YES	D	C
	Multifunction Computer (MFC)	Multifunction Computer (MFC)	NO	YES	D	C
	Centralized Crew Alerting System (CCAS)	Cockpit colors philosophy CCAS description Crew Alerting Panel (CAP) EMER audio cancel and TO config test Aural alarms	NO	YES	D	C
	Air	Pneumatic system panel Air conditioning panel Avionics ventilation panel Pressurization panel	NO	YES	D	C
	Automatic Flight Control System (AFCS)	Advisory Display Unit (ADU) AFCS control panel	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A 600 versions TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Communications	VHF control TCAS and ATC control box AUDIO SEL pb	NO	YES	D	C
	Electrical Systems	Electrical system panels	NO	YES	D	C
	Emergency Equipment	Oxygen panel	NO	YES	D	C
	Fire Protection	Avionics FWD and AFT smoke Detection alerts Condition levers fuel light Compartment smoke panel	NO	YES	D	C
	Flight Controls	Gust lock Stick shaker/stick pusher pb and light Trim position indicator Pitch trim asym light Flaps position indicator	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A 600 versions TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Flight Instruments	Electronic Attitude Director Indicator (EADI) Electronic Horizontal Situation Indicator (EHSI) Altimeter EFIS Control Panel (EFCP) Source failure alert (local alert) Switching panel Weather radar control TAT/SAT indicator TAS/GS indicator Clocks STBY instruments Airspeed indicator Altimeter Radio Magnetic Indicator (RMI) TCAS Vertical Speed Indicator (VSI)	NO	YES	D	C
	Fuel System	Fuel system panel Fuel low level Engine fire procedure Fuel QTY panel XFEED advisory light	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A 600 versions TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Hydraulic System	HYD PWR panel Pressure indicator AUX pump pedestal switch	NO	YES	D	C
	Ice and Rain Protection	Ice detector panel and icing AOA Deicing and anti-icing panel Deicing memo panel	NO	YES	D	C
	Landing Gear	Landing gear position indicators Brakes temperature and antiskid	NO	YES	D	C
	Navigation System	Nav control box AFCS AHRS ADC EGPWS GPS/GNSS Radio Altimeter (RA)	NO	YES	D	C

FROM BASE AIRCRAFT: ATR42-500 and ATR72-212A 600 versions TO RELATED AIRCRAFT: ATR42-500 and ATR72-212A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Flight Management System (FMS)	System overview Operational principles Pilot interface Flight phase related procedures Multiphase related procedures Abnormal procedures - description of the alarm messages, operational checking procedures and analyzing status Maintenance procedures - description of the maintenance procedures and technical Information.	NO	YES	D	C
	Powerplant	Power and propeller controls Engine indicators ATPCS test panel	NO	YES	D	C

APPENDIX 4. ATR42/ATR72 SPECIAL TRAINING for WINTER OPERATIONS

USE OF TYPE II/IV DEICING/ANTI-ICING FLUIDS TRAINING

1. Background

Due to the potential for higher than normal unstick forces during takeoff with type II or type IV deicing/anti-icing fluids applied, the following special training for winter operations is required.

2. Pilot Type Rating

ATR42, ATR72.

3. Related Aircraft

All ATR42 or ATR72 variations.

4. Pilot Training

Ground Training (computer-based training (CBT) or classroom).

Minimum Curriculum:

- Ground Deicing procedure.
- Use of Type II/IV fluids.
- Position of control surfaces.
- Effects of Type II/IV fluids on ATR.
- Description of the aerodynamic phenomena.
- Effects on the takeoff phase.
- Takeoff procedures
- Airplane Flight Manual (AFM) procedures:
 - Method No. 1.
 - Method No. 2 *.
- Impact on performance,
- Assisted takeoff procedure with Type II/IV *,
- Takeoff briefing,
- Takeoff sequence,

* If the operator chooses to NOT use AFM Method No.2 for takeoff, then this training is not required.

Flight Training:

Must be accomplished in an approved Level C or D full flight simulator (FFS) capable of emulating applicable forces, specific environmental conditions, and handling qualities. After takeoff, the FFS may be reset to the takeoff position upon pilot flying's (PF) "Gear Up" call.

NOTE 1: PF is captain or left seat (CM1)/pilot in command (PIC).

NOTE 2: Assisted takeoff is task oriented (not seat dependant). Flightcrew members must receive training for both performing the takeoff and assisting the takeoff.

Item	Use of Procedures Description	Checklist Anti-Ice/Deice	Conditions
1.	Normal takeoff Experience normal forces on elevator.	Normal Level 1	Normal; Vis.: > 10 km OAT: 1 °C Ceiling: 1,000 ft
2.	Takeoff with Type II/IV fluid. Experience the force required to overcome adverse effect of fluids on elevator.	Level 1 + 2	Icing; Vis.: < 1 nm In moisture TAT: < 7 °C Type II/IV applied
3. *	Takeoff with Type II/IV fluid with assistance. Practice to proficiency.	Level 1 + 2	Icing; Vis.: < 1 nm In moisture TAT: < 7 °C Type II/IV applied
4 a.	Takeoff with Type II/IV fluid. Engine failure at V ₁ . Practice to proficiency.	Level 1 + 2	Icing; Vis.: < 1 nm In moisture TAT: < 7 °C Type II/IV applied
OR			
4 b. *	Takeoff with Type II/IV fluid with assistance. Engine failure at V ₁ Practice to proficiency. Demonstrates that, after assistance, procedures remain unchanged.	Level 1 + 2	Icing; Vis.: < 1 nm In moisture TAT: < 7 °C Type II/IV applied

* If the operator chooses to NOT use AFM Method No.2 for takeoff, then this training is not required.

APPENDIX 5. ATR42/ATR72 STEEP APPROACH LANDING OPERATIONS

1. Background

Avions de Transport Régional (ATR) applied to the Federal Aviation Administration (FAA) in July 2012 for the validation of steep approach capability and with reduced landing distance accompanied by performance credit. In accordance with Advisory Circular (AC) 25-7C, Flight Test Guide for Certification of Transport Category Airplanes, and 14 CFR part 25, §§ 25.119, 25.121, 25.235, and 25.143, a Flight Standardization Board (FSB) was convened in May 2013 to evaluate operational suitability to determine training, checking, and currency requirements for conducting steep approach landing operations in the ATR42 and ATR72 aircraft variations.

The FSB completed academic and flight training at ATR's Headquarters in Toulouse, France. FSB members flew the ATR42-500 aircraft in Toulouse Blagnac, France. Certification activities were conducted together along with the FSB evaluation. Certification activities included sessions on a full flight simulator (FFS) at ATR facilities in Toulouse, France.

ATR requested that the FAA accept this project (evaluation) as validation for all aircraft variations of the ATR42 and 72 (ATR72 without the "Steep Slope with Reduced Landing Distance" modification). Steep approach landing operations in the ATR42 and ATR72 aircraft are defined as those glide paths greater than 4.5° and less than or equal to 6.0° .

ATR has two modifications established for steep approach:

- Major Mod 4404 steep approach capability (4.5° – 6.0°) ATR42-500.
- Major Mod 4972 steep slope with reduced landing distance ATR42-500.

Three phases (days) were used to complete the evaluation. Incorporated throughout the evaluation were an introduction and briefing provided by the European Aeronautic Defense and Space Company (EADS) and ATR, flight training device (FTD) scenarios, Level D FFS scenarios, aircraft flight operation scenarios, and a debrief.

The FTD utilized was an ATR42-500.

The FFS (Level D) utilized was an ATR42-500.

The aircraft utilized was an ATR42-500 (600 version).

The FSB evaluation included numerous steep approach landing operations, both on the FFS and on the actual aircraft. Lugano, Switzerland (LSZA), and Toulouse Blagnac, France (LFBO), were both used to evaluate steep approach with screen heights to 35 feet and 50 feet in accordance with AC 25-7C. (Screen height is the height at which a transition from the final approach speed and the selected approach path angle to the start of a landing flare/touchdown condition should be made.)

Steep approach landing operations were conducted during the day and night conditions using either 5.5° or 6.0° approach angles. Some abuse cases, up to 8.0° approach angles, were also conducted. The aircraft was loaded to the most critical weight and center of gravity (CG) for the flight. A visual scenario was conducted at LFBO utilizing an adjusted precision approach path indicator (PAPI) for 6.0° descent. All engines operative and one-engine inoperative (OEI) steep approach landing operations were flown, terminating either with a landing or execution of a missed approach or bailed landing procedure. Although all steep approach landing operations in either the ATR42 or ATR72 applicable variations must be conducted with all engines operative, the FSB evaluated piloting skills required to perform an OEI extraction should an engine fail at or below decision altitude (DA). Demonstrated crosswind operations during the evaluation was 10 kts in the ATR42-500 aircraft. During the use of ATR42-500 Level D FFS, the demonstrated capability was 25 kts.

2. Pilot Type Rating

ATR42, ATR72.

3. Related Aircraft

All ATR42 and/or ATR72 variations.

4. Pilot Training

Academic training must consist of training in the following areas and is appropriate to any aircrew position:

- 4.1 Airplane Flight Manual (AFM) review to include: normal procedures, abnormal procedures, emergency procedures, limitations, and performance with special emphasis on landing distance.
- 4.2 Stages of steep approach to include: stabilized approach concept as a key success for steep approach landing, timely establishment of appropriate aircraft configuration, and stabilized approach conditions and approach speed.
- 4.3 Comparison of the steep approach sight picture to that of a 3.0° (normal) approach.
- 4.4 Pilot techniques to include: flare, avoidance of abrupt control inputs, ground rush illusion, and cross wind landings.
- 4.5 Operational conditions to include: icing conditions, crosswind and gusting conditions, OEI procedures, terminated approach, missed approach, go-around, and rejected landing.
- 4.6 Identification and specificity of airports with steep approaches to include arrival and departure procedures and noise abatement procedures.
- 4.7 Discussion of an unstabilized approach. Emphasis of the requirement to execute a missed approach when such a condition occurs.

- 4.8 Overly aggressive pitch input during flare resulting in a momentary stall warning. Emphasis of the requirement to execute a missed approach when such a condition occurs.
- 4.9 Overly aggressive pitch input during flare without a stall warning occurring. Pilots should consider the effect on landing distance and the option for a balked landing, missed approach, etc.
- 4.10 Human factors and common errors in relation to steep approach and screen height operation.
- 4.11 Crew resource and coordination management and situational awareness.

Flight Training, FFS, and/or Aircraft:

- 4.11 Use of aircraft equipment to include: use of autopilot (automatic flight control system (AFCS)), use of the steep approach button if equipped, steep approach with and without the flight director (FD) displayed.
- 4.12 Pilot techniques to include flare, avoidance of abrupt control inputs, ground rush illusion, and cross wind landings.
- 4.13 Stages of steep approach to include: stabilized approach concept as a key success for steep approach landing, timely establishment of appropriate aircraft configuration, and stabilized approach conditions and approach speed.
- 4.14 Operational conditions to include icing conditions, crosswind and gusting conditions, OEI procedures, terminated approach, missed approach, go-around, and rejected landing.
- 4.15 Specific airport operation with steep approaches to include arrival and departure procedures, takeoff and landing data (TOLD) performance, limitations, common conditions (winds and weather, etc.), and noise abatement procedures.
- 4.15 Satisfactory completion of Level C or D FFS training to applicable airport.
- 4.16 Supervised Line Flying (SLF) (see NOTE below) at specific airports, in the applicable aircraft, a minimum of six steep approaches to full-stop landings and six departures.
- 4.17 SLF at specific airports, in the applicable aircraft, a minimum of four steep approaches with applicable screen height operation.

NOTE: All SLF must be under the supervision of a line check pilot qualified and current on the applicable ATR aircraft variation.

Differences Training:

For differences training for steep approach between ATR42 variations, the FSB determined the differences training is Level A. For differences training for steep approach between ATR72 variations, FSB determined the differences training is Level A. For differences training for steep

approach between the ATR42 variations and the ATR72 variations, the FSB determined the differences training is Level D requiring an FFS.

5. Pilot Checking

Pilot checking requirements are dependent upon the training program objectives and operational parts and will be defined by each training program.

6. Pilot Recurrent Training

Recurrent training requirements for steep approach operations should be incorporated into a train to proficiency model with recurrent training based on a 12 calendar-month cycle.

Regardless of the number of steep approaches completed by individual pilots during the past 12 months, a full review of all academic and flight training items must be accomplished annually and documented in a manner acceptable to the Administrator.

7. Operational Suitability

The FSB has determined that all current ATR-42 or ATR-72 variations are operationally suitable under 14 CFR parts 91, 121, 125, and 135 to conduct steep approach landing operations with aircrew trained in accordance with the requirements set in this appendix. Screen height capability of 35 feet and 50 feet are applicable to the ATR42 variations ONLY.