THE AVIATION POINT · THEAVIATIONPOINT.COM · THE AVIATION POINT · THEAVIATIONPOINT.COM · THE AVIATION POINT · THEAVIATIONPOINT.COM

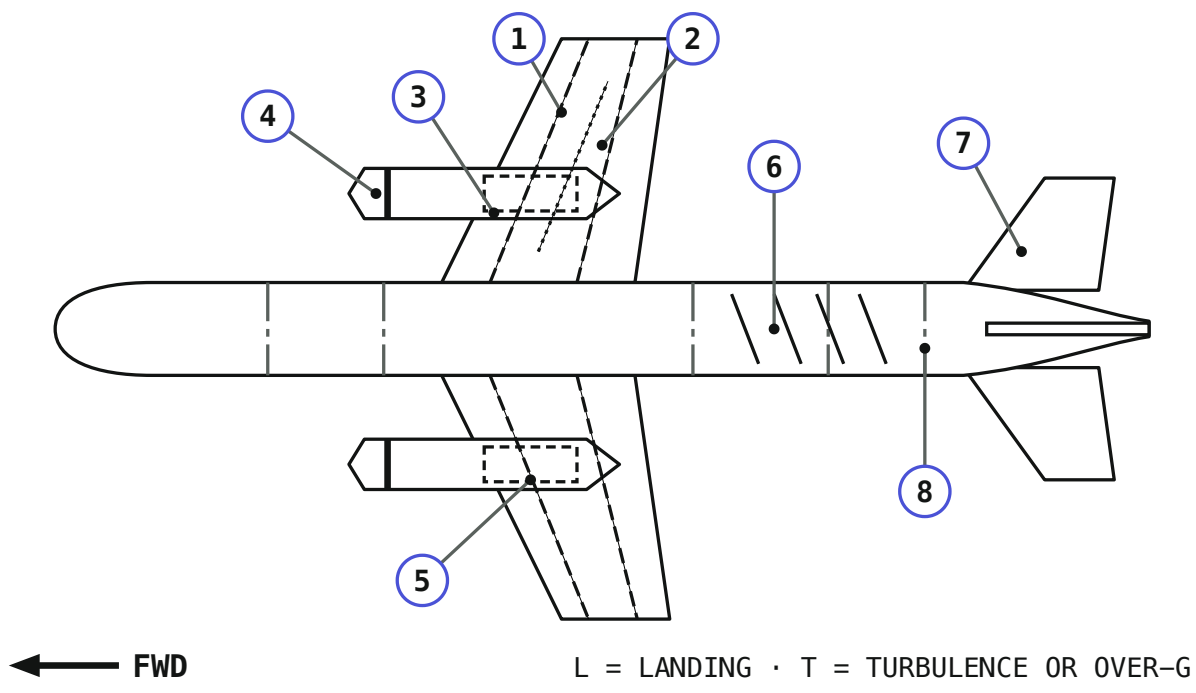
Abnormal Events: Inspecting After Hard Landings, Turbulence, Lightning and HIRF

Trigger · first pass · widen if damaged · lightning path · bonding · records

1 Identification

PLAN VIEW

TYPICAL AIRCRAFT · THE AMM TASK NAMES THE AREAS



L = LANDING · T = TURBULENCE OR OVER-G

#	AREA	LOOK FOR	EV.	SOURCE
1	WING SKIN, UPPER, LOWER	WRINKLES WITH PERMANENT SET: THE EASIEST SIGN TO SEE	L, T	FAA-H-8083-30B CH. 10
2	RIVETED SEAMS, TANKS	FUEL LEAKS: SEALANT BROKEN, SEAMS OPENED	L, T	FAA-H-8083-30B CH. 10
3	SPAR WEBS	BUCKLING, WRINKLES, SHEARED ATTACHMENTS, VIA ACCESS HOLES	L, T	FAA-H-8083-30B CH. 10
4	NACELLES, FIREWALL	SKIN, ATTACHMENTS; BUCKLING AT THE WING LEADING EDGE	L, T	FAA-H-8083-30B CH. 10
5	GEAR AREA, WHEEL WELL	LOOSE RIVETS, CRACKS OR BUCKLING, GEAR DOWN IN TURB.	T	FAA-H-8083-30B CH. 10
6	FUSELAGE SKIN, TOP, BOTTOM	DIAGONAL WRINKLES: TOO HIGH A BENDING MOMENT	T	FAA-H-8083-30B CH. 10
7	EMPENNAGE AND ATTACHMENT	WRINKLES, BUCKLING, SHEARED ATTACHMENTS AT THE FUSELAGE	T	FAA-H-8083-30B CH. 10
8	BULKHEADS, STRINGERS	DISTORTION, BUCKLED WEBS, CRACKS	L	TO 1-1A-1 PAR. 2.1.2
–	FASTENERS, ALL AREAS	LOOSE, SHEARED, POPPED; IN A WRINKLE PULL A FEW: SHANKS	ALL	FAA-H-8083-30B CH. 10
–	WING ALIGNMENT	DIHEDRAL AND INCIDENCE WITHIN LIMITS	L	FAA-H-8083-31B P. 2-48

SIZE LIMITS: – (THE SRM OF THE TYPE SETS WRINKLE, BUCKLE, DENT)

The Aviation Point.	TITLE: WHERE THE DAMAGE SHOWS	DWG NO.: TAP-SYL-B09	REV: A
SCALE: NTS	UNITS: IN [MM]	PROJ. / SHEET: 1/1	MATERIAL: –
TOLERANCES: –	SOURCE: FAA-H-8083-30B CH. 10	STATUS: TYPICAL, NOT APPROVED	

General guidance after FAA-H-8083-30B ch. 10 and TO 1-1A-1 par. 2.1.2: the AMM task of the type names the areas, their order and the method, and the SRM sets the limits.

What triggers each inspection

Event	Trigger in public documents	Threshold	Source
Hard landing	A rough landing, even below the design landing weight: the vertical speed at contact is hard to judge	— : the AMM 05-51 of the type	FAA-H-8083-30B ch. 10
Overweight landing	A landing at a weight known to exceed the design landing weight	— : the type's landing weight limit	FAA-H-8083-30B ch. 10
Severe turbulence, over-g, violent maneuvers	Flight through severe turbulence; reported violent maneuvers	— : the AMM; load-factor limits are the type's	FAA-H-8083-30B ch. 10; TO 1-1A-1 2.1.2
Lightning strike	Any strike that has occurred	Any strike	FAA-H-8083-30B ch. 10
HIRF exposure	— : no public document sets a structural inspection; HIRF protection is kept by the maintenance in the ICA	— : the AMM of the type	AMC 20-158A 10

Where the damage shows

Area	What to look for	Event	Source
Wing skin	Wrinkles: the most easily detected sign of an excessive landing load. Upper and lower surfaces: buckles or wrinkles with permanent set	Landing; turbulence	FAA-H-8083-30B ch. 10; TO 1-1A-1 1.5.3.4
Riveted seams and tanks	Fuel leaks along riveted seams: overloads broke the sealant and opened the seams	Landing; turbulence	FAA-H-8083-30B ch. 10
Spar webs	Buckling, wrinkles and sheared attachments, fuselage to tip, through the access openings	Landing; turbulence	FAA-H-8083-30B ch. 10

Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.

THE AVIATION POINT · THEAVIATIONPOINT.COM

Area	What to look for	Event	Source
Fasteners	Loose, sheared or popped. In a wrinkled area remove a few rivets and look at the shanks for shear	All	FAA-H-8083-30B ch. 10; TO 1-1A-1 2.1.2
Bulkheads and stringers	Distortion, buckled webs, cracks	Landing	FAA-H-8083-30B ch. 10; TO 1-1A-1 2.1.2
Nacelles and firewall	Nacelle skin and attachments, buckling at the wing leading edge, firewall skin	Landing; turbulence	FAA-H-8083-30B ch. 10
Landing gear area	Loose rivets, cracks or buckling round the gear if it was down in turbulence; the wheel well	Turbulence	FAA-H-8083-30B ch. 10
Fuselage skin, top and bottom	Diagonal wrinkles left by an excessive bending moment	Turbulence	FAA-H-8083-30B ch. 10
Empennage	Wrinkles, buckling or sheared attachments on the surfaces and at the attachment to the fuselage	Turbulence	FAA-H-8083-30B ch. 10
Rivet rows and fittings	Small cracks leading away from rivets; overstress cracks	All	TO 1-1A-1 1.5.3.4.1; AC 43.13-1B 5-5e(2)
Composite structure	Delamination, disbonding, broken fibers, core crushing	All	TO 1-1A-1 1.5.3.4
Wing dihedral and incidence	Angles within limits, components not distorted	Landing; abnormal flight loads	FAA-H-8083-31B p. 2-48

2 Allowable damage

After a lightning strike: what to check

Check	Look for	Source
Structure and paint in zones 1 and 2	Burns, pits, holes, scorched paint at the entry and exit points	FAA-H-8083-30B ch. 10; AMC 20-136A 6.e
Radome, cowls, fairings, windows, composite	Burning, discoloration, delamination, disbonds, water ingress. Composite strike protection: lightning protection; radome: radome repair	FAA-H-8083-30B ch. 10; FAA-H-8083-31B pp. 7-15, 7-40
Bonding straps and jumpers	Burnt, broken or loose; the jumpers across every control-surface hinge in place	FAA-H-8083-30B ch. 10; AC 43.13-1B 11-193a
Static wicks and null field dischargers	Burnt, eroded or missing	FAA-H-8083-30B ch. 10
Hinges and control cables	Burning or pitting at the hinges; jumpers on cables and levers near the surface	AC 43.13-1B 11-193a, b
Antennas and air data probes	Burns at the mounting, damaged surge protection	AC 43.13-1B 11-194
Systems	— : the AMM lists the system and functional checks for the type	—

3 Repair

1. Take the report.
2. Open the AMM 05-51 task.
3. First pass of the listed areas.
4. Widen until all damage is found.
5. Classify by the SRM; repair.
6. Record and release.

Key points

- **The AMM 05-51 and the SRM govern.**
- **No public threshold** for g or sink rate.
- **Wrinkles with set:** pull rivets, check shanks.
- **Strike:** entry, exit, bonding, dischargers.

MAIN SOURCES · FAA-H-8083-30B, Aviation Maintenance Technician Handbook: General · FAA-H-8083-31B, Aviation Maintenance Technician Handbook: Airframe · FAA AC 43.13-1B CHG 1 · TO 1-1A-1 / NAVAIR 01-1A-1, General Manual for Structural Repair · EASA AMC 20-136A, Aircraft Electrical and Electronic System Lightning Protection · EASA AMC 20-158A, Aircraft Electrical and Electronic System HIRF Protection · 14 CFR 43.9 and Part-145

SCAN · OPEN THIS GUIDE
theaviationpoint.com/standard-practices/abnormal-events/

Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.