THE CRANE CORNER

Navy Crane Center Technical Bulletin

https://portal.navfac.navy.mil/ncc ***75th Edition – September 2012***
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A WORD FROM TOPSIDE

As we approach having the complete weight handling data for Fiscal Year (FY) 2012, the data looks encouraging. The total number of crane and rigging gear accidents is currently lower than the same period in FY 2011. But the total number of reports is less important than reducing the severity of the accidents. Much more noteworthy is the reduction in what we classify as "significant" accidents (injuries, dropped loads, overloads, and two-block accidents), as well as accidents meeting the OPNAV reporting threshold that fall outside our significant accident classification. Currently, the FY 2012 total for these type accidents is significantly below last year's numbers…reflecting a major reduction in potentially serious accidents.

I am convinced much of this achievement is due to your focus on the many more minor events, whether ultimately classified as accidents or near misses, as well as the unsafe practices and conditions that are being discovered and documented through heightened situational awareness and effective documented observations of weight handling operations. Sharing lessons learned from these minor events and conditions has proven to help reinforce safe practices, promote more effective lift supervision, and improve questionable lift processes and preconditions – BEFORE they can lead to a serious event. The collective Navy shore weight handling data reported thus far in FY 2012 is evidence of the benefit of this approach.

Many of you have heard of Heinrich's safety triangle. The theory is expressed many ways, one of which is: for every major accident, there are roughly 30 minor accidents, and roughly 300 near misses/unsafe acts. Put another way, if left unchecked, unsafe acts will eventually result in a major accident. Our mutual goal is to work at the lower end of this triangle and be "proactive" to eliminate, or reduce the risk of, a serious accident from happening, as opposed to being "reactive" to a serious event. The records show that you are paying attention. In addition to the improvement noted above, near-miss reports submitted to the Navy Crane Center have doubled from last year. We are certainly not yet at the ten-to-one ratio of near-miss reports to accident reports, but we are improving. Any identified unsafe act is worth documenting and reporting. If it happens at your activity, it can be, and most likely is, happening elsewhere, and your corrective actions could be shared with many others. Eventually, we can reshape the Navy's weight handling "accident triangle" to eliminate events occurring near the apex of the triangle and not have to react to a serious or catastrophic event.

The first quarter of FY 2013 comes with its own set of challenges. In many regions, changes in the weather will become noticeable. Daylight will be reduced. Multiple holiday events can cause distractions. Increased leave will result in crane team substitutions and new faces on the team. Every crane team member should be empowered, encouraged, and challenged to identify anything that just doesn't look right or wasn't done well and could be done safer, and raise those issues to supervision and management. This self-critical reporting is an indication of a healthy program and an activity that is serious about working on the right things, at the right level, supporting continuous incremental improvement. Taking action to address these issues will send a positive message to the crane teams and

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foster further overall improvement. We owe this to each person working in our Navy's weight handling program, as well as to Fleet Readiness. As we know, an added benefit of safer weight handling operations is the improvement to mission execution efficiency that results. The efficiency of mission execution is significantly improved by preventing personnel injury, equipment damage, and schedule disruption that can result from weight handling accidents.

CRANE SAFETY ADVISORIES AND EQUIPMENT DEFICIENCY MEMORANDA

We receive reports of equipment deficiencies, component failures, crane accidents, and other potentially unsafe conditions and practices. When applicable to other activities, we issue a Crane Safety Advisory (CSA) or an Equipment Deficiency Memorandum (EDM). A CSA is a directive and often requires feedback from the activities receiving the advisory. An EDM is provided for information and can include deficiencies to nonload bearing or nonload controlling parts. A complete list of CSAs and EDMs can be found on the Navy Crane Center's web site.

We have had no CSAs or EDMs this quarter.

WEIGHT HANDLING SAFETY BRIEF

The attached Weight Handling Safety Brief (WHSB) is provided for communication to personnel associated with Navy Shore Weight Handling. This WHSB provides information on requirements associated with the barricading of the swing radius of mobile cranes where pinch point hazards are created due to the rotation of the superstructure. The intent of this WHSB is to remind crane operations/rigging personnel that a physical barrier must be erected to warn and keep employees from entering the danger area where they can be struck or crushed by a rotating crane.

The Navy Shore 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 our 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 it can be 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: Barricading the Swing Radius of Mobile Cranes

Target Audience: Personnel who Supervise, Operate, or Work with Mobile Cranes

Paragraph 10.11 of NAVFAC P-307 requires that accessible areas within the swing radius of the rotating superstructure of a crane must be barricaded to prevent personnel from being struck or crushed by the crane. The intent of this requirement is to provide a physical barrier to warn and keep employees from entering the danger area where they can be struck or crushed by a rotating crane.

- A "barricade" is typically a device that delineates and warns of a boundary that is not to be crossed, or an obstruction to deter the passage of persons or vehicles.
- Examples include: tapes, screens, rope, wire, chain, "A"-frame type wood or plastic, fencing and other structures that are intended to warn and limit access to an area. There are no strength requirements for the items used.
- The barricade should be installed in a manner that keeps personnel out of the potential danger area. Attachment of warning or caution tape, chains, or rope to the outriggers, carrier frame of the crane, or other objects are acceptable methods.
- Placing a single cone or item between the outriggers or at each outrigger on a mobile crane does not meet the requirement for the barricade unless the item extends the entire length of the accessible area and extends beyond the swing radius of the crane.
- Load testing operations are not excluded from this requirement. Performing a pre-job brief that includes all hazards involved with the operation adds to the level of personnel awareness, but does not remove the requirement to establish the barricade.

16 July 2012

SAFETY

Navy Crane Center 12-S-04

WEIGHT HANDLING TRAINING BRIEF

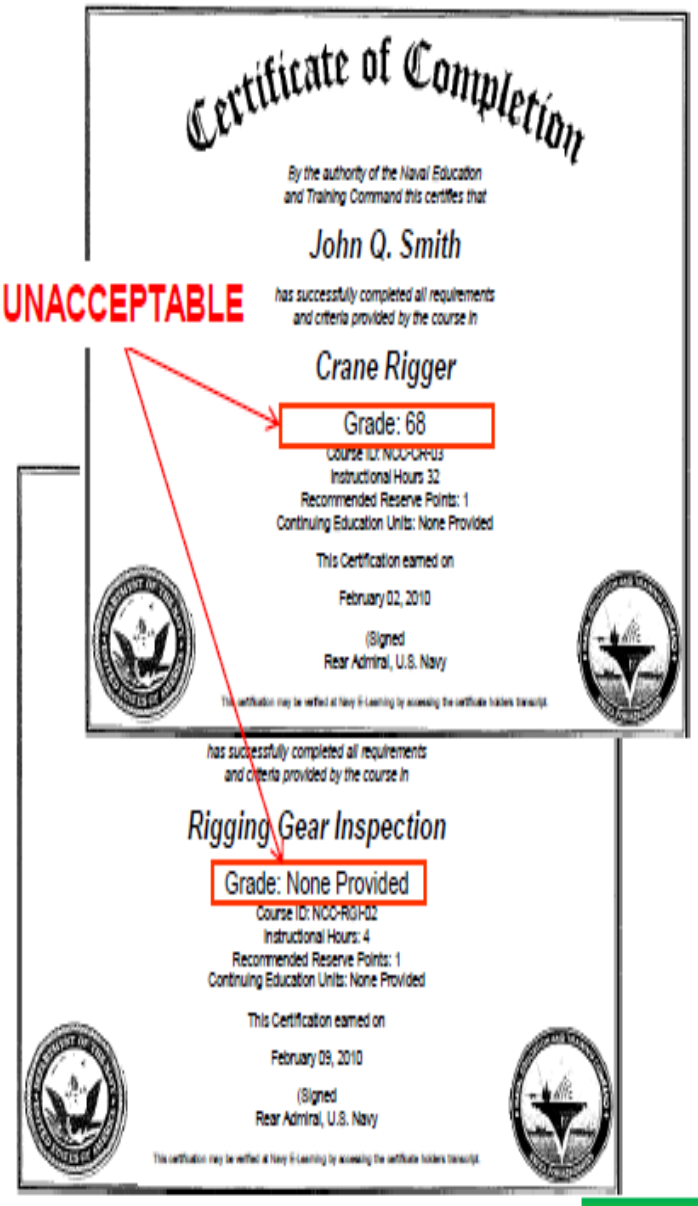
The attached Weight Handling Training Brief (WHTB) is provided for communication to personnel associated with Navy Shore Weight Handling. Recent weight handling audits have identified a problem associated with the printing of certain weight handling training certificates following the completion of web based training. An intermittent anomaly in the Navy Knowledge Online / Navy E-Learning (NKO/NEL) web-based NAVFAC P-307 Weight Handling training courses occasionally allows course completion certificates to be printed with an unsatisfactory score or no score at all. The purpose of this brief is to make cognizant personnel aware of this training anomaly and to remind personnel of the testing performance requirements for successfully completing a Navy shore weight handling training course. This information is specifically applicable to all personnel who are involved in the supervision and/or training of weight handling personnel and all personnel who complete NKO/NEL web based Navy Shore weight handling equipment training courses.

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. ■

Navy Shore Weight Handling Training Brief!

Title: NKO/NEL Weight Handling Training Completion Certificates

Target Audience: WHE Managers and Users of NKO/NEL to complete NAVFAC P-307 Courses



- In several instances, an anomaly in the Navy Knowledge Online / Navy E-Learning (NKO/NEL) web-based system for NAVFAC P-307 Weight Handling training courses has allowed course completion certificates to be printed with:
  - *an unsatisfactory score or*
  - *no score provided*
- The minimum passing score for all NAVFAC P-307 courses is 70% - anything less is unsatisfactory and unacceptable
- All NKO/NEL completion certificates for NAVFAC P-307 courses should have a score listed under the course title.
- Commands, activities, and contractor organizations who utilize NKO/NEL to complete NAVFAC P-307 courses are responsible for validating satisfactory completion of training prior to assigning WHE duties and tasks
  - *review employee completion certificates*
- If you believe your completion certificate has been generated and/or scored incorrectly, report it to the NKO/NEL help desk for resolution.
  - COMM: (850) 452-1001, Option 1
    DSN: 922-1001, Option 1
    Toll Free: (877) 253-7122, Option 1
- NCC is working with NKO to isolate and correct the cause of this anomaly.

14 September 2012

Training

Navy Crane Center 12-T-02

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS THIRD QUARTER FY12

For the 3rd quarter of FY12, 61 Navy WHE accidents (47 crane and 14 rigging) and 35 near miss occurrences (23 crane and 12 rigging) were reported. A total of nine contractor crane and rigging accidents were also reported. Of the 61 Navy WHE accidents, 11 were considered significant (overload, dropped load, two block, or injury). This represents the lowest percentage of significant accidents to total accidents reported in the last two years. Most Crane accidents are the result of human error and the most commonly cited cause is inattention. Lessons which can be shared from the significant Navy crane accidents are discussed herein.

The 35 near miss reports represent the highest number reported in a quarter. This is a very positive trend. More activities are recognizing that taking corrective actions and reporting these events can help preclude accidents from occurring. A near miss is a situation where an accident was avoided by mere chance or where intervention prevented an ongoing sequence of events that would have resulted in an accident. The increased reporting of near misses is not negative or indicative of a poor weight handling program. Discovering crane and rigging problems or actions that may lead to an accident and preventing accidents from occurring is positive and key to reduction and subsequent elimination of accidents. Shared lessons learned from near misses will help to improve the awareness and knowledge of all personnel involved in weight handling. Examples of near misses reported this quarter are as follows: (1) Wire rope was found miss-spooled (no damage) on three overhead hoists. (2) During the pre-use check, the operator noticed a rope lying on the crane rail after a suspended load lift with a forklift. It was found that the operator was untrained in rigging and the rigging gear was not in the program. (3) A suspended load was rotated over personnel and an uncertified pole truck was used to make a lift. (4) Proper procedures for complex lifts were not followed during a lift and the crane operation was stopped when misaligned trolley wheels were noticed. (5) The hoist block continued to drift during an ODCL because the primary hoist brake had been left in the open position. (6) A swivel hoist ring was found loose after a lift. These events were shared with all weight handling personnel at each of the activities where they were discovered.

OVERLOADS

Accidents: Six of the eleven significant crane and rigging gear accidents involved crane or rigging gear overloads (four crane capacity and two rigging gear overloads). Two of the four crane capacity overloads occurred during load testing. During load testing of a mobile crane, the test load was lifted beyond the planned radius due to boom break over. During another load test, an incorrect test load, which exceeded the maximum allowable test load for the selected radius, was lifted. Boom deflection, or break over, was not taken into consideration during the test. During positioning of a container onto a ship, a portal crane was overloaded when the boom was inadvertently lowered beyond the certified radius of the crane. In another accident, two shackles being used to lift and position a battery were overloaded and damaged during use. Personnel did not verify the capacity of the shackles prior to lifting.

Lessons Learned: When lifting test loads, always lift the load well within the maximum radius and slowly boom down to the pre-measured radius. When lifting heavy loads with mobile cranes, the boom position should be adjusted as necessary to compensate for deflection or boom break. The signal person should assist in keeping the hoist or block directly over the load. To accomplish this, the boom may need to be raised in lieu of raising the hoist when lifting the load. Similar actions may also be required when lifting heavy loads with floating cranes, where the crane is subject to listing. Personnel must remain alert at all times and ensure the crane and rigging gear have adequate capacity to lift the load in the configuration used.

TWO-BLOCK

Accidents: Three two-block accidents occurred during crane operations. During no load operational testing of the upper limit switch on a Category 3 jib crane, the hoist was raised into the upper limit switch. The operator tried to lower the hoist, but could not. The hoist was two-blocked and the limit lever was damaged. During the accident investigation, it was discovered that the crane had a phase reversal in the wiring. In another accident, while performing an operational check of the upper limit switch on a Category 3 crane, the anti-two-block device did not function properly and the hoist was two-blocked. In yet another accident, while attempting to raise a crane boom out of the support saddle, or stowed position, the operator inadvertently raised the hoist and boom at the same time and the hoist two-blocked.

Lessons Learned: Operators are required to perform an operational check of all functions prior to operation. If the crane functions (i.e., hoist, trolley, or bridge functions) do not operate properly or as labeled, the inspection and crane operation should be stopped and supervision should be notified. One of the first functions that should be tested is the hoist up function. If the phases are reversed, the hoist will lower. Personnel must monitor hook clearances and ensure two-blocking, collision, or contact does not occur during these operations. When testing the upper limit switch, the hoist should be raised at the slowest possible speed or inched into the upper limit switch. Operators should not stand directly under the hoist during this test and should be in a position to monitor the hoist movement and stop movement if the limit switch fails or the hoist block does not stop prior to contacting the crane sheaves, drum, or structure.

DROPPED LOADS

Accidents: One dropped load accident occurred during the 3rd quarter of FY12. During load testing of a portal crane's whip hoist, a test load made contact with the ground when the brakes were defeated (released) by personnel without direction of the test director.

Lessons Learned: Prior to conducting load tests, the test director must conduct an interactive pre-job briefing to ensure that all personnel understand what work is to be performed. Communication between all test team personnel must be understood and maintained throughout the test evolution. If communication is lost or misunderstood, personnel should stop the test. Testing should not be continued until communication is re-established and understood by all test team members.

INJURY

Accidents: One injury occurred during crane operations this quarter. During repositioning of a cover, the rigger-in-charge (RIC) placed his hands on the upper edge of the cover while another rigger pulled on a tagline. The load shifted, resulting in the RICs right hand index finger and middle finger being pinched between the cover and a cover mount.

Lessons Learned: Personnel should remain alert and aware of their surroundings at all times. Personnel should not place any part of their body (i.e., hands, fingers, arms, etc.) in a pinch point between the rigging gear, load, or other obstructions during movement of the load or during the tensioning of rigging gear.

COLLISIONS

Accidents: Collisions continue to be the leading crane accident type. 20 of 47, or just over 42 percent of Navy crane accidents reported during the 3rd quarter of FY12 involved collisions (16 crane collisions and 4 load collisions). The next highest crane accident type reported was damage to synthetic slings with a total of five. Maintaining crane and load clearances should be stressed to all personnel involved in crane and rigging operations. Pre-job briefs, including discussion to ensure adequate clearances are maintained during all crane operations, and the placement of additional personnel to monitor areas of restricted or poor visibility should be performed to aid in reducing collisions.

Additional weight handling accident prevention information can be found on the Navy Crane Center website at https://portal.navfac.navy.mil/NCC.

Weight handling program managers and safety officials should review the above lessons learned with personnel performing weight handling functions and consider the potential risk of accidents occurring at your activity. Contracting officers should share this information with representatives who oversee contractor weight handling operations. This is also a good time to reinforce the principles of operational risk management. Our goal remains zero weight handling accidents. ■

SHARE YOUR SUCCESS

We are always in need of articles from the field. Please share your sea stories with our editor nfsh_ncc_crane_corner@navy.mil.

WEIGHT HANDLING PROGRAM SAFETY VIDEOS

Accident Prevention, seven crane accident prevention lessons learned videos are available to assist activities in raising the level of safety awareness among their personnel involved in weight handling operations. The target audience for these videos is 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 ensures 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 stand alone, topic driven, DVD format upon request.

Note: ***"Load Testing Mobile Cranes at Naval Shore Activities"*** is currently being updated to address the revised load test procedures in the December 2009 edition of NAVFAC P-307.

All of the videos can be viewed on the Navy Crane Center website:
https://portal.navfac.navy.mil/ncc.

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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?

Please email your comments and suggestions to ***nfsh_ncc_crane_corner@navy.mil***