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A WORD FROM TOPSIDE

Tim Blanton

As 2017 comes to a close, let us pause to reflect on the past year. The Navy's weight handling program continued its focus on safety, efficiency, and effectiveness in support of the Fleet in 2017. The ratio of significant crane accidents to total crane accidents has remained below 20 percent for the third straight year despite our very stringent definition of "significant accident". For rigging accidents, the significant accident ratio dropped from 25 to 23 percent, after a major drop from the previous year, largely due to improved training for the influx of new riggers into the program, particularly at the shipyards.

We are resolutely convinced that learning from the minor events help prevent serious accidents. This is borne out by the fact that only 1.3 percent of reported weight handling accidents met the OPNAV reporting threshold, none of which were Class A or B events. An effective monitor program provides a golden opportunity to engage the entire weight handling staff to identify and learn from the minor events that are bound to happen when teams of personnel engage in the complex processes of weight handling. Practically all activities have instituted monitor programs, although many still need to integrate the program into maintenance, inspection, and load test Our evaluation teams processes. strongly encourage all weight handling program personnel to participate.

We issued a major revision to NAVFAC P-307 in June 2016 and gave activities

one year to be in full compliance. took immediate Manv activities advantage of the cost avoidance offered bv the relaxation of requirements in the revision. particularly the elimination of marking, testing, and inspection documentation for tens of thousands of items of rigging hardware. Progress toward full compliance has been very positive. One factor in this accomplishment, was an extensive series of Weight Handling Training Briefs explaining all the significant changes in the manual. All training briefs, along with an extensive array of weight handling related information, are available on the Navy Crane Center (NCC) website. The revision required the updating of virtually all of NCC's online training Our training staff has courses. completed the updates and is coordinating with NETC to make the available on the Navy courses eLearning website.

Effective weight handling begins with the acquisition of quality equipment that meets the demanding needs of our users. We continued our initiative of challenging our engineers, equipment specialists, and support personnel to become more versatile by getting involved in new facets of work, includina engaging procurement engineers in in-service engineering issues and utilizing equipment specialists for procurement quality assurance.

The Navy could not accomplish its many missions without weight handling capability.

The goal of the Navy Crane Center is to ensure successful mission accomplishment through weight handling safety, efficiency, and

effectiveness. Let's look forward to another safe and successful year of efficient weight handling in 2018.

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 230 – MISSING SUSPENSION NUT RETENTION PINS FOR 2016 BUDGIT AND YALE LUG MOUNT HOIST TROLLEYS

1. BACKGROUND:

A. The purpose of this CSA is to inform activities of a potential deficiency of missing retention pins in the trolley suspension assembly on Columbus McKinnon's Budgit and Yale Air or Electric hoists with rated capacities between $\frac{1}{4}$ and 1 ton. Reference (a) is Columbus McKinnon's recall notification to stop using these hoists immediately until it is verified that the two subject retention pins for locking the suspension nut in place are installed. If the nut on these lug mounted trolleys comes off the hoist will fall. Navy Crane Center correspondence with Columbus McKinnon clarified that Yale hoists should have been included in the reference distributor (a) notification.

B The hoists in question were manufactured in

April, May and June of 2016 and will have serial numbers AH###XD, AH####XE or AH####XF respectively. With the hoist and trolley in their normal operating position a telescoping 1 inch diameter mirror can be used to view the top of the suspension nut to verify that the retention pins are installed to lock the suspension nut in place.

2. DIRECTION:

A. Within seven days activities are to review their crane/hoist inventory and identify all Columbus McKinnon's Budgit/Yale Air or Electric hoists with rated capacities between 1/4 and 1 ton manufactured between April and June of 2016. Hoists identified as meeting these criteria shall be removed from service immediately pending satisfactory verification of retention pins as described in paragraph 2.B.

B. Hoists that are identified in paragraph 2.A as being part of the suspect population shall be visually inspected with the use of a telescopic mirror and secondary retention pins installation verified prior to returning the crane/hoist to service. Detailed inspection instructions and pictures shown in reference (a) can be found on the Navy Crane Center website at <u>https://</u> <u>hub.navfac.navy.mil:443/webcenter/content/conn/</u> <u>WebCenterSpaces-ucm/path/Enterprise%</u> 20Libraries/ncc/Documents/Budgit Letter-

End User.pdf?lve. Activities shall contact a Columbus McKinnon Customer Service Representative at 276-475-1322 for any additional questions with respect to the recall inspection or to report that the pins are not installed.

TIP OF THE SPEAR FIRST QUARTER FY18 EVALUATION SUMMARY

All activity weight handling programs evaluated in the first quarter were satisfactory. Monitor (observation) program issues continued to dominate evaluation items. 13 activities had not instituted a monitor program.

In addition, numerous activities that perform maintenance, inspection, and load test were not including those functions in their monitor programs. Training issues were the second most common evaluation items. These included examination scores less than the new requirement of 80 percent, refresher training not taken by category 3 crane operators, and localized training courses that were not approved by the Navy Crane Center.

SUMMARY OF PROGRAMS EVALUATED

44 Navy WHE programs were evaluated. All were fully satisfactory.

SATISFACTORY CRANES

30 of 35 cranes were satisfactory (86%).

Reasons for Unsatisfactory Cranes.

Secondary limit switch not properly tested (2 cranes).

Guide roller disengaged from conductor bar.

Loss of power test not performed. Brake measurements not taken and NDT documentation missing from MISR.

EVALUATION ITEMS

Common Evaluation Items (five or more items):

- Lack of monitor program or established program that needs improvement or does not cover all program elements – 36 items.

- Training issues, including contractor personnel (training not taken, training weak or not effective, refresher training not taken or not taken within three months of license renewal, lack of inspector training, instructor not authorized by NCC, locally required training not taken, training course score less than 80 percent, non-Navy eLearning (NEL) certificates) – 26 items.

- Inspection and certification documentation errors – 15 items.

- Operator's Daily Check Lists/Operator's Monthly Check Lists (ODCLs/OMCLs) and simulated lifts performed incorrectly or nor performed - 14 items.

- Various unsafe crane and rigging operations observed by the evaluation team (side loading, unattended load, standing/walking beneath load, operating without signals, poor signaling, pinch points, slings bunched in hooks, load not balanced, no synthetic sling protection, brakes not checked at start of lift, side loading of shackles, trackwalker out of position, swivel hoist rings not torqued, trolley racked to one side, etc.) – 13 items.

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- Operators/riggers/test directors lacked essential knowledge (recognizing crane accidents, complex lifts, knowing the weight of the load, how to connect special equipment, etc.) – 11 items.

- Rigging gear, containers, brows, test weights, etc., not marked properly or marking not understood by riggers (including illegible marking, mismatched components, SPS vs GPS, pin diameter not marked on alternate yarn roundslings) – 11 items.

- Operator's Daily Check Lists/Operator's Monthly Check Lists (ODCLs/OMCLs documentation deficiencies (including incorrect form used and pre-completed forms) – 11 items.

- Lack of, ineffective, or insufficient crane replacement/modernization plan – 11 items.

- Local WH instruction/SOPs non-existent or inadequate – 10 items.

- Unrecognized/unreported accidents or near misses (including damaged gear not investigated for cause) – 10 items.

- Lack of (or low number of) lower order crane or rigging accident and near-miss reports – 10 items.

- Poor inspections/inspection processes (incl. inspector removing load bearing fasteners voiding certification, inspections not performed, work documents not available for in-process inspections, unsafe practices, wire rope not inspected completely, fall protection PPE not utilized, deficiencies not identified) – 9 items. - No procedure for tagging equipment with known deficiencies and/or tagging equipment that is out of certification – 8 items.

- Operator license/file discrepancies (no OQE of performance exam, examiner not licensed, no OQE of safety course, no OQE of operation to waive performance test, course not signed by examiner, course improperly graded, corrective lenses not noted, course not graded, licensed for more than 2 years, license not in possession of operator, operating with expired license/training, operating with no license) – 7 items.

- Cranes/rigging gear/crane structures/other section 14 equipment not in the program or lack documentation – 6 items.

- Crane improperly stowed/secured (hook block in, or too close to, upper limit switch or stowed in path of traffic, machines, etc., power not secured, stowed with gear left on hook and the hook latching mechanism not secured) – 6 items.

- Rigging gear/section 14 gear load test issues (load not held for prescribed time or duration not noted, documentation missing, not tested properly, not tested, pin diameter not identified, test load tolerance exceeded) – 6 items.

- Expired or non-program gear in use or not segregated from in-service gear – 6 items.

- Tagging issues (illegible or incorrect caution tags, cranes/crane structures with expired certifications not tagged, inspector did not have tag in possession, tag not removed upon condition correction, essentially permanent tags in lieu of more effective solutions, such as removal of obstruction or relocated rail stops, incorrect tag used) – 6 items.

- Deficient or worn rigging gear (including noncompliant gear) – 6 items.

- Lockout/tagout violations (PPE not used for energy check, verification not performed, supervisor's annual review not performed, hazard analysis not performed for PPE requirements, procedure not on site, electrical isolation not established after load testing, personal locks not used, voltage meter was not validated against a known power source, incorrect locks used) – 6 items.

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

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SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FOURTH QUARTER FY17

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

Accidents: For the fourth quarter of fiscal year (FY) 17, 96 Navy weight handling accidents (72 crane and 24 rigging) were reported. there Unfortunately, were 19 significant accidents, as defined in reference (A), which is the highest quarterly total in the past three years. Almost 50 percent of the significant accidents were overloads. It is essential when performing calculations or following procedures that second checks are utilized to ensure equipment is not overloaded. Side loading and bound loads were also attributed as causes of overloads. Collisions (crane and/or load) accounted for 47 percent of the crane accidents, indicating improvement is needed in this area. Envelope checks are a must to ensure the path of the crane is free from all obstructions. In addition to the above accidents, 12 contractor accidents were reported, 5 of which were significant.

INJURIES

Accidents: Three injury accidents (two rigging and one crane) were reported in the fourth quarter. While performing crane lifts with a blended crane team, a ships force individual received a puncture wound from a nail when pallet slings snagged some empty pallets. An eyebolt broke during a rigging evolution dropping the component and injuring a rigger's finger. While assisting during a rigging evolution, a nonrigging employee suffered a hand laceration when a chainfall block twisted under tension.

Lessons Learned: All injuries could have been avoided with proper oversight from experienced crane team personnel. Riggers-in-charge and associated crew members are reminded to initially assess the proficiency or skill level of all assigned personnel and maintain positive visual oversight of the assigned helpers while completing the tasks.

When encountering situations that are not normal, it is important to make sure that the team is adequately prepared to perform the task. Effective pre-job briefings that address responsibilities, procedures, precautions, and operational risk management associated with a planned operation are a great approach to improving weight handling operations. Examples of effective pre-job briefings can be found in the "Take Two" video on the NCC website.

OVERLOADS

Accidents: Eight overload accidents (seven crane and one rigging) were reported. A NAVAIR sling was side loaded resulting in a binding condition causing an overload of the sling. Riggers overloaded a stores box while lifting palletized lead out of the drydock. A mobile crane was overloaded when a test weight was identified outside its maximum radius by approximately two inches. A monorail crane was overloaded when the up button on the pendant controller stuck while hoisting a component. A shape became bound while lifting it out of a frame resulting in the shape handling beam being overloaded. Four category 3 cranes were administratively overloaded due to activities not adhering to new load test tolerance requirements. Two of four legs of a lifting adapter sling parted during removal of an adapter from the cell. A load indicating device (LID) was overloaded while testing wire rope pendants in a pull-test machine.

Lessons Learned: Some of the overload accidents listed above dealt with potential binding conditions and had LIDs installed in line with the rigging. Use of a chainfall was not utilized and its use is recommended in instances to help control loading of equipment in minor increments when compared to the use of a crane.

In other instances, some of the overloads could have been avoided if a LID was incorporated into the rigging with a dedicated LID reader assigned and stopping points established. In one accident, the wrong size LID was chosen for use and was overloaded during load test of slings. Best work practices (how to approach maximum radius with test weights) for testing mobile cranes were not standard at two different sites for one activity. Push buttons should be checked during the operator's daily checklist (ODCL) or pre-use inspection to make sure they operate freely and the corresponding component actuates properly when controls are Lastly, ensure the crane test activated. requirements are current and that the test team clearly understands and complies with those requirements.

DROPPED LOADS

Dropped Loads: There were five dropped load accidents (four crane and one rigging). A knot tied in lashing and used to rig a component through a ship's access slipped causing the component to drop 10 to 12 inches to the deck. During a lift of an aircraft engine, the engine dropped to the deck due to improperly installed rigging gear. While lifting an object, it partially separated and fell four inches into a shipping container. A pump assembly being lifted from a pallet slipped from the rigging and fell 10 inches to the pier. While removing a component from a lathe, a one-inch synthetic nylon grommet was severed resulting in a dropped load.

Lessons Learned: Improper rigging was identified during many of the dropped load accidents that were reported. In three of the instances, developing procedures or following best work practices could have helped mitigate dropped loads. In one instance, a component was not seated properly in the lift rig as required by procedure. This caused the component to fall from the rig, which resulted in over \$30,000 in damage to a component, rendering it useless. Two of the dropped loads were a result of not using enough rigging gear to secure the loads within the rigging Root causes included not configurations. following past best work practices. When rigging components that have a high center of gravity, it is essential to frap the component to secure it within the rigging configuration. Frapping is tight wrapping around the load and the supporting rigging gear to keep the load attached and centered in the rigging.

TWO-BLOCK

Two-Block: Two two-block accidents were reported. A mobile crane operator inadvertently engaged the wrong hoist lever hoisting the hook block through the anti-twoblock switch (which did not activate) twoblocking the hoist block. Also, a monorail crane was identified in a two-blocked condition.

Lessons Learned: Improper operation was identified as the root causes for these accidents. For the mobile crane, the crane operator thought he was engaging the main block lever so when the

operator didn't notice movement, he increased the throttle speed.

The operator should have stopped and visually checked that the correct lever was engaged after initially engaging the throttle with no movement on the main block. This event had the potential for severe consequences. The other occurrence could have been averted if the operator stopped the hoist prior to the two-The accident was attributed to block. improperly securing the crane the night before. Reference (A), paragraph 10.20 states in part "Do not store the hook block in the upper limit unless allowed by the OEM or activity instruction. Additionally, provide sufficient clearance below the upper sheave assembly or trolley/hoist frame so that the subsequent operator performing a pre-use check will be able to stop the hoist motion before a two-block event occurs in case the hoist does not operate in the correct direction upon initiation". If you must enter the limit switch, do it at the slowest speed possible.

CRANE DERAILMENT

Accidents: One derailment was reported this quarter. A portal crane ran over a wheel chock causing one wheel of the travel truck assembly to de-rail.

Lessons Learned: The activity had a process and instructions to verify removal of chocks but did not follow the process. Many activities have heard of the term "forceful team back-up". All members of the crane team are responsible to identify crane envelope obstructions that affect the safe operation of the crane. It is imperative that all aspects of the job are discussed and carried out in the manner that was briefed.

When any part of the plan cannot be executed, all work must stop and be re-briefed to resolve discrepant conditions before continuing.

CRANE COLLISIONS

Accidents: As noted above, 47 percent of the crane accidents reported this quarter were collision related. The following accidents had the potential for severe outcomes: A bridge crane's rail sweep contacted a steel plate (adrift piece of debris) during crane travel, causing the rail sweep to shear off and fall to the ground. During an ODCL, a bridge crane collided with a section of staging erected inside the crane's travel path. A personnel brow being positioned from the pier to a ship struck and damaged the ship's radar dome.

Lessons Learned: A complete envelope check (to the maximum extent possible) should be performed to identify potential hazards that affect the safe operation of cranes. Operators should be

particularly cautious when facility maintenance has been performed in or near the crane's travel path. Contractors and activity building maintenance personnel must be made aware of the crane clearance requirements and ensure adequate clearance is maintained. Work control processes should be developed for any work performed within the crane's operating envelope. Maintenance managers and/or contracting officers must ensure the activity's crane manager is made aware of work being done and must ensure a thorough review of the work is performed and verify adequate clearance is maintained. In the case of the brow, adequate positioning of personnel or use of taglines may have prevented this occurrence.

NEAR MISSES

Near Misses and Unplanned Occurrences: Activities reported 76 near misses (62 crane and 14 rigging) and 15 unplanned occurrences (13 crane and 2 rigging). Half of the near misses were true near misses, that is, the identification of these events averted potential overloads, equipment damage, and numerous avoidable contacts. In some instances, hand signals were not followed or

cranes were being operated without direction. The near misses identified errors that were committed by crane teams and needed outside intervention to correct. The other half of the near miss reports were actually really good monitor program observations, which are needed to fill out the bottom of activities' safety triangles. Reference (A) defines a near miss as "an unplanned event during a weight handling operation that did not result in a definable accident, but easily had the potential to do so". Only a break in the chain of events prevented an accident. Simply put, a near miss is an accident that almost took place. The difference between a near miss and an accident (serious or otherwise) is often a fraction of an inch or a split second of time. When discussing these events internally, review the near miss definition to decide if the event merits a report or is just a tangible observation.

Weight handling program managers, operations supervisors, and safety officials should review the above lessons learned with personnel performing weight handling operations and share lessons learned at other activities with personnel at your activity. Data reported in the fourth guarter of FY17 indicates that there is a need to focus on reducing significant accidents, and in particular, overload accidents. Even though half of the near misses reported were not true near misses, deficient conditions are being identified to help broaden the bases of activity safety triangles. Documentation and periodic analysis of accidents, near misses, unplanned occurrences, and monitor program observations are essential to help activities identify trends and take appropriate corrective actions necessary to prevent recurrence or to prevent the events from evolving into more significant accidents.

WEIGHT HANDLING TRAINING BRIEFS

Meight Handling Training

Target Audience: Journeyman, Inspectors, Load Test Directors, and Certifying Official

Title: Exception for Maintenance Personnel to Inspect Specific MISR Items

Weight Handling Training Briefs (WHTBs) are provided for communication to weight handling personnel.

On 21 June 2016, the new NAVFAC P-307 revision was signed and became available for immediate implementation. Navy Crane Center developed a series of briefs in order to provide specific details relating to the change.

Similar to the Navy Shore Weight Handling Safety Brief, the WHTB is intended to be a concise and informative discussion of a trend, concern, or requirement related to recent/real time issues that have the potential to affect our performance and efficiency. The WHTB is not command-specific and can be used by your activity to increase awareness of potential issues or weaknesses that could result in problems for your weight handling program. WHTBs can be provided directly to personnel, posted in appropriate areas at your command as a reminder to those performing weight handling tasks, or 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.

Navy Crane Center point of contact for requests to be added to future WHTB distribution is Christina Jodanovic (christina.jodanovic@navy.mil).

 MAINTENANCE INSPECTION SPECIFICATION AND RECORD FOR CATEGORY 1 AND 4 CRANES

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Many of the sigma annotated items are trade specific (e.g., mechanical, electrical). Although preferred, there is no requirement for mechanics to only inspect mechanical items or vice-versa. However, activities should ensure that the individuals have the requisite level of knowledge to properly complete the required inspections.

NAVFAC P-307

 The NAVFAC P-307 2016 allows mechanics and electricians to inspect select inspection items found in Appendix C and D Maintenance Inspection Specification Records (MISR).

Note 11 of each appendix states:

"Items marked with a lower case sigma (σ) after the item number may be inspected by a mechanic or electrician in lieu of an inspector".

- Mechanics and electricians who perform inspections shall sign the MISR or AMISR, as applicable.
- This information is presently being added to the applicable Navy Crane Center maintenance training courses.

10 October 2017

Training

Navy Crane Center 17-T-06





WEIGHT HANDLING PROGRAM SAFETY VIDEOS

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

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

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

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

management associated with a planned crane operation.

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

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

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

SHARE YOUR SUCCESS

We are always in need of articles from the field. Please share your weight handling/rigging stories with our editor <u>nfsh ncc crane corner@navy.mil</u>.

