NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

STRUCTURES GROUP CHAIRMANS FACTUAL REPORT

DCA06MA010

Attachment A
Figures

Accident #: DCA06MA010	N2969

Description: In-flight breakup and in-flight fire.

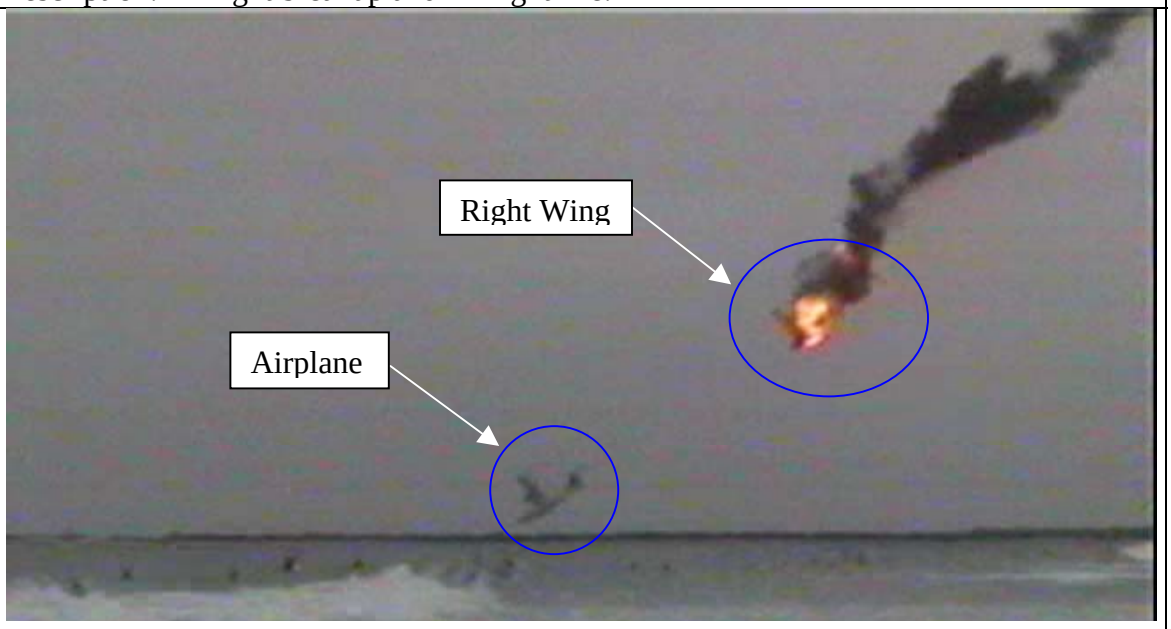


Figure 1

Accident #: DCA06MA010	N2969

Description: Accident airplane The red arrow shows location of wing separation.

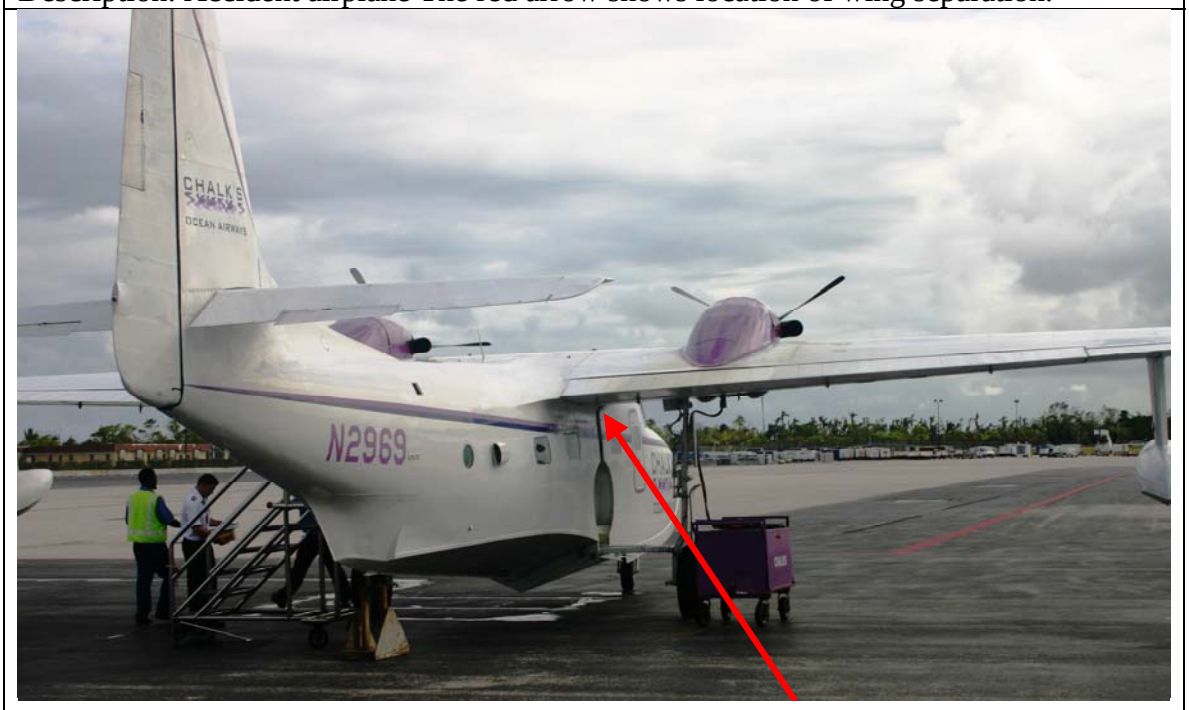


Figure 2

Accident #: DCA06MA010	
Description: Accident site.	

Figure 3

Accident #: DCA06MA010	
Description: Accident site and flight path.	

Figure 4

Accident #: DCA06MA010	N2969
Description: Underwater debris field.	

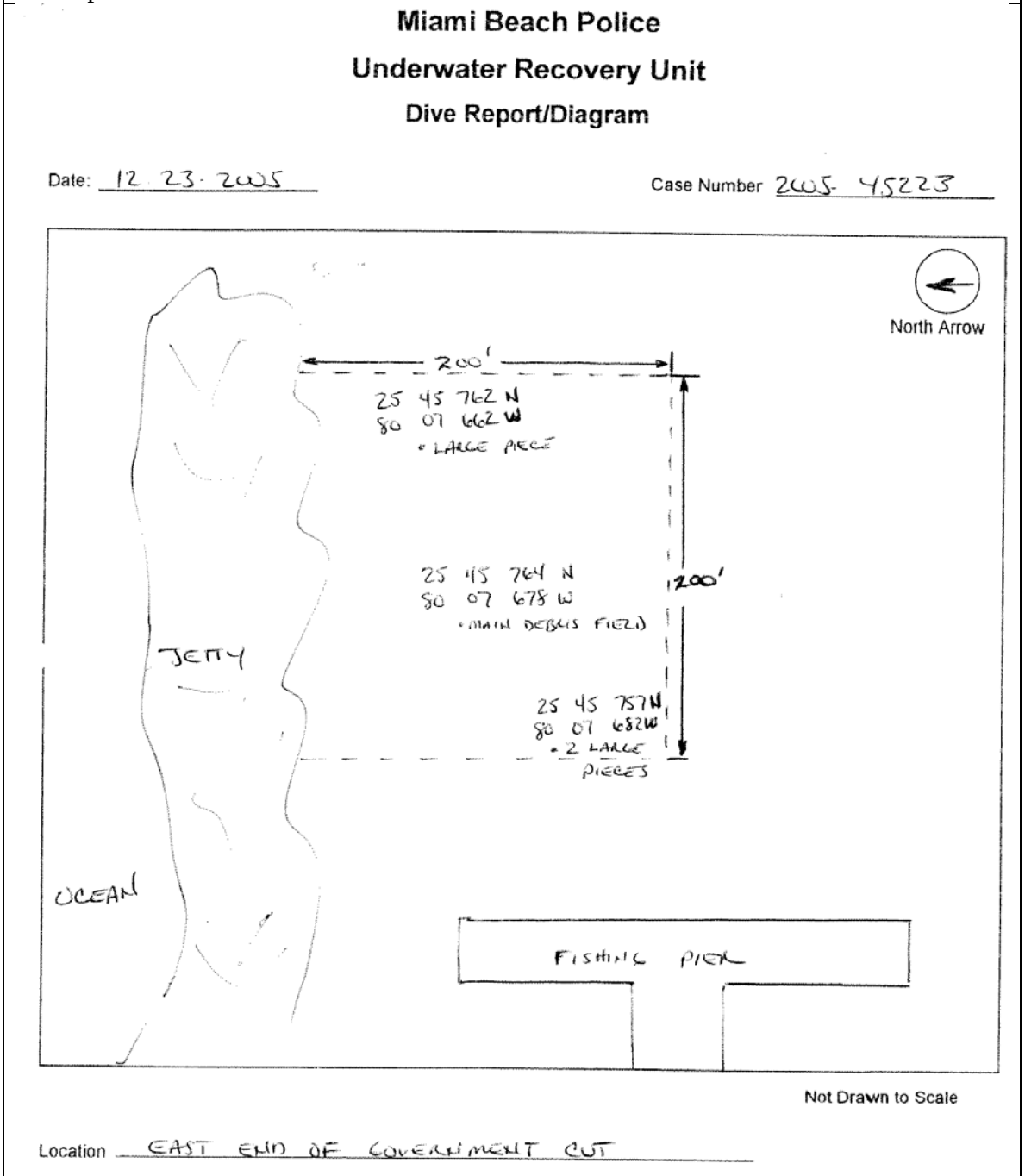


Figure 5

Accident #: DCA06MA010	N2969

Description: Lower surface of the right wing from WS 140 to WS 240.

Figure 6

Accident #: DCA06MA010	N2969

Description: Left wing, control cables and fuselage.

Figure 7

Accident #: DCA06MA010	N2969

Description: Right wing skin, stringer and spar cap fractures overview at WS 34.

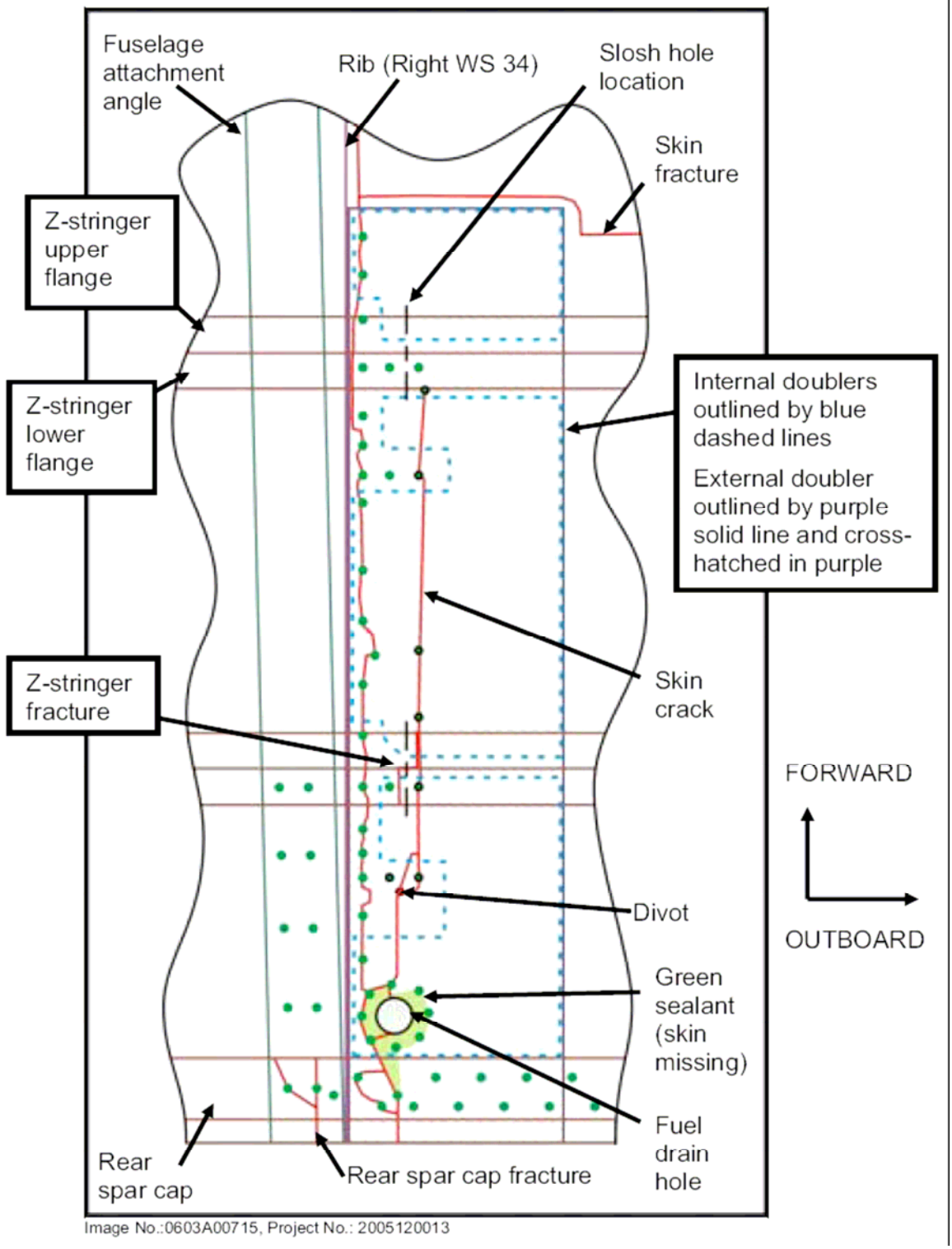


Figure 8

Accident #: DCA06MA010	N2969

Description: Right wing rear spar lower cap fracture at WS 34.

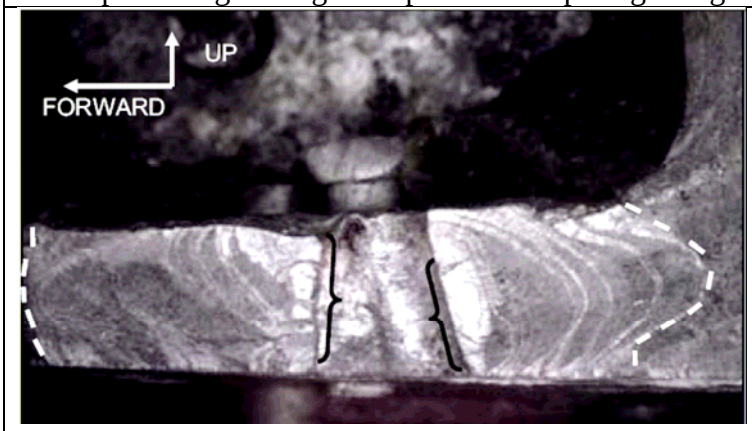
Image No.:0512A00890, Project No.: 2005120013

Close view of theoutboard side of the rear spar lower spar cap transverse fracture just inboard of right WS 34. Fatigue features emanated from a doubledrilled fastener hole.

Figure 9

Accident #: DCA06MA010	N2969

Description: Right wing rear spar lower cap fatigue region.



Closer view of the fatigue region on horizontal flange of rear spar lower spar cap. Dashed lines indicate the fatigue boundaries, and brackets indicate the fatigue origin areas.

Figure 10

Accident #: DCA06MA010	N2969

Description: Right wing aft Z-stringer fracture at WS 34 fuel slosh hole.

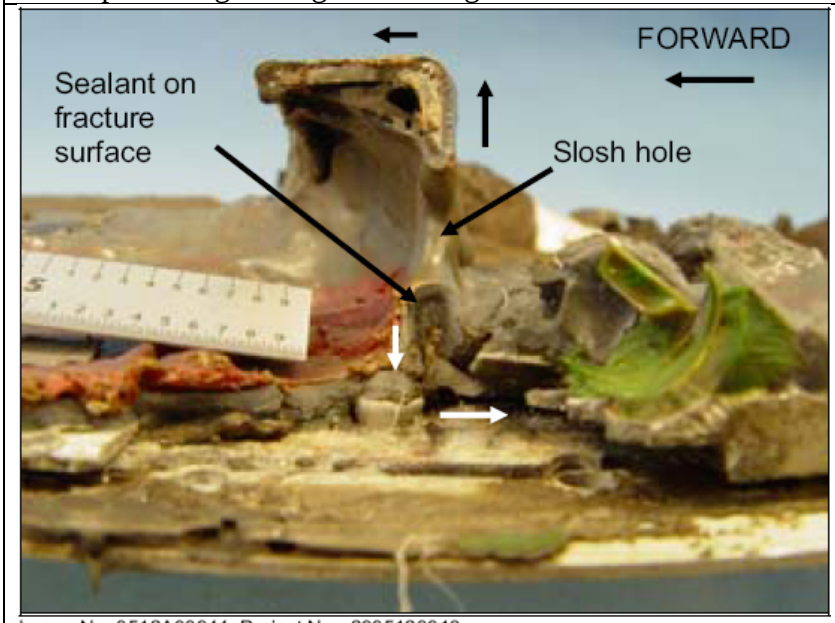


Image No.:0512A00944, Project No.: 2005120013

Close view of the rear Z-stringer fracture near right WS 34. Fatigue features emanated from a slosh hole in the stringer web as indicated with unlabeled arrows.

Figure 11

Accident #: DCA06MA010	N2969

Description: Right wing aft Z-stringer fatigue region at WS 34.

Close view of fatigue at upper side of hole in rear Z-stringer fracture near right WS 34. A dashed line indicates the fatigue boundary, and an unlabeled arrow indicates the local fatigue propagation direction.

Figure 12

Accident #: DCA06MA010	N2969
Description: Right wing aft Z-stringer fatigue region at WS 34.	

Close view of fatigue at the lower side of the slosh hole in the rear Z-stringer fracture near right WS 34. Unlabeled arrows indicate the local fatigue propagation directions.

Figure 13

Accident #: DCA06MA010	N2969

Description: Left wing skin, stringer and spar cap fractures overview at WS 34.

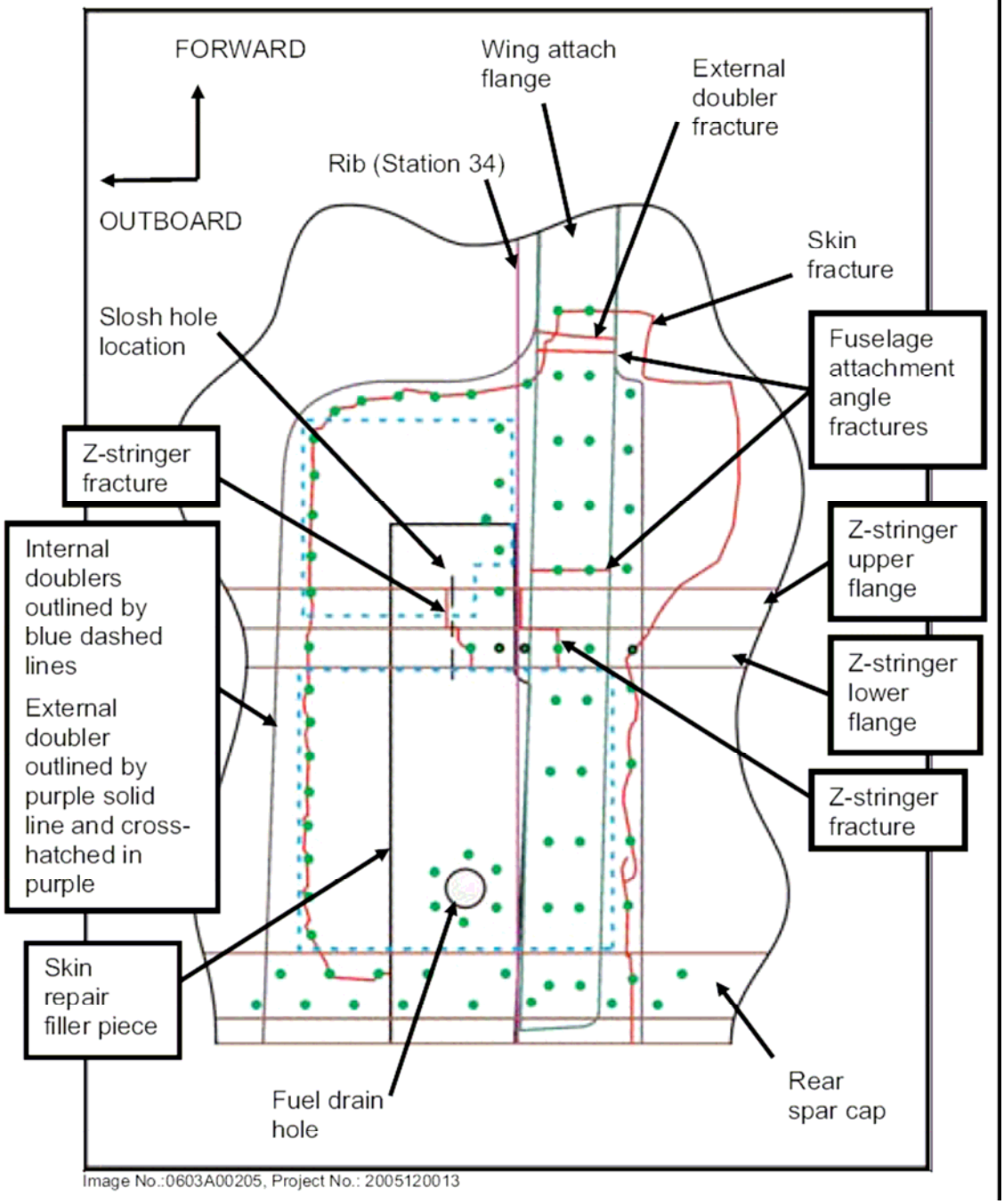
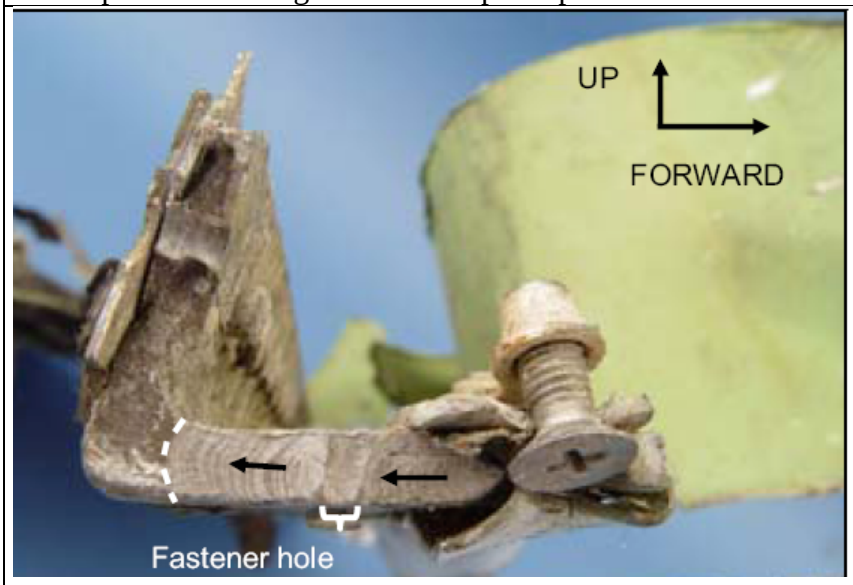


Figure 14

Accident #: DCA06MA010	N2969

Description: Left wing front lower spar cap fracture at WS 34.

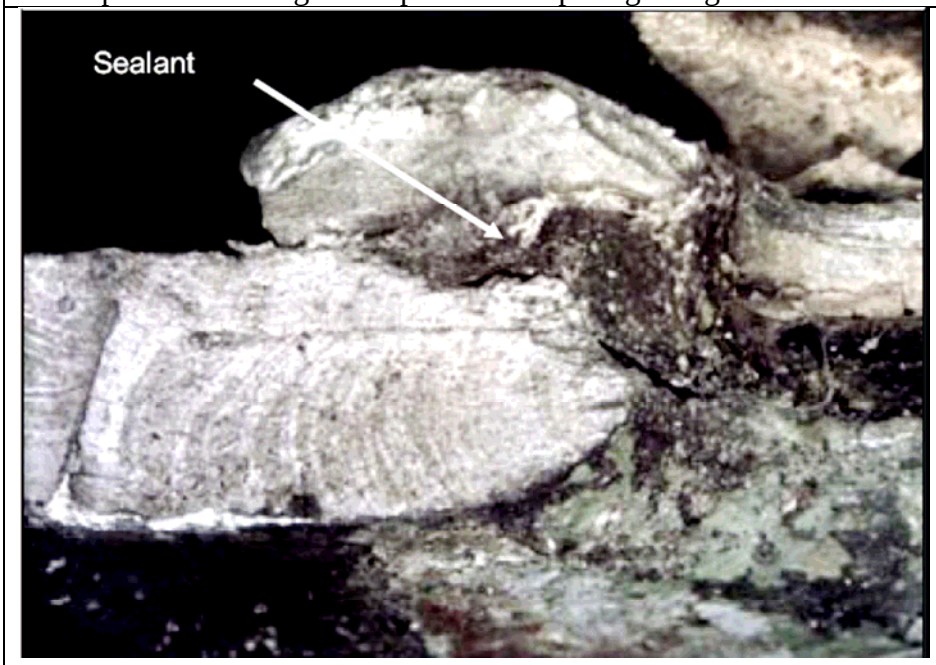


View of the outboard side of the fracture in the front spar lower spar cap 5 inches outboard of WS 34. A dashed line indicates the fatigue boundary, and unlabeled arrows indicate the direction of fatigue propagation.

Figure 15

Accident #: DCA06MA010	N2969

Description: Left wing front spar lower cap fatigue region.



Closer view of the fatigue origin area in the front spar cap fracture.

Figure 16

Accident #: DCA06MA010	N2969

Description: Left wing aft Z-stringer fracture at WS 34 at fuel slosh hole.

Unlabeled arrows indicate the directions of fatigue propagation emanating from the slosh hole in the web.

Figure 17

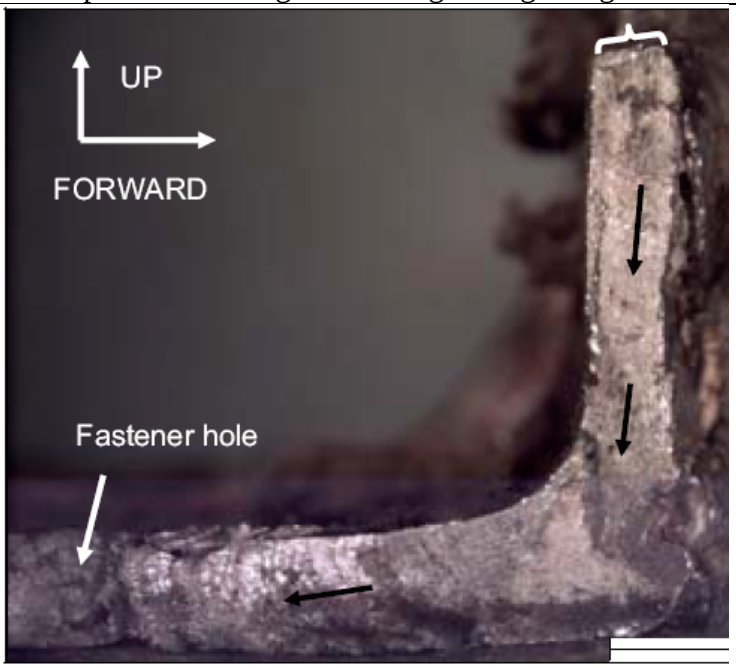
Accident #: DCA06MA010	N2969

Description: Left wing aft Z-stringer fatigue region at WS 34.

Close view of fatigue features of the Z-stringer fracture shown in the previous figure at the upper side of the slosh hole. Unlabeled arrows indicate general fracture propagation directions and an unlabeled bracket indicates the origin area at the slosh hole.

Figure 18

Accident #: DCA06MA010	N2969
Description: Left wing aft Z-stringer fatigue region at WS 34.	



Close view of fatigue features of the Z-stringer fracture shown in the previous figure at the lower side of the slosh hole. Unlabeled arrows indicate general fracture propagation directions and an unlabeled bracket indicates the origin area at the slosh hole.

Figure 19

Accident #: DCA06MA010	N2969

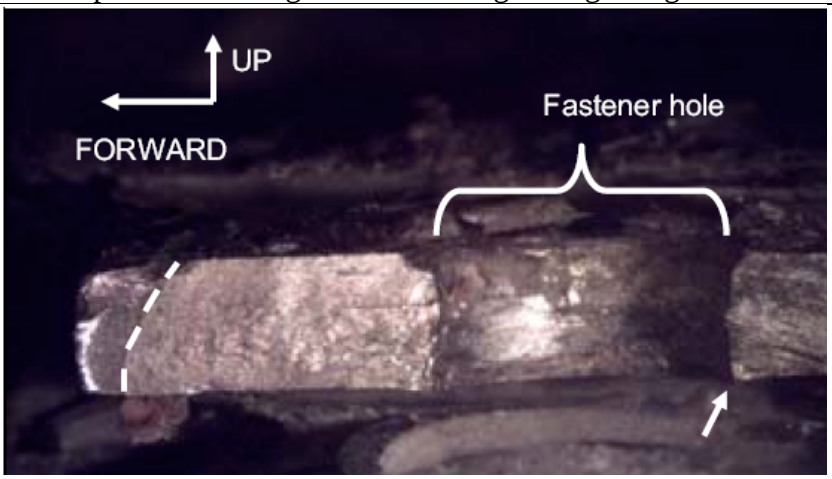
Description: Left wing middle Z-stringer fracture at WS 34 at fuel slosh hole.

View of the fracture surface for the middle left Z-stringer. An unlabeled bracket indicates the extent of a fatigue region emanating from the forward side of a fastener hole, and an unlabeled arrow indicates a small fatigue region at the aft side of the fastener hole.

Figure 20

Accident #: DCA06MA010	N2969

Description: Left wing middle Z-stringer fatigue region at WS 34.



Close view of the fracture in upper flange of the left wing middle Z-stringer shown in the previous figure. A dashed line indicates the fatigue boundary for the region emanating from the forward side of the fastener hole, and an arrow indicates the smaller fatigue region at the aft side of the fastener hole.

Figure 21

Accident #: DCA06MA010	N2969

Description: Empennage.

Figure 22

Accident #: DCA06MA010	N2969

Description: Typical dope and fabric control surface fire damage.

Figure 23

Accident #: DCA06MA010	N142PA (reference Attachment C)

Description: Right wing lower surface skin repair splice (February 2006).

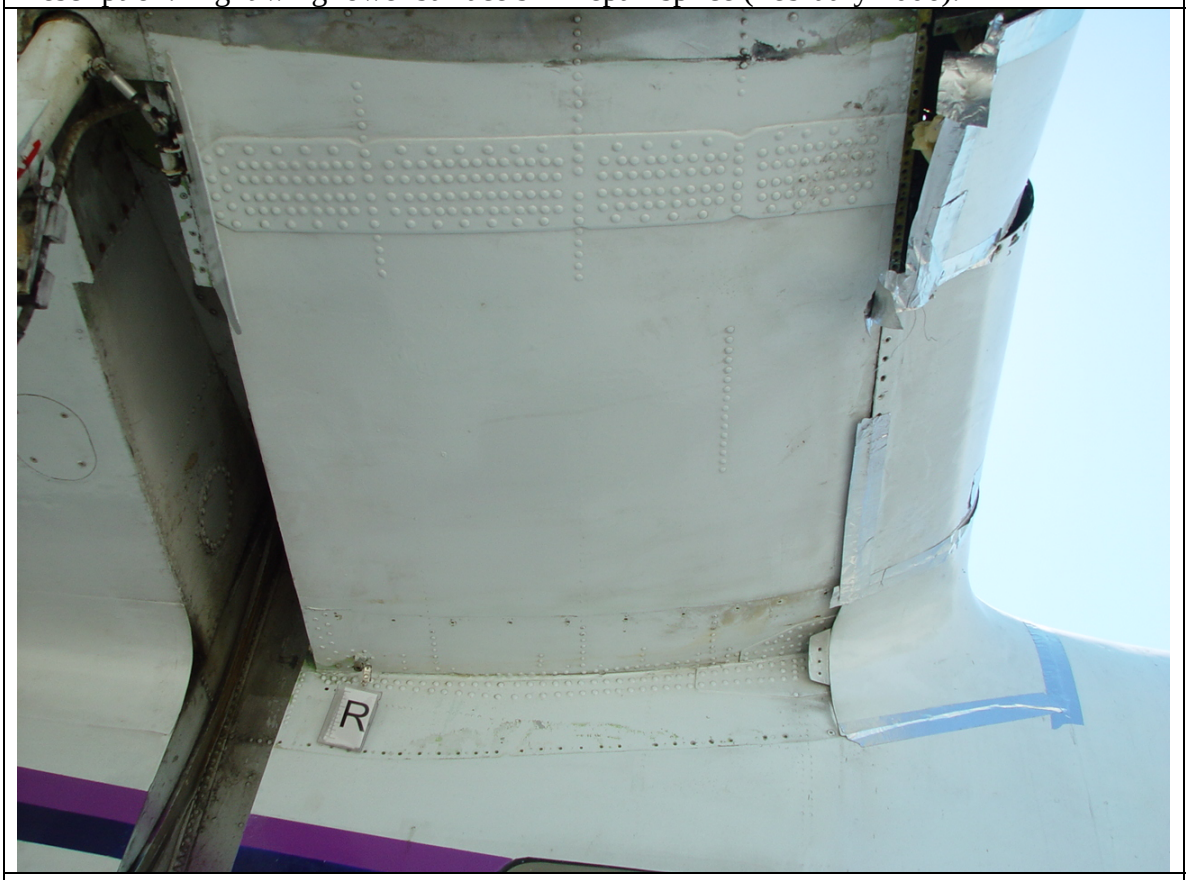


Figure 24

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Left wing lower surface wing skin repair (February 2006).	

Figure 25

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Left wing interior lower surface wing repair (February2006).	

Figure 26

Accident #: DCA06MA010	N130FB
Description: N130FB left wing to fuselage attach (February 2006).	

Figure 27

Accident #: DCA06MA010	N130FB
Description: Left wing lower surface wing repair (February 2006).	

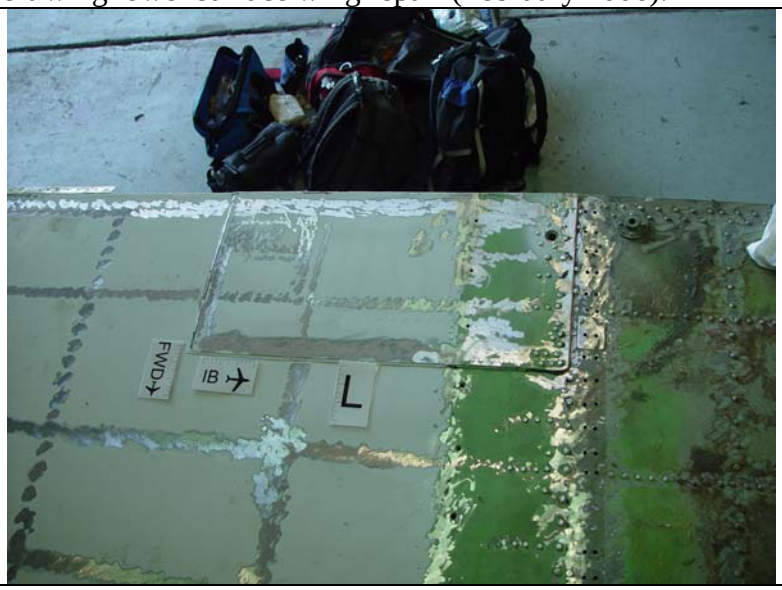


Figure 28

Accident #: DCA06MA010	Spare located in Chalk's hangar.

Description: Left wing rear lower spar cap double drilled holes (February 2006).

Figure 29

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: N142PA right wing lower surface skin crack (red line, June 2005).	

Figure 30 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Right wing lower surface skin crack close-up (June 2005).	

Figure 31 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Right wing lower surface with previous repair doubler removed (June 2005).	

Figure 32 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Right wing lower surface with previous repair doubler removed (June 2005).	

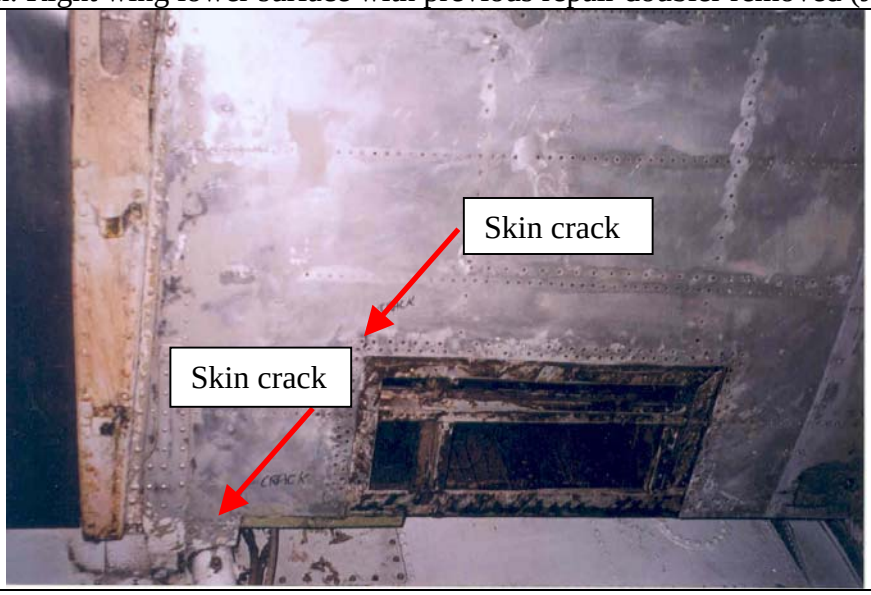


Figure 33 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Right wing lower surface with previous wing skin removed (June 2005).	

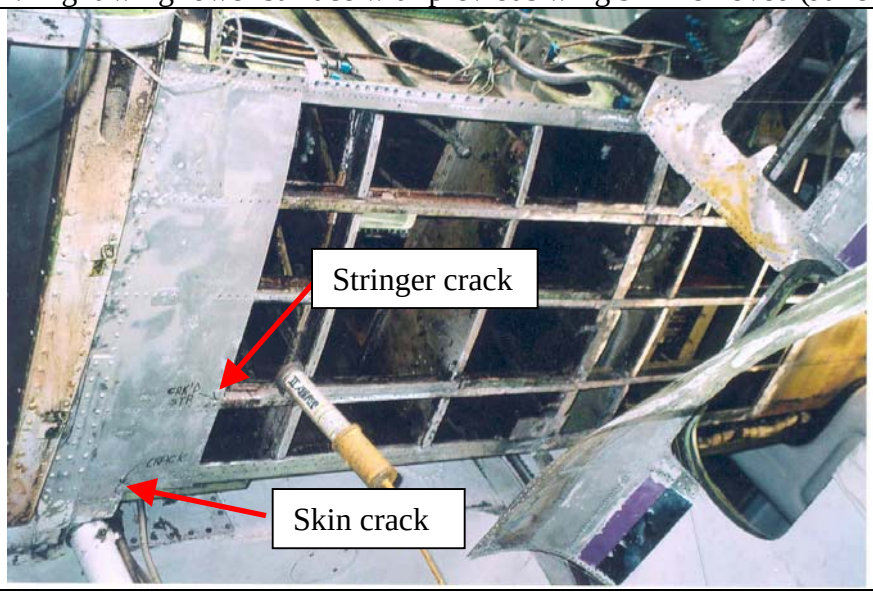


Figure 34 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Right wing lower surface with wing skin repaired (June 2005).	

Figure 35 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Left wing lower surface with previous wing skin repair & crack (June 2005).	

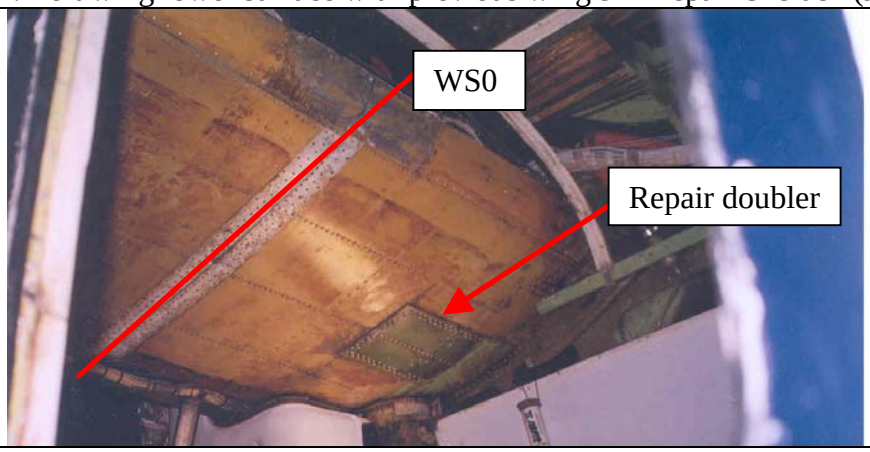


Figure 36 (Source John S. Patterson DER)

Accident #: DCA06MA010	N142PA (reference Attachment C)
Description: Left wing lower surface with previous wing skin & crack (June 2005).	

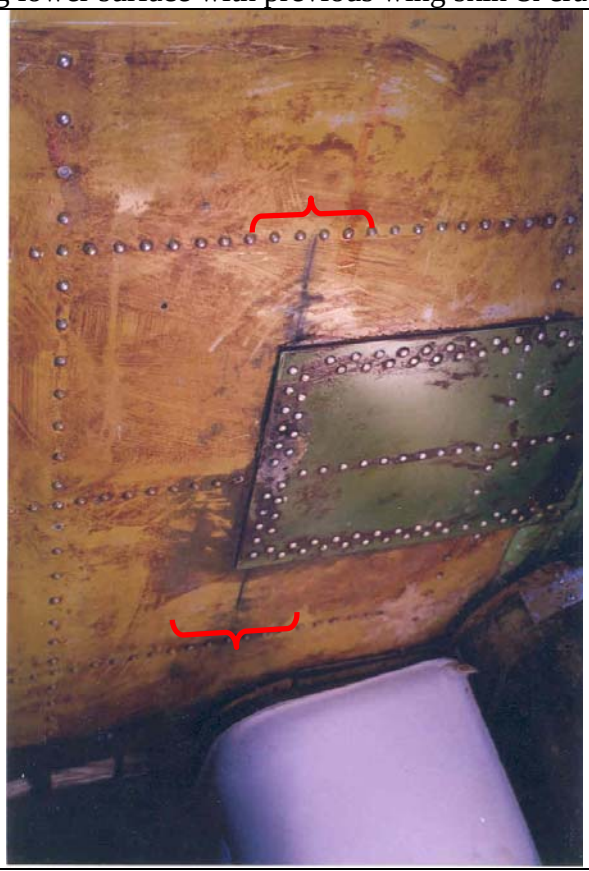


Figure 37 (Source John S. Patterson DER)