



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

FINDINGS OF CONCERN

Office of Investigations and Casualty Analysis

March 22, 2023
Washington, DC

Findings of Concern 009-23

BE AWARE OF USING MODERN FUELS IN OLDER ENGINES

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. A 25-foot commercial assist vessel built in 1995 with a 250-horsepower inboard/outboard gasoline engine caught fire while unattended at a marina dock. The fire destroyed the vessel with only the hull remaining. Earlier in the day, while conducting towing assistance operations, the vessel's engine had unexpectedly shut down three times while under load but was easily restarted. The engine operated normally at all other times.

Contributing Factors and Analysis. The Coast Guard's investigation concluded that the deteriorated condition of the vessel's fuel system components due to age would have been exacerbated by the fact that the gasoline used in the engine prior to being bought by the current owner would have contained ethanol. Ethanol can break down certain parts of older gasoline engines such as fuel lines and seals. Cracks in fuel lines or compromised seals are also common causes for fuel starvation in gasoline engines, which would have caused the engine shutdowns earlier in the day. The ignition and rapid spread of the fire indicated that there had been a considerable amount of gasoline in the bilge which was likely due to the compromised fuel hoses and seals.

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

- Know the type of fuel your boat's engine manufacturer recommends including any advisories, warnings, and recommendations on the use of fuels containing ethanol.
- Avoid water intrusion into your boat's fuel system.
- Ensure a good water-separating fuel filter is installed.
- Keep spare fuel filters onboard and know how to safely install one if needed.
- Follow the engine manufacturer's preventative maintenance schedule for periodic engine servicing and parts replacement.

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 the Office of Investigations and Casualty Analysis by email at HQS-SMB-CG-INV@uscg.mil.