

In-service Corrosion Issues in Sustainment of Naval Aircraft



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Report Documentation Page

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Synopsis

- **Corrosion Issues**

- Dorsal Longeron Scallop corrosion.
- Inner Wing Corrosion.
- Outer Wing Corrosion.
- Fuel cell Floor Corrosion.
- Y395 Lug Corrosion.

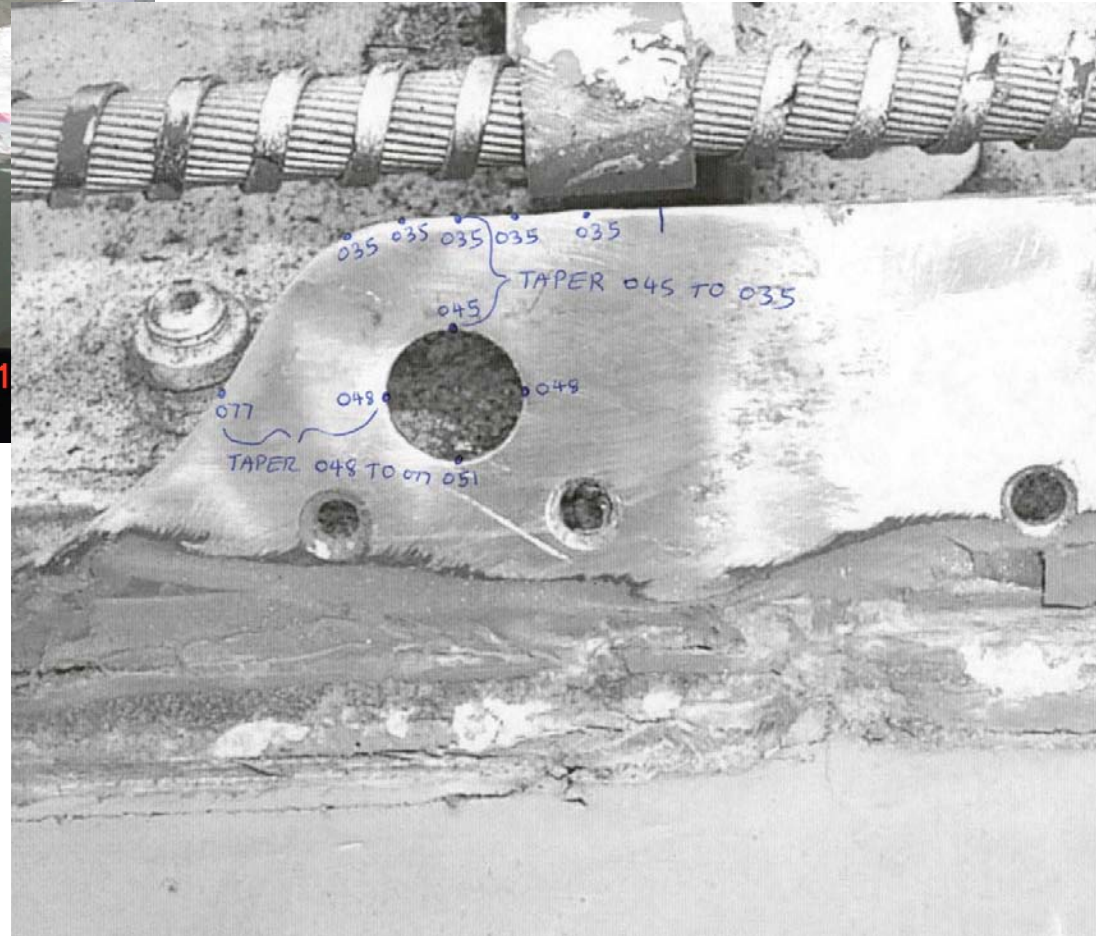


Dorsal Longeron Doors



Dorsal Longeron

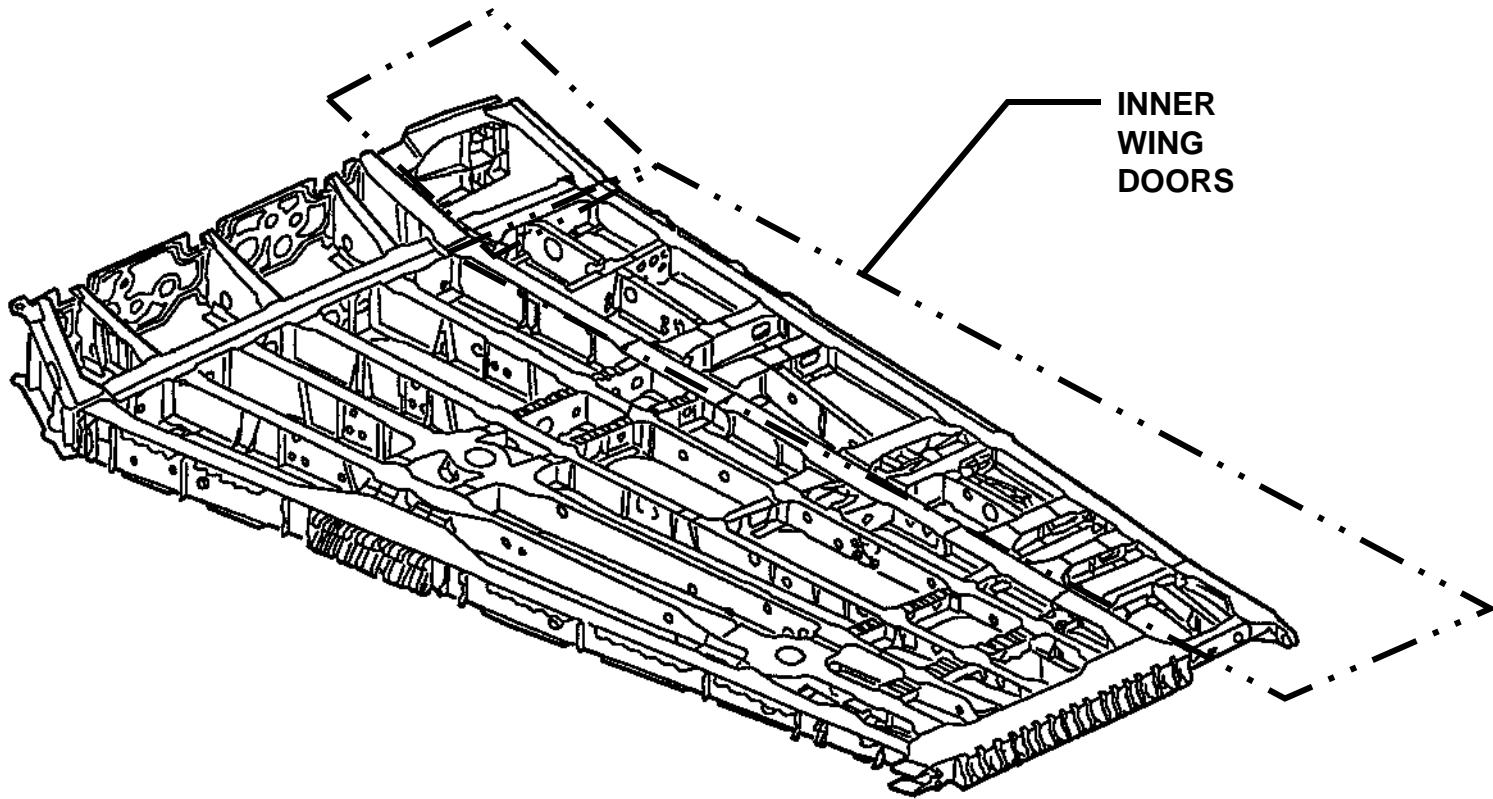




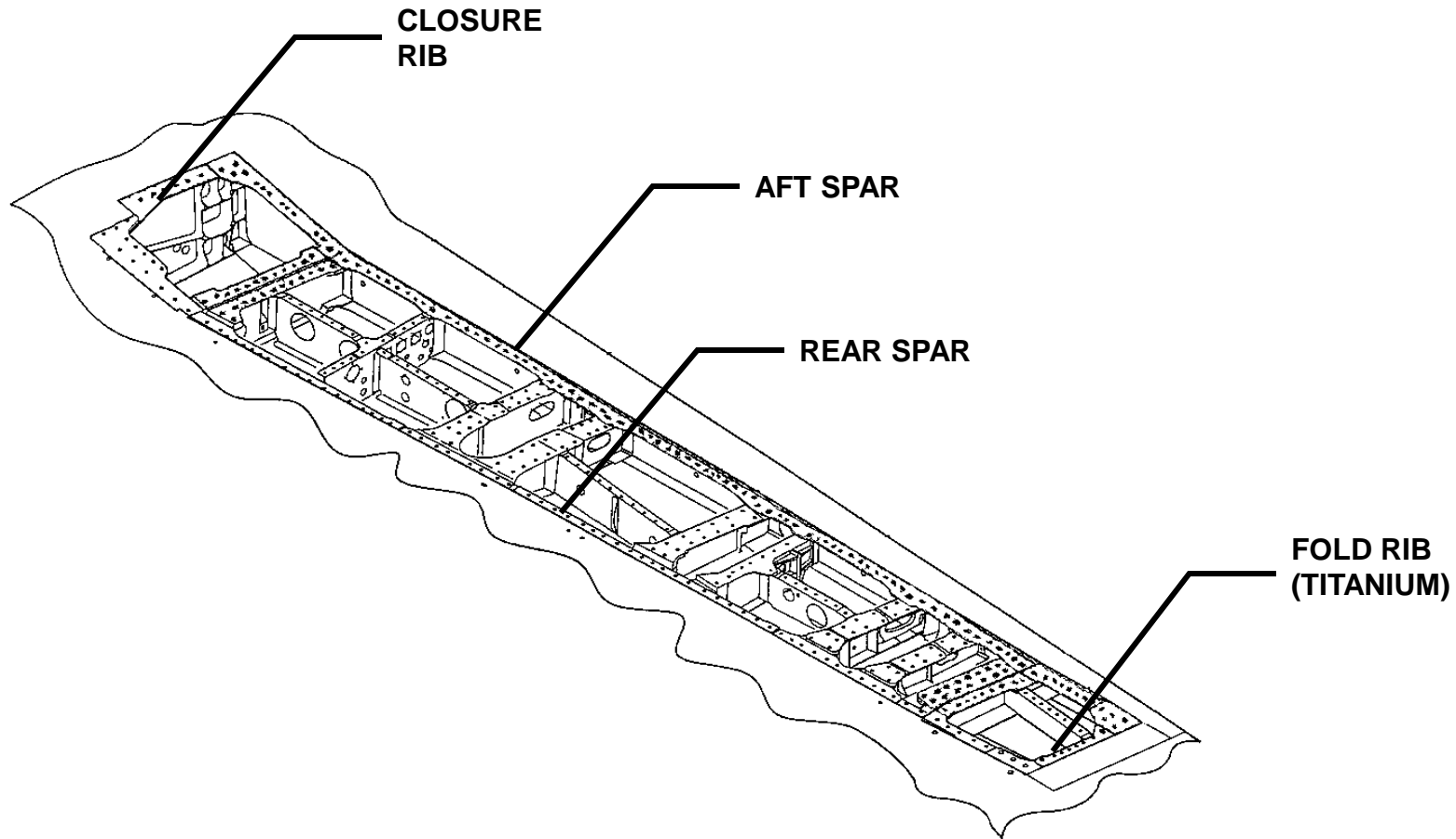




INNER WING STRUCTURE



IWP DOOR SUBSTRUCTURE



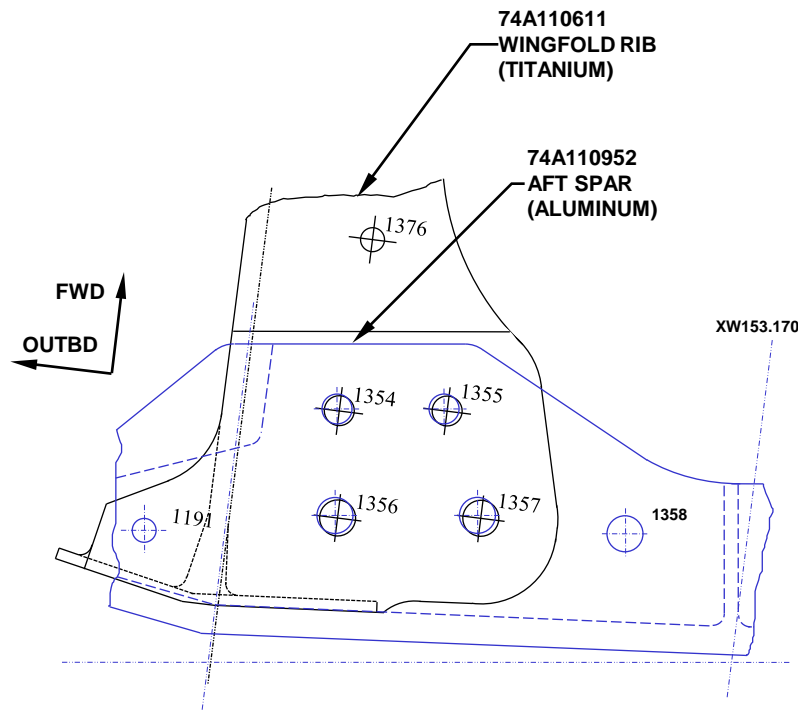
DOOR 78/79/143/82 SUBSTRUCTURE



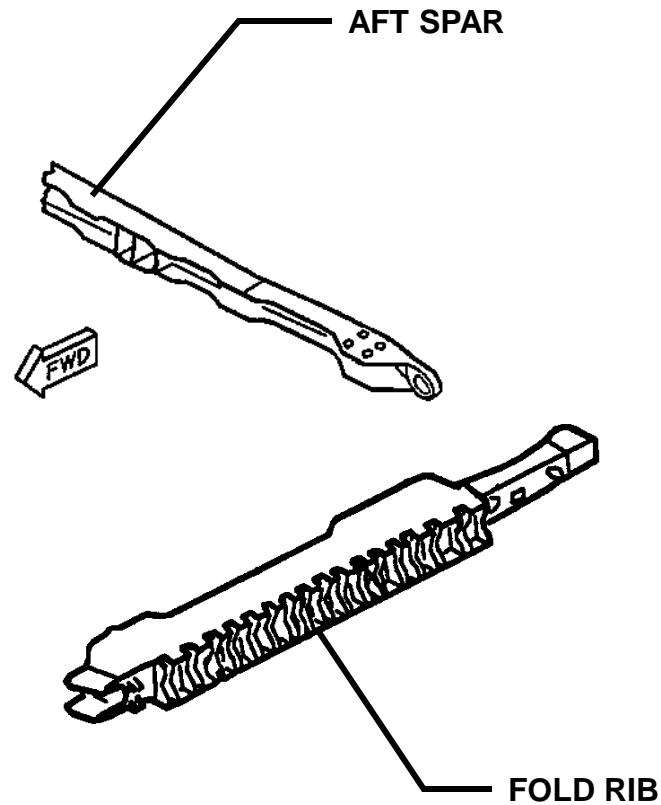


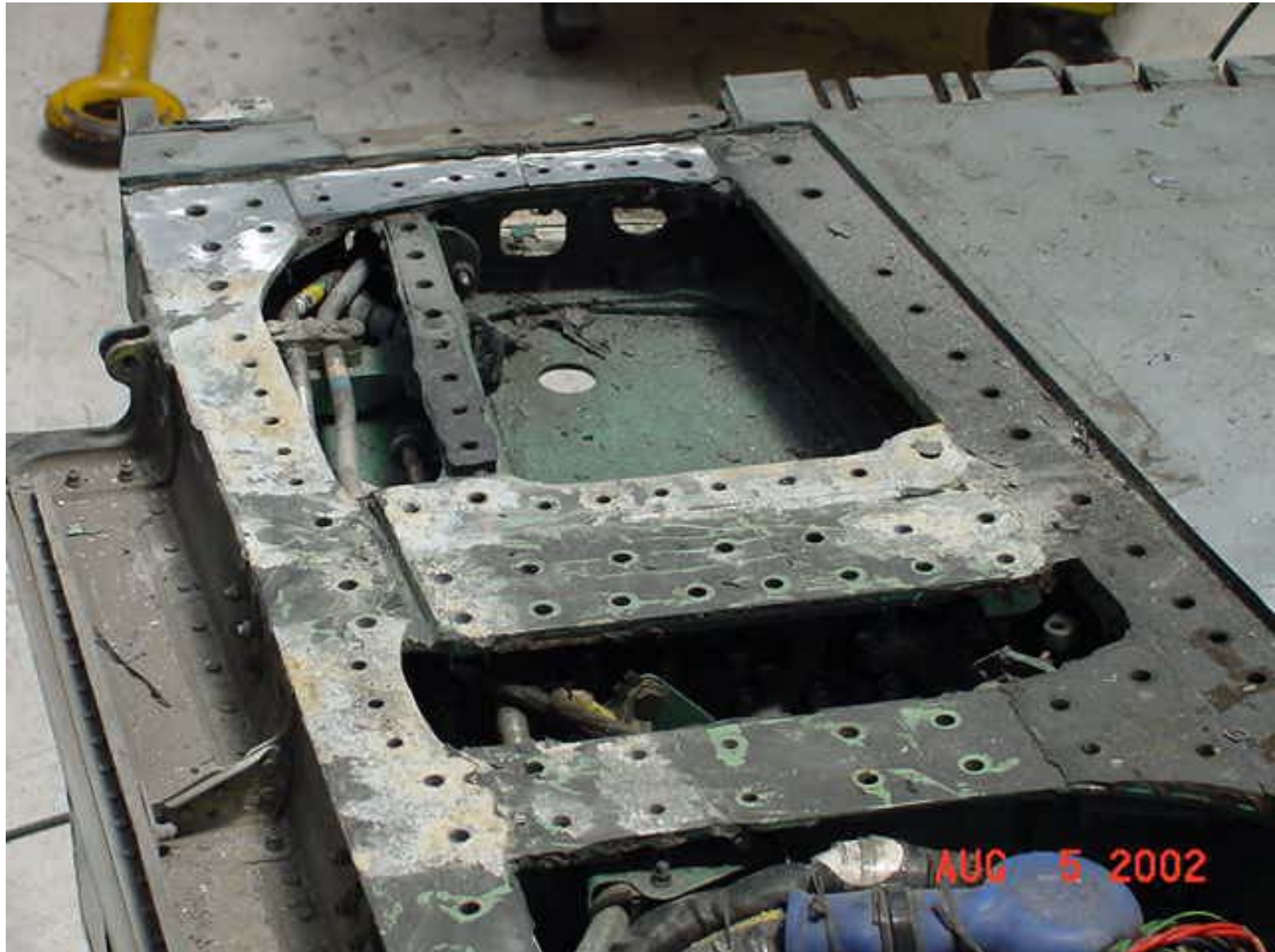


IWP AFT SPAR/FOLD RIB INTERFACE



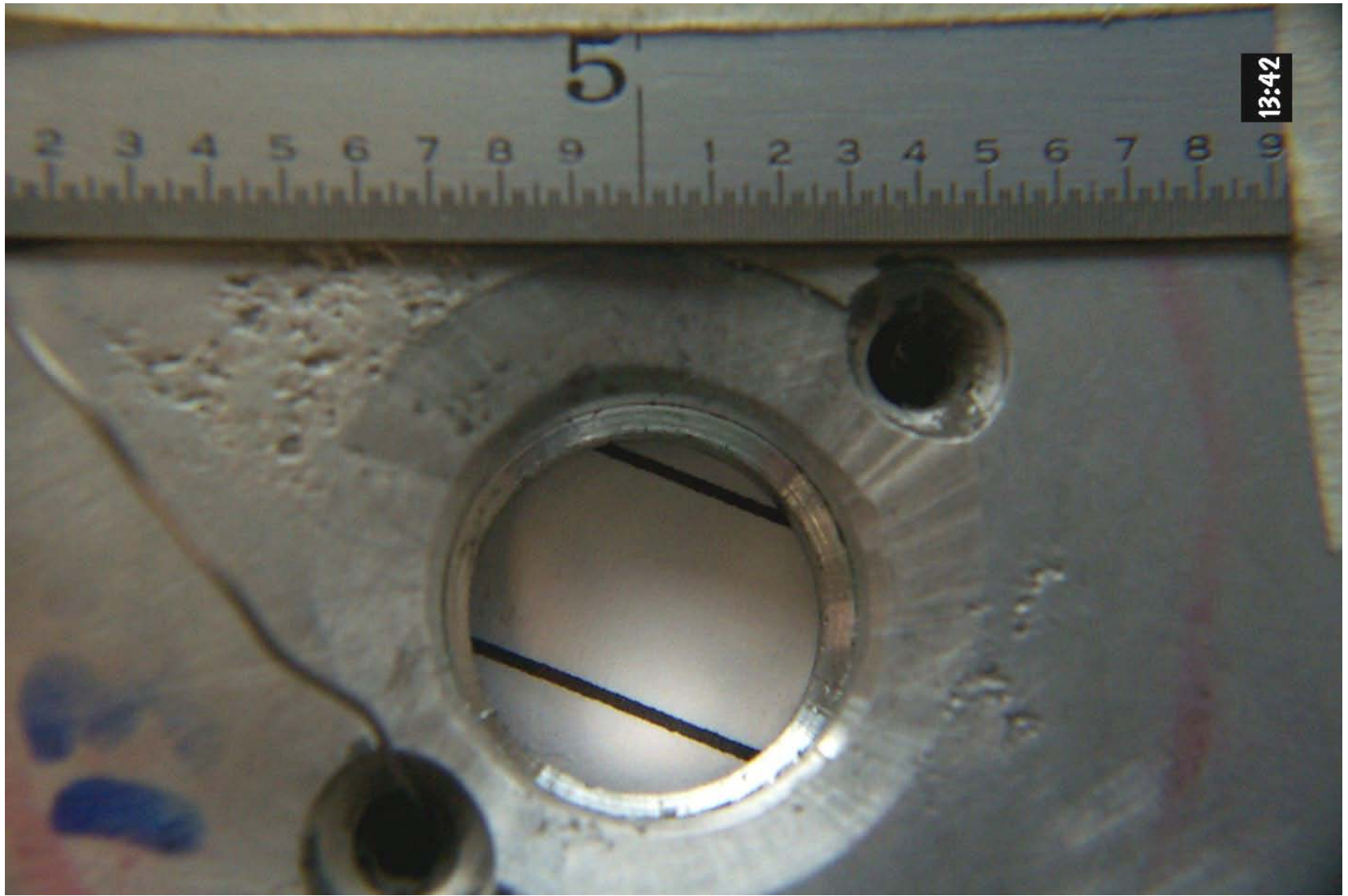
VIEW LOOKING DOWN AT AFT SPAR UPPER FLANGE

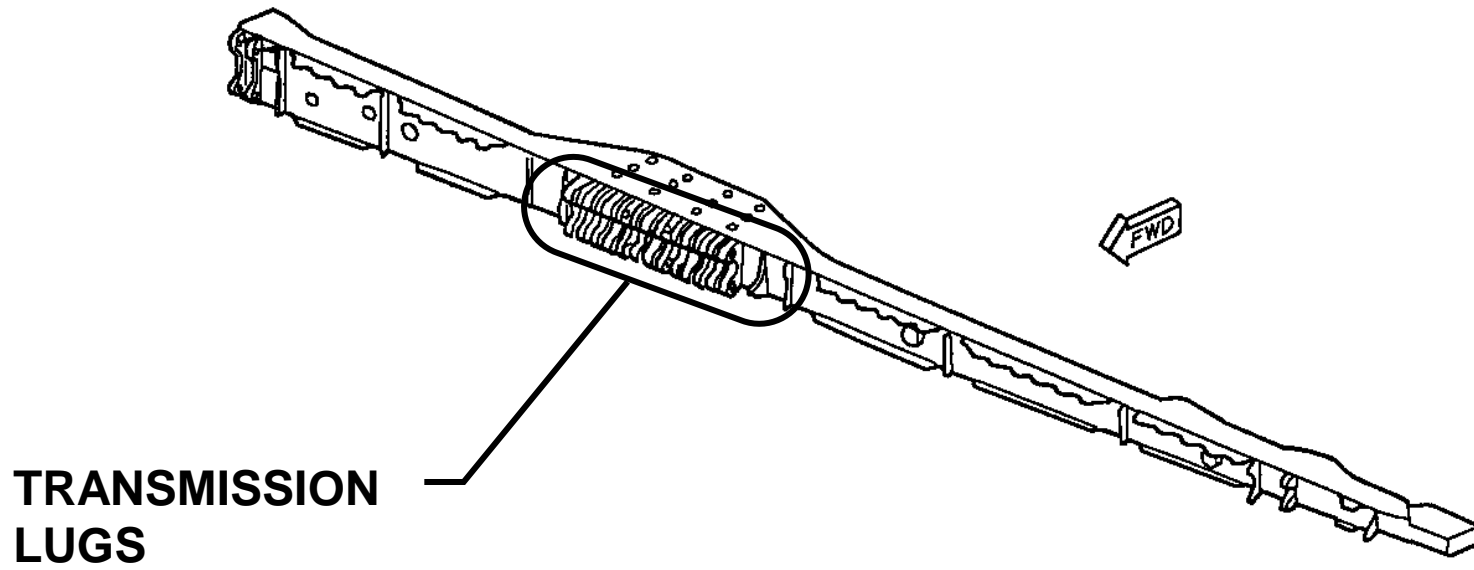








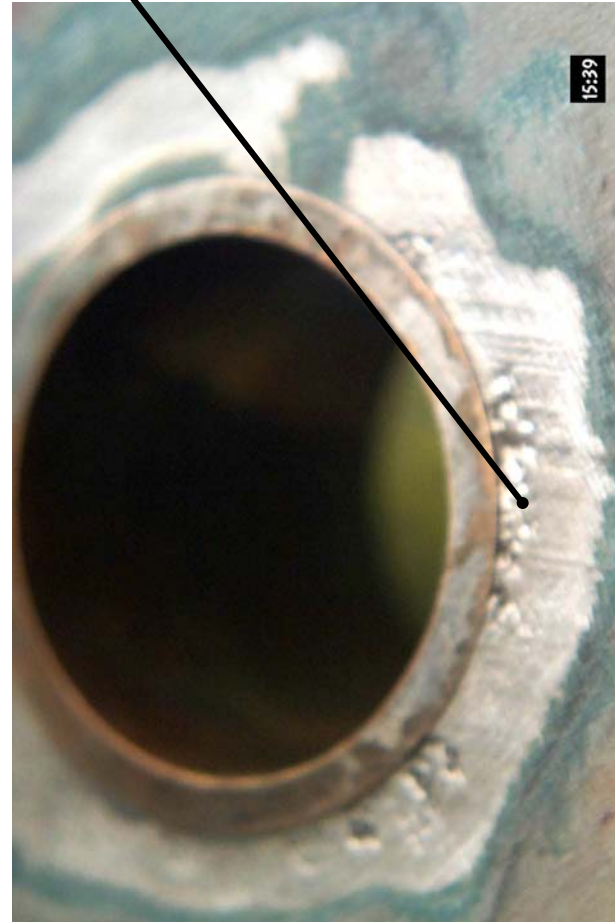
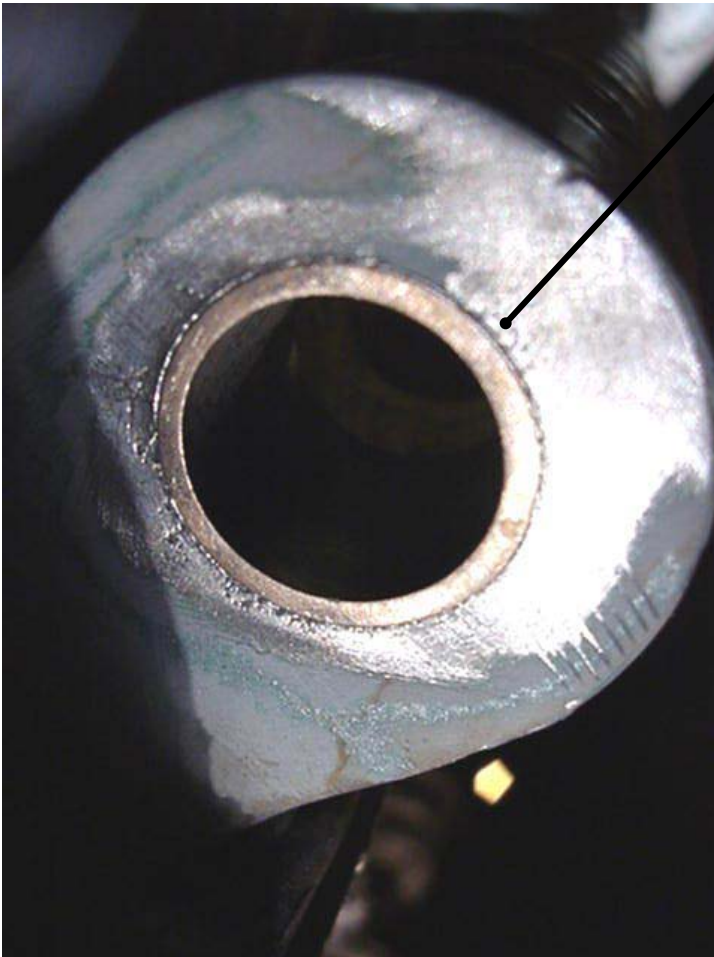




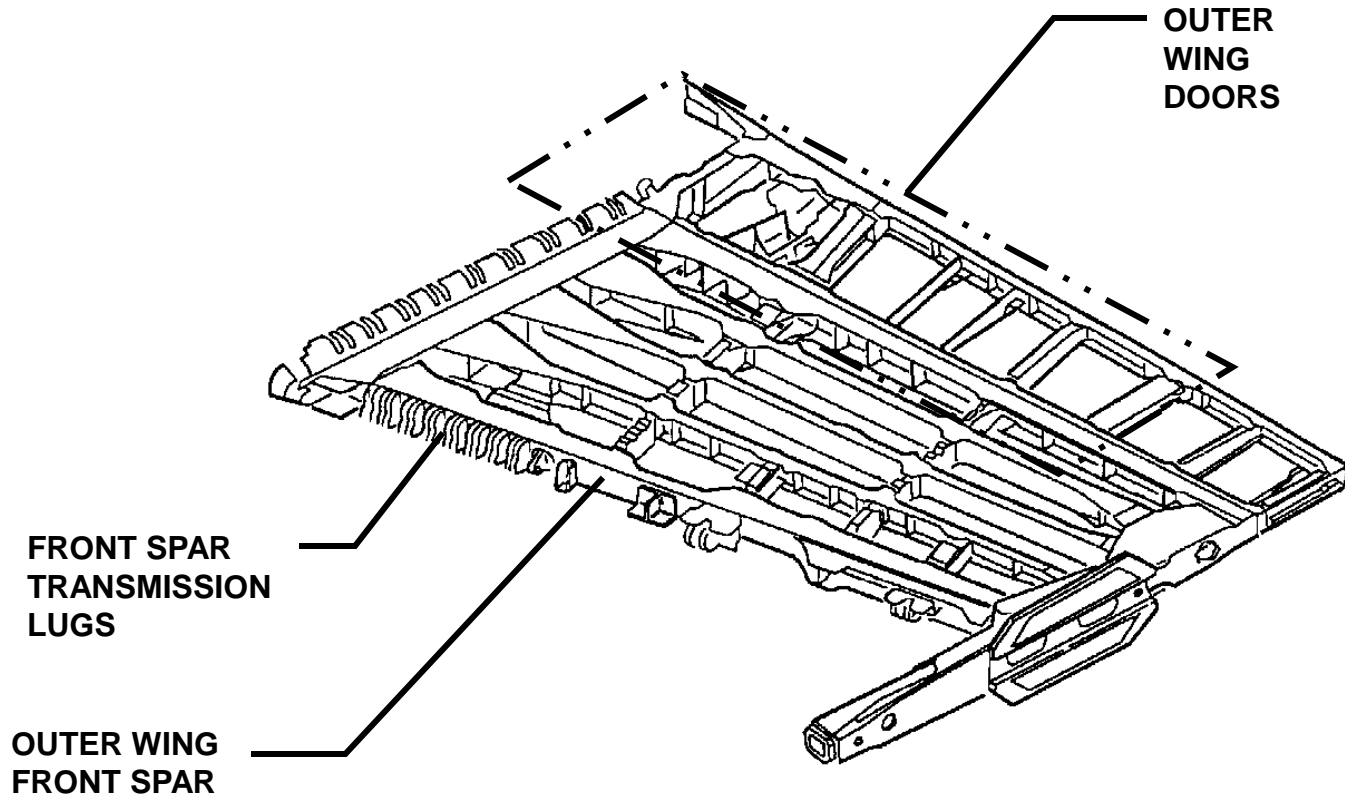
**TRANSMISSION
LUGS**



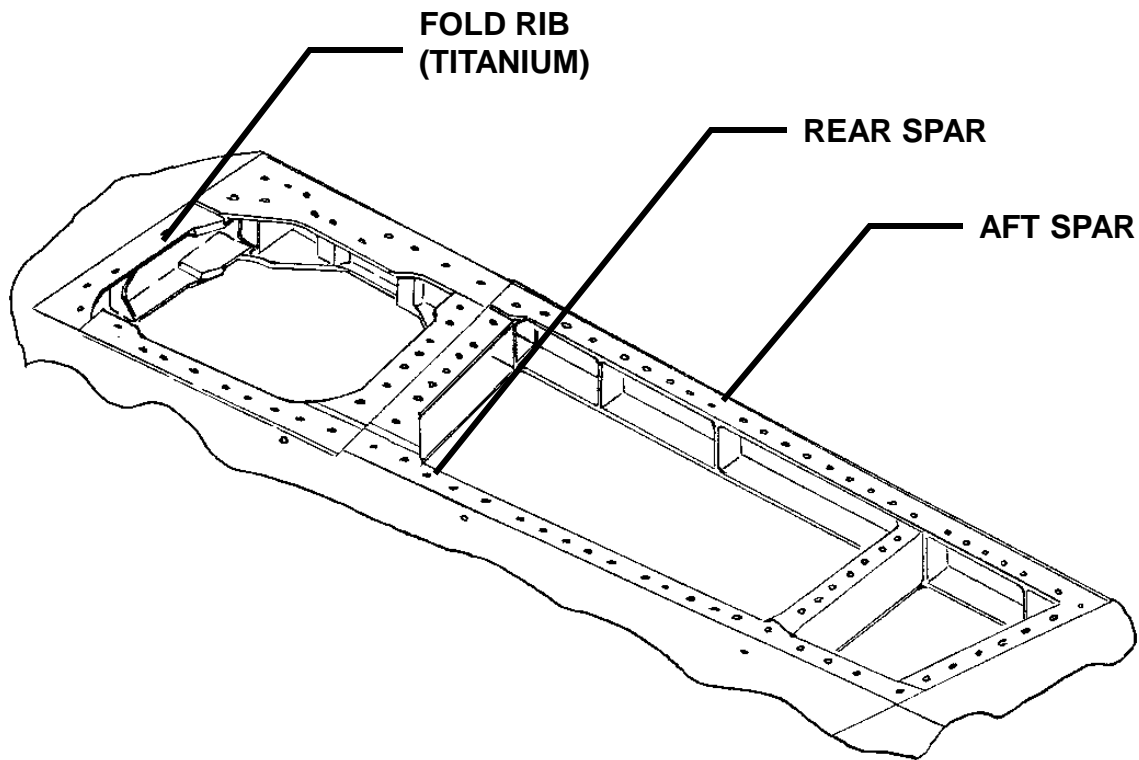
**CORROSION
PITTING**



OUTER WING STRUCTURE



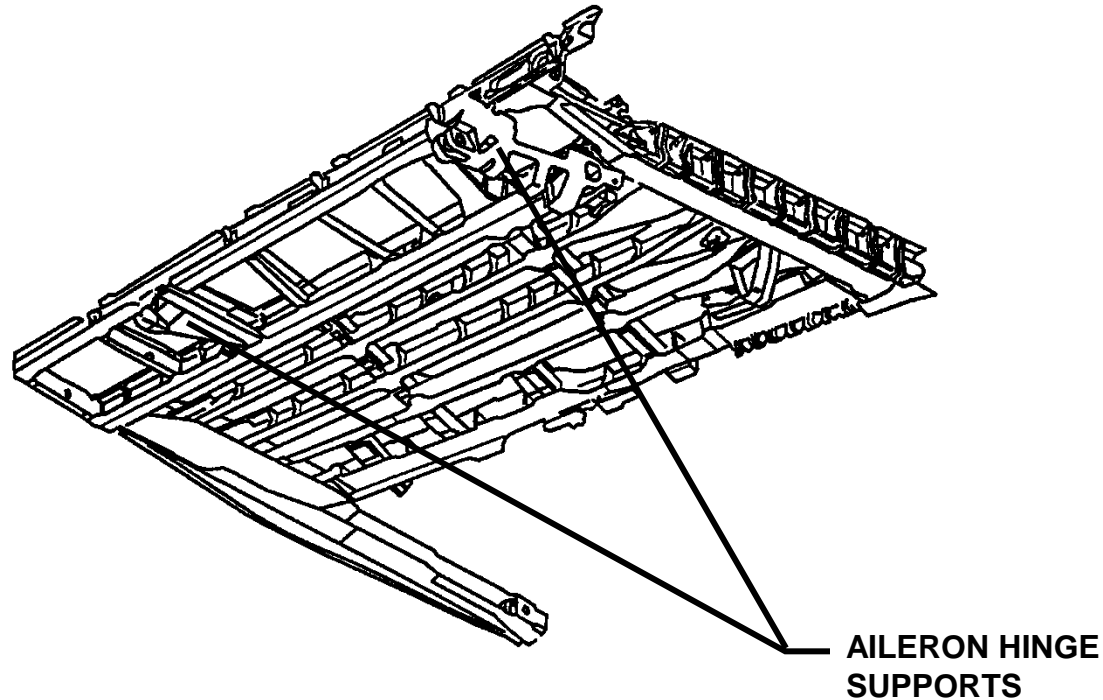
OWP DOOR 83/84 SUBSTRUCTURE

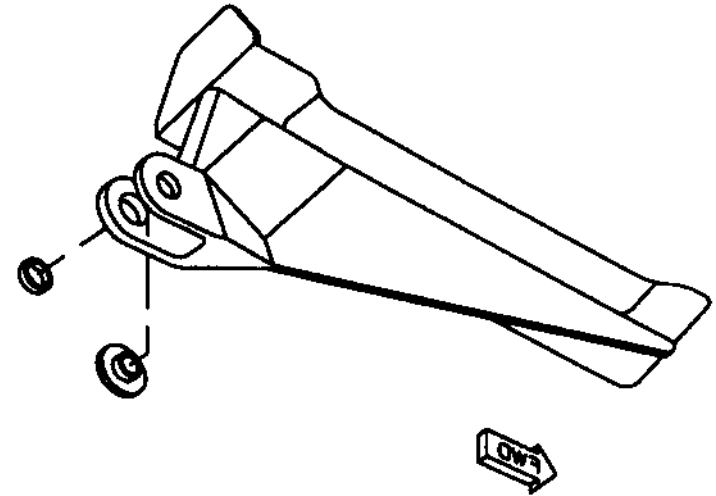
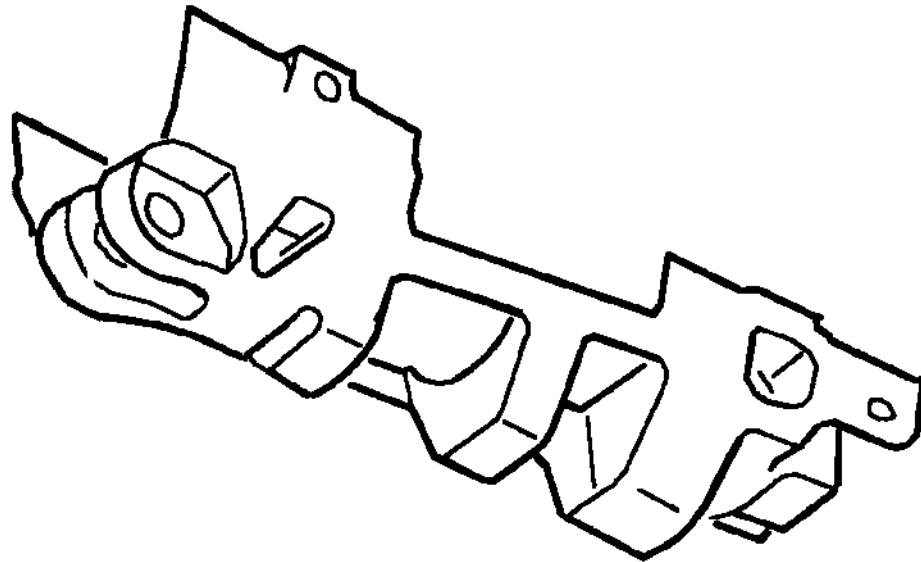


DOOR 84/84 SUBSTRUCTURE



OWP AFT SPAR AILERON INBOARD & OUTBOARD HINGES



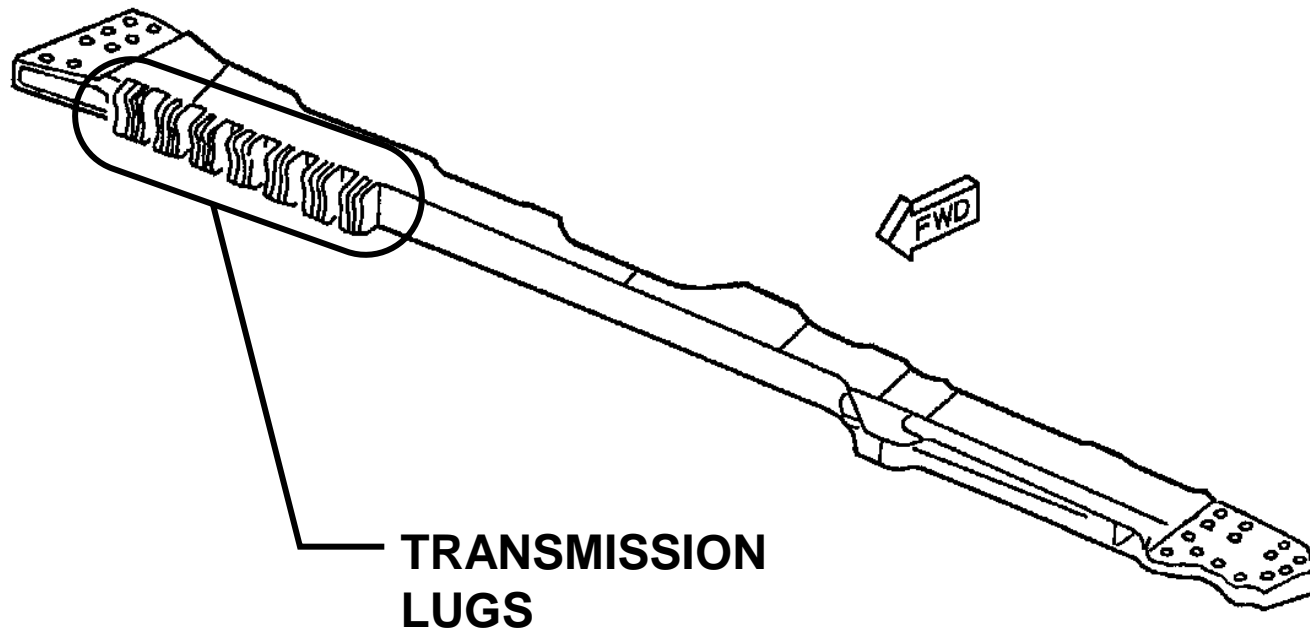




CORROSION PITTING

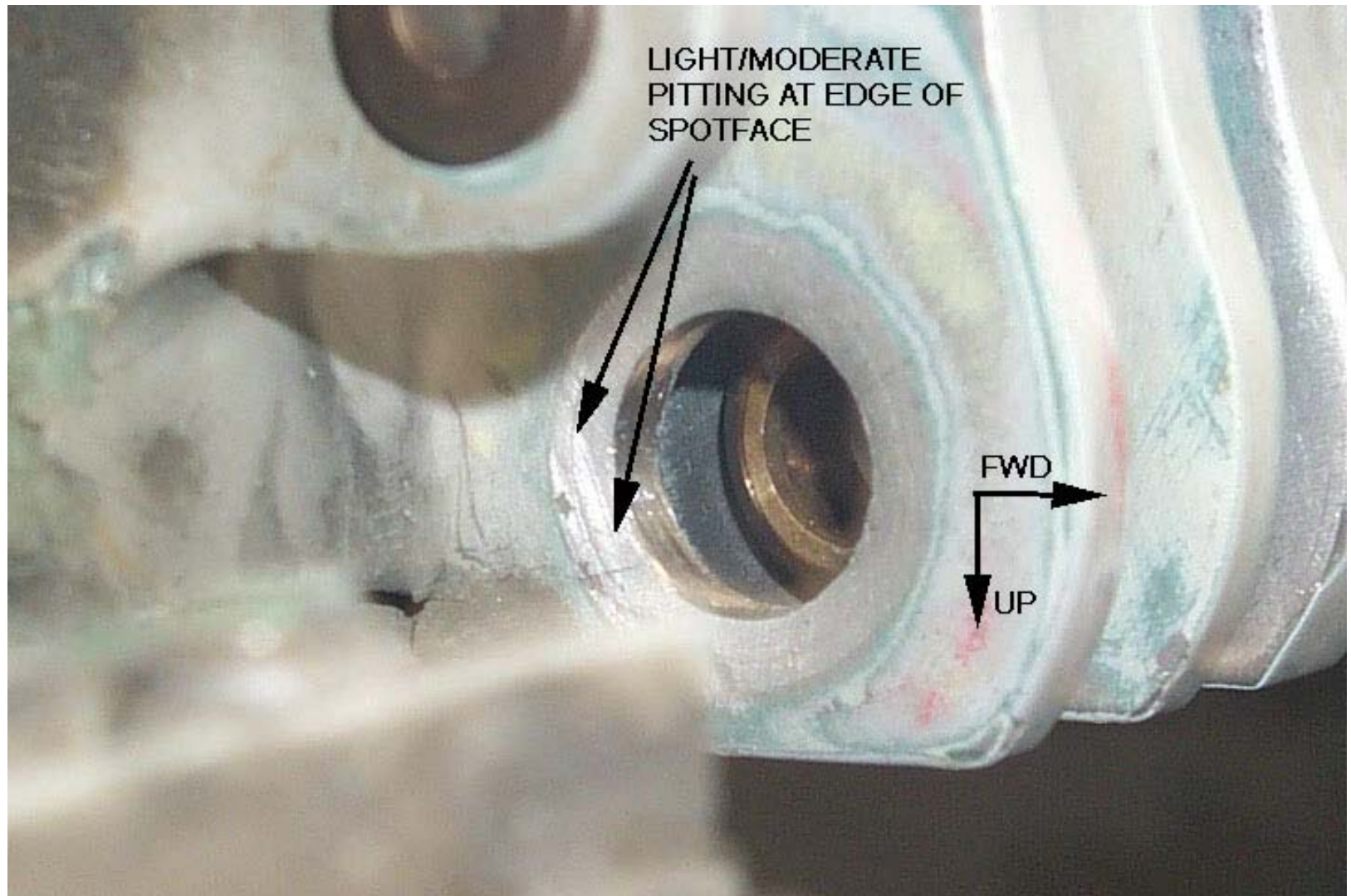


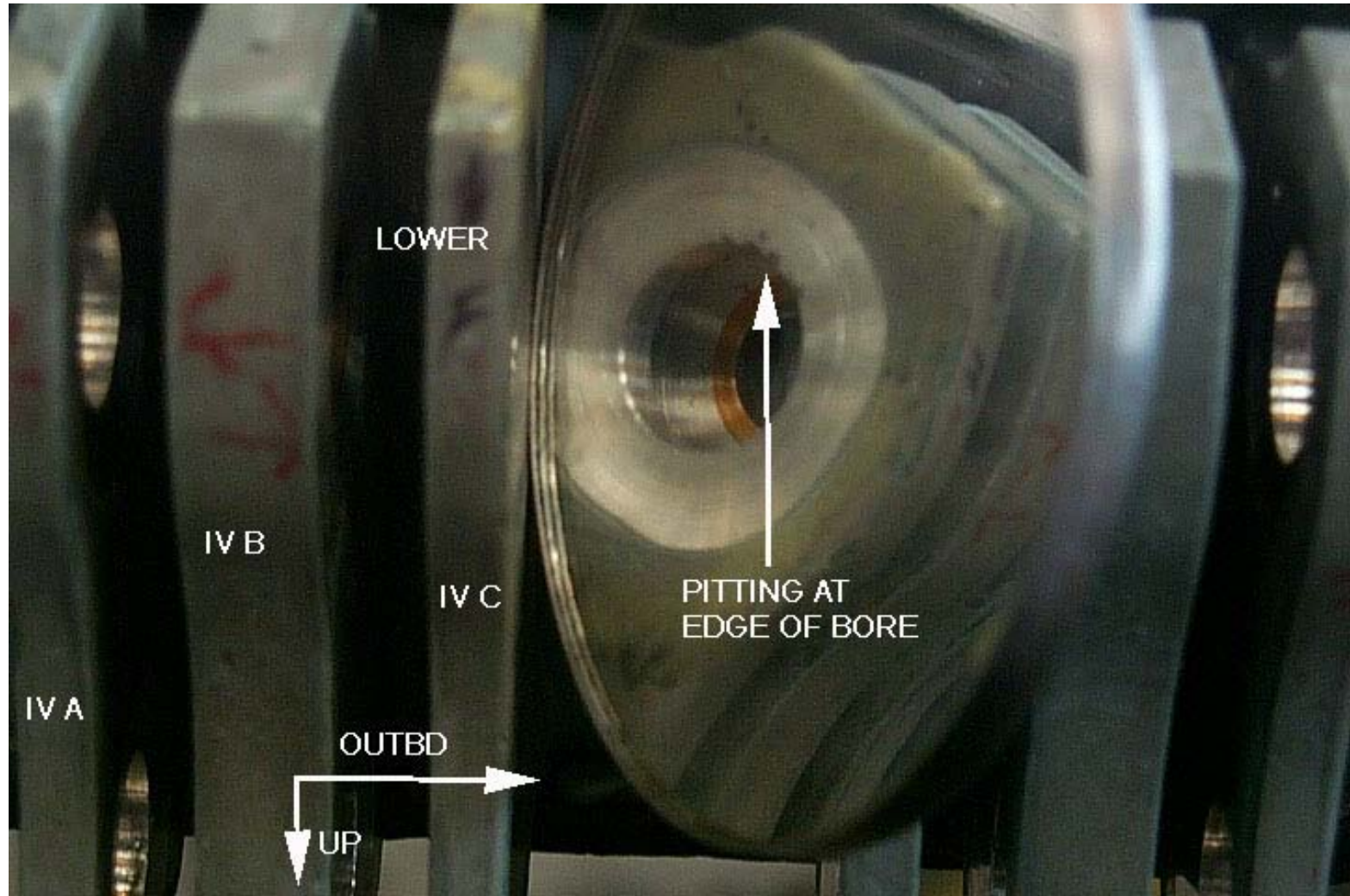
OWP FRONT SPAR

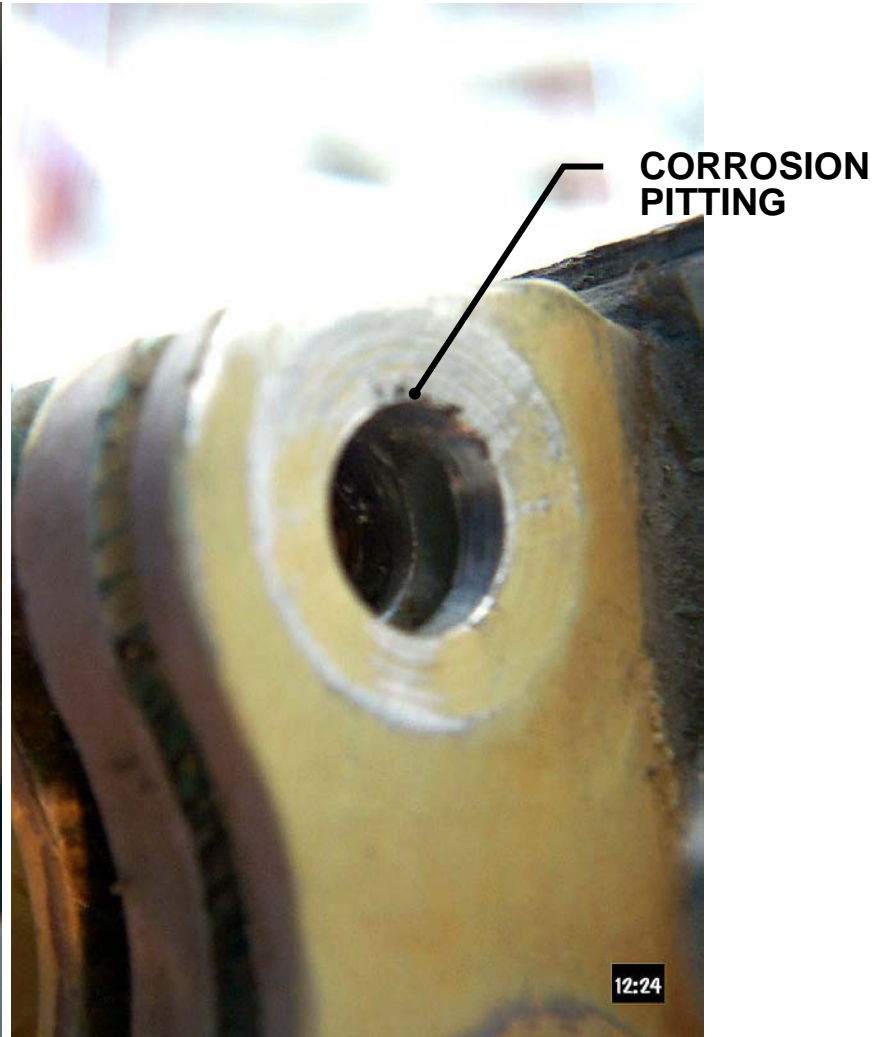
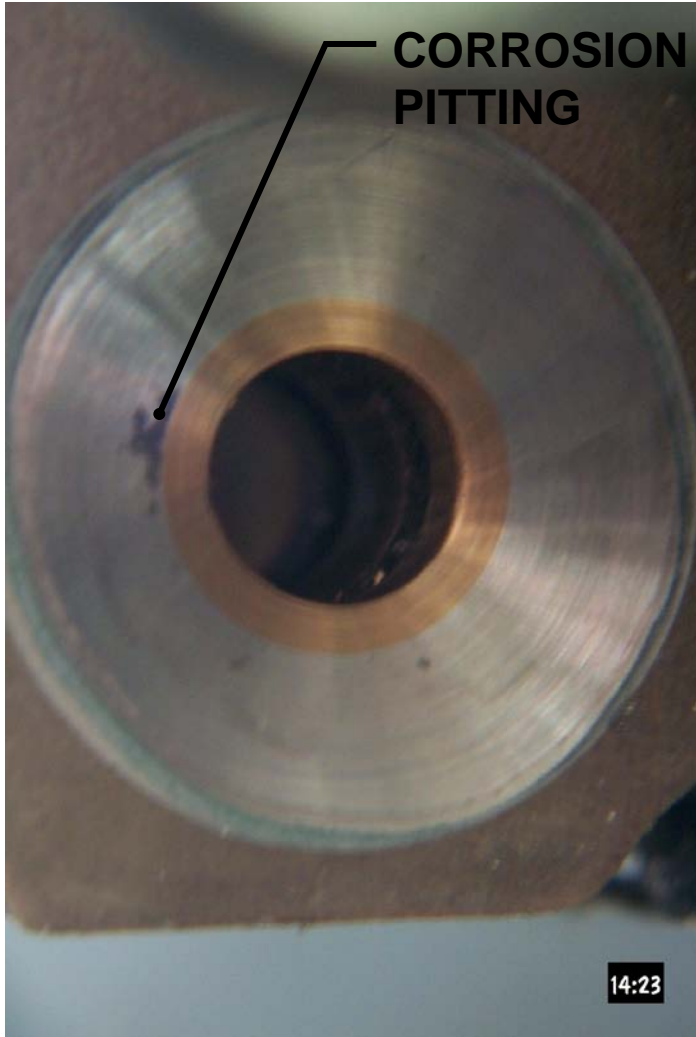






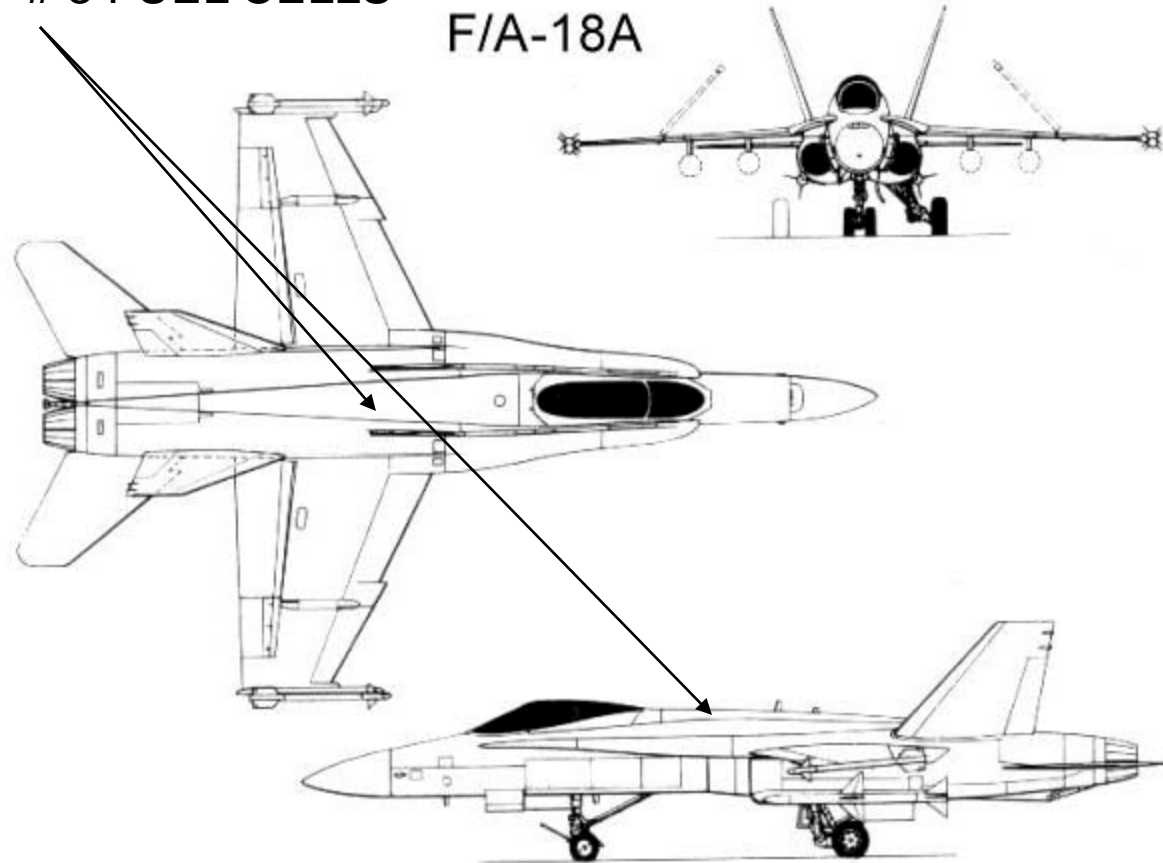


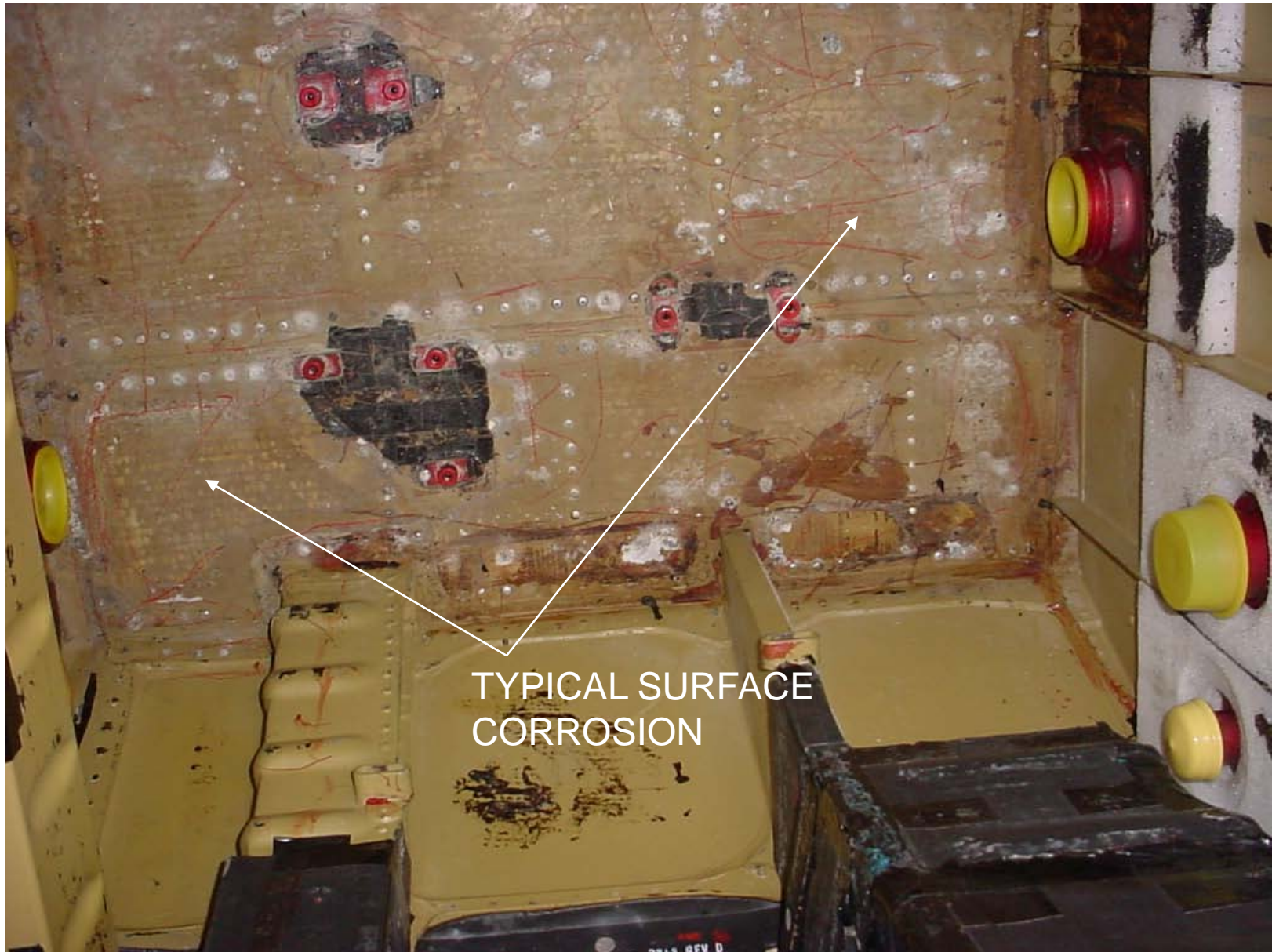




#2 AND #3 FUEL CELLS

F/A-18A



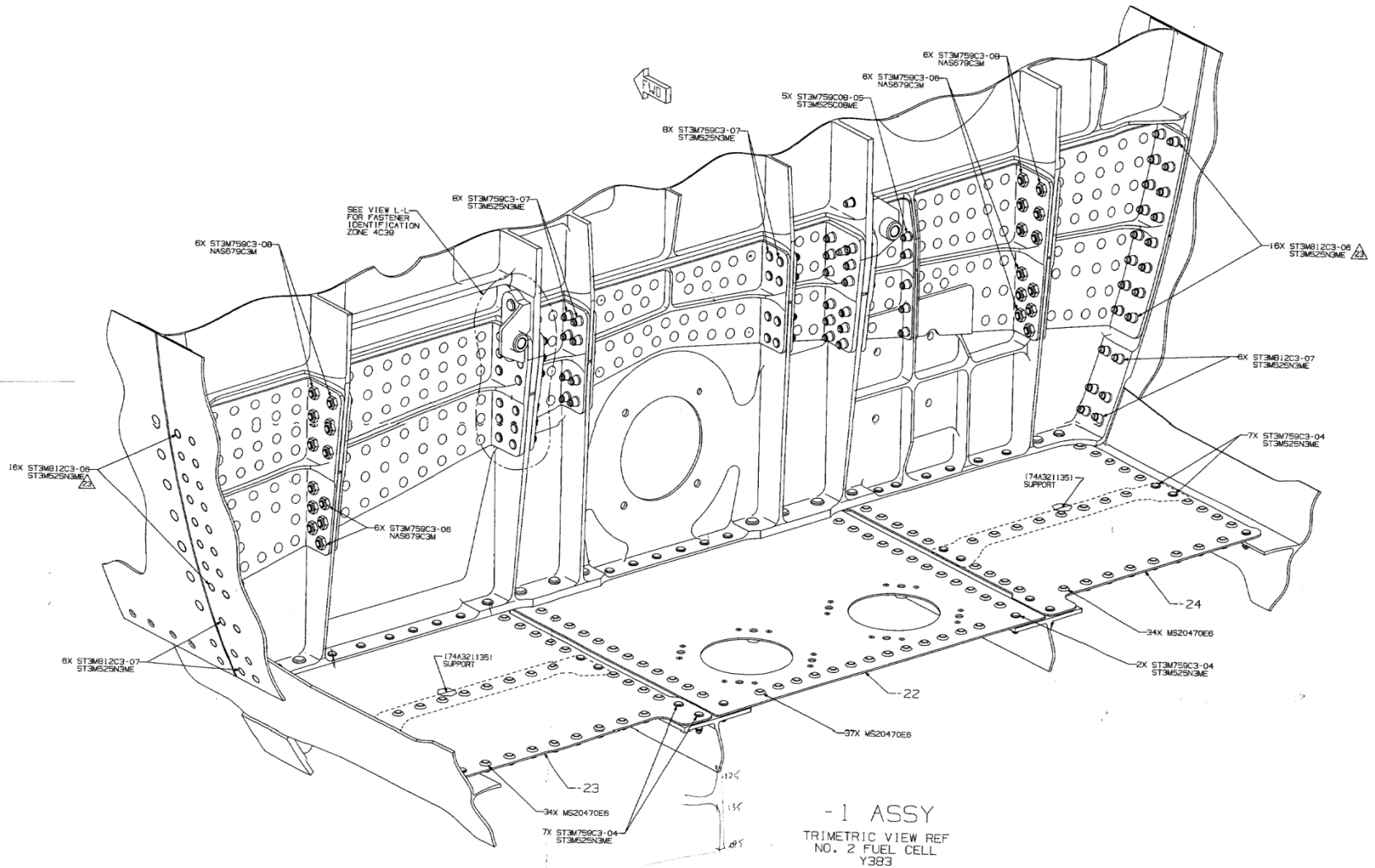


TYPICAL SURFACE
CORROSION

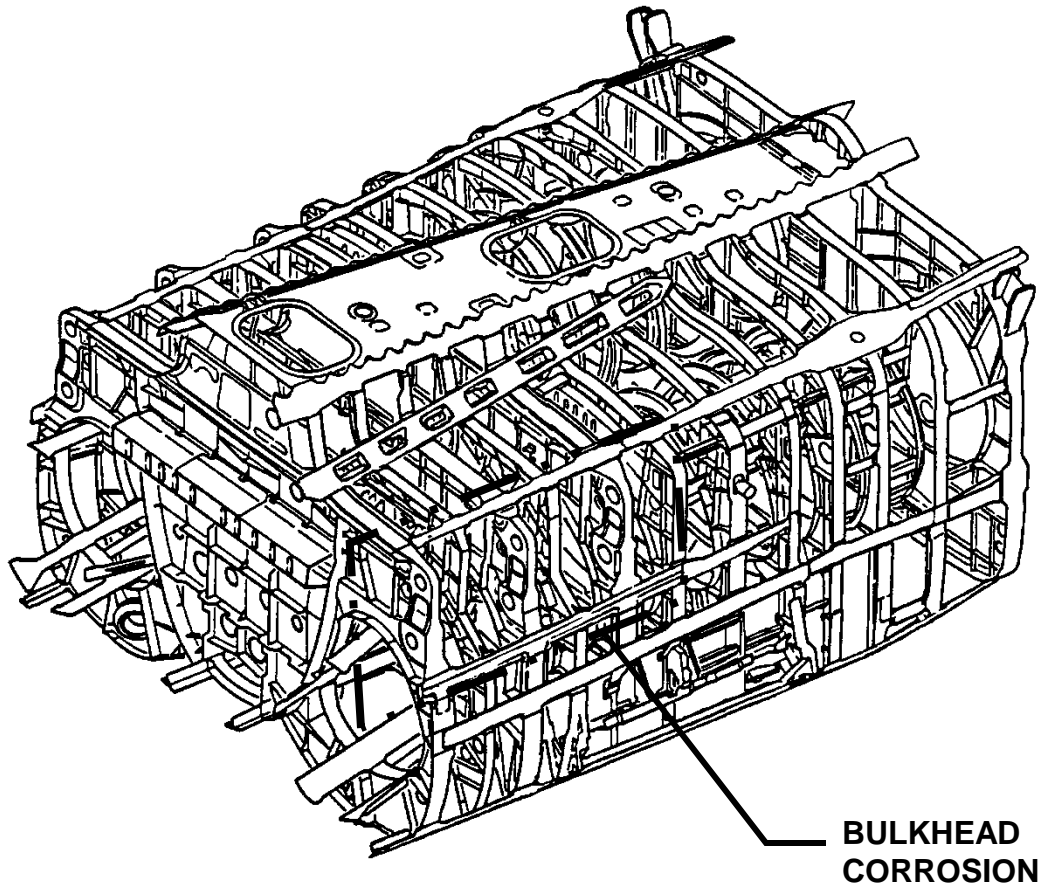








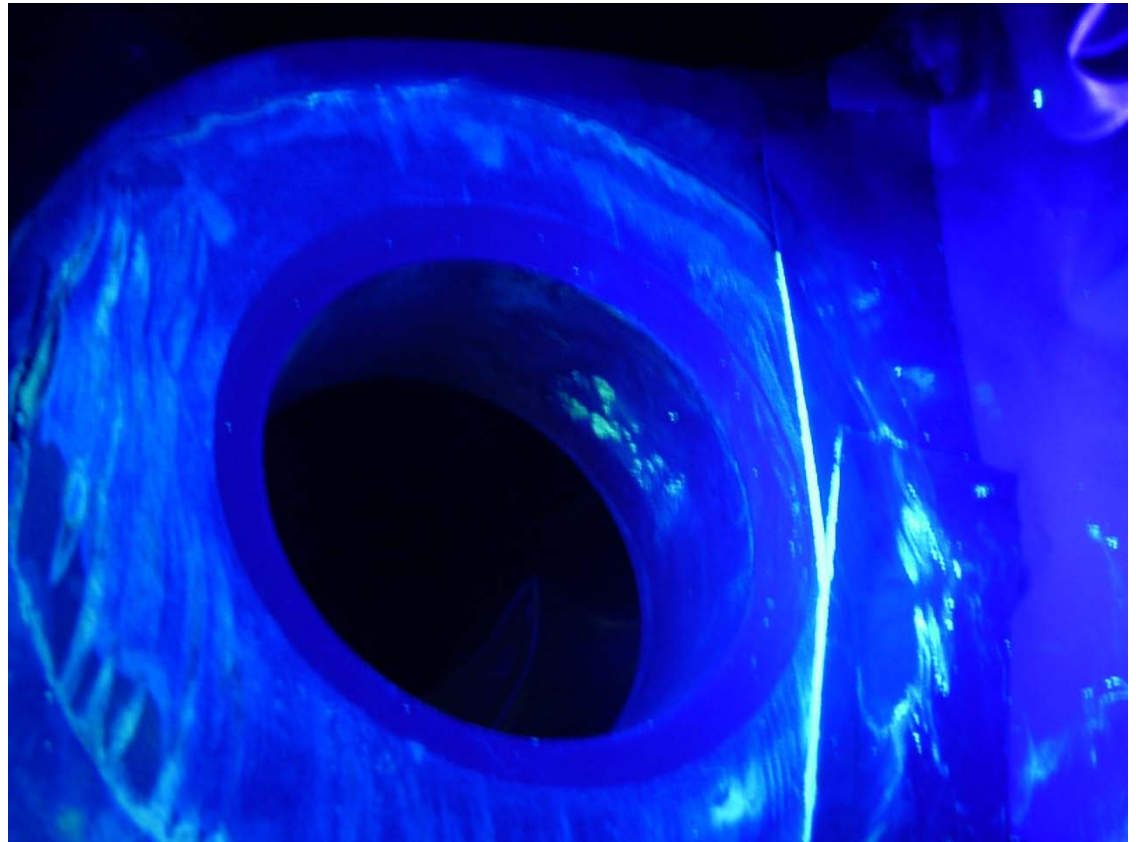
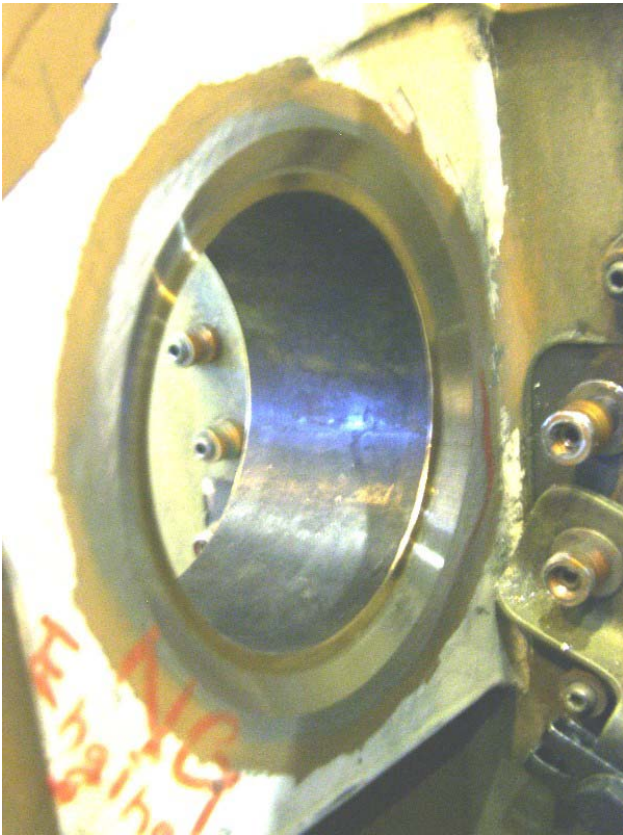
WING-FUSELAGE ATTACH BULKHEADS



WING-FUSELAGE ATTACH BULKHEADS



- Dissimilar Metals



GALVANIC SERIES OF METALS AND ALLOYS IN SEA WATER

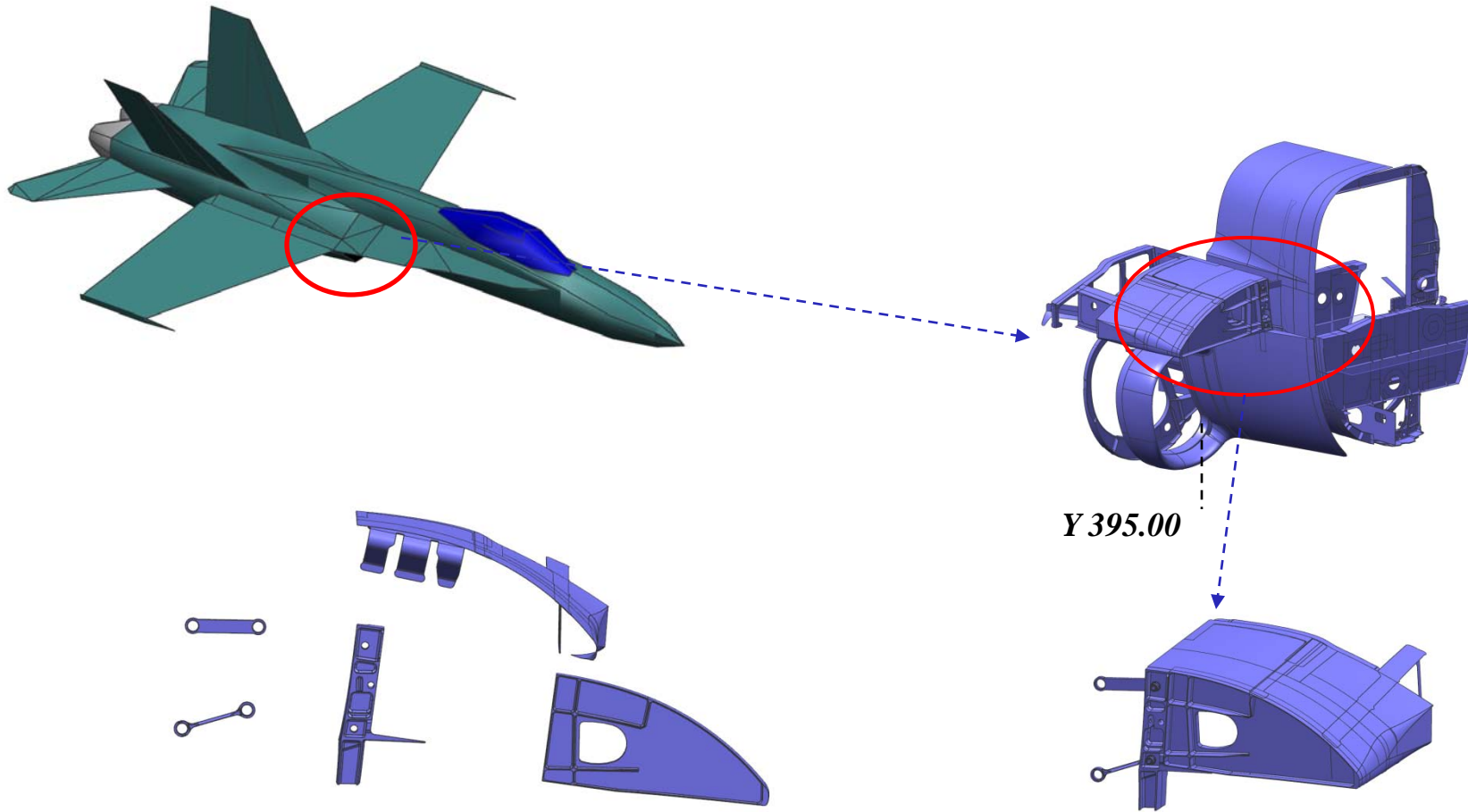
ANODIC (High corrosion potential)

Magnesium Alloys
 Zinc (plate)
 Beryllium
 Cadmium (plate)
 Uranium (depleted)
 Aluminum Alloys
 Indium
 Tin (plate)
 Stainless Steel 430 (active)
 Lead
 1010 Steel
 Cast Iron
 Stainless Steel 410 (active)
 Copper (plate)
 Nickel (plate)
 AM 350 (active)
 Chromium (plate)
 Stainless Steels 350, 310, 301, 304 (active)
 Stainless Steels 430, 410 (passive)
 Stainless Steel 13-8, 17-7 PH (active)
 Brass, Yellow, Naval
 Stainless Steel 316L (active)
 Bronze 220
 Copper 110
 Stainless Steel 347 (active)
 Copper-Nickel 715
 Stainless Steel 202 (active)
 Monel 400
 Stainless Steel 202 (active)
 Stainless Steels 321, 316 (active)
 Stainless Steels 309, 13-8, 17-7 PH (passive)
 Stainless Steels 304, 301, 321 (passive)
 Stainless Steels 201, 316L (passive)
 Stainless Steel 286 (active)
 AM355 (passive)
 Titanium Alloys
 Am350 (passive)
 AM350 (passive)
 Silver
 Palladium
 Gold
 Rhodium
 Platinum
 Carbon/Graphite

CATHODIC (Low corrosion potential)



Y395 Inlet Nacelle Corrosion



Exploded View of Y 395 Area

Y 395 Area

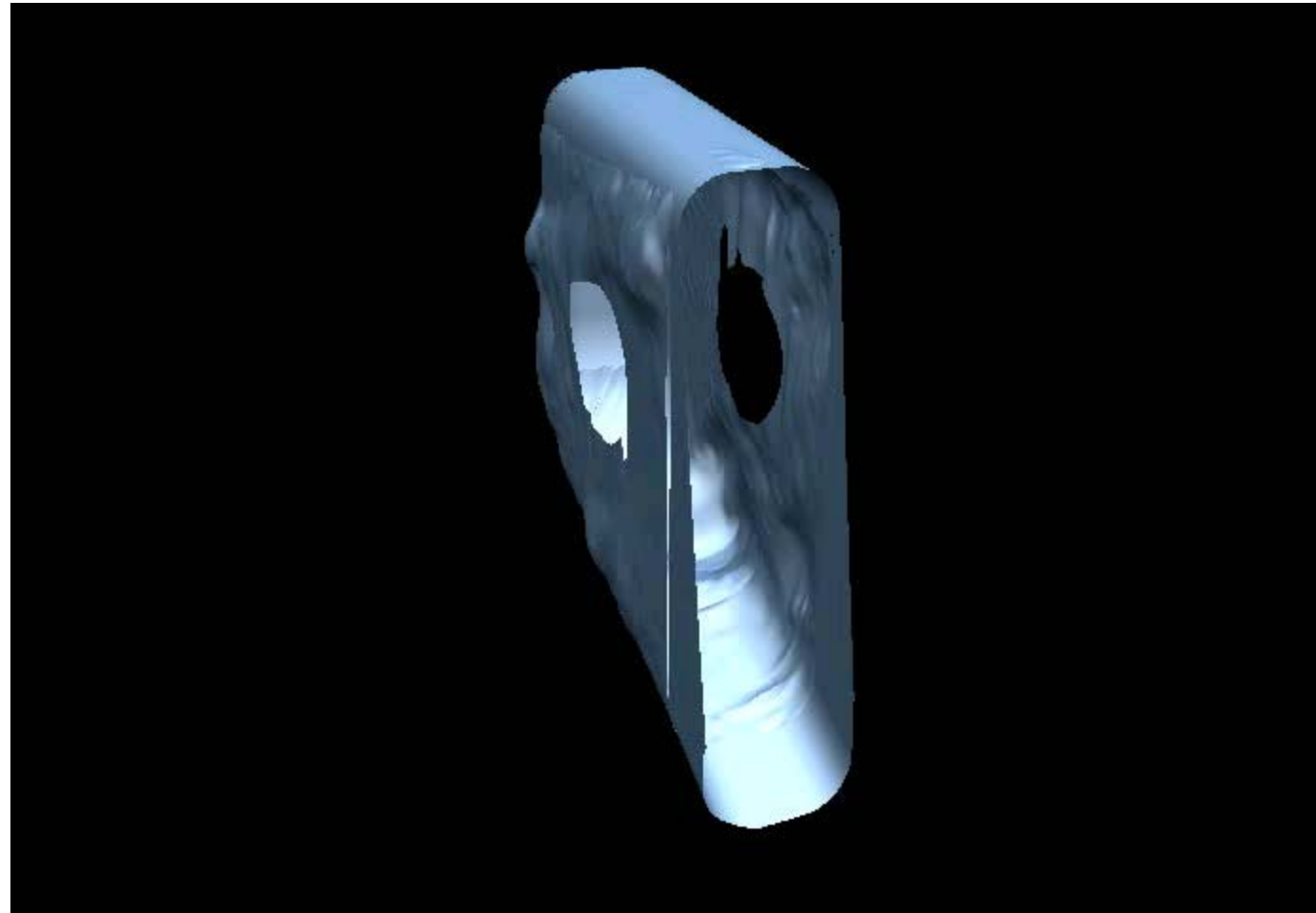


CORROSION ON Y395



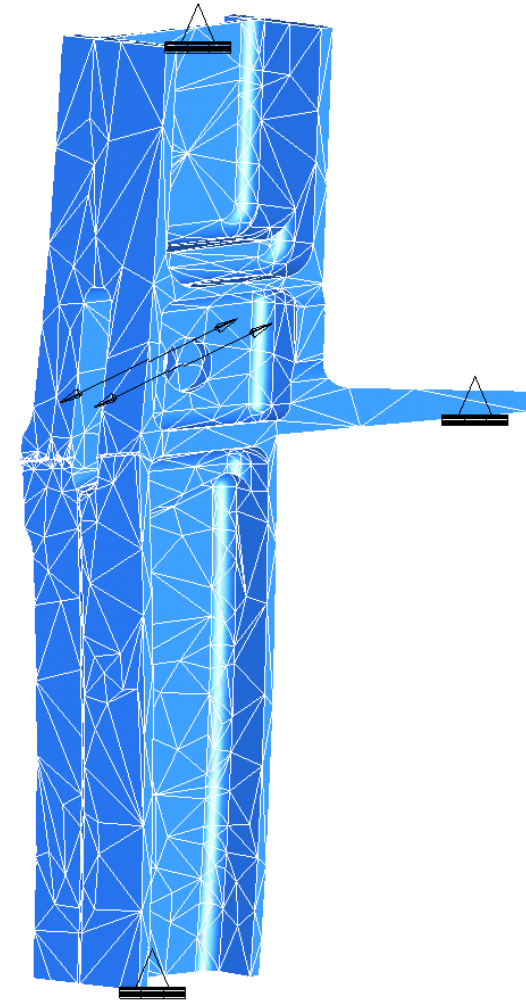
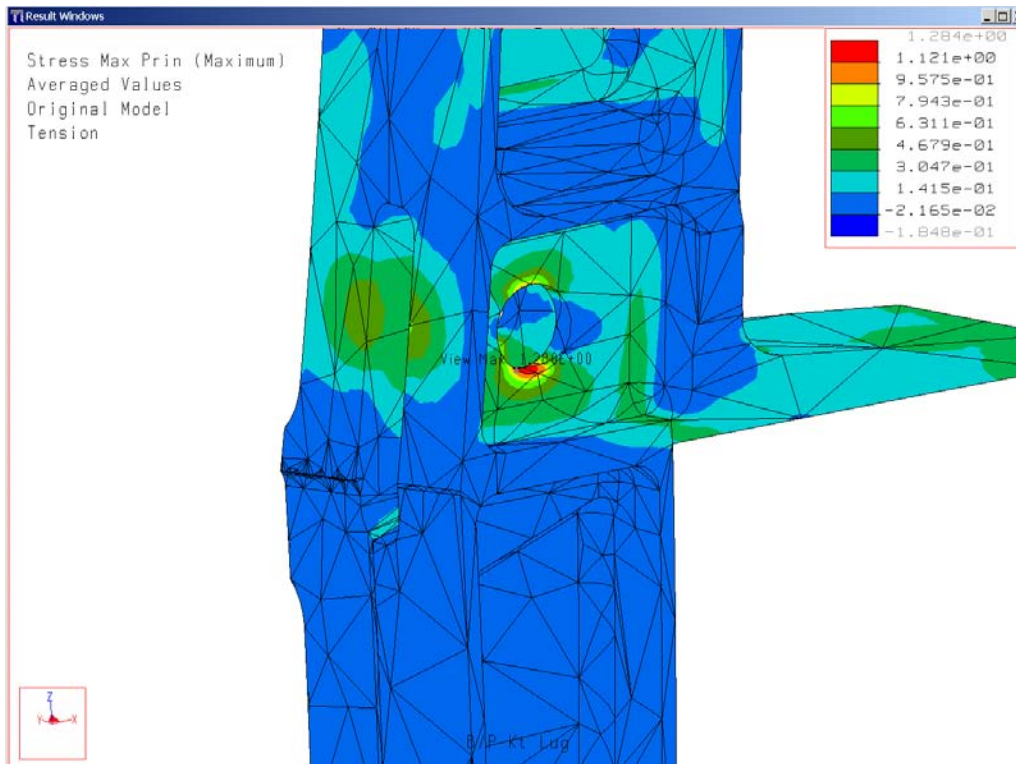
IMAGEWARE USE

- Manipulate points into curves
- Curves into surfaces.

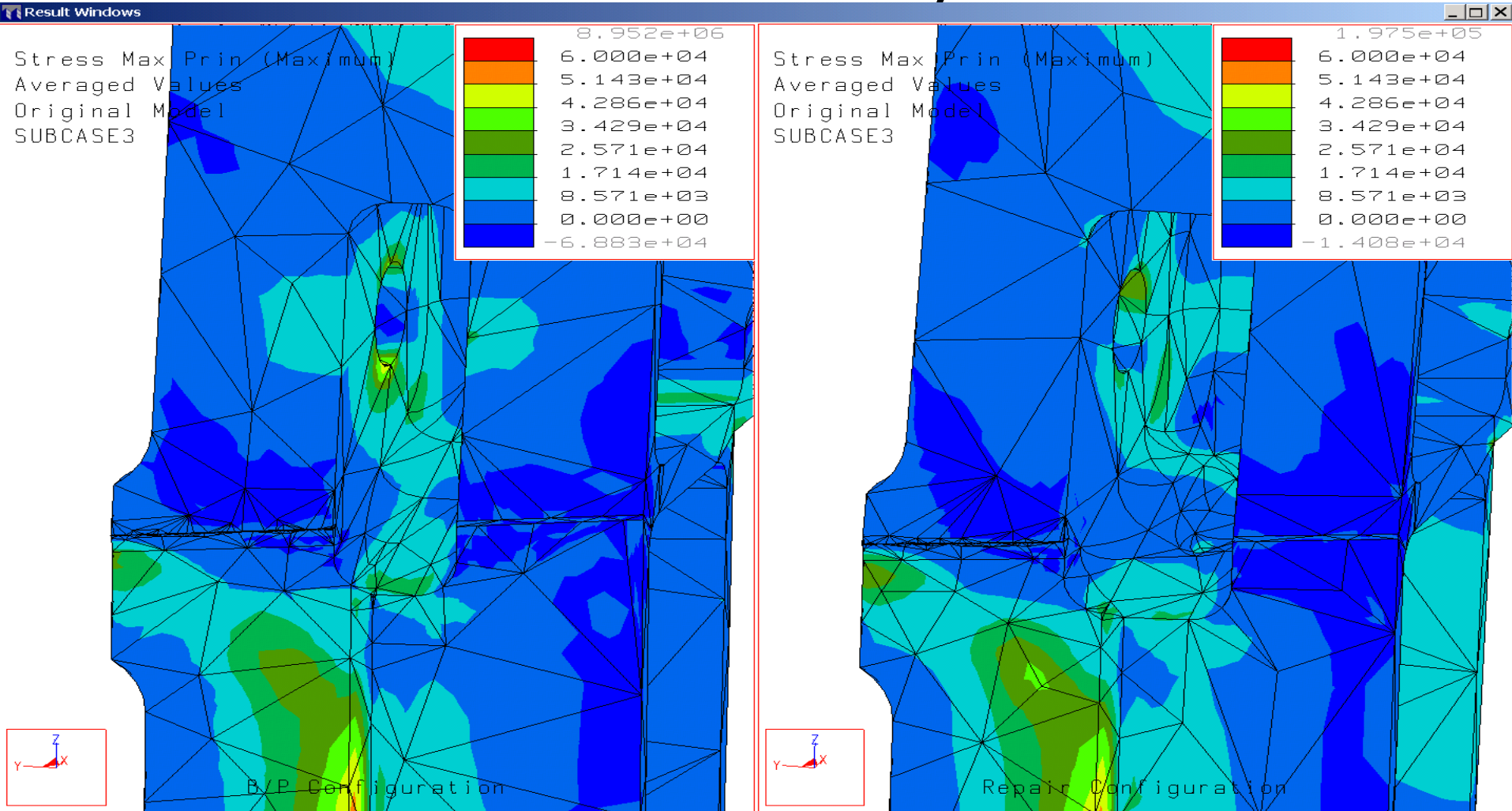


Pro/MECHANICA

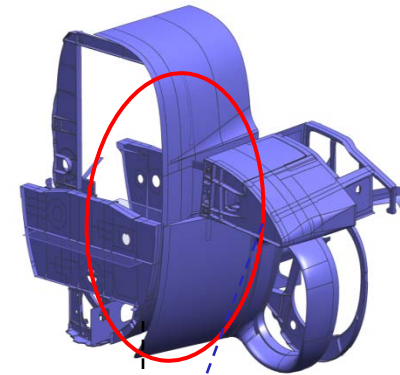
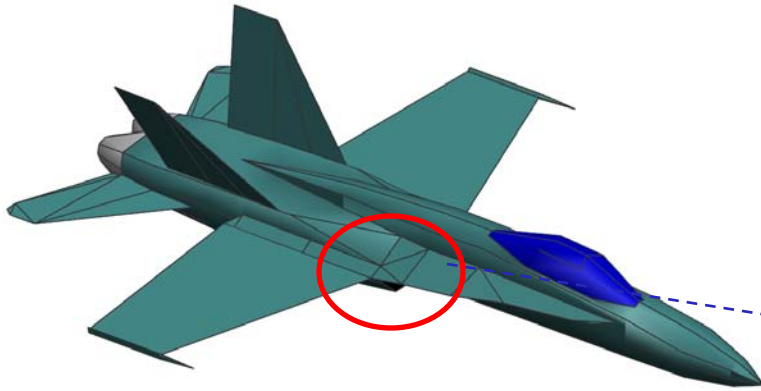
- Finite Element Analysis
- Durability Assessment



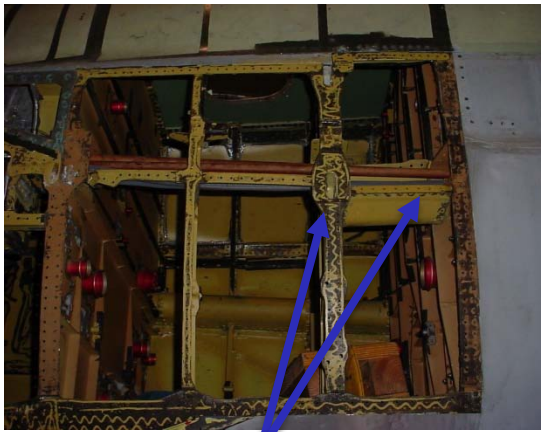
Current Analysis



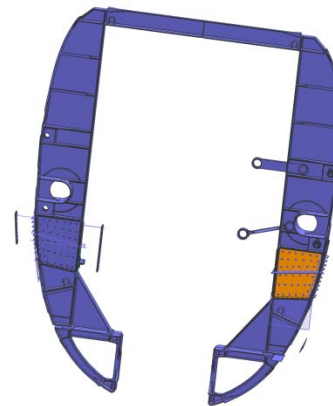
Y395 Former Corrosion



Y 395.00



EXCCESIVE CORROSION INSIDE CLEVIS

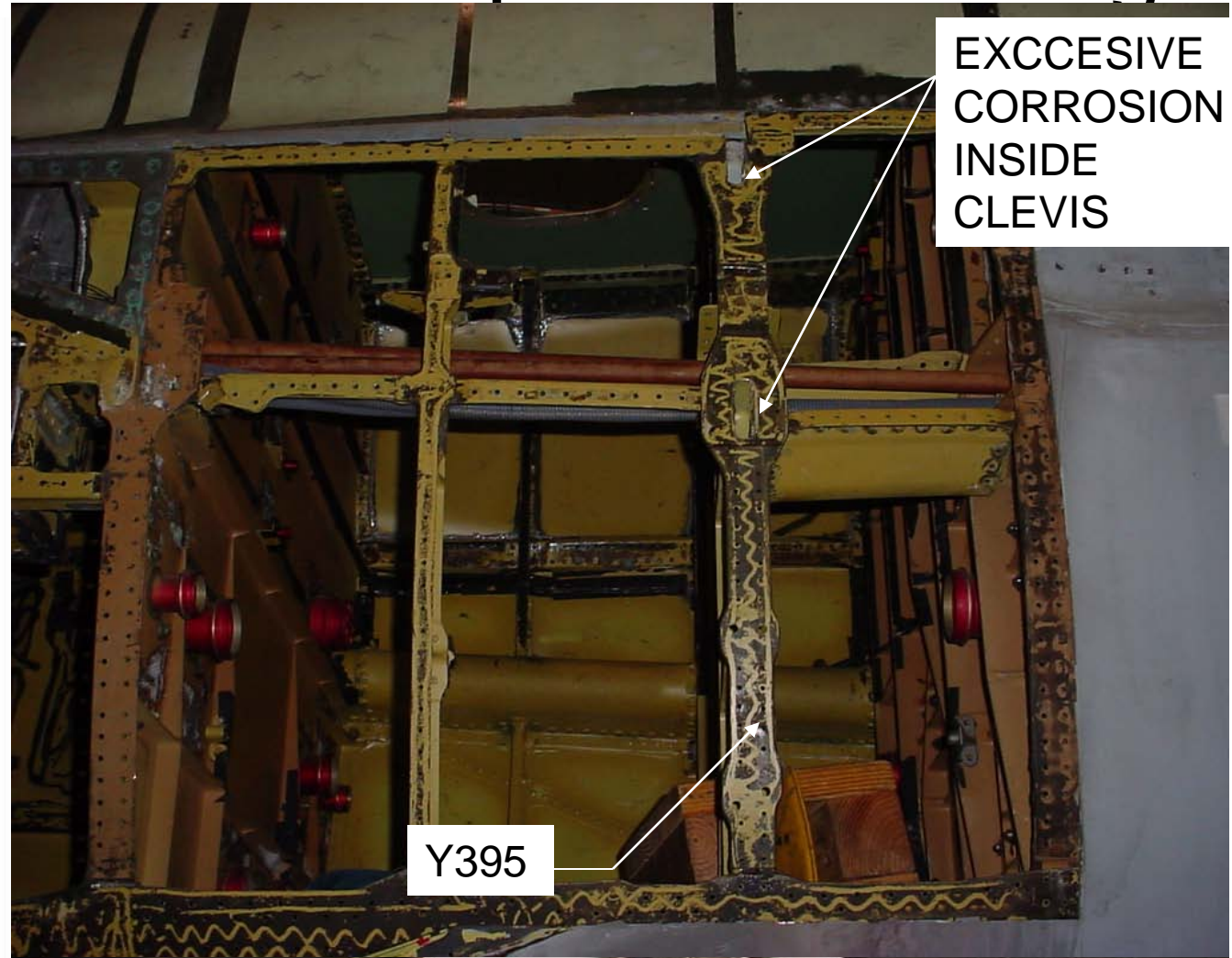


Y 395 Former



Y395 Corrosion Repair on Fuselage

- Y395
Prior to
removal.



Y395 Corrosion Repair on Fuselage



Questions?

