SIKORSKY
A LOCKHEED MARTIN COMPANY

S-76

DRB 2015-SA-76-037B

Repair Doubler on RHS Center Firewall

SIKORSKY AIRCRAFT
DESIGN RECORD BOOK

Record NO:

Prepared by	Blayne Ashmore	DRB No:	2015-SA-76-037B
Title	Repair Doubler on RHS Center Firewall		
Start Date:	16 May 2017	Detail Dwg	
End Date:	16 May 2017	Assy Dwg	76202-77002-045
No. Pages:	7	Related Documents: (1)	76306-77651-013 (3)
Model:	S-76D	(2)	76202-77001-012 (4)
Keyword: (1)	Firewall (2) Y-Tube	Hours:	583
(3)	Crack	Model Effectivity:	761064
Supersedes:		FEM Analysis:	
Analysis Type	Repair	Charge No:	
Reason for Analysis	Field Support	Superseded By:	

Description:

During performance of the first 600-hour inspection and removal of the Y-pipe installation per AMM Subtask 21-40-00-610-002 on A/C S/N 761064 TAS maintainers noted cracking of the P/N 76202-77002-046 No. 2 engine bay firewall at the Y-pipe pass-through.

Three cracks were noted in the firewall. All are in excess of cracking illustrated in DRB 2015-SA-76-037A.

- One horizontal crack 2.5 inches long emanating from the pass-through opening at approximately the 4 o'clock position, running forward.

- One horizontal crack approximately 1.9 inches long emanating from the pass-through opening at approximately the 9 o'clock position, running aft, terminating approximately 0.030 inches from the forward edge of the vertical stiffener.

- One vertical crack approximately 1.7 inches high, approximately 0.5 inches forward of the vertical stiffener at its closest point. This crack intersects the aft horizontal crack. There are no pieces missing. The firewall deck attach angle was inspected for cracks. None were found.

TAS request the following on a Work Stop basis:

1) Please confirm that the repair procedures called out in DRB 2015-SA-76-037A are applicable to address the cracking as noted above, with adjustments to standard practices in order to accommodate a larger repair doubler. TAS have 0.020, 0.025 and 0.030 301 ¼ Hard SS available. They do not have any Ti sheet stock on site.

2) If DRB 2015-SA-76-037A is not applicable, please provide a DRB repair with the appropriate repair data.

The repair procedures are outlined in this DRB. For FAA purposes, these repairs are considered "minor".

Results:

Rev B

1. Changed "ring doubler" to "Doubler"
2. Added "extended in one direction to vertical member and in the other direction past the attach clip for the hose"
3. Added "using Plexiglas to trace the location of the holes as necessary using Plexiglas to trace the location of the holes as necessary"

The recommended repair procedures for the right hand side is to stop-drill the crack and install a repair doubler as shown in Figure 5.
The repair procedures are outlined in this DRB. For FAA purposes, these repairs are considered "minor".

Assigned:	Blayne Ashmore	Approval :	John W Scheib	Approve Date:	16 May 2017

Repair Doubler on RHS Center Firewall

Background:

Reference:
1) Attached JPEG images
2) DRB 2015-SA-76-037A

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EoM

Repair Doubler on RHS Center Firewall

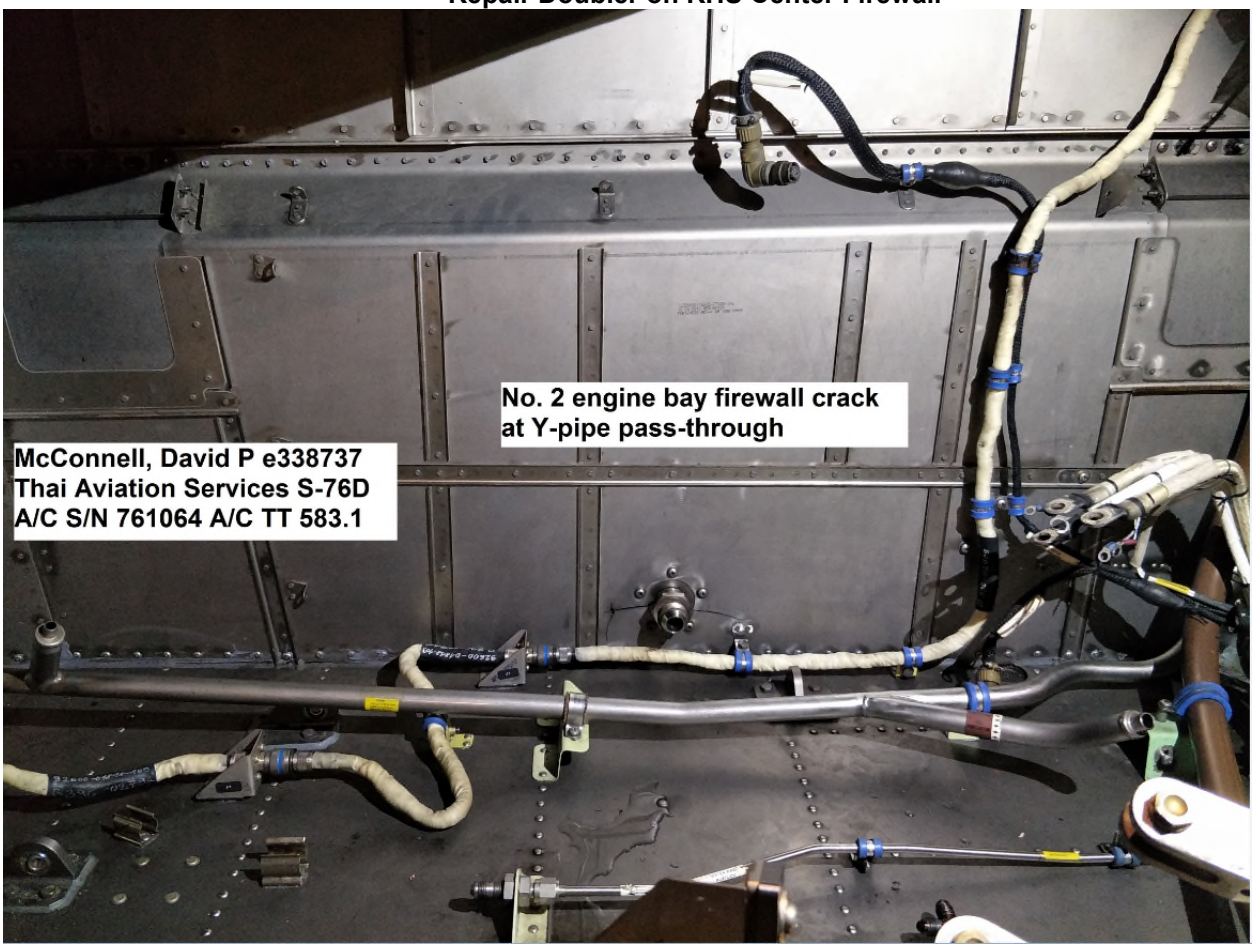

Figure 1: No. 2 Engine Bay Firewall Crack at Y-Pipe Pass-Through

Repair Doubler on RHS Center Firewall

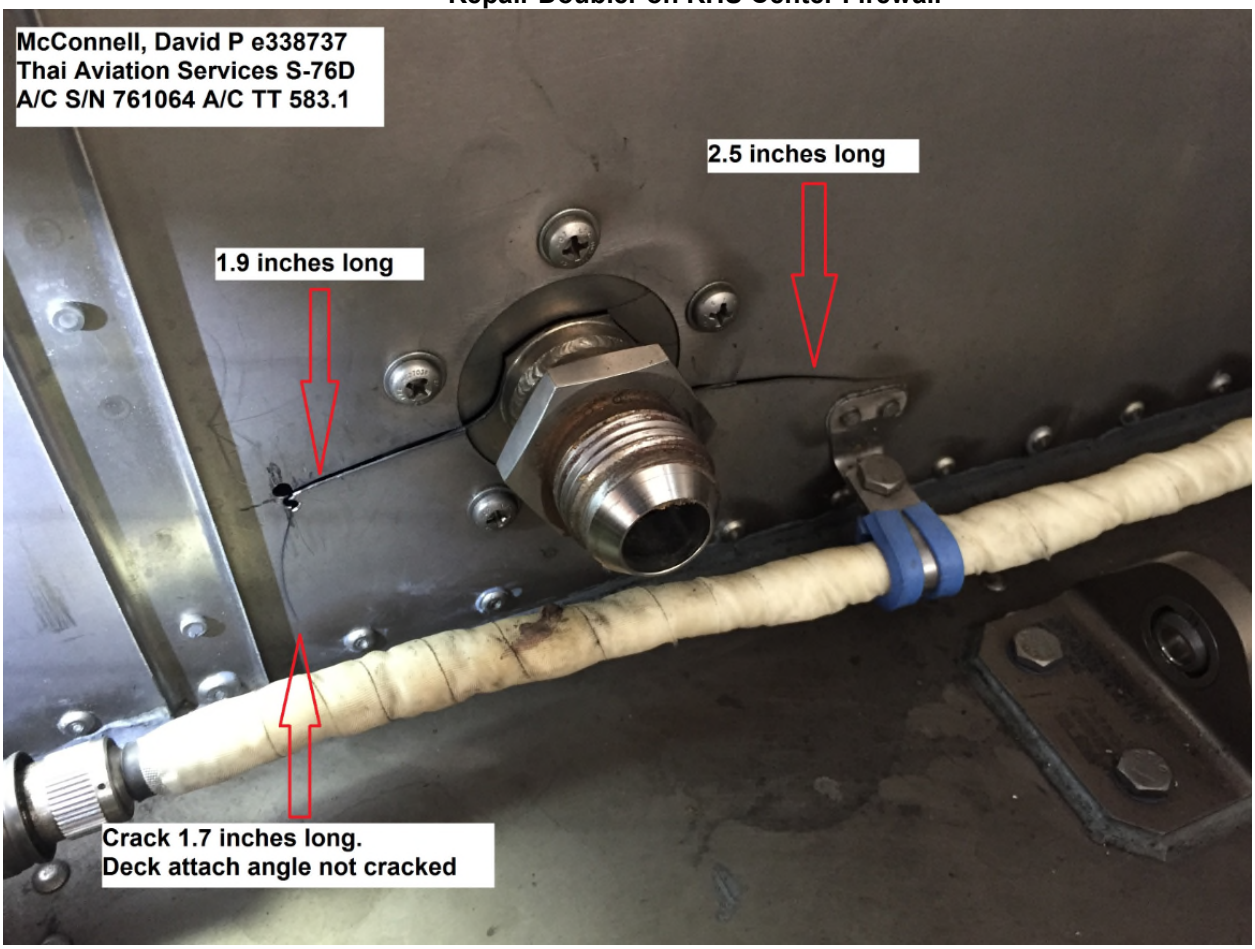

Figure 2: No. 2 Engine Bay Firewall Crack at Y-Pipe Pass-Through

Repair Doubler on RHS Center Firewall

Repair Procedure

1. Prepare the helicopter for ground maintenance.
2. Mask off area to be repaired on the outboard side of the panel.
3. Remove LHS access panel and Y-tube to gain access to area of the firewall panel to be repaired.
4. Remove lower cap fasteners as shown in Figure 3
5. Abrade the firewall panel in the repair area to clean titanium substrate, using scotch-brite abrasive mat, MIL-A-9962.
6. Stop drill crack tip using a 0.098” diameter drill. Be careful not to damage any additional structure, wiring, hoses, etc. in this area. Deburr the holes. Vacuum the area to remove loose particles.
7. Degrease the repair area by wiping with a low-lint cleaning cloth (conforming to A-A-59323, Type II) using acetone (conforming to ASTM D329) or ethyl alcohol (conforming to A-A-51693). Wash with clean water to a water-break free condition.
8. Inspect the firewall in the repair area using dye penetrant. If any further cracks exist, contact Sikorsky Aircraft for further instructions.
9. Again degrease by wiping above areas with a low-lint cleaning cloth (conforming to A-A-59323, Type II) using acetone (conforming to ASTM D329) or ethyl alcohol (conforming to A-A-51693). Wash with clean water to a water-break free condition.
10. Fabricate a reinforcement doubler from cracked access panel approximately as shown in Figure 4 Reorient as necessary to avoid crack and existing fastener holes. The doubler will be made of 0.020 TI 6AL-4V, or 0.025 301¼ HD SS as available. The doubler will be centered on the Y-tube pass through hole on the outboard side of the RHS firewall, extended in one direction to vertical member and in the other direction past the attach clip for the hose as shown in Figure 4. The doubler shall be sized to allow a staggered row of 1/8” fasteners, maintaining 2D edge distance and a minimum of 4D pitch on the fasteners. Corner radii shall be 0.190” minimum. Deburr the edges of the doubler. Avoid Crack and existing fastener holes.
11. Temporarily locate the doubler in place. Back drill any removed fastener locations that would be common to the doubler. Transfer pass through hole and flange mounting holes to doubler using Plexiglas to trace the location of the holes as necessary from firewall as shown in Figure 4.
12. Remove the doubler and pilot drill fastener holes. Form two rows maintaining 2D edge distance and a minimum of 4D pitch on the fasteners. Again temporarily locate the doubler in place and use the pilot holes to mark the fastener locations on the original skin panel.
13. Open all holes in the doublers and skin panel to full size for 1/8” rivets. Deburr all holes. Clean the doublers and repair area per step 7 of this procedure.
14. Faying surface seal the doubler using AMS 3347 firewall sealant. Remove sealant squeeze-out and flash after application. Wet install fasteners with AMS 3374.

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Figure 3: Removed Y-Tube

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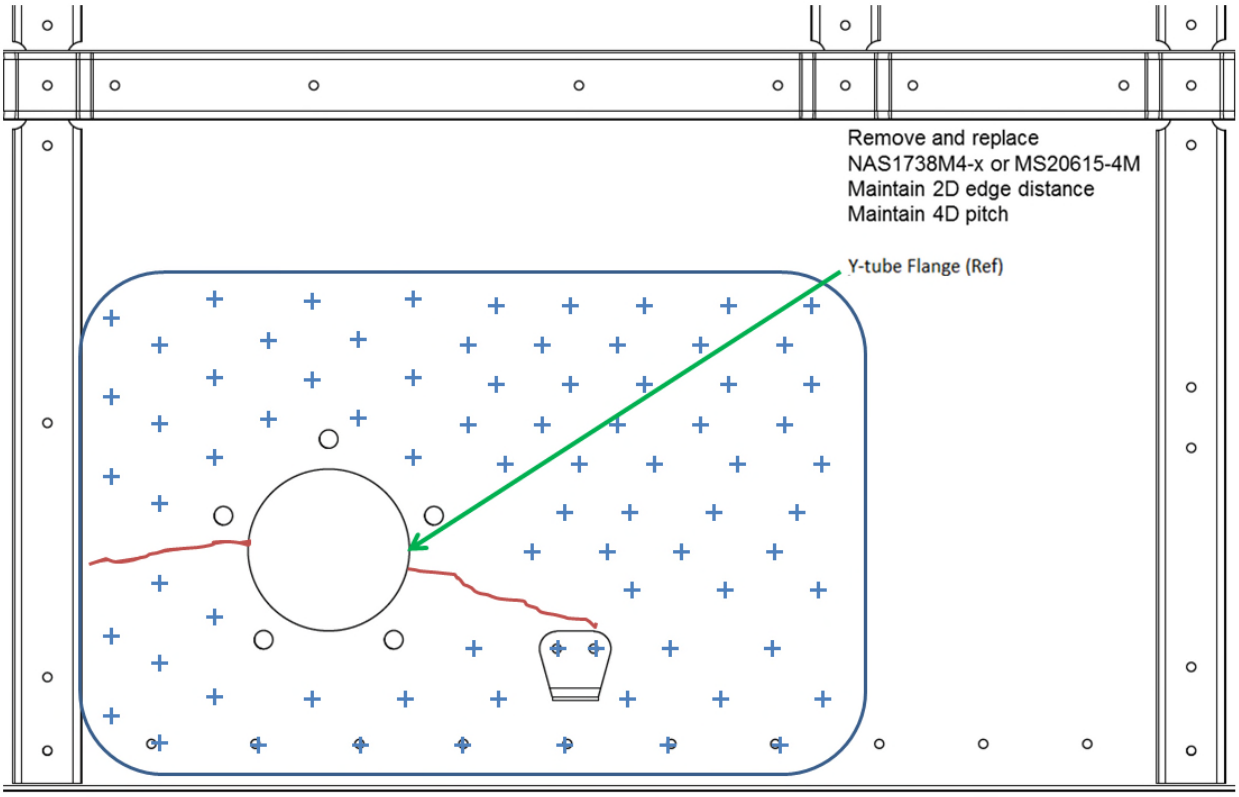

Figure 4: Doubler Installed Over RHS Y-Tube Pass Through