FEDERAL AVIATION ADMINISTRATION

Aviation Maintenance Alerts Template

Hello Aviation Industry Members,

Numerous Aviation Industry Members (Industry) requested that the Aviation Maintenance Alerts (AC-43-16) (Alerts) be reinstated to assist them when they find anomalies, safety issues, or experiences when flying, upgrading, or maintaining aircraft.

This newly created Aviation Maintenance Alerts Template (AMA) is available for voluntary information that you will provide as non-format documentation to add new information regarding any anomalies, risks, safety issues, or problems incurred while using, inspecting, or upgrading aircraft; we will add this data to our historical files.

Further, when populated and submitted, the data is included as individual alerts to our FAAST site under the General Aviation section; (see instructions for additional information). The Alerts Team will track and log the Industry's data to upgrade historical files; a Table of Contents (List) of the identified Alerts. This information will assist the Industry to find similar information on products written by others. The Alerts Team will update the site's List on a regular basis (either monthly or quarterly depending on the information received), and include copies of the original Alerts, as well as this Word Template. The Word template is very simplistic and easy-to-populate.

The Industry will use the AMA Template to provide an Aviation Maintenance Alert that identifies anomalies, safety issues, and experiences found during daily usage or routine maintenance checks and inspections. Gathering this information will not only help the Industry to share experiences, but will assist the entire Aviation Community to improve aeronautical product safety.

If the Industry submitter resolves the issues and successfully creates a workable solution for the situation; the submitter is encouraged to describe the corrective actions in Section III of the Template; or, if the submitter has found an option to correct future issues of the same nature, please include your recommendation in Section III. These actions will provide important information to other members of the aviation industry and ensures the actions are captured and provided to all field aviation personnel. These records will not only describe possible issues and resolutions, but encourages feedback from other staff regarding their experiences on similar products.

When the AMA is first published, it is possible the corrective action may not be fully evaluated. As more knowledge is secured, the List will be updated on a regular basis to include all facts provided; this includes feedback from other Aviation personnel or government agencies who provide support to the Aviation Industry. When the Alert is received, the List will be updated and then published on a regularly established schedule, as described above.

Please use this Voluntary Template to document any safety issues, possible alerts, comments, or suggestions you may find during your work day. Download the Template to your electronic device, fill in as much information as possible, save the Template on your device, and email your completed document to: FAA; ATTN: AFS-600 at: 9-AVS-Mxalerts@faa.gov.

Thank you.

INITIATION DATE: 5/21/2018 6:53 AM

SECTION I: DESCRIBE ALERT SUBJECT

PRODUCT CATEGORY	MANUFACTURER	MODEL	YEAR OF MFG/	TOTAL TIME IN SERVICE
AIRCRAFT **Note: This is the Word Template which must be populated by the submitter**	**There is a list of common manufacturers listed in the Instructions, should you require the preferred product title for the categories**	Enter the Model Number of your product	If available, please list the manufactured year of the product	If available, please enter the Total Time in Service for the Product
AIRPLANES	**CESSNA**	**208/208B, Super Cargo-Master**	**1988 Cessna 208B**	**15,000 Flight Hours**
HELICOPTER/ ROTORCRAFT				
BALLOONS				
UAS				
POWERED PARACHUTE, WEIGHT-SHIFT CONTROL AND ULTRA-LIGHT				
POWERPLANT				
PROPELLER				
APPLIANCES/ACCESSORIES				

SECTION II: DESCRIBE SAFETY ISSUE

Broken Horizontal Stabilizer Mount Bolts found on three Cessna 208/208B airplanes.

Since corrosion and/or inadequate torque can cause the mount bolts to break from fatigue, the FAA recommendation is to adhere to the Cessna 208/208B Maintenance Manual when inspecting for corroded and broken mount bolts, and to ensure that the bolts are adequately torqued per Service Bulletin CAB01-8.

In July 2017, a broken and severely corroded Horizontal Stabilizer Mount Bolt was found during a normal Approved Aircraft Inspection Program (AAIP) inspection per AC 135-10B on a 1988 Cessna 208B Super CargoMaster; the airplane had 15,000 flight hours. When the mechanic opened the access panel on the bottom of the empennage, a broken off section of the bolt was found lying nearby. The bolt was broken at the root of the thread. The other three mount bolts on the subject aircraft and all mount bolts on eighteen (18) other Cessna 208B airplanes in their inventory were corroded. A search of records revealed that two other Cessna 208B airplanes had broken mount bolts, one in March 2006 and another in April 2017.

The Textron Aviation Materials and Process Laboratory examined both the AN4-12A broken bolt found in July 2017, shown in Figure 1, and the S3461-61 broken bolt found in March 2006, shown in Figure 3.

A charter operator in Botswana provided photographs of the S3461-61 broken bolt found in April 2017, shown in upper Figure 2. The broken bolt found in July 2017 was severely corroded; whereas, there was no corrosion found on the broken bolt in March 2006. The photograph of the bolt found in April 2017 and sent from Botswana to the FAA shows corrosion discoloration.

On May 3, 2018, Textron provided their metallurgical results for the broken bolt found in July 2017. Figure 1 shows three AN4-12A horizontal stabilizer aft bolts. The charter operator did not provide the fourth bolt. The bolts all displayed corrosion discoloration. They are non-corrosion-resistant steel bolts with X-marking as shown at the bolt heads at the top of Figure 1. The metallurgical lab report noted corrosion on the fracture surface and on the threads of the broken bolt. The majority of the fracture surface displayed fatigue features. A small region at the end of fracture displayed overload dimples.

The mount bolt in Figure 3, found in March 2006, is an S3461-61 mount bolt that is broken at the root of the thread. This bolt shows no evidence of corrosion; whereas, the broken bolt in Figure 2, found in April 2017, shows signs of corrosion discoloration. These bolts are located at the 2632018-1 attach fitting (see Item 30 in Figure 6 and Table 1). The bolt in Figure 3 was found in March 2006 on a 1995 Cessna 208B in Australia with 12,000 flight hours. Textron Aviation examined this bolt in 2006 and concluded that the broken bolt was due to reverse bending fatigue. The polish marks on the bolt indicates relative movement between the bolt and the attach fitting. The cause of this bolt fracture is believed to be insufficient torque applied when the bolt was installed. Cessna Service Bulletin CAB01-8, “Horizontal and Vertical Stabilizer Attach Bolt Inspection”, dated May 7, 2001, addresses this condition and provides the torque values for these mount bolts.

Bolts shown in Figure 1 and Figure 2 provide illustrations of the referenced corroded Mount Bolts.

Figure 6 shows the locations of the Horizontal Stabilizer Mount Bolts. Two aft bolts are not shown that are forward of the green arrows. Table 1 provides the description of the stabilizer mount bolts and accompanying hardware. The Figure 7 photograph shows two left-side aft horizontal mount bolts. Right-side bolts are typical. The Figure 8 photograph shows the location of the right-side aft horizontal mount bolt. The Figure 9 photograph shows the position of the mount bolts relative to the elevator torque tube that is discussed in SAIB CE-17-25. The close vicinity of the mount bolts to the elevator torque tube allows them to be inspected at the same time.

SECTION III: DESCRIBE ALERT CORRECTIVE ACTION/RECOMMENDATION

Since corrosion and/or inadequate torque can cause the mount bolts to break from fatigue, the FAA recommendation is to adhere to the Cessna 208/208B Maintenance Manual when inspecting for corroded and broken mount bolts, and to ensure that the bolts are adequately torqued per Service Bulletin CAB01-8.

It is also recommended that the Elevator Torque Tubes be inspected as recommended by SAIB CE-17-25 at the same time as the Mount Bolts.

SECTION IV: INCLUDE GRAPHICS, DRAWINGS, AND PICTURES

Figure 1 Horizontal Stabilizer Mount Bolts (P/N: AN4-12A). See Figure 6 (green arrows)

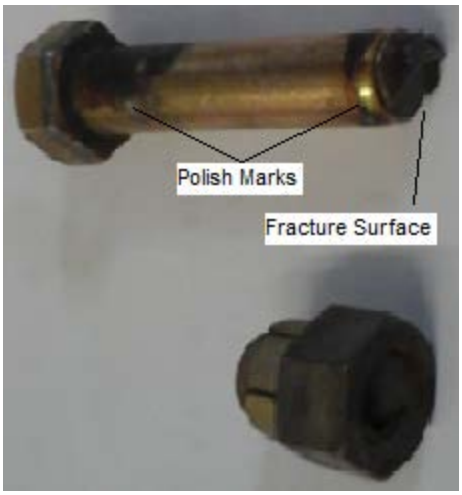

Figure 2 Polish Marks and Fracture Surface on Bolt, Found in April 2017

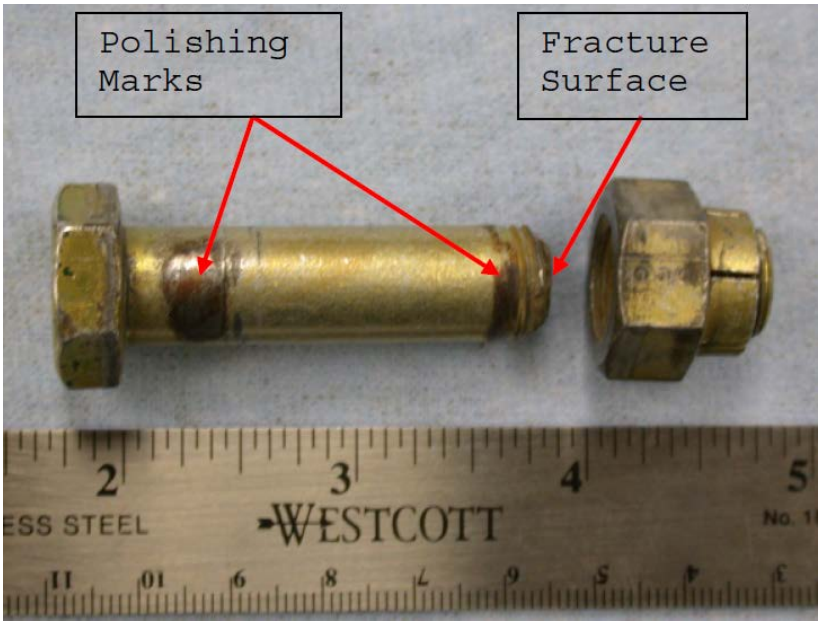

Figure 3 Polishing Marks and Fracture Surface on Broken Bolt, Found in 2006

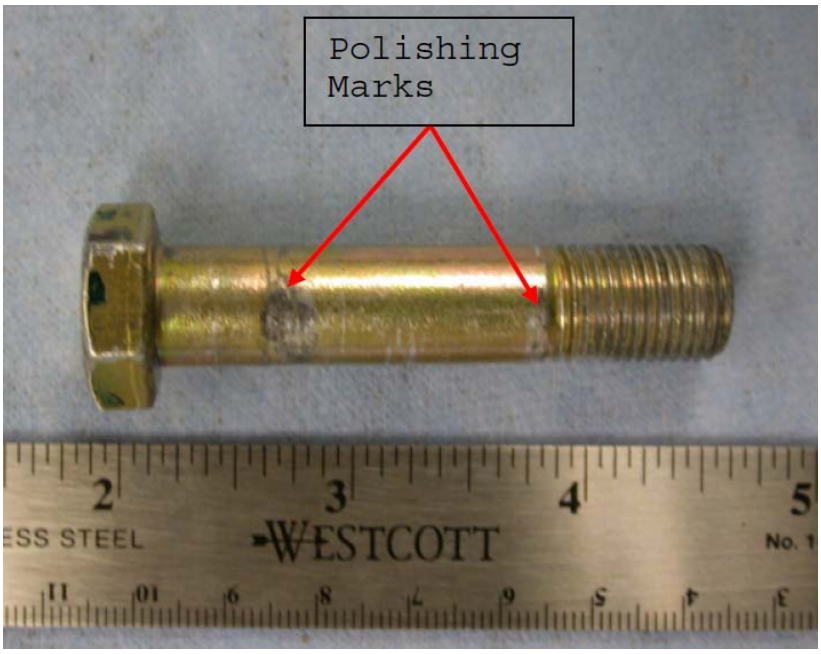

Figure 4 Polishing Marks on Bolt, this bolt shows no corrosion

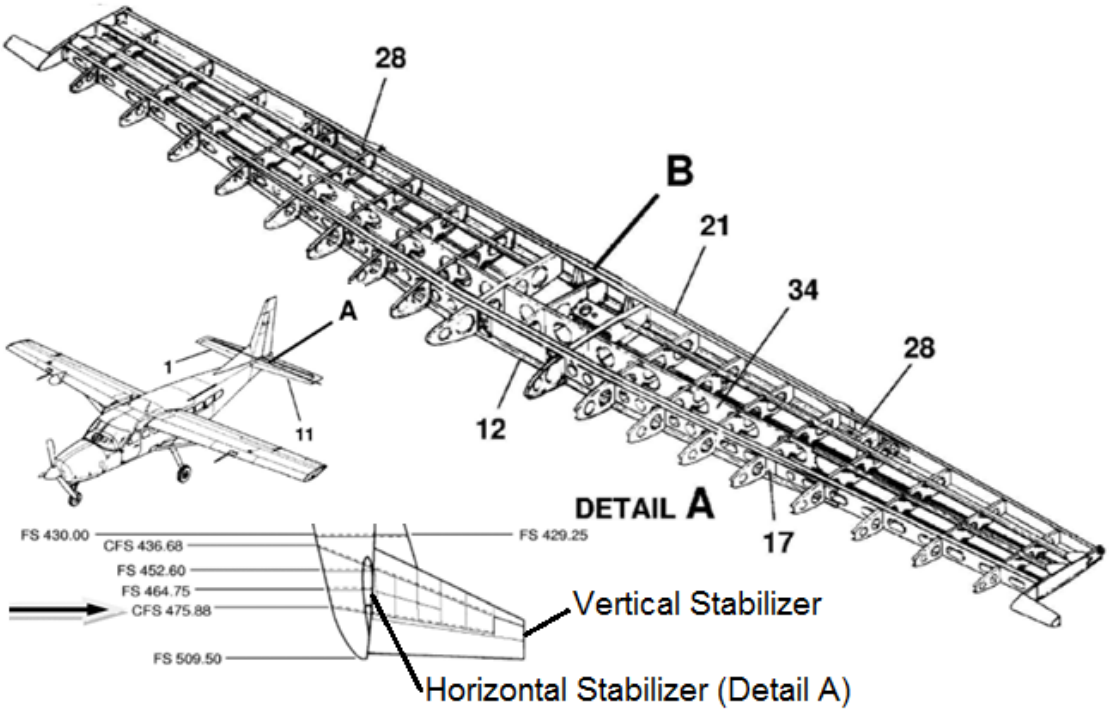

Figure 5 Horizontal Stabilizer (Detail A)

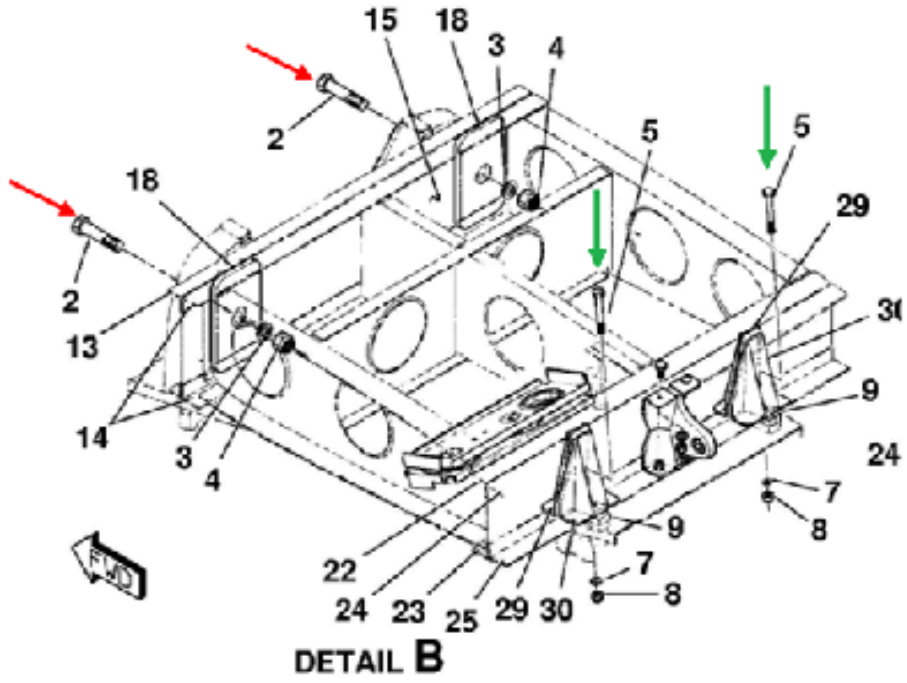

Figure 6 Horizontal Stabilizer Mount Bolds Installation, (Detail B),

NOTES:

The Red Arrows depict the forward bolts (S3461-61), the Green Arrows depict aft bolts (AN4-12A).

Two bolts are not shown forward of the Aft Horizontal Stabilizer bolts (green arrow) as shown in Figures 6 (see Figure 7)

Table 1 Table of the Applicable Parts

Item in Detail B	Part No.	Description	Quantity
FORWARD HORIZONTAL STABLIZER (red arrows)			
2	S3461-61	Bolt	2
3	NAS1149F0863P	Washer	2
4	MS21044N8	Nut	4
18	2632018-1	Attach Fitting	
14	2632024-5	Aft Spar Cap	
AFT HORIZONTAL STABILIZER (green arrows) *			
5	AN4-12A	Bolt	4
7	NAS1149F0463P	Washer	4
8	MS21044N4	Nut	8

30	**2612987-1**	**Attach Support**	

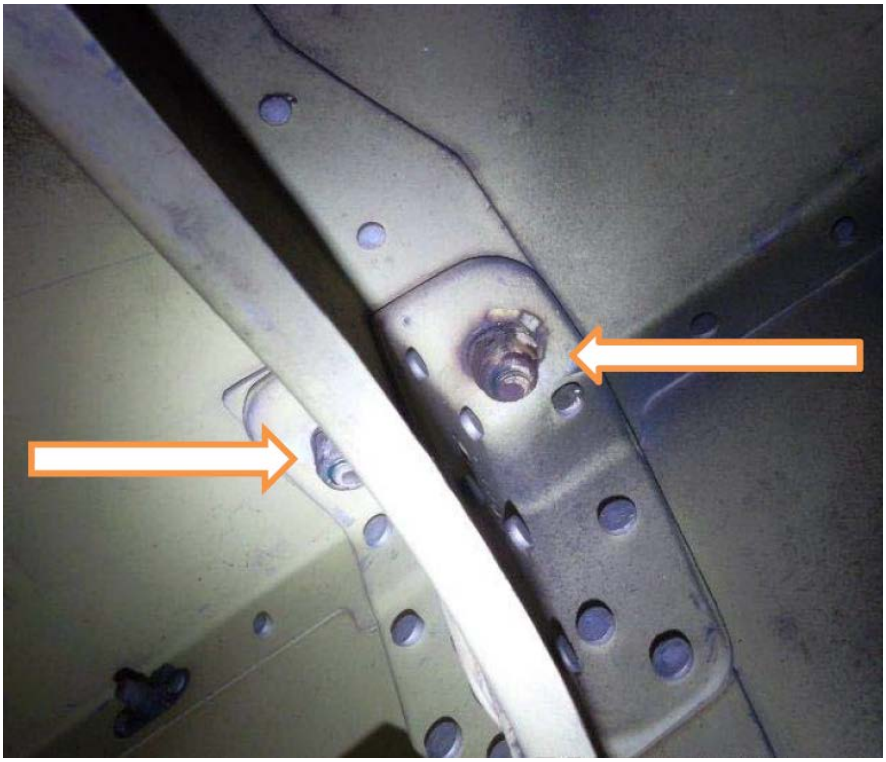

Figure 7 Left side Aft Horizontal Mounts Bolts (P/N AN4-12A)

NOTE:

Looking upward at left side of green arrow in Figure 6, Detail B.

This view shows the forward bolt, pictured on the right, which is not shown in Figure 6, forward of the green arrows.

Right side is typical.

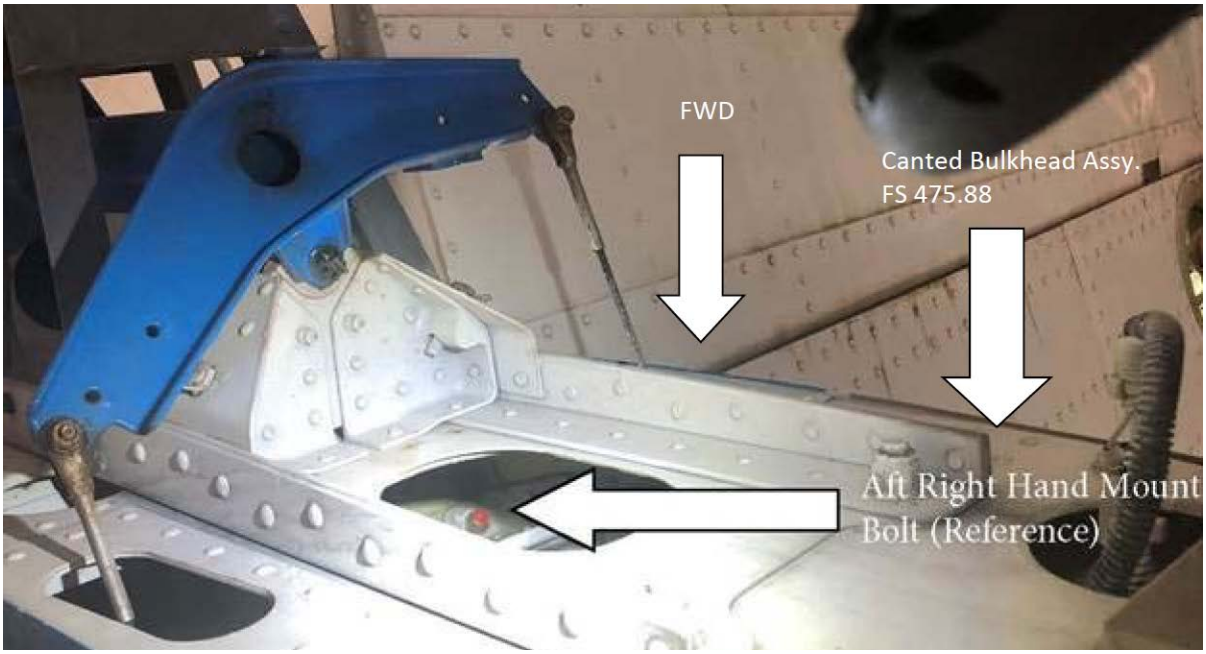

Figure 8 Installation of Right Side Aft Horizontal Mount Bolt (P/N AN4-12A)

NOTE:

View is looking up through the 261205-1 Canted Bulkhead at FS 475.88

See Figure 6 and the lower illustration in Figure 5 for Reference

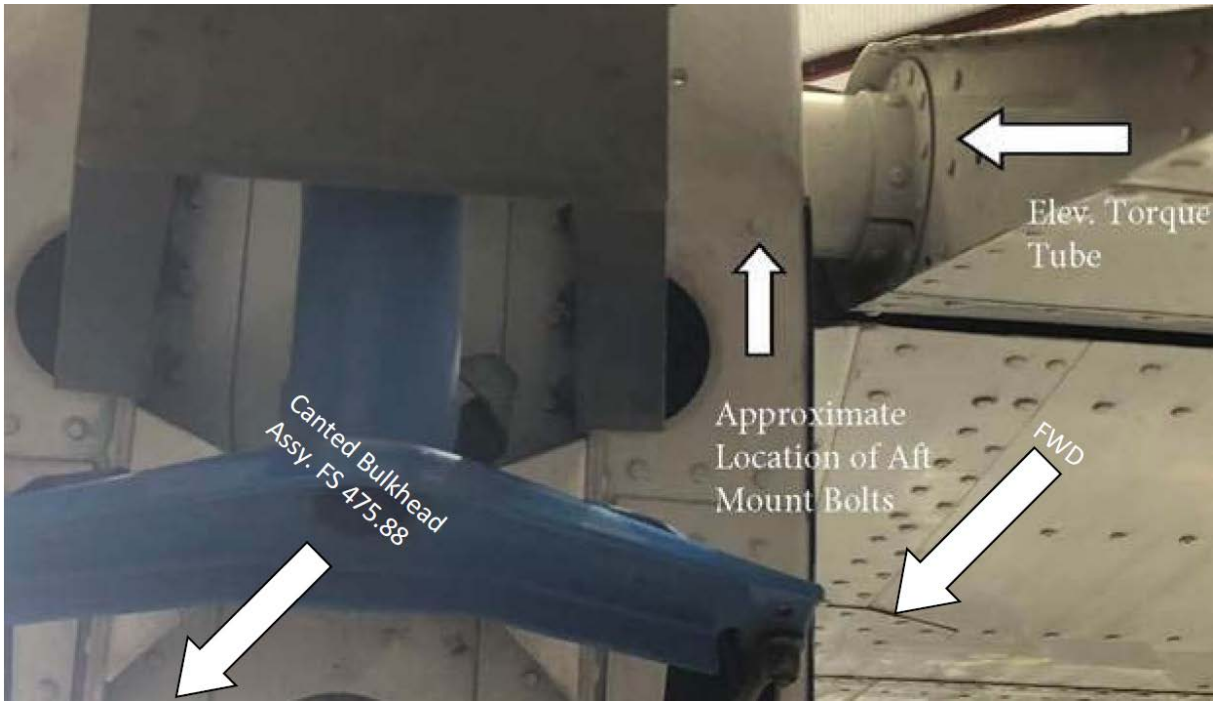

Figure 9 Elevator Torque Tube, Canted Bulkhead Assembly, and Approximate Location of Aft Mount Bolds

NOTES:

Due to the relative location of the Elevator Torque Tube, the Team recommend inspecting by SAIB-CE-17-25

View is looking forward at the Canted Bulkhead Assembly at FS 475.88

See Figure 6 and the lower illustration in Figure 5 for Reference