

THE CRANE CORNER

Navy Crane Center Technical Bulletin

https://portal.navfac.navy.mil/ncc 60th Edition – December 2008 Editor: (757) 967-3816/DSN 387-3816 / <u>nfsh_ncc_crane_corner@navy.mil</u>

A WORD FROM TOPSIDE Sam Bevins

As 2008 comes to an end, I want to personally express my thanks to every one of our approximately 350 weight handling activities for your achievements in crane accident reduction over the past year. You followed up last year's significant reduction in crane accidents (11 percent) with a subsequent four percent reduction in overall crane accidents. More importantly, you achieved a 17 percent reduction in the number of significant crane accidents. Also, for the third year in a row, there were no reportable class A or B mishaps as defined by OPNAVINST 5102.1D, and for the fourth straight year, the number of reportable class C mishaps decreased (less than two percent of the total number of crane accidents for FY08).

In the 56th edition (December 2007) of "The Crane Corner" I discussed two major challenges that your activities face in the coming months: Holiday work curtailment and harsh weather conditions.

With regard to the holiday shutdown period, I want to reiterate the message I posted in the 56th edition: "Many of our people will be off on leave to be with their families during this holiday period and activities will be faced with a different make-up of crane teams, temporary supervisory assignments, and personnel being placed in unfamiliar job assignments presenting increased risk if not managed properly." Our audit teams have identified a decline in the number and quality of surveillances and oversight conducted during these periods. You need to take a fresh look at operations that will be conducted during these periods and re-evaluate the risk mitigation practices you have in place. For example, lifts considered normal earlier in the year, may need to be treated as complex due the increased risk discussed above. Supervisors and managers must make a concerted effort to provide additional oversight during these periods.

With regard to the harsh weather conditions faced by many of our activities, additional precautions need to be considered due to the frigid temperatures and icy conditions including:

- Unaddressed ice adhering to loads or the crane could be dislodged during crane lifts creating falling object hazards.
- During mobile crane set-ups, frozen ground can give the operator a false sense of security for ground loading requirements.
- Pre-use inspections need to be more diligent as the boom, block, sheaves and wire rope can become frozen increasing the chance of mis-reeving and subsequent damage. Always raise the hoists prior to lowering during the pre-use operational check.
- Trackage switches can ice over causing slippery conditions, resulting in falls and strain injuries while attempting to re-position switches.
- Cranes repositioned and operated on icy piers and drydocks pose increased risk due to the crane slipping, loss of traction, and the risk imposed to crane team members who may be focused on crane clearance zones and not necessarily their individual walk paths.

Commanding Officers of Navy shore activities should intensify their efforts to raise the level of safety

awareness in their weight handling operations during the upcoming holiday period and return to work in 2009. Your continued diligence and constructive dissatisfaction with the status quo will reinforce our goal of ZERO weight handling accidents. With the commitment to safety by all personnel involved in lifting and handling, we can make FY09 our safest year on record.

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ON-SITE SUPPORT OF NAVY CONSTRUCTION

The Navy Crane Center provides a variety of services in support of worldwide Navy construction projects. The following are some of the services provided by Navy Crane Center divisions. Our Design Division and NCCR & Safety/Training Division, as well as the Audio Visual Department of Norfolk Naval Shipyard, were on site at the National Naval Medical Center, Bethesda, Maryland to oversee and photograph erection and testing of a tower crane that will support construction of the Walter Reed National Military Medical Center at Bethesda. Our Quality Assurance Branch ensured the safety of personnel during erection of the crane. Video taken at the site will be used to train personnel on oversight of contractor tower crane erection and operation. Navy Crane Center personnel expect to return to the site to provide quality assurance for erection of two additional tower cranes.





Design Division and Project Management Division personnel were on-site at Naval Air Station, Sigonella, Italy to provide oversight of acceptance testing of a 4.5-metric ton capacity bridge crane. Compliance Division personnel had previously inspected the crane during an audit of the facility. Acceptance testing ensured that identified deficiencies in the runway system were corrected, and that the crane equipment meets UFC 3-320-07N design and NAVFAC P-307 certification requirements.



Design Division and In-Service Engineering Division personnel provided oversight of the installation and testing of a 35-ton capacity bridge crane at Fleet Readiness Center, Cherry Point, North Carolina. The on-site team overcame installation challenges and ensured satisfactory load testing by the crane contractor. All shop testing identified deficiencies were corrected and the crane was accepted.

Design Division personnel provided oversight of the installation and testing of a 250-ton capacity mobile boat hoist at Naval Amphibious Base, Little Creek, Virginia. Design Division personnel previously attended shop testing of crane components at the manufacturer's facility.

Design Division personnel provided oversight of acceptance testing following the overhaul of a 20-ton semi-gantry crane located at Naval Air Weapons Station, China Lake, California. The overhaul included replacement of the hoist, travel drive, electrification and crane controls. Quality assurance was performed to ensure contractor compliance with the contract.







SAFETY PRECAUTIONS WHEN USING BELOW-THE-HOOK LIFTING DEVICES

A significant weight handling accident recently occurred involving the use of a below-the-hook lifting device. Preliminary reports indicate the following: during an engineered lift of a high value piece of equipment, a fastener in the lift rig failed, causing the other fasteners in the configuration to overstress and fail, resulting in a dropped load. Unauthorized alternate replacement fasteners were used instead of the procedurally prescribed fasteners. The fasteners were tensioned using a pneumatic impact wrench without regard to the amount of torque applied. The investigation of this accident is ongoing.

Strict compliance with applicable installation and assembly procedures when using below-the-hook lifting devices is vital. Where these devices require installation of fasteners or other components, procedures should provide details such as size, material, grade, and installation provisions, e.g., torque requirements. Where procedures are unclear or unavailable, the cognizant engineering organization shall be contacted for direction/guidance. Activities must ensure that personnel assigned to install these devices are appropriately trained in their use.

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 184, Swage Sockets Used On 34 or More Strand Rotation Resistant Wire Rope

Reference A: Wire Rope Users Manual, Wire Rope Technical Board Publication, Fourth Edition

Reference B: NAVFAC P-307, Management of Weight Handling Equipment, June 2006 Edition

Reference C: ASTM A 1023, Standard Specification for Stranded Carbon Steel Wire Ropes Used for General Purposes

Reference D: ASTM A 931, Standard Test Method for Tension Testing of Wire Ropes and Strand

The purpose of this CSA is to alert activities of a change in NAVCRANECEN policy regarding the use of swage sockets on 34 (or more) strand rotation resistant wire rope.

Background:

A. An activity recently reported that they were unable to consistently achieve 100 percent efficiency using a swage socket on a 34-strand rotation resistant wire rope. Test samples were fabricated using 7/8-inch open swage sockets (standard catalog equipment) and 7/8-inch diameter 34 x 7 compacted strand rotation resistant wire rope. Four test samples were fabricated and pulled to destruction with results as low as 83 percent of the wire rope minimum breaking force (MBF). Additionally, wire rope manufacturers' testing has determined that 100 percent efficiency is not obtainable on 34 (or more) strand construction rotation resistant wire rope. To be acceptable for use, swage socket test samples must break at or above the published MBF of the wire rope (i.e., the swaged socket develops 100 percent efficiency). This is consistent with terminal efficiencies published in Reference A.

B. Wire rope and end fitting manufacturers recommend that swage sockets not be used with 34 (or more) strand rotation resistant wire rope. Investigation has shown that this combination of swaged socket and wire rope construction can lead to sockets that are over swaged resulting in wire nicking or sockets that are under swaged resulting in the wire rope pulling out of the swage socket during pull testing. Numerous tests have shown that these factors have contributed to test results consistently below the wire rope published MBF. As a result, wire rope and end fitting manufacturers recommend using poured sockets (molten zinc or resin) or wedge sockets with 34 (or more) strand construction rotation resistant wire rope.

C. Reference B, Paragraph 11.4.2 approves the use of swaged end connections provided that procedures and parts approved by the swage press OEM are used. End fitting manufacturers typically recommend that swage end fittings be used with 6×19 or 6×37 IPS, EIPS, RRL, IWRC wire rope and further recommend that end fittings used with any other type construction, lay, or grade wire rope be destructive tested to prove adequacy of the end connection.

D. NAVCRANECEN policy now is to prohibit the use of swage sockets on 34 (or more) strand rotation resistant wire rope, and to permit their use on other construction rotation resistant wire rope only after satisfactory testing. Testing shall be accomplished in accordance with Reference C and Reference D. A minimum of three destructive test samples approximately nine feet in length are required. The test samples shall demonstrate that the published MBF of the wire rope is achieved (i.e., the swaged socket develops 100 percent efficiency) on all samples. Wire rope pulling out of the swage socket is an unacceptable test result. Additionally, swage end fittings used on any wire rope other than that recommended by the wire rope or end fitting manufacturer shall be similarly tested.

E. Test reports are only valid for the activity's/vendors equipment and procedure that installed the end fitting and for the type, size, and manufacturer of the end fitting tested with the wire rope manufacturer and construction type. Test reports shall be filed in the equipment history file for the life of the end fitting. Reference B and NAVCRANECEN standing alterations will be updated to reflect this new information.

Direction:

A. Before or during the next scheduled Type B maintenance inspection, remove any swage sockets used with 34 (or more) strand construction rotation resistant wire rope. The use of swage sockets with these wire rope types is prohibited. Poured sockets or wedge sockets are acceptable alternatives. However, wedge sockets are not permitted on portal or floating cranes.

B. Swage sockets used with any other type of rope other than that recommended by the wire rope or end fitting manufacturer may remain in service provided that the activity has a destructive test sample showing that the published MBF of the wire rope is achieved. Copies of these test reports shall be forwarded to NAVCRANECEN.

C. Any requests for deviation shall be sent to NAVCRANECEN in writing on a Request for Clarification, Deviation, or Revision (RCDR), Reference B, Paragraph 1.11. These requests will be considered only after adequate testing that proves a 100 percent efficient swaged connection.

D. Future installations of swaged connections used on any wire rope other than that recommended by the wire rope or end-fitting manufacturer shall have a minimum of three destructive test samples demonstrating that the published efficiency for the swaged connection used is achieved. Copies of all test reports (pass or fail) shall be forwarded to NAVCRANECEN.

EQUIPMENT DEFICIENCY MEMORANDUM

EDM 097, Proper Inspection and Maintenance of Mechanical Load Brakes on Manual Chain Hoists

Reference A: NAVFAC P-307, Management of Weight Handling Equipment, June 2006

The purpose of this EDM is to alert Navy activities of the importance of proper inspection and maintenance of mechanical load brakes on manual chain hoists. There have been several reported cases where the load brake on manual chain hoists did not stop the load while lowering (i.e., the load continued to slowly drift after the hand wheel had stopped). Subsequent investigations found that the mechanical load brakes were either assembled using the wrong parts, assembled using worn or damaged parts, or assembled incorrectly.

OEM manuals state that a careful inspection of all brake components is essential since any number of brake component variables will affect proper operation of the brake. For example, glazing or contamination of the friction washer will significantly affect the coefficient of friction. The thread condition (e.g., thread wear, nicks, or deformation) of the brake flange and mating hand wheel hub could provide enough friction to prevent the hand wheel hub from tightening. The hand wheel hub to load ratchet friction surfaces and threads (i.e.,

metal-to-metal contact surfaces) rely on the proper application of lubricant for friction and wear properties. Changes in any one of these variables could affect the stopping and holding capability of the brake.

Activities are reminded that Reference A requires that servicing specifications and inspection guidelines be developed using OEM manuals and industry consensus standards (ASME B30 series) as a minimum. Reference A, Section 2 and Appendix D applies to chain hoists designated as category 2 or 3 equipment. Reference A, Paragraph 14.11 applies to portable manual or powered chain hoists. Any questions concerning the proper servicing, inspection, or condition of hoist components should be referred to the OEM or the activity engineering organization.

CRANE ACCIDENT PREVENTION SAFETY CHALLENGE FOR FY2009

Good news! Directly complementing SECNAV's priority focus on safety and significantly contributing to fleet readiness, the safety and condition of the Navy's shore weight handling programs improved to a record level in FY08 - achieving the best performance in the history of the program. In addition to the continued reduction in the overall number of weight handling accidents, the severity of the accidents continues to show very positive improvement; only three accidents met the OPNAV mishap classification thresholds (with Zero Class A or B). There was also an outstanding 17 percent reduction in "significant" accidents (injuries, dropped loads, overloads, and two-blockings). This excellent safety performance is a testament to the dedication and hard work of everyone in the navy shore weight handling programs around the world.

Our challenge will be to continue this positive trend in FY09. Unfortunately, the start of the new fiscal year has not been encouraging. During the month of October, Navy shore activities reported 19 crane accidents, exceeding the October totals from the past several years. As in past years, human error continues to be the major cause of Navy weight handling accidents.

As we approach the holiday season and winter months, I asked weight handling managers and supervisors to place a special focus on safe crane and rigging operations. We still have an opportunity to make FY09 another record year but we have many significant challenges before us. As we move toward the holiday season, in many regions environmental working conditions will continue to worsen and bring ice, sleet and snow conditions. Crane teams could become undermanned due to end of year leave use and for those working during this period, thoughts can easily shift toward spending well deserved time with families at home. Even after 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.

As we move into the holiday season, managers and supervisors should consider conducting increased surveillance of weight handling 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 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 safe weight handling requirements and practices.

Management should consider and address the impact of the vacation/leave 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 called "take two" that discusses the importance of good planning, communication, and ORM has been added to our Navy Crane Center website. I highly encourage you to share it with your crane team personnel.

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. Information on our safety videos is available on our Navy Crane Center website.

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) Don't pull suspended loads sideways while hoisting or traveling. Damaged wire rope caused by side loading was by far the most common type of category 3 crane accident in FY08.

(e) Hoist and travel at a controlled speed. Slow is better than fast. Don't hurry.

(f) Be aware of the operating environment and be especially alert for other cranes on the runway and operating near runway end stops. Go slow under these circumstances.

Each weight handling accident diminishes support to the fleet. A safe and reliable Navy weight handling program is an essential enabler for fleet readiness. Commanding Officers of Navy shore activities are strongly encouraged to intensify their efforts to raise the level of safety awareness in their weight handling operations and continue to strive for the goal of zero weight handling accidents.

In order to allow the Navy Crane Center adequate time to react to negative or undesirable accident trends, effective immediately as an advance change to NAVFAC P-307, 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. Accidents involving a fatality, in-patient hospitalization, overturned crane, collapsed boom, or other major damage to the crane, load, or adjacent property will continue to require a Navy Crane Center notification 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.

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS FOURTH QUARTER FY08

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 fourth quarter of FY08, 53 Navy WHE accidents (43 crane accidents and 10 rigging gear accidents) were reported. Seven of the 43 crane accidents were significant (overload, dropped load, and two block). For FY08, 189 WHE accidents (157 crane accidents and 32 rigging accidents) were reported. Of those 189 accidents, 46 were considered significant (34 crane accidents and 12 rigging accidents) some of the more significant crane accidents this quarter are discussed herein.

DROPPED LOAD

Accident: Three crane accidents were reported that involved dropped loads. While attempting to raise a cleat slightly for repositioning, the cleat slipped out of its rigging and fell. The cleat was improperly rigged. In another accident, a toolbox that was supported by pallet bar slings dropped to the deck during a lifting evolution. The pallet bars were not secured to the load to prevent the load and/or pallet bars from slipping. In yet another accident, a loaded pallet came apart as it was being lifted. The pallet failure occurred as a result of improper placement of the slings. The load on the pallet was also improperly secured.

Lessons learned: Improper rigging practices contributed to each of these crane accidents. There should be no difference between rigging attachments for lifting the load two inches or fifty feet. The load should always be adequately secured before it is lifted. One of the accidents relied on plastic wrap to secure the load but plastic wrap does not have adequate capacity to hold a load and can fail, as was the case. Rigging gear should be adequate for the task at hand and it should be secured against undesired movement. Proper equipment, load control, and the use of good rigging practices would have prevented these accidents.

OVERLOAD

Accident: A category 3 hoist was overloaded when it was used to unload a motor from a truck. The operator was not trained to operate the equipment. The investigation determined that the load was stenciled with an accurate weight and the crane had a rated capacity stenciled on it.

Lessons learned: Supervision must ensure that only trained and authorized personnel operate weight handling equipment. This includes briefing personnel on the requirements for operating cranes so that personnel understand that training and authorization is a prerequisite for operating a crane.

Accident: During a load test of a sliding padeye, a portable load indicating device (LID) was overloaded. The safe working load of the LID was not verified during the rigging gear inspection and prior to the actual test.

Lessons learned: Adequate planning, inspection, and verification of the rigging gear to be used would have prevented this mishap. An undersized lid was issued to the rigger by the tool room due to a miscommunication. Check to ensure the tool is the right one for the job. Also, remember that even though equipment may look similar in shape and size, it does not mean they have the same capacity.

TWO-BLOCKING

Accidents: There were two instances of two blocking accidents caused by power phase reversals upstream of the crane. In one case, it involved a newly installed crane. Upon realizing that there were electrical power problems in the building, an operator attempted to check power to the crane by depressing the down button on a pendant controller. The block traveled upward through the limit switch and two blocked. The hoist rope parted and the block fell to the floor, narrowly missing an employee. A similar incident occurred after maintenance work was performed on a facility electrical circuit upstream of the crane. Both subsequent investigations concluded that the accidents were caused by improper electrical work the resulted in a phase reversal of the wiring.

Lessons learned: The obvious lesson here is that improper facility electrical maintenance or repair may affect downstream components. From a crane operational standpoint, avoid storing a hoist block too close to the upper limit switch. Watch closely how the crane reacts to the operational function of the controller. Be prepared to stop the motion immediately if the crane reacts in an undesired manner. The long term solution to this problem, if the crane has two upper limit switches, is to ensure that the hoist has been modified in accordance with CSA 102 that was issued by the Navy Crane Center in October 2001. This action would prevent a two block accident due to phase reversals.

CATEGORY 3 CRANES

Accident: Thirty seven percent of the crane accidents for the fourth quarter involved category 3 cranes. Four of the category 3 crane accidents involved wire rope damage due to improper reeving caused by side pulls and other improper use. Three of the crane accidents involved collisions.

Lessons learned: Most of the reported category 3 crane accidents involved improper operation of the equipment. Category 3 cranes make up the largest percentage of cranes in use in the Navy and are used at most shore activities. In most locations, they could be operated infrequently by many different people. Even with training, operators lose proficiency due to infrequent operation. In these instances, consider refresher training. A pre-work brief could also be used to plan and prepare operators for safely operating the equipment.

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 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 program 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 operational risk management.

Through hard work and a common desire for continuous improvement within the weight handling community, FY08 ended as the safest year on record for crane operations. Many thanks for your efforts in making our workplaces safer. Our goal remains zero crane accidents!

CRANE ALTERATION REQUESTS – ALLOW TIME FOR REVIEW

In a typical year, the Navy Crane Center reviews approximately 1000 crane alteration requests (CAR). Although the majority of CARs are approved on first submission, some require further explanation or revision, while some are disapproved because they do not meet established criteria.

Some activities take significant risk by ordering materials and starting work prior to obtaining Navy Crane Center approval. In some cases, significant work is performed prior to even submitting the CAR for review.

Unnecessary costs and delays can be incurred if work must be undone because the CAR is disapproved or requires unforeseen work.

We recommend activities obtain approval of CARs before beginning work on a crane. If the work is of an emergent nature, notify our In Service Engineering Division. We will work with you to help ensure the activity's plan of action is appropriate and complies with NAVFAC P-307, UFC 3-320-07N, standing crane alterations, crane safety advisories, etc. An early phone call or email can put the activity on the right track and potentially avoid wasted time and effort.

REMINDER

The Navy Crane Center 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.

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. Early registration is encouraged. The registration form can be found on the Navy Crane Center web site.

Topics may include: WHE accident review and prevention initiatives; risk management; new technologies; mobile crane safety; acquisition of WHE equipment; Lean Six-Sigma efforts in weight handling; contractor crane safety; crane drives and controls; oil analysis for cranes; and wire rope selection. Proposed agenda items from these or other WHE topics are welcome. Additionally, activities interested in making a presentation should contact Navy Crane Center.

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

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: <u>https://portal.navfac.navy.mil/ncc</u>

Operational Risk Management 5-Step Process

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