

1. Critical Maintenance Tasks overview

145.A.48 (b) / AMC 145.A.48 (b)/ AMC M.A.402(g)

What are "Critical Tasks"? Maintenance task that involves the assembly or any disturbance of a system or any part on an aircraft, engine that, if an error occurred during its performance, could directly endanger the flight safety / lead to an unsafe condition.

What does that mean? "Critical maintenance tasks" are tasks that involve:

1. **Disturbance / Disconnection or Assembly/Reassembly** of a system or any part (or their controls) whereby errors may lead to an unsafe condition of the aircraft, ("safety task" or "RII") or
2. **Removal / Installation of components** fitted on similar systems; whose failure could have an impact on safety. ("identical tasks on similar system") Note that a visual inspection / Lubrication without part removal are not a critical task

Consideration should also be given to: (Evaluation of work to be performed by the Team Leader/Aircraft manager/Certifying staff)

- The criticality and the complexity of the task on systems and consequences of failure,
- The vulnerability of the task to human error due to un-normal operations,
- The presence or absence of other checks (e.g. Operational or functional checks),
- Previous experience of maintenance errors, depending on the consequences of the failure.

What to do in case of "critical maintenance tasks"?

1. The TASK must be clearly identified as "Critical" in Quantum and in Task card, → **STAMP**
2. One (or a combination) of the following actions (error capturing methods) are required:
 - An "independent" inspection (in case of "safety task");
 - Different staff (in case of "Identical tasks on similar systems") or additional inspection if same staff;
 - Reinspection (in case of simple tasks or only 1 staff available) - in Line Maintenance environment or Away from approved Base facility)
3. An additional check (Leak, Operational, Functional, Run) is performed as required;

CRITICAL TASKS

3.1

3.2

3.3

2. Responsibility

1. **Technical Services** is responsible to identify "critical tasks" on cards at the planning stage. (CS if AOG)
2. **Team leader/Aircraft manager / CS (line)** is responsible to identify "critical tasks" for additional works.
3. **Supervisor / CSM (line)** is responsible to review tasks during Maintenance event to ensure that all "critical tasks" are appropriately identified, including specific customer requirements.
4. **Team leader / CS (line)** has the responsibility to define appropriate required actions (error capturing methods + inspection) for all "critical tasks" to reduce the risks of error, during Maintenance.
5. **Staff** must inform **Team leader** in case of any disturbance of a system/part during task execution (may lead to unsafe conditions)
6. **Technical Services** is responsible to verify that identified "Error capturing methods" have been correctly recorded.

3. Required Action – Error capturing Method

An error capturing method is implemented after the performance of any critical task; Should be adequate:

Could be a combination of several actions (independent inspection, operational / functional check, visual inspection, different staff, reinspection).

3.1 Independent inspection

-Required in case of "Safety task" - when Maintenance task that may affect the following: AMC2 145.A.48(b)

- Control of the aircraft flight path and attitude - Installation / Rigging / Adjustment of Flight controls;
- Aircraft stability control systems (autopilot, fuel transfer)
- Propulsive force of the aircraft, including installation of engines,
- Overhaul, calibration or rigging of engines, transmissions and gearboxes

-Who is the independent staff? -B1/B2/S staff- In relation with independent insp. to be performed - Cat. B1 or B2 or specialised work

The "independent staff" is **not involved** in the task (before the independent inspection) and is **not issuing** the Task Release.

He is a Rated staff with a certifying Staff privilege, **not required to hold Rating on AC type**.

-How to perform the "independent inspection"?

The staff performing the **independent inspection** should consider the following points **independently** (if appropriate):

- Parts that have been disconnected / disturbed should be **visually inspected for correct assembly and locking**;
- The whole system should be inspected for **full and free movement over the complete range**;
- Cables should be **tensioned correctly, with adequate clearance**;
- The operation of the whole control system should be observed to ensure that the **controls are operating in the correct sense**;
- **Software** should be checked in terms of version, compatibility with aircraft configuration

If the control system is duplicated to provide redundancy, each should be checked separately.

-Sequence of "Independent inspection"?

1. **Task is Performed / Fully completed** by an Authorised staff (box "3.2"). He attests the procedure has been correctly performed i.a.w data.
2. **Task is Inspected** by an AC-Rated staff with relevant AC Type (box "3.3"). He attests inspection of the work, and satisfactory completion of the task.
3. **Independent Inspection** by independent Rated staff (B1/B2/S). He attests that no deficiencies have been found on system.
This inspection must be **described** because this inspection generally differs from task inspection.
4. **Task is Released** by an AC-Rated staff. He attests that task has been fully completed & properly signed by appropriate staff i.a.w data. . (box "6")

3.2 Identical Tasks on similar system

If several similar components are removed/installed on similar systems (>1 system),

- **Different staff** (not necessarily authorised rated staff) are required to work on identical tasks involving removal/installation.
- When the **same staff** work on identical task, an **additional inspection** should be performed.
- **FOR work on identical simple tasks OR Away from Approved Base Facility / Line Maintenance environment, a Reinspection** must be performed by the **same staff**.

3.3 Additional Check (i.e. Functional / Operational / Leak check / Run)

Additional check must be **described** in card (box "3.1") or in additional card with the following:

- **Description of inspection/check performed, and the result of the inspection observed.**
- **Results of checks, i.e. values or absence of leakage or test performed satisfactory.**

Note: This check could be performed by the independent staff if performed **after** the independent inspection.

Tasks that must be assessed for Impact regarding risk of errors [RED] tasks are considered "safety CRITICAL TASK" and required independent inspection(s)		Following actions (Error capturing method) are recommended
"Major" change (as described in data) <i>It includes Major modification Or Repair outside the SRM-</i> CDCCL tasks Any task related to CDCCL Identified by the Operator/Manuf. ETOPS/EROPS/EDTO tasks Any task related to EROPS Identified by Operator/Manuf. RVSM area Task related to RVSM critical skin area (repair/paint) Additional tasks identified by the Operator/CAMO. "Critical" need to be evaluated regarding risk of errors		• [RED] = guide for required independent inspection <i>Any physical connection/reassembly needs the independent inspection</i> • Visual inspection of xxxx for correct assembly, locking, routing and connection. • Visual inspection of xxxx for correct assembly, routing and connection. • Visual inspection of xxxx for correct assembly, locking, routing and connection. • Visual inspection of area for absence of skin waviness, scratches, damage. • Independent inspection Depending of the system/Part affected.
Outflow Valves ATA 21 Installation / Replacement / Disconnection		• Visual inspection of xxxx for correct assembly and locking. + leak/Pressurised Check
Autopilot system / Flight director / Cable ATA 22 Installation / Replacement / Disconnection <i>(Not required for equipment plug-and-play)</i>		• Visual inspection of xxxx for correct assembly, locking, routing and connection. • Cables are correctly tensioned. (if appropriate) + Ops Check
Electrical power components (>1) ATA 24 (ADGs / IDGs/starters/DC generators) Installation / Replacement		ADG • Visual inspection for correct assembly and locking. Different STAFF on similar system involving removal/installation OR Inspection
Flight crew Seat ATA 25 Installation / Replacement / Major Mods&Repairs		Inspection: Visual inspection for correct assembly and locking
Fire Extinguisher/Detection System on Eng./APU ATA 26 Installation / Replacement <i>(Not required for portable equipment)</i>		• Visual inspection of xxxx for correct assembly, locking, routing and connection. Reinspection (add step) if same staff out of Base facility / in Line maintenance environment
Flight Controls - Primary or Secondary ATA 27/55 (Aileron, Elevator, Rudder, Tab, Flap, Slat, Stabilizer, Spoiler) Installation / Rigging / Adjustment / Disconnection <ul style="list-style-type: none"> Flight Control surfaces Control system (Cables, Pulleys, Rods) Flight Control actuator / servo FBW system component & interface 		• Visual inspection of xxxx for correct assembly and locking (and clearances). • Cables are correctly tensioned. (if appropriate) • System is observed for full and free movement over the complete range. • All Controls are operating in the correct direction + Different STAFF on similar system involving removal/installation OR Inspection + Ops Check
Work inside fuel tanks ATA 28 Installation / Replacement / Disconnection		• Visual inspection of xxxx for correct assembly, locking and routing. (incl. Borescope) • Inside Area is clean and free of foreign bodies <i>(Not required for Borescope)</i>
Fuel transfer Filters (>1)/Fuel Boost Pump Installation / Replacement / Disconnection		Inspection: Visual for correct assembly, locking and connection + Leak Check
Hydraulic Filters (>1) ATA 29 Installation / Replacement		Inspection: Visual for correct assembly, locking and connection + Leak Check
Ice Protection – Telescopic duct (F7X ONLY) ATA 30 Installation / Replacement		• Visual inspection for correct assembly, locking and connection . + Different STAFF on similar system involving removal/installation OR Inspection
Landing Gear ATA 32 Assembly of Actuators & Critical Attachments affecting extension, retraction, or locking of the landing gear Installation / Replacement/ Adjustment / Disconnection		• Visual inspection of xxxx for correct assembly, locking, routing and connection. + Different STAFF on similar system involving removal/installation OR Inspection
Pitot Static/Tubes/ADC /AOA ATA 34 Installation / Replacement / Adjustment / Disconnection <i>(Not required for equipment plug-and-play)</i>		• Visual inspection of xxxx for correct assembly and connection. + Functional / Ops Check
Critical Software Installation / Upgrade ATA 45		Check Software in terms of version , compatibility with aircraft conf.
Primary Structure Major Mods & Repairs ATA 52 to 57 Wing/Pylon - Installation / Replacement		• Visual inspection of xxxx for correct assembly, locking, routing and connection.
Engine mount bolt/attachment/Cable/Rod ATA 61/71/72 Engine/Thrust reverser/Propeller Fan blade/Disk/Module/Stator vane system Installation / Replacement / Rig		• Visual inspection of xxxx for correct assembly and locking and clearances. • Cables are tensioned correctly. (if appropriate) + Check / Run
Gearbox Note. will be done by engine staff		• Visual inspection of xxxx for correct assembly, locking.
Identical Tasks involving Part removal/installation on similar systems (>1) <i>whose failure could have an impact on safety</i>		Different STAFF on identical task OR Inspection by a different staff <i>if same staff performing all work</i> OR Reinspection (add step) if same staff out of Base facility / in Line maintenance environment
Swap / Replacement on similar systems [simple tasks] Chip detectors/Igniter plug/Fuel&Oil Filters/Oil Replenishing/ Wheels/Brakes / Plug-and-play instrument		Inspection (box3.3) by different staff <i>if same staff performing all work</i> Reinspection (add step) if same staff out of Base facility / in Line maintenance environment + Functional / Ops check

Single Task performed on listed system

Similar system

Independent inspection should be described in Task card - **should be performed by an independent staff (B1/B2/S) BEFORE task release.**

- He is **not required to hold Rating** on Aircraft type (internal authorisation)
- He should **not participate to this Task**. (He could perform test/check after the independent inspection OR perform other tasks during same maintenance)
- He should **not release this Task**. He shall describe independent inspection performed, as described above
- All independent inspections could be performed by the **same independent staff**

Inspection should be performed by a **different Staff (NOT necessary to be independent).**

Reinspection should be performed by **the same rated staff** - He holds **Rating on AC type.**

Check (Leak, Functional, Operational) **could be performed/recorded by the same rated staff.**

1 additional step is described in card (box3)

1 additional step is described in card (box3)

Action and result be described in card (box3)