DAH Introduction to Outbound
International Validation



Presented to: Design Approval Holders

By: International Validation Branch

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18 slides

Topics for Today

- **Intro to Type Validation**
  - What is a validation
  - The IPA validation style for the most common authorities
- **DAH role in type validation**
  - Steps required before application
  - Creating a complete application
    - Including new application requirement tables for those most-common authorities
  - Communications guidelines

New acronyms with validation

- IPA: Implementation Procedures for Airworthiness
- VA: Validating Authority
  For outbounds, this is the foreign authority
- CA: Certifying/Certificating Authority
  For outbounds, this is the FAA

More validation-specific acronyms still to come

Note: DAH actions are shown in this color too

Why And How We Do Validations

- **USA is the State of Design** (per ICAO Annex 8) **and FAA is the CA**
  - FAA represents our certification of your aviation products to our global partners
  - In order for products to be exported to other countries, FAA works with FCAAs to meet their import requirements

    Foreign Civil Aviation Authorities
    - Many countries require Type Validation of the design before importing
    - Others require Type Acceptance (FCAA accepts our approval as-is and issues their own)
    - Or just Notification (only when limited/no import requirements exist)
- **Type Validation is an authority-to-authority process where…**
  - The VA validates the CA's type design / certificate
  - While relying on the CA to the maximum extent and setting their own expectations for limited areas
  - Which prevents extensive recertifications by the VA
- **Bilateral agreements tell us how to do that validation**
  - Codify trust between FAA and FCAA, identify which areas VA will rely on CA for, and what additional requirements may be expected

Classifications within Type Validation

- **Our most-common FCAAs or those with newest agreements**
  - Europe, Canada, Brazil, UK, China, Japan, Israel, Singapore
  - Have “risk-based” Implementation Procedures for Airworthiness (IPAs)
    - All implementation procedures found here - including other styles & ones that aren’t for airworthiness
  - Categorize changes into different classifications

- **Lots of other types of agreements too**
  - Other countries may have an older IPA style, or Working Procedures, or Import Requirements, or nothing
  - Other FCAAs have their own requirements, varying levels of structure within a validation, but no classifications
    - Therefore, their validations are never “Basic” or “Streamlined”

- **DAH responsibility to know which classification your validation is** (if any)

DAH Role Before Validation

- **Learn the bilateral agreement's implementation procedures**
  - Determine which classification applies, if any, to each design/change and why
  - If there is no IPA, working procedure, or special import requirement?
    - Still come thru us. Your CB focal can provide guidance, contacts, and templates.
    - VA decides how a validation works, so be more prepared for the unknown. Err on side of sending *less*.
- **Review foreign regulations to ensure design complies**
  - Identify VA differences such as Significant Standards Differences (SSDs), Additional Technical Conditions (ATCs), and the EASA Noise Database (and disposition those differences: show compliance or inapplicability)
  - Identify additional export/import requirements per Export Airworthiness Approval
  - Make a statement that your design complies with the VA's regulations
    - Could be at the beginning or at end of project, depending on authority and classification
- **Compile a complete application per the IPA from the start,** including…
  - Confirming the product(s) you're modifying has been validated
  - Sending all documents identified on an STC, at their signed/approved revisions
  - Stating which IPA requirements aren't applicable (so we don't think you just forgot)

Cert Basis differences between their TCDS and ours

Your letter to FAA needs to identify any models that are not validated and will be excluded



IPA Validation Classifications



European Union, Canada, Brazil

(EU/C/B)

- Classify validations as Basic Accepted, Basic Streamlined, and Non-Basic (x2)
  - Europe and Brazil use IPA and SEI lists to determine classification
  - Canada uses only the IPA list

SEI & AFTCB definitions coming later

United Kingdom, China, Japan, Israel, Singapore

(UK/C/J/I/S)

- Classify validations as Accepted, Streamlined, Limited Technical, and Full Technical
  - Use IPA, SEI, SSD, and AFTCB lists to determine classification

Reminder: No other countries use classification terms. “Streamlined” does not apply to them.

Bucket 1: Accepted



- Officially classified as “Basic Accepted” or “Accepted”
  (EU/C/B) (UK/C/J/I/S)
- Minor changes and limited major changes
  - IPA defines exact parameters
  - e.g. MDL revision due to a small drawing update
- No change needed to TC, TCDS, or STC themselves
- No application required to VA but DAH may still need application to FAA
  - (Caution: DAH still required to provide noise data to EASA when the EASA Certification Noise Database is impacted, even on Basic Accepted)

- DAHs must keep track of these and have available upon request

Bucket 2: Basic or Streamlined



- Officially classified as “Basic Streamlined” or “Streamlined” validations
  (EU/C/B) (UK/C/J/I/S)

- Major design changes that don’t meet IPA criteria for higher involvement BUT
- Change or issuance *is* needed on TC, TCDS, or STC themselves
  - e.g. Adding an alternate configuration

- DAH sends application to FAA, FAA sends to VA
  - These can only be “sequential” (FAA approves certification first, then validation can start)

- VA conducts general review - but not technical review - to issue approval

Bucket 3: Non-Basic or LTV



- Classified as Non-Basic or Limited Technical validations
  (EU/C/B) (UK/C/J/I/S)

- Major design changes that *do* meet IPA criteria for higher involvement
  - e.g. STC includes a large lithium battery
- Each VA defines *exact* list of what they want to "double check" from the FAA and vice versa
  - EU/C/B: "Non-Basic Items"
  - UK/C/J/I/S: "Safety Elements"

  } Consist of IPA List + SEIs (except Canada) + SSDs & AFTCBs (except EU/C/B)

  - DAH job to review lists before application and identify all impacted areas

- Areas beyond the Non-Basic Items or Safety Elements do not permit VA technical review
  - FAA should enforce compliance
  - DAH should not send data when VA review isn't permitted

Involvement Lists



Typical IPA List Items

- Exemptions, SCs, ELOSs
- Significant change, 21.101
- New products/TCs
- Issue papers
- Unique/novel aspects
- Plus SEIs, ATCs/SSDs, AFTCBs
  - SEI = Safety/Special Emphasis Item; non-harmonized requirement that VA wants involvement in every time (7/8)
  - SSD = Significant Standards Difference; VA requires more than the CA's reg, or CA's reg doesn't exist (5/8)
  - AFTCB = Area of Further Technical Confidence Building; area VA has not yet seen often enough from CA to trust showings (5/8, but effectively only China and Israel)

Typical SEI/ATC/SSD/AFTCB Items

All of these can overlap

- Lithium batteries
- Human factors
- Expanded flight envelopes
- Inlet barrier filters
- Damage tolerance
- Noise, Emissions
- Fuel tank explosion
- Cold soak
- Brand new regulation

(These lists update more frequently than the IPAs)

For each project, all eight **IPAs require VA** to define and document their involvement based on the exact applicable items from these lists in a "work plan," which they submit to FAA and DAH. The VA's involvement may not exceed the items listed.

Bucket 4: Non-Basic or FTV



- Classified as Non-Basic or Full Technical Validation
  (EU/C/B) (UK/C/J/I/S)

- Limited to new products on new TCs
  - New model on an existing type certificate usually does *not* count

- Involvement is not limited to Non-Basic Items or Safety Elements, but VA must still define what they will and won't do
  - Generally, they'll still focus on the Non-Basic Items and Safety Elements
  - More allowance for VA involvement where they see fit
  - VA still writes a "work plan" to identify their involvement

Risk-Based IPAs Structured Similarly

- Makes finding answers and differences quicker
  - These IPAs and all others can be found here on the FAA website

Reminder: Check every IPA for that country's requirements. Can't assume it matches another country

- Chapter 3 is the design approval process
  - Section 3.5 is the detailed how-to

  - Application contents:



Europe	Brazil	Canada	UK	China	Japan	Israel	Singapore
3.5.4.2 3.5.5.1	3.5.4.3 3.5.5.1	3.5.3.1	3.5.1.2				

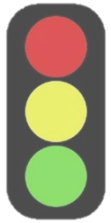
  - Classification Criteria:



Europe	Brazil	Canada	UK	China	Japan	Israel	Singapore
3.5.3		3.5.2	3.5.3				

Federal Aviation Administration

Complete Applications Please



- Really slows down your approval if you send packages with…
  - Too few documents: missing cert plans, manuals
  - Too many documents: Unnecessary per the IPA requirements
  - Documents marked “proprietary” that FAA may not be allowed to send
    - Or when you delay sending those docs to VA after FAA applies
  - Number-only titles for documents



“**Cert Plan** 123-ABC Rev 1.pdf” please instead of “123-ABC-1.pdf”

  - STCs with errors: old addresses, missing signatures, incorrect document numbers, etc.
  - A request for concurrent Basic/Streamlined
    - Not allowed: DAH and FAA can’t make compliance statements if it isn’t done
  - A prerequisite mod that isn’t validated
    - Provide evidence that it *is* validated
  - The wrong classification (or *any* classification when the IPA doesn’t do that)
    - Review IPA, SEI, ATC, SSD, and AFTCB, lists thoroughly before submitting

- We <u>are</u> seeing better Basic/Streamlined approval times (sometimes a few days!) when we…
  - Require the above before we send an application to the VA and
  - Use the new application requirements tables

Application Requirements Tables

- FAA wants to see <u>complete</u> applications more often please
  - Please complete the one for your VA and include it with your application package
  - Europe, Canada, Brazil, UK, China, Japan, Israel, Singapore only

Yes/No		Description of Non-Basic Item from Paragraph 3.5.3.2
Select	(b)(2)	The CA or VA certification basis includes or is anticipated to include a new or amended: (i) FAA Exemption or EASA Deviation; (ii) Special Condition; or (iii) Equivalent level of Safety/Equivalent Safety Finding (ELOS/ESF); **Note:** New or amended is considered in the context of the project, relative to the baseline Certification Basis of the product or STC being changed.
Caution: All changes (including STCs) to a reciprocating engine TC or a propeller TC without a new/amended ELOS, SC, or exemption are Basic. The below list does not apply.		
Select	(b)(3)	A classification of "significant" has been made by the CA in accordance with FAA 14 CFR section 21.101(b) or EASA 21A101(b);
Select	(b)(4)	An AD is affected that was … - issued by EASA unilaterally (i.e. without the State of Design); or - issued by EASA as State of Design (SoD) for the TC *Search EASA ADs here. List any applicable ADs in the Non-Basic Application Requirements table in Part 3 of this document.*
Select	(b)(5)	Changes involving the use of a new or different applicable method of Compliance from that previously agreed by the CA and the VA. **Note:** A method of compliance (MOC) would not be considered "new" or "different" if it had been applied previously in a similar context by both the CA and the VA.
Select	(b)(6)	New technology exists; **Note**: New technology is technology that is new to the VA as a whole, not just new to the VA team members. For example, if technology used by the applicant were new to the VA team but not the VA itself, it would not be considered new. It is the VA Management's responsibility to make sure the VA team members are properly informed of the earlier use of the technology, VA standards and MOC.
Select	(b)(7)	Novel applications of existing technology exist; **Note**: Novel technology is where a particular technology is being used in a manner that causes the precepts of the technology to be questioned. However, it does not mean that existing technology being applied for the first time to a particular product line is automatically novel. Additionally, novel applies to the VA as a whole, not just to a project being assessed by the specific VA team members.
Select	(b)(8)	Changes that impact environmental protection per paragraph 3.5.3.2(e)
Select	(b)(9)	Changes that have an appreciable effect on any one of the Operational Suitability Data (OSD) constituents *(refer to EASA Guidance Material GM 21.A.91 to determine an appreciable effect, see latest AMC/GM doc here)*
Select	(b)(10)	Any other design change designated as Non-Basic by the CA **Note**: The addition of models to TC and STCs are considered basic if none of the 10 criteria is triggered.
Select	(c)	PMA Parts Application for PMA parts on critical components that have not been produced under a licensing agreement from the TC or STC holder according to 14 CFR section 21.303 shall be classified as Non-Basic.
Select	(d)	Alterations Application for alteration on critical components shall be classified as Non-Basic.

Select Yes/No & give explanations

Yes/No	Description
Select	Is this an FAA STC which encompass multiple TCDSs (i.e. Approved Model List - AML)?
Select	Are there any product models (aircraft or engine) involved that EASA has **not** certified/validated? *(EASA product list here, scroll to bottom)* **If Yes**, list all EASA TCDSs in the Compliance Checklist.
Select	Does the FAA TC/STC have any dependency with other associated approvals? (Prerequisites) **If Yes**, list all dependencies:
Select	**If Yes**, have all associated dependencies (Prerequisites) been approved by EASA? *It is the applicant's job to research and prove this to the FAA. EASA STC search here, but it does not include Grandfathered STCs prior to Sept 2003*
Select	Is this approval a provisions-only installation, which requires a subsequent approval? **If Yes**, please explain:

TIP Requirement	Description of Application Requirement	Please provide required information as indicated below
3.5.5.1(j)	Brief description of all novel or unusual design features	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(k)	Information on VA customers and delivery schedules	[Applicant] plans to make delivery to [operator] in month/year or No customer identified at this time.
3.5.5.1(l)	Master documentation list or master drawing list which lists all type design drawing, specifications and reports for the TC or for the change	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(m)	Top level drawing of the aircraft or design change. If a top level drawing is not available include a drawing or diagram that shows the overall change	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(n)	Approved manuals or changes to approved manuals as applicable	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(o)	Changed OSD constituents for EASA as VA	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(p)	Weight and balance data if not contained in an approved manual	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(q)	Environmental Protection: For a TC, a definition of the noise, fuel venting, and exhaust emissions standards upon which the design approval was based, and the amendment level of VA noise, fuel venting, and exhaust emissions standards that the applicant proposes and the CA believes to be applicable to the VA validation	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(r)	Instructions for Continued Airworthiness	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(s)	For FAA PMA parts on critical components, which will be validated as an EASA STC, the application should contain the following information:	Listed Below, Not Applicable to this Project, or Concurrent - will provide when available
3.5.5.1(s)(1)	The FAA PMA approval, with all supplements, and in particular the description of the means by which the FAA PMA approval was granted	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(s)(2)	Overview of the technical data transmitted to the FAA for the purpose of approving the critical PMA part	Provide, Not Applicable, or Concurrent – will provide when available
3.5.5.1(s)(3)	Description of the means by which the PMA part user would be made aware of any changes on the PMA part by the PMA holder with a potential impact on safety	Provide, Not Applicable, or Concurrent – will provide when available

Europe and Brazil will have 3A (Basic) and 3B (Non-Basic) tables. Pick one.

For other 6: Same table for both, DAH chooses which guidance text applies

Replace blue text guidance with answers

1. Classification Checks
2. General Checks
3. Application Contents

DAH Role During Validation

- *Then* apply for validation thru the FAA (not the VA)
  - Submit validation application package to the FAA in accordance with IPA requirements
  - Provide all documents to your Cert Branch
    - If providing a link, provide link to location specific to *this* validation, not an entire project folder
    - Include a Cert Plan or compliance checklist for the FAA, especially when any reg is newer than the TCDS, and even when the IPA doesn't require it
    - Identify any proprietary documents that you are responsible for sending yourself

OK to upload stuff to FCAA application portals early

- Support the foreign validation project
  - Prepare for familiarization meetings, coordinate any (FAA-agreed) VA flights, etc.
  - Provide compliance data as required by the VA, after FAA agrees with request
    - Extra caution with export-controlled data
  - Show compliance to foreign regulations
    - Including a statement of compliance to those foreign regulations
      - Reminder: Found on foreign TCDS, including ATCs, and per newer amendment levels as applicable
  - Keep communicating with FAA: changed priorities, requests from VA without us cc'd, etc.

Keep FAA in the Conversation

- The benefit of validation agreements is for the VA to rely on the CA
  - Allows DAH to benefit from FAA's global leadership position and VA's respect for FAA's capabilities
  - Alleviates DAH from re-proving compliance for harmonized areas

*TCCA: 3.5.4.1(b) Communication shall be initiated and maintained **between** the assigned project managers/officers of **the CA and VA** for the submitted application until the validation is concluded.*

- An FAA presence in the validation aids in VA alignment to IPAs
  - FAA can keep them on task, not overstepping what's allowed
  - From an equivalent footing that applicant doesn't have

*EASA: 3.5.8.6. Communication during a validation should be primarily **between the CA and VA**.*

a) If the CA is not present in a technical discussion, the CA should be immediately informed of the outcome.

b) The VA will request data through the CA to the applicant.

- Foreign authorities trust FAA's processes and findings
  - For most areas, they are validating *FAA decisions*, not your design
  - For just their chosen retained areas, they're reviewing the design

DAH & VA Communications

- All validation communication should be conducted *through* the FAA
  - FAA validation focal being cc'd on emails is sufficient
  - Even more important to include us in meetings when any VA management is attending
  - Reminder: Check with us before sending compliance data in particular

- Direct communication with VA (without FAA) should be limited to…
  - Payment-related information
  - Sensitive data transmittal like cybersecurity documentation
  - Please ensure FAA is cc'd on any other emails you send to an FCAA or VA

Up Next

- After you receive approval…
  - If FAA isn't cc'd on the approval, please tell us!
  - Support continued airworthiness for your international fleet
  - Inform FAA and VAs of design or DAH updates

- More pre-application work for DAH on future applications
  - Please include the filled-out requirements tables, and all attachments from the start
  - Basic/Streamlined validations get faster VA approval when we do these
    - Other validations move more smoothly too

Thank You

Appendix: Validation Acronyms

- **IPA:** Implementation Procedures for Airworthiness
  - EASA calls theirs TIP: Technical Implementation Procedures for Airworthiness
- **FCAA:** Foreign Civil Aviation Authority
- **VA:** Validating Authority
  - the FCAA during outbound validation
- **CA:** Certifying/Certificating Authority
  - the FAA during outbound validation
- **SEI:** Safety/Special Emphasis Item
  - Allowed VA involvement area during validation, based on differing, non-“harmonized” requirements or policy
- **SSD:** Significant Standards Difference
  - A VA regulation that expects more than the CA’s, or the CA reg doesn’t exist. May or may not allow VA involvement.
- **ATC:** Additional Technical Condition
  - Make/model specific requirement where VA’s TCDS requires something beyond the CA’s TCDS
- **AFTCB:** Area of Further Technical Confidence Building
  - Allowed VA involvement area during validation, based on the VA not yet seeing enough showings from CA

Appendix: All Mentioned Links

FCAA	SEIs	SSDs	AFTCBs	Regs & Other Links
EASA	All products	SSDs	Not applicable	Regulations, Noise Database & Noise & Emissions examples
Canada	Not applicable	ATCs instead	Not applicable	Regulations & Eligible Aircraft List
Brazil	Airplanes only*	None	Not applicable	Regulations
UK	Uses EASA's	Uses EASA's	None	Uses EASA's regulations
China	All products	SSDs	AFTCBs	CCAR regulations
Japan	All products	SSDs	None	CARS (AIMS not located)
Israel	Transport airplanes*	None	Posted FAA-internally only	Regs in Hebrew only. Certificate search
Singapore	Uses FAA PILs	None	None	Regulations

**Other products have no SEIs*

IPAs **Working Procedures** **Import Requirements** **Export Approval**