

Bombardier Aerospace, Belfast

Panel 4 – Manufacturing and Production Quality Assurance



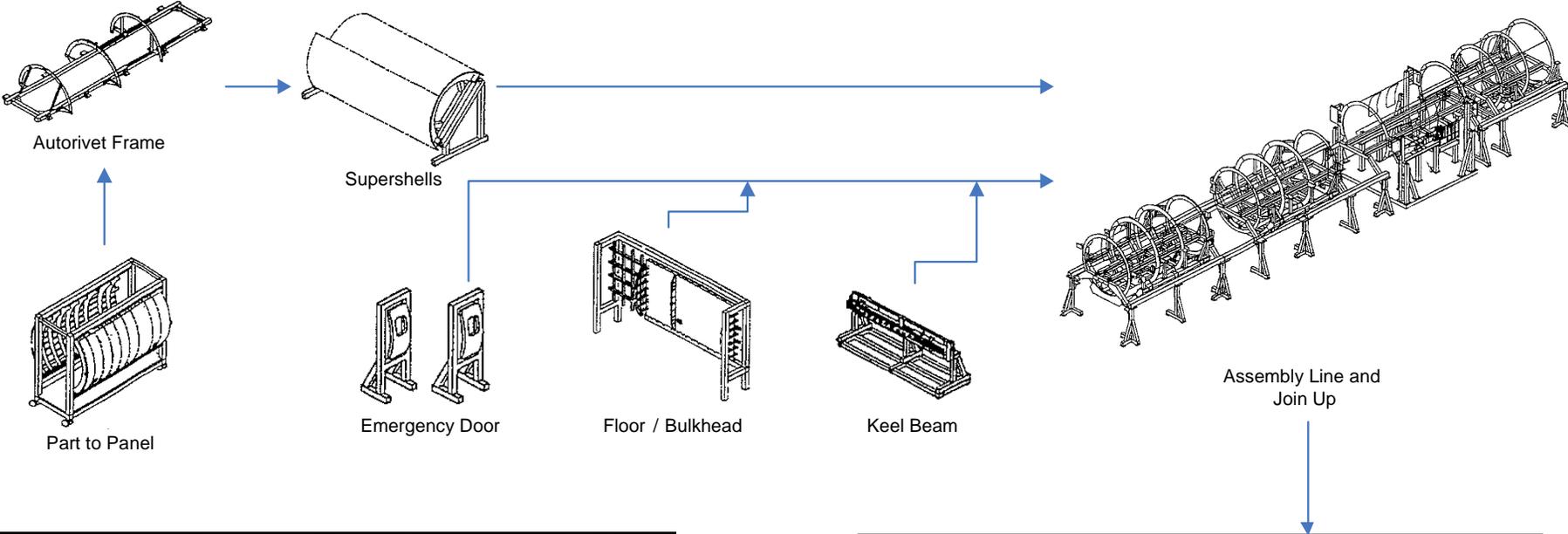
National Transportation Safety Board
Airplane Fuselage Structural Integrity Forum

Panel 4 Manufacturing and Production Quality Assurance

21st – 22nd September 2011

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Fuselage Assembly Process



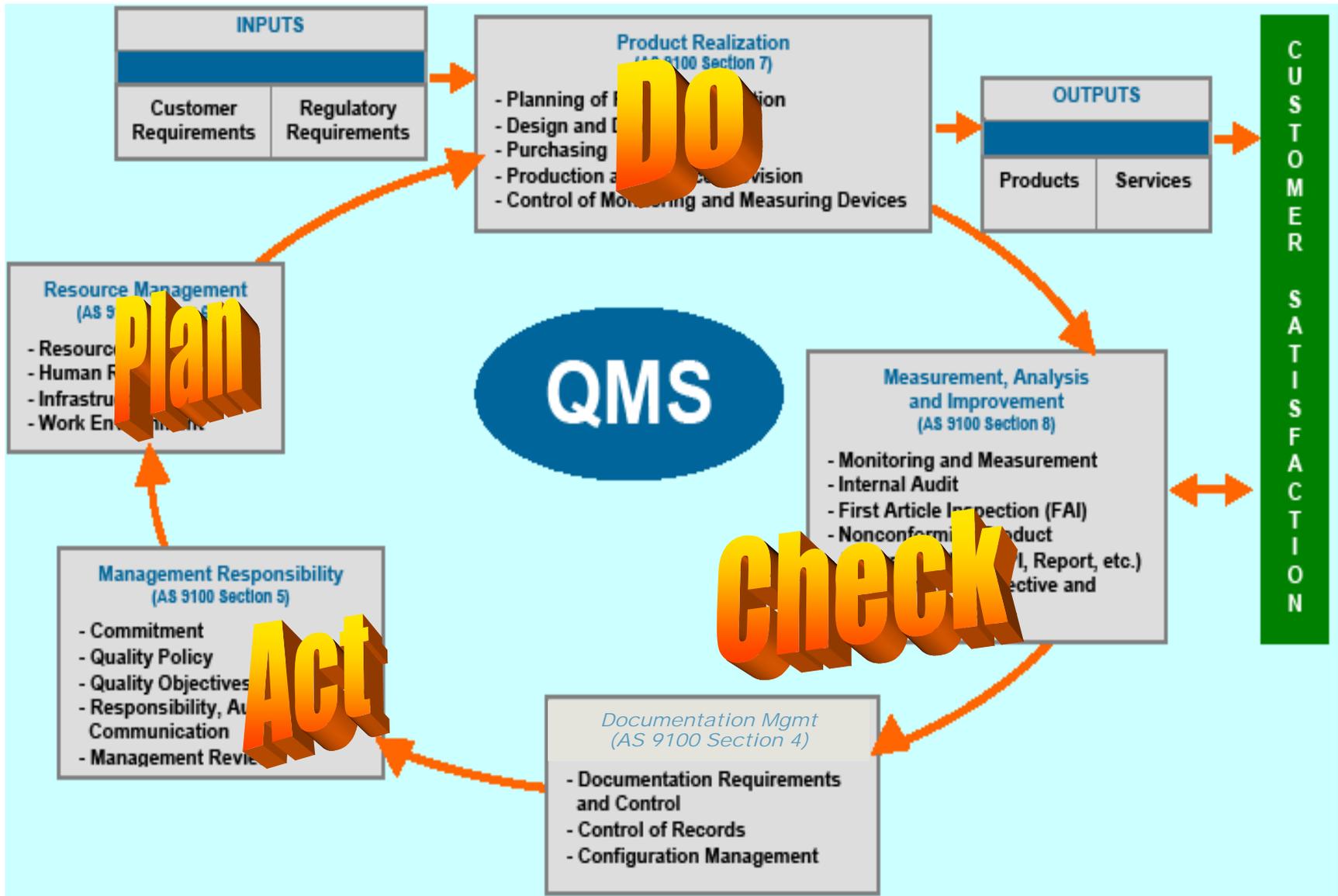
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Quality Management System (QMS)

- Ensure product safety and quality
- Provide products that meet customer requirements and create customer satisfaction
- Meet the regulatory requirements, both Regulatory and AS9100 Rev C
- To authorize the production, certification and delivery of aircraft and aircraft components:
 1. Authorities approve the Quality Manual and issue a production certificate for specified products
 2. They follow-up with regular audits of our facilities – all functions

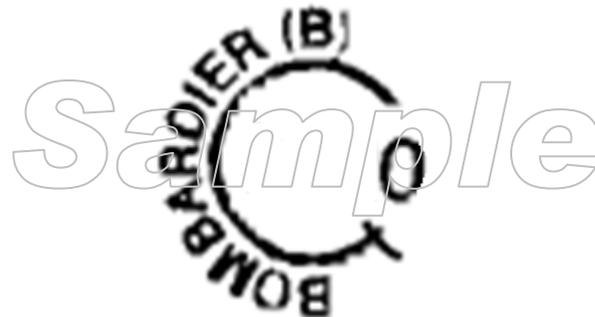


QMS Organizational Structure and Interactions



Ensuring Product Quality through Quality oversight

- Work Instructions are available and maintained on the shop floor to provide Operations and Quality personnel with the necessary information to manufacture and assemble components to Engineering and Quality standards
- Independent product inspections are completed by the Quality Department
- Internal quality audits are completed by Quality Assurance to ensure continued compliance with regulatory requirements
 - Audits completed against regulatory requirements including:
 - EASA Part 21 G
 - AS9100 Rev C
 - NADCAP



Regulatory Oversight on the Bombardier Belfast

- Bombardier Belfast is subject to regular oversight by Civil Aviation Authority (UK) on behalf of EASA
- Audits against EASA Part 21 G Production Organisation Approval (POA) are conducted every quarter
 - 3 year plan issued
 - All facilities and product lines covered (including off site working parties)
- Oversight of audits performed by Belfast personnel are also completed every year
 - Internal Audits
 - Supplier Audits
- Quarterly approval meetings held to review items including:
 - Facility / Product line changes
 - Personnel changes
 - POA Exposition updates
 - Supplier Audits / Control

Belfast Quality System – Quality Records

- Quality Records are maintained in accordance with regulatory and customer requirements.
- Type of records maintained include:
 - EASA Form 1's and delivery Documents / Assembly Build Charts / Detail Part EPR's / Concession paperwork / First Article Inspection Reports / Special Process Records / Tooling Records
- Both paper and electronic records are maintained
- Requirements including retention times are defined in QDI-16-01 Quality Records:
 - Authorised Release Certificates EASA Form 1 - life of aircraft
 - Build records - life of aircraft
 - Detail part records - 7 years
 - Concessions - life of aircraft
 - Special process records – life of aircraft / 7 years

Belfast Quality System – Quality Records

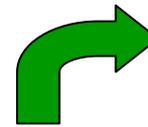
- Paper product records are stored off-site at a purpose build record storage facility
- Access to records is available immediately
- Records are boxed and labelled to allow for quick recovery if required
- Storage ensures records are secure and protected from damage and deterioration

- Electronic records are stored on the company servers
- Several servers located both on and off site
- Several back ups completed daily and stored off site

Product Escapes Process

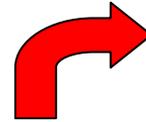
- To identify and address all issues that could result in safety concerns.
- All issues are to be presented to the site Quality Product Integrity Governance Focal who will register the item in a central database.
- Ensure appropriate communication and governance of site performance.
- Coordinate issues within each program and between Bombardier sites that have the potential to threaten safety of flight and/or certification.
- Mandate an initial response relating to the aircraft discovery from both Quality and Engineering within 24 hours in support of the Safety Management System.
- Establish a standard governance process for all sites to manage defect severity, process of response/containment, risk assessment and regulatory response.

Product Escapes Process



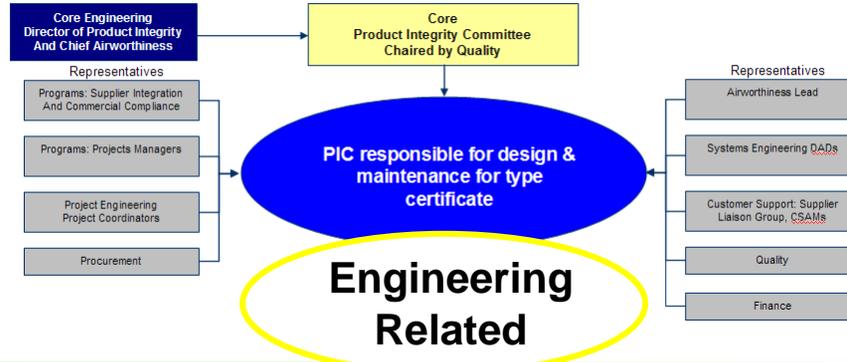
Safety Organization

Corporate Management



Corrective Action Review Board

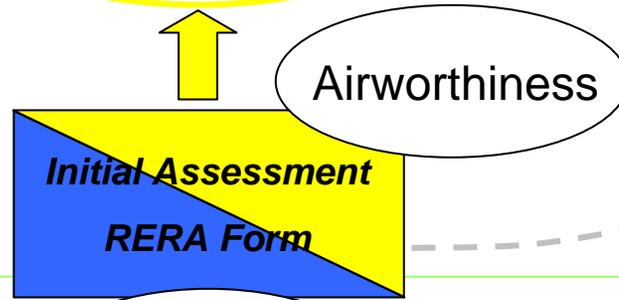
Risk to Operator or Fleet



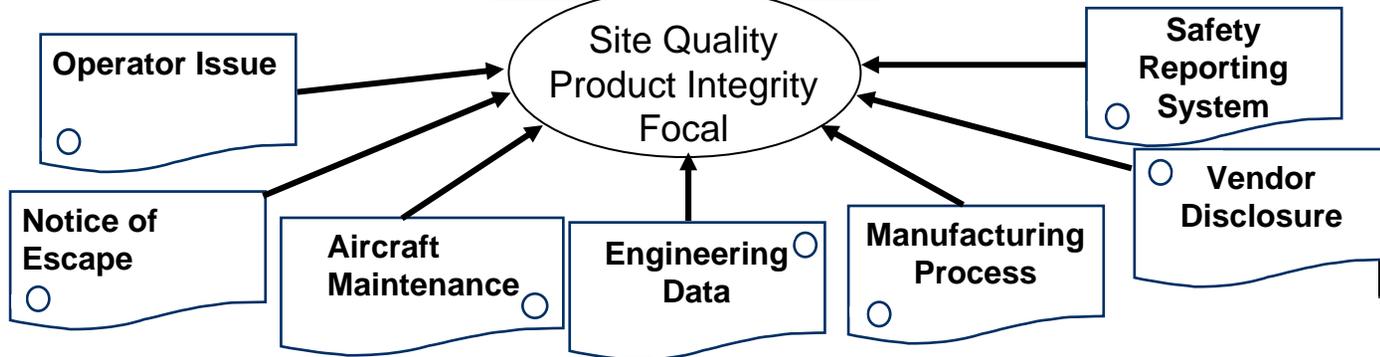
Risk to Certification

All Reported Issues

Quality Escape (non airworthiness)



Initial assessment and inter-site notification



Fault Find

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