



Abstract of a Mishap

Accident Type: Damage to Crane

Injury: None

Type of Work: Concrete Formwork

Equipment: Manitowoc 4100W crawler crane, tower configuration - 163 ft tower, 150 ft boom

Location: Keesler AFB, FY06 Dormitory project

DESCRIPTION OF THE MISHAP:

At approximately 0820 on 31 October 2008, after performing startup checks and conducting two lifts, the crane operator experienced a failure of the crane boom hoist to respond to the control. The operator moved the crane away from the work, asked observers to visually check the boom and its hoist drum for movement and then attempted to boom down. The hoist drum was found to be intermittently moving very slowly. Before the operator took additional action to shut down the machine, the hoist pulled the boom straight up and over backwards, collapsing the boom and tower to the ground behind the machine. The spotters were focused on the hoist drum and did not recognize that the boom was in an imminent failure situation. There were no injuries and damage was isolated to the crane.

DIRECT CAUSE:

Investigation on site indicates the boom hoist control valve stuck in a partially up position and did not move to the neutral or down positions when the control lever was operated. . The machine has been moved to the rental company location for further examination and confirmation of the valve failure.

INDIRECT CAUSE:

The crane had experienced a similar boom hoist control problem once in the previous two weeks. It was reported to the rental company mechanic who was on site replacing an alternator belt. The mechanic asked the operator to demonstrate the problem, but the operator could not duplicate the control issue. The mechanic and operator decided this was not cause for immediate concern and the crane remained in service.

ROOT CAUSE:

Mechanical failure of the crane hydraulic controls is considered the root cause of the mishap. However, EM 385 16.A.03 directs that equipment shall be immediately taken out of service whenever a deficiency that affects the safe operation is observed. Despite experiencing an intermittent failure of the boom operating controls, the operator did not identify this as an unsafe condition and take the crane out of service.

LESSONS LEARNED:

To ensure the provisions of EM 385 16.A.03 are followed and similar incidents are prevented, contractors need to train crane operators to understand that problems with a crane's operating controls constitute an unsafe condition. In this instance, the contractor has codified a policy regarding actions required when crane operating controls are shown to be deficient and is in the process of training all of their crane operators on this incident, and the necessary actions to achieve a safe shutdown.

