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AgustaWestland AW139

OPERATIONAL SUITABILITY DATA
FLIGHT CREW DATA

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Leonardo Helicopters

Operational Suitability Data (OSD)
Flight Crew

AW139

Leonardo S.p.A. – Helicopters

May 2023

Doc. N° 139G0000N027 Issue E

AW139
Operational Suitability Data (OSD)
Flight Crew

This Operational Suitability Data (OSD) – Flight Crew Data is originally approved by the European Union Aviation Safety Agency (EASA) with the Type Certificate No. EASA.R.006, as part of the Operational Suitability Data (OSD) as per Regulation (EU) 748/2012 as amended by Regulation (EU) 69/2014.

Subsequent revisions approvals are reported in the Log of Revision

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REVISION HISTORY

ISSUE	CHANGE DESCRIPTION	ISSUE DATE	APPROVAL
A	- First issue	December 2015	EASA first approval from OEB to OSD dated 14 December 2015
B	- General Revision	July 2020	EASA approved with Approval Number 10073688 Rev.1 dated 2 July 2020
C	- Fixed a clerical error in Par. 5.7.2 (Additional IR Extension table)	November 2020	Approved under the authority of DOA ref. EASA.21J.005 through NDC number NDC-139G0061-002/3 dated 13 November 2020
D	- Introduction of "Family Concept Approach" - Added Family Credits for Pilots AW189 rated - Added a note regarding A139 license endorsement within the chapter "Aircraft Type Designation and License Endorsement" - Implementation of some words clarifications and improvements.	June 2022	EASA approved with Approval Number 10079418 dated 7 June 2022

E	- Added Family Credits for pilots already rated with AW169; - Introduced a new chapter which makes the use of the FSTDs for the recurrent training clear in relation to the aircraft software phases on which pilots to be trained are qualified; - Introduced a recommended recurrent training program for pilot operating the AW139 type helicopter and a reduced recurrent training footprint; - Removed the additional training credits for pilots already rated with AW189 if a FTD is used as training device; - Implementation of some words clarifications and improvements; - New Company logo at the cover pages. *Note: Revised text is indicated by a black lateral revision bar.*	May 2023	EASA approved with Approval Number 10081923 dated 12 May 2023

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1 GENERAL

1.1 Scope

The scope of this document is to establish the Flight Crew Data for the Leonardo helicopter AB139/AW139, in accordance with EASA CS-FCD. For the scope of this document, the AW139 will refer to the models AB139 and AW139. 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 this document. Users should take account of subsequent amendments to any references, in particular concerning requirement for civil aviation aircrew and air operations. Determinations made in this document are based on the evaluations of specific configurations of aircraft models, equipped in a given configuration and in accordance with current regulations and guidance.

Modifications and upgrades to the aircraft evaluated require additional OSD assessment for type designation, training / checking / currency, operational credits, and other elements within the scope of the OSD evaluations.

In accordance with Commission Regulation (EU) No 69/2014 of 27 Jan 2014, the Operational Suitability Data contained in this document are identified as follows:

[M] Mandatory Operational Suitability Data, bearing the status of rule

[AMC] Non-mandatory Operational Suitability Data, bearing the status of Acceptable Means of Compliance.

1.2 Applicability

This document provides:

- General description of the AW139;
- Type Rating and license endorsement (FCL.010 and FCL 700) [M];
- Minimum Type Rating training [M];
- Training footprint for commonality credits [AMC];
- Recommended recurrent training program [AMC];
- Training Areas of Special Emphasis (TASE) [M];
- Descriptions of difference training for avionic software upgrades [M];
- Description of Specific Mandatory Training [M];
- Description of Specific Recommended Training [AMC].

This document is applicable to the helicopter type AW139 (as per TCDS No. EASA.R.006).

1.3 References

Regulations/Specifications:

- Commission Regulation (EU) N° 1178/2011
- Commission Regulation (EU) N° 748/2012
- Commission Regulation (EU) N° 69/2014
- Commission Regulation (EU) N° 1321/2014
- Commission Regulation (EU) N° 70/2014
- Commission Regulation (EU) N° 71/2014
- ED Decision 2014/008/R (annex CS-FCD)
- ED Decision 2016/007/R

2 ACRONYMS AND DEFINITIONS

2.1 Acronyms

AEO	All Engine Operative
AFCS	Automatic Flight Control System
ALT	Altitude
ALTA	Altitude Acquire
ALVL	Autolevel
AMC	Acceptable Means of Compliance
APP	Approach
ATO	Approved Training Organization
ATR	Additional Type Rating
AW	AgustaWestland
BC	Back course
CAS	Crew Alerting System
CBT	Computer Based Training
CCP	Crew Coordination Procedure
CFIT	Controlled Flight Into Terrain
CRM	Crew Resource Management
CS	Certification Specification
EASA	European Union Aviation Safety Agency
EU	European Union
FC	Flight Crew
FCD	Flight Crew Data
FCL	Flight Crew Licensing
FD	Flight Director
FFS	Full Flight Simulator
FMS	Flight Management System
FSTD	Flight Simulation Training Device
FTD	Flight Training Device
FTR	Family Type Rating
GA	Go-around
GM	Guidance Material
HDG	Heading
HELO	Helicopter
HHO	Helicopter Hoist Operations
HOV	Hover
HTAWS	Helicopter Terrain Awareness and Warning System
IAS	Indicated Airspeed

ILS	Instrument Landing System
IFR	Instrument Flight Rules
IR	Instrument Rating
ITR	Initial Type Rating
L	Litres
LIDAR	Laser Imaging Detection and Ranging
M	Mandatory
MAU	Modular Avionics Unit
MP	Multi Pilot
MDR	Master Differences Requirements
MET-H	Multi Engine Turbine Helicopter
MFD	Multifunction Display
MTOM	Maximum Take Off Mass
NAV	Navigation
NDC	Notice of Design Change
ODR	Operator Differences Requirements
OEI	One Engine Inoperative
OPLS	Obstacle Proximity Lidar System
OS	Over Station
OSD	Operational Suitable Data
OTD	Other Training Device
PF	Pilot Fixing
PFD	Primary Flight Display
PM	Pilot Monitoring
QRH	Quick Reference Handbook
RFM	Rotorcraft Flight Manual
RHT	Radio Height
SAR	Search and Rescue
SP	Single Pilot
TASE	Training Area of Special Emphasis
TCAS	Traffic and Collision Avoidance System
TCDS	Type Certificate Data Sheet
TU	Transition Up
VFR	Visual Flight Rules
VIPT	Virtual Interactive Procedural Trainer
VNE	Velocity Never Exceed
VOR	VHF Omnidirectional Range
VS	Vertical Speed

2.2 Definitions

Difference Level	A designated level of difference as defined in CS-FCD for the evaluation of pilot training, checking and currency.
Family Concept Approach	The way to establish training credits for pilots already type rated on existing Leonardo Helicopters Products based on the evaluations of communalities between different aircraft types.
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 16/2008 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 and of Council (as the Parliament amended).

3 AIRCRAFT TYPE DESIGNATION AND PILOT LICENSE ENDORSEMENT [M]

With reference to Part-FCL FCL.010 (“type of aircraft”) and GM1 FCL.700, the Leonardo Helicopters AW139 series have been evaluated for aircraft categorization and license endorsement as follows:

Manufacturer	Helicopter Model / Name (1)	Differences (2)	License Endorsement (3)
Leonardo -ME Turbine-	AB139 and AW139 Phase 4 AW139 Phase 5 AW139 Phase 7	(D)	**AW139**
	AW139 Phase 8		

(1): AW139 Phase 4 is the base aircraft [ref. CS FCD.105]

(2): (D) Reported above indicates that differences training, in accordance with FCL.710, are required.

(3): A139 has to be modified in AW139, as license endorsement, at the first opportunity by the National Aviation Authorities. A139 remains valid till the 31st of December 2024 as license endorsement.

4 AIRCRAFT MAIN CHARACTERISTICS

4.1 General

The AW139 is certified in accordance with Certification Specification 29 as Large Rotorcraft Category A and B, with limitations of operations and crews as reported in Rotor Flight Manual Section 1 Limitations (refer to last revision of RFM).

The AW139 is a twin-engine transport helicopter having a conventional configuration with a 5-blades fully articulated main rotor, a 4-blades tail rotor and a tricycle retractable wheel landing gear. The AW139 is a Single pilot day & night VFR/IFR helicopter.

AW139 and AB139 are two names for the same product. They identify two batches of aircraft manufactured in conformity with a unique Type Certificate Data Sheet.

4.2 Cockpit Layout

The cockpit includes dual Primary Flight Displays (PFD), dual Multi-function Displays (MFD) and dual Multi-function Control Display Units (MCDU) for the Flight Management System.

The avionics and the FMS are fully integrated and some of the aircraft main systems are also are monitored and controlled through menus available from within the PFD or MFD screens (e.g. TAWS, weather radar, TCAS, electrical & hydraulic system status and Crew Alerting System (CAS).

The standby instrument display is a single ESIS unit in the center of the instrument panel, powered by the aircraft electrical system This instrument receives information from one of the dual AHRS and ADC and is designed to provide attitude, heading, airspeed and altitude indication as well as navigation information.

The Automatic Flight Control System (AFCS) is a duplex redundant electromechanical system that provides, with hydraulic assistance, automatic control of the rotor control system.
The auto stabilization part of the system provides short-term corrections against unwanted inputs such as turbulence, making for a smoother flight. The autopilot part of AFCS carries out long-term corrections such as height hold or heading hold.
The AFCS is also coupled through the Flight Management System (FMS) to the navigation systems, integrating functions such as automatic approach and auto track of VOR radials.
The helicopter is equipped with the Honeywell PRIMUS EPIC Integrated Avionics and Flight Control System.

Cockpit Layout

4.3 Aircraft main characteristics

AW139			
Dimensions	Fuselage	Length	13,53 m
		Width	3,50 m
		Height	3,57 m
	Main rotor	Diameter	13,80 m
	Tail rotor		2,70 m
Number of Main/Tail Rotor Blades			5/4
Minimum Flight Crew (see RFM)	VFR		1
	IFR		1
Seating Capacity	Passengers Seats		17
Engines			2 x PWC PT6C-67C
Fuel tanks	Total		1608 Kg
Air Speed	Power ON	Absolute VNE	168 KIAS
	Power OFF		148 KIAS
Rotor Speed	Power ON	100% NR	296rpm
Maximum Operating	Pressure Altitude		20000 ft
MTOM with Internal load (see RFM)			6400 Kg
Category A: (see RFM)	Density Alt	Clear Heliport	14000 ft
		VTOL operations	Variable (see RFM)

AW139 main characteristics

5 SPECIFICATIONS FOR PILOT TRAINING

5.1 General

These specifications for pilot training are applicable to the base aircraft AW139 EPIC phase 4.
In accordance with EASA guidelines, Leonardo Helicopters recommends extensive use of FSTDs by Approved Training Organizations. Fidelity level, technical criteria and operational features of such devices allow different achievement of training objectives. In this document, FFS designate standard EASA qualification levels FFS C or D and devices having dual qualification FFS B & FTD 3. Due to the complexity of the systems of the AW139 displays and systems integration Leonardo Helicopters recommends, to better understand their functions, it is strongly recommended to integrate a training device (OTD) during the theoretical course and before commencing the flight training. Those OTDs can be a VIPT, CBT, eventually helicopter on the ground but also a FNPT and, if those are not available, upper level devices like FTD, FFS or an equivalent way of cockpit training proposed by the training organizations. However no credit towards flight training is given hereby.

5.2 Training Areas of Special Emphasis (TASE) [M]

The following training areas of special emphasis are applicable to the base aircraft AW139 (EPIC phase 4); further helicopter developments will determine additional TASE (if necessary), or will determine the non-applicability of the existing ones (see chapter 7.1 for details).
Here below several helicopter systems and/or procedures that should receive specific attention in the AW139 type rating courses:

- Failure of both autopilots. Working with autopilots off, pilots must keep their hands on the controls, manually flying the helicopter. Special emphasis should be placed on coordination between cyclic, collective and pedals in flight and hover phase. The AW139 helicopter without autopilots is easily controllable in longitudinal and lateral axes but care is required in yaw control due to yaw reaction with power change. To become familiar with this situation pilot can be trained following these maneuvers:
    - Steady hover and disengage both autopilots
    - Land from hover without autopilots
    - Spot Turns IGE without autopilots
    - Rolling landing (approximately 10 KT GS) without autopilots
    - Demonstration of Autopilots disengaged at 80 KIAS
    - Demonstration of Autopilots disengaged at 120 KIAS
    - Demonstration of deceleration from 120 to 60 KIAS
    - Demonstration of Autopilots disengaged above 120 KIAS

  All the above maneuvers end with the completion of an autopilot off landing; the training must be performed in VMC condition with no excessive wind or turbulence.

- Crew Alerting System (CAS). The helicopter systems are monitored through the Crew Alerting System (CAS). There are over 200 CAS messages that could appear (normally appearing in the lower part of the MFD) either on the ground or during flight. The messages are color-coded white, green amber and red to reflect normal, cautionary and emergency conditions as appropriate. It is not reasonable to expect a pilot to remember all the appropriate actions for

each of these and a comprehensive QRH needs to be immediately available in the cockpit for every flight.
The inter-relationship between systems and their automation means that a series of messages may appear at one time, revealing a number of symptoms that may be the result of a single system fault.
Although, the most urgent or compelling message is normally prioritized to the top of the visible list, any such situation requires a thorough understanding of the systems by the pilot to avoid an inappropriate action or delayed intervention by the pilot.

- Flight Director (FD). The 4-axis Flight Director (FD) provides commands that are coupled to the autopilot (AP) for automatic flight path control around the three axis (pitch, roll, yaw) plus collective.
  The 4-axis Flight Director can work in coupled or in uncoupled mode depending on crew selection. Two different versions of 4-axis FD (Basic and Enhanced) are currently certified for the AB/AW139 in the following configurations:
  - Basic Flight Director: (RFM Supplement 40)
  - With EPIC software Phase 5, 6 & 7 (RFM Supplement 70)
  - Enhanced Flight Director : (RFM Supplement 34)
  - With EPIC software Phase 5 (RFM Supplement 67)
  - With EPIC software Phase 5, 6 & 7 including SAR modes (RFM Supplement 69)

  The PRIMUS EPIC® system is an integrated system that includes the following sub-systems necessary to operate the helicopter: auto-flight, communications, indicating and recording, navigation and central maintenance. The system can also integrate the communications and navigation systems with other sub-systems of the helicopter.
  Lateral and vertical navigation plus approach modes are available for the Basic 4-axis FD while in the Enhanced 4-axis FD the automatic hovering function is also provided.
  The following modes are available: HDG, ALT, IAS, ALTA, NAV, APP (these modes allows ILS/VOR CAT 1 approaches up to 7.5 deg and FMS approaches as well), PRV (preview mode), DCL (deceleration during ILS), BC, VS, GA, OS (over station mode), ALVL, RHT, HOV (only in the 4-axis Enhanced).
  When any mode is engaged through the guidance controller panel located on the central console, the FD shows the selected mode, the axis used for controlling the helicopter flight path and the navigation source on the PFD of the pilot in command. The same data are also presented on the PFD of the pilot non in command.
  Navigation source and helicopter position are also presented on the MFD on the MAP page.
  A number of safety features have been introduced in the system to protect the aircraft from drifting from the selected altitude and to alert the crew through dedicated aural and visual warnings. Also the power used by the collective axis is limited by a PI (Power Index) limiting function that has been developed taking into account both AEO and OEI conditions.

- Category A. Category “A” operations are dealt by through a dedicated Supplement (Supplement no. 12) to the RFM applicable to the 4-display configuration (doc. 13G0290X002). This Supplement also includes instructions and procedures for Category “A” training.

- Training mode. The Category ”A” training function has been designed to allow flight crew to practice engine failure procedures during Category “A” take off and landings without switching one engine to IDLE. The main characteristic of the system is the use of both engines power during the simulated OEI phase. This avoids use of the engine OEI 2,5 minutes rating.
  The maximum power deliverable by the two engines running during the OEI simulated phase is limited to 140% PI (approximately 70% per engine), instead of 160% PI of the real OEI case; the maximum weight to be used for the training is reduced accordingly.
  The training function is activated by a dedicated switch located on the ENG MODE panel. Through this switch the crew can select which engine will be simulated in failure conditions.
  It is to be noted that when the training mode is used the PI display on the pilot and co-pilot PFDs will indicate a simulated engine failure (in other words it will not show the power delivered by each engine, instead the total power delivered by the two engines is artificially attributed to the “live” engine). On the MFDs the actual engine parameters are shown to allow the crew to monitor engines and detect malfunctions.

- QRH. A hard copy version of the QRH is to be readily available in the cockpit as the primary reference in emergency and ab-normal situations.
  The manufacturer has developed procedures that should be performed in the event of an emergency or malfunction. It is the manufacturer’s policy not to identify any steps in these procedures as “memory items”. However pilots are expected to perform some of these initial and critical steps without reference to documentation. Proficiency in the carrying out of emergency procedures are an essential part of the training course and pilots should be provided with adequate guidance at the earliest possible time during training.
  Operators must establish which steps of these procedures should be performed immediately and without reference to a checklist.
  Operators and ATOs must ensure that pilots are trained in accordance with this or other acceptable defined procedures, which satisfies these provisions for time-critical emergencies.

- Tail Rotor Driveshaft and Tail Rotor Control failures. Training for the recognition of the failure symptoms and the correct crew diagnosis and initial reaction are of prime importance. This training can only be carried out in FSTDs with level D standard. The training should include failures occurring in a range of power settings and various points of the flight envelope.

- Electrical failures - Double Generator failure. In the unlikely event of the failure of electrical generators electrical power for all remaining services is provided by the aircraft batteries. Unless services are reduced the batteries will be depleted in a relatively short period resulting in a total electrical power loss. The correct use of the load shedding procedures should be emphasized particularly during night or in IMC conditions.

- Avionics failures – MAU failure. A failure of either MAU 1 or MAU 2 will generate multiple caution messages related to dependent services, and the loss of several functionalities, which are not immediately obvious from the cockpit displays. Emphasis should be placed on the correct interpretation of these messages. Since it is not permitted to simulate this failure in an aircraft it should be demonstrated on an interactive procedure-training device or optimally on an FSTD.

- Throughout the whole training programs, emphasis should be made with regards to the high level of automation available in this helicopter. Due to the fact that this aircraft can be operated either in Single pilot or in Multi pilot operations, Crew coordination and proper flight management (CRM) should be reinforced to cover both operational issues.

5.3 Skill Test [M]

All the following tables provide flight training duration without skill test. As per EASA Part-FCL, skill test is required for Initial Type Rating, Additional and IR extension, and must be performed on a properly qualified FSTD (or on the helicopter if FSTD is unavailable). Recommended duration is similar to standard training sessions and can be adapted to specific environmental constraints.

5.4 Pre-entry Requirements - General [M]

AW139 Type Rating Courses are divided into two different training patterns:

- Initial Type Rating Courses (ITR)
- Additional Type Rating (ATR)

ITR courses are aimed to applicants for whom the AW139 is the first Type Rating on a Multi-Engine Turbine (MET) helicopter.

ATR courses are aimed to applicants who already have a Type Rating on a Multi-Engine Turbine helicopter and require the issuance of an additional Type Rating.

5.5 Initial Type Rating (ITR SP or MP) Pre-entry Requirements [M]

Applicants for the Initial AW139 Type Rating must comply with FCL.720.H; additionally, due to the high level of digitalization of AW139 avionic systems, they need to hold experience in a Glass Cockpit aircraft or attend a Digital Glass Cockpit familiarization Course (see chapter 8).
The applicant for the issue of a Multi Pilot type rating shall also demonstrate the ability to act as PM, so he will receive dual training on the PF and PM roles to develop the technical and non-technical components of the knowledge, skills and attitudes required to operate a multi-crew aircraft.

5.5.1 ITR Training – Theoretical Syllabus [M]

The following sections present a summary of the material that Initial Type Rating training program shall consider. For theoretical training methodologies and aids can be used (distance learning, virtual reality devises, OTD, etc.) depending on trainees background and technology available, ATOs will set up training programs that guaranties competencies are acquired, with particular emphasis on distance learning. The use of OTD to reinforce the theoretical lesson is strongly recommended during the ground session.

INITIAL / ADDITIONAL TYPE RATING THEORETICAL KNOWLEDGE SYLLABUS	
Helicopter structure, transmissions, rotors and equipment, normal and abnormal operation of the systems	34h00
Limitations (*)	2h30
Performance, flight planning (*)	2h00
Weight and balance, servicing	3h00
Emergency procedures (*)	5h00
Special requirements for helicopters fitted with electronic flight instrument systems or equivalent equipment, Systems Integration and Display, Navigation, FMS.	12h00
Optional equipment	In addition
TOTAL THEORETICAL KNOWLEDGE SYLLABUS	**58h30**
Theoretical examination	1h30
TOTAL	**60h00**

(*) theoretical knowledge instruction elements shall be reinforced during briefing and de-briefing of flight training sessions

On completion of the theoretical knowledge instruction phase, the trainee is assessed via a written examination questionnaire organized by the ATO (a minimum of 100 multiple-choice questions is recommended either for multi and single-pilot operation) distributed appropriately across the main subjects of the syllabus. The pass mark must be 75%; the applicant shall pass the skill test within a period of 6 months after commencement of the type rating training course and within a period of 6 months preceding the application for the issue of the type rating. If an initial type rating is combined with a pre-entry course for first multi-engine helicopter or Glass Cockpit familiarization, this must be completed before commencing practical training on type.

5.5.2 ITR Training – VFR Type Rating [M]

A standard flight session should last 2h, but can be reduced at the discretion of the instructor if he evaluates it too demanding compared to the applicant learning improvement. Additional flight(s) could also be necessary if the trainee has not successfully demonstrated the ability to perform all maneuvers with a sufficient degree of proficiency. Additional flights may be performed by ATOs to enhance basic Initial Type Rating Training (minimum syllabus) for different purposes, these additional modules are detailed in Special Events Training. Where ATOs integrate Type Rating training into an operator's commercial training requirements, the figures proposed below may be integrated into the operator's training course.

ITR AW139	SINGLE-PILOT OPERATION VFR			MULTI-PILOT OPERATION VFR		
	HELO only	FFS + HELO	FTD + HELO	HELO only	FFS + HELO	FTD + HELO
OTD(*)	6h(*)	6h(*)	6h(*)	6h(*)	6h(*)	6h(*)
FFS		12h			12h +2h PM	
FTD			10h			10h +2h PM
HELO	8h	2h	5h	8h + 2h PM	2h	5h
Total PF	8h	14h	15h	8h	14h	15h
Total PF + PM				10h	16h	17h

(*) OTD: VIPT or helo on the ground. No practical training credit

Due to the complexity of the helicopter, 6 hours of avionic familiarization are strongly recommended, using Virtual Interactive Procedural Trainer or equivalent training device.

5.6 Additional Type Rating (ATR SP or MP) Pre-entry Requirements [M]

In addition to what enlisted in Chapter 5.5, this course is applicable to pilots with previous experience on a Multi-Engine helicopter.

5.6.1 ATR Training – Theoretical Syllabus [M]

Chapter 5.5.1 is also applicable for the ATR with no changes.

5.6.2 ATR Training – VFR Type Rating [M]

As for ITR, a standard flight session lasts to 2h, but can be reduced at the discretion of the instructor if he evaluates it too demanding compared to the applicant learning improvement. Additional flight(s) could also be necessary if the trainee has not successfully demonstrated the ability to perform all maneuvers with a sufficient degree of proficiency. Additional flights may be performed by ATOs to enhance basic Initial Type Rating Training (minimum syllabus) for different purposes; these additional modules are detailed in Special Events Training. Where ATOs integrate Type Rating training into an operator's commercial training requirements, the figures proposed below may be integrated into the operator's training course.

ATR AW139	SINGLE-PILOT OPERATION VFR			MULTI-PILOT OPERATION VFR		
	HELO only	FFS + HELO	FTD + HELO	HELO only	FFS + HELO	FTD + HELO
OTD(*)	4h(*)	4h(*)	6h(*)	4h(*)	4h(*)	4h(*)
FFS		8h			8h +2h PM	
FTD			6h			6h +2h PM
HELO	5h	2h	4h	5h + 2h PM	2h	4h
Total PF	5h	10h	10h	5h	10h	10h
Total PF + PM				7h	12h	12h

(*) OTD: VIPT or helo on the ground. No practical training credit

Due to the complexity of the helicopter, 4 hours of avionic familiarization are strongly recommended, using Virtual Interactive Procedural Trainer or equivalent training device.

5.7 Initial / Additional IR extension Pre-entry Requirements [M]

An Applicant for an initial/additional IR extension SP/MP operations course shall meet the following requirements:

a. hold a valid AW139 type rating or have completed the approved VFR type rating training on the type in a VFR/IFR combined course, and

b. hold a valid IR (H) (not expired from more than 7 years).

5.7.1 Initial IR extension [M]

I IR Ext. AW139	SINGLE-PILOT OPERATION IR Ext.			MULTI-PILOT OPERATION IR Ext.		
	HELO only	FFS + HELO	FTD + HELO	HELO only	FFS + HELO	FTD + HELO
OTD(*)						
FFS		8h			8h	
FTD			8h			8h
HELO	6h	2h	2h	6h	2h	2h
Total PF	6h	10h	10h	6h	10h	10h
Total PF + PM				6h	10h	10h

(*) OTD: VIPT or helo on the ground. No practical training credit

5.7.2 Additional IR extension [M]

A IR Ext. AW139	SINGLE-PILOT OPERATION IR Ext.			MULTI-PILOT OPERATION IR Ext.		
	HELO only	FFS + HELO	FTD + HELO	HELO only	FFS + HELO	FTD + HELO
OTD(*)						
FFS		6h			6h	
FTD			6h			6h
HELO	4h			4h		
Total PF	4h	6h	6h	4h	6h	6h
Total PF + PM				4h	6h	6h

(*) OTD: VIPT or helo on the ground. No practical training credit

6 MASTER DIFFERENCE REQUIREMENT [M]

6.1 General [M]

The MDR are and will be developed for every upgrade of the basic helicopter, as well as to give credits for previous experience on other eventual helicopter type. When the training difference required is limited to theoretical instructions, the applicable methods to comply with will be:

a. Self-instruction

The OSD provide the list of the items that are necessary to be known to be able to fly safely all the upgraded aircraft, and the trainee is responsible himself for his proficiency in the subject.

a. Aided instruction

The OSD provide the list of the items that are necessary to be known to be able to fly safely all the upgraded aircraft, that will be made available in a lecture provided by a qualified instructor in an ATO; alternative means of compliance are:

- Distance Learning
  The distance learning concept allows additional value and progressive helicopter discovery and the main technical and operational concept, which describe its design. Training providers should design their Distance Learning modules focusing on general presentation of helicopter and systems, as well as on specific items with a specific purpose. The intended benefit is to allow self-training during this phase, and the advantage given by Distance learning is the possibility to self-evaluate the learning outcome.
- Computer Based Training (CBT)
  On-site and Deployable CBT are a pedagogical approach that aims at putting the trainee in situation to interact with the helicopter system. Based on an avionic emulator that can be very realistic and include basic flight loop, CBT will guide the trainee from discovering aviation design to using basic and complex function and modes to become familiar to their use.

CBT can be also a way to consider knowledge prior to practical training and thus allows better effectives of flight and simulator training time; even with CBT, one advantage is the possibility to self-evaluate the learning outcome.

6.2 MDR AW139 type rating for pilots rated with AW189 and/or AW169 [M]

A detailed analysis has been conducted to evaluate general systems handling qualities and cockpit management differences between LH family helicopters. In particular, following the comparison between AW189 and AW139 and the comparison between AW169 and AW139 the results gave evidence of a Master Differences Requirements at levels E/E/E, as reported in the table below. However, giving the proper attention to the TASE hereafter reported, the training credits for pilots holding AW189 and/or AW169 type ratings have been evaluated and a reduced AW139 type rating training footprint has been developed.

MDR between LH Family Type Helicopters		FROM HELO		
		AW139	AW189	AW169
TO HELO	AW139		E/E/E	E/E/E
	AW189	E/E/E		E/E/E
	AW169	E/E/E	E/E/E	

AW139 MDR Table for pilots AW189 and/or AW169 rated

6.2.1 Aircraft Main Characteristics Comparison

			AW169	AW189	AW139
Dimensions	Fuselage	Length	12,19 m	17,60 m	16,62 m
		Width	3,205 m	4,00 m	3,5 m
		Height	3,49 m	5,16 m	4,98 m
	Main rotor	Diameter	12,12 m	14,60 m	13,80 m
	Tail rotor		2,40 m	2,90 m	2,70 m
Number of Main Rotor Blades			5	5	5
Minimum Flight Crew	VFR		1	1	1
	IFR		1	1	1
Seating Capacity	Passengers Seats		8/10	19	15
Engines			2 Pratt & Whitney Canada PW 210/A, with dual FADEC system, APU mode and variable RPM control capability	2 General Electric GE CT7-2E1 / 2 Safran Aneto 1K	2 Pratt & Whitney Canada P&W PT6C-67C
Fuel tanks	Total		920 kg	1600 kg	1270 kg
Air Speed	Power ON	Absolute VNE	165 KIAS	169 KIAS	167 KIAS
	Power OFF		125 KIAS	120 KIAS	147 KIAS
Rotor Speed	Power ON	100% / 102% NR	318/355	Na/291	296/Na
Maximum Operating	Pressure Altitude		15000 ft	10000 ft / 15000 ft	20000 ft
MTOM with Internal load			4800 kg	8300 Kg / 8600 Kg	6400 kg
Category A: see RFM Supplement	Density Alt	Clear Heliport	8000 ft	8000 ft / 14000 ft	14000 ft
		VTOL operations	TBC	TBC	TBC

Main characteristics comparison between AW169, AW189 and AW139

6.3 MDR AW139 EPIC software phases upgrades/downgrades [M]

The MDR are developed for pilots upgrading from a specific EPIC software phase to the following ones available, as well as for pilots rated on a specific EPIC software phase who are requested to fly on AW139 helicopter with a previous EPIC software phase installed. The training needs are the sum of training between the software phases; so then, as an example, the training needs from the base aircraft to the software phase 7 is the sum of training from the base aircraft to the software phase 5 and, the training needs from the software phase 5 to the software phase 7.

AW139		FROM HELO			
		EPIC phase 4	EPIC phase 5	EPIC phase 7	EPIC phase 8
TO HELO	EPIC phase 4		A/-/-		
	EPIC phase 5	A/-/-		A/-/-	
	EPIC phase 7		A/-/-		A/-/-
	EPIC phase 8			C/A/-	

AW139 MDR Table

7 TRAINING FOOTPRINT FOR COMMONALITY CREDITS [AMC]

The following footprints are developed and applicable for pilots already qualified at least in one of LH Family helicopter (AW189 and/or AW169). Pre-requisite for the applicability of commonality credits is a flight experience of, at least, 50 (fifty) flight hours in the actual helicopter (no FSTDs) with the type already endorsed.

7.1 Family Type Rating for Pilots AW189 rated [AMC]

Family Type Rating is a reduced Additional Type Rating (ATR) for training credits applicable to pilots holding AW189 and/or AW169 Type Rating.

7.1.1 Family Type Rating - Theoretical Syllabus for pilots AW189 rated [AMC]

FAMILY TYPE RATING - THEORETICAL KNOWLEDGE SYLLABUS for PILOTS AW189 RATED	
Helicopter structure, transmissions, rotors and equipment, normal and abnormal operation of the systems	24h00
Limitations (*)	1h30
Performance, flight planning (*)	1h30
Weight and balance, servicing	2h00
Emergency procedures (*)	4h00
Special requirements for helicopters fitted with electronic flight instrument systems or equivalent equipment, Systems Integration and Display, Navigation, FMS.	09h00
Optional equipment	In addition
TOTAL THEORETICAL KNOWLEDGE SYLLABUS	**42h00**
Theoretical examination	1h30
TOTAL	**43h30**

AW139 Family Type Rating – Theoretical Syllabus for pilots AW189 rated

(*) theoretical knowledge instruction elements shall be reinforced during briefing and de-briefing during flight training sessions

7.1.2 Family Type Rating VFR for pilots AW189 rated [AMC]

FTR AW139	SINGLE-PILOT OPERATION VFR			MULTI-PILOT OPERATION VFR		
	HELO only	FFS + HELO	FTD+HELO(1)	HELO only	FFS + HELO	FTD+HELO(1)
OTD(*)	4h(*)	4h(*)	6h(*)	4h(*)	4h(*)	4h(*)
FFS		5h			5h +2h PM	
FTD (1)			6h			6h +2h PM
HELO	4h	2h	4h	4h+ 2h PM	2h	4h
Total PF	4h	7h	10h	4h	7h	10h
Total PF + PM				6h	9h	12h

AW139 Family Type Rating VFR for pilots AW189 rated

(*)OTD: VIPT or helo on the ground. No pratical training credit

(1) No credits are granted if a FTD is used for this Family Type Rating training purpose

7.1.3 Family Type Rating IR extension for pilots AW189 rated [AMC]

F. IR Ext. AW139	SINGLE-PILOT OPERATION IR Ext.			MULTI-PILOT OPERATION IR Ext.		
	HELO only	FFS + HELO	FTD+HELO(1)	HELO only	FFS + HELO	FTD+HELO(1)
OTD(*)						
FFS		3h			3h	
FTD (1)			6h			6h
HELO	2h			2h		
Total PF	2h	3h	6h	2h	3h	6h
Total PF + PM				2h	3h	6h

AW139 Family Type Rating IR extension for pilots AW189 rated

(*)OTD: VIPT or helo on the ground. No pratical training credit

(1) No credits are granted if a FTD is used for this Family Type Rating training purpose

7.1.4 Family Type Rating - Theoretical Syllabus for pilots AW169 rated [AMC]

INITIAL / ADDITIONAL TYPE RATING THEORETICAL KNOWLEDGE SYLLABUS	
Helicopter structure, transmissions, rotors and equipment, normal and abnormal operation of the systems	28h00
Limitations (*)	2h00
Performance, flight planning (*)	1h30
Weight and balance, servicing	3h00
Emergency procedures (*)	4h00
Special requirements for helicopters fitted with electronic flight instrument systems or equivalent equipment, Systems Integration and Display, Navigation, FMS.	10h00
Optional equipment	In addition
TOTAL THEORETICAL KNOWLEDGE SYLLABUS	**48h30**
Theoretical examination	1h30
TOTAL	**50h00**

AW139 Family Type Rating – Theoretical Syllabus for pilots AW169 rated

(*) theoretical knowledge instruction elements shall be reinforced during briefing and de-briefing during flight training sessions

7.1.5 Family Type Rating VFR for pilots AW169 rated [AMC]

FTR AW139	SINGLE-PILOT OPERATION VFR			MULTI-PILOT OPERATION VFR		
	HELO only	FFS + HELO	FTD+HELO(1)	HELO only	FFS + HELO	FTD+HELO(1)
OTD(*)	4h(*)	4h(*)	6h(*)	4h(*)	4h(*)	4h(*)
FFS		5h			5h +2h PM	
FTD (1)			6h			6h +2h PM
HELO	4h	2h	4h	4h+ 2h PM	2h	4h
Total PF	4h	7h	10h	4h	7h	10h
Total PF + PM				6h	9h	12h

AW139 Family Type rating VFR for pilots AW169 rated

(*)OTD: VIPT or helo on the ground. No practical training credit

(1) No credits are granted if a FTD is used for this Family Type Rating training purpose

7.1.6 Family Type Rating IR extension for pilots AW169 rated [AMC]

F. IR Ext. AW139	SINGLE-PILOT OPERATION IR Ext.			MULTI-PILOT OPERATION IR Ext.		
	HELO only	FFS + HELO	FTD+HELO(1)	HELO only	FFS + HELO	FTD+HELO(1)
OTD(*)						
FFS		3h			3h	
FTD (1)			6h			6h
HELO	2h			2h		
Total PF	2h	3h	6h	2h	3h	6h
Total PF + PM				2h	3h	6h

AW139 Family IR extension for pilots AW169 rated
(*)OTD: VIPT or helo on the ground. No practical training credit

(1) ***No credits are granted if a FTD is used for this Family Type Rating training purpose***

8 RECOMMENDED RECURRENT TRAINING PROGRAM [AMC]

The aim of this section is to propose the following recommendations as acceptable guidelines for the National Aviation Authorities.

8.1 Recurrent training program for pilots operating with AW139 type helicopter

The recurrent training for AW139 recommended by LH, which is actually approved by the majority of the Civil Aviation Authorities of the AW139 operators, is reported in the table below.

Rec. Training AW139	SP-MP OPERATION VFR/IFR			SP-MP OPERATION VFR/IFR + P.C.		
	HELO only	FFS	FTD	HELO only	FFS	FTD
FFS		6h			4h+2h P.C.	
FTD			3h + 3h FFS			
HELO	6h			4h+2h P.C.		
Total PF	6h	6h	3h + 3h FFS	6h	6h	
Total PF + P.C.				6h	6h	

Recommended recurrent training program for pilots operating with AW139 type helicopter

8.2 Reduced recurrent training footprint for pilots operating with AW139 and AW189/AW169 type helicopters

The proposed reduced recurrent training program for AW139 is applicable to a pilot that operates with AW139 and another type between AW189 and AW169 in the same period of time.
Due to the familiarity of this types, the recurrent training program applicable to the second type flown, in this case AW189 or AW169, can be reduced to 2 hours, both of training time or Proficiency Check as necessary, granted that pilots have a flight time logged on the second type of at least 25 Flight Hours (FH) in the 6 months preceding the recurrent training.
No reduction for the theoretical ground part of recurrent training is proposed instead.

Combined Reduced Recurrent Training	SP-MP OPERATION VFR/IFR			SP-MP OPERATION VFR/IFR + P.C.		
AW189/AW169	**HELO only**	**FFS**	**FTD**	**HELO only**	**FFS**	**FTD**
FFS		6h			4h+2h P.C.	
FTD			3h + 3h FFS			
HELO	6h			4h+2h P.C.		
Total PF	6h	6h	3h + 3h FFS	6h	6h	
Total PF + P.C.				6h	6h	
Combined with AW139	**HELO only**	**FFS**	**FTD**	**HELO only**	**FFS**	**FTD**
FFS		2h			2h P.C.	
FTD			2h			
HELO	2h			2h P.C.		
TOTAL PF	2h	2h	2h			
Total PF + P.C.	2h	2h	2h	2h	2h	

Reduced Recurrent Training AW139

The combined reduced recurrent training reported in the table above must be completed alternatively on each type every year and is applicable only when the 25 Flight Hours in the 6 months, preceding the recurrent training, have been achieved without any interruptions in the alternation of the recurrent training itself. Any interruption in this alternation will lead to a complete recurrent process for either the types.

8.3 FSTDs for recurrent training purposes

The AW139 software phases are developed with the concept that each new software phase contains the features of the previous one. The following table is reported with the scope of to clarify the use of FSTD for recurrent training purpose, in relation to the software phases on which the trainees are qualified.

Training with FSTD for Recurrent training purpose		FSTD			
		SW Phase 4	**SW Phase 5**	**SW Phase 7**	**SW Phase 8**
AW139 Helo	**SW Phase 4**	Yes	Yes	Yes	Yes
	SW Phase 5		Yes	Yes	Yes
	SW Phase 7			Yes	Yes
	SW Phase 8				Yes

***Notes**: 'AW139 Helo' rows report the SW phases installed in AW139 helicopter, while 'FSTD' columns report the SW phases installed in Flight Simulator Training Devices.*

9 DIFFERENCE TRAINING FOOTPRINT FOR AW139 AVIONIC CORE EPIC SOFTWARE UPGRADE [M]

Difference training is provided from the base aircraft to AW139 with EPIC phase 5, from AW139 with EPIC phase 5 to AW139 with EPIC phase 7 and from AW139 with EPIC phase 7 to AW139 with EPIC phase 8. For the AW139 with EPIC software phase 6 refer to EPIC software phase 5 for pilot training specifications. The training necessary to upgrade from AW139 EPIC phase 4 to AW139 EPIC phase 8, is the sum of the upgrades to EPIC phase 5, to EPIC phase 7 and to EPIC phase 8; an equivalent theoretical self-training is requested in case of “downgrade” to previous software versions.

9.1 TASE for AW139 EPIC software phases upgrades/downgrades [M]

The availability of different software phases for the same model of helicopter must be taken in account to avoid possible safety hazards, due to the lack of focus on specific functionalities that can or cannot be available in accordance with the specific software version installed on the helicopter. In the following subparagraph the additional TASE for the different software upgrade will be listed, where present. When a pilot rated on a specific software phase is requested to fly an AW139 with a previous software phase installed (from 8 to 7, 5 and 4), he must be aware of the features that will not be available on his helicopter; for this reason, a self-training is indicated mandatory in each software downgrade, to let the pilot to review and be well aware of the functionalities that will not be present in the helicopter he is going to fly: those items are the one listed in the tables developed in this document for each software phase upgrades/downgrades.

9.1.1 TASE for AW139 EPIC phase 5 [M]

- Special emphasis must be given to the availability of many performance data in the PERF pages of the FMS that were not there in the phase 4.

9.1.2 TASE for AW139 EPIC phase 8 [M]

- It must be well explained by the instructors and understood by the pilots the three different selections available for the SVS: how they work and their information given.
- The custom approaches are a very useful tool; the pilot must understand that they are a VFR only tool, and the differences between the off shore approach and the VFR approach.

9.2 Additional training for EPIC upgrade phase 4 to phase 5 [M]

ITEMS AFFECTED FROM BASE AIRCRAFT			
SYSTEMS	**DIFFERENCES**	**TRAINING**	**REFERENCE MATERIAL**
AUTOFLIGHT	Implementation of 4 Axis SAR modes: MOT, WTR, TU, TD, TDH	Self-Instruction	RFM Sect.2/3/7
	Implementation of collective safety limiter	Self-Instruction	RFM Sect.2/3/7
	New aural for disengagement of FD modes (due to low speed)	Self-Instruction	RFM Sect.2/3/7
	Updates of RHT mode	Self-Instruction	RFM Sect.2/3/7
FMS	Inclusion of SAR patterns	Self-Instruction	RFM Sect. 1/2/3/7 FMS Sect.VI
	Inclusion of MOT	Self-Instruction	RFM Sect. 1/2/3/7 FMS Sect.VI
	Inclusion of Performance Tables	Self-Instruction	RFM Sect. 1/2/3/7 FMS Sect.V
	Increased capability of Waypoint numbers in the Flight plan	Self-Instruction	RFM Sect. 1/2/3/7 FMS Sect.VI
RADIO	HF emergency channel setup page	Self-Instruction	RFM Sect. 2/3/7
	PAST functionality for HF and XPDR	Self-Instruction	RFM Sect. 2/3/7
	Added new CAT A related aurals	Self-Instruction	RFM Sect. 2/3/7
DISPLAYS	Added GEN 1/2 OVLD caution	Self-Instruction	RFM Sect. 2/3/7
	DC GEN LOAD scale enlarged	Self-Instruction	RFM Sect. 2/3/7
AURAL	Added messages : LOW SPEED LOW SPEED - CHECK HEIGHT CHECK HIGHT	Self-Instruction	RFM Sect. 2/3/7
	Added new CAT A related aurals	Self-Instruction	RFM Sect. 2/3/7
	Landing Gear aural suppression in SAR modes operations	Self-Instruction	RFM Sect. 2/3/7

Additional training for EPIC upgrade phase 4 to phase 5

9.3 Additional training for EPIC upgrade phase 5 to phase 7 [M]

ITEMS AFFECTED FROM BASE AIRCRAFT			
SYSTEMS	**DIFFERENCES**	**TRAINING**	**REFERENCE MATERIAL**
AFCS	Automatic engagement of LNAV at Go-Around engagement or at LPV disengagement	Self-Instruction	RFM Sect. 2/3/7
	Added LPV function including steep/slow	Self-Instruction	RFM Sect. 2/3/7
	Various software fixes/improvement	Self-Instruction	RFM Sect. 2/3/7
DISPLAYS	Expanded Lateral Deviation scale for RNP Approach Capability	Self-Instruction	RFM Sect. 2/3/7
	Full Time DME display on PFD	Self-Instruction	RFM Sect. 2/3/7
FMS	Updated logic for “Landing Gear” caution and aural including low speed condition (offshore customer requirements)	Self-Instruction	RFM Sect. 1/2/3/7
	Various fixes to software errors	Self-Instruction	RFM Sect. 1/2/3/7
	Performance database update to allow negative pressure altitude inputs	Self-Instruction	RFM Sect. 1/2/3/7
	Capability to auto-close flight plan	Self-Instruction	RFM Sect. 1/2/3/7
	Steep glide path compatibility	Self-Instruction	RFM Sect. 1/2/3/7
RADIO	Change "ADS-B Unavailable" and "ADS-B Mode Change Fail" from "Advisory" to "Alert" in Radio Tuning. This will result in the MSG annunciation being displayed on the PFD	Self-Instruction	RFM Sect. 2/3/7
	When ADS-B is "ON" and becomes failed, put up the "ADS-B Unavailable" scratch pad Alert message.	Self-Instruction	RFM Sect. 2/3/7
	When the XPDRs are in Standby mode (on ground or in air) inhibit the "ADS-B Unavailable" scratch pad message.	Self-Instruction	RFM Sect. 2/3/7
MULTISYSTEM	Added TCAS II provision	Self-Instruction	RFM Sect. 2/3/7
	Added EGPWS-30	Self-Instruction	RFM Sect. 2/3/7
	Added ADS-B Out	Self-Instruction	RFM Sect. 2/3/7

Additional training for EPIC upgrade phase 5 to phase 7

9.4 Additional training/checking for EPIC upgrade phase 7 to phase 8 [M]

9.4.1 Theoretical Basic Improvement

ITEMS AFFECTED FROM BASE AIRCRAFT				
SYSTEMS	**DIFFERENCES**	**TRAINING**	**CHECKING**	**REFERENCE MATERIAL**
DISPLAYS	Blue over Brown format and Flight Path Symbol	Aided-Training 0h:30min	Self-Assessment	RFM Sect. 1/2/3/5
INTEGRATED MODULAR AVIONIC	Interactive Navigation	Aided-Training 1h:00min	Self-Assessment	RFM Sect. 1/2/3/5
	EGPWS	Aided-Training 1h:00min	Self-Assessment	RFM Sect. 1/2/3/5
NAVIGATION	Custom Approach	Aided-Training 1h:00min	Self-Assessment	RFM Sect. 1/2/3/5
	FMS improvement	Aided-Training 0h:30 min	Self-Assessment	RFM Sect. 1/2/3/5
Total Aided Training - Base Improvement		4h:00min		

Theoretical Basic improvement for EPIC upgrade phase 7 to phase 8

9.4.2 Theoretical Optional Improvement

OPTIONAL ITEMS AFFECTED FROM BASE AIRCRAFT				
SYSTEMS	**DIFFERENCES**	**TRAINING**	**CHECKING**	**REFERENCE MATERIAL**
INTEGRATED MODULAR AVIONIC	SVS	Aided-Training 1h:00min	Self-Assessment	RFM Sect. 1/2/3/5
AFCS	Custom Approach	Aided-Training 1h:00min	Self-Assessment	RFM Sect. 1/2/3/5
Total Aided Training - Optional Improvement		2h:00min		

Theoretical Optional improvement for EPIC upgrade phase 7 to phase 8

9.4.3 Flight Syllabus

After the theoretical session, the following practical training must be completed:

DIFFERENCE FLIGHT TRAINING BETWEEN PHASE 7 AND PHASE 8	FFS or HELO
AW139	**1 h**

10 SPECIFIC MANDATORY TRAINING [M]

Specific Mandatory Training includes all the training that is mandatory for particular features of the type, specific items or optional kits installed with respect to the basic helicopter, that require a dedicated training session to reinforce the knowledge of capabilities, performance and limitations.

10.1 Digital Glass Cockpit Familiarization Course

The switch from an analogue to a glass/digital cockpit with last generation of AFCS and the helicopter avionic suite will represent a challenge and imply specific training requirements.

To support the acquisition of the identified skills linked to the effective use of such systems, training must be adapted with additional sections to consolidate:

- Hands-off into flying maneuvers that are performed “hands-on” on the helicopter types
- Scanning technique and situational awareness adapted to digital display design and multiple information versus analogue cockpits
- Crew workload assessment to tackle the risk of a pilot becoming overwhelmed by the availability of data and information.

DIGITAL COCKPIT FAMILIARIZATION COURSE		
	Theory	**FSTD or OTD**
Duration	**8h**	**4h**

10.2 OPLS (when installed)

The OPLS is a system that strongly enhances the situational awareness of the crew about the presence of obstacles surrounding the main rotor disk, by giving information regarding the position of the obstacles related to the horizontal plan and the relative distance both on the displays and by audio warning. It is not to be considered as a primary reference system for the safe conduct of navigation (the system has no credit for the navigation), but the knowledge of his functionalities and limitations is of great advice in certain kind of flight operations. The OPLS course can be delivered by an authorized ATO (classroom or distance learning method).

OPLS	
	Theory
Duration	**1h**

11 SPECIFIC RECOMMENDED TRAINING [AMC]

Specific recommended training chapter includes all the courses, available from the factory, 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:

- Advance Cat. Training, including all the different Cat. A profiles developed and available on the type
- ACAS warnings, situational awareness and crew co-ordination, as appropriate
- HTAWS
- CFIT emphasis on avoidance and escape maneuvers, altitude awareness.

For the Specific Recommended Training, use of FSTDs is strongly recommended.

11.1 Advanced Category A training procedures

For Operations in hostile and congested environment, Category A profiles has to be taught. Based on previous experience of the applicant, this Category A sessions can either be included in the standard training or in addition as follows.

ADVANCED CATEGORY A TRAINING		
	Theory	**FSTD or OTD**
Recommended duration	**2h**	**4h**

11.2 ACAS

ACAS intend to provide pilots with a familiarization program on how to operate ACAS system and become familiar with all the possible associated maneuvers.

ACAS		
	Theory	**FSTD, OTD or HELO**
Recommended duration	**3h**	**2h**

11.3 HTAWS

HTAWS intend to provide pilots with a familiarization program on how to operate HTAWS system.

HTAWS		
	Theory	**FSTD, OTD or HELO**
Recommended duration	**3h**	**4h**

11.4 Helicopter CFIT avoidance educational program

CFIT intend to provide pilots with a familiarization program on how to operate at Low Level VFR in marginal weather situation using the helicopter at its best performance, and provide the knowledge and skill necessary to safely operate and manage the relevant helicopter type. Special emphasis will be given to the TAWS/HTAWS, CRM, Inadvertent IMC Procedure, Brown Out/White Out Procedure.

Helicopter CFIT avoidance educational program		
	Theory	**FSTD, OTD or HELO**
Recommended duration	**3h**	**2h**

11.5 FMS and Autopilot Advanced Features

FMS and Autopilot advanced features intend to provide pilots with a deeper knowledge on all the advanced functionalities of the FMS (such as SAR patterns, custom approaches etc.), and a familiarization with the Autopilot modes (TU, TD, TDH, MOT, WTR).

FMS and Autopilot Advanced Features		
	Theory	**FSTD, OTD or HELO**
Recommended duration	**4h**	**6h**