

OBSERVATIONS - COMMENTS

**On the technical discussion regarding the HAF (Hellenic Air Force)
Integrated System of New Aircraft for Primary Training (IS NAPT):**

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Pipistrel d.o.o, Ajdovščina observations and comments on technical specifications related to Integrated System of New Aircraft for Primary Training (IS NAPT)

Type of entry: Comment

Chapter: 2. RELEVANT DOCUMENTATION

As primary relevant document from our opinion is **EC 748/2012 Annex I (Part 21)** and it should be considered as one of the first listings in this chapter. This combine all later defined Regulation and Certification specifications which are not mandatory but must follow Part 21 legal frame. All European producers must follow this regulation to maintain their Type certificates, otherwise those aircrafts become orphans and there is no legal obligation of producer to maintain all activities related to continued airworthiness which are crucial after delivery of aircraft.

We suggest adding the EC748/2012 Annex I (part 21) to the relevant documentation

Type of entry: Observation

Chapter: 2. RELEVANT DOCUMENTATION

Economic operator is in legal point of view right word for supplier or provider of goods. In aviation industry also have different meaning like f.e. AOC holder executing Wet lease operation is considered economic operator under other airline code name under existing aviation rulers. Especially in terms of CS-FSTD requirements we can recognize economic operator as technology and process operator which might be misleading according to requirement in this technical specifications. Proposal is to change term economic operator to more suitable one like equipment provider or solution provider. This wording should be updated in whole document or clear definition of economic operator should be in place.

Type of entry: Comment

Chapter: 4.2 General Characteristics of IS NAPT

4.2.4. The A/C should be three-controlled, Normal or Utility Category, Single Engine, propeller driven, two-seated or more, with a side-by- side seat arrangement, double controlled with full functionality from both seats, with Maximum Take Off Weight equal to or bigger than 600 kgr.

The A/C should be three-controlled is not sufficient description. We propose to change wording to three axis controlled.

Type of entry: Observation

Chapter: 4.2.10 Engine Characteristics

4.2.10.5. The aircraft might have a system for fire/ overheat at the engine compartment.

This requirement is normally in place when turbine engine is installed. In case of piston engine installation there must be sensors described in 4.2.12.2. to indicate engine malfunctions. Installed addition system as specified will not have any practical function in case of installation of the piston engine.

Type of entry: Comment

Chapter: 4.2.11 Avionics Characteristics

4.2.11.1 The A/C must have the following instruments: Altimeter, Airspeed Indicator,

Magnetic Compass, Gyro Stabilized Directional Indicator, Altitude Indicator, Vertical Speed Indicator and Turn and Blank Indicator (or Turn Co-ordinator) which must be either analog or digital with an analog depiction

Proposed avionics installation is outdated and might lead to specific producer installation. All modern avionics used in military aircrafts and advanced military HUD's are based on digital presentation of speed, altitude and attitude with modern indicators (side bars and heading bugs).

Blank indicator is typo mistake and should be updated with bank indicator wording.

We propose change of wording of last sentence to ..either analog or digitally indicating instruments.

Type of entry: Observation

Chapter: 4.2.11 Avionics Characteristics

4.2.11.3.1 The GPS system must be integrated, and must provide the speed, altitude, heading information, along with the position on a map. All these must be properly displayed on one or more displays, as defined in the specification AMC1 ACNS.D.ADSB.070 or equivalent

Modern ADAHRS and AHRS systems provide all necessary equipment and can be according to EASA ELA1 rules due its simplicity installed as a part of aircraft avionics without specific ETSO certification. Equivalent level of safety is in place. Does this kind of installation meet equivalency in this case?

Type of entry: Comment

Chapter: 4.2.11 Avionics Characteristics

4.2.11.4.1 The A/C must have VOR/DME, as defined in the specifications European Technical Standard Order (ETSO)-2C40c and ETSO-2C66b or equivalents

Modern avionics systems have due displaying more accurate distance from VOR the DME indication paired with VOR frequencies and are receiving distance information from WAAS equipped GPS source. Does this kind of installation meet equivalency in this case?

If so please update this chapter with additional wording; The DME values may be displayed in navigation equipment from compatible GPS source

Type of entry: Comment

Chapter 4.2.12 Characteristics of the Pilot Compartment - Cockpit

4.2.12.2 The cockpit must have at least the following engine instruments or indications: Fuel Quantity Indicator for every fuel tank, Oil Pressure Indicator, Oil Temperature Indicator, Tachometer, Fuel Pressure Indicator, Low Fuel Pressure Warning (if the engine is equipped with a fuel pump), Manifold Pressure Indicator (if the AC is equipped a variable-pitch propeller) and a Cylinder Head Temperature Indicator for every cylinder of the engine.

The proposed indication installation is outdated and might lead to specific producer installation. Modern engine producers (like Rotax) are liquid cooled and coolant temperature indicates overheating. Normally indication is on hottest and coldest cylinder where modern engine indications system.

We propose additional definition wording at the end of last sentence of this chapter as follows... of the engine or Coolant temperature on hottest and coolest cylinder.

Type of entry: Comment**Chapter: 4.2.17 Characteristics of the Flight Simulation Training Device (FSTD)**

4.2.17.1 The FSTD must be a Level II Flight and Navigation Procedures Trainer (FNPT), as described in the EASA Certification Standard CS-FSTD(A). In addition, the FSTD must have a Colored Visual System with the following characteristics:

After consultancy with EASA FSTD certification team we discovered that this requirement is contradictory with 4.2.17.3 where specific cockpit layout is required. The requirement in part of FNPT II is for generic SEP/MEP and MEP complex aircraft (3 types) with all operational activities in place (see observation for chapter 2). So the FSTD certificate owner needs to meet technical specifications of the device and also operational one (having teaching procedures in place and sufficient staff with appropriate aviation licenses), where outcome of complying to this requirement is training of pilots on this particular device. Complying to both requirements lead to FSTD certificate according to CS-FSTD and till now certificate to only technical compliance to CS-FSTD was never issued. As we understand this specification HAL will execute the training and Economic operator will just deliver technical equipment meeting technical part of requirements.

We propose following change in wording:

The FSTD shall meet technical requirements of Level II Flight and Navigation Procedures Trainer (FNPT) for single type of A/C as described in the EASA Certification Standard CS-FSTD(A).

Type of entry: Observation**Chapter: 4.3. Reliability**

The Airframe Life Limit of the A/C must be at least 5.500 flight hours and must be substantiated with one of the following methods:

With a record of the Airframe Life Limit to the Type Certificate Data Sheet (TCDS), approved by the Air Navigation Authority

Please specify Air navigation Authority. It seems like typo mistake. We propose to change wording to competent aviation authority (civil or military).

Type of entry: Observation**Chapter: 4.4. Maintainability**

4.4.6 The Ground Support Equipment Package (GSE Package) must include all the standards, common and special tools, instruments, adapters and calibration devices

Is it planned that all calibration devices are delivered in GSE package like Pitostatic device calibration equipment or just basic line maintenance equipment (f.e Pitostatic device) that accredited measuring institute will calibrate?

Type of entry: Observation**Chapter: 4.4. Maintainability**

4.4.1. The economic operator must provide Instructions for Continued Airworthiness (ICA) for the A/C.

For economic operator with reference to the chapter 2, same observation.

Type of entry: Observation
Chapter: 4.4. Maintainability

4.4.2. The economic operator must provide an Aircraft Maintenance Plan, adapted to the final configuration of the aircraft and compatible to the ICA that prepared during the issuance of the Aircraft Type Certificate

The economic operator reference to chapter 2, same observation.

Type of entry: Observation
Chapter: 4.8 Item Labeling and Transportation Packaging

4.8.3. The economic operator is obliged to place a packing list within each dispatch box for every delivering item. A copy of the packing list will also be placed outside of the box in a suitable position and within a waterproof case, easily identifiable. The packing list will quote all items included in the box and will state the following data per item:

The economic operator reference to chapter 2, same observation.

Type of entry: Observation
Chapter: 4.9. Support Services

4.9.1 A support for every kind of software and firmware of the procured IS NAPT should be provided and cover the following: installation of new editions / versions, use of diagnostic programs, copy, loading, parameters' change (Graded criterion).

It is not clearly defined if third party installed avionics with separate equipment type certificate considered as a part of this requirement or not.

Type of entry: Observation
Chapter: 4.9. Support Services

4.9.2 The manufacturer of the aircraft, the individual components of the IS NAPT and the Ground Support Equipment must have a Configuration Management System in accordance with AS 9100 or equivalent standard (Graded criterion)

Having in mind that this is international summon does complying to EC 748/2012 Annex I (Part 21 with DO and PO approval) meet the equivalency of AS 9100 or ISO 9001 as its requirements are less strict than Part 21 regulation with supportive AMC and GM. In that matter it is not clearly described if are the third party installed equipment with separate equipment type certificate considered as a part of Manufacturer process or not.

Type of entry: Observation
Chapter: 5.1 Accompanying Documents / Certifications

5.1.2 The Quality Management System of the aircraft manufacturer, FSTD and CBTS must comply to the standard ISO 9001:2008 "Quality Management Systems - Requirements" (or new) or equivalent

Having in mind that this is international summon does complying to EC 748/2012 Annex I (Part 21 with DO and PO approval) meet the equivalency of AS 9100 or ISO 9001 as its requirements are less strict than Part 21 regulation with supportive AMC and GM.

We suggest adding *Quality Management Systems - Requirements" (or new)* or to EC 748/2012 Annex I (PART 21) or equivalent

Type of entry: Observation**Chapter: 5.1 Accompanying Documents / Certifications**

5.1.3 The manufacturer of the aircraft must have AS/EN 9120 certification or equivalent (Graded criterion)

Ref. to chapter 5.1.2, same observation.

Type of entry: Observation**Chapter: 5.1 Accompanying Documents / Certifications**

5.1.4 The manufacturer of FSTD must have AS/EN 9120 certification or equivalent (Graded criterion)

Ref. to chapter 5.1.2, same observation.

ADDITIONAL COMMENTS TO TECHNICAL DOCUMENTATION RELATED TO UNSPECIFIED ITEMS

FLIGHT SAFETY INNOVATIONS CRITERIA

For over a half of century systems have been invented and installed to support the need/challenge of a safe aircraft in case of a major accident or massive incident. Especially, in the specific training phase, the screening level, the need of minimizing the risk for the human factor and the safety- protection of the asset is mandatory, nowadays. The substantial importance of this criteria in the evaluation of the aircraft is critical for the trainer, trainee, asset management and the prevention of any potential liabilities for HAF after a massive accident (in some cases the after death lawsuits from family members generate liabilities that could exceed the millions of euros if not the tens of millions) . Systems like the airframe parachutes with documented track record and successful past performance from the manufacturer are highly increasing the aircraft - flight safety and minimizing the possibilities of any potential loss and any relative liabilities for the HAF. It's a high value for money criteria, with no additional cost or maintenance increase, no limitations to flight - aircraft performance, and with the highest respect to the most valuable / priceless HAF's asset, the Human factor. Even deploying the airframe parachute in unsafe condition in modern designed aircraft leads to major repair of airframe and engine shock load inspection but the aircraft is not lost The system has been installed in many aircraft around the globe and is considered as a common standard system in Aviation at present.

DIRECT OPERATING COSTS CRITERIA

Modern air force constellation is focused beside initial purchase costs also to direct operating costs where fuel component is one of crucial. In these terms fuel consumption in level cruise must be considered and also type of fuel. Calculating the use of automotive fuel instead of aviation fuel makes huge difference in overall operating cost. Only appropriate fuel (automotive) can bring more than 40% in savings only on that component of direct operating costs.

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