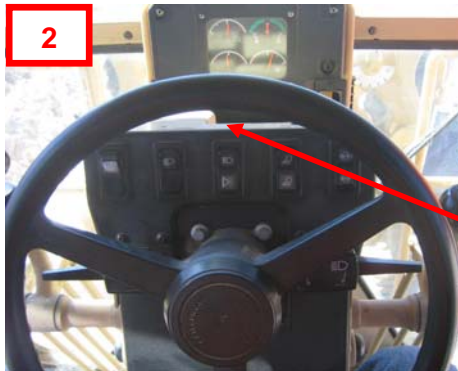
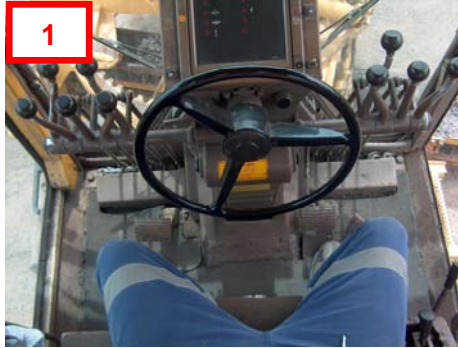
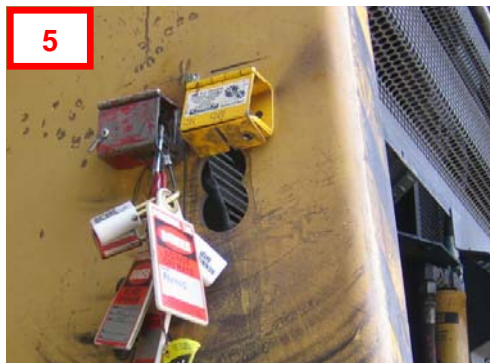


Risks to be mitigated



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11. Controls and Displays (V1.4 2008)	
Objective	The objective is to minimise risk of operator error related to the understanding or use of controls and displays (including labelling) to ALARP, including consideration in design for foreseeable human error.
General outcome	The intended design outcome should include the following: <ul style="list-style-type: none"> • Controls and displays that are appropriately located, intuitive to use, consistent and failsafe. • Warnings and alarms that are designed to be detectable, unambiguous, simple and meaningful. If multiple alarms are possible then they should be tested and integrated so that they minimise the risk of overloading an operator. • Labels that are durable, clear and appropriately positioned. In addition, the intended design outcome should minimise injury from contact with controls and displays in the event of a collision/accident.
Risks to be mitigated	<ol style="list-style-type: none"> 1. Risk of incorrect use of equipment controls, due to their being: <ol style="list-style-type: none"> a. not fully understood or misunderstood, b. not easily reachable (particularly frequently used and/or safety critical ones), c. not consistent with other controls, d. not matching the associated displays e. not appropriately considering simultaneous control operation f. unintentionally operated g. incorrectly selected h. in an unexpected operating mode (mode errors) 2. Risk of visual displays being illegible, not visible or incomprehensible (e.g. auxiliary equipment interfering with visibility of primary displays) 3. Risk of warnings and alarms: <ol style="list-style-type: none"> a. Not being seen/heard or understood, b. Not being reliable or sufficiently sensitive c. Being overused, ignored, and compromised, 4. Risk of incorrect/inaccurate calibration or maintenance of displays, warnings or alarms 5. Risk of ineffective labels due to their: <ol style="list-style-type: none"> a. not being durable, clear, readable and understandable, b. not using standardised terminology, c. not being positioned appropriately with the control or hazard. 6. Risk of symbols used in labels, displays and warnings not being fully understood or being misunderstood. 7. Risk of injury from controls and displays that protrude, have sharp edges, or have become loose
Examples of industry attempts to mitigate risks	<ol style="list-style-type: none"> a. Indicators, gauges, meters and lights monitoring the condition of the equipment are clearly visible from the operator's position, day or night (e.g. backlit and adjustable) b. Instruments, controls and other gauges that are marked in colour coded metric units; gauges with a single scale with no multipliers c. Self test facility to test warning lights d. Instrument panels made up of a number of easily removable modules to enable various instruments and the wiring loom to be easily serviced e. Labels designed/fitted to be permanent, durable and readable, fitted to non-removable parts where possible (e.g. frame). f. Labelling of location of emergency egress points and emergency stop. g. Designated isolation points clearly labelled to identify the system they control. h. Where isolation points are located behind engine, or other covers, clear isolation labels located both beside the isolation point and on the outside of the cover i. An indicator to display when an engine shutdown timer is activated. The 'off' switch and indicating light mounted (and labelled) on the front dash of the cabin. j. Label showing all limits of application (such as maximum vehicle height) k. Warning and danger signs – labelling for all specific hazards & tasks e.g. noise l. Designated towing, jacking and supporting locations labelled m. Making control and displays low profile, secure and smooth to minimise injury risk in the case of an accident.

Industry attempts to mitigate risks

