



# THE CRANE CORNER

## *Navy Crane Center Technical Bulletin*

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### WORD FROM TOPSIDE

*Sam Bevins*

**T**he Navy has an exemplary shore activity weight handling program. This is recognized both within and outside of the Navy. As we near the end of the reporting period for Fiscal Year 2013, thus far there has been only one accident that has met the OPNAV reporting threshold and that was a Class C accident. Millions of lifts are performed safely each year by more than 400 shore activities, detachments, and shore-based operating units with the Navy's extensive inventory of cranes and related gear. These lifts are performed by dedicated people who know the requirements, are properly trained, and who are focused on the job at hand, from the selection and pre-use inspection of the equipment, through the lift process, to the completion of the lift. Our focus on reporting and learning from the small events continues to pay off in minimizing the more serious accidents. Our challenge will be to carry this positive effort into the new fiscal year.

Where do we go from here? A key to a successful program, like those 400+ weight handling programs noted above, is maintaining what I like to call a prudent dissatisfaction with the status quo. If you are not looking to improve, your weight handling program will be heading in the wrong direction. As you know, our focus at the Navy Crane Center is not solely on the OPNAV reportable accidents as very little can be learned from such a small database. Rather, we need you to identify and share with us, as well as with your personnel, the minor events, the near misses and other unplanned occurrences.

Many activities have initiated oversight programs where peers and supervisors objectively observe crane lifts, rigging operations, maintenance procedures, inspections, etc., and identify behaviors such as short cuts, omissions, inattention, and a dozen other things that could have jeopardized the evolution and resulted in an accident. Some of these "surveillance programs" are well-founded and are effective at identifying "tangible" deficiencies; i.e., those circumstances which have a strong potential to result in a weight handling accident. Most activities are still in the "start-up" stage and have not yet developed the proficiency to spot all hazardous acts or situations. A good oversight program will provide big dividends in both weight handling safety and weight handling efficiency, i.e., doing the job right the first time or identifying improvements in the process. Supervisors can use the items found from surveillances in daily and weekly team briefings. "Better ideas" can be formulated when observed problems are shared. The idea is to use the findings in a positive way to make effective improvements.

Another key process in continuous improvement is a thorough, self-critical, i.e., inwardly focused self-assessment of your weight handling program. As with the oversight program mentioned above, the self-assessment process requires significant proficiency in rigorously assessing where shortcomings and areas for improvement exist in your program. Nevertheless, with practice (which means not just assessing your program a

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month before a Navy Crane Center audit), the process will reveal worthwhile improvement areas.

Weaknesses in one or the other (or both) of the above two areas are common themes in the majority of our audits of shore activities' weight handling programs. If I were to answer where we go from here in our continuous improvement journey, it would be to develop or improve these two processes. They will provide a big bang for the buck as we continue to strive for continuous improvement in safety, efficiency, and effectiveness. As we know, a safe, efficient, and effective weight handling program is an essential enabler for Fleet Readiness. ■

## **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 website.

### **CSA 206 – Coffing Chain Hoist Model LLH 1 Ton Manual Chain Hoist**

#### **Background:**

A. The purpose of this CSA is to inform activities of a failure of a Coffing Model LHH 1-ton manual chain hoist upper hook yoke pin due to the hoist being repeatedly operated with a loose yoke pin nut (Items 33 and 56 of the LHH Operations, Maintenance, and Parts Manual).

B. An activity reported the failure of a Coffing Model LHH 1-ton manual chain hoist in which the upper hook separated from the hoist housing. Subsequent investigation discovered that the failure occurred in the threaded portion of the yoke pin because the nut that secures the yoke pin in place was loose. When this connection is loose, the yoke pin can move laterally in the hoist housing until the threads of the yoke pin bears against the hoist frame side plate. This reduces the load bearing capacity of the yoke pin. This upper hook yoke pin design is common to Coffing Model LHH (1/2-ton through 5-ton capacity) manual chain hoists.

C. Activities are reminded that NAVFAC P-307 requires pre-use (frequent) inspections and periodic (annual) maintenance inspections that include a general condition inspection checking for loose fasteners. These prescribed inspections are intended to identify equipment deficiencies prior to use with attention to detail key to accident prevention.

#### **Direction:**

A. Prior to the next use, activities shall check Coffing Model LHH (1/2-ton through 5-ton capacity) manual chain hoists upper hook yoke pins to ensure the yoke pin nut is properly tightened. The yoke pin nut is properly tightened when the split lock washer is compressed flat against the hoist frame side plate and the yoke pin is approximately flush with the nut.

## **EDM 102 – Loose Rotate (Turntable) Drive Pinion Gear Bolt**

A. The purpose of this EDM is to inform activities of the possibility of loose bolts on rotate (turntable) drive pinion gears on mobile cranes.

B. An activity reported a loose bolt holding the rotate drive pinion gear in place on a Grove 635C Mobile Crane. In the event this bolt became disengaged, the turntable pinion gear could have fallen off the crane allowing the upper works of the crane to rotate freely. Subsequent corrective action was to tighten the bolt using a thread locking compound and to include tightness checks into scheduled preventive maintenance instructions.

C. Activities are reminded that NAVFAC P-307, Appendix C, Item 29a requires inspections of these external gears, which includes inspection for loose fasteners. Additionally, P-307, Paragraph 2.5, requires local instructions be developed for performing preventive maintenance based on OEM recommendations and Navy experience. Navy Crane Center recommends that activities review local inspection and maintenance instructions for inclusion of rotate drive pinion gear bolt tightness checks where applicable. ■

### **WEIGHT HANDLING SAFETY AND EFFICIENCY IN A CHALLENGING FISCAL ENVIRONMENT**

SECNAV Instruction 11260.2A notes "safe and reliable weight handling is critical to the operation of the Navy." The current environment presents multiple challenges to weight handling managers and supervisors, especially in the area of fiscal management and diligence to safety.

Weight handling program managers are encouraged to take full advantage of the cost-avoidance opportunities afforded by NAVFAC P307. Extending the load test cycle of category 2 and 3 cranes to four years can result in considerable cost avoidance. Crane hook nondestructive testing (NDT) cycles have been expanded and NDT of the hook nut has been eliminated. Maintenance periodicities based on engine hours of low-usage cranes will avoid unnecessary servicing. In addition, our audits continually find equipment at numerous activities that see little or no usage. Significant costs can be avoided by removing unneeded equipment from the program.

Of course, a big factor in avoiding unnecessary cost is ensuring the maintenance, inspections, testing, and operations are performed correctly the first time. Weight handling managers, supervisors, and team leaders must strive to maintain focus on the job at hand. Ensure that jobs are adequately staffed by qualified personnel to guard against the possibility of "cutting corners" to get the job done. Ensure the job can be done correctly and safely or do not allow it to be performed.

As the Chief of Naval Operations recently reaffirmed, "we will only execute our missions with the proper training, resources, and safety measures." This applies to the mechanic, the inspector, the test team, the independent category 3 crane operator, and to the crane and rigging teams. Personnel should be reminded that no task is so important or urgent that it cannot be done safely.

Weight handling safety is paramount. The critical and high risk nature of weight handling work requires strict compliance to requirements. To date, the Navy's weight handling program has improved in the area of reducing accident severity and in the reduction of OPNAV reportable events over the comparable FY-12 period. These

improvements are the result of your weight handling personnel placing continuing positive focus on weight handling safety. Our challenge is to maintain that focus as we deal with the fiscal constraints as well as potential distractions brought on by planned summer vacations/leave. As you are aware, most weight handling accidents are attributed to human factors where lack of attention to the task at hand can lead to accidents with potential injuries, equipment damage, and mission execution inefficiencies/impacts.

Navy weight handling managers should readdress these challenges with their personnel in order to maintain focus and reduce the risk of accidents during this challenging period. Good planning, teamwork, communication, and situational awareness are all valuable tools for use in reducing weight handling risks. Operational risk management (ORM) must be a fundamental element of any undertaking.

Safe and reliable weight handling operations directly support fleet readiness, enabling overhauling, repairing, fueling, refueling, and arming ships and submarines. ■

### **WEIGHT HANDLING SAFETY BRIEF**

**T**he Weight Handling Safety Briefs (WHSB) are provided for communication to personnel associated with Navy Shore Weight Handling. One of the most common "near miss" events reported to the Navy Crane Center involves the "improper spooling" of hoist wire rope onto the drum. In most instances, the condition was recognized before any damage to the wire rope occurred. However, there have been similar events that resulted in damage and were reported as crane accidents. Wire rope spooling deficiencies have been especially prevalent on category 3 wire rope hoists where the cause of improper spooling was primarily attributed to "side pulling" or lifting a load at an angle. Improper spooling also frequently occurred as a result of the crane/hoist being in hoist motion while the hook block was swinging due to crane movement. This WHSB reiterates precautionary measures used to avoid improper crane hoist wire rope spooling.

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!

When Navy Shore Weight Handling Safety Briefs are issued, they are also posted on the NCC's web site at: [http://www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/ncc.html](http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc.html). ■

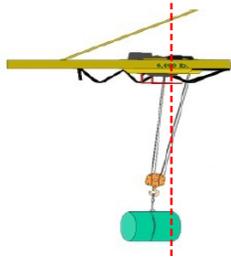
Title: Crane Hoist Wire Rope Drum Spooling Precautions  
 Target Audience: Crane Operators and Supervisors



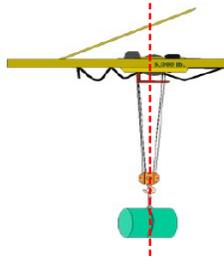
IMPROPER SPOOLING / DRUM MIS-SPOOL



Mis-spools cause: flattening, crushing, abrading, distorting or kinking of the wire rope



Incorrect



Correct

14 June 2013

Crane near misses occur when an accident is avoided by mere chance or where intervention prevented an ongoing sequence of events that would have resulted in an accident. The most frequently reported near miss involves improper spooling of the hoist wire rope onto the drum (mis-spooling). Mis-spooling occurs when a hoist's wire rope is wrapped on the drum unevenly or is overlapped. If not identified, wire rope mis-spooling can lead to damaged wire rope, possible dropped loads, and loss of crane availability. Eighteen mis-spooling conditions have been reported during this calendar year (most being on category 3 cranes), including four that resulted in crane accidents.

**CAUSES OF IMPROPER DRUM SPOOLING:**

- **Rapid movement or sudden stopping** of the crane's bridge and/or trolley motion **while hoisting** can cause the **hoist block to swing excessively** leading to improper reeving of the hoist.
- **Hoisting without sufficient tension** on the wire rope. Commonly occurs during no load hoisting on some mobile cranes.
- Hoisting while **applying an end or side pull** on the hoist.

**DRUM SPOOLING PRECAUTIONS:**

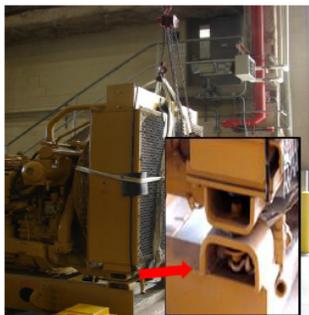
- **Operate** the crane in a safe manner, raising the hook block **slowly and smoothly**. Avoid rapid starts and sudden stops to **prevent swinging** the hoist block.
- Operate one function at a time to minimize hook block swing.
- **Pay particular attention to the drum spooling** while hoisting with no load and during stowage of the hook block.
- **Ensure the hoist line is vertical and over the load's center of gravity** prior to lifting. Cranes and hoists are designed to lift straight up and lower straight down! They are not designed to drag or pull a load horizontally!
- For mobile cranes it may be necessary to monitor and guide the rope when spooling without a load. A nominal load may be required when winding the first layer on the drum.

**SAFETY**

Navy Crane Center 13-S-02

Title: CRANE/RIGGING GEAR OVERLOADS DUE TO BINDING  
 Target Audience: All Weight Handling Personnel, Supervisors, and Managers

**CONSTRAINED LIFT**



Portable Load Indicating Device with chain fall



5 August 2013

Crane & rigging gear **overloads** are significant accidents with potentially severe consequences including dropped loads, damaged equipment, and injury to personnel. A negative trend in the occurrence of potential crane or rigging gear overloads due to **lifting loads that are constrained** (binding condition) or lifting loads that are **anchored (fasteners left in place)** has been identified.

**Methods for Overload Prevention**

- **Know, or have a reasonable estimate of, the weight to be lifted.**
- **Know the weak link** in your rigging gear configuration and **do not exceed.**
- **Remove all hold-down fasteners. Ensure the load is free to lift. A SECOND CHECK IS ALWAYS ADVISIBLE!**
- **Portable load indicating devices (LID)** will be used when overload due to binding conditions is possible. The LID readout shall be readily visible to the signal person or RIC. A LID should also be utilized where it cannot be positively verified that all hold-down fasteners have been removed.
- **Stopping points** shall be **established, LID monitored** and stopping point **not exceeded.**
- **Chain falls, or other hoisting control means,** shall be used to avoid sudden overload when necessary.

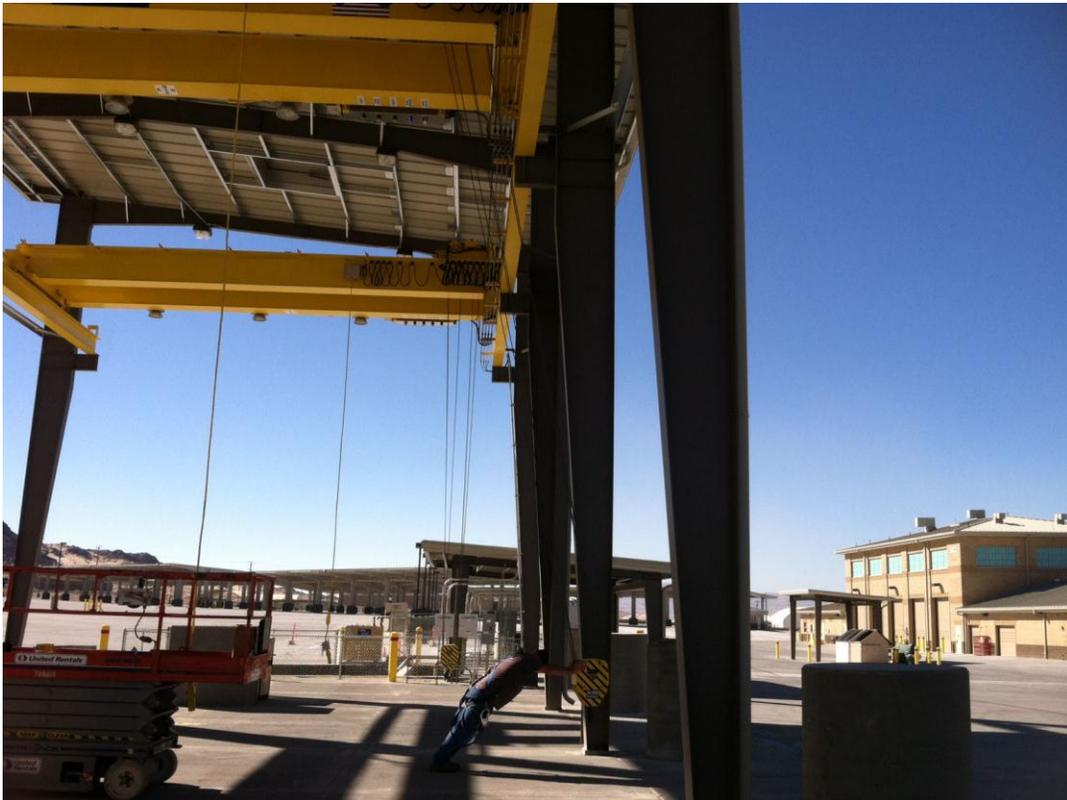
The above are a few of the Pre-lift preparation tools that can be used to avoid overloads. **NAVFAC P-307, paragraph 10.5** provides Pre-lift preparation guidance for operation safety. If there are any concerns, stop and contact your supervisor or engineering personnel.

**SAFETY**

Navy Crane Center 13-S-03

## 35-TON AND 10-TON TOP RUNNING BRIDGE CRANES

***D***uring June and July of 2013, the Navy Crane Center accepted one 35-ton and five 10-ton rated capacity, top running, double girder bridge cranes, and one 10-ton rated capacity, top running, single girder bridge crane with underhung trolley/hoist for a new vehicle maintenance facility constructed by the military construction program. Three of the 10-Ton double girder cranes are designed for outdoor service with a design ambient temperature of up to 150 degrees Fahrenheit (pictured below). They travel on one continuous 198 foot-long runway that covers nine separate bays. The 35-ton and two 10-ton indoor service double girder cranes and the 10-ton single girder crane are located in indoor areas of the new facility. All cranes have spans of approximately 40 feet, maximum hook heights of 30 feet, pendant mounted crane controls, and variable frequency drives that enable operating speeds of 13 feet per minute down to 1.3 feet per minute for hoists and 50 feet per minute down to 5 feet per minute for trolley and bridge travel functions. A 25% speed switch was included to enable very fine control of function speeds when needed. The scope of the crane acquisition contract included installation of finger-safe runway electrification systems, survey of the new facility contractor installed elevated crane rails, crane installation, and full performance testing. Runway surveys included measurements of rail straightness and span and levelness to ensure proper operation of the new cranes. Crane delivery and facility construction schedules were coordinated so that the new cranes were available for service coincident with completion of the facility. ■



## **“TIP OF THE SPEAR” (Notable Audit Items)**

### **Program Management**

Some activities have not recognized higher level (two-blockings, dropped loads, personnel injuries, overloads, and derailments) accident trends which have exceeded the Navy’s average of 25 percent (for FY13). In one case, an activity only relied on the Navy’s mishap reporting threshold (whose lowest threshold is \$50,000 in damage or a lost-time injury) when evaluating accident significance and no additional accident metrics were implemented or analyzed for patterns or other commonalities. As a result, an increase in the above-noted accident types was not recognized. Specifically, the audit team’s review of accidents identified that in the period since the last audit, 5 of the 11 (46 percent) reported accidents were significant as compared to only 2 of 13 (16 percent) during the previous audit period. Additionally, the majority (9 of 11) of accidents occurred on Fridays, weekends, or backshifts, including 4 of the 5 significant accidents. NAVCRANECEN highly recommends developing accident metrics that focus on reducing accident significance, which will also assist in identifying changing trends and patterns in the data.

At a number of activities, the audit team identified more tangible surveillance deficiencies during the audits than the activity identified during the previous 6 to 12 months of performing surveillances. Tangible deficiencies are those that if not corrected could result in a crane accident such as poor load control, crane movements without direction, inattentive crane team members, lack of or inadequate chafing protection, rigger-in-charge (RIC) not in overall control of the evolution, supervisors engaged in work, and poor planning. In many cases, the tangible deficiencies identified by the audit team were contributing factors to several reported crane accidents.

Audit teams identified repeat problems with insufficient gains in crane reliability. Although some process improvements were made to address crane reliability, these efforts were not effective at reducing malfunctions over the long term, and even short-term gains were not sustainable. At one activity, the majority (>70 percent) of malfunctions were electrical in nature and nearly all repeat malfunctions involved electrical components. The audit team identified that the activity lacked a robust electrical panel inspection process, coupled with inadequate documentation and resolution of electrical malfunctions.

### **Operations**

At one activity, the audit team identified numerous cranes with mis-spoiled wire rope on the wire rope drums. The majority of the mis-spoiled cranes were in one shop that had the potential for side loading based on operations normally conducted. NAVFAC P-307, paragraph 10.13, requires all lifts to be vertical only. The mis-spooling of one crane was severe (half of the wire rope was off the drum and wrapped around the drum shaft) and was determined to be a crane accident as the crane’s wire rope was damaged. Another instance of a mis-spoiled crane involved a monorail crane that had been certified just prior to the audit and locked-out by the program manager to prevent unauthorized use. The activity tagged each of the mis-spoiled cranes out of service until the service provider could perform an inspection of the wire rope.

At some activities, there were instances of crane team(s) not controlling the operation, contrary to training and management expectations. These included instances where the rigger-in-charge was performing work where other rigging team personnel were available and instances of crane movements without signals.

## **Contractor Cranes**

The audit team identified a contractor crane preparing for a personnel lift with a personnel platform that had recently been painted and did not have a visible safe working load. Additionally, the lift plan included a proof test that was contrary to OSHA 29 CFR 1926.1431 in that it did not meet the 125 percent load test requirement. After audit team prompting, the contractor subsequently provided certification papers indicating that the personnel platform had a larger capacity and test weight than was identified on the lift plan. A new lift plan, in compliance with 29 CFR 1926.1431, was developed prior to the required proof test and start of the job.

## **Maintenance, Inspection, Test, and Certification**

At one activity, several mobile cranes had multiple breakdowns during their most recent certification period. Of the eight history files reviewed, five of the cranes had repeat breakdowns with inadequate root cause analysis for the original breakdown and in several instances, there were multiple breakdowns prior to the root cause being identified. Examples include:

a. One mobile crane had three breakdowns within the past year for the boom (would not retract) with the last breakdown resulting in damaged boom components.

b. A second mobile crane had five breakdowns resulting in lost production service within the past year. Three of the breakdowns were attributed to hydraulic systems (hydraulic pump lever and two associated with outrigger hydraulic leaks).

c. A third mobile crane experienced five breakdowns within the past year. Two of the breakdowns were identified as error codes on the boom (less than a month between breakdowns). Additionally, in one instance the crane would not swing in one direction and in another instance, there was a lower engine error code.

d. A fourth mobile crane experienced six breakdowns within the past year. Three were for inoperative outriggers and two were for inoperative load moment indicators. Another involved a hydraulic swivel leak.

## **Engineering**

At one activity the audit team reviewed malfunction notifications for ten cranes and identified several examples of repeat malfunctions that had inadequate root cause analysis to identify and eliminate possible causes of the failures.

a. A mobile crane experienced three malfunctions where the crane would not start or would not continue to run once started. The third malfunction occurred during the week of the audit with a suspended load on the crane. Several causes had been documented including low fuel level, low fuel pressure, and a loose solenoid wire. The eventual corrective action culminated with replacing the fuel pump; however, no root cause determination confirming the fuel pump as the failed component was provided.

b. On one crane, five notifications reported failed low voltage coils, twice on the hoist and three times on the trolley. One notification identified the repeat malfunctions and stated in part that “engineering shall evaluate the coils to determine if they are the right coil for the application.” None of the five notifications addressed possible root causes for the repeated crane failures.

c. On the same crane, six malfunctions occurred due to failed overload relays on the bridge, trolley, and hoist functions. None of these notifications identified the possible root causes. The hoist overload relay was replaced with no cause provided and was replaced again one week later, also with no cause provided. Additionally, a brake was subsequently identified as overheating during operational checks. A later notification identified the repeat malfunction and stated “engineering shall determine feasibility of changing the overload relay style to improve crane reliability,” again with no reference to or identification of the root cause.

The audit team identified several instances of technical evaluations that did not clearly communicate the state of the equipment, the troubleshooting steps taken, and/or the corrective actions required which was probably a contributor to the high number of out-of-service cranes. Examples include:

a. Work order evaluations of repeat boom malfunctions on a mobile crane within a five month period did not contain root causes or state what positions the booms were in during the malfunctions.

b. Work order evaluations of repeat error codes on a mobile crane within a three month period did not contain positive verification that the part replaced was the root cause of the errors.

c. A work order for a mobile crane documented that there was no visual damage to the boom and that the crane was painted prior to completion of inspection. No further information was given to justify that no damage occurred (e.g. checks for unseen damage or photos).

### **Rigging Gear**

At one activity, records for the latest inspection reports for the entire rigging gear inventory could not be produced for review during the audit.

At another activity, the audit team identified a three-foot synthetic sling with cuts that met the rejection criteria of NAVFAC P-307, paragraph 14.7.4.2.2. The sling had been returned for recertification; however, the cognizant end user had not notified supervision or removed the sling from service. The activity is investigating this event as a potential rigging accident in accordance with NAVFAC P-307, paragraph 12.4.2.

### **Training**

The audit team identified instances where medical restrictions were not recorded on either the license or the crane operator license record, contrary to NAVFAC P-307, paragraph 8.2 and 8.3.1.3 respectively. In another instance, the back of the medical certificate that lists the actual restrictions was not copied, contrary to NAVFAC P-307, paragraph 7.1.1. ■

## SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS THIRD QUARTER FY13

**D**uring the third quarter, 58 Navy weight handling equipment (WHE) accidents (44 cranes and 14 rigging) were reported. Of the 58 Navy WHE accidents, 14 were considered significant (overload, dropped load, injury, or two block). Overall, the number of crane accidents decreased from the second quarters total by 17 percent. Twelve contractor WHE accidents were reported during the third quarter. Half of the reported contractor accidents were considered significant. A continued and constant focus on accident prevention is essential to reducing and potentially eliminating weight handling accidents.

### NEAR MISSES:

**Accidents:** Activities continue to take advantage of the value of capturing, documenting, and reporting near miss and/or other unplanned occurrence events. Through the third quarter of FY13, activities have increased the reporting of near miss events by 56 percent when compared to the same period of FY12. This encouraging statistic suggests that personnel are embracing the proactive approach of recognizing and reacting to unsafe practices or conditions that could potentially result in accidents. This focus on identifying, documenting, and correcting deficiencies at the lowest level possible goes a long way in eliminating the more significant issues and significantly improves the overall safety and efficiency of weight handling operations. 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. Examples of the various types of near miss reports submitted this past quarter include: the identification of crane deficiencies prior to operation including wire rope misspools, obstructed travel paths, and rigging gear deficiencies such as introduction of uncertified/unauthorized gear or defective gear, and work evolutions where rigging gear was incorrectly sized for the job to be performed.

### INJURIES

**Accidents:** There were four injuries reported during the third quarter of FY13 as compared to only one injury in the second quarter. Three of the four were hand/finger injuries which occurred in pinch points between moving and fixed objects. The other injury occurred when a lift rig failed at a welded joint and the load dropped unexpectedly and scraped a rigger's arm.

**Lessons Learned:** Risk identification and mitigation is a critical part of performing a safe weight handling evolution. Prior to every weight handling evolution, personnel should discuss and implement methods to reduce the risk of injury including recognition and avoidance of pinch points, eliminating the need to "put hands-on" the load, remaining alert to sudden shifts of the load, and maintaining a safe distance from a load that is in movement. Personnel should ensure they are utilizing personal protective equipment appropriate for the task being performed and identify ways to maintain a safe distance between yourself and the load. Also, utilize lashing and tag lines to assist in controlling the load whenever possible.

### DROPPED LOADS

**Accidents:** Three dropped load accidents were reported during the third quarter. A plate clamp slipped off a steel plate during up-righting from horizontal to vertical due to improper installation of the plate clamp. While lifting a portable structure, an unsecured fixture on the structure fell. During relocation of a catapult cover, a forklift attachment came off the blade, causing one end of the cover to fall to the deck.

**Lessons Learned:** In each of the dropped load accidents, personnel did not ensure that the rigging or all parts of the component being lifted was secured. Prior to commencing the lift, personnel should inspect the rigging configuration from top to bottom to ensure it is secure. Larger loads require more extensive checks to ensure all components on the load are secured or removed prior to lifting the load. NAVFAC P-307, paragraph 10.18, requires forklift attachments to be authorized and used in accordance with the forklift OEM recommendations.

## OVERLOADS

**Accidents:** Six overloads were reported during the quarter. Several of the events involved overloaded rigging gear due to improper selection or use of the gear. One leg of a two leg sling assembly came loose under load due to an improper rigging configuration resulting in an overload of the remaining leg. A four-leg sling assembly was overloaded due to being under sized for the load. A set of 4-way boat slings were overloaded during a lift of a boat onto a trailer.

**Lessons Learned:** Weight handling personnel should first know the weight of the item being lifted and select gear accordingly, based on the weight of the load, height restrictions (sling angle), and attachment points. Personnel should familiarize themselves with the specific restrictions for utilizing slings as discussed in NAVFAC P-307, paragraph 14.7 (i.e., the worst case distribution of loading would be two legs of a four leg sling assembly carrying the entire load).

Collisions continue to be the most common type of crane accident being reported. In fact, 39 percent of the accidents this quarter were related to crane or load collisions. In most instances, activities are identifying improper operation, poor communication, and procedural errors as the primary root causes. While some of the load collisions may be occurring during the lifting of a load in areas with tight work tolerances, the majority are not. Activity investigations routinely reveal the accident causes to include inattention, poor judgment, and a failure to use risk mitigation. Proper job planning includes understanding the load travel path and mitigating potential collision hazards. During load movement, involved personnel must exercise situational awareness and remain alert for changing conditions. Safe crane operations occur when personnel in the operating envelope plan their work, execute it per requirements, and remain alert for potential changing conditions.

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. Please remind your personnel that no task is so important or urgent that it cannot be performed safely. Taking the time to be safe can increase our productive support to the fleet. Our goal remains zero weight handling accidents. ■

## NAVFAC P-307 QUESTIONS & INTERPRETATIONS

The questions and interpretations listed below are based on crane program issues that arose and Requests for Clarification, Deviation, or Revision, P-307, figure 1-1.

**Question:** Please clarify Note (6) of Table 14-1. Does the note apply to inspection of portable load indicating devices (LID's) or calibration?

**Answer:** The intent of Table 14-1 Note 6 is to require calibration of the LID as required by the activity's calibration program and OEM recommendations. P-307, paragraph 14.11 states to follow ASME B30.26 selection, use, and maintenance requirements for LID's. P-307, Table 14-1, and ASME B30.26 require a documented periodic inspection annually as a minimum. Navy Crane Center will clarify Note 6 as part of the upcoming P-307 revision.

Navy Crane Center will make appropriate changes to P-307, as discussed above, as part of the next revision to P-307. 

### ACCESSING NAVFAC P-307 WEB-BASED TRAINING COURSES

All military, civilian and contractor personnel involved in the operation, maintenance, inspection, and testing of Navy weight handling equipment (WHE) are required to complete NAVFAC P-307 required training. To facilitate, Navy Crane Center (NCC) offers 16 training courses, free of cost, via the Navy eLearning (NeL) website. They include:

- General Crane Safety
- General Crane Safety Refresher
- Category 2 and cab-operated Category 3 Crane Safety
- Category 2 Crane Safety Refresher
- Category 3 non-cab operated Crane Safety
- Category 4 Crane Safety
- Crane Rigger
- Rigging Gear Inspection
- Load Test Director
- Certifying Official
- Contractor Crane Awareness
- Crane Mechanic
- Mobile Crane Mechanic
- Mechanical Crane Inspector
- Crane Electrician
- Electrical Crane Inspector

Accessing these courses has traditionally required personnel to have both a Navy Knowledge Online (NKO) account and a Navy eLearning account. Personnel were also required to go through the NKO website to get to NeL. An NKO account is no longer necessary. The benefits of this change include:

- Direct access to NeL
- Easier access
- NKO account not required
- Sponsorship not required

A common access card, or CAC, is still required to access NeL (and NKO). To learn more about CAC, visit:

<http://www.cac.mil/>

Because CAC is required and direct access permitted, sponsorship is no longer necessary (nor offered) to access and take NAVFAC P-307 courses via NeL.

The current process for accessing NeL is different for each group.

[Navy, Marine Corp, and Coast Guard](#) active duty, reserves, civil service, and contractors, with properly authorized CACs [i.e., validated through DEERS], and who have an existing NKO account, can log into NeL through NKO (the traditional route) or they can go directly to NeL via the link provided at the end of this article. If you do not have an NKO account, register for one via the NKO login screen (link following this paragraph). NeL access is automatically granted upon approval of your NKO user account. While an NKO account is not necessary, military personnel may wish to register via NKO to obtain the benefits of an NKO account. Civil service and contractor personnel who may not need the benefits of an NKO account may request a NeL account as described below in the “Other Services” paragraph.

<https://wwwa.nko.navy.mil/portal/home/>

Other services, such as [Army and Air Force](#) will need to request a NeL account. After requesting and being approved for a NeL account, active duty, civil service, and contractor personnel, with properly authorized CACs [i.e., validated through DEERS], may access NeL directly via the link at the end of this article. To request a NeL account, call the helpdesk at 1-877-253-7122 opt 1 or do the following:

- go to: <https://ile-deers.nko.navy.mil/ELIAAS/Banner.jsf>
- click “Requests” (either one). Nothing obvious will happen but this is an important step.
- click the “OK” button below the banner.
- click on “NeL Learner Account Request Form.”
- Select/click “Agree,” “OK,” “Agree” buttons as you scroll down the screens.
- Fill out the request form completely and enter "YOUR" contact data in both the “Requestor Information” and “Government Sponsor Information” sections of the form.
- Click “Submit.”

For more detailed information, including a pictorial guide, go to the NCC Training web page and click on the Web-Based Training link at the bottom of the screen.

NCC Training Web Page:

[http://www.navy.mil/navac\\_worldwide/specialty\\_centers/ncc/about\\_us/resources/training.html](http://www.navy.mil/navac_worldwide/specialty_centers/ncc/about_us/resources/training.html)

NeL ACCOUNT REQUESTS AND COURSE CATALOGS  
MAY BE ACCESSED DIRECTLY WITH THIS LINK:

<https://ile-deers.nko.navy.mil/ELIAAS/Banner.jsf>

To keep abreast of changes, please check the NKO, NeL, and/or NCC Training web pages for the latest information. ■

## 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](mailto: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 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 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:

<http://www.navfac.navy.mil/ncc> ■

### HOW ARE WE DOING?

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