

NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: September 9, 1977

 Forwarded to:

 Mr. Edward L. Patton
 Chairman
 Alyeska Pipeline Service Company
 1835 S. Bragaw
 Anchorage, Alaska 99504

SAFETY RECOMMENDATION(S)
P-77-21 through 23

About 3:45 p.m. Anchorage Time, July 8, 1977, an explosion and fire occurred at Alyeska Pipeline Service Company's (Alyeska) Pump Station No. 8 on the Trans-Alaska pipeline. As a result of the accident one person died and five persons were injured.

The National Transportation Safety Board's ongoing investigation indicates that the explosion at Pump Station No. 8 occurred when crude oil was turned into Pump No. 1 while the workers were servicing the pump's strainer. The oil under a pressure of about 400 psig sprayed out of the open cover and rapidly filled the building with vaporized crude oil. The vapor was ignited by one of several possible sources and exploded. The force of the explosion heavily damaged the building and the gushing crude oil was ignited; the station was shut down and isolated from the pipeline within minutes. The damage to the environment was minimal, but the pump station was practically destroyed.

Information obtained after interrogating personnel directly affected by this accident revealed that before removing and cleaning the No. 1 pump's strainer, the selector switch for the No. 1 pump suction valve's motor operator had been placed in the manual position to allow the men in the pump room to close this valve and then drain the crude oil out of the strainer. However, after the valve was closed the control for the valve operator was not "locked out" electrically to render the No. 1 pump suction valve inoperative as the Alyeska company procedures direct. Later, while the men in the pump room were opening the strainer, the selector switch was repositioned from the manual position to the automatic position. This action caused the suction valve to begin to open allowing the crude oil stream to enter the partially opened strainer.

Although the men in the pump room immediately saw the crude oil enter the strainer and would have had time to stop it, they were unable to do so because the pump suction valve could not be operated from the pump room when its selector switch was in the automatic position.

Additional testimony revealed that in the ensuing confusion caused by the now spraying and vaporizing crude oil, the men in the pump room radioed the pump station control room to shut down, but they did not specify the No. 1 pump. The pump station control room personnel were unable to see into any part of the pump room because the pump room was completely enclosed as a protection against the Arctic weather conditions. Therefore, they were not aware of the No. 1 pump suction valve opening and they complied with the order to shut down by shutting down No. 2 which was running at the time. The pump station design is such that neither the pump room nor the turbine room is visible from the pump station control room.

Therefore, because of the inability to control the valves or to shut down the pumps from the pump room, and because of the inability of personnel in the pump station control room to monitor operations visually in the pump room and turbine room, the National Transportation Safety Board recommends that the Alyeska Pipeline Service Company:

Install a control in the pump room to shut down the pumps from that location. (Class I, Urgent Followup) (P-77-21)

Install a control in the pump room to operate the pump valves from that location at any time. (Class I, Urgent Followup) (P-77-22)

Install a closed circuit-type video camera in the pump room and turbine room to allow the pump station control center to monitor visually all activities at these locations. (Class I, Urgent Followup) (P-77-23)

TODD, Chairman, BAILEY, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendations. HALEY, Member, did not participate.



By: Kay Bailey
Acting Chairman