Department of Consumer and Employment Protection
Government of Western Australia

Resources Safety

Mines Safety
Significant Incident Report No. 147

Fire and entrapment hazard on mobile plant (salt harvester)

Incident

During salt harvesting operations, unknown to the operator, a fire occurred within the machinery of the salt harvester. The fire was brought to the attention of the operator by a grader driver working in the vicinity.

While attempting to escape from the harvester, the operator was unable to exit by the cabin door due to the heat from the flames. In the absence of a second egress, the operator was forced to break the front windscreen of the cabin, exit the machine via the front access platform and use the cross travel conveyor to jump across onto a full salt trailer, which was moved into position to allow this.

The operator received a laceration to the right lower leg from the broken windscreen and was extremely lucky not to be trapped.

The harvester was a modified, experimental machine being developed by the company. There was no fire suppression equipment installed on the harvester at the time of the incident.

Contributing factors

The following were identified as likely contributors to the incident:

- Hydraulic components located in close proximity to ignition sources without shielding or design separation.
- The harvester was an experimental machine, modified with elements designed on site by the operating company.

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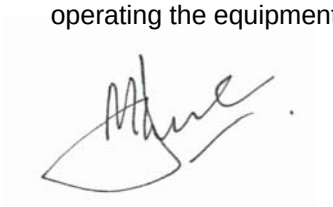
- The original fire suppression system was not redesigned and refitted to the machine after modification.
- The cabin of the harvester was situated directly above the engine. The location of the cabin above the engine prevented the operator from identifying the presence of the fire before it became well established.
- The harvester was equipped with two means of egress that were both rendered inaccessible during the fire, due to the location of the stairs proximal to the engine compartment.
- A lack of emergency training for operators of the harvester was identified.

Recommendations

Section 14 of the *Mines Safety and Inspection Act 1994* places a duty on persons who design and manufacture plant for use at a mine to ensure that persons who use or maintain the plant are not exposed to hazards. Under the Part 6 regulations, the principal employer and every other employer at the mine must ensure that all risks and hazards associated with plant are identified and controlled.

- Mobile plant hydraulic components should be shielded from ignition sources.
- Consideration should be given to the use of double braided or sleeved hydraulic hoses to reduce the likelihood of hose failures and, consequently, oil sprays coming into contact with hot parts.
- Fuel and oil tanks should be appropriately located with respect to the operator's cabin.
- All large mobile plant with high temperature duty cycles should be fitted with a suitable fixed fire suppression system — such as aqueous film-forming foam (AFFF) or film-forming fluoro-protein (FFFP) systems — with adequate spray coverage to reach all potential fire sources. Where fires within the machinery are not easily identified by the operator, an automatic self-activating system should be considered.
- Appropriate gauges and/or audible or visual alarms should be fitted to notify the operator of fire in the engine compartment.
- All fixed and mobile plant must be equipped with a safe means of access and egress for both normal and emergency conditions. The means of egress provided for an emergency should be located in and routed through areas a safe distance away from potential fire hazards.
- Mobile plant cabins need to be provided with an adequate means of exit maintained in an operable condition at all times. This may require more than one means of egress for emergency use.
- Cabin windows that might be used as a means of egress in case of emergency should preferably be of the removable type or, if it is contemplated that that the window would be broken to provide egress, be glazed with glass that breaks into small pieces and can be removed without any danger of jagged edges.
- An adequate emergency response plan with the appropriate backup capability including fire and rescue equipment and trained personnel must be provided at all mines.
- Operators need to be trained in the safe emergency egress procedures for mobile plant prior to operating the equipment.



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