THE CRANE CORNER

Navy Crane Center Technical Bulletin

http://portal.navfac.navy.mil/ncc ***64th Edition – December 2009***

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A WORD FROM TOPSIDE

Sam Bevins

The December 2009 revision of NAVFAC P-307 has been issued. This revision addresses some new issues and also provides significant cost avoidance opportunities for the Navy shore activities.

This revision addresses equipment that is sometimes used as "substitutes" for cranes, particularly by contractors on Navy property but also by Navy personnel on occasion. One type of equipment is the multi-purpose machine, which is defined as "a machine that is designed to be configured in various ways, at least one of which allows it to hoist (by means of a winch or hook) and horizontally move a suspended load." This includes machines that are sometimes referred to as telescopic handlers, telehandlers, or rough terrain forklifts. Basically, when these machines are configured to lift loads suspended by rigging gear, they are to be considered cranes. When construction equipment (e.g., backhoes, frontend loaders) and standard forklifts are used to lift suspended loads, the rigging gear must comply with P-307 and personnel using the gear must take either the Crane Rigger or the Category 3 Crane Safety course. Contractors who use multi-purpose machines must provide a certificate of compliance for them, and they must also certify their rigging gear complies with applicable OSHA and ASME standards. Contracting officials should be made aware of these changes and the need to incorporate the requirements into new contracts.

Equipment belonging to other military services at Joint Bases where the Navy will maintain, test, and/or certify the cranes is now covered.

Regarding cost avoidance opportunities, test data from more than 4000 load tests of category 2 and 3 cranes justify extending the load test periodicity for these cranes from two years to four years. In addition to the cost avoidance, this initiative improves safety by minimizing a high risk crane operation for thousands of cranes. In the inspection area, based on data provided by activities, periodicities or criteria for numerous inspections have been extended or modified, including engine sensors verifications, slewing ring bearing fastener checks, boom hoist equalizer sheave inspections, telescoping boom extend and retract cable inspection requiring boom disassembly for Category 1 and 4 cranes, and coupling alignment verifications and brake disassembly for Category 2 and 3 cranes.

Please read the complete Change Synopsis in this revision. The new revision is now posted on our web site, https://portal.navfac.navy.mil/ncc. Activities have a year to be in compliance with the new revision, but may take advantage of the changes that are advantageous to your activity immediately.

Finally, as we start the New Year and as lifting and handling personnel return from the holidays, I ask weight-handling managers to take the measures to ensure your teams start the year fully alert and engaged at the critical jobs your personnel perform. Thus far, this fiscal year accidents are on a positive trend. Let's keep the momentum going to make 2010 our safest year yet!

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)

CSA 190 – Under Rated Brake Hoses Supplied on Grove RT Mobile Cranes

The purpose of this CSA is to inform activities of under rated hoses on Grove RT Mobile cranes.

A. An activity reported receiving OEM replacement travel brake hose assemblies with ratings for working pressure and bursting pressure less than the pressure that may be developed in the crane braking system. The replacement travel brake hose assemblies were ordered through the local Manitowoc (Grove) distributor using the part numbers supplied on the OEM drawings.

B. Grove has determined that the brake hose assemblies supplied were underrated for the maximum pressures that could be realized in the crane braking system. Grove further determined that the affected brake hose assemblies were also provided on several Grove RT cranes produced between 1988 through 1999. Grove has provided new part numbers for replacing the affected hoses with ones of adequate strength. The crane models with the affected and replacement part numbers are listed in Attachment 1. Grove has stated that there have been no reported failures of the crane's braking system due to burst hoses.

Direction:
Activities shall replace the affected hoses identified in Attachment 1 by the next Type A PM or within the next four calendar months, whichever comes first. Contact Grove if there are any questions about existing brake hoses being undersized. Replacement brake hoses can be obtained by contacting Manitowoc Crane Care at (717) 593-5926 or 5962. When calling, reference the Navy Hose Replacement Program.

Attachment 1: OEM Indentified List
Affected Grove Mobile Cranes and Part Numbers

Model	Affected Part Number	Replacement Part Number
RT600C	7542103450	7555203401
	7542101849	7555201800
RT635C	7542103450	7555203401
	7542101849	7555201800
RT640C	7542103450	7555203401
	7542101849	7555201800
RT700B	7555203451	7555203401
	7555202250	7555202300
RT740B	7555203451	7555203401
	7555202250	7555202300

EQUIPMENT DEFICIENCY MEMORANDUM (EDM)

No EDMs have been issued since the September 2009 edition of The Crane Corner.

NAVFAC P-307, MANAGEMENT OF WEIGHT HANDLING EQUIPMENT, DECEMBER 2009 EDITION

NAVFAC P-307 has been revised as the December 2009 edition. This revision incorporates appropriate crane safety advisories and requests for clarification or revision issued/received over the past three years.

Revisions include the following (some of which have cost-avoidance potential):

a. The required load test periodicity for Category 2 and 3 cranes has been reduced to every 4 years (quadrennially) from every 2 years (biennially).

b. For category 2 and 3 cranes, the frequency of various inspection items has been decreased from 6 years to 8 years to correspond with every second quadrennial load test.

c. Various maintenance inspection requirements have been reduced, specifically: periodicity of rotate bearing fastener tightness checks, periodicity of diesel engine shutdown checks, periodicity of boom hoist equalizer sheave inspection, and periodicity of telescoping boom disassembly for internal extend and retract cable inspection.

d. Navy owned rigging equipment used with multi-purpose machines, material handling equipment (forklifts) and construction equipment is now covered.

e. Contractor owned rigging equipment, regardless of how it is used, is covered under separate rules that essentially require the contractor to meet OSHA, ASME, ANSI, or other appropriate industry standards and require the contracting officer to ensure these rules are in the contract and some amount of oversight is performed.

f. Updating of training requirements including the new requirement of Category 3 crane operators requiring retraining every 3 years.

g. Numerous updates to all sections to keep NAVFAC P-307 up to date with: current ASME and ANSI standards, current crane designs such as latching telescoping boom mobile cranes, trends in Navy and DoD such as joint basing, and the best safety practices in weight handling such as using load indicating devices for constrained load lifting, and increased requirements and supervision for tower cranes and lifting in the vicinity of power lines.

Changes are identified in the change synopsis. Navy shore activities shall be in full compliance with the changes identified within one year.

NAVFAC P-307 is now available for download from the Navy Crane Center's web site, https://portal.navfac.navy.mil/ncc. Navy Crane Center will not be issuing printed copies. Within the next few weeks, printed copies will be available for ordering. For DoD and DoD contractors, printed copies may be ordered from the naval logistics library, https://nll.ahf.nmci.navy.mil. A public key infrastructure (PKI) certificate is required. Customer service phone number is 877-418-6824. For others, printed copies may be ordered from Naval Inventory Control Point, 700 Robbins Avenue, Philadelphia, PA 19111-5098, (215) 697-2626. Only the standard size will be stocked. Stock number is 0525-LP-109-7546.

DC FUSE RATING VERIFICATION

NAVFAC P-307 states that any replacement part identified by the OEM's part number to a single National Stock Number (NSN) in the Defense Logistics Information Service data base is approved as interchangeable with any other manufacturer's part number listed under the same NSN and does not constitute an alteration. However, activities may be surprised to discover that not all parts listed in the NSN meet specifications stated in the NSN, which is what happened to an activity recently. It turns out that while replacing fuses on one of its P&H bridge cranes, an activity discovered that the DC voltage rating (VDC) of the installed fuses were 125 VDC instead of the required 250 VDC. The fuses had been installed during a 1994 overhaul by the manufacturer. Subsequently, the activity ordered replacement fuses through the NSN catalog and received ones that were rated for 125 VDC and not the 250 VDC stated in the catalog. The activity contacted the Defense Logistics Agency to update the NSN information and performed the corrective action of removing the crane from service to verify all other fuses for the correct rating.

What this activity experienced is probably not unique and other activities may have experienced similar occurrences. So then, what is the big deal with having the correct fuse voltage rating? Well, having the correct fuse voltage rating is important because the voltage rating indicates the ability of the fuse to quickly extinguish the arc of current after the fuse element melts. It also indicates the maximum voltage the open fuse will block. In other words, once the fuse has opened, any applied voltage equal to or less than the voltage rating of the fuse will not be able to jump the gap of the fuse (i.e. no arcing across the gap).

Fuses can be safely used in circuits at any voltage at or below the fuse voltage rating (e.g. a 20-ampere fuse rated for 250 VDC can be used in a 20-ampere 125 VDC circuit). However, keep in mind that when fuse replacement is necessary be sure to contact the manufacturer before replacing fuses in DC circuits since some manufacturers have lowered the DC voltage ratings for certain types of fuses. Additionally, NAVFAC P-307's Appendices C and D require that fuses be inspected for proper ratings and type during the annual or Type B maintenance inspection.

Remember, safety is key. By verifying proper fuse ratings, you ensure proper equipment and circuit protection.

PRECAUTIONS WHEN LIFTING OBJECTS FROM HORIZONTAL TO VERTICAL POSITION WITH WEIGHT HANDLING EQUIPMENT

Two recent crane accidents have occurred during the up-righting of cylindrical objects from a horizontal plane to vertical. Investigations into these two accidents identified potential flaws of fundamental rigging and/or crane operating practices. In both accidents, during the process of up-righting the component from horizontal to vertical, personnel did not ensure the hook of the crane was properly positioned over the component's center of gravity. As the component was lifted to the vertical position, the component moved unexpectedly beyond the center of gravity and a loss of load control occurred. A failure of installed hold-backs may have also contributed to the most recent accident. The investigation is ongoing.

When a stationary crane is used to up-right a component, the radius will increase or decrease when the crane is rotated, depending on the position of the crane. When possible, position the crane in-line with the direction of up-righting and use the trolley, travel or luffing functions of the crane to keep the hook centered over the center of gravity and prevent side loading of the crane. If the crane cannot be placed into position to perform the lift in line with the direction of the lift, the crane must be adjusted to maintain position over the center of gravity to prevent side-loading and a loss of load control.

Rigging personnel should monitor the lift at all times and not depend solely on the operator's judgment as to the position of the hook over the center of gravity. Additional personnel should be assigned for the purpose of monitoring the hook's position throughout the lift, if required.

Consideration should also be given for the placement of adequate hold-back rigging to control any inadvertent movement during the up-righting process.

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FOURTH 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 P-307 requires commands to submit to the Navy Crane Center (NAVCRANECEN) a final accident report (including corrective/preventive actions) within 30 days of an accident, regardless of severity or type. This reporting requirement includes rigging gear accidents (gear covered by section 14 of NAVFAC P-307 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. In order to allow NAVCRANECEN adequate time to react to negative or undesirable accident trends, activities shall provide an initial notification of all crane and rigging gear accidents within 3 days of the occurrence with the facts known at that time. For accidents involving a fatality, in-patient hospitalization, overturned crane, collapsed boom, or other major damage to the crane, load, or adjacent property NAVCRANECEN should be notified as soon as practical but not later than 24 hours after the event. Forward all notifications and accident reports to: nfsh_ncc_accident@navy.mil

For the fourth quarter of FY09, 66 Navy WHE accidents (54 crane accidents and 12 rigging gear accidents) and 10 contractor crane accidents were reported. Eighteen of the 54 Navy WHE crane accidents were significant (overload, dropped load, two block, or injury). Some of the more significant crane and rigging accidents this quarter are discussed herein.

DROPPED LOAD

Accident: A team of crane maintenance mechanics was assigned to remove the hook from its hoist block assembly on a bridge crane. The plan was to lower the hook into a support cradle designed to hold the hook in a vertical position, remove the hook nut and bearing and raise the hoist block clear of the hook. During removal of the hoist block from the hook, the unsecured hook nut and bearing fell to the floor.

Lessons Learned: Weight handling maintenance evolutions need to be pre-planned to mitigate all known and potential risks. In this case, the hook support cradle did not adequately fit the hook. This required unplanned tilting and hoisting of the hoist block to clear the hook's threaded shank. The risk mitigation plan did not include manipulation of the hoist block and the need to secure, or remove, previously disassembled crane components from the top of the hoist block. The unsecured hook nut and bearing slid off the hoist block and onto the floor as the hoist block was tilted.

Accident: Two navy crane accidents involved dropped loads due to improper rigging configurations using synthetic slings. One accident involved a valve that was being relocated from a work stand to a pallet. The synthetic sling was attached in a basket configuration around the valve's actuator. However, the center of gravity shifted as the valve was laid on its side, causing the sling to slip off the actuator. The other dropped load occurred when a toolbox was hoisted using synthetic slings in a basket configuration without ensuring the load was secured within the sling configuration. In this instance, the load's center of gravity within the sling configuration shifted and the box fell from the rigging and onto the deck.

Lessons Learned: Personnel performing rigging operations must be trained and familiar with proper rigging techniques and methods used to lift loads. Personnel who are not familiar with or not sure how to properly rig

the load should contact supervision, engineering, or knowledgeable rigging personnel for assistance. Standardization of lifting sketches for loads and lifts with odd centers of gravity should be developed and documented for future use. A synthetic round sling or flat webbed sling used in a choker configuration with appropriate chafing material was the correct way to rig the valve. The tool box rigged in a basket hitch was the best choice. However, lashing, such as flat nylon webbing, should be used to secure each sling to the other and encompass the outside perimeter of the box, above the center of gravity for the best stability. Activity surveillances of lifting and rigging operations should include observance for proper rigging, especially of loads without standard lifting points.

TWO BLOCK

Accident: An operator was hoisting a load when the upper chain stop (rubber donut clamped to load chain) contacted the stop plate at the base of the hoist, resulting in a two block of the crane.

Lessons Learned: The investigation determined that the lift slings were too long, preventing the load from lifting before the upper limit was contacted. Proper planning is key to every lift. Standardization of lifting arrangements and rigging gear required for the lift can assist the operator or rigger during the risk assessment of work to be performed. The crane operator should always know where the hoist block is in relation to the limit switch. Safety devices such as the upper limit shall never be used to stop hoisting of the crane. In some cases performing, an "empty hook" dry-run from the pick-up location to the designated landing area for the equipment can be beneficial in identifying envelope problems as well as identifying correct rigging gear and height restrictions.

INJURY

Accident: During a shipboard rigging operation, a mechanic placed his hand in a pinch point and sustained an injury to his hand. This happened while the mechanic was attempting to remove a bolt from the component and hold the component steady. But instead of holding it steady, the mechanic shifted the load pinching his hand between the load and another component.

Lessons Learned: Riggers have to maintain a safe operating envelope around equipment to control work that is being performed. Binding situations and any potential pinch points during disassembly of equipment can occur quickly. The rigger must monitor and challenge personnel in the rigging envelope to understand the disassembly to prevent shifting of the load as equipment is removed from the component. Pre-job briefs should identify potential hazards and cover potential binding situations expected when rigging ship's equipment and should ensure team personnel, such as mechanics, ship's force, and others who may be less experienced, are made fully aware of potential hazards.

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.

CONTROLLING HAZARDOUS FLUID ENERGY

Earlier this year, an accident occurred at a non-Navy drilling rig resulting in hydraulic fluid being injected into a worker's hand.[1] The maintenance worker found a small leak on a hydraulic line. After having the machine shut down, the worker placed his double gloved finger over the hose at the leak's location. What the worker was not aware of was that the line remained pressurized. Hydraulic fluid penetrated the double glove, injected into his index finger and pushed up his hand and into his forearm. The picture below shows the extent of the surgery required to clean the oil from the worker's hand and arm.

Fluid penetration accidents are serious and occasionally fatal! According to OSHA:[2]

- 40% of accidents result in amputation when the pressure is less than 2000 psi.
- 50% amputation rate when the pressure is over 2000 psi.
- 100% amputation rate when the pressure is over 7000 psi.

Why are the amputation rates so high? This type of injury requires immediate surgery by a knowledgeable specialist. The chemicals begin immediately damaging or killing tissue. If not treated promptly, gangrene can occur.

While hydraulic oil injections provide the spectacular pictures (of the unfortunate ones), high pressure grease guns and paint sprayers cause the most injuries. Any fluid operating at pressures as low as 100 psi can penetrate the skin and cause harm – including air and water. OSHA regulation, 29 CFR 1910.147, "The Control of Hazardous Energy (Lockout/Tagout)," and OPNAV INSTRUCTION 5100.23, Chapter 24 requires all organizations to have lockout/tagout procedures during servicing and maintenance of equipment. If a leak is suspected in a pressure line, follow your organization's Lockout / Tagout procedures to CONTROL THAT RISK and ENSURE YOUR SAFETY.

References:

1. One Steel Recycling Safety Alert No. 87, 24 August, 2009
2. OSHA briefing, "OSHA Fatal Facts: Hydraulic Pressure", 5 April, 2005

CRANE ACCIDENT PREVENTION SAFETY CHALLENGE FOR FY2010

In FY08, the Navy shore crane accident statistics reflected the best performance in the history of the weight handling program. Unfortunately, that trend did not continue into FY09. Some activities saw significant improvement in their safety record and are to be congratulated for their achievement. Others have been challenged with increased numbers of accidents. We engaged with the key commands that experienced challenges in accident reduction in FY09, encouraging them to intensify their efforts on weight handling safety for FY10. Overall crane accidents were up 8 percent in FY09 with significant accidents (injuries, dropped loads, overloads and two-blocking) up 38 percent. Only 5 of the accidents met the OPNAV instruction 5102.1d reporting threshold (1 Class B and 4 Class C). Our focus on identifying and reporting virtually every unplanned event and treating each event as an opportunity to learn valuable lessons (as required by NAVFAC P307) continues to be effective in minimizing serious accidents. Human error continues to be the primary cause of most accidents.

The start of the new fiscal year has been encouraging. During the month of October, Navy shore activities reported 21 percent fewer crane accidents than in October 2008. However, we must guard against getting too comfortable with positive trends and everyone must remember that constant attention during each and every weight handling operation is critical to ensure safety.

As we approach the holiday season and winter months, I ask weight handling managers and supervisors to place a special focus on safe crane and rigging operations. Many regions will begin experiencing winter weather conditions including ice, sleet and snow. Crane and rigging teams may experience personnel substitutions due to end of year leave use. For those working during this period, thoughts can easily shift from the task at hand toward spending well deserved time with families at home. When returning from leave, we have a challenge to safely get re-engaged in our work. Maintaining an ever sharp focus on the critical job at hand during weight handling operations is challenging but we cannot expect anything less.

To improve personnel safety awareness, managers and supervisors should consider conducting increased surveillance of both crane and rigging operations. Look for signs of complacency or inattention. Make sure that the environment is conducive to safe weight handling operations. Make sure that your crane and rigging teams have sufficiently planned the task at hand and all involved personnel understand their responsibilities in support of the task. Proactive leadership throughout the command is a powerful tool in ensuring safe weight handling operations. Consider preemptive safety awareness briefings before and after the holidays to reinforce management's expectations for adherence to weight handling requirements and safe practices. Management should consider and address the impact of vacation/leave absences on crane teams. Effective planning, teamwork, communication, situational awareness, and operational risk management (ORM) are all good tools for reducing the risk of an accident. Good job planning and communication go hand in hand. A training video titled "Take Two" that discusses the importance of good planning, communication, and ORM is available on the Navy Crane Center website. This video can be used as a training tool for both crane lifts and rigging operations. I strongly encourage you to share it with your crane and rigging team personnel.

For Category 3 cranes, where the crane operator may work alone, shop supervisors should ensure that operators are frequently reminded of the following safe operating practices:

(a) Know the weight of the load being lifted. If in doubt, seek assistance.
(b) Know how to properly rig the load. If in doubt, seek assistance.
(c) Know the location of the load's Center of Gravity (CG) and center the hook over the CG to avoid sudden load shifting and side loading as the load is being lifted.
(d) Do not pull suspended loads sideways while hoisting or traveling.
(e) Hoist and travel at a controlled speed. Slow is better than fast.
(f) Be aware of the operating environment and be especially alert for other cranes on the runway and operating near runway end stops.

Shop supervisors may also utilize the new Navy Crane Center video "Safe Rigging and Operation of Category 3 Cranes." Copies of the video can be ordered from or viewed on the navy crane center website https://portal.navfac.navy.mil/ncc.

Seven other crane accident prevention videos are 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, three other videos are available (Mobile Crane Safety, Weight Handling Program for Commanding Officers, and Mobile Crane Load Test) to assist commands in crane safety awareness. All can be ordered from or viewed on the Navy Crane Center website https://portal.navfac.navy.mil/ncc.

Each weight handling accident diminishes support to the fleet. A safe and reliable navy weight handling program is an essential enabler for fleet readiness. I encourage commanding officers to intensify your efforts during the upcoming few months to raise the level of safety awareness in your weight handling operations and continue to strive for the goal of ZERO weight handling accidents.

SAFETY PRECAUTIONS WHEN WORKING FROM HEIGHTS WHILE PERFORMING WEIGHT HANDLING EQUIPMENT RELATED WORK

The purpose of this message is to reemphasize the hazards of working from heights and the importance of following applicable fall protection program requirements during maintenance, inspection, or use of weight handling equipment (WHE). Falls from heights continue to be a leading cause of work related injuries and/or fatalities in the Navy and in private industry.

Activities should remind employees of their responsibility to comply with activity fall protection/prevention program requirements as prescribed by OPNAVINST 5100.23(SERIES). Working at heights is a frequent necessity during operation, inspection and maintenance of weight handling equipment. Whether it is an operator accessing a crane or mechanics/inspectors performing work, the possibility of a fall is ever present.

Activities must anticipate the need to work at heights and plan their work accordingly. Effective accident prevention must be incorporated into the job planning process. Careful planning, conformance to fall prevention/protection requirements and adherence to the tenets of operational risk management are positive tools for preventing fall related accidents.

Personnel should perform risk assessments of their work environment and take the appropriate measures to mitigate the risk associated with working at heights. Employees must work in accordance with the activity's fall prevention/protection plan when working from heights and be familiar with the activity's fall rescue plan.

The consequences of inadequate preparation, lack of situational awareness or an ineffective means of mitigating fall hazards can be catastrophic. Commanding officers of navy shore activities are strongly encouraged to intensify their efforts to raise the level of fall hazard awareness and prevention in their weight handling operations. Personnel should be encouraged to identify and report any conditions or acts that may contribute to a fall during weight handling equipment operation, inspection or maintenance. Zero accidents must remain a strong command goal.

2011 WEIGHT HANDLING CONFERENCE

The Navy Crane Center (NAVCRANECEN) is planning another Navy Weight Handling Conference for the spring of 2011 in the Virginia, Hampton Roads area. The purpose is to share weight handling equipment (WHE) improvement initiatives and safety practices, as well as discuss related issues with the goal of further improvement in WHE safety, maintenance management, engineering, operations, and training. All Navy shore activities and shore based operational units with WHE are invited to attend and participate. Activities interested in making a presentation should contact NAVCRANECEN at 757-967-4042. Conference information will be posted on the NAVCRANECEN web site, https://portal.navfac.navy.mil/ncc as it evolves.

SHARE YOUR SUCCESS

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

Weight Handling Program Safety Videos

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

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

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.

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

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