



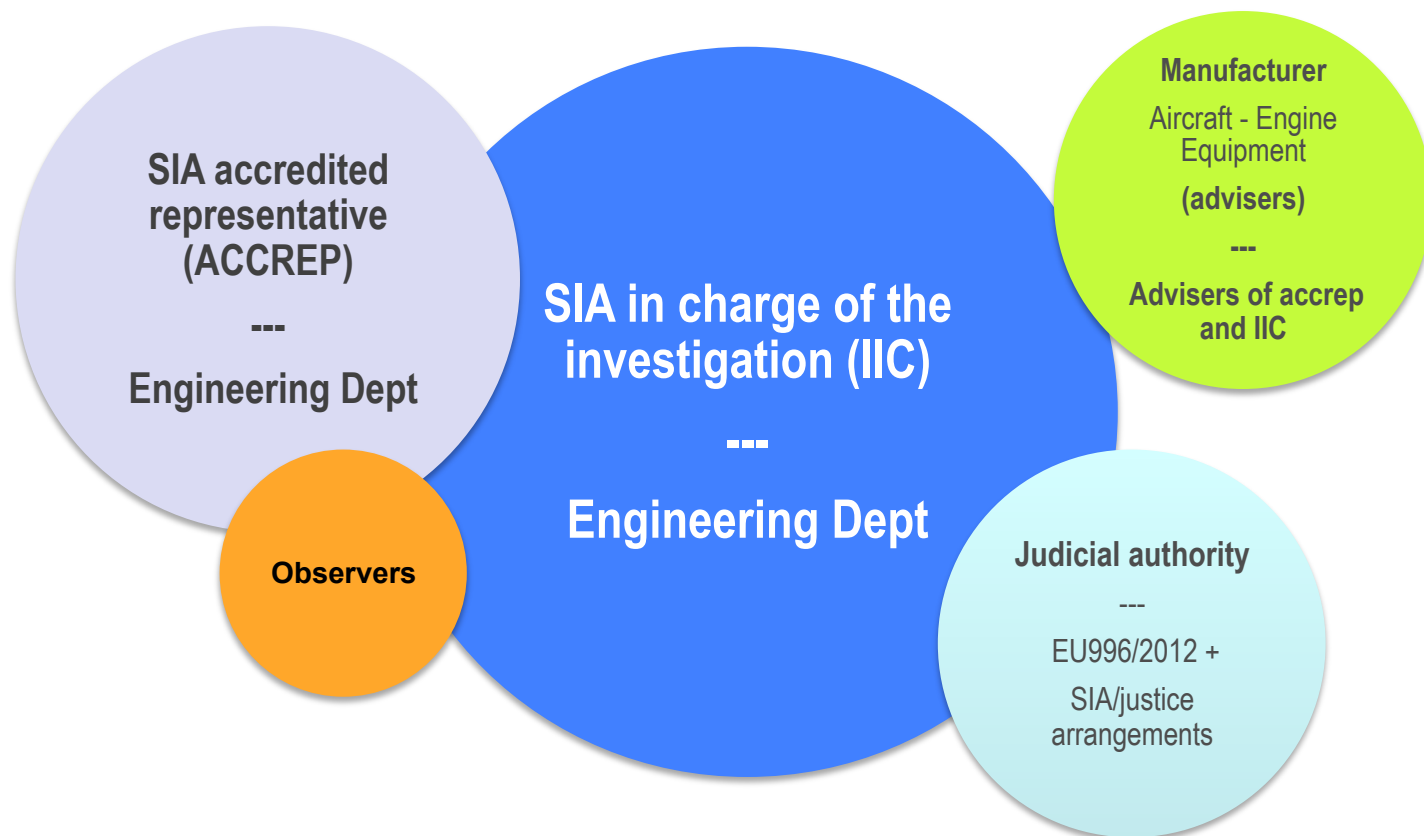
BEA

Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

Coordination des examens

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Who are the parties involved?



- **SIA in charge** always responsible for the objectives, the choice of the laboratory, the test plan of the examination to be performed
- **Good coordination** is the key to efficiency in terms of results and energy spent. Done through the investigation team and investigation groups when major accident.

BEA Where Can We Perform an Examination?

1. SIA laboratory (IIC or ACCREP or technical assistance) → SIAs capability (network)

- Most of the time, mastered and validated procedures:
 - Recorders read-out
 - NVM read-out
 - Material failure analysis (fractography)
- On rare occasions need to validate new procedure based on validated skills (otherwise look for outsourcing):
 - Development or adaptation of existing procedures
 - Practice on component or part of the same model
 - Manufacturer's technical assistance (diagrams, schematics)
 - Ex: AF447 recorders read-out at BEA

BEA Where Can We Perform an Examination?

2. **Outsourcing:** we don't know how to proceed and/or we don't have the right resources → **outside of SIAs network capability**

- Manufacturer test benches (when components still functional)
 - Engines functional testing
 - ATP for computers
 - Re-installation of equipment in an aircraft of the same type: Iron Bird

- Manufacturer's laboratories and/or independent external laboratories
 - Mechanical tests : traction, fatigue
 - Chemical analysis
 - Tests on screwed assemblies
 - Composites : material characteristics

- **DGA (Délégation Générale pour l'Armement) Defence Ministry Centers**
 - DGA EP Engine Test Center
 - DGA TA Aeronautical Center
 - DGA EV Flight Test Center
 - DGA TN Naval Center

- **Close cooperation BEA-DGA**

BEA BEA Outsourcing - Private Laboratories

- **Thales C&S, Toulouse**, failure analysis of electronic device
- **IRCGN / PTS**, forensic laboratories (technical advise)
- **ANADEF**, electronic failure analysis association (industrial experts forum)

- **Smaller Investigations of Incidents and Accidents:**
 - Transportation assured by SIA (generally from SIA to SIA if needed)
 - Receipt (packing opening) and examination: without any attendance
 - Examination based on known and validated procedures
 - If not: validation of new procedure (but need tests, skills and time)
 - After examination: share of results and raw data between IIC and ACCREP and sometimes advisers (exception CVR)

■ Major investigations

- Transportation assured by SIA (generally from SIA to SIA if needed)
- The SIA in charge has the responsibility of the procedure or the test plan but a good coordination is more than desirable between all parties (IIC, ACCREP, advisers): more often within the investigation groups
- Receipt (packing opening) and examination: often with attendance of all parties involved (IIC, ACCREP, advisers, justice)
- Examination based on known and validated procedures
- If not: slight adaptation of existing ones (you usually don't have time and you need skills)

■ Independent laboratories

- Objectives and test plan easily defined
 - chemical analysis
 - NDT (2D 3D X-rays)

■ Manufacturer facility

- Objectives, test plan and attendance to be strictly defined through coordination (IIC, ACCREP, manufacturer) and validated by SIAs
 - Preservation and Non destructive first, CMM adaptation, rehearsal on Golden Unit (ATP that erases NVM data), step by step, intermediate meetings...
- Transportation and receipt (packing opening with attendance)
 - Engines (manufacturer boxes through Field rep)
- Examination report from manufacturer to be validated and addressed to IIC

BEA AccRep is asked by IIC to supervise an examination in a manufacturer facility in France

- **BEA Engineering Investigator attends the examinations**
 - with or without IIC (or its representative from Engineering)

- **BEA AccRep attends the meetings**
 - when IIC is attending

- **When IIC (or its representative) attends the examination**
 - BEA validates the manufacturer's examination report (factual results only)
 - Manufacturer sends his report directly to IIC, copying BEA

- **When IIC (or its representative) doesn't attend the examination**
 - BEA provides a Technical Document (summary of examinations and conclusions)
 - BEA sends both documents to IIC (BEA's and manufacturer's)

- Import / export procedure

- Need for traceability

Thank you for your attention

Any questions?

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