OPERATIONAL EVALUATION REPORT

AIRBUS

A320 FAMILY

GRUPO DE AVALIAÇÃO DE AERONAVES – GAA

BRAZILIAN AIRCRAFT EVALUATION GROUP

ORIGINAL – JANUARY 24TH, 2020.

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Index

Acronyms

AFCS ..... Automatic Flight Control System
AFM ..... Airplane Flight Manual
ANAC ..... *Agência Nacional de Aviação Civil*
AOM ..... Airplane Operations Manual
AIC ..... Aeronautic Information Circular
AP ..... Autopilot
ATC ..... Air Traffic Control
ATO ..... Approved Training Organization
ATPL ..... Airline Transport Pilot License
CBT ..... Computer Based Training
CRM ..... Crew Resource Management
ECAM ..... Electronic Centralized Aircraft Monitoring
ECL ..... Electronic Checklist
EDFCS ..... Enhanced Digital Flight Control System
EFIS ..... Electronic Flight Instrument System
EFVS ..... Enhanced Flight Visual System
FCU ..... Flight Control Unit
FD ..... Flight Director
FFS ..... Full Flight Simulator
FMA ..... Flight Mode Annunciator
FMS ..... Flight Management System
FSTD ..... Flight Simulation Training Device
GAA ..... *Grupo de Avaliação de Aeronaves* (Brazilian Aircraft Evaluation Group)
GGCP ..... *Gerência Geral de Certificação de Produto*
GS ..... Ground School
HUD ..... Head-Up Display
IAC ..... *Instrução de Aviação Civil*
IS ..... *Instrução Suplementar*
LAM ..... Landing Attitude Modifier
LOFT ..... Line Oriented Flight Training
LSP ..... Left Seat Pilot
MCC ..... Multi Crew Coordination
MDR ..... Master Differences Requirements
MEL ..... Minimum Equipment List
MFD ..... Multi-Function Display
MMEL ..... Master Minimum Equipment List

ND.....Navigation Display
ODR .....Operator Differences Requirements
OSD-FC .....Operational Suitability Data – Flight Crew
OTD .....Other Training Device
PDCS .....Performance Data Computer System
PFD .....Primary Flight Display
PIC .....Pilot In Command
PMS .....Performance Management Systems
POI.....Principal Operations Inspector
RBAC.....*Regulamento Brasileiro de Aviação Civil*
RBHA .....*Regulamento Brasileiro de Homologação Aeronáutica*
SAR .....Department of Airworthiness *(Superintendência de Aeronavegabilidade)*
SLF .....Supervised Line Flying
TASE.....Training Areas of Special Emphasis
TCDS .....Type Certification Data Sheet
VREF .....Landing Reference Speed

1. INTRODUCTION

1.1. Background

The Airbus A320 family (A318/A319/A320/A321) has been in service for many years in Brazil, even before the ANAC Aircraft Evaluation Group (GAA) was established. The first operational evaluation conducted by ANAC was on the A320neo.

Airbus aircraft commercial designations are used in this document and are defined as follow:

- "A320 family" refers to all the models of the A318, A319, A320, A321 aircraft.
- "A320ceo family" refers to all the models of the A318, A319, A320, A321 aircraft equipped with the "conventional engine option" i.e. the first engine types proposed for the A320 family aircraft.
- "A320neo family" refers to all the models of the A320, A321 aircraft equipped with the "new engine option" i.e. the new engine types proposed for the A320 family aircraft (except the A318).
- "Sharklet" refers to large wing-tip devices installed on A320 family aircraft (except the A318) to improve the aircraft fuel consumption performance. Sharklets replace the original Wing Tip Fences.

A320neo

An operational evaluation was conducted by ANAC Aircraft Evaluation Group (GAA) in Toulouse, France, in October 2015, in a joint evaluation with EASA and FAA, where the proposed differences training for the A320neo was evaluated, considering the A320ceo with sharklets as the base aircraft. The evaluation was conducted using the methods described in ANAC Instrução Suplementar (IS) 00-007A.

ANAC concluded that:

- the Training/Checking/Currency levels from any A320ceo model to any A320neo model as well as from any A320neo model to any A320ceo model is B/A/A, respectively;
- A320neo models are considered as variants of the current A320ceo models and thereof can share the same type rating "A320" in the ANAC Instrução Suplementar (IS) 61-004 Type Rating List;
- No specific A320neo flight crew training or checking requirements (e.g. TASE) has been identified.

During the A320neo operational evaluation, ANAC had established an agreement with Airbus to evaluate model A321neo by analysis based on the ODR tables complemented by subjective assessments reports by Airbus, EASA and FAA flight test pilots involved in the flight test campaign.

A321neo

In September 2017, ANAC conducted an evaluation by analysis of the model A321neo with the following conclusions:

- The installation of the PW1100G-JM engines or the CFM LEAP-1A engines on A321neo models does not change the flight characteristics compared to A321ceo with Sharklets.
- The Training/Checking/Currency levels from the A321ceo with Sharklets to A321neo with

PW1100G-JM or CFM LEAP-1A engines installed, as well as from the A321neo with PW1100G-JM or CFM LEAP-1A engines installed to the A321ceo with Sharklets are B/A/A respectively.

- A321neo with PW1100G-JM or CFM LEAP-1A engines installed is considered a variant of the current A320 family and thereof can share the same pilot Type Rating "A320" listed in the ANAC Instrução Suplementar (IS) 61-004 Type Rating List.
- No specific A321neo flight crew training or checking requirements (e.g. TASE) has been identified.

A320ceo family

The results presented here for the previous A320ceo family are based on the Airbus A320 Operational Suitability Data (OSD) Flight Crew (reference SA01RP1536744) issue 7.1.

In case more detailed information is required, refer to above mentioned OSD-Flight Crew report.

1.2. Objective

The objective of this report is to present the results from the operational evaluation of the Airbus A320 family aircraft.

The content of this report is applicable to operations under the framework of ANAC.

1.3. Purpose

The purpose of this report is to:

- Determine the pilot type rating assigned for the A320 family;
- Recommend the requirements for training, checking and currency applicable to flight crew for the A320 family, and functionalities; and
- Present the compliance of the A320 family with the requirements of the RBHA 91 and RBAC 121.

1.4. Applicability

This report is applicable to:

- Brazilian operators of the A320 family under RBHA 91 and RBAC 121 requirements;
- Approved Training Organizations certified under RBAC 142 (Training Centers);
- Civil Aviation Inspectors related to safety oversight of the A320 family;
- ANAC Principal Operations Inspectors (POIs) of the A320 family operators.

1.5. Cancellation

ANAC letter nº 040/2015/GAA/GCOI/SPO-ANAC of December 17th, 2015.

ANAC letter nº 14(SEI)/2017/GAA/GCOI/SPO-ANAC of September 4th, 2017.

2. PILOT TYPE RATING

The Airbus A320 family aircraft pilot type rating designation is "**A320**".

Table 1 – ANAC IS 61-004 (type rating list) revision proposal

Fabricante *(Manufacturer)*	**Aeronave** *(Aircraft)*		**Observações** *(Remarks)*	**Designativo** *(Designative)*
	Modelo *(Model)*	**Nome** *(Name)*		
AIRBUS S.A.S.	A318-111, -112, -121, -122	A318	Relatório de Avaliação Operacional A320 *ANAC Operational Evaluation Report A320*	A320
	A319-111,-112,-113,-115,-114, -131, -132 and -133	A319		
	A320-211,-231,-212,-232, -214,-233,-251N,-252N, -253N,-271N,-272N,-273N	A320/A320neo		
	A321-131,-112,-111,-211, -212,-213,-231-232,-251N, -252N,-253N,-271N,-272N, -251NX,-252NX,-253NX, -271NX,-272NX	A321/A321neo		

3. MASTER DIFFERENCE REQUIREMENTS (MDR)

Airbus A320 Family MDR table among variants is shown below.

A320 family		FROM AIRPLANE					
		A318	**A319**	**A320**	**A320neo**	**A321**	**A321neo**
TO AIRPLANE	**A318**	-	B/A/B	B/A/B	B/A/B	B/A/B	B/A/B
	A319	B/A/B	-	B/A/B	B/A/B	B/A/B	B/A/B
	A320	B/A/B	B/A/B	-	B/A/B	B/A/B	B/A/B
	A320neo	B/A/A	B/A/A	B/A/A	-	B/A/A	B/A/A
	A321	B/A/B	B/A/B	B/A/B	B/A/B	-	B/A/B
	A321neo	B/A/A	B/A/A	B/A/A	B/A/A	B/A/A	-

ANAC did not evaluate the differences requirements between A320 family and other Airbus fly-by-wire aircraft (A330, A340, A350 and A380). In case this information is needed, the OSD-FC report (reference SA01RP1536744) may be used as a reference.

4. OPERATOR DIFFERENCE REQUIREMENTS (ODR)

Each operator of a mixed fleet of A320 family airplanes shall produce its own ODR, as required by IS 00-007.

Airbus publishes the ODR tables as a separate document: A320 Family Operator Difference Requirement Tables and TASE – Flight Crew (reference SA01RP1712258). This document should be used as a reference for the A320 family operators do develop their own ODR tables.

5. SPECIFICATIONS FOR PILOT TRAINING

5.1. Initial Type Rating Training (Airbus Standard Transition Course)

The provisions of this section apply to all A320 family training programs, and assume the training will be given to airmen with the following previous experience:

- have at least 70 hours of flight experience as PIC on aeroplanes;
- hold a multi-engine instrument rating (airplane);
- have passed the ATPL(A) theoretical knowledge examinations in accordance with ANAC RBAC 61;
- except when the type rating course is combined with an MCC course:
    - hold a certificate of satisfactory completion of an MCC course in aeroplanes; or
    - have at least 500 hours as a pilot in multi-pilot operations on single- pilot multiengine aeroplanes, in commercial air transport in accordance with the applicable air operations requirements.

For airmen not having such experience (e.g. recent “ab initio” program graduates), additional requirements may be necessary as determined by the POI or ANAC GAA.

As A318, A319, A320 and A321 aircraft share the same type rating, qualification can be conducted according to the following path:

- Standard transition course (Type Rating course) conducted onto any A320 family aircraft.
- Familiarization course covering the differences between the A320 family aircraft of the Type rating course and the variant to be flown.

5.2. A320 family Familiarization training (differences training)

ANAC has determined that the maximum training difference level between any A320 family variants is level B as per approved ODR tables. See also detailed A320 family MDR table.

Familiarization training is required between the various A320 family aircraft variants and must address all items identified in the approved ODR tables.

5.3. Training Areas of Special Emphasis (TASE)

5.3.1. TASE applicable to all Airbus Fly-By-Wire family aircraft

All the following characteristics of the Airbus Fly-By-Wire family must be emphasized during the A320 training and are common to all the Airbus Fly-By-Wire family aircraft: A320, A330, A340, A350 and A380 family:

- Fly-By-Wire: the following must be included in both initial and recurrent training
    - Knowledge of flight characteristics and the degree of flight envelope protection provided by the various flight control laws for pitch, roll and yaw control.

- Procedural and handling consequences following multiple failures that result in alternate or direct law, both at low and high altitude (refer to the Airbus Operational Suitability Data – Flight Crew – A320 Appendix 3)
- Knowledge of the use of side stick controller with a special emphasis on the relationship between the two controllers and the transfer/takeover of control.

- Use of Flight Management System
  - Knowledge of the various modes of automation
  - Knowledge and skills related to MFD / FCU use
  - Recognition of mode awareness and transition modes through the FMA
  - CRM issue linked to automation (task sharing and crosschecks)
- Use of ECAM
  - Knowledge of appropriate use of ECAM in conjunction with system failures
  - Crew discipline for ECAM actions: respect of the depicted procedure, crosscheck of irreversible actions, aircraft status analysis
- Autothrust system
  - Knowledge of the thrust control system in conjunction with the "non-moving throttles"
  - Recognition of all messages associated to Autothrust failure, engagement and disconnection

5.3.2. TASE applicable to specific variants or aircraft modifications

TASE linked to specific variants or specific aircraft modifications are specified in the document "A320 ODR tables and TASE for variants and modifications" reference SA01RP1712258, published by Airbus. It is the operator or ATO responsibility to identify the configuration of its fleet or the configuration of the aircraft on which the training is provided, and to address TASE in addition to the ones applicable for a type rating course.

5.4. Recurrent Training

Recurrent training must be compliant with ANAC regulations for civil aviation aircrew and air operations, as applicable, and include the identified Training Areas of Special Emphasis.

Operators must establish an approved recurrent training and checking programme which is relevant to the aircraft variant flown and its intended operation.

All A320 family aircraft models are assigned a single license endorsement, therefore:

- Recurrent training performed on any A320 family aircraft is valid for all variants, provided that the differences identified are addressed.
- Differences to be addressed in recurrent training are identified in ODR tables.
- The differences within the A320 family have been assessed as maximum to be level B training. For variants at level B training, recurrent training shall be addressed through aided instruction.

- Therefore, recurrent training can be conducted on any simulator from the A320 family, provided that the differences are addressed as per ODR tables.

6. SPECIFICATIONS FOR CHECKING

6.1. Recurrent Checks

Proficiency checks must be performed in accordance with applicable ANAC regulations for civil aviation aircrew and air operations.

Proficiency checks performed on any A320 family aircraft are valid for all variants, provided that the differences are addressed during recurrent training as per ODR tables.

Consequently, proficiency checks can be conducted on any approved A320 family aircraft simulator (FFS).

7. SPECIFICATIONS FOR RECENT EXPERIENCE AND CURRENCY

All A320 family aircraft models are assigned a single license endorsement, therefore takeoff and landing performed on any A320 family aircraft is valid for all variants.

This means that for pilots operating a mix of A318, A319, A320, A320neo, A321 and A321neo, the recent experience requirement is satisfied as soon as they achieve 3 takeoffs and landings, as pilot flying, regardless the aircraft flown.

8. COMPLIANCE WITH RBHA 91 AND RBAC 121

No Compliance Checklists were provided by the manufacturer.

9. TECHNICAL PUBLICATIONS

9.1. Master Minimum Equipment List - MMEL

The A320 family MMELs approved by EASA shall be used by Brazilian operators as a basis for developing their MEL.

9.2. Airplane Flight Manual - AFM

Brazilian operators shall use the Airplane Flight Manuals – AFMs approved by GGCP/SAR for the A320 family for developing their Airplane Operation Manuals – AOMs, when applicable.

10. MISCELLANEOUS

10.1. Forward Observer Seat

The A320 family aircraft forward center observer seat has been evaluated and determined to meet regulatory requirements.

10.2. Aircraft Approach Category

All operators should comply with DECEA publication AIC N07/09 dated 12 Mar 2009 and use an approach category appropriate to the speed of VREF. Air carriers may be further restricted by their operations specifications for circling approaches.

Approach Category for A320 family aircraft is as follows:

Aircraft	Category
A320 family	C (*A321ceo: C or D based on MLW of the variant)