

AVO7829
Rev. F
Subject:
A/C 0852 RH Horizontal Stabilizer Damage Assessment
Issue Date:
07/25/2019
Issued by:
M. Nguyen
Aircraft/Component: N57852
Disposition:

Revision F created to add step to replace all existing elevator attaching hardware. Revisions in bold.

Revision E created to include additional inspections recommended by Boeing via Message UAL-UAL-19-1505-02B. See instruction steps 11 through 17.

Revision D created to add skin cutout and NDT instructions. Revisions in bold.

Revision C created to expand inspection instructions. Revisions in bold.

Revision B - not used

Revision A created to add inspection instructions. Revisions in bold.

REASON:

Ground damage event on aircraft 0852 via inadvertent contact with an American Airlines aircraft, causing damage to the RH Horizontal Stabilizer, including the following damages: Right-hand elevator outboard section was broken off at second attach fitting. Right-hand horizontal Stab has scratches and dents and possible cracks on right hand side lower skin. Scratches and dents on lower skin extending 24-30 inches from outboard end. Right-hand horizontal stab end cap damage and punctured.

Right-hand horizontal fixed leading edge panel scratched and dented. This AVO provides damage assessment an inspection instructions for the subject matter.

DISPOSITION:

CAUTION: PROTECT/CLEAN ELECTRICAL WIRING INTERCONNECTION SYSTEM (EWIS) IN ACCORDANCE WITH SECTIONS 20-60-02 AND 20-60-07 OF THE AMM FOR THE BOEING 757-300 MODEL. EWIS IS DEFINED AS WIRES, POWER FEEDERS, WIRING DEVICES, AND TERMINATION DEVICES INSTALLED IN ANY AREA OF THE AIRPLANE. EWIS HAS THE PURPOSE OF TRANSMITTING ELECTRICAL ENERGY, DATA, AND SIGNALS BETWEEN TWO OR MORE INTENDED TERMINATION POINTS.

WARNING: OBSERVE ALL SAFETY PRECAUTIONS FOR THE HANDLING OF HAZARDOUS MATERIALS AS GIVEN IN THE REFERENCED SPECIFICATION OR APPLICABLE MSDS OR INJURY TO PERSONNEL MAY OCCUR.

A. Initial Damage Evaluation:

1. Remove the following parts to gain access for inspection:
 - a. Remove the remaining elevator segment
 - b. Removed horizontal stabilizer end cap
 - c. Remove the leading edge
 - d. Remove TE composite panels
 - e. Remove all access panels in foot print of damage and a minimum of 20 -inch or 2 ribs past all damage.
2. Quarantine all removed parts for further investigation.
3. Contact Engineering for inspection instructions when access is available.

B. Inspection Procedures:
Internal Structures:

4. Once access is available, accomplish a detailed visual inspection of the following internal structures for any signs of distortion, buckles, dents, cracked or pulled/loose/missing fasteners/rivets, see attached Figures 4 thru 7 for details.
 - a. Internal skin area from Stab Sta 318. - HSBL 297.00 and between front spar to rear spar.

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- b. Stringers S-1 thru S-3 from Stab Sta 318. - HSBL 297.00.
- c. Ribs 13 thru 15.
- d. Elevator Control Fittings.
- e. Stabilizer Pivot Support Fitting.
- f. Horizontal Stabilizer Jackscrew Support Fitting.
- 5. For any internal structure parts that have signs of distortion, buckles and dents, accomplish HFEC surface inspections per 757 NDT Part 6, Chapter 51-00-19 for cracks.

External Structures:

- 6. Accomplish a detailed visual inspection of the following external structures for any signs of distortion, buckles, dents, cracked or pulled/loose/missing fasteners/rivets.
 - a. All external hinge fittings.
 - b. Whole front spar assembly from BBL0.0 to FS Station 338.866.
 - c. Whole rear spar assembly from BBL0.0 to end of fitting.
- 7. For any external structure parts that have signs of distortion, buckles and dents, accomplish HFEC surface inspections per 757 NDT Part 6, Chapter 51-00-19 for cracks.

External Skins:

- 8. Accomplish a detailed visual inspection of the upper horizontal stabilizer skin from BL0.0 to the stabilizer tip for any signs of distortion, buckles, dents, cracked or pulled/loose/missing fasteners/rivets.
- 9. Accomplish a detailed visual inspection of the lower horizontal stabilizer skin from BL0.0 to the stabilizer tip for any signs of distortion, buckles, dents, cracked or pulled/loose/missing fasteners/rivets.
At the damage area on the lower horizontal stabilizer skin, accomplish the following instructions:
 - a. Remove all finish and smooth blend surface. Maintain surface roughness of 63 micro-inches RA or smoother.
 - b. Accomplish surface HFEC inspection at the affected area per 757 NDT Manual, Part 6, Subject 51-00-01, Procedure 2 to ensure crack/damage free condition.
 - c. At damage skin section with two cracks and a gouge:
 - i. Carefully cut out the minimal amount of fuselage skin, approximately 6.0" x 12" area, to remove the two cracks and the gouge area as shown in Figure 8.
 - ii. Ensure the shape of the cutout is rectangular with the sides parallel or perpendicular to the stringer or rib.
 - iii. Maintain a minimum 2D+0.040" edge margin at all fastener locations.
 - iv. Ensure the corner radii of the cut a minimum of 0.50 inch.
 - v. Accomplish a high frequency eddy current inspection (HFEC) of the skin cut out edge to ensure no cracks. Refer to 757 NDT Part 6, 51-00-01 or 51-00-19.
 - vi. Enlarge cut out 0.040 inch as an insurance cut.
 - d. At other blend out areas, accomplish an ultrasound thickness test per 757 NDT Manual Part 4, Chapter 51-00-00 or equivalent to determine the remaining skin thickness. At any locations with blend out areas beyond 757 SRM 55-10-01 Allowable Damage 1, use a .25" grid system, record the remaining skin thickness and provide all dimensions to Engineering. Map out the damage location, provide size of affected area and distance to adjacent structure.
- 10. Report all damage findings to Engineering for further evaluation.

Additional structural inspections to be performed (Note that some portions of these inspections may have already been accomplished):

- 11. Remove the horizontal stabilizer pivot fitting pins and bearings as called out in B757-300 AMM 55-17-51 and inspect for wear/damage as specified in the AMM. Accomplish HFEC inspection of the bores/lugs of the fuselage pivot fittings and stabilizer pivot fittings. Provided no damage exists install the bearings and pins per AMM.

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12. Remove and inspect the horizontal stabilizer ballscrew actuator and jackscrew per B757-300 AMM 27-41-10. If damage is found, accomplish additional inspections per CMMs 27-41-05 and 27-41-10. Accomplish HFEC inspection of the fuselage and stabilizer bores/lugs at the attachment points to the ballscrew actuator. Provided no damage exists, reinstall the horizontal stabilizer ballscrew actuator and jackscrew per AMM.
13. Inspect RH Elevator Hinge Fittings per B757-300 AMM 27-31-01.
14. Accomplish a visual inspection of the structure adjacent to the areas addressed by steps 11, 12, and 13.
15. Accomplish a visual inspection of the RH horizontal stabilizer fairings and attaching brackets.
16. Accomplish a detailed visual inspection of the suspected affected locations on the Front Spar, Rear Spar, Ribs, Stringers, and Skins.
17. **Replace all existing elevator attaching hardware use 757 IPC 55-20-51-01 Elevator Instl. as reference.**
18. Report results to Engineering. NOTE: Further repair instructions will be provided in a forthcoming revision(s) to this AVO.

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Figure 1

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Figure 2

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Figure 3

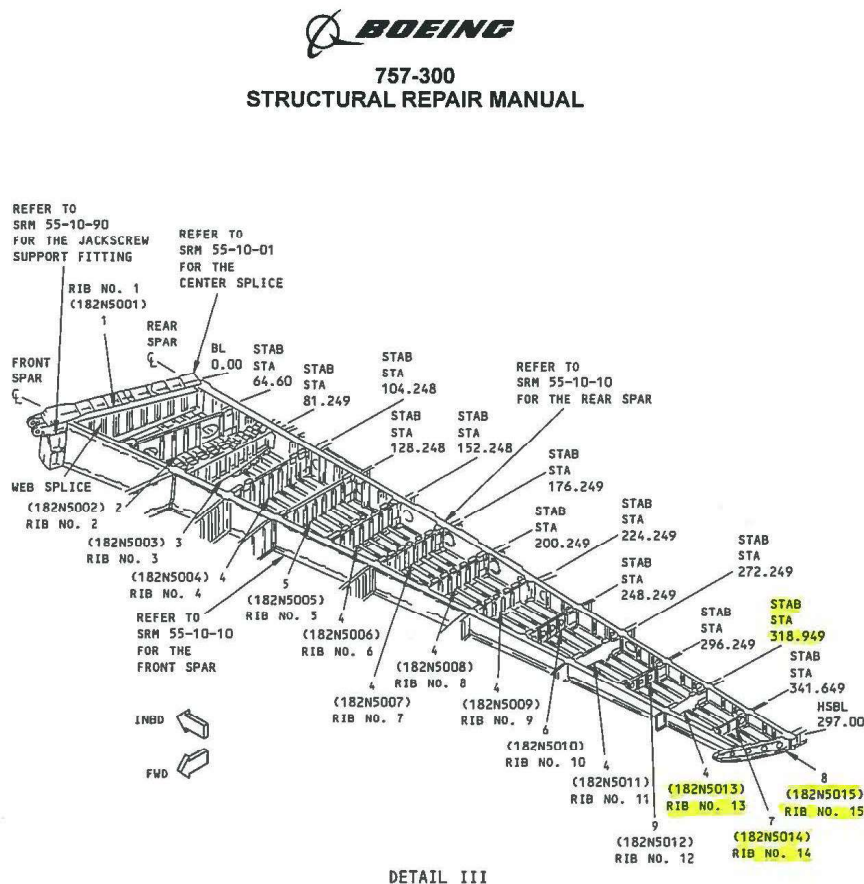
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Horizontal Stabilizer Rib Identification
Figure 1 (Sheet 3 of 6)

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Figure 4

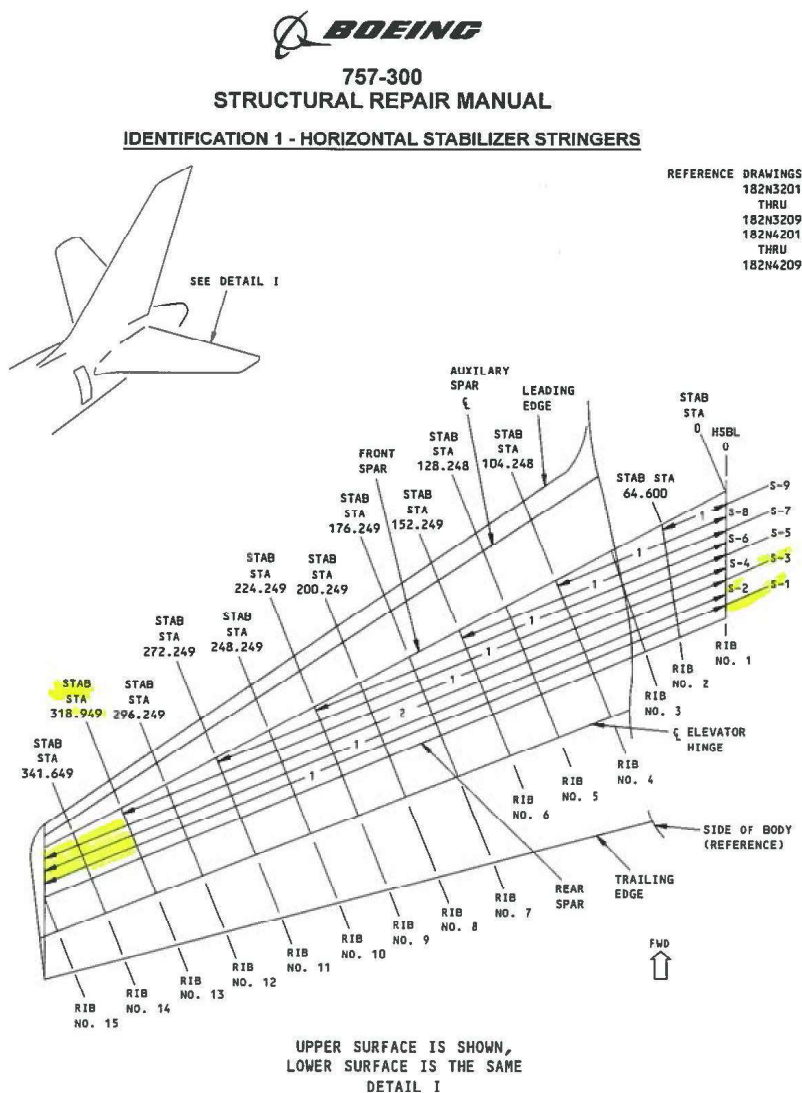
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Horizontal Stabilizer Stringer Identification
Figure 1 (Sheet 1 of 2)

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IDENTIFICATION 1
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Figure 5

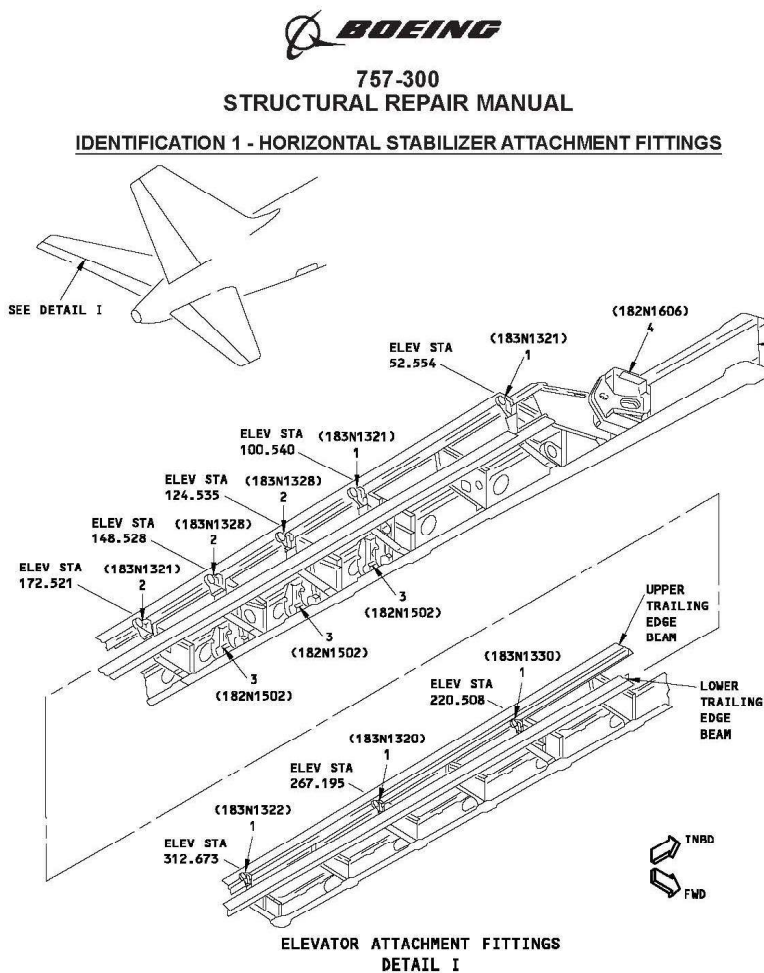
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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FITTING	0.875	7075-T7351	
2	HINGE FITTING		FORGING 7075-T73	
3	ELEVATOR CONTROL FITTING		FORGING 7075-T73	
4	STABILIZER PIVOT SUPPORT		FORGING 7175-T736	

LIST OF MATERIALS FOR DETAIL I

719994 S0006805399_V1

Horizontal Stabilizer Attachment Fittings Identification
Figure 1

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IDENTIFICATION 1
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Figure 6

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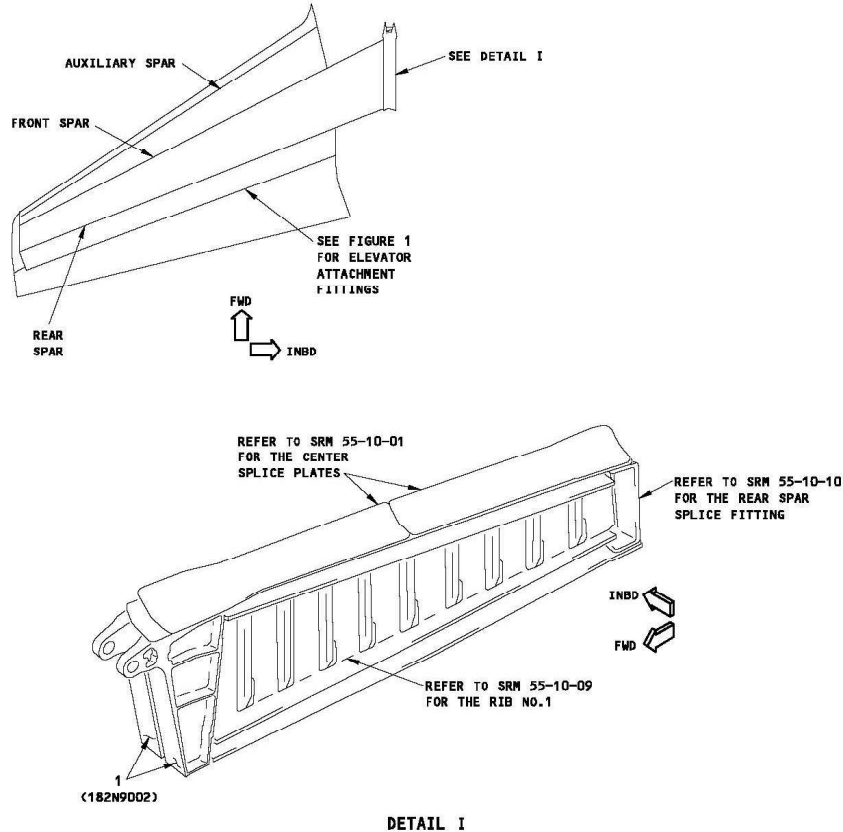
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757-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 2 - HORIZONTAL STABILIZER JACKSCREW SUPPORT FITTING



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	JACKSCREW SUPPORT FITTING	2.25	7175-T736 DIE FORGING (OPTIONAL: 7075-T7351)	

LIST OF MATERIALS

16317 S0006805400_V1

Horizontal Stabilizer Jackscrew Support Fitting Identification
Figure 1

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Figure 7

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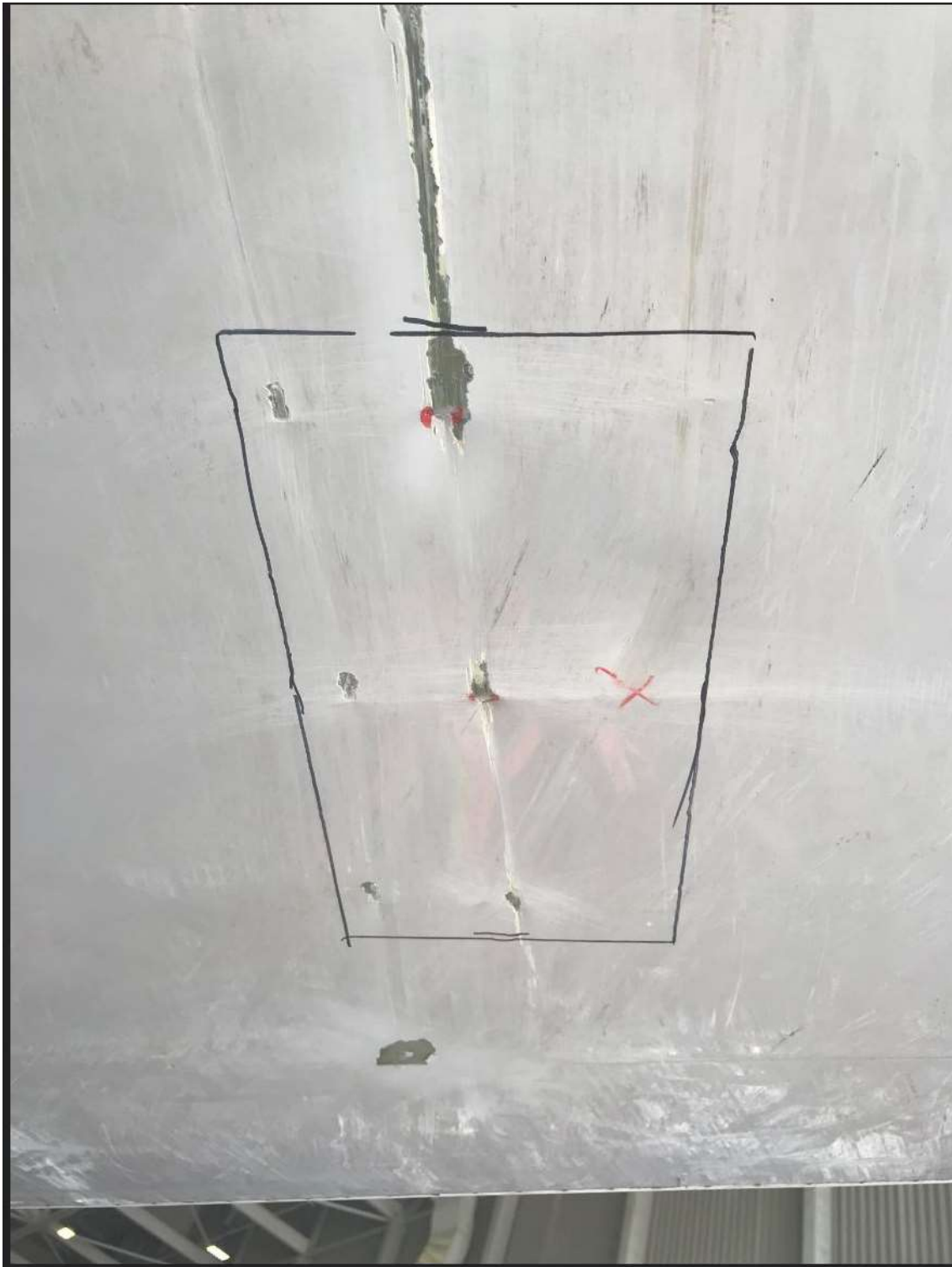


Figure 8

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