



**DEPARTMENT OF MINERALS AND ENERGY
WESTERN AUSTRALIA**

SIGNIFICANT INCIDENT REPORT NO. 54

STRUCTURAL COLLAPSE OF AN IRON ORE STACKER

INCIDENT

During January 1995 a maintenance engineer received a fractured foot and severe concussion whilst lowering the tip of the conveyor boom of an iron ore stacker close to the stockpile ground level for the purpose of maintenance access to the dust shroud.

In order to fully lower the conveyor boom, maintenance personnel had intentionally overridden the luff down limit switches. The conveyor boom was lowered to such an extent that the jib contacted the cross beam and this caused the hoist ropes to become slack. Once the hoist ropes were slack the mast had no top lateral support and therefore buckled, and consequently the counterweight boom buckled and fell to the ground.

A structural collapse of this magnitude has the potential for serious or fatal injuries.

COMMENT

The design of this stacker did not take account of the stability of the mast and counterweight support structure during a slack rope condition, because it was believed the luff limit switches protected the machine from developing a slack rope situation. However, adequate work procedures were not in place to stop maintenance personnel from overriding the luff limit switches.

Luff limit switches and tilt switches are not considered to be a totally safe system on their own.

../2

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RECOMMENDATIONS

1. Owners of all similar rope link suspension machines should undertake design checks to ensure that all structural members and connections would remain stable in the event of a slack rope situation or rope failures occurring.
2. Work procedures need to be reviewed to ensure that maintenance personnel do not override protective devices on such machines.

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24 May 1995

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