



# National Commission for the Certification of Crane Operators

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## Tower Crane Operators Survey

July 2003

### Purpose of the Survey

The National Commission for the Certification of Crane Operators (CCO) is conducting a job analysis study. The results of the study will be used to form the basis for the content of CCO certification examinations. CCO needs your help as a professional tower crane operator, so that we can be sure that the content areas included in the certification examinations accurately reflect current regulations and today's work environment. Your responses combined with those of other tower crane operators in the U.S. will be used to develop the CCO tower crane operator certification examinations.

### How to Complete the Survey

You will be asked to answer questions about the knowledge, skills and abilities needed for safe tower crane operation and how frequently you use the knowledge, skills, or abilities. Four areas are covered on the survey:

- Site,
- Erection, Climbing and Dismantling,
- Operations,
- Technical knowledge.

The last page of the survey form asks you to provide some "Background Information". It is important that you complete this section. *Your responses will be kept completely confidential.* Your name will not be included in our data files. Only group results will be reported.

Please return the completed survey via mail or fax to:

International Assessment Institute  
600 Cleveland Street Ste. 900  
Clearwater, FL 33755  
Fax: 727-461-2746

If you would like to see the results of this survey, please provide us with your name and mailing address on the attached form. Thank you for your assistance.

## Section 1: Knowledge, Skill, and Ability Statements

The knowledge, skills, and abilities statements presented in this section describe the information needed to operate a tower crane. For each knowledge, skill, or ability statement presented on the following pages, we ask that you circle one number in the importance column and one in the frequency column using the rating scales described below. *There are no right or wrong answers.* We want your opinion—your expert judgment

### Rating Scale

Importance	Frequency
<p>How important is it for a tower crane operator to have this knowledge, skill and ability?</p> <p><b>1. Not Important</b>, a lack of knowledge, skill, or ability is unlikely to lead to an accident, a work disruption, or a delay in completing the work.</p> <p><b>2. Somewhat Important</b>, a lack of knowledge, skill, or ability could lead to a minor accident resulting in a work disruption or a delay in completing the work.</p> <p><b>3. Quite Important</b>, a lack of knowledge, skill, or ability could lead to an accident resulting in personal injuries or property damage.</p> <p><b>4. Very Important</b>, a lack of knowledge, skill, or ability could lead to a serious accident resulting in a fatality or major property damage.</p>	<p>How frequently did you use the knowledge to operate a tower crane?</p> <p><b>1. Almost Never</b> - maybe once a year</p> <p><b>2. Sometimes</b> - at least monthly</p> <p><b>3. Quite Frequently</b> - at least weekly</p> <p><b>4. Very Frequently</b> – just about every day</p>

### Sample Rating

1. Know how to locate and identify site hazards and restrictions, such as electric powerlines and piping. (Circle the number that corresponds to your opinion.)

Importance		Frequency	
1. Not Important	1   2   3 <b>4</b>	1. Almost Never	1   2 <b>3</b> 4
2. Somewhat Important		2. Sometimes	
3. Quite Important		3. Quite Frequently	
4. Very Important		4. Very Frequently	

**Importance:** If you believe that knowledge about locating and identifying site hazards and restrictions is very important and that a lack of knowledge could lead to a serious accident resulting in a fatality or major property damage, then circle # “4”.

**Frequency:** If you used the knowledge at least weekly for tower crane operation during a twelve month period, then circle # “3” .



## JOB ANALYSIS SURVEY – TOWER CRANES

**Importance**

1. Not Important
2. Somewhat Important
3. Quite Important
4. Very Important

**Frequency**

1. Almost Never
2. Sometimes
3. Quite Frequently
4. Very Frequently

### 1: SITE

	Importance	Frequency
K1.1 Know how to assess suitability of the supporting surface to handle the expected loads of the operation.	1 2 3 4	1 2 3 4
*K1.2 Know how to determine if there is adequate room for outriggers and counterweights.	1 2 3 4	1 2 3 4
K1.3 Know how to locate and identify site hazards and restrictions such as electric powerlines, air-rights, or other hazardous systems and public access areas.	1 2 3 4	1 2 3 4
K1.4 Be familiar with basic requirements for power sources, fusing, disconnects, lightning protection, and grounding.	1 2 3 4	1 2 3 4
K1.5 Be familiar with the necessity to protect the crane's foundation.	1 2 3 4	1 2 3 4

\* Question K1.2 only refers to Self-Erecting Cranes

### 2. ERECTION, CLIMBING, AND DISMANTLING

	Importance	Frequency
K2.1 Know proper erection, climbing, and dismantling procedures specified by the manufacturer in the operator's manual.	1 2 3 4	1 2 3 4
K2.2 Know general notes and warnings to be applied during climbing procedures.	1 2 3 4	1 2 3 4
K2.3 Know the maximum allowable wind speeds during erection, climbing, dismantling, and operation.	1 2 3 4	1 2 3 4
K2.4 Understand the proper procedures for bolting and/or pinning connections.	1 2 3 4	1 2 3 4

**Importance**  
 1. Not Important  
 2. Somewhat Important  
 3. Quite Important  
 4. Very Important

**Frequency**  
 1. Almost Never  
 2. Sometimes  
 3. Quite Frequently  
 4. Very Frequently

**2. ERECTION, CLIMBING, AND DISMANTLING (continued)**

	Importance	Frequency
K2.5 Understand the maximum freestanding height allowed.	1 2 3 4	1 2 3 4
K2.6 Understand the proper counterweight configurations.	1 2 3 4	1 2 3 4
K2.7 Understand the proper crane configuration.	1 2 3 4	1 2 3 4
K2.8 Be familiar with standard minimum and maximum tie-in spacing and maximum tower height above tie-ins.	1 2 3 4	1 2 3 4
K2.9 Be familiar with proper installation of internal climbing collars, support beams, wedges and climbing apparatus.	1 2 3 4	1 2 3 4
K2.10 Be familiar with proper installation of top climbing units and tie-in collars, struts, and lower braces.	1 2 3 4	1 2 3 4
K2.11 Know climbing sequences to be used when more than one crane is installed.	1 2 3 4	1 2 3 4
K2.12 Be familiar with proper operation of climbing unit and related equipment.	1 2 3 4	1 2 3 4
K2.13 Know procedures for making the tower “plumb.”	1 2 3 4	1 2 3 4
K2.14 Be familiar with proper grounding of tower crane.	1 2 3 4	1 2 3 4
K2.15 Be familiar with central ballast requirements.	1 2 3 4	1 2 3 4
K2.16 Know proper position of top climbing unit after climbing procedures in accordance with manufacturer’s specifications.	1 2 3 4	1 2 3 4
K2.17 Be familiar with proper travel rail installation and maintenance.	1 2 3 4	1 2 3 4

**Importance**

1. Not Important
2. Somewhat Important
3. Quite Important
4. Very Important

**Frequency**

1. Almost Never
2. Sometimes
3. Quite Frequently
4. Very Frequently

**3. OPERATIONS**

	Importance	Frequency
K3.1 Know how to inspect the crane for proper condition and complete required records.	1 2 3 4	1 2 3 4
K3.2 Know how to operate the crane smoothly i.e., lift, lower, travel, trolley, and swing.	1 2 3 4	1 2 3 4
K3.3 Know how and when to communicate with management, crew, and signal person.	1 2 3 4	1 2 3 4
K3.4 Know standard hand signals as specified in ASME B30.3.	1 2 3 4	1 2 3 4
K3.5 Know how to shut down and secure the crane properly when leaving it unattended.	1 2 3 4	1 2 3 4
K3.6 Know the manufacturer's recommendations for operating in various weather conditions.	1 2 3 4	1 2 3 4
K3.7 Know how to verify the weight of the load and the rigging.	1 2 3 4	1 2 3 4
K3.8 Understand basic load rigging procedures.	1 2 3 4	1 2 3 4
K3.9 Know how to perform the basic maintenance.	1 2 3 4	1 2 3 4
K3.10 Know the Crane Operator responsibilities contained in ASME B30.3	1 2 3 4	1 2 3 4
K3.11 Know how to use operator aids and limiting devices.	1 2 3 4	1 2 3 4

**Importance**

1. Not Important
2. Somewhat Important
3. Quite Important
4. Very Important

**Frequency**

1. Almost Never
2. Sometimes
3. Quite Frequently
4. Very Frequently

**3. OPERATIONS (continued)**

	Importance	Frequency
K3.12 Know the proper procedures for operating safely under special conditions: i.e., traveling with suspended loads; approaching two-blocking; operating near electric power lines; lifting loads from beneath the surface of the water; handling loads out of the operator's vision ("in the blind"), and suspended personnel platforms.	1 2 3 4	1 2 3 4
K3.13 Know the proper procedures for load control during the use of hand held tag lines.	1 2 3 4	1 2 3 4
K3.14 Know emergency response procedures : i.e., fire control, electric power line contact, and control malfunction	1 2 3 4	1 2 3 4
K3.15 Understand federal, state, and local regulations and ASME B30.3 regulations pertaining to the operation of the crane.	1 2 3 4	1 2 3 4
K3.16 Know how to review planned crane operations and requirements with site supervision.	1 2 3 4	1 2 3 4

**4. TECHNICAL KNOWLEDGE**

	Importance	Frequency
K4.1 Understand the function, limitations, and characteristics of the crane.	1 2 3 4	1 2 3 4
K4.2 Know the basic replacement criteria for tower crane wire rope	1 2 3 4	1 2 3 4
K4.3 Know the basic maintenance and inspection criteria for tower crane wire rope	1 2 3 4	1 2 3 4
K4.4 Know basic tower crane nomenclature.	1 2 3 4	1 2 3 4
K4.5 Understand basic machine power flow systems: i.e., mechanical, electrical, hydraulic, combination.	1 2 3 4	1 2 3 4
K4.6 Understand boom, jib, counter jib, and counterweight configurations.	1 2 3 4	1 2 3 4

## Background Information

The collection of this information is for statistical purposes only. All responses will be kept strictly confidential.

Please mark an **X** in the appropriate box.

**1. Are you actively working as a tower crane operator?**

Yes  No

**2. What is your current primary position?**

Operator  Supervisor  Trainer  Trainee

**3. How many years of experience do you have as a Tower crane operator?**

Less than 1 year  1-5 years  6-10 years  11-19 years  Over 20 years

**4. Are you currently certified in tower crane operations? Yes  No**

By Whom: \_\_\_\_\_

**5. Are you licensed by a government agency as a tower crane operator?**

Yes  No  If yes, which city or state? \_\_\_\_\_

**6. What education level have you completed? (Check all that apply)**

10<sup>th</sup> Grade or less  High School/GED  Formal Operator Apprenticeship

Associate Degree  Bachelor's Degree or higher

**7. What is your gender?**

Female  Male

**8. Which of the following best describes your racial/ethnic background?**

American Indian or Alaskan Native  Asian or Pacific Islander  Caucasian/White

Black or African American  Hispanic/Latino  Other (Specify) \_\_\_\_\_

**9. Indicate the geographic area in which you currently work. (Please check one only)**

- 1. Northeast (CT, MA, ME, NH, RI, VT)
- 2. Mid Atlantic (NJ, NY, PA)
- 3. So Atlantic (DC, DE, FL, GA, MD, NC, SC, VA, WV)
- 4. No Central (IA, IL, IN, MI, MN, OH, ND, NE, SD, WI)
- 5. So Central (AL, AR, LA, KS, KY, MO, MS, OK, TN, TX)
- 6. Mountain (AZ, CO, ID, MT, NM, UT, WY)
- 7. Pacific (AK, CA, HI, NV, OR, WA)
- 8. International

**10. Indicate the type(s) of cranes you have operated and currently operate.**

**(Check all that apply)**

Crane Type	Have Operated	Currently Operate	% of Operating time in this Type of Crane			
Tower Cranes	<input type="checkbox"/>	<input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>
Mobile Cranes	<input type="checkbox"/>	<input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>

Should equal 100%

**11. Indicate the type(s) of TOWER CRANES you have operated and currently operate.**

**(Check all that apply)**

Crane Type	Have Operated	Currently Operate	% of Operating time in this Type of Crane			
Hammerhead Tower	<input type="checkbox"/>	<input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>
Luffing Boom Tower	<input type="checkbox"/>	<input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>
Self Erecting Tower	<input type="checkbox"/>	<input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>

Should equal 100%

**12. What percentage of your time do you directly participate in the following:**

Erection	0% <input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>
Climbing	0% <input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>
Dismantling	0% <input type="checkbox"/>	25% <input type="checkbox"/>	50% <input type="checkbox"/>	75% <input type="checkbox"/>	100% <input type="checkbox"/>



