106 M-10 dg

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 12, 1979

Forwarded to:

Admiral John B. Hayes
Commandant
U.S. Coast Guard
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

M-79-99

About 1220 e.d.t. on May 10, 1978, the Military Sealift Command tanker USNS NECHES, carrying 25,000 long tons of jet fuel JP8, was about 50 nmi north of Curacao, Netherlands Antilles when the engineer on watch saw flames on the after part of the tanker's port main diesel engine. The flames appeared to be coming from the top of the engine and were 7 to 8 feet high. The engineer on watch stopped both engines, activated the engineer's assistance alarm, and exited the engineroom. The first assistant engineer activated the emergency stop switches for the fuel pumps and the engineroom ventilation. After making sure that all crewmembers were out of the engineroom, the master ordered the fixed CO2 system to be activated. At 1305, the fire was extinguished but the main engines and ship's service electrical system were inoperable. The tanker was towed to Curacao where the repair cost was estimated to be $750,000.

On May 13 and 14, 1978, the port main engine was examined by Coast Guard investigators, vessel personnel, machinery manufacturer representatives, and a representative of the Military Sealift Command. They found the fuel intake and return lines from the fuel oil supply header to the fuel injection pumps on Nos. 1 and 2 cylinders on the port engine were leaking at the headers. The fuel intake and return lines have packing gland fittings at the headers, but not at the fuel injection pumps. The packing gland fittings of all lines leading to Nos. 1, 2, 3, and 4 cylinders were disassembled, and evidence of mechanical damage to the packing material due to overtightening was noted.

The frequent disassembly of diesel engines for maintenance necessitates that fuel intake and return lines be easily removable. However, this accident indicates that packing gland fittings on pressurized fuel lines, near hot surfaces such as exhaust lines, can be a serious fire hazard. Maintenance personnel were not aware that the packing glands had been damaged.

The installation of medium speed, high horsepower diesel engines on large merchant ships is a relatively new development in the United States. The NECHES, built in 1971, was one of the first large ships to be built in the U.S. with diesel engines since World War II. Large ships in the U.S. have traditionally been equipped with steam turbine engines, but, more and more U.S. ships are being converted to, or built with, medium speed, high horsepower diesel engines. There are at least 19 large ships in operation or under construction which have diesel engines similar to those in the NECHES, and the same type of packing gland fittings are probably being used. Therefore, the Coast Guard should ensure that the fittings used in these fuel systems do not pose a fire hazard.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

> Conduct a design study to determine the adequacy of packing gland fittings on pressurized diesel engine fuel systems and promulgate regulations as neccessary. (Class II, Priority Action) (M-79-99)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in this recommendation.

By: James B. King
Chairman