



Bulletin No. 16

July 27, 1995

## Dockside Crane Operations: Three Recent Fatalities Raise Safety Concerns

Between November 1994 and June 1995, three occupational fatalities occurred during dockside crane operations in Alaska. Because the use of dockside cranes for water transportation (logs, fishing equipment, wood products, general cargo) is widespread, these deaths have raised concerns about safe use of cranes in these work environments.

**Case 1:** On November 28, 1994, a worker operating a crane was killed as he attempted to lift a bundle of logs from a truck to the adjacent bay for water transportation. As the worker moved the crane boom toward the bay, the crane tipped over into the bay. The victim was removed from the water, but resuscitation efforts were unsuccessful.

**Case 2:** On May 18, 1995, a worker operating a crane was killed as he attempted to lift a large rock from the bottom of the bay at a dock embankment. As the worker moved the crane boom toward the dock with the rock above the surface of the water, the crane tipped over into the bay and supporting dock structure. A diver, who had attached the rock to the crane cable, brought the victim to the surface. Although the victim was breathing with no apparent external injuries at the time, he later went into respiratory arrest at the scene and was pronounced dead at a nearby hospital.

**Case 3:** On June 28, 1995, a worker operating a boom crane-equipped truck was killed as he attempted to load a fishing net onto a vessel at the dock. The truck apparently became unbalanced as the boom moved from the dock toward the vessel; this movement caused the load to begin a pendulum motion which resulted in the vehicle tipping onto its side against the dock railing. The victim died as a result of massive head trauma.

A number of common factors were found during subsequent investigations. In all three cases, the vehicles became unbalanced because of failure to use safe crane operation procedures (e.g. boom loading specifications) or failure to appropriately use vehicle equipment (e.g., outriggers). Specific examples include: failure to use vehicle outriggers when required by the boom extension and load weight (per manufacturer's specifications); and lack of familiarity by operators of individual crane model's lifting capacities, appropriate boom angles, extensions, and orientations. Another factor in these cases was inadequate training and experience of the operators. None of the victims had specific training. All had minimal familiarity with the crane models they were operating. In the three cases described above, there was a combined total of only 5-weeks experience in the specific crane models used. Because each crane model has specific loading parameters, operators cannot assume that all cranes can be safely operated based on their experience on other crane types. In one case, the worker nearly overturned the crane the day before the fatality. Such incidents may reinforce the continuation of unsafe operating techniques or behavior.

Dockside cranes pose multiple hazards, including their location on water shipping terminals. They can be safely operated through careful adherence to manufacturer's specifications and regulations governing crane use. The following recommendations can prevent future occurrences of similar events:

- 1) Operators must receive adequate model-specific training on the crane they plan to operate. This training must be in addition to on-the-job training.**
- 2) Operators must be familiar with crane boom loading specifications, and boom dynamics (e.g., effects of moving loads on vehicle stability).**
- 3) Operators must fully deploy out-riggers and other stability-enhancing devices when required by the weight of the load and associated boom characteristics.**
- 4) The environmental surface must be conducive to appropriate use of equipment (e.g., level terrain capable of supporting the crane in use, ample space for outrigger extension and boom swing radius, avoidance of overhead power lines).**