UNITED STATES COAST GUARD
U.S. Department of Homeland Security

FINDINGS OF CONCERN

Sector New York

March 3, 2023
Staten Island, NY

Findings of Concern 007-23

RISK OF FIRE DUE TO MISALIGNMENT OF HIGH-PRESSURE DIESEL FUEL PUMP ASSEMBLY

Purpose. The U.S. Coast Guard issues findings of concern to disseminate information related to unsafe conditions that were identified as causal factors in a casualty and could contribute to future incidents. Findings of concern are intended to educate the public, state, or local agencies about the conditions discovered so they may address the findings with an appropriate voluntary action or highlight existing applicable company policies or state/local regulations.

The Incident. Recently, the Coast Guard investigated a main space engine room fire onboard a chemical tank ship. The vessel was underway after conducting a routine overhaul on the Main Diesel Engine high pressure diesel fuel pump. Shortly into the voyage, a high-pressure diesel fuel leak was identified on the high-pressure diesel fuel pump collective pipe igniting into a main space fire which resulted in substantial damage.

Contributing Factors and Analysis. The facts of the investigation revealed the following existing unsafe conditions.

1. Misalignment of fuel oil collective pipe assembly.
2. Utilization of used parts on overhauled fuel oil pump.
3. A lack of fuel oil collective pipe mounting hardware torque specifications.
4. Material failure of the fuel oil collective pipe.
5. Inadequate load test of the #2 Main Diesel Engine.

Findings of Concern. Coast Guard investigators have identified the following measures to mitigate the risks associated with the above identified contributing factors:

- Vessel safety management preventative maintenance procedures should specifically identify the importance of proper fuel pipe assembly alignment when overhauling main diesel engine high pressure fuel pumps.

- Vessels utilizing MAK Caterpillar M32 Engines should take caution when tightening fuel distributing collecting pipe banjo bolt screw connection (Part No. 9.8517-510), due to the lack of established torque specification by manufacturer.

- Vessel safety management preventative maintenance procedures should specify which parts are a one-time use “consumable” in accordance with manufacturer recommendations.

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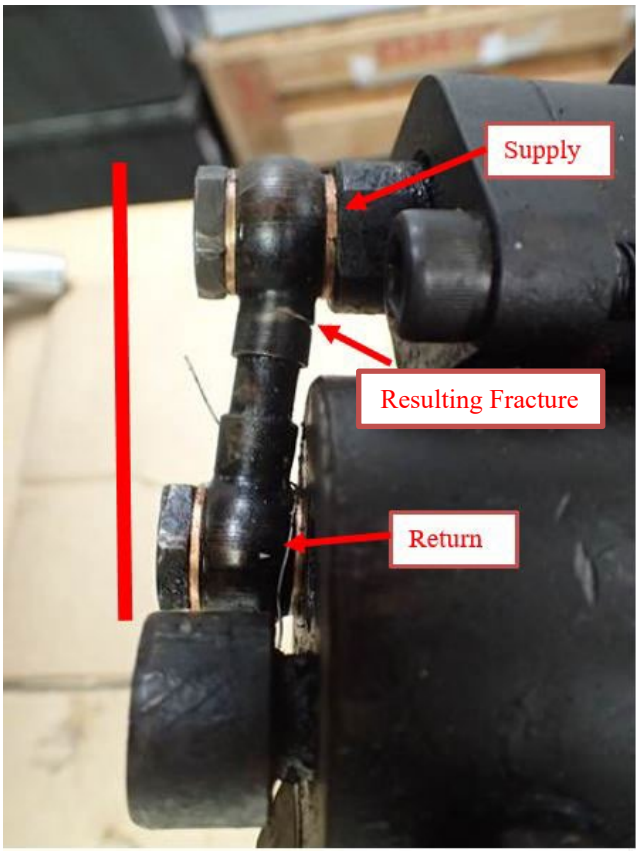

Photograph of misaligned fuel oil collective pipe, tightened to the point of fracture.

MAK

Fuel Distribution / Collective Pipe
Repair / Disassembly and reassembly

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M32

07

2.3 Tighten the cheese head screws (**Fig. 3**/8) with a torque of

M = 65 Nm

Make sure that the cone (15) remains in correct position during tightening.

2.4 Tighten the cheese head screws (9) with a torque of

M = 60 Nm

2.5 Mount the tube (7). Firmly tighten the banjo bolts (16).

2.6 Mount the nozzle leakage pipe (**Fig. 1**/6).

2.7 Insert the fuel pipes (**Fig. 2**/4). Shift the sleeves (3) with shaft seal (17) and plate (18) to the right or to the left up to limit stop.

2.8 Daub the cheese head screws (2) with Molykote paste "G-Rapid Plus" and tighten them with a torque of

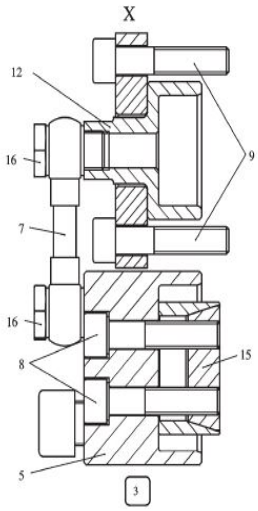
M = 25 Nm

2.9 Open the shut-off cocks and firmly tighten the screw plug (**Fig. 1**/1) with a torque of

M = 80 Nm

2.10 Replenish the fuel system by means of the stand-by pump and vent it.

2.11 Mount the pump space cover. .



MAK M32 Manual notating no established torque specification

Closing. These findings of concern are provided for informational purpose only and do not relieve any domestic or international safety, operational, or material requirements. For any questions or comments please contact Sector New York Investigations Division by phone at (718) 354-4234 or by email at D01-SG-SecNY-Investigations@uscg.mil.