Online survey

PART 14: CRANES AND HOISTS

EQUIPMENT OPERATION

Operator's duties	**14.37.1**	**The operator of a crane, hoist or boom truck must have full control of the equipment controls whenever the hoisting equipment is in use, and engaged in no other duties while operating the equipment.**

Explanatory Note:

In June 2005 a worker was fatally injured when struck by the overhaul ball of a mobile crane. The overhaul ball lowered unexpectedly and struck the worker when the brake on the hoist drum for the load line did not properly engage when set by the operator before the operator left the controls to attend to other duties. The BC Coroners Service *Judgement of Inquiry* into this death made several recommendations directed to WorkSafeBC and the *Occupational Health and Safety Regulation* ("*OHSR*"). This proposed change addresses one of those recommendations, related to operator's duties and supervision.

The relevant *Judgement of Inquiry* Recommendation reads as follows:

> *"8) That Part 14: Cranes and Hoists, of the OHSR be amended by requiring that all critical lifts (defined in such a way so as to include all situations in which persons on the ground may be at risk of being struck by a suspended load, or any part of the mobile crane) be made under the direction of a qualified supervisor who is not operating the crane, or otherwise involved in the operation of another piece of lifting equipment."*

WorkSafeBC has considered this recommendation and took the proposed wording for a new section 14.37.1 to consultation in December 2007/January 2008.

A number of regulation changes made to Part 14 of the *OHSR* in 2006 and 2007, such as those related to crane operator certification, critical lift definition, tandem lift and critical lift requirements for preplanning and crew meeting prior to the start of lifting operations, and overall site supervision, are beneficial in addressing some aspects of the *Judgement of Inquiry* Recommendation 8.

The requirement added in 2006 for crane operators to be certified (section 14.34.1 of the *OHSR*) has resulted in approximately 10,000 people being registered as operators and is expected to improve the overall competency of crane operations.

The 2007 amendments to the *OHSR*, which became effective February 1, 2008, provide a definition of critical lift, and also requirements for a tandem lift and critical lift. A tandem lift requires a supervisor who is not operating a crane or hoist. A critical lift does not require such a supervisor but does require a written lift plan, a pre-job crew meeting immediately before starting lifting operations, and that effective communications be established and maintained between all people involved in the lift. The 2007 amendments also provide a new section 14.38(6) which will require the employer or prime contractor provide overall supervision and control on the worksite so people not involved in the lifting operation do not need to be supervised by the crane crew.

The definition proposed by the *Judgement of Inquiry* Recommendation for "critical lift" is very broad and would mean that if any person was within the reach of the crane or any possible load path, then a supervisor would be required. Implementing this recommendation would be impracticable. Broadening the *OHSR* definition of critical lift to reflect the proposal in the Coroner's Inquiry Recommendation 8 is not recommended.

WorkSafeBC proposes adding a new clause restricting the duties that may be assigned to or undertaken by a crane operator similar to section 20.52 of the *OHSR* which sets out "Operator's duties" for the operator of a concrete pump and placing boom or mast. This section states:

20.52 Operator's duties

The operator of a concrete placing boom or mast must have full control of the pump and placing equipment controls whenever the equipment is operating and engage in no other duties while operating the concrete pump and placing boom or mast.

Generally industry has been training crane operators to “own the lift”, meaning the operator should understand all parameters of the lift about to be made and the role of each person involved in the lift, and to introduce a new role for a supervisor of the lift would likely take away from the operator’s sense of overall obligation to ensure the lift can be safely made. An experienced (and certified) operator is expected to have the skills and knowledge to operate the crane without constant or ongoing direct supervision and to ask questions about load weights and rigging points if the operator is not satisfied these have been properly determined and communicated to the operator. A person training to be a crane or hoist operator should be operating under the direct and close supervision of a certified operator.

In proposed section 14.37.1, “in use” is intended to include equipment set up and take down as well as any time the equipment is being positioned to lift a load or is supporting a load.

Withdrawal of proposed section 14.63.1, Hoist drum brake systems

A proposal to require two brake systems on hoist drums operated with friction controls was taken to consultation. Based on a review of stakeholder feedback at consultation, this proposal has been withdrawn. The background for the proposal and the reason for its withdrawal are set out below.

Explanatory Note:

In June 2005 a worker was fatally injured when struck by the overhaul ball of a mobile crane. The overhaul ball lowered unexpectedly and struck the worker when the brake on the hoist drum for the load line did not properly engage when set by the operator before the operator left the controls to attend to other duties. The BC Coroners Service *Judgement of Inquiry* into this death made several recommendations directed to WorkSafeBC and the *Occupational Health and Safety Regulation* ("*OHSR"*), including recommendations aimed at requiring a second brake system on hoist drums.

The relevant *Judgement of Inquiry* recommendations read as follows:

> *"6) That the OHSR be amended to adopt the future revision of CSA Standard Z150 which will require that a positive secondary drum brake system be installed and used on all operating load hoists;*
>
> *7) Alternatively, that WorkSafeBC act independently of CSA and implement in the OHSR a specific requirement that a positive secondary drum brake system be installed and used on all operating load hoists being used in all crane operations in British Columbia;*
>
> *9) That Part 14: Cranes and Hoists, of the OHSR be amended by requiring that crane operators not leave their seat and/or crane controls without first engaging a secondary brake system."*

The concept of requiring a second brake on hoist drums is only relevant to mobile cranes with hoist drums operated using friction controls. These types of controls work by the operator applying power to the hoist drum through a clutch (friction) mechanism when the load line is to be spooled on or off the drum, and the operator applies a brake to secure the hoist drum from moving when the clutch for the drum is disengaged and the load line is to remain stationary. Note this type of control system requires the operator to engage the clutch to apply power to move the load line and to manually apply the brake to secure the drum and load line against movement when the clutch is disengaged. This manual application of a brake is not necessary for a hydraulically-controlled mobile crane as the crane motion automatically stops when the hoist control lever is released and returns to the neutral position, and the "second brake" capability is effectively provided by the design of the hydraulic system.

Generally the main hoist on a crane with friction controls has, in addition to the normal operating brake, a positive drum securing means in the form of a dog (ratchet and pawl mechanism) that can be set by the operator to engage the drum and secure it against rotation. The auxiliary hoist (or hoists) on such a crane generally does not have such a holding mechanism. Initially WorkSafeBC thought a second brake system could be fitted to secure these hoist drums at an estimated cost of $2000-4000 per hoist. However, additional inquiries by WorkSafeBC and feedback received during Consultation have lead WorkSafeBC to conclude fitting a second brake system is not practicable. Accordingly, the proposal to require a mobile crane with friction controls have two brake systems on hoist drums operated by friction controls, and that the operator be required to engage both brakes before leaving the operator's seat or crane controls, has been withdrawn.

WorkSafeBC is represented on the Technical Committee for the *CSA Standard Z150 Safety Code for Mobile Cranes*. The Committee is aware of the above *Judgement of Inquiry* recommendations and has discussed them at the Committee level. The Committee's position on the matter of a future edition of the code requiring a second drum securing system and the possible timing for any code change is not known. If the Committee does proceed with a change to the safety code to require a second brake or

drum securing means on each hoist, the requirement would in all likelihood not be retroactive to existing machines. And if the CSA Standard is revised to adopt part or all of the Coroner's recommendation regarding drum securing systems, WorkSafeBC would revisit this issue at that time.