

AMTAS Nov 30 to Dec 2 Workshop

TCO Summary

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E: engineers

T: technicians

I: inspectors

Category	General (1 - very general; 3 - very specific)	Outcomes
Basic knowledge of composites	1	E: distinguish between the resin, fiber, and core used in composite parts.
	1	I: Describe basic steps in repair process
	1	T: follow personal and equipment safety requirements
	2	T: describe the differences between repairing composite and metal structures
	1	T: describe the state of the art of composite technology
Damage Assessment	2	E: perform damage inspection on a composite part
	2	I: Identify different in-service damage scenarios
	2	I: Identify typical composite manufacturing defects
Disposition	1	I: List basic NDI methods with their limitations
	2	E: list and describe the critical steps and skills needed in making a damage disposition
Repair Design Detail & Process Plan	2	E: identify and chart the steps involved in repair design and approval
	3	E: identify the requirement for material and process specifications and specification approval requirements.
	2	I: Know the different process parameters that affect repair quality (surface preparation, moisture ingress, contamination, cure parameters, storage & handling of materials, proper calibration & standards).
	3	I: Identify important differences between pre- and post-repair NDI.
	3	I: explain the impact of processing variables on NDI, and fiber waviness.
	2	I: select and use manuals and publications to research repair processes, practices, parts, and materials.
	1	T: identify sources of technical data and regulatory requirements.

Tooling, equipment and expendable materials	1	E: list all the necessary tooling and equipment to accomplish a simple laminate structural repair
	1	E: list the key composite and expendable materials needed for simple laminate structure repair including appropriate storage requirement
	2	I: verify that the correct materials were used and that they were handled and stored correctly.
	1	T: describe storage and handling requirements
Execute process and In-Process Controls	2	E: describe and apply common surface preparation and drying techniques and how to inspect them for acceptability
	2	E: describe and apply material lay down [including orientation] and compaction process for laminate structure repair
	1	E: demonstrate how to prepare and cure a laminated structural repair and explain the types of defects to be avoided
	3	E: articulate and draft a QA plan for a typical repair to include material selection and orientation, process parameters, and inspection requirements
	1	I: Describe basic steps in repair process.
	3	I: verify that the repair environment was correct, the surfaces were properly pretreated and cleaned, and that the part was properly dried.
	3	I: verify correct fastener selection, that fastener holes were properly machined, inspected, and fasteners were properly installed.
	1	I: understand the roles, responsibilities and relationship of technician, inspector and engineer in the composite repair process.
	2	T: describe repair processes from damage assessment through repair completion
Post repair inspection	2	E: describe two different post-repair inspection procedures
	3	E: describe the steps taken in post-repair inspection and the meaning of results as related to different types of processing defects
	2	I: Lessons learned.
	3	I: verify that a repair cure was done correctly, the plies were properly impregnated, the resin was properly mixed, the # and orientation of the plies was correct, and that the repair was properly thermocoupled.
	2	I: demonstrate an awareness of post-repair visual inspection and NDI techniques.