THE CRANE CORNER

Navy Crane Center Technical Bulletin

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A WORD FROM TOPSIDE

Sam Bevins

There has been a lot of activity in the weight handling arena recently, both within and outside the Navy. We are working on the next revision of NAVFAC P-307 and hope to have it out this year. This revision will address any changes in the weight handling management at joint bases where the Navy will be assuming ownership and management of weight handling equipment and operations. A number of RCDRs and CSAs that have been issued since the last revision will also be incorporated as well as cost avoidance opportunities that have been identified.

The Occupational Safety and Health Administration (OSHA) has been working on an extensive revision to their standard for cranes used in construction. We have been keeping a close eye on the progress of this standard, which will affect any Navy activity that engages in construction work. We have worked with OSHA to gain some significant cost avoiding exemptions for military work in recognition of our robust weight handling program.

More and more tower cranes are showing up at Navy construction sites. In light of the recent tower crane accidents at non-Navy sites, we are completing the development of a tower crane supplement for our Contractor Crane Awareness training course. Also, our team has provided on-site, hands-on training at a number of NAVFAC construction sites. This training is available upon request.

We are always looking for cost avoidance opportunities where safety is not affected. In conjunction with NAVFAC's Facilities Engineering Commands, we plan to launch a LEAN event on reducing mobile crane maintenance and testing costs in the near future. We are also studying load test data to see if we can extend load test periodicities. In addition, our hook testing study is progressing well and we are hopeful the results will justify extending the periodicity of hook non destructive testing.

Of course, you can learn more about some of these issues and many more weight handling topics at our three-day Navy-wide Weight Handling Conference, starting May 5 in the Norfolk Virginia area. In addition to informative and interesting presentations, this forum provides an excellent opportunity to network with your peers at other Navy activities and share common safety issues and best practice solutions as we continue our journey toward our mutual goal of zero weight handling accidents. There is still time to register and there is no cost to attend. See our notice for further details. I hope to see you there.

Operational Risk Management 5-Step Process

- Identify Hazards
- Assess Hazards
- Make Risk Decisions
- Implement Controls
- Supervise (Watch for Changes)

Inside This Issue

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.

CRANE SAFETY ADVISORY

CSA 185 – Fire Suppressor (Pressurized Container) Installation and Removal Rigging Hazard

The purpose of this CSA is to alert activities of possible rigging hazards associated with the installation and removal of pressurized containers.

Background:
A serious weight handling accident recently occurred involving the removal of a pressurized gas container from a wall mount. Preliminary reports indicate the following: as part of a maintenance evolution on a fire extinguishing system, a high rate discharge (HRD) suppressor was being removed for servicing. HRD suppressors are pressure vessels charged at pressures up to 900 psig. An OEM-provided specialized lifting sling device was utilized for attaching the suppressor to the crane. Reportedly, the sling device was not properly installed on the container and as the container was being lowered, it slipped through the sling device and fell to the ground. The investigation of this accident is ongoing.

Direction:
A. Where OEM provided specialized lifting devices are used in weight handling operations associated with fire suppression systems, the activity shall ensure that the device is in good condition and that personnel using the device know how it is to be used. The activity shall independently inspect the rigged assembly to ensure compliance with the device's assembly instructions prior to permitting the lift. This applies to work being performed by activity and contractor personnel.

B. In addition, whenever a lift involves these components, proper safeguards specified by the OEM (protective covers, plates, caps, etc.) must be installed prior to movement. Refer to product safety requirements and instructions for guidance. If in doubt of the requirements, seek assistance from your activity safety and health personnel.

C. Weight handling personnel and contract administrators involved in the maintenance of fire suppression systems shall be briefed on these requirements.

EQUIPMENT DEFICIENCY MEMORANDUM

No EDMs have been issued since the December 2008 edition of the Crane Corner.

MOBILE CRANES OPERATING INDOORS

Mobile cranes are typically operated in outdoor environments. However, they are often needed and used inside buildings, inside large deck ships or in other areas that may be somewhat enclosed. They are sometimes used as temporary replacements for overhead cranes that are out of service or in locations where a special lift is required. They are commonly used to erect and dismantle overhead cranes, and they are used indoors at the tail end of construction projects.

The types of hazards usually addressed with mobile crane operations include set up conditions, operating near power lines, overloads and loss of stability, pinch points, and two-blocking. When mobile cranes are used for indoor lifting, a potential health concern is created by the crane's exhaust emissions. This particular hazard is not commonly addressed among the hazards of mobile crane operation. Without adequate ventilation, the indoor or enclosed environment may allow unsafe or unhealthful concentrations of the emission constituents to build up. Diesel fumes contain gases and solid particulate matter that can create a health hazard in certain concentrations. When the equipment is operated in an enclosed area, there is a chance that certain constituents in the exhaust can exceed established occupational exposure limits.

Weight handling managers, crane teams, engineers, contracting officer representatives, and activity safety personnel must be alert to this concern when a mobile crane is used indoors. Work documents requiring this type of operation should address the control of exhaust fumes. Hazard analysis plans must also address ventilation and the control of exhaust fumes whenever a mobile crane is to be operating indoors. Supervisors need to ensure exhaust control methods are in place and they must be alert to uncontrolled fumes, inadequate ventilation, and workers concerns that might indicate inadequate risk mitigation.

If equipment must be operated inside an enclosed area, there are actions that may be effective in minimizing or controlling concentrations to an acceptable level. Ensure adequate ventilation. Roof vents, open doors and windows, roof fans, or other mechanical systems can be used to move fresh air through work areas. The activity safety and health personnel can assist in determining air exchange requirements or the need for onsite monitoring. If practical, attach an approved exhaust hose to the tailpipe of the diesel equipment and exhaust the fumes outside where they can't reenter the workplace. Regularly inspect the hose for defects and damage. Minimize the run time of the equipment only to that which is required to complete the task.

In addition to the more commonly known risks associated with mobile crane operation, weight handling managers, engineers, crane teams, contract administrators, and safety personnel must be alert to this particular hazard when mobile cranes are prescribed for indoor operation. Maintenance work conducted on mobile cranes, when performed inside buildings, must also address these safety considerations regarding control of exhaust fumes. ■

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FIRST QUARTER FY09

The purpose of this message is to disseminate shore activity weight handling equipment (WHE) accident and near miss lessons learned to prevent repeat accidents and improve overall safety.

NAVFAC P307 requires commands to submit to the Navy Crane Center (NAVCRANECEN) a final, complete accident report (including corrective/preventive actions) within 30 days of an accident, regardless of severity or type. This reporting requirement includes rigging gear accidents, i.e., gear covered by section 14 of NAVFAC P307 used by itself in a weight handling operation and other unplanned occurrences with lessons to be learned. In addition, contracting officers are required to forward to NAVCRANECEN reports of all contractor accidents, including contractor caused accidents with Navy owned cranes. To ensure adequate time to react to negative or undesirable accident trends, NAVCRANECEN requests initial notification of any crane or rigging gear accident within 3 days of its occurrence. Accidents involving a fatality, in-patient hospitalization, overturned crane, collapsed boom, or other major damage to the crane, load, or adjacent property continue to require a NAVCRANECEN notification as soon as practical but not later than 24 hours of the event. Forward all notifications and accident reports to: nfsh_ncc_accident@navy.mil.

For the first quarter of FY09, 46 Navy WHE accidents (41 crane accidents and 5 rigging gear accidents) and 7 contractor crane accidents were reported. Ten of the 41 crane accidents were significant (overload, dropped load, two block, or injury). Some of the more significant crane accidents this quarter are discussed herein.

DROPPED LOAD

Accident: Three crane accidents were reported that involved dropped loads. NAVCRANECEN message P121451Z of 12 December 2008 reported a costly accident resulting from the use of incorrect hardware (nuts and bolts) on a below-the-hook lifting device. The other two dropped load accidents resulted from improperly secured loads.

Lessons learned: A primary cause of dropped loads is inadequate rigging where the load is not adequately secured. Vibration, sway, or other dynamic effects can cause loads to shift within the rigging and fall. Riggers need to assess load configurations and ensure the loads are rigged to withstand external forces that may occur during the lift. As noted in the NAVCRANECEN message, when using below-the-hook lifting devices strict compliance with applicable installation and assembly procedures is vital. Where these devices require installation of fasteners or other components, procedures should provide details such as size, material, grade, and torque requirements. Where procedures are unclear or unavailable, contact the engineering group for guidance.

OVERLOAD

Accident: A mobile crane operator was given the signal to telescope the boom in an attempt to loosen a gear box. While doing so, a chainfall that was attached to the load was overloaded and parted.

Lessons learned: Previous NAVCRANECEN safety messages have highlighted lifting bound or potentially bound loads. When load binding occurs, the crane should not be used as the primary lifting device to mitigate the binding condition. In this occurrence, a chainfall was in the rigging arrangement and should have been used, preferably with a load indicating device, to remove the gear box.

Injury: As a rigger was in the process of disconnecting the rigging after a load was landed, the operator further lowered the hoist allowing the rigging hardware to flop onto the rigger's hand. The operator was not in the best position to see the load and wasn't aware the load had been landed. Communication between the rigger and the operator was inadequate.

Lessons learned: If the operator cannot see the load, communication between the rigger and the operator must be continuous. The operator must stop if communication stops.

TWO-BLOCKING

Accidents: There were two almost identical two-block accidents involving mobile cranes. In each case, an operator trainee was operating the crane under the supervision of a licensed operator. In each case, the trainee failed to activate the anti two block device. In each case, the trainee telescoped the boom and neither the trainee nor the licensed operator paid sufficient attention to the hook block as the boom was being extended.

Lessons learned: Two block accidents, such as the two described here, can be catastrophic. The last fatality with a Navy owned crane was the result of a two blocking occurring under the same circumstances. Fortunately, in these two cases, operation was stopped prior to parting the hoist line. When trainees are operating cranes, the risk is elevated and the supervisor must be particularly vigilant to ensure such accidents cannot happen.

Effective planning, teamwork, communication, situational awareness, and Operational Risk Management (ORM) as detailed in OPNAVINST 3500.39B are all good tools for reducing the risk of an accident. Good job

planning and communication go hand in hand. A training video called "take two" that discusses the importance of good planning, communication, and ORM is now available on the Navy Crane Center website for your use.

Weight handling program managers and safety officials are to review the above lessons learned with personnel performing lifting and handling functions and consider the potential risk of accidents occurring at your activity. This is also a good time to reinforce the principles of ORM. Our goal remains zero crane accidents.

REMINDER
NAVY WEIGHT HANDLING CONFERENCE

The Navy Crane Center (NAVCRANECEN) is hosting a Navy Weight Handling Conference 5 - 7 May 2009. The conference will be held at the Norfolk Waterside Marriott hotel in Norfolk, Virginia. The purpose is to share weight handling equipment (WHE) improvement initiatives and safety practices as well as to discuss related issues with the goal of further improvement in WHE safety, maintenance management, engineering, operations, and training.

The conference agenda has been posted on the NAVCRANECEN web page. Topics will include: NAVFAC Prospective on the WHE program, Oversight of contractor tower crane operations, Human factors in crane accidents, LEAN Six Sigma in weight handling, Selection Maintenance and Inspection of High Performance Wire Rope for Cranes, Navy WHE program safety record, Crane Acquisitions, and Controls for lifting of constrained loads.

All Navy shore activities and shore based operational units with WHE are invited to attend and participate. Complete and submit a registration form for each person attending the conference by 3 April 2009. The registration form can be found on the NAVCRANECEN web site. Early registration is encouraged.

A no host two-hour dinner cruise on board the Spirit of Norfolk has been organized for the evening of May 6, from 7PM to 9PM. This event will be an excellent opportunity to socialize with members of the Navy WHE program and all attendees and guests are encouraged to attend. Attendees are responsible for making their own reservations through the Spirit of Norfolk by contacting the POC at (757) 217-0627. The deadline for reservations is April 3. Cost is $35 per person.

Conference information is posted on the Navy Crane Center web site, https://portal.navfac.navy.mil/ncc.

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 Videos

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

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

Load Testing Mobile Cranes at Naval Shore Activities provides load test personnel guidance on properly testing mobile cranes per NAVFAC P-307.

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

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

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