

NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: July 15, 1980

 Forwarded to:
 Chief of Engineers
 Department of the Army
 20 Massachusetts Avenue, N.W.
 Washington, D.C. 20314

SAFETY RECOMMENDATION(S)

M-80-43

About 0930 c.d.t., on June 5, 1979, a buried 4-inch-diameter, high-pressure, natural gas pipeline was separated at a collar by a mooring spud dropped from the crane barge C. L. DILL 10 as the barge was being maneuvered by a tugboat alongside tank battery No. 205 in a channel of the Texaco, Inc., oil field in the Garden Island Bay section of the Mississippi River Delta. Gas, escaping under 700-psig pressure, was ignited by an unknown source and set the barge, tugboat, and tank battery on fire. Four of the six persons on the barge drowned in their attempt to escape. The fire was extinguished about 1030; damage was estimated at \$500,000. 1/

The accident occurred while the barge was being maneuvered into a mooring position. The Safety Board determined that the crane operator, who was in charge, failed to survey the channel for pipeline crossings near the tank battery before dropping the spud. Normally, mooring at the tank battery was made using mooring lines tied to piling clusters along the tank battery. The use of spuds for mooring at a tank battery was permitted, but only when special precautions were taken. Usually, a Texaco supervisor would be at the tank battery to take charge of the operation. The precautions included probing the bottom of a channel to locate any pipelines, and then easing the spud into position to avoid the pipelines.

The crane barge had been scheduled first for cribbing repairs at oil well No. 160 and then for a pump replacement at tank battery No. 205. There had been no arrangements made for Texaco supervision at the oil well. The schedule as planned would have permitted time for the head roustabout to disconnect the pump while the cribbing repairs were made. The crane operator in charge of the barge deviated from the schedule and went directly to the tank battery. Had the barge been met by the head roustabout or some other supervisor, who had knowledge of the local hazards to direct the mooring operations, the spud might not have been dropped. There were no signs on the tank battery to prohibit mooring with spuds in the channel opposite the tank battery.

1/ For more detailed information read "Marine Accident Report--Crane Barge C. L. DILL 10 Fire, Garden Island Bay, Mississippi River Delta, June 5, 1979" (NTSB-MAR-80-9).

The Safety Board was unable to determine how the fire started. Exhaust from diesel engines and sparks from an operating generator onboard the barge were available sources of ignition. The source of ignition also could have been lighted tobacco products. The crane operator, barge foreman, and one laborer smoked. There were no signs on the tank battery prohibiting smoking, and someone on the barge who was unaware of the no-smoking rule may have been smoking.

Five groups of pipelines crossed below the 8- to 10-foot-deep channel at the tank battery, and two of the groups, separated by about 25 feet, crossed in front of the main platform. Texaco records indicated that all pipelines were laid between the early 1950's and the mid 1960's, and were either oil flow or gas lift pipelines. Most of the 29 pipelines were still in use. According to Texaco, it was normal practice to have the groups of pipelines protected as well as marked only where they surfaced along the spoil bank opposite the tank battery. This was done by driving single, 5-foot-high (above high water) piling clusters upstream and downstream of each group. However, the group of pipelines which included the 4-inch separated pipeline had only an upstream piling cluster and another group, located about 175 feet downstream, had none. There were no protective pilings on the tank battery side of the channel.

The high-pressure gas line that was struck was made up of sections of 4-inch-diameter, plastic-coated, thread-and-collar, seamless steel pipe. The ends of the pipe sections had tapered male threads which were connected by pipe collars of mating threads. The pipeline was normally operated under a pressure of about 700 psig at ambient temperature. The pipe had a design pressure of about 960 psig for gas temperatures up to 250° F, as required by 49 CFR 192.

Divers found the damaged 4-inch pipeline buried about 6 feet below soft mud and sand beneath the channel. Examination of the pipeline indicated that it had separated at a collar when the spud impinged against the upstream side of the pipe. The pipeline met the U.S. Army Corps of Engineers requirement that it be buried at least 4 feet below the channel bed; however, the depth at which the pipeline had been buried apparently was insufficient to protect it from the dropped spud.

Therefore, the National Transportation Safety Board recommends that the U.S. Army Corps of Engineers:

Reassess the criteria used to determine the safe depth at which pipelines carrying oil or pressurized natural gas should be buried to protect against anchors and mooring spuds, and implement requirements based on the reassessment. (Class II, Priority Action)
(M-80-43)

KING, Chairman, GOLDMAN and BURSLEY, Members, concurred in this recommendation. DRIVER, Vice Chairman, and McADAMS, Member, did not participate.

for
By: *James B. King*
Chairman