



THE CRANE CORNER

Navy Crane Center Technical Bulletin

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WORD FROM TOPSIDE

Sam Bevins

Reflecting on this past fiscal year's very positive safety performance with millions of crane lifts and rigging operations performed safely at more than 400 Navy shore activities, detachments, and shore-based operating units worldwide, the dedicated men and women of the weight handling community achieved one of the safest years of Navy weight handling operations on record.

Looking back over the past decade and a half since the Secretary of the Navy signed the SECNAVINST that established the Navy shore weight handling program, dramatic improvements have been made in the condition and safe operation of Navy weight handling equipment. This success is a testament to the conscientious efforts of all involved in this program that directly supports Fleet Readiness. I am confident that you will continue to maintain and improve upon this very positive record of achievement throughout the future...maintaining a keen focus on continuous improvement and safely executing our mission with a strong sense of urgency.

Today, as a result of your efforts, the Navy has a truly world-class weight handling program that is recognized both within the government and in private industry. Navy shore activity weight handling personnel are well trained and safety conscious. Embracement of our philosophy of looking for and documenting the small events, unsafe acts, complacency, and corner-cutting has led to a dramatic drop in serious crane and rigging accidents. More and more activities are self-identifying and correcting their shortcomings. We are almost at the point where the number of near-miss reports exceeds the number of accidents reported. The percentage of activities with satisfactory weight handling programs is now in the high nineties, and the condition of cranes evaluated by our teams is significantly better than a decade and half ago.

Safe weight handling operations mean more efficient weight handling operations, which in turn means more effective support to the Fleet. Your weight handling programs are essential enablers of Fleet Readiness...vital to our Nation in these challenging times. ■

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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 non-load bearing or non-load controlling parts. A complete list of CSAs and EDMs can be found on the Navy Crane Center's web site.

CSA 207 - TORQUE SPRING MEASUREMENT FOR CUTLER-HAMMER 511 TYPE S BRAKES

Background:

- A. The purpose of this CSA is to clarify torque spring measurement instructions for Cutler-Hammer 511 type S brakes, and emphasize the NAVFAC P-307 requirement to clearly identify measurement locations for verifying brake settings during maintenance inspections.
- B. An activity reported the primary hoist brake failed to hold the 125 percent test load during a recent certification load test. The primary hoist brake is a Cutler-Hammer 511 type S 5-1/2-inch AC shoe brake (OEM part number 511h993-41). Cutler-Hammer Publication 17377 Rev 001-510 of May 2010 specifies the required compressed spring length for the torque spring (Item 21) to obtain a specified torque rating. The torque spring is partially recessed into a 3/16-inch deep cup washer (Item 22) between the torque adjusting bolt (Item 23) and the torque spring. The Cutler-Hammer Publication does not show where the spring is to be measured; i.e., to include or not to include the 3/16-inch of spring length within the cup washer.
- C. Specification data sheets, as required by NAVFAC P-307, were also developed without clearly identifying where the spring was to be measured, contrary to NAVFAC P-307, paragraph 2.2.1. Acceptance testing and subsequent load testing were conducted utilizing a compressed spring length based on a measurement of the exposed spring length versus a measurement of the total spring length which would include the 3/16-inch length of the spring recessed in the cup washer. Measuring the exposed portion of the torque spring vice the entire torque spring length and setting these measurements to the values provided on the May 2010 Cutler-Hammer publication resulted in a torque setting that was less than expected and did not hold the test load.
- D. The OEM was contacted regarding whether the exposed portion of the torque spring or the entire torque spring length was to be used for torque adjustment. After significant testing and discussion, including measuring the brake's actual output torque, the OEM agreed that the entire torque spring length value shall be used, inclusive of the portion of the torque spring recessed into the cup washer. The OEM will be revising their publication.

Direction:

A. Prior to or during the next annual certification, activities shall verify that specification data sheets for cranes with Cutler-Hammer 511 type S brakes that utilize cup washers provide a range for measuring the torque spring length using the total spring length. Brakes found where the torque spring length was incorrectly measured shall be corrected and load tested and/or recertified in accordance with NAVFAC P-307.

B. Additionally, activities are reminded of the NAVFAC P-307, paragraph 2.2.1 requirement that measurement locations for verifying settings shall be clearly identified on specification data sheets. Specification data sheets found not to clearly identify measurement locations shall be revised to indicate these locations based on OEM literature and service bulletins, and activity historical experience with the brake.

CSA 208 - ACCO WRIGHT-WAY HOIST MOTOR COUPLING DESIGN CHANGE**Background:**

A. The purpose of this CSA is to notify activities of a change in the hoist motor coupling design for Wright-Way hoists.

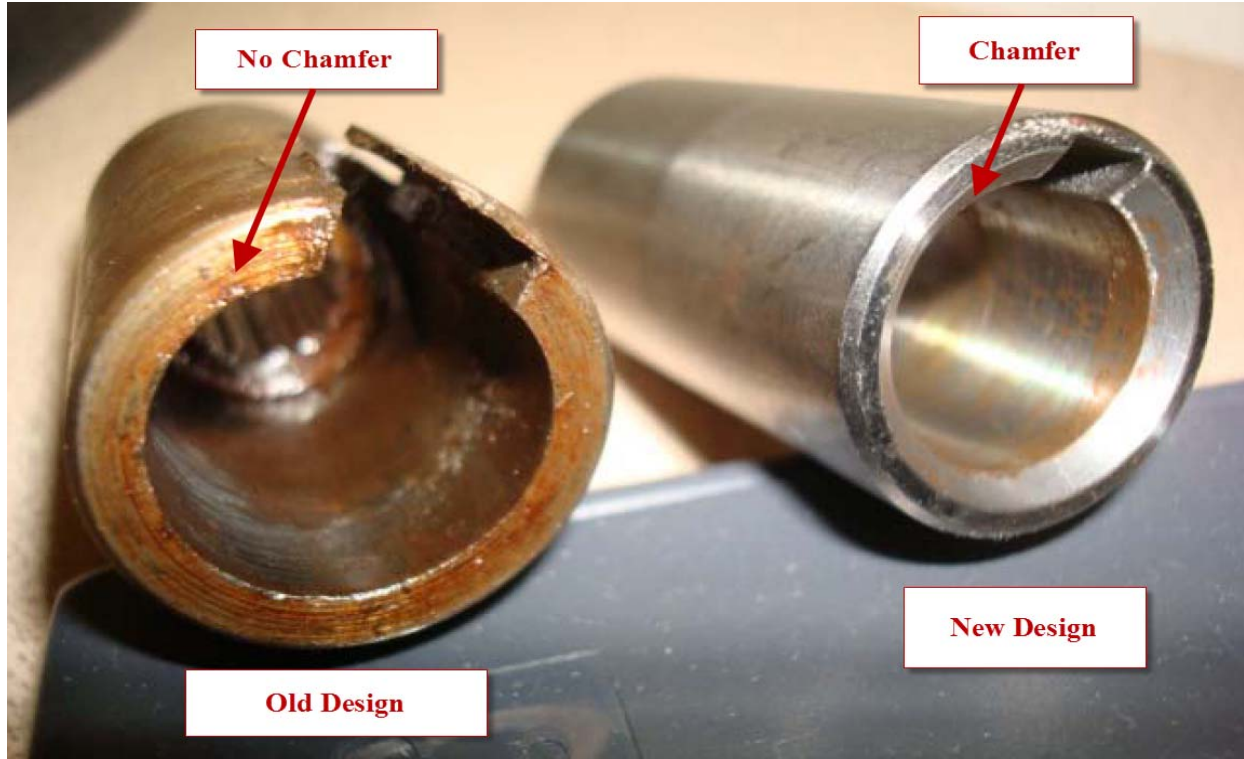
B. An activity reported a damaged hoist motor coupling on a 2-Ton Wright-Way electric wire rope hoist manufactured in 1990. Damage on the coupling was at the keyway and there were no indications of misalignment between the gear box and motor on the damaged hoist.

C. According to the original equipment manufacturer, the motor coupling and key assembly, Part Number 67928, was modified in 1980 from a square key and keyway to a chamfered key and radiused keyway. It should be noted that prior to 1985, the key that was supplied with the motor did not have a part number. It is now identified as Part Number 67927. The part number for the coupling itself is identified as 61721.

D. Although the damaged hoist was manufactured in 1990, the coupling on the hoist utilized a square keyway, which is consistent with couplings manufactured prior to the 1980 design change.

Direction:

Prior to or during the next certification requiring a load test by NAVFAC P-307, activities shall verify that the redesigned motor coupling and key, Part Number 67928, is installed on all Wright-Way hoists. The new coupling design can be identified by the presence of a chamfer on the end of the bore. The older design is square. Hoists found to have the un-chamfered design shall have the motor coupling and key replaced. Hoists shall be corrected, load tested and recertified in accordance with NAVFAC P-307. Activities should keep the work order for the coupling and key in the history file for the life of the crane.



ACCO WRIGHT-WAY HOIST MOTOR COUPLING DESIGN CHANGE

CSA 209 - YIELDING OF CONSOLIDATED RIGGING TWO-INCH SHACKLE PINS DURING 200 PERCENT PROOF TEST

Background:

A. The purpose of this CSA is to notify activities of the potential for shackle pins of two-inch shackles manufactured by Consolidated Rigging to yield during proof testing and provide corrective actions.

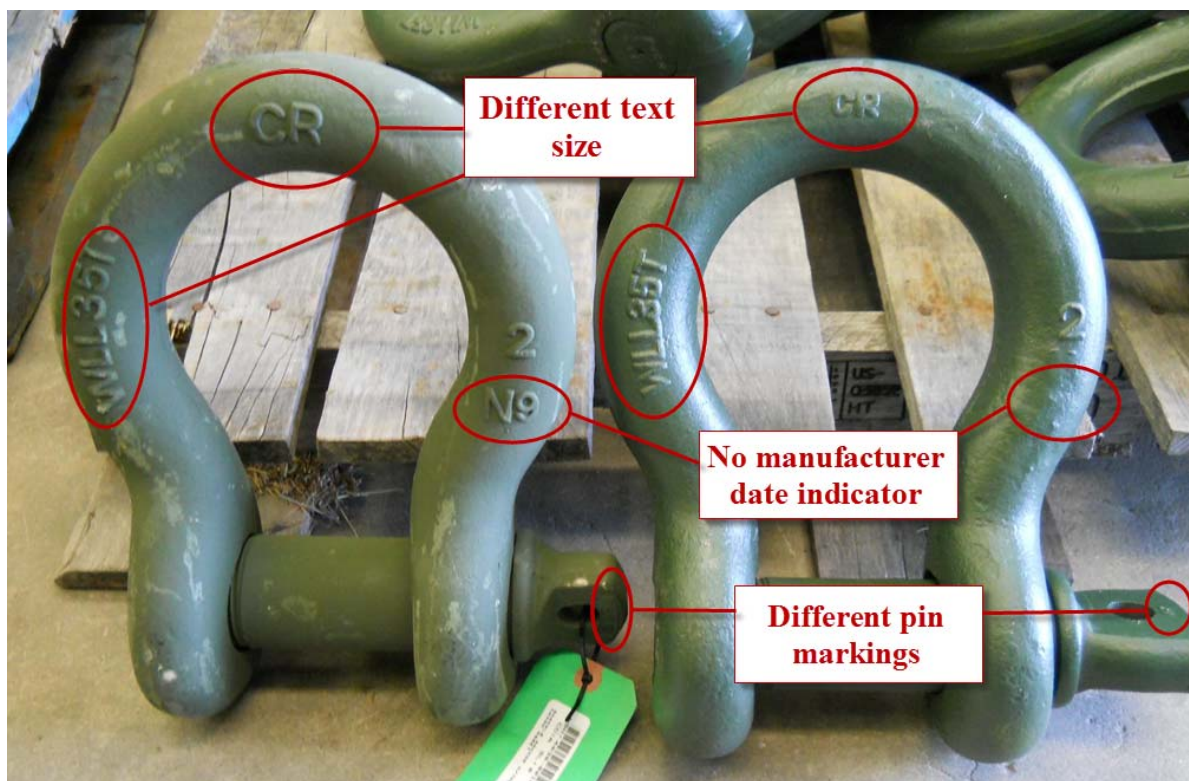
B. An activity reported a deficiency involving two-inch Consolidated Rigging shackles experiencing a 25 percent deficiency rate during 200 percent proof testing as required by NAVFAC P-307, Paragraph 14.4.1. During proof testing, the shackle pin was yielding to the extent that the pin could not be removed from the shackle bail by hand. The activity confirmed the two-inch Consolidated Rigging shackles met the marking requirements of Federal Specification RR-C-271F.

C. The OEM identified that the deficient shackles are traceable to a specific lot for the national stock system, quantity of 186 shackles. These shackles were forged at a separate foundry from what the OEM had utilized previously, and a specific issue was identified with these pins.

D. The deficient shackles are marked with the two-inch size, working load limit of 35 tons, and manufacturer Consolidated Rigging, similar to shackles that passed the proof test, with the exception that the deficient shackles did not have a batch code marked on the bail below the two-inch size marking, where the others were marked with a batch code of N9.

Direction:

Within the next 90 days, and prior to use of any two-inch Consolidated Rigging shackles, activities shall inspect the shackles for proper markings, ensuring the batch code is marked on the shackle bail. Any shackles found without a batch code marked on the bail shall be removed immediately from service.



**YIELDING OF CONSOLIDATED RIGGING TWO-INCH SHACKLE PINS
DURING 200 PERCENT PROOF TEST**

EDM 103 - REOCCURRING LMI “LOW REFERENCE VOLTAGE” ERROR ON OLDER MOBILE CRANES

A. The purpose of this EDM is to inform activities of the possibility of an “E19,” or “low reference” voltage error, on a PAT load moment indication (LMI) system used on older mobile cranes.

B. An activity reported an E19 error on a PAT LMI system on a mobile crane manufactured in 1998. The error occurred when a voltage drop was caused by peripheral devices, such as air conditioners and wipers, being activated on the same circuit that was supplying power to the PAT LMI system. As these peripheral devices age, they tend to draw more power, thereby causing a greater voltage drop in the circuit in which the LMI is connected. The subsequent corrective action was to provide a dedicated power supply from the battery for the PAT LMI system. As a result of the corrective action, power being drawn by the peripheral devices no longer affected the PAT LMI system.

C. Navy Crane Center recommends that activities using PAT LMI systems experiencing similar low voltage errors consider dedicating an independent power supply from the battery to the PAT LMI system. ■

PRODUCT QUALITY DEFICIENCY REPORTS

*M*ost activities are aware of using the Weight Handling Equipment Deficiency Report form found in NAVFAC P-307 to report deficiencies to weight handling equipment. However, there is another reporting form that may be required when material quality discrepancies are identified. This reporting form is the Product Quality Deficiency Report (PQDR), SF-368.

Defense Logistics Agency Directive, DLAD 4155.24/AR 702-7/SECNAVINST 4855.5/AFI 21-115 is an instruction that implements the DOD Product Quality Deficiency Report (PQDR) Program and defines requirements for product/supplier performance data and reporting of deficiencies within the Navy. This instruction includes use of the PQDR reporting form.

The purpose of preparing PQDRs is to determine the cause of discrepancies, provide a vehicle to recover material cost, and effect corrective action and prevent recurrences. Material quality discrepancies include any defect, nonconforming condition, or premature equipment failure indicating deficiencies in design, specification, material, manufacturing, and workmanship. Discrepancies do not include failure due to improper/inadequate maintenance, storage or operation. They also do not include failure with normal use within reasonable range of life expectancy.

One of the three main components for safe and reliable weight handling operations is implementation of Operational Risk Management. By reporting product quality deficiencies, the Navy can strive to prevent deficient material from being used and improve the quality of parts and material obtained using a National Stock Number (NSN). To determine whether you need to report equipment deficiencies via the PQDR Program, contact your local acquisition department. ■

WEIGHT HANDLING SAFETY BRIEF

The Navy Shore Weight Handling Safety Brief (WHSB) below is provided for communication to personnel involved in rigging operations within the Navy shore weight handling program. The purpose of this brief is to discuss inspection requirements and recommendations for rigging gear and reiterates the importance of identifying damaged rigging gear before and after its use.

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!

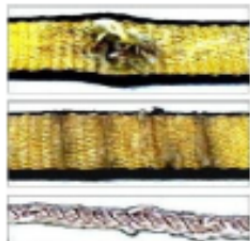
When Navy Shore Weight Handling Safety Briefs are issued, they are also posted on the Navy Crane Center's web site at: <http://www.navfac.navy.mil/ncc> 

Weight Handling Safety

Title: IDENTIFICATION OF DAMAGED RIGGING GEAR

Target Audience: PERSONNEL WHO PERFORM/SUPERVISE RIGGING OPERATIONS

Damaged Slings



Snags or
punctures

CUTS

Variations in Size

Damaged Wire Rope



Damaged Shackles

Types of Gear Damage

- Corrosion
- Nicks
- Gouges
- Distortion
- Peening
- Heat damage



Nicks

What happens at your command when rigging gear is discovered in a damaged condition? Do you stop and remove the gear from service? Is an investigation conducted to determine how the damage occurred and whether or not a lesson is to be learned? Damaged gear is usually a clear indication that something didn't go right during its use. The determination of what went wrong starts with identifying the damage and initiating an investigation!

Rigging Gear Inspection

- **Pre-use inspection:** Personnel must ensure that all rigging gear is **visually inspected prior to each use** to verify rated capacity, marking, inspection status, serial number, and condition. Documentation of the pre-use inspection is not required.
- **Post-use inspection:** To avoid reusing damaged gear and to link damage to a specific event, it is always a good idea to visually inspect rigging gear following its use.
- **Periodic Inspection:** Periodic documented inspections for rigging gear is specified in section 14 of NAVFAC P-307. Rigging gear used exclusively for lifts of 100 pounds or less and gear with a design factor of 10 or greater with respect to yield strength of the material are excluded from these periodic inspection requirements.

Rigging Gear Management Program

- Navy activities can help ensure that all rigging gear meets the requirements of NAVFAC P-307 by implementing a comprehensive rigging gear management program. Activities that utilize a basic database program to track gear type, equipment serial number, rated load, and inspection status have benefited from improvements in overall efficiency and reduced costs by maintaining only the required inventory to meet mission requirements, thereby reducing the number of required inspections.

11 March 2014


SAFETY

Navy Crane Center 14-S-01

WEIGHT HANDLING TRAINING BRIEF

The Weight Handling Training Brief (WHTB) below is provided for communication to personnel associated with Navy shore weight handling. The brief discusses "Take Two," a concept of performing an ON-SITE and FINAL review of team responsibilities, preparations, and workplace conditions prior to proceeding with a lift evolution. Weight handling operations often occur in areas where there is a dynamic or ever changing work environment. The "Take Two" concept focuses on identifying potential hazards created by changing conditions within the operating envelope and it provides an opportunity to conduct a final review of roles, responsibilities and expectations of the team to ensure that everyone is prepared to proceed with the lift.

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 the Navy Crane Center's web site at: <http://www.navfac.navy.mil/ncc>. 

Title: "TAKE-TWO" - Final Review Immediately Prior to a Lift

Target Audience: Weight Handling Supervisors, Riggers, Crane Operators, Crane Walkers

Who is involved in a "Take-Two"?

What is "Take-Two"?

Where do we do a "Take-Two"?

When do we "Take-Two"?

Why do we "Take-Two"?



- Crane Team
- Latest Information Review
- On-site
- Immediately prior to lift
- Safety

*Load suitability to lift: *Is the load ready to be lifted? Consider all aspects of the load:* all fasteners have been removed, all interferences have been removed, all clearances verified, all frapping and chafing is in place, hook is centered over the load, taglines attached properly; in other words, *The load is suitable for lifting.*

- TAKE-TWO is an **ON-SITE, final review** of the entire weight handling job that's about to occur.
- Worksites are dynamic, meaning they change all the time. Evaluate the current conditions. Look for changes or new conditions that may have occurred since the earlier in-depth pre-job briefing.
- **With everything in place** and the job ready to begin, the rigger-in-charge (RIC) or rigger supervisor should **STOP, TAKE-TWO**, and conduct an efficient, short review of all aspects of the job. This includes: the gear, rigging plan, **load suitability to lift***, travel path of crane and load, personnel positioning and responsibilities at each position, potential obstacles including those previously briefed as well as newly identified/assigned risks and hazards, stopping points, and communications.
- The RIC or supervisor should **employ a questioning methodology**. In other words, make it interactive. Ask personnel directly about their responsibilities, the work area, the plan, and any risks. Ensure each person understands the overall plan and their role. This includes the crane riggers, crane operators, crane walkers, and any other personnel involved in the lift.
- A TAKE-TWO video is available on the NCC website at:

http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc/about_us/resources/safety_videos.html

ENSURE THE JOB IS DONE SAFELY →



25 March 2014

Training

Navy Crane Center 14-T-01

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FIRST QUARTER FY14

The purpose of this message is to disseminate and share lessons learned from select shore activity weight handling equipment (WHE) accidents, near misses, and other unplanned occurrences so that similar accidents can be avoided and overall safety can be improved.

Accidents: For the first quarter of FY14, 61 Navy WHE accidents (52 crane and 9 rigging), were reported. Of these, 16 (26 percent) were considered significant (overload, dropped load, injury, or two block). One met the threshold of an OPNAV Class "C" accident. The percentage of significant accidents increased slightly over the previous quarter and all but one were crane accidents. Overall, the crane accident total from the fourth quarter remained about the same, but rigging accident totals declined by 57 percent. Contractors reported nine WHE accidents for the first quarter, of which three were identified as significant.

INJURIES

Accidents: Three injuries were reported for the first quarter of FY14 compared to four in the previous quarter. An employee's finger was severely injured when an unauthorized sling, connected to a category 3 crane, broke during a lift. The accident resulted in lost time and was reported as an OPNAV Class "C" accident. An employee's finger was broken when his hand slipped off the outrigger pad's handle and contacted the mounting lug while attempting to manually stow a mobile crane's outrigger pad that was not properly aligned. In another incident, a crew member's arm was injured when he placed it into a pinch point while a load was being positioned.

Lessons Learned: The causes of the injuries reported during the first quarter range from personnel placing an extremity in a pinch point to personnel utilizing unauthorized gear. A common theme, however, is that personnel did not follow basic weight handling fundamentals. Each individual must accept responsibility for helping to ensure their own safety, including stopping when proper equipment or conditions are inadequate for the task at hand. Remember, only rigging gear that has been inspected and certified per the requirements of NAVFAC P-307, section 14, is authorized for weight handling operations. In addition, personnel should always keep extremities clear of the load and remain alert for the potential of sudden shifting of the load.

DROPPED LOADS

Accidents: In the first quarter of FY14, dropped load accidents increased from four to ten from the previous quarter. Six of the ten dropped load accidents were due to improper rigging. A component slipped from the rigging while being lifted from a balancing machine. Material dropped from a pallet during a mobile crane lift due to improper rigging of the pallet. A component was dropped and damaged due to improper rigging, while being lifted from a transfer stand to a shipping container. A steel plate was dropped three to six inches when an operator utilized deficient and unauthorized gear.

Lessons Learned: The majority of dropped load accidents identified during the first quarter of FY14 occurred as a result of improper rigging and could have been prevented through pre-lift preparation and job planning. Crane teams and riggers must be briefed on all facets of the job, including weight of the load, in order to ensure gear is adequately selected. Loads should always be rigged to prevent the load from falling out of the rigging. When using slings in a sweeping configuration under a load, the slings should be secured in place to prevent inadvertent shifting or movement of the load. Frapping (line or rope) should also be used to secure the load within the rigging configuration. This is extremely important when lifting loads with a high center of gravity.

OVERLOADS

Accidents: Three crane accidents involving overloads (two rigging gear and one crane) were reported. A crane team attempted to remove the outside wall of an enclosure without disconnecting all fasteners, resulting in damage to the structure and overloaded gear. A category 4 crane was overloaded during the annual load test due to exceeding the allowable test load. After disconnecting two chain hoists from a load, the hook of one chain hoist caught on the load as the operator hoisted, lifting the load and overloading the chain hoist.

Lessons Learned: Overloads have the potential to cause significant equipment damage or injury to personnel. The overloads reported during the first quarter were primarily the result of lack of attention to detail during and prior to the operation. NAVFAC P-307, Section 10, assigns the rigger-in-charge (RIC) to be responsible for overall control and safety of the lift, including knowing the weight of the load and ensuring the load is properly rigged. In order to ensure the overall safety, the RIC should always monitor the load and rigging gear during the lift. Overloads like those identified above are prevented by adhering to basic weight handling fundamentals.

COLLISIONS

Accidents: Collisions accounted for 44 percent of Navy crane accidents (10 crane collisions and 13 load collisions), indicating a need for continued focus and caution when operating a crane.

Lessons Learned: Collisions are always avoidable if personnel focus on their surroundings and mitigate potential obstructions in the crane envelope. Pausing prior to commencing a lift to identify potential hazards can be the difference needed in prevention of an accident. Potential hazards that should be addressed by the supervisor or RIC are outlined in NAVFAC P-307 Section 10, and include common issues like potential collision hazards, travel path obstructions, and changing conditions (e.g., wind and ice). Personnel cannot let their guard down during the entire duration of the lift because a collision can happen at any time including crane set-up or shutdown. Crane team personnel must understand that when they identify a hazard, they are to stop and inform their supervisor. Personnel should not be discouraged to report potential deficiencies because they might result in delays in schedule. Accident prevention is paramount in preventing equipment damage and personnel injuries that can result in substantial costs and delays. The primary cause for the majority of accidents involving collisions during the past quarter is improper operation caused by personnel error or complacency. Safe crane operations

occur when personnel in the operating envelope plan their work, execute per requirements, and stop if abnormal conditions occur. Supervisors and managers can assist by conducting routine and frequent worksite tours in order to identify areas that require improvement and provide feedback to the weight handling team. All weight handling professionals should be encouraged to identify deficiencies on the job and ensure the deficiency is documented and corrected prior to continuing with the operation.

NEAR MISSES

Accidents: Near miss reports submitted during the first quarter remained consistent with the number of reports in the previous quarter. Operational or dynamic surveillances/observations by activities yielded the highest percentage of near miss reports (32 Percent). Identification of these tangible deficiencies directly leads to the reduction in Navy accidents and provides an excellent opportunity to share lessons learned and strengthen the overall safety of the Navy's weight handling program. These types of surveillances/observations should be a primary focus for all activities to model when setting goals for their weight handling managers and personnel because documented surveillance/observation is a proactive approach that leads to reductions in significant and costly accidents. Navy leaders should continue to encourage their weight handling professionals to remain focused on identifying, documenting, and correcting deficiencies at the lowest possible level and increase their attention on active weight handling operations with a particular focus on safe rigging fundamentals. Near miss reports in the first quarter identified a slight increase in instances of wire rope miss-spools and rigging gear deficiencies, indicating a need to reinforce the necessity to operate cranes in a slow and controlled manner and always perform pre and post-use inspections on weight handling equipment.

Lessons Learned: 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. The increase in dropped load accidents indicates a need to focus on basic rigging fundamentals. Personnel should be encouraged to utilize training courses (e.g., Crane Rigger and General Crane Safety) available on the Navy e-learning website, <https://www.aas.prod.nel.training.navy.mil>, for refresher training. Navy shore weight handling operations occur in unforgiving high-risk operating environments that require continuous rigorous oversight and compliance with stringent program requirements. 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. ■

“TIP OF THE SPEAR” (Notable Evaluation Items and Focus Areas)

Crane and Rigging Accident/Near Miss Focus

As many of you have witnessed, we have shifted our focus away from the total number of accidents being reported, and instead are focusing on the “make-up” (significance) of the accidents as a whole. In the past, we and Navy leadership (SYSCOMS, Commanding Officers, etc.) were primarily focused on the number of accidents, i.e., less is good which, though true, resulted in instances of minor accidents not being reported. There are a number of reasons why this shift has been made but one key reason is to encourage the reporting of all accidents, no matter how minor, so that more accident data can be obtained. This increased data and information allows us to provide additional lessons learned to Navy weight handling programs worldwide, which can be utilized to prevent accidents throughout the Navy, in addition to increasing the margin for safety. Additionally, the increased data allows for the research and development of technological advances, such as collision avoidance systems, to further reduce the chance for future accidents.

The Navy Crane Center defines significant accidents as those that result in personal injury, dropped loads, overloads, derailments, and two-blocking of a crane’s hoist. These accidents are considered significant because they can easily result in serious personal injury or cause significant damage to Navy property. As discussed above, focusing on the significant accidents provides the activity (and us) a better perspective as to the actual health (maturity) of the activity’s weight handling program. To better explain this, consider the following example: The evaluation team arrives at your activity and their review of crane accidents identifies that you reported seven accidents this year as compared to only three accidents the previous year. However, the previous year, two of the three accidents were significant. This year, although the total accidents numbers have more than doubled, only one of the seven accidents was significant. In prior years, our evaluation reports would cite the increase in accidents as a problem area. With the new methodology, the increase in reported accidents would not be a focal point and the evaluation team would positively comment about the reduction in significant accidents. This is particularly true if the majority of the reported accidents are in the lowest threshold of accidents, i.e., avoidable contact and no damage.

Similarly, the reporting of near misses and other unplanned occurrences is also seen as a sign of a maturing weight handling program. The reporting of near misses and other unplanned occurrences as defined in NAVFAC P-307, paragraph 12.5 is an indicator that your activity recognizes lower level events and realizes the significance of capturing lessons learned from these type events.

Oversight/Observation (Surveillance) Process

Another area that you have most likely heard about and seen during your activity’s evaluation is the importance of an oversight/observation (surveillance) process. Although currently not required by NAVFAC P-307, at activities where the process has been implemented surveillances

have proven effective at reducing accidents, lowering accident severity, identifying process improvements, and ensuring management's expectations and standards are communicated to the workforce. Expect the next revision of NAVFAC P-307 to require all weight handling programs to have an observation/surveillance process, with the complexity of the process driven by the program's size. Surveillance processes were initially implemented in the operations area; however, the utilization of surveillances in other areas of the weight handling program (maintenance, inspection, load testing, rigging gear management, etc.) has proven effective at promoting efficiency, reducing rework due to errors, and identifying other process improvements. When initially implemented, many activities focused on documenting large numbers of surveillance reports even though most reports did not note any deficiencies. For example, some activities have documented hundreds of surveillances in a six-month period with only a few dozen documenting any deficiencies, poor practices, or process improvements. This merely results in an administratively burdensome process, which provides few, if any, improvement opportunities. It is important to remember that the quantity is not nearly as important as the quality of the surveillances.

For the process to be successful, your activity must create a self-critical environment. Program personnel, both management and the workforce, must believe in the process in order to obtain the most out of the effort. Management must set the standard with regard to the conduct of surveillances. A few proven guidelines include:

- All levels of the weight handling program, from senior management to personnel on the deck plate and on the waterfront should be encouraged to participate in the surveillance process.
- The process must be documented in order to capture the unsafe act, shortcut, process improvement, etc., for sharing with others.
- The "forms" used to document deficiencies, poor practices, and potential process improvements should not contain personal information (e.g., names) with regard to the personnel who committed an error or poor practice. Remember – the purpose of the process is to create a self-critical culture to establish an environment for continuous incremental improvement. The moment you make it "personal", you will turn off the "spigot" of information that provides opportunities for improvements in your program.
- Your form should contain some basic information to make the data easier to analyze as the amount of collected data increases. Basic minimum required information should include the name of the person conducting the surveillance, the date, shift, time, event or evolution observed, and enough "white space" on the form so that the observed deficiency, poor practice, or improvement recommendation can be described.
- Your goal is to identify deficiencies, poor practices, and process improvements. Early data analysis should focus on the percentage of surveillances that identify issues, not the number of surveillances documented.

- As the process matures, the identification of “tangible” deficiencies should be stressed. See definition and examples of tangible deficiencies below.
- Most importantly, the conduct of surveillances does not require or imply that extra manpower is needed.

The conduct of oversight is a fundamental responsibility of a supervisor. The surveillance process simply provides a means to document the issues identified by normal everyday observation of your personnel in a non-disciplinary manner. Remember – DO NOT use the surveillance process to document personnel issues or to impose disciplinary action, as it will undermine the purpose of the process, which is to improve the efficiency and performance of your overall weight handling program.

As stated above, the identification of tangible deficiencies should be a key focus area of the overall surveillance process. Tangible deficiencies are those that can directly lead to a crane or rigging accident, a crane breakdown, or production impacts. With regard to weight handling operations, examples of tangible deficiencies would include a crane operator making movements without direction, inadequate use of chafing gear, inadequate use of tag lines, crane team member inattentiveness, poor crane team member positioning, insufficient crane team members, rigger-in-charge becoming involved in work, which compromises his/her ability to maintain overall control of the lift, supervisors or managers becoming involved in work, not taking the correct precautions for a complex lift, etc. Although the identification of static type issues (PPE violations, rigging gear issues, documentation issues) is still important, they should not be the primary driver of your surveillance process. With regard to maintenance, tangible deficiencies would include such things as not bagging and tagging removed parts, using the wrong tool for the job, poor foreign material exclusion (FME) controls, not using wire removal forms, not following procedure, not having the right tools staged for the work (which can lead to work-arounds), or poor staging and planning for a job (again, which can lead to work-arounds and delays). Inspection area tangible deficiencies would include such things as the inspector not using a flashlight or poor lighting to conduct inspections, not have an inspection mirror for hard to see areas, cursory inspections, missing required components checks, or not following procedure. Frequently, our evaluation reports provide examples of tangible deficiencies that our team has found (usually in a short time) in their observations of work processes. Many are not hard to find. Refer to recent evaluation reports. ■

REVISION OF NAVCRANECENINST 11450.1

We recently issued the “B” revision dated 28 March 2014 of NAVCRANECENINST 11450.1, Acquisition of Shore Based Weight Handling Equipment. Significant changes: we addressed specific weight handling equipment (WHE) that is under the purview of other SYSCOMS after coordinating with NAVSUP, NAVAIR, NOSSA, and SSPO; we clarified the WHE under the purview of the Navy Crane Center; we explained how we support the facility designer for WHE to be installed in facilities; we revised the process for activities to obtain a waiver to procure WHE locally; and we clarified the conditions that apply for activity self-procurement of WHE. Find the instruction on Navy Crane Center’s website at <http://www.navfac.navy.mil/ncc>. ■

CRANE SAFETY AWARENESS FOR THE SPRING AND SUMMER MONTHS

As we approach the spring/summer months, I again ask weight handling managers and supervisors to place a special focus on safe crane and rigging operations. Overall, the trend of Navy based shore crane accidents thus far this fiscal year parallels that of the same period last year. Unfortunately, one Class "C" crane accident has already been reported this fiscal year. On a positive note, there has been a 30 percent reduction in rigging gear accidents and a 58 percent decrease in the number of significant rigging gear accidents (dropped load, overload, injury) when compared to the same period last year. We still have over six months remaining in the fiscal year, and with proper risk management, we have the opportunity to make significant improvements from last year's performance.

Historically, the warmer months have brought unique challenges in preventing crane accidents. With the distractions associated with the warmer weather, vacations and leave, maintaining a sharp focus on the critical job at hand during weight handling operations is most imperative. We must appropriately address the challenges these circumstances may create as we assemble our weight handling maintenance and operations teams. We must strive to maintain focus and ensure that weight handling operations are properly planned and executed by trained and qualified personnel. We must ensure that jobs are adequately staffed to guard against the possibility of "cutting corners" in an attempt to get the job done. Personnel should be reminded that no task is so important or urgent that it cannot be done safely.

I encourage all Navy weight handling managers to address this challenge with their personnel in order to maintain focus and reduce the risk of accidents. Nearly all of the reported Navy shore activity crane accidents are attributable to human error. By intensifying safety awareness in all weight handling operations, we can continue to strengthen and improve the Navy's weight handling safety performance. Good planning, teamwork, communication, and situational awareness are all valuable tools for use in reducing weight handling risks. Operational Risk Management must be a fundamental element of any undertaking.

Activities should consider a preemptive safety awareness briefing to reinforce management's expectations for adherence to safe weight handling requirements and practices. Recognize safe practices and achievements where warranted. As a reminder, there are seven crane accident prevention videos available to assist activities in raising the level of safety awareness among their personnel involved in weight handling operations. These videos provide a very useful mechanism for emphasizing the impact that the human element can have on safe weight handling operations. In addition to these lessons learned safety videos, other videos are available (Safe Rigging and Operation of Category 3 Cranes; Mobile Crane Safety; and Weight Handling Program for Commanding Officers) to assist commands in crane safety awareness. All can be ordered from or viewed on the Navy Crane Center website <http://www.navfac.navy.mil/ncc>.

In order to maintain an intense focus on safety, we have very rigorous crane and rigging gear accident definitions that include essentially any unplanned event in a weight handling evolution, whether or not injury or damage occurs. The basic strategy is that all accidents (regardless of severity) must be investigated and reported to ensure the command, as well as the Navy, benefit

from the lessons learned. With this approach, along with a focused safety awareness by all personnel involved in weight handling operations and consistent application of ORM principles, significant crane accidents can be prevented.

As we have noted many times in the past; Navy shore weight handling operations are unforgiving, high-risk, operating environments that require continuous rigorous oversight and compliance with stringent program requirements. Under the current challenging fiscal environment, it is even more important that we emphasize the fact that the EFFICIENCY of mission execution is significantly improved by preventing personnel injury, equipment damage, and schedule disruption that can result from weight handling accidents.

With respect to the Navy's weight handling program, EITHER execute the weight handling program in strict accordance with requirements OR do not operate (take the equipment out of service and immediately communicate up the chain of command). As the CNO reaffirmed last year, "We will only execute missions with the proper training, resources, and safety measures." As we know, safe and reliable weight handling operations support Fleet Readiness, enabling overhauling, repairing, fueling, refueling, and arming ships and submarines. ■

ON LINE CRANE ACQUISITION CLASS

Navy Crane Center will be presenting a one-hour course on crane acquisition. This online course, taught by Navy Crane Center Project Managers, provides a description of U.S. Navy requirements for acquisition of cranes and hoists and the role of Navy Crane Center in crane acquisition. The acquisition process is described from project inception through facility integration, contract award, design review, quality assurance, installation, and testing. The process for obtaining Navy Crane Center acquisition assistance is also discussed. The course is directed for facility designers and facility project managers, but anyone involved in crane or hoist acquisition will benefit from the content. The information presented will ensure that cranes and hoists procured individually, or as part of larger facility projects, will meet Navy crane design and NAVFAC P-307 certification requirements. See the NAVFAC Process Driven Training web page, https://totalforcetraining.navfac.navy.mil/s_courses.asp?command=lantdiv&course_type=process_driven, for the dates and times that the course will be presented in April, May, June and July. ■

ACQUISITION UPDATES

75-METRIC TON MOBILE BOAT HOIST

The Navy Crane Center recently accepted 75 metric ton mobile boat hoist. The boat hoist is used to support maintenance and inspection of surface craft at the facility. The diesel-powered, electric-over hydraulically operated crane can be controlled from either the operator's cab or remotely by radio controls. The contract included spreaders for extending the length between the sling centers to 40 feet and a test weight. The mobile boat hoist has the capability of traversing a 6 percent grade under full load. ■



40-TON RATED CAPACITY, 65 FOOT LIFE HEIGHT HOIST/TROLLEY

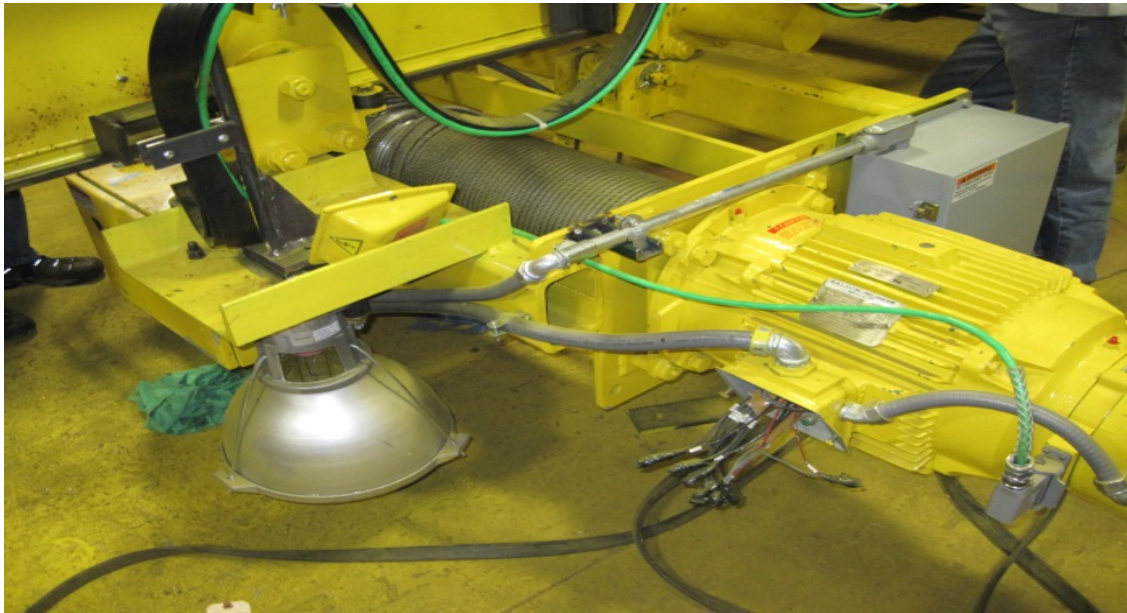
The Navy Crane Center accepted a 40 ton rated capacity, 65 foot lift height, hoist/trolley located in an enclosed space at an existing test facility. The new hoist/trolley replaced the existing unit to provide additional safety measures against loss of control of a load necessitated by the critical operations being performed. The new hoist/trolley included box section end trucks, a dual reeving system with a 5:1 safety factor in each reeving path coupled by a trolley mounted equalizer bar, a load hook with double the manufacturer's factor of safety against straightening, a hoist drum mounted ratchet and pawl to prevent unintended movement, features to retain the drum in position in the event of drum shaft or bearing failure, hydraulic thruster hoist brakes, a third hoist brake mounted on the flange of the wire rope drum, and an audible alarm that sounds when the hoist slow down limit is activated near the end of hook travel. The crane can be

controlled either from a pendant system, or from a fixed station mounted in the overhead next to the crane's power panel. Due to the limited access to the equipment space, removal of the existing trolley and installation of the new equipment required special effort and reorientation of components while they were lifted. Navy Crane Center personnel reviewed planning for and oversaw these lifting operations to ensure safe performance. Navy Crane Center has completed installation of a 30 ton hoist/trolley at the same site with similar features and complexity of installation. ■



10 TON, 32 FOOT SPAN 38 FOOT HEIGHT, DUAL UNDERRUNNING HOIST, UNDERRUNNING BRIDGE CRANE

The Navy Crane Center accepted two 10 ton rated capacity, 32 foot span, 38 foot lift height, dual underrunning hoist, underrunning bridge cranes in an existing facility. One of the new cranes is cab operated double girder construction, and the other is radio controlled single girder construction to achieve closer end approaches with the load hook. The new cranes replaced existing 6 ton rated capacity bridge cranes. ■



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 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.

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>.



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