



# THE CRANE CORNER

March 2017  
93rd Edition

## *Navy Crane Center Technical Bulletin*

<http://www.navfac.navy.mil/ncc>

Editor: 757-967-3803/DSN 387-3803 / [nfsh\\_ncc\\_crane\\_corner@navy.mil](mailto:nfsh_ncc_crane_corner@navy.mil)

### A WORD FROM TOPSIDE

*Tim Blanton*



#### Inside this issue:

A Word From Topside	1
Tip of the Spear	2
Summary of Weight Handling Accidents, First Quarter, FY17	4
Weight Handling Training Briefs	7
Weight Handling Safety Briefs	10
Did You Know?	11
Weight Handling Program Safety Videos	13
Share Your Success	13

As I am sure many of you have seen or read, there are many news stories and articles on the new administration's plans to increase the size of the Navy fleet. If this planned build-up comes to fruition, it will likely have a significant impact on the weight handling equipment necessary to load, repair, and maintain the Navy's fleet. Not related to this build-up, for FY17 and beyond, Navy Crane Center has already seen an uptick in crane procurement projects in support of the Ohio class submarine replacement (Columbia class) build-up. Other major planned or ongoing procurement and overhaul actions include naval shipyard portal crane service life extensions, Strategic Systems Programs (SSP) expansion and overhauls at the strategic weapons facilities, and new portal cranes are being procured for the first time in approximately a decade.

As many of you are preparing for full compliance with the 2016 revision of the NAVFAC P-307 (1 July 2017), you have undoubtedly reviewed the new requirement for a crane replacement and modernization plan, which is now required for activities with category 1, category 2, or critical category 3 or 4 cranes. A critical crane is defined as a crane that performs NAVSEA 08 cognizant work, an ordnance handling crane, a hot metal handling crane, a crane that handles high value or one of

a kind loads, or any crane the absence of which would significantly jeopardize the activity's mission. The crane replacement and modernization plan should also evaluate the crane inventory in relationship to projected workload and mission requirements. As changes occur, it is of the utmost importance to be proactive in not only identifying crane replacements and modernizations for existing facilities, but also the weight handling needs for new or overhauled facilities. The Word from Topside in the June 2016 (90<sup>th</sup> edition) of "The Crane Corner" provides more detailed information with regard to crane replacement and modernization plans.

The Navy Crane Center's procurement team is constantly reaching out to supported commands and NAVFAC's facilities engineering commands to determine what MILCON construction projects are being initiated and which of these projects include weight handling equipment. However, in some instances the cranes required by these projects are not identified or given the consideration needed until late in the acquisition process. Identification of lifting and handling needs early in the facility planning phase allows in-depth review of weight handling equipment requirements and determination of the technical configurations and operating characteristics that best suit the intended application.

It also allows for weight handling professionals to provide input to facility designers on crane specific facility requirements, such as electrical loads and crane supporting structures (e.g., access ladders, maintenance platform access, maintenance tie-off points).

As projected workload and mission requirements grow and change, it is important for us as a

weight handling community to ensure we are engaged with the facility professionals to ensure that weight handling requirements are not only identified early in the process, but are also vetted through the proper weight handling professionals such that the equipment is properly selected and sized and that the technical configuration and operating characteristics support the mission requirements.

## **TIP OF THE SPEAR SECOND QUARTER FY17 EVALUATION SUMMARY**

**A**ll activity weight handling programs evaluated in the second quarter of fiscal year 2017 were satisfactory (two programs were marginally satisfactory). The most common evaluation item continued to be the lack of a monitor program or an established program that needs improvement. A monitor program is now mandatory (effective date 1 July 2017), and it should include monitoring all weight handling related processes (maintenance, load test, inspection, etc.) and not just crane and rigging operations.

Activities should now be recognizing and documenting in their monitor programs the types of unsafe crane and rigging operations, poor maintenance and inspection practices, and load test issues, as applicable, that are frequently observed by the evaluation teams (see below) during the evaluation. Unsafe crane and rigging observations by Navy Crane Center evaluation teams increased by 50 percent in the second quarter. These were tangible deficiencies, and self-recognition of such deficiencies, along with the development of effective metrics, can form the basis of a strong self-assessment, from which true program improvement can be achieved.

The poor performance of pre-use checks and simulated lifts, particularly for category 3 cranes, continued into the second quarter are ripe areas for the monitor program.

A trend for unsatisfactory cranes that continued into the second quarter was the failure to test the hoist secondary limit switch by block actuation.

This one-time procedure is addressed in NAVFAC P-307, appendix C, item 64 for category 1 and 4 cranes, and appendix D, item 29 for category 2 and 3 cranes.

### **SUMMARY OF PROGRAMS EVALUATED**

59 Navy WHE programs were evaluated. 56 were fully satisfactory. 2 programs were marginally satisfactory. 1 program was not rated.

For FY17 to date, 117 activity programs were evaluated, with 3 programs found marginally satisfactory and no unsatisfactory programs (100% satisfactory rate).

### **SATISFACTORY CRANES**

42 of 50 cranes were satisfactory (84%). For FY17, 83 of 102 cranes were satisfactory (81%).

### **REASONS FOR UNSATISFACTORY CRANES**

- Improper check of hoist secondary limit switch (three cranes).
- Incorrect load test procedure (portable gantry travel test).
- Damaged wire rope not previously identified.
- Hoist brakes not tested individually.
- Misspooled wire rope.
- Bridge brake air gap out of specification.

## **EVALUATION ITEMS**

- Lack of surveillance program or established program that needs improvement - 34 items.

- Various unsafe crane and rigging operations observed by the audit team (side loading, unattended load, standing/walking beneath load, operating without signals, poor signaling, pinch points, slings bunched in hooks, load not balanced, no synthetic sling protection, brakes not checked at start of lift, side loading of shackles, trackwalker out of position, swivel hoist rings not torqued, trolley racked to one side, etc.) - 32 items.

- Operators/riggers/test directors lacked essential knowledge (recognizing crane accidents, complex lifts, knowing the weight of the load, how to connect special equipment, etc.) - 17 items.

- ODCLs/OMCLs and simulated lifts performed incorrectly or not performed - 16 items.

- ODCL/OMCL documentation deficiencies (including incorrect form used) - 13 items.

- Unrecognized/unreported accidents or near misses (including damaged gear not investigated for cause) - 13 items.

- Local weight handling program instruction/standard operating procedures non-existent or inadequate - 11 items.

- Crane improperly stowed/secured (hook block in, or too close to, upper limit switch or stowed in path of traffic, machines, etc., power not secured) - 11 items.

- Training issues, including contractor personnel (training not taken; refresher training not taken or not taken within three months of license renewal; lack of inspector training; locally required training not taken) - 10 items.

- Rigging gear/crane structures/other section 14 equipment not in the program or lack documentation - 10 items.

- Poor inspections/inspection processes (including inspector removing load bearing fasteners voiding certification, inspections not performed, work

documents not available for in-process inspections, unsafe practices, wire rope not inspected completely, fall protection PPE not utilized, deficiencies not identified) - 9 items.

- Expired or non-program gear in use or not segregated from in-service gear - 9 items.

- Deficient or worn rigging gear (including noncompliant gear) - 8 items.

- Crane marking issues (monorail tracks not marked with rated capacities, directional signs not marked on crane, crane capacity incorrectly marked, hook not prominently identified, electrical equipment not marked per NEC, certification tag not visible to operator) - 8 items.

- Rigging gear, containers, brows, test weights, etc., not marked properly or marking not understood by riggers (including illegible marking, mismatched components, SPS vs GPS, pin diameter not marked on alternate yarn roundslings) - 7 items.

- Inspection and certification documentation errors - 7 items.

- Lack of leading metrics/metrics not being properly analyzed - 7 items.

- Lack of (or low number of) lower order crane or rigging accident and near-miss reports - 6 items.

- Poor maintenance practices or maintenance/inspection not performed as required (significant corrosion evident, parts not tagged/bagged, hazardous materials not properly stored, work documents not available, lubrication not per schedule, lack of long-range maintenance schedule, components not reassembled properly, activity deficient in structural bolt installation) - 6 items.

- Designation issues (no designation, performance examiner designation not specific, designee not qualified, NAVFAC P-307 not referenced.) - 6 items.

- No procedure for tagging equipment with known deficiencies and/or tagging equipment that is out of certification - 6 items.

- Operator license/file discrepancies (no OQE of performance exam; examiner not licensed; no OQE of safety course; no OQE of operation to waive performance test; course not signed by examiner; course improperly graded; corrective lenses not noted; course not graded; licensed for more than 2 years; license not in possession of operator; operating with expired license; operating with no license) – 5 items.

- Work document issues (lacked sufficient detail, no work document for inspection disassembly, no statement of work for contractor service providers, inspection document not signed, work document not issued) – 5 items.

- Bound load issues (not identified as complex lifts, load indicating device not used, chainfall not used) – 5 items.

- Poor engineering/technical evaluations – 5 items.



## SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FIRST QUARTER FY17

**T**he purpose of this message is to disseminate and share lessons learned from select shore activity weight handling accidents, near misses, and other unplanned occurrences so that similar events can be avoided and overall safety can be improved.

**Accidents:** For the first quarter of FY17, 72 Navy weight handling accidents (58 crane and 14 rigging) were reported, 16 of which were considered significant. Accident totals decreased in the first quarter of FY17 compared to the previous quarter; however, significant accidents declined only slightly. Significant accidents (overload, dropped load, injury, two-block, derailment or overhead power line contact) are accidents that have the potential to result in serious injuries, substantial material damage, or equipment costs and require a more detailed investigation. In addition to the Navy accident numbers identified above, there were 11 contractor accidents, including four that were significant.

### INJURIES

**Accidents:** Four injuries were reported in the first quarter including three OPNAV reportable injuries. While repositioning an outrigger assembly with a crane, the assembly's cylinder rod slid forward and pinched the mechanic's fingers between the cylinder and the gland nut. A worker's finger was pinched while rotating a tool that was attached to a suspended component. While removing material from a jet blast deflector door pit using a portable "A" frame, the "A" frame rolled into the pit injuring a worker. While rigging a pump off its foundation, a shackle came off of the hook of a chain fall causing the pump to fall and injure two riggers.

**Lessons Learned:** Two of the four injuries occurred when personnel working on suspended loads caught their fingers in pinch points. The primary causes were identified as inadequate risk mitigation and improper rigging that occurred as a result of insufficient personnel experience.

One accident of particular concern occurred when a mechanic attempted to manipulate a suspended load in its rigging. Improper rigging resulted in an unrestrained portion of the load to shift while rotating the load, pinching the mechanic's fingers. The investigation identified that the mechanic was attempting to manipulate the load without assistance. In addition, the mechanic's actions to rotate the tool caused the suspended component to shift. The mechanic did not have the original equipment manufacturer's operating manual on the job site. Following the accident, the activity convened a safety stand down to discuss operational risk management and job hazard analysis focusing on preventing pinch point injuries. Supervisors play an important role in the job planning process and are essential to the risk mitigation process. Supervisors should make a point of identifying potential hazards that can lead to personnel injuries, like extremities caught in pinch points or being struck by the load. Risk identification and mitigation are mandatory elements of every weight handling revolution, and focusing on risk mitigation via job planning is key to preventing personnel injuries.

### **DROPPED LOADS**

**Accidents:** There were six dropped load accidents including one identified above that resulted in an injury. A scrap milling machine being positioned by a fork lift fell to the deck when the synthetic sling was overloaded to failure during the operation. While rigging a hydraulic manifold assembly, an unsecured valve handle fell off the manifold assembly and onto the material highway conveyor. A synthetic sling broke when it was cut while lifting one end of a propeller blade resulting in one end of the blade to drop to the ground. A shore power cable fell out of the lifting block attachment and into the water due to excessive swing in the cable. A test fixture being placed into a test stand, dropped from its support assembly as a result of side loading by the crane.

**Lessons Learned:** The majority of dropped load accidents this quarter occurred as a result of improper rigging. One accident of particular interest occurred while positioning a single propeller blade on a pallet when the sharp edges of the rigging attachment point cut the rubber sling protection and the synthetic rigging strap used to lift

the blade. The 6300 pound blade, which was not fully suspended, fell approximately two feet onto the pallet. The investigation identified that the rigger-in-charge (RIC) did not have the engineered lifting attachment for lifting the blade; but instead, used a synthetic sling and rubber for sling protection.

NAVFAC P-307 2016 contains requirements and precautions for lifts utilizing synthetic slings, and paragraph 14.7.4 (Synthetic Slings) requires that sling protection be of sufficient thickness and strength to prevent sling damage. As in this instance, sling damage often results in catastrophic sling failure with little or no warning. When cutting is a potential, the sling should be completely blocked from contacting the load edge with a hard material, not soft materials such as canvas, fire hoses, or leather gloves. In this instance, the activity recognized that the RIC should have stopped and notified supervision when it was recognized that a special lifting assembly was needed.

### **OVERLOADS**

**Accidents:** Six overload accidents were reported. The maximum allowable test load tolerance for a crane was exceeded when the test director misread the weight of a test load. A plate clamp was overloaded when a steel plate was lifted after incorrectly estimating the weight. A mobile crane was overloaded in the process of lifting a shipboard elevator hatch. A multi-purpose machine (forklift) was overloaded during a lift of diver's air bags. A one ton chain hoist that was found with elongated hooks was determined to have been overloaded during a weight handling evolution. Rigging gear was overloaded while disassembling a bow dome handling ring when the ring tipped over into slack rigging gear.

**Lessons Learned:** Four out of the six overload accidents occurred as a result of rigging gear overloads. The primary cause identified was improper operation, but several contributing causes included personnel error in calculating the weight of the load or misreading the weight of the test load. Gear damage resulted in half of the overload accidents, and there was one accident of particular concern that resulted in rigging gear damage and a near injury.

Personnel were attempting to disassemble a 4000 pound bow dome handling fixture when there was a loss of control of the section being removed. Slack rigging gear that was attached to the load and the crane prevented the load from falling, but a rigger attempting to stabilize the load was struck by the load and subsequently tripped and fell to the ground. Fortunately, there were no injuries as a result of the accident. The investigation concluded that personnel did not utilize local instructions to properly plan and mitigate the hazards of the operation. It is incumbent on weight handling program managers to stress the concept of effective teamwork. Team members shall work together to ensure the safety of weight handling operations and recognize potential problems. Personnel should stop the job any time unsafe conditions or risks are found and report these issues to supervision.

**Accidents:** The number of total accident reports declined by 16 percent from the previous quarter, and significant accidents declined from 17 to 15. Out of the total crane accidents, over 30 percent resulted in damage to either the crane or rigging gear. Nearly all of the reports of damaged cranes (8 of 11) identified damage to the crane's wire rope. Damage to a crane's wire rope can result in significant cost and down time in order to complete repairs, and is also a concern because it could result in a significant dropped load accident. The cause associated with these types of accidents is usually attributable to improper operation. Specifically, operation that results in a miss-spool or slack wire condition that results in the wire rope coming out of the sheave. Operators should be particularly attentive to the wire rope ensuring there is no side loading; also, operators should operate in a slow, controlled manner to prevent miss-spools. The majority of damaged rigging gear accidents involved damage to synthetic slings. Again, these types of accidents can easily result in significant dropped load accidents. Use of synthetic slings does have its advantages, but personnel must utilize appropriate precautions outlined in NAVFAC P-307 2016. Paragraph 14.7.4 to prevent damage during weight handling operations.

### NEAR MISSES

In the first quarter of FY17, there was a rare and substantial decline in near miss reporting.

Reporting of near misses declined by nearly 50 percent in the first quarter of FY17 compared to the same period a year ago. Near miss reports allow activities to learn from situations in which an accident "almost" occurred so that significant accidents can be averted. By focusing on and learning from minor events, it is possible to reduce the probability of a significant accident from occurring by providing the opportunity to identify risks that can be mitigated. Near miss reports are not usually intended to be as thoroughly investigated as those for a rigging or crane accident; however, the investigation and report should be commensurate with the significance of the event.

Several near miss reports submitted this quarter would have resulted in significant accidents, and potentially prevented personnel injury and equipment damage. Weight handling program managers are strongly encouraged to stress the importance of conducting observations to their personnel in order to identify tangible deficiencies and near misses.

Weight handling program managers, operations supervisors, and safety officials should review the above lessons learned with personnel performing weight handling operations and share lessons learned at other activities with personnel at your activity. Data from the first quarter of FY17 indicates that there is a need to focus on eliminating personal injuries, specifically by increasing awareness to pinch points when working on suspended loads. In addition, the substantial decline in near miss reporting is of particular concern due to the missed opportunities for identifying issues that have the potential to result in more significant accidents. Commanding officers and civilian leaders are encouraged to stress this issue to their weight handling program managers. I am confident this trend will be reversed and look forward to assisting as we work together to accomplish our primary mission of enabling the warfighter.



## WEIGHT HANDLING TRAINING BRIEFS

**T**he Weight Handling Training Briefs (WHTBs) are provided for communication to weight handling personnel. On 21 June 2016, the new NAVFAC P-307 revision was signed and became available for immediate implementation. Navy Crane Center developed a series of briefs in order to provide some specific details relating to the change.

Similar to the Navy Shore Weight Handling Safety Brief, the WHTB is intended to be a concise and informative discussion of a trend, concern, or requirement related to recent/real time issues that have the potential to affect our performance and efficiency. The WHTB is not command specific and can be used by your activity to increase awareness of potential issues


or weaknesses that could result in problems for your weight handling program. The WHTB can be provided directly to personnel, posted in appropriate areas at your command as a reminder to those performing weight handling tasks, or it can be used as supplemental information for supervisory use during routine discussions with their employees. When Navy Shore Weight Handling Safety or Training Briefs are issued, they are also posted in the Accident Prevention Info tab on NCC's web site at <http://www.navfac.navy.mil/ncc>.

Navy Crane Center point of contact for requests to be added to future WHTB distribution is [nfsh\\_ncc\\_crane\\_corner@navy.mil](mailto:nfsh_ncc_crane_corner@navy.mil).

# Navy Shore Weight Handling Training Brief!

Title: Accident Notification, Near Miss, & Unplanned Occurrence  
Target Audience: All Weight Handling Program Personnel


**The Ultimate Near Miss...**



In addition to minor clarifications and changes to the accident definitions (discussed in WHTB-16-T-02 – Module 22), NAVFAC P-307, section 12 contains updated requirements for accident reporting, and additional clarification for the definitions of near misses and unplanned occurrences.

- The Initial accident notification (paragraph 12.6.1) is important as it provides timely perspective to Navy Crane Center to help the activity in determining what additional actions may be required or assistance needed. For severe accidents, initial notification is now required as soon as practicable but not later than **8 hours** (previously 24 hours) following the event. Additionally, paragraph 12.6.1 was revised to include the minimum information required for the initial notification.
- **Near misses and unplanned occurrences**, discussed in paragraphs 12.7.1 and 12.7.2, respectively, now include additional perspective on what constitutes a near miss or unplanned occurrence. Near misses are events that occur during weight handling operations that did not result in an accident, but easily had the potential to do so (close call). Unplanned occurrences are events that result in injury or damage to weight handling or related equipment but are not directly related to a weight handling operation.

**Unplanned Occurrence...**



- Summarizing past training bulletins, the different perspectives begin to take shape with regard to event classification and levelization. Using a motor vehicle as an example, you look over and see the driver texting on the phone while at a stop light (**deficiency**). After the light turns green, you see the driver texting and driving (**tangible deficiency**). This same driver, at some point during the day or upcoming week, is going to veer into another lane or off the road and suddenly notices and corrects (at the same time panic sets in at what he/she had just done - **near miss**). However, eventually if uncorrected, this behavior is going to result in a fender bender (**accident**). Unfortunately, when several of these deficiencies align (texting and driving, excessive speed, weather), the car might roll over, totaling the vehicle or hurting someone (**significant accident**). With regard to an **unplanned occurrence**, think of someone backing into your vehicle while you are legally parked!

25 January 2017

**Training**

Navy Crane Center 16-T-02 – Module 23

# Navy Shore Weight Handling Training Brief!

**Title:** Rigging Gear Requirements in NAVFAC P-307 2016  
**Target Audience:** All Weight Handling Program Personnel

Table 14-1  
 Test Load Percentages for Initial and Periodic Load Tests, Periodic Load Test Frequencies, and Inspection Frequencies

Equipment	Test Load Percentage	Periodic Load Test Frequency	Periodic Inspection Frequency
Sheet piling	125	NA <sup>a</sup>	Annual
Below the floor lifting devices (except as noted)	125	NA <sup>a</sup>	Annual
Special hoists, winches, wire rope	NA	NA	Annual <sup>b</sup>
Chain slings	200	NA	Annual
Crane integral to larger machine systems	125	Annual	Annual
Crane structures that do not have permanently mounted hoists	125	Every 2 years	Every 2 years
Equatorial beams and founder plates	125	NA <sup>a</sup>	Annual
Eye bolts	NA	NA	Annual <sup>b</sup>
Eye pins	NA	NA	Annual <sup>b</sup>
Endless chokers	125	Annual <sup>b</sup>	Annual
Hooks	200	NA	Annual
Insulated links	200	NA	Annual
Links	200	NA	Annual
Links and rings (including links and rings for ship assemblies and welded links and rings)	125	NA <sup>a</sup>	Annual <sup>b</sup>
Magnetic lifts	200	Annual	Annual
Plate clamps	125	Annual <sup>b</sup>	Annual
Portable gantry frames	125	Annual <sup>b</sup>	Annual
Portable gantry frames, portable floor cranes	125 <sup>a</sup>	Every 2 years	Every 2 years
Portable load integration devices	NA	NA	Annual <sup>b</sup>
Portable playdowns (see paragraph 14.4.2 for attachment standards)	125	NA <sup>a</sup>	Annual
Shackles	NA	NA	Annual <sup>b</sup>
Shackles, load rings	NA	NA	Annual <sup>b</sup>
Shackles, load rings	NA	NA	Annual <sup>b</sup>
Synthetic rope slings	200	NA	Annual
Synthetic roundrope	200	NA	Annual
Synthetic webbing slings (including cargo/wheel nets and flexible intermediate bulk containers (FIBC) bags)	200	NA	Annual
Trolleys	125	Every 2 years	Every 2 years
Turnbuckles	NA	NA	Annual <sup>b</sup>
Vacuum lifts	125	Annual <sup>b</sup>	Annual
Welded links and chokes	200	NA	Annual <sup>b</sup>
Wire rope slings & endless slings (grommets)	200	NA	Annual
Wire rope slings & grommets (hand trucks)	125	NA	Annual

NAVFAC P-307, Table 14-1 provides test load percentages, load test periodicities, and periodic inspection frequencies for rigging gear and miscellaneous equipment. NAVFAC P-307 2016 contains significant changes in this area and brings rigging hardware in line with ASME B30.26 requirements.

- Changes to Table 14-1 appear in **red** in the adjacent table.
- The initial load test for many items has been eliminated.
- The periodic inspection frequency has changed from every two years to annually for some equipment.
- Particularly noteworthy, documentation of periodic inspection is not required for many items as annotated by note 6 in Table 14-1. A proper pre-use (frequent) inspection satisfies the requirements for periodic inspection.
- However, past requirements are still in place for several pieces of equipment (e.g., slings, plate clamps).
- Additionally, pay particular attention to specific requirements for rigging gear used in cargo transfer and for links and rings.
- Several new pieces of equipment were added to Table 14-1 including cargo/wheel nets, flexible intermediate bulk container (FIBC) bags, and trolleys.

2 February 2017

Training

Navy Crane Center 16-T-2 – Module 24

# Navy Shore Weight Handling Training Brief!

**Title:** Sling Protection in NAVFAC P-307 2016  
**Target Audience:** All Weight Handling Program Personnel

## Use the Proper Materials for Sling Protection!



Sling protection requirements for three different types of damage to synthetic slings were added in Paragraph 14.7.4 and Appendix A in the NAVFAC P-307 2016 Revision:

- **ABRASION** – Damage resulting from friction, scrubbing or scuffing from contact with a rough surface, such as concrete pipe or rough hook.
  - As the sling tensions during use the sling stretches and can be abraded or burned by the rough surface
  - Solution: Add protection where the sling contacts the rough surface. See example.
- **BEARING** – Damage resulting from the pressure exerted from a load surface onto the sling by a small load radius or high sling pressure.
  - As the sling contact width decreases, the pressure increases
  - Folding, bunching or pinching slings will reduce the working load limit - either calculations are required to determine the reduced working load limit or the bearing surface needs to be increased
  - Possible solution: Increase the bearing surface with a sling saver shackle.
- **CUTTING** – Damage caused by a corner or an edge.
  - With moderate pressure a sling may be cut (e.g., machined surface, steel box beam).
  - Solution: The sling shall be completely blocked from contacting the load edge with hard material. Soft materials such as canvas, fire hoses, and leather gloves shall NOT be used. See example.

8 February 2017

Training

Navy Crane Center 16-T-2 – Module 25

# Navy Shore Weight Handling Training Brief!

Title: General Rigging Practices and Safety  
Target Audience: All Weight Handling Program Personnel

Common **rigging trade practices** are now included in NAVFAC P-307 2016 (par. 14.15), along with requirements for **general rigging safety** (par. 14.16 and 14.17), consistent to those used in operations.

The rigging practices are particularly important for activities with a high turnover rate or less experienced personnel. Highlights include:

- Securement of loads and gear to prevent potential dropped loads or damage. Includes application of frapping (e.g., body and soul, backlashing), securing of slings, and removal or securing of items that may fall from the load.
- Containers and pallets shall be properly maintained to safely support and carry the applied loads.
- Proper tagline usage, including facing the load, keep hands and feet clear, and never wrapping taglines around parts of the body.
- When applying a choker hitch, a shackle should be used, with the pin in the sling eye, at the choke point.
- Consideration for the amount of force required to operate a manual hoist. If more than one person is required, it's probably overloaded.
- Do not lower a hoist's load chain to the bitter end, to prevent excessive loading on the pin.
- Ensure hand chains are secured prior to moving any load suspended by a manual chain hoist.



15 February 2017

Paragraph 14.16 and 14.17 reinforce existing requirements for rigging that were previously only in the operations section (section 10) to ensure the same standards are applied across the program.

- Specifically, requirements with regard to reaching under loads, personnel positioned within the fall zone, and pinch points are mirrored in par. 14.16 for rigging.
- Additionally, paragraph 14.17 re-states existing operational requirements with regard to knowing the weight of the load to be rigged, alternate methods to determine the weight of the load, and binding or slack line conditions that warrant use of a load indicating device (LID).

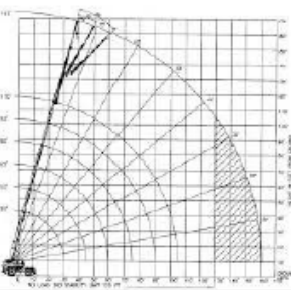
Training

Navy Crane Center 16-T-2 - Module 26

# Navy Shore Weight Handling Training Brief!

Title: Deletion of Appendices G, H and I in 2016 NAVFAC P-307  
Target Audience: All Weight Handling Program Personnel

## Operator Examinations



22 February 2017

In the 2016 revision of NAVFAC P-307, Appendices G, H and I have been removed:

- The questions contained in the original Appendices G, H and I are currently included in the following NCC safety courses, as applicable, and no longer need to be added to locally developed examinations:

- ☐ NCC-GCS-03: General Crane Safety
- ☐ NCC-GCSR-04: General Crane Safety Refresher
- ☐ NCC-C2CS-02: Category 2 and Cab-Operated Category 3 Crane Safety
- ☐ NCC-C2CSR-03: Category 2 Crane Safety Refresher
- ☐ NCC-C3CS-03: Category 3 Non-Cab Operated Crane Safety
- ☐ NCC-C4CS-02: Category 4 Crane Safety

- Activities must develop the written examinations for each type and category of crane for which a license is to be issued including questions regarding:

- ☐ Particular operating characteristics and features of the activity's crane
- ☐ Unique mission requirements of the activity
- ☐ Local safety requirements

- Existing written examinations that do not address the applicable types and categories shown in NAVFAC P-307 2016, paragraph 8.7.3.1 shall be re-developed and shall be administered when the affected operators are due for license renewal.

NOTE: Activities that utilize mobile and Category 4 cranes shall also develop and administer load chart exercises specific to each type of crane in use at their activity

- Sections 7 and 8 of NAVFAC P-307 now include all the requirements for training, testing and licensing of crane operators.

- The passing grade for the written examination has changed from 70 to 80 percent.

Training

Navy Crane Center 16-T-2 - Module 27

## WEIGHT HANDLING SAFETY BRIEFS

**N**avy Shore Weight Handling Safety Briefs (WHSBs) are provided for communication to weight handling personnel. Data analysis indicates a negative trend related to the occurrence of dropped load accidents at naval activities. These types of accidents can result in personnel injury if personnel are not focused on complying with the fall zone avoidance requirements of NAVFAC P-307. This WHSB is being issued as a reminder for all personnel to increase their focus on the fall zone and on the prevention of dropped load accidents.

The WHSB is intended to be a concise and informative, data driven, one page snapshot of a trend, concern, or requirement related to recent/real time issues that have the potential to affect weight handling performance and

efficiency. The WHSB is not command specific and can be used by your activity to increase awareness of potential issues that could result in problems for your weight handling program. The WHSB can be provided directly to personnel, posted in appropriate areas at your command as a safety reminder to those performing weight handling tasks, or used as supplemental information for supervisory use during routine safety meetings. Through data analysis of issues identified by accident and near miss reports, and taking appropriate actions on the information we gain from that analysis, in conjunction with effective communication to the proper personnel, we have the tools to reduce serious events from occurring. As we improve the Navy weight handling safety posture, we improve our performance, thereby improving our efficiency, resulting in improved Fleet Readiness!

# Navy Shore Weight Handling Safety Brief!

**Title: Benefits of Near Miss Reporting**  
**Target Audience: All Personnel Associated with the Weight Handling Program**

**Don't just say "Whew, that was close!". Document it. Share it, along with LESSONS LEARNED, within your organization.**

3 March 2017

- **Near misses** can provide valuable lessons to help prevent accidents. A near miss is an accident that almost took place. Near miss reports are a key to preventing significant accidents, and are required to be reported per NAVFAC P-307, paragraph 12.7. Training and awareness of near miss identification and reporting should be an integral component of every weight handling program.
- Why report a near miss? It's a free lesson without suffering an accident where someone gets hurt or damage occurs. The benefits of reporting a near miss far outweigh the time and cost required to investigate and report it. Our goal is to prevent accidents. The difference in a near miss and an accident is sometimes only an inch or a second, as in this case reported by a crane crew of a Navy command:  
*A crane team was assigned to lift a hydro-blast machine. The known weight was 9,000 pounds which the rigger-in-charge (RIC) established as a stopping point. As the team came up on the hoist, the stopping point (9,000 pounds) was reached without the load moving. The RIC stopped the lift and directed another rigger to remove a manhole cover on top of the machine. Inside, 300 gallons of water frozen was discovered adding several thousand pounds of additional weight that **could have resulted in an overload.***
- The accident was prevented by trained personnel who recognized a hazard and stopped in order to prevent a significant accident. This **positive behavior** is a vital component for improving and maintaining weight handling safety. Let this be a great example of why near miss reporting is so important!

**SAFETY**

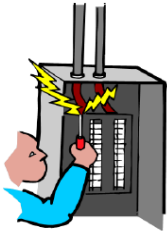
Navy Crane Center 17-S-01



# Weight Handling Safety

# Brief!

Title: WORKING ON OR NEAR ELECTRICAL EQUIPMENT  
Target Audience: ALL WEIGHT HANDLING PROGRAM PERSONNEL



## It's Your Job to Know!

- ✓ Know the hazards of electricity
- ✓ Know the equipment
- ✓ Use safe work practices
- ✓ Inspect PPE before each use
- ✓ Don't work on energized circuits unless absolutely necessary, and then only with proper permission and controls

## Report and Document Unsafe Conditions!

28 March 2017

- ❑ In the past month, individuals from two different Navy activities received electrical shocks while performing routine electrical work (non-crane work) when basic safety procedures were not followed. More importantly, a FATAL shock recently occurred at a DOD (Army) facility during crane maintenance. While the details of the fatal shock are still under investigation, it serves as a reminder that good electrical safety work practices are essential to the protection of personnel from electrical shock. Most electrical shocks result from **unsafe work practices** in the vicinity of or while working on energized equipment, including equipment thought to be deenergized.
- ❑ Electrical accidents are largely preventable through proper training, safe work practices and equally important, setting and enforcing the proper standards and expectations during oversight of work. For example:
  - Deenergize equipment before inspection/repair using proper lock-out/tag-out procedures.
  - Keep tools used for electrical work properly maintained and insulated.
  - Exercise caution when working on or near energized equipment. Working near energized power lines, hot rails, etc. from a ladder or aerial work platform can be particularly hazardous.
  - Use the required (appropriate) PPE.
  - Ensure all cognizant employees are properly trained and thoroughly familiar with the safety procedures for their particular jobs.
  - Ensure that all safety rules, requirements, and procedures are implemented and followed at all times.
- ❑ For those servicing activities that already have monitoring (surveillance) programs in place (as required per NAVFAC P-307 2016, par. 2.6), oversight of electrical work should be a part of your monitoring program. NAVCRANECEN evaluation teams will be reviewing this area during upcoming evaluations.

**SAFETY**

Navy Crane Center 17-S-02

## DID YOU KNOW?

In August 2016, the National Fire Protection Association (NFPA) issued the 2017 edition of NFPA 70, better known as the National Electrical Code (NEC). Several changes were made to the 2017 NEC in Article 610 specifically concerning cranes. They are as follows:

Section 610.32 - The last sentence of the section has been rewritten to state that "Means shall be provided at the operating station to open the power circuit to all motors of the crane or monorail hoist." This change clarifies the requirement for a means to remove power to be located at the operating station whereas previous editions of the NEC qualified this sentence by stating "Where the disconnecting means is not readily accessible from the crane or monorail hoist operating station, means shall be provided

at the operating station to open the power circuit to all motors of the crane or monorail hoist." Section 610.42(B)(3) – This section was deleted in its entirety. Previously, this paragraph allowed taps without separate overcurrent protection for brake coils. However, with the advent of Variable Frequency Drives and other electronic controls, there is typically a long conductor run between the control cabinet and the brake coil on most new cranes that may be inadequately protected. Therefore, the risk of fire and severe damage for new applications beyond the original intent of the existing code language warranted elimination of this allowance.

Section 610.43(A)(3) - This section was updated to better explain how thermal sensing devices should function, as the previous NEC did not adequately cover these devices.

The NEC now states that a function is considered to be protected from overload if the thermal sensing device limits travel for the specific function. Specifically, the hoist drive is considered to be protected if the sensing device limits the hoist to operation in the lowering direction in the event of a hoist motor overload. Similarly, in the event of a traverse (e.g., trolley, bridge) motor overload condition being sensed, only the affected traverse drive needs to be limited in operation (in both directions ) to be considered adequately protected. Section 610.55 – This section was deleted removing the functional requirements of limit switches from the NEC. As the purpose of the NEC is to provide guidance for electrical safety, the functional requirements of limit switches for cranes and hoists were determined to go beyond the scope of the NEC. However, the requirements for limit switches on cranes are still covered by other safety standards, such as the ASME B30 and OSHA.

All of the changes to the NEC were incorporated into the current revision of NAVCRANECENINST 11450.2 prior to their incorporation in the NEC. Therefore, these requirements are applicable to new procurements; however existing cranes need not be modified if the requirements of NAVFAC P-307 (2016), paragraph 6.4.7.a are met. Safety standards such as the NEC are constantly being revised for new technologies, clarifications, and updates with the changing market. It is important to stay abreast of these changes to ensure the Navy is receiving cranes and modifying cranes in accordance with the latest safety standards/regulations.

We are always interested in learning about advances in weight handling equipment. If you have found new technology please share with our editor, [nfsh\\_ncc\\_crane\\_corner@navy.mil](mailto:nfsh_ncc_crane_corner@navy.mil).



## WEIGHT HANDLING PROGRAM SAFETY VIDEOS

**Accident Prevention** provides seven crane accident prevention lessons learned videos to assist activities in raising the level of safety awareness among their personnel involved in weight handling operations. The target audiences for these videos are crane operations and rigging personnel and their supervisors. These videos provide a very useful mechanism for emphasizing the impact that the human element can have on safe weight handling operations.

**Weight Handling Program for Commanding Officers** provides an executive summary of the salient program requirements and critical command responsibilities associated with shore activity weight handling programs. The video covers NAVFAC P-307 requirements and activity responsibilities.

**Mobile Crane Safety** covers seven topics: laying a foundation for safety, teamwork, crane setup, understanding crane capacities, rigging considerations, safe operating procedures, and traveling and securing mobile cranes.

**"Take Two" Briefing Video** provides an overview on how to conduct effective pre-job briefings that ensure interactive involvement of the crane team in addressing responsibilities, procedures, precautions, and operational risk management associated with a planned

crane operation.

**Safe Rigging and Operation of Category 3 Cranes** provides an overview of safe operating principles and rigging practices associated with Category 3 crane operations. New and experienced operators may view this video to augment their training, improve their techniques, and to refresh themselves on the practices and principles for safely lifting equipment and materials with Category 3 cranes. Topics include: accident statistics, definitions and reporting procedures, pre-use inspections, load weight, center of gravity, selection and inspection of rigging gear, sling angle stress, chafing, D/d ratio, capacities and configurations, elements of safe operations, hand signals, and operational risk management (ORM). This video is also available in a standalone, topic driven, DVD format upon request.

All of the videos can be viewed on the Navy Crane Center website:

[http://www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/ncc/about\\_us/resources/safety\\_videos.html](http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc/about_us/resources/safety_videos.html).

## SHARE YOUR SUCCESS

We are always in need of articles from the field. Please share your weight handling/rigging stories with our editor [nfsh\\_ncc\\_crane\\_corner@navy.mil](mailto:nfsh_ncc_crane_corner@navy.mil).

### HOW ARE WE DOING?

We want your feedback on the Crane Corner.

Is it Informative?

Is it readily accessible?

Which types of articles do you prefer seeing?

What can we do to better meet your expectations?