Compliance Review

Crane Operator Online Training

The purpose of this document is to outline the compliance review for the eSafetyFirst Canada (eSafety) Crane Operator Online Training course. The course was viewed in its entirety and then reviewed module by module to determine compliance with the legislation and standards outlined in the next paragraph. Each section will contain recommendations for changes or revisions required to meet compliance and non-technical recommendations to improve or correct content.

In writing this report the writer endeavoured to incorporate regulatory mandates from internet accessible material from **British Columbia** (*WorkSafeBC OHS Regulation Part 14*), **Alberta** (*OHS Code Part 6 & Part 19*), **Ontario** (*O. Reg. 213/91 & O. Reg. 851*), and **Quebec** (*CNESST RSST & CSTC*), alongside **CSA Standards Z248-17** (Tower Cranes), **CSA B167-16** (Overhead Cranes), and **CSA Z150** (Mobile Cranes).

The eSafety Crane Operator Online Training course does not measure any practical training and also emphasizes that all participants must complete a practical training session separately their employer, supervisor, or qualified designate to meet requirements to safely operate a crane.

Therefore, this report will focus on the theory portion pertaining to crane operator training and will note if the course requires revisions to meet the CSA Standard or any outstanding points as required by provincial OHS legislation.

The eSafetyFirst course also provides a robust supplementary information article regarding crane operator training and other useful information, it can be found here, https://esafetyfirst.com/blog/crane-safety-in-canada-ensuring-safe-and-productive-worksites/. The course confirms theory component understanding using quizzes.

Due to the amount of corrections and comments, please see anything under **Important Compliance Notes in RED,** the remaining content corrections and comments are in black.

This is an amended report. All addressed and completed corrective actions are noted in **BOLD RED** font.

Introduction to Crane Safety Training

To meet compliance and adhere to the referenced standards once reaching the end of this module, the student must be able to:

- **Define Regulatory Compliance & Roles:**
    - Explain the hierarchy of safety governance in Canada, including provincial OHS Acts/Regulations (WorkSafeBC, Alberta OHS, Ontario MOL/OHSA, CNESST in Quebec) and applicable CSA standards (CSA Z248-17, B167-16, Z150).

- Identify employer, supervisor, operator, and rigger responsibilities regarding competency, qualification, and workplace safety under Canadian provincial OHS laws.
- Recognize that online theoretical certification satisfies cognitive knowledge requirements but **must be paired with employer-verified practical evaluation** prior to authorized workplace operation.

Between the online blog and the course material in Module 1 these points are met with the material.

- **Identify Crane Definitions & Core Components:**
  - Define what constitutes a crane and distinguish between major structural, mechanical, and electrical components (e.g., boom, jib, hoist mechanism, trolley, bridge, outriggers, load block, wire rope).

Important compliance notes: ~~The course reviewed the main components, leveler, pulley, hydraulic cylinder. However, there is so much more that an operator must know beyond that.~~ ~~**The course falls short**~~ ~~of providing a good overview of the components of a crane. The course mentions things like masts, jibs, and outriggers later in other modules but nowhere does it provide the learner with what these parts do or look like. The course does not meet the necessary outcomes in this point to be considered compliant.~~

~~Canadian Safety Association (CSA) standards mandate that operators understand the specific mechanical and structural components of the equipment they operate:~~

- ~~**CSA B167-16 (Overhead Cranes):** Explicitly requires operators to be trained on the functions, limits, and inspection criteria of the **bridge, trolley, hoist mechanism, load block, and wire rope**.~~
- ~~**CSA Z150 (Mobile Cranes):** Mandates comprehensive knowledge of structural components including **booms, jibs, outriggers/stabilizers, load blocks, and counterweights**, along with how these components interact with load charts.~~
- ~~**CSA Z248-17 (Tower Cranes):** Requires detailed coverage of the **mast, slewing ring, counter-jib, trolley, and jib assembly**.~~

~~Referring only to "pulleys, levers, and hydraulic cylinders" does not teach enough to meet compliance.~~

A detailed slide showing different components has been added that corrects this.

Provincial regulations in **BC, Alberta, Ontario, and Quebec** require employers to ensure operators are trained to a standard of **competency**. A worker cannot be deemed competent under provincial OHS laws if they cannot identify or inspect key safety components on their machine:

- **Pre-Operational Inspections:** How can an operator perform a legally mandated daily pre-use inspection if the course never shows them what an **outrigger lock**, a **trolley stop**, a **load block safety latch**, or a **boom angle indicator** looks like or how it functions?

- **Hazard Identification:** Components like outriggers (ground pressure hazards) and jibs (structural capacity limits) carry specific operational hazards. Failing to teach these components directly compromises workplace safety.

- **Analyze Lifting Gear & Below-the-Hook Attachments (slings and spreader bars):**
    - Identify types, ratings, and application limits of rigged components, including synthetic slings, wire rope slings, alloy steel chain slings, shackles, eyebolts, and spreader bars.
    - Explain the rejection and removal-from-service criteria for damaged slings and hardware in accordance with manufacturer guidelines and CSA rules.

~~The course is very clear on slings, eyes, hooks, and what constitutes removing them from service. However, **the course does not cover spreader bars,** and they should be added to the next revision.~~

A revised image has been added that corrects this.

- **Evaluate Crane Hazards:**
    - Recognize primary workplace hazards associated with crane operations, including overhead powerline contact (limits of approach per provincial regulations), ground instability, side-loading, pinch points, structural overload, and adverse environmental conditions (e.g., wind thresholds per CSA Z248-17).

The course is very thorough on crane hazards covering them in Module 1 but also reinforcing them in other modules. This meets compliance.

Other content that needs correction:

~~**Slide 21:** 1st blue box says 3 broken wires in "none" strand, should be in one strand. It also mentions kinking or bird caging. It would be good to have a diagram or picture. Unless the person has worked with flexible steel wire rope (FSWR) before they won't know.~~ **Spelling error has been corrected**

~~**Slides 22-24:** Talk about metal mesh sling but no images at all. It would be better to have at least one image of a metal mesh sling.~~ **A revised image has been added that corrects this.**

~~**Slide 27:** talks about natural or synthetic rope slings but the image shows FSWR.~~ **A revised image has been added that corrects this.**

~~**Slide 32 (Electrical Hazards):** talks about electrocution from the leveler or "book" making contact with the wires. It can only be assumed the writer meant boom or possibly hook.~~ **Spelling error has been corrected.**

~~**Slide 37:** It repeats slide 34~~ – **Slide removed to correct this.**

Safe Operating Procedures

To meet compliance and adhere to the referenced standards once reaching the end of this module, the student must be able to:

- **Principles of Rigging & Load Attachment:**
    - Explain safe rigging practices, including basket, choker, and vertical hitch configurations and their corresponding load capacity reductions.
    - Differentiate between sling angle factors and calculate the increased tension on sling legs as sling angles decrease.
- **Centre of Gravity & Load Balance:**
    - Explain the physical principles of Centre of Gravity (CG) and its critical role in maintain balance and load control during a lift.
    - Identify procedures for locating the CG on irregular or unbalanced loads before hoisting.
- **Moving Loads Safely:**
    - Describe safe lifting, traveling, slewing/swinging, and landing techniques to prevent load shock-loading, swing (pendulum effect), and tag-line misuse.
    - Identify procedures for maintaining clear line-of-sight or continuous communication during obscured lifts.
    - Explain safe practices when lifting near obstacles, workers, or restricted areas according to provincial OHS requirements.
- **Crane Safety After Use & Securing Equipment:**
    - Detail proper shut-down and securing procedures for different crane types (e.g., raising blocks, placing controls in neutral, locking out power, setting brakes/anchors, weather-vaning for tower cranes per CSA Z248-17).
    - Identify post-operation reporting procedures for operational anomalies or defect logging.

The course covers these points well in the narration and material However, please see important compliance notes below.

Important compliance notes:

- ~~**Slide 4: This slide needs to be redone.** The slide looks like it is using instructions from a very specific facility's internal Standard Operating Procedure (SOP) (likely a university lab, research center, or manufacturing plant with an "experimental hall"). Including ultra-specific directions like *"to the left of the experimental hall door"* in a general or provincial safety course is confusing, irrelevant, and incorrect for anyone not working in that exact building. It looks like a misspelling, **"log-out tags"**, which is possibly a typo for **"lock-out**~~

tags" (as in Lockout/Tagout or LOTO). **The top box** tells the operator to test the upper limit switch by hoisting up slowly. Then **the middle box** suddenly shifts to the physical location of a main electrical panel in a specific facility which is very confusing.**The bottom box** says *"Pull the lever down to the place in the off position"*—which awkwardly jumps straight to shutting off power, rather than finishing a clear step-by-step procedure for testing a limit switch. **The slide has been edited, and it addresses and corrects this issue**

- **Slide 6:** The image in the slide is appearing to demonstrate about how the rigging and load block might be positioned. However it is talking about the **drum** (hoist drum) which is the cylindrical spool inside the hoist/winch mechanism around which the wire rope wraps. It stays up on the crane's trolley or boom structure. You don't position the drum over a load; you position the **hook** (or the **hoist unit / boom tip / load block**) directly over the load. It also looks like the author is trying to explain the rule against **"side loading"** (or side pulling). When a lift isn't centered vertically, it introduces sideways stress. While side loading *can* cause the wire rope to jump out of its grooves and jam or scrub against the hoist **drum**, telling an operator to "position the drum" makes no sense operationally. **What the Slide Should Say** *"The **hook or load block** of a crane or hoist shall be positioned directly over the centre of gravity of the load to prevent side loading."* **The slide has been edited, and it addresses and corrects this issue**

Other content that needs correction:

- **Slide 7:** Is talking about positioning the sling so the load is balanced but the image shows someone using a wired remote for a hoist. A slide this important should at least have a drawing. **A revised image has been added that corrects this.**
- **Slide 8:** Is talking about steep angles for slings. The image shows a gantry crane using a spreader bar with frames. There is no sling pictured. This needs to be changed. **The report says it has been corrected, no image provided.**
- **Slide 10:** Talks about rigging tips but it covers operation. There is nothing on the slide that covers rigging. It also talks about no one is to ride the crane without permission. This is misleading as other than the operator nobody is permitted to ride crane under any circumstances. **The slide has been revised and this is corrected.**
- **Slide 25:** Covers safe lifting procedures. The very first box says weight of item to be lifted. The correct instruction should be gross weight and explain this is the weight of item to be lifted and the rigging. **The report says it has been corrected, no image provided.**
- **Slide 26:** talks about standing clear of the "swing radius of this machine" which is good information, nobody should be in the swing radius when the load is being moved. The image shows an overhead trolley crane which will not swing. The wording should be changed as well to read something like "All workers must be clear of the crane swing radius while the load is being moved" – **The slide and image have been revised which corrects this issue.**
- **Slide 27:** The wording should be changed. You cannot check the connections on a hoisted load except possibly visually from a distance which is ineffective. Further to that the first

~~paragraph talks about the crane moving. So the slide could be misinterpreted.~~ **The slides mentioning this have both been revised and this is corrected.**

- ~~**Slide 33:** Talks about things to avoid. However, the second box on the left says to avoid Opening the main switch to the OFF position. This makes no sense as it is standard to power down or to LOTO the machine. Whereas slide 35 covers the main switch to the OFF position.~~ **The slide has been revised to correct this issue.**

Inspection and Maintenance

To meet compliance and adhere to the referenced standards once reaching the end of this module, the student must be able to:

- **Inspection Categories & Frequency:**
    - Distinguish between **Frequent** (daily/pre-operational), **Periodic** (monthly/quarterly), and **Annual** inspection scopes and requirements under CSA B167-16, CSA Z150, and CSA Z248-17.
    - Identify required items on a pre-operational checklist (e.g., limit switches, brakes, emergency stop buttons, wire rope condition, fluid leaks, structural damage).
- **Inspection & Maintenance Responsibilities:**
    - Explain the distinction between the operator's duty to perform pre-use checks versus a certified technician's role in performing scheduled preventative maintenance and load testing.
    - Detail proper Lockout/Tagout (LOTO) and Tag-Out procedures when a crane fails inspection or requires repair.
- **Personnel Requirements & Operator Competency:**
    - Define what constitutes a "Competent Person" / "Qualified Person" under BC, AB, ON, and QC OHS frameworks.
    - Explain fitness-for-duty standards, including physical fitness, vision/hearing requirements, fatigue management, and substance use policies.
- **Operator Key Awareness & Documentation:**
    - Explain logbook maintenance requirements, including recording daily checks, deficiencies, maintenance history, and third-party inspections as mandated by provincial authorities.

The **course meets these requirements** as outlined but there are some content corrections that need to be done to ensure learner understanding and remove some contradictions. **Please see the notes below, any non-compliance is addressed in RED bullets:**

Other content that needs correction:

- **~~Slide 3:~~** ~~The wording should be changed. Most jurisdictions require daily or peruse inspections and, in some cases, complex daily inspections (the course provides a sample checklist) the initial wording on the slide says, "In order to maintain a safe work environment, inspection and lubrication should be done twice yearly. This is a very misleading statement and needs to be changed. Add something like inspected as per OEM specs and local OHS requirements. Also it says to open the gas cap? This is usually only done when fueling and most cranes will run on diesel or have a diesel engine that will generate the electricity. So when talking about it, it should be referred to as a fuel cap which should only be removed during refueling to avoid contamination.~~ **The slide and wording has been revised to correct most of the issues. The slide still states to open the fuel cap during inspection which is a poor practice and does not need to be done.**

- **~~Slide 14:~~** ~~States that all crane operators must be able to read and speak English fluently. This is not true in Canada and violates Quebec French language laws. I suspect it might have come from an American source. It should be changed to read something like, "Crane operators must be fluent in the language of operation designated by the workplace and local OHS authority (e.g., French in Quebec, English or French in other jurisdictions) and be capable of understanding all load charts, safety markings, manufacturer instructions, and signal person communications."~~ **The report states this has been addressed in a previous update.**

- **~~Slide 17:~~** ~~The last blue box talks about maintaining a certification record for inspection. This terminology sounds more American, especially when it goes on to talk about an identifier for the rope. A search shows it comes from from **U.S. OSHA Standard 29 CFR 1910.179(m)(2)** (Overhead & Gantry Cranes) and **1910.180(g)(1). It would be wise to Canadianize the box to refer to things like,** Crane Logbooks, Equipment Maintenance Logs, and Annual Inspection Certificates certified by a Qualified Person or Professional Engineer~~ **The slide has been revised and correct this issue.**

- **~~Slide 18:~~** ~~The last box refers to testing the **break** before a lift, it should read **brake**.~~ **Corrected**

- **~~Slide 19: Wording for the last box,~~** ~~should likely read, "the load stays secured and balanced"~~ **Corrected**

- **~~Slide 21:~~** ~~3rd box down on the right. It reads the load is certified beneath the crane when it likely means centred.~~ **Corrected**

- **~~Slides 23 and 24:~~** ~~Wording is confusing.~~ **Revised slides correct this.**

Types of Cranes and Signals

By the end of this module, the student will be able to:

- **Classify Crane Types & Configurations:**
    - Differentiate operational characteristics, limitations, and applications among major crane classes:

        - **Overhead Travelling Cranes** (Bridge, Gantry, Monorail, Jib) governed by CSA B167-16.
        - **Mobile Cranes** (Telescopic, Lattice Boom, Rough Terrain, Crawler, Boom Trucks) governed by CSA Z150.
        - **Tower Cranes** (Hammerhead, Luffing Jib, Self-Erecting) governed by CSA Z248-17.
    - Interpret manufacturer capacity charts (load charts) specific to mobile and tower cranes, factoring in boom length, radius, counterweight, and outrigger extension.
- **Standardized Hand Signals & Communication:**
    - Identify standard Canadian/CSA hand signals used for crane communication (e.g., Hoist, Lower, Boom Up/Down, Swing, Stop, Emergency Stop).
    - Explain the rules surrounding signal persons (signallers/doggers), including designated signal person requirements, continuous contact, and voice communication protocol over radio channels.
    - Recognize that an **Emergency Stop signal** given by *any worker* must be obeyed immediately by the crane operator.

The course does a very good job of covering hand signals and covers some of the types of cranes. However there needs to be some work done on the content. Please see the notes below, any non-compliance is addressed in **RED** bullets:

- ~~**Slide 9:** The last paragraph reads that All-terrain cranes have 2-9 axles but is narrated all-terrain cranes have two nine axles. It should read and narrate that all-terrain cranes can have 2 to 9 axles.~~ **The slide has been revised and correct this issue.**
- ~~**Slide 17:** Talks about tower cranes which can be seen in the background. However, the foreground images are mobile **telescoping boom cranes. "A tower crane rotates on its axis before lowering the lifting hook."** Slewing (rotating), hoisting, and trolleying can happen simultaneously depending on the operator's inputs and safety protocols. There is no rigid rule that a crane must fully finish rotating before lowering a hook. **"Tower cranes are a modern form of balance"** They are lever/counterweight machines operating on basic physics, not a "modern form of balance."~~ **The slide and image have been revised and correct this issue.**
- ~~**Slide 20:** Talks about tower cranes which can be seen in the background. However, the foreground images are **Stiffleg Derricks / Roof Derricks** used for erecting or dismantling tower cranes. It also states that the hook is located on the long horizontal arm to lift the load and contains its motor. Hooks, which is likely to mean, load blocks, do not contain motors. This slide needs correction.~~ **The slide has been revised and correct this issue.**
- ~~**Slide 21:** Rigger is misspelled.~~ **Corrected**

- ~~**Slide 24:** Talking about telescopic cranes, which should switch the term to telescoping crane or telescoping boom crane, the image does not show anything but the crane body without the boom. **Slide 25** has a good image likewise with **slide 9** that could be reused.~~ **The slide and image have been revised and correct this issue.**
- ~~**Slide 30:** Talks about bulk handling cranes. However, the crane in the image is completely hydraulic. The slide talks about **"If the drum wraps are not seated properly…"** There are **no drums** on a hydraulic crane. The point about leaving a load suspended while unattended is a correct statement but makes no sense in this context. It would be better under a don't do this slide.~~ **The slide has been removed correcting this issue.**
- **The course does not cover overhead and gantry cranes in the types of cranes module but does have images of both throughout. It would be advised to add a section on overhead and gantry cranes. No indication this has been resolved but it does not affect course compliance.**



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