

Information Bulletin no. 2018/03

“J-NEWS”



Dear Madam, dear Sir,

In our field of activity, we consider the communication between the Agency and the DO community as essential. I am therefore pleased to announce the third edition for the year 2018 of the *J-News bulletin*.

Regarding the time of year, this edition comes wrapped like seven Christmas presents, each one covering a different technical topic.

On the forthcoming pages, you will find useful information on the following topics:

Item 1. Good Practices on ISM - Implementation of an effective ISM into a small Design Organisation

Item 2. ALS minor changes

Item 3. Level of Involvement (LOI)

Item 4. Acceptance of parts fabricated by Part 145 based on TC holder data

Item 5. Changes to External Livery with focus on film layer application

Item 6. List of CMs

Item 7. Generic CRIs

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Merry Christmas and Happy New Year!

Yours faithfully,

Markus GÖRNEMANN

Head of the DOA Department

Note: As usual, should you need more information on any of the topics presented, please get in contact with the DOA Team Leader allocated to your DO.

General DOA information

Item 2018/3/1

Good Practices on ISM - Implementation of an effective ISM into a small Design Organisation

Following the last J-News survey, recent side meeting and feedback from the Industry, this item of the J-News Bulletin aims to provide recommended practices on ISM with a particular focus on small Design Organisations.

General preliminary remarks and definitions of terms

Independent	<ol style="list-style-type: none">1. Review and assessment by an individual of a work which was not made by himself and who is not responsible for the assessed process or output2. Sufficient authority within the organisation to perform an assessment in an independent manner without negative impact on career development
System	The Design Assurance System which contains also the systematic monitoring
Monitoring	<ol style="list-style-type: none">1. To observe, record, or detect (an operation or condition) with instruments that have no effect upon the operation or condition2. To watch closely for purpose of control and surveillance; to keep track of it and check continually.

Implementation of an effective ISM into a small Design Organisation

General:

21.A.239(a)3 stipulates that the Design Assurance System shall be such as to enable the organisation *[to independently monitor the **compliance** with, and **adequacy** of, the documented procedures of the system...]*. This function is performed by the Independent System Monitoring (ISM).

Therefore, ISM function has to verify:

- 1) the **adequacy** of the DOA referential to the scope of activities and for the compliance with the applicable Part 21 requirements, and
- 2) the **compliance** with those DOA referential of the activities performed and deliverables produced

In general the independent system monitoring may be conducted through regular audits spanned over a period of not more than three years (ISM cycle).

The EASA Part 21 CCL may be used as a basis for the establishment of the ISM surveillance programme in order to ensure that all requirements are covered in the ISM cycle. Indeed, all applicable handbook paragraphs, cross-referenced procedures and forms/IT tools (“DOA referential”) are referenced directly or indirectly in the Part 21 CCL, and the audits may be grouped by DOA core processes as defined in the CCL itself.

Due to the nature and size of small DOAs, the Company’s Quality Management System may be used to cover ISM activities and amend their quality assurance system audit planning by adding the Part 21 audits grouped by DOA core processes.

Audits on sample projects should also be performed to determine sufficiency and appropriateness of design and certification data.

Example of a questionnaire covering the *[...compliance with, and adequacy of, the documented procedures...]*:

Type 1 Question:	<i>How is the compliance with Part 21.A.XXX shown?</i>
Expected Answer:	<i>Procedure XYZ is used for the classification and approval of xxxxx</i>
Type 1 Question:	<i>Does the procedure XYZ have provisions to address the subparagraph (a) and AMC of Part 21.A.XXX requirement?</i>
Expected Answer:	<i>yes, Form XYZ is referenced in the procedure XYZ and its intended use is explained to the user in order to comply with the requirement of Part 21.A.XXX (a) and related AMC</i>
Type 2 Question:	<i>Please show that the Form XYZ was properly used and filled in for the sampled projects ref.123 and ref. 345</i>
Expected Answer:	<i>see attached forms XYZ for projects ref. 123 and ref. 345</i>
Conclusion/ Finding:	<i>The compliance with Part 21.A.XXX was demonstrated both at process level (compliance of procedures with Part 21 and AMC) and at activities level (compliance of DOA activities with procedures)</i>

Notes:

- 1- Type 1 Questions
 - a. are to determine whether the DOA handbook/cross-referenced procedures are compliant with Part 21 and associated AMC & GM or not
 - b. could be supplemented by an activity where ISM is taking part of the review of the handbook and procedure updates ensuring continuous monitoring of the adequacy of documented procedures.
- 2- Type 2 Questions are to determine whether the DOA activities are performed in line with the DOA procedures or not

ISM personnel:

The audits should be conducted by personnel with sufficient experience, competence and knowledge, and could be also supported by technical experts for the audited processes (e.g. for reviewing design projects).

Nomination criteria for ISM personnel should consider:

- work experience in aviation engineering, DOA ISM or Airworthiness function
- training on:
 - **Part 21 for DOA subjects, and**
 - **DOA holders handbook and procedures (unless direct work experience in their use can be proven)**
- auditor qualification (e.g. ISO 19011)
- supplementary on-job training

ISM Programme and post audit activities

The overall ISM programme progress and status should be presented to the HDO on a regular basis (yearly or earlier in case of level 1 or level 2 findings), including results from/at the subcontractors. This allows the HDO observing the ISM effectiveness as well.

Findings should always be followed up by an appropriate root cause analysis (performed via a recognised technique¹), to ensure adequacy of the corrective actions. Where applicable, recovery actions should be put in place to rectify non-compliances (retroactive on approvals or design and certification data already produced).

The overall ISM surveillance programme should be regularly reviewed and updated according to the development of the organisation. The effectiveness of previous preventive measures should also be part of the planned ISM activities.

Closing words:

Please contact your DOA Team Leader to get further information on good practices related to ISM.

Stay tuned! With the next J-News bulletin we are coming with additional information regarding ISM with a particular focus on other 'monitoring' means than audit.

Additional ISM related information published on EASA website

- What are the expectations of the Agency in respect to the independent system monitoring of a DOA holder?
- **Independent System Monitoring**
- **2-6 ISM - Presentation from Product Certification and Design Organisation Approval Workshop**

1 Recognized techniques could be 5Why, Ishikawa, 8D or any other tools for proper root cause analysis

Part 21 implementation

Item 2018/3/2
ALS minor changes

For some of you the heading of this item may sound strange. How can we have minor changes to the ALS? Not all ALS changes shall be classified major? Maybe there is a mistake in the title!

No there is no mistake. It is acknowledged that Airworthiness Limitation Section (ALS) of the Instructions for Continued Airworthiness is an approved document, part of the Type Design which is itself part of and approved through the Type Certificate.

Being part of the Type Certificate, any change to the ALS shall be handled according to the Part 21, Subpart D, “Changes to Type-Certificates and Restricted Type-Certificates” requirements. Consequently, classification criteria of paragraph 21.A.91 shall apply.

EASA interpretation of 21.A.91 requirements and associated Guidance Material has, up to now, always been to consider any change to the Type Certificate which alters the ALS, as major.

This interpretation might be seen as too restrictive and the industry, in particular Type Certificate Holders, has collected cases of ALS changes which can be classified as minor and approved using DOA privileges.

The industry has approached the Agency to present these cases and we’ve started to discuss together within which limits the Agency may accept that a change to ALS can be classified minor with full observance of the high level criteria in 21.A.91.

The comprehensive review of industry proposals was performed with the support of the EASA certification experts (Structures and Hydro-mechanical Systems) and formalised in a DOA Review Item (DOARI)². Considering that this topic is of general interest, the Agency has also decided to submit this DOARI for public consultation ([link](#)).

After the completion of this review the DOARI has been approved and the related minor ALS classification examples / criteria have been accepted by the Agency.

To implement such criteria and enable a certain DOA to classify and approve minor changes to the ALS a Significant Change to the Design Assurance System has to be open.

EASA may also further consider these criteria for the publication in Part 21 Guidance Material.

² A DOA Review Item is a structured administrative means of recording significant issues during DOA processes (initial investigation and surveillance). The DOARI is used to capture specific interpretation or specific implementation of Part 21 requirements, to propose alternative means to show compliance with Part 21 requirements or to resolve disagreements between DOA Team and the Organisation.

EASA regulatory update

Item 2018/3/3

Level of Involvement (LOI)

Background

In 2013 the Agency started a rulemaking activity to implement a risk-based approach to the Agency's compliance verification in Part-21, with the following objectives:

- Focus Agency resources on aspects of certification projects posing higher risk;
- Develop objective criteria and transparent processes:
 - o controlled processes;
 - o predictable;
 - o equal treatment.
- Initiate the implementation of the safety risk management standards of ICAO Annex 19 (SMS).

Rulemaking

The rulemaking activities (RMT.0262) encompassed the following activities:

- Drafting of the amendment to Part 21;
- Testing how the new concept could be introduced by running "Advance implementation projects";
- Developing AMC/GM to support the new rules;
- Developing a Certification Memorandum to provide further guidance.

Currently the amendment to Part 21 is expected to enter into force in April 2019 with a 9 Month implementation period.

Note: The amendment to Part 21 introduces more changes than just LOI.

DOA action

DOA's (and APDOA's) need to update their procedures to incorporate LOI principles by the end of the implementation period. No update is required for DOA's who only have minor changes and/or minor repairs in their scope of work.

DOA's are encouraged to start developing those procedures and discuss the implementation plan with their DOA Team Leader.

Material currently available that can support the development:

- Opinion 7/2016 (amendment to Part 21);
- NPA 2017-20 (1st AMC/GM to support implementation);
- CM draft issue 3 (available through your DOATL);
- Presentation pack of the Product Certification and Design Organisation Approval Workshop 22 – 23 November 2017 (available online).

An application for significant change (Form 82) is necessary to have the update to the procedures approved by the Agency.

Tips

- Try to keep the procedures simple;
- Do not fix the way CDI's are determined; a project by project evaluation will give better results;
- Discuss your implementation plan with the DOATL as soon as practical;
- Also review the other changes introduced in the amendment to Part 21.

Good practice

Item 2018/3/4

Acceptance of parts fabricated by Part 145 based on TC holder data

When, in the course of maintenance checks, the need to replace some parts has been identified, TC holders sometimes provide design data for spare parts to be fabricated as part of the repair instructions instead of the actual spare parts in order to bring the aircraft back to service.

In certain case, some operators have approached Production Organisations to manufacture parts based on that design data.

This approach is acceptable, if the Production Organisation is able to obtain the DO/PO-arrangement required by 21.A.133. These parts can then receive an EASA Form 1 by the PO and can be used by the Maintenance Organisation when embedding the repair.

Where the TC holder is not entering into the DO/PO-arrangement required by 21.A.133, the PO may enter in an arrangement with another DO who approves the TC holders design data under their 21.A.263(c)(2) privilege as a minor change or applies for approval of an STC (depending on the classification i.a.w. 21.A.91), thus taking responsibility for the design. Such an approval, however, requires full demonstration of compliance with the applicable certification specifications. The design data provided by the TC holder in itself does neither qualify as “an arrangement with the TC holder “ in the sense of 21.A.113(b) nor does it qualify as statement of no technical objection as required by 21.A.115(d)(1). The PO may then issue an EASA form 1 for these parts and the Maintenance Organisation uses these parts when embedding the repair.

No further involvement of DO or PO is required if the Maintenance Organisation has the capability to fabricate these components within its own facilities and have a detailed MOE procedure approved by the competent authority (ref. 145.A.42(c) to be replaced by 145.A.42(b)(ii) with amending Regulation (EU) 2018/1142, applicable from 5 March 2019). The Maintenance Organisation can then use these parts when embedding the repair. The fabricated parts, however, do not qualify for certification on EASA Form 1.

Changes to Type Certificate

Item 2018/3/5

Changes to External Livery with focus on film layer application

See also Item 1 of J-News 2018/01

Paint has long been used as a means to protect aviation products, for decorative purposes and to comply with requirements for external markings.

During recent years there has been a significant evolution in the application of printed film layers (sometimes known as ‘vinyl wrap’ or foil) to aviation products. However, there is little common industry standardised guidance regarding the subject.

The broad range of benefits offered by using paint includes the provision of protection against erosion and general ‘wear and tear’ through to protection benefits more specific to the baseline materials used in the product design, e.g. protection against corrosion for some metals, or protection against UV damage for composite materials. Such benefits form part of the basis for certification and can contribute significantly to providing safety throughout the life of the product.

The generally successful history relating to paint application has been the result of effective paint material and process selection by the TCHs (Type Certificate Holders), and appropriate communication of the acceptable associated maintenance actions by the TCH and the appropriate execution of these actions by the maintenance community.

Changing the external livery of an aircraft, in particular from paint to a film layer, may affect the compliance of the product with several airworthiness requirements and, if not implemented using approved data, lead to safety concerns such as a reduced ability to detect structural damage beneath the film layer.

An application for a change is required when external livery material and process including the scope of its application to the product is not addressed in existing applicable design data such as the SRM. Application of a film layer over a significant area of the aircraft may require a major change approval or STC.

Applicants for changes to external livery will need to demonstrate that applicable airworthiness requirements are not appreciably affected or have been addressed, and should consider the following points:

- Impact on ICA due to possible reduced ability to detect structural damage beneath the paint or film layer;
- Potential adverse effects of use of a darker livery on structural properties;
- Mass balance and adverse effects on flutter characteristics;
- Adverse effects on underlying material due to chemical reaction;
- Adhesion of film throughout the flight envelope and effects of long term deterioration;

- Impact on lightning protection;
- Static build up leading to electrical discharge in or around fuel tanks or causing radio/navigation interference;
- Adequate instructions for application of the film to avoid structural damage due to cutting tools or heat application and to prevent blocking or impeding emergency exits, static ports, fuel vents, air vents and drain holes;
- Required aircraft markings are maintained;
- Risk of loss of large parts of the film layer and interference with lifting surfaces, controls or engines;
- Revised or new ICA for maintaining the changed livery.

Examples of potentially impacted related Certification Specifications (CS 2X.--, where X varies according to the product):

CS 2X.305 Strength and Deformation, CS 2X.571 Fatigue (and Damage Tolerance) Evaluation, CS 2X.581 Lightning Protection, CS 2X.603 Materials, CS 2X.609 protection of structure; CS 2X.611 Accessibility Provisions; CS 2X.629 Aeroelastic Stability (Flutter) Requirements, CS 2X.811 Emergency Exit Marking; CS 2X.1529 Instructions for Continued Airworthiness.

Finally, it's worth mentioning, that film layers (foils) are considered as parts and are therefore subject to marking requirements as stipulated in Part 21 paragraph 21.A.804.

General DOA information

Item 2018/3/6
List of CMs

What does Certification Memoranda represents?

Certification Memoranda (CM) are documents with the purpose of describing EASA's general course of action on specific certification items.

Are CMs important?

The CMs are part of soft law, so they are not mandatory. However, that does not diminish their value. CMs are created in order to provide guidance on a particular subject or even complementary information and guidance for compliance demonstration with current standards.

CM or AMC?

Even though CMs and AMC are both non-binding material, they must not be misconstrued. Certification Memoranda are provided for information purposes only and are not intended to introduce new certification requirements or to modify existing certification requirements and do not constitute any legal obligation.

Where the industry can find them?

A list of CMs can be found on EASA's website, following a few steps. First, you will have to look in the "search box" for CM, and then, scrolling with a little patience, in the bottom of the page you will have a download hyperlink that can deliver you a list of Planned - Under development - Final CM.

Also, as a shortcut, you can find the link [here](#).



Changes to Type Certificate

Item 2018/3/7
Generic CRIs

Subject to 21.A.16B, the Agency prescribe Special Conditions by means of a CRI when the related certification specifications do not contain adequate or appropriate safety standards for the product, as for example for the following cases:

- The product/modification has novel or unusual design features relative to the design practices on which the applicable certification basis are based; or
- The intended use of the product (due to/as part of the modification) is unconventional; or
- Service experience of the product/or experience from other similar products in service or products having similar design features has shown that unsafe conditions may develop.

Usually, CRIs are individually set up for the specific product and project. However, certain design features or certification aspects are independent of aircraft type or applicable to other similar modifications so that such CRIs, and the additional airworthiness requirements defined therein, are of more generic nature and applicable also for other projects. These kind of CRIs are known as “Generic CRIs” but nevertheless are subject to adaptation on individual project level. These also have to be taken into account during the classification of design project as they might trigger a major classification as per GM 21.A.91, paragraph 3.4 point (a), if not already due to the technical aspects of the change. If such generic CRIs are already part of the Type-Certification Basis, i.e. incorporated into the TCDS, they do not need to be considered for the classification of changes in terms of GM 21.A.91, paragraph 3.4 point (a) and only the technical aspects taken into account.

As industry frequently asked for more transparency with regard to Generic CRIs, we decided to provide examples of the most prominent Generic CRIs in the J-News. Since this is not a straight-forward task, we start with this J-News issue to provide a selection of the most common disciplines which are more interesting for STC cases to be supplemented in subsequent issues. Please note that some of the Generic CRIs are of interdisciplinary nature. In addition, the provided examples are not exhaustive and our intention is to provide an enhanced awareness. At the beginning, we focus more on Large Aeroplanes if not stated otherwise in below examples.

Cabin Safety:

Most of the generic CRIs for Cabin VIP Completions were incorporated into CS-25 Appendix S with Amdt. 19. Besides of this, some provisions have been incorporated directly into CS-25 requirements with Amdt. 19 as for example shower installations and use of glass. For older certification bases, these provisions need to be included with a CRI if not elected to comply with latest requirements (in such cases there is still the need to be classified as major).

Cargo Seatbag Installations are also deemed Major Changes and are covered by Certification Memorandum CM-CS-003. Other Certification Memoranda should also be taken into account as for example CM-CS-007 (Width of Aisle), CM-S-009 Cabin Interior Abuse Loads, CM-CS-010 Incomplete Cabin (Zero-PAX Layouts) and CM-S-002 (Application of CS 25.561 (c)(2) 1.33 ‘Wear and Tear’ Factor – Frequent Removal of Interior Structures).

Structures:

For Structures disciplines, the following Certification Memorandum might be of interest for certification projects and provide additional information of EASA certification policy:

- CM-S-001 Bird Strike (interesting for antenna radomes)
- CM-S-002 Wear & Tear Factor
- CM-S-005 Composites – Bonded Repairs
- CM-S-008 Additive Manufacturing
- CM-S-009 Loading conditions for Occupant Safety in Cabin Interiors

In the following, you can find examples of CRIs that address specific installations that are not yet covered by CS-25 requirements and should be considered during the classification.

<i>Cabin Safety</i>	<i>Electrical Systems</i>	<i>Avionics Systems</i>	<i>Structures</i>
<ul style="list-style-type: none"> • Inertia Locking Device for Dynamic Seats • Side Facing Seats (interdisciplinary with Structures) • Oblique Seats • Mini Suites • Crew Rest Compartments • Battery/Laptop/PED Charging Station • Dual Head-up Display Installations • Medevac Configurations • Oxygen Fire Hazard in Gaseous Oxygen Systems 	<ul style="list-style-type: none"> • Certification of Aircraft compatibility as PED tolerant (referring to CM-ES-003 related to transmitting PED) • Battery endurance (Operation without normal electrical power) – normally this is applicable for TCs • Circuit protective devices accessibility – normally for TCs • EWIS ICA (CRI H-01) • HIRF protection • In-Flight Entertainment System (referring to TGL-17) 	<ul style="list-style-type: none"> • ADS-B IN • Aeronautical Databases (is in the process of transfer into AMC) • Automatic Speech Recognition • Criteria for airworthiness approval of offshore approach assistance function • Cybersecurity (CS-23, CS-25, CS-27, CS-29) • Electronic Charts • Electronic Checklists • Application of CS 25.1322 Amdt. 11 or later (Flight Crew Alerting) • Flight Recorders and Data Link Recording • GBAS Landing System for Cat 1 Operations • Human Factors for CS-23 aircraft • Integrated Modular Avionics (IMA) 	<ul style="list-style-type: none"> • Composite Seats • Rapid Decompression – Small Compartments (VIP installations, Mini-Suites) • Seat to Floor Interface Structure (Seat Adapter Plates) • Large Non-Structural Glass Screens (monitors, partitions)

<i>Cabin Safety</i>	<i>Electrical Systems</i>	<i>Avionics Systems</i>	<i>Structures</i>
<ul style="list-style-type: none"> • Installation of Airbags and Seat Belts with Airbag • Protection of essential systems (Cargo aircraft) • Courier Area Installation in Cargo Aircraft • Groom Station Installation (Cargo Aircraft limited to horse transportation) • Access to Class E Cargo Compartments (Cargo Aircraft) • Individual VIP customer wishes (In-flight Casino, etc.) usually require specific CRIs. 	<ul style="list-style-type: none"> • Lightning protection (Lightning Direct Effects LDE and Lightning Indirect Effects LIE) • Rechargeable Lithium Batteries • Non-rechargeable Lithium Batteries • Mobile communications on aircraft (CM-ES-003 and installation guidance material) • WLAN installations (CM-ES-003 and installation guidance material) • Power Supply System for PEDs (including In-Seats Power Supply Systems ISPSS and Executive Power Supply EPS, refers to CM ES-001) • Solid-State Power Controllers SSPC – normally for TCs 	<ul style="list-style-type: none"> • Integrated Standby Indicator • Lead Free Soldering • LPV Approaches (addressed in the meanwhile in AMC 20-28) • LPV Steep Approaches • Non-magnetic Standby Compass • Runway Overrun Awareness and Advisory Systems (ROAAS) • SATCOM Voice for ATS • Standalone GPS for ADS-B Mandate • Surface Management Systems (SMS) • TCAS II + Autopilot coupling for Rotorcraft • Touchscreen Interface & Control Devices (all categories of product!) • Vision Systems (CVS on PFD, CVS+SVS on HUD without credit, EFVS on PFD and HUD, SVS on PFD and HUD) • Voice Input 	<ul style="list-style-type: none"> • Structural Criteria for Large Antenna Installations • Vibration & Buffeting for Large Antenna Installations (Equivalent Safety Finding, important for flight testing) • Additive Manufacturing (not applicable for non-safety relevant parts, refer to corresponding Certification Memorandum) • Towbarless Towing



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