

## Category 2 Crane Safety Refresher (NCC-C2CSR-03) Instructor Guide Revision 03 Changes

### Introduction

1. Added an Introduction Module with Welcome and Course Learning Objectives topics to the Instructor Guide

### NAVFAC P-307 Training Overview

2. Added a NAVFAC P-307 Training Overview module to the course and wording to the Instructor Guide after the Introduction module that states this module is not required to be discussed during Instructor led training

### Crane Components

3. Added a Crane Components module prior to the Operator's Daily Checklist (ODCL) module.

### Operator's Daily Checklist (ODCL)

4. In the ODCL/Introduction topic, removed the words "specifically developed for each type of crane" from the first sentence in the narration and the word "daily" from the second sentence. Also, removed the first bulleted item from the screen and the word "daily" from the last bulleted item.
5. Added the following sentences to the Frequency topic narration: "When a crane is used in construction, a complete pre-use check must be performed by each operator." And, "A documented pre-use check is not required for non-cab operated Category 3 cranes; however, for bridge, wall, and gantry cranes, a documented pre-use check shall be performed at least once each calendar month the crane is in use."  
Also: two bulleted items addressing the added narration were added to the screen.
6. In the Sections topic, the words "no-load" were removed from the first sentence in the narration. Also, added the following sentence to the end of the narration: "The operator may perform the check from the various groupings in parallel."
7. Added a Knowledge Check section after the "Sections" topic
8. Added a "Warning Tags" topic, screen and narration after the Knowledge Check section.
9. Added a "Who Can Remove These Tags" topic, screen and narration after Warning Tags.
10. Added the following wording to the last sentence of the Critical Crane Components topic narration: "..., and the crane shall not be operated until resolved."
11. Added a "Limit Switches" topic, including screen and narration, after the Critical Crane Components topic.

12. Added the following sentences to the Unsatisfactory Conditions topic: “The item shall be marked by the operator as unsatisfactory on the ODCL and the deficiency shall be described in the remarks block. Minor deficiencies must be marked as unsatisfactory on the ODCL and the operator shall describe the deficiency in the remarks block. The supervisor shall provide the ODCL to the organization responsible for corrective action.”
13. Modified the screen of the Recording topic to include a picture of an Operator’s Daily Check List. Also, added the following sentence to the end of the narration: “The ODCL shall be turned in to the supervisor after the last use of the crane each day.
14. Added a Knowledge Check section after the Recording topic
15. Added a “Safety Guards and Plates” topic, including screen and narration, after the Walk Around Check topic.
16. Moved the General Hardware topic after the Safety Guards and Plates topic
17. Added a “Wire Rope and Reeving” topic, including screen and narration, after the General Hardware topic.
18. Added a “Block and Hook” topic, including screen and narration, after the Wire Rope and Reeving topic.
19. Added a “Sheaves or Sprockets” topic after the Block and Hook topic.
20. Modified the narration wording and the picture and bulleted items in the “Walkways, Ladders, Handrails” topic
21. Changed the title of the “Rail Sweeps and Bumpers” topic to “Stops and Bumpers” and modified the narration wording, screen picture, and text
22. Deleted the “Bridge and Trolley Structure” topic
23. Added a “Wheels and Tracks” topic, including narration and screen picture and text, after the Stops and Bumpers topic
24. Added a “Leaks” topic after the Wheels and Tracks topic.
25. Added a “Load Chain” topic after the Leaks topic.
26. Added an “Area Safety” topic after the Load Chain topic.
27. Deleted the Trolley Rails and Stops topic
28. Deleted the Safety Guards and Plates topic
29. In the Machinery House Check topic, added the word “House” to the screen title and added an asterisk beside Electric Motors on the screen ODCL card picture.
30. Modified the “Housekeeping” topic screen picture, bullets, and narration.
31. Moved the “Leaks” topic in front of the “Lubrication” topic and modified the bulleted items on the screen (deleted “Brake fluid and Gear case oil”, and added “Lubricating oil, Fuel, Coolant, and Hydraulic oil”)
32. Modified the “Lubrication” topic screen text and narration.
33. Added a “Clutches and Brakes” topic after the Lubrication topic
34. Deleted the “Brake Linings” topic

35. Modified the “Electric Motors” topic screen picture and text, and narration.
36. Added a “Danger/Caution Tags” topic after the Electric Motors topic.
37. Added a “Fire Extinguishers” topic after the Danger/Caution Tags topic.
38. Added a Knowledge Check section after the Fire Extinguishers topic.
39. In the “Operator Cab Check” topic, added the following to the narration: “The operator should enter the cab and ensure all controls are in the neutral or off position prior to starting the engine. Start the engine and check the items in the Operator Cab Check section. Also, added an asterisk beside the Boom Angle/Radius Indicator item on the screen picture of the Operator Cab Check ODCL section.
40. Added a “Gauges, Indicator and Warning Lights” topic after the Operator Cab Check topic.
41. Added a “Visibility” topic after Gauges, Indicator and Warning Lights.
42. Added a “Load Rating Charts” topic after Visibility.
43. Added a “Fire Extinguishers” topic after the Load Rating Charts topic.
44. Added a “Danger/Caution Tags” topic after the Fire Extinguishers topic.
45. Deleted the “Posting Requirements” topic.
46. Deleted the “Cab Controls” topic.
47. Deleted the “Warning Tags” topic.
48. Deleted the “Visibility and Glass” topic.
49. In the “Operational Check” topic, modified the screen picture to include “d Control Action\*” and added an asterisk after Emergency Stop. Also added the following to the narration: “When performing the operational check portion of the ODCL in cold weather or icy conditions, the operator should raise the blocks and boom before lowering them to avoid damage when sheaves may be frozen. Operators should inform rigging personnel to stand clear of the area below the blocks and boom prior to operation. The operator should hoist up slowly, in small increments, to break any ice and/or snow free, and monitor the sheaves to ensure proper movement and operation of the sheaves and wire rope.
50. Added an “Area Safety” topic after the Operational Check topic.
51. Added a “Unusual Noises” topic after the Area Safety topic.
52. Added a “Control Action” topic after Unusual Noises.
53. Deleted the “Wire Rope” topic and added a “Wire Rope or Chain” topic after the Control Action topic.
54. Deleted the “Controls and Brakes” topic and added a “Brakes and Clutches” topic after the Wire Rope or Chain topic.
55. Added a “Limit Switches” topic after the Brakes and Clutches topic.
56. Added a “Emergency Stop” topic after the Limit Switches topic.
57. Added a “Other Operational Safety Devices” topic after the Emergency Stop topic.
58. Deleted the “Horns and Alarms” topic and added a “General Safety Devices” topic.

59. Deleted the Knowledge Check questions 1-5 and inserted a new Knowledge Check section after the General Safety Devices topic.
60. Deleted the ODCL Module Exam section.

### Complex & Non-Complex Lifts

61. Changed the name of the Instructional Objectives topic to “Objectives” and changed the word “Identify” in the first bulleted item to “Define” in the screen text.
62. Modified the screen text (removed the third bulleted item) and changed the 2<sup>nd</sup> bulleted item wording on the Complex Lifts Overview topic
63. Modified the narration and screen text of the “Complex Lift Categories” topic.
64. Modified the narration and screen text of the “Complex Lift Procedures” topic.
65. Added the following wording to the last sentence of the narration in the “Complex Lift Exceptions” topic: “...; except for lifts using tilt fixtures, lifts where binding may occur, lifts of submerged loads, multiple crane or multiple hook lifts.” Also, modified the screen text.
66. Added a Knowledge Check section after the Complex Lift Exceptions topic.
67. Changed the picture on the “Large and Complex Shapes” topic screen
68. Modified the “Personnel Lifts” topic screen bulleted items and narration.
69. Modified the narration of the first and next to last sentence in the “Multiple Crane Lifts” topic.
70. Added a Knowledge Check after the Multiple Crane Lifts topic.
71. Added the following wording to the last sentence of the narration in the Complex and Non-Complex Lifts Summary: “except for lifts exceeding 80 percent of the capacity of the crane’s hoist, lifts using tilt fixtures, lifts where binding may occur, lifts of submerged loads, and multiple crane or multiple hook lifts”
72. Deleted the Complex and Non-Complex Lifts Module Exam

### Crane Communications

73. Changed the Instructional Objectives topic title to Learning Objectives and modified the screen text (added an additional bulleted item and changed the screen title)
74. Added the following narration to the “Communications” topic: “When making lifts where hand signals are not feasible (such as when the operator cannot see the signal person), the rigger giving the signals shall remain in constant voice communication with the operator. The operator shall stop the crane at any time and in any situation judged to be unsafe or when communication is lost or unclear. If communication is lost, the operator shall stop operation until communication is reestablished. In addition, the operator shall immediately respond to a direction from any person to stop the crane.”
75. Added: “Only one signaler communicates with the crane operator at a time” to the bulleted items on the screen in the Hand Signaling Rules topic

76. In the “Radio” Communications topic, modified the screen text to cover additional narration added. The following narration was added: “Radio guidelines: The device, or devices, used shall be tested on-site prior to crane operations. Use an isolated channel and clear the line of other traffic. Limit background noise. The operator’s reception of signals shall be by a hands-free system. Radio work practices: Voice directions given to the operator shall be given from the operator’s directional perspective. Identify the crane and yourself. Each voice signal *shall* contain the following elements, given in the following order: function (such as hoist, boom), direction; distance and/or speed; function, stop command. Allow time between commands. Verify the command. Note: the operator shall stop the crane at any time and in any situation judged to be unsafe or when communication is lost or unclear. In addition, the operator shall immediately respond to a direction from any person to stop the crane.”
77. Added a Knowledge Check after the “Radio Communications” topic.
78. Added 9 Boom Signal topics after the Move Slowly topic
79. Moved the Stop Signals, Stop, Emergency Stop, and Dog Everything topics in front of the Magnet Signals topics
80. Added 7 additional questions to the Knowledge Check after the Magnet Disconnected topic.
81. Deleted the Crane Communications module exam.

### Crane Team Concept

82. Changed the Instructional Objectives topic title to Learning Objectives and modified the screen text (changed the screen title)
83. Added a Knowledge Check section after the Crane Team Members topic.
84. In the Common Responsibilities/Communications topic, added the following sentences to the narration: “When making lifts where hand signals are not feasible, the rigger giving the signals shall remain in constant voice communication with the operator. It shall be understood that if the communication ceases, the operator shall stop operation until communication is re-established.”
85. Deleted the Knowledge Check after the Common Responsibilities/Safety topic.
86. In the Crane Operator Responsibilities topic, added the following sentences to the beginning of the narration: “The crane operator must ensure that his or her license is not expired, and that the certification of the crane is not expired prior to operation. These are the two expiration dates that are of particular importance to crane operators. Also, modified the second paragraph, or third sentence, of the narration.
87. In the Crane Operator Responsibilities/Pre-Use Check topic, deleted the words “no load” from the last bulleted item on the screen.
88. Added a Knowledge Check section after the Crane Operator Responsibilities/Stop for Safety topic.

89. In the Crane Rigger Responsibilities/Assisting with ODCL topic, replaced/changed the pictures on the screen.
90. In the Crane Walker Responsibilities/Pre-use Check topic, replaced/changed the picture on the screen.
91. In the Crane Walker Responsibilities/Safe Travel topic, removed the links to Obstructions and Alignment of track switches, and modified the text in the first bulleted item on the screen. Also, modified the narration wording to include: "..., monitoring portions of the crane such as the gantry, boom, and counterbalance to ensure adequate clearance is maintained...".
92. In the Crane Walker Responsibilities/Communicating Stop topic, modified the narration wording and the screen text.
93. In the Supervisor Responsibilities/Responsibilities topic, modified the screen text of the second bulleted item, and added the following narration: "The supervisor designates crane team personnel, reviews and inspects site conditions for potential safety problems and complex lifts, reviews procedures for operations near electrical lines, investigates and reports crane accidents, and supports the team anytime they feel they need to stop a lift due to safety concerns."
94. In the Supervisor Responsibilities/Complex Lifts topic, modified the narration, screen text and picture.
95. In the Supervisor Responsibilities/Accidents topic, replaced the word "authorities" with "personnel" in the narration.
96. Added a Knowledge Check after the Supervisor Responsibilities/Accidents topic.
97. Deleted the Complex Lifts topic after the Knowledge Check
98. Deleted the Crane Team Module Exam.

### Rigging Considerations

99. Moved the Rigging Considerations module prior to the Safe Operations module.
100. Removed the Calculating Object Weight by Area topic after the Objectives topic.
101. Changed the "Finding Weight of Materials" topic title to "Standard Weights of Materials"
102. Changed the "Finding Weight of Materials – Volume" topic title to "Standard Weight of Materials"
103. Changed the "Object Weight by Volume (Cu Ft) and Weight of Materials" topic title to "Load Weight"
104. Removed some of the screens in the Knowledge Check: Area section and added one additional Knowledge Check question
105. Changed the "Common Rigging Hardware" topic title to "Common Rigging Gear"
106. Changed the "New Rigging Gear Markings" topic title to "Additional Marking Requirements", and changed the wording of the first sentence to: "Rigging gear

shall be marked with the name, logo or trademark of the manufacturer (in addition to the rated load and re-inspection due date).

107. Added a “Damaged Rigging Gear” topic, including screen image, text, and audio narration after the Rigging Gear Inspection topic
108. Added “Never side load round-pin shackles” to the narration text
109. Modified the narration text and audio of the “Sling Angle Stress” topic
110. Moved the Summary of Sling Angle Stress topic after the Sling Angle Stress topic
111. Removed the “Slings – Choke Configuration” and replaced it with a “Choker Hitch Efficiency” topic, including screen image, text, and narration
112. Added a “Synthetic Sling Types” topic, including screen image, text, and narration, after the Choker Hitch Efficiency topic
113. Added a “Synthetic Sling Use” topic after the Synthetic Sling Types topic
114. Changed the “Synthetic Web Slings” topic title to “Web Sling Use” and changed the screen image and narration
115. Added a “Web Slings and Shackles” topic after the Web Sling Use topic
116. Added a “Web Sling Temperature Restrictions” topic after the Web Slings and Shackles topic
117. Added a “Synthetic Rope Sling Use” topic after the Web Sling Temperature Restrictions topic
118. Added a “Rope Sling Temperature Restrictions” topic after the Synthetic Rope Sling Use topic
119. Added a Knowledge Check after the Rigging Considerations and Hooks topic
120. Changed the “Review and Summary” topic title to “Rigging Considerations Summary”
121. Removed the “Rigging Considerations Module Exam Questions and Answers” section

## Safe Operations

122. In the Instructional Objectives topic, changed the topic title to Learning Objectives on the screen, added the following wording to the narration: “...understand the requirements when working near overhead power lines ...”, and modified the wording of third bulleted item on the screen.
123. Modified the narration wording and screen text in the “Understanding the Crane” topic.
124. Added an “Operator Training” topic after the Understanding the Crane topic.
125. In the Pre-Operational Check topic, added the following to the screen: “When performing the operational check portion of the ODCL in cold weather or icy conditions, the operator should raise the blocks and boom before lowering them, to avoid damage when sheaves may be frozen.” and modified the narration wording.
126. Added a Knowledge Check section after the Pre-Operational topic.

127. Added an Overhead Lines and Limit of Approach topic
128. In the Overhead Lines topic, modified the narration to include: "Follow the requirements of NAVFAC P-307 paragraphs 10.11.1 through 10.11.1.6 for crane operations near or below overhead electrical transmission lines, operation near communication towers, and travelling below power lines." Modified the screen text to include the added narration. Also, and modified the Danger Zone NAVFAC P-307 linked distance figures.
129. In the Limit of Approach topic, modified the narration and the screen text.
130. In the Operating Practices topic, modified the narration and the screen picture and text.
131. In the Lifting Loads topic, modified the narration.
132. Modified the narration and screen text in the Landing Loads topic.
133. Modified the narration in the Securing the Crane topic.
134. Deleted the Knowledge Check after the Securing the Crane topic.
135. In the Traveling Cranes with Loads topic, added "Maintain communication and operate under the direction of a signaler" to the bulleted items on the screen and in the narration.
136. Added a Crane Operating Characteristics topic after the Operations topic
137. Modified the narration and screen text in the OET and Gantry Cranes – Operating I topic
138. Added an Operating Techniques topic prior to the Securing topic
139. Modified the narration and screen text in the Securing topic
140. Added a Knowledge Check section after the OET and Gantry Cranes/Securing topic.
141. Modified the Summary topic narration and screen text.
142. Deleted the Safe Operations Module 1 exam.

### Crane and Rigging Gear Accidents

143. Added an "Accident Categories" topic after the Instructional Objectives topic.
144. Added a Knowledge Check section after the Rigging Gear Operating Envelope topic.
145. Added a "Near Misses" topic after the Knowledge Check section.
146. Added a Damaged Rigging Gear topic after the Accident Examples topic.
147. Modified the Accident Causes topic narration.
148. Added a "Accident Actions" topic and a "Crane Accident Actions" topic after the Operator Responsibilities topic.
149. Modified the "Accident Reporting Procedures – General" topic narration and screen text.
150. Added/modified the narration in the Contractor Accident Reporting Procedures topic

151. Added/modified the narration in the Contracting Officer Accident Reporting Procedures topic
152. Added a Knowledge Check section after the Accident Reporting Procedures – Contracting Officer topic.
153. Deleted the Crane and Rigging Gear Accidents Module Exam.

#### Final Exam

154. Revised and deleted several exam questions
155. Added additional questions from NAVFAC P-307, Appendix H