

A WORD FROM TOPSIDE Tim Blanton

## http://www.navfac.navy.mil/ncc

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Through the first three quarters of FY19, the Navy's crane accident severitv rate. defined as the percentage of total accidents that are significant (NAVFAC P-307, paragraph 12.3), is higher than in recent years at 27 percent. However, based on your actions and response when I have challenged you before, I am confident that we can reduce this percentage during the next couple of months and start out FY20 stronger than ever before.

For example, earlier this year, the Navy's contractor crane significant accident rate was very high, with several severe events, including mobile crane hoist wire ropes parting on three occasions and another event that severely injured two contractor employees. In response, NCC issued several targeted weight handling briefs and Navy leadership echoed our concerns resulting in many activities taking strong actions to improve contractor crane oversight. As a result, fewer significant contractor crane accidents have occurred and those that occurred were of lesser severity. Similarly, earlier in the year, Navy crane near misses were significantly down, lagging Navy crane accidents by approximately 30 reports. After raising my concerns and our evaluation teams making this a point of during subsequent emphasis near miss reporting evaluations. bounced back and is now well ahead of the number of reported accidents.

With regard to the high Navy accident

severity rate, NCC has reviewed our accident data and evaluation findings and has identified one key common denominator that will result in reduced significant events, and that is a well-balanced healthy. monitor program. At activities that have a significant amount of data to evaluate (e.g., shipyards, facilities engineering commands, intermediate and depot level repair facilities), there is a strong correlation between monitor (oversight) coverage and events. Data indicates that the days and even times of the day (e.g., morning, afternoon) where oversight is frequent have lower accident severity, more tangible findings, more "good" near misses, and even identify some lower threshold accidents (i.e., avoidable contact with no resulting damage), which is viewed as a positive by NCC. Conversely, days of the week and times of the day where oversight wanes display few tangible findings, few near misses, and undesirable accidents, often resulting in damage.

Supervisory involvement is also key. In some cases, our evaluation teams have observed high employee to supervisor ratios (e.g., 16:1, 20:1, 25:1), which inhibit the supervisor from performing oversight, mentoring, and training in the field, which should be at least 50 percent of the supervisor's overall role/job. Remember, the vast majority of employees come to work wanting to perform their jobs well.

When short cuts are taken or employees do not perform as trained, I encourage you to not focus as much on the employee, but look broader and ask yourself "Why did the employee not perform as trained? Or why did the team cut corners?" In many cases, supervision and management have not set the expected standards and expectations on a regular basis, which often results in production pressure, whether real or perceived, taking precedence.

Your work is challenging, as there is ongoing significant investment in the Navy's future in

terms of warships, aircraft, and infrastructure. Many commands have high turnover (e.g., retirements, promotions, outside competiveness) resulting in a motivated, but less experienced workforce. Together, through oversight, mentoring, formal and on-the job training, and engagement at the supervisory and management level we can continue to improve one of the top weight handling programs in the world.

# TIP OF THE SPEAR THIRD QUARTER FY19 EVALUATION SUMMARY

All but 2 of the 21 activity weight handling programs evaluated in the third quarter were fully satisfactory. Two activity programs were marginally satisfactory. Monitor (observation) program issues continued to dominate evaluation items, as this was an item for 18 of the 21 activities evaluated, followed by unsafe crane and rigging operations, and ODCL/OMCL errors with 15 items in each of these categories.

Remember, improving your monitor programs will result in better recognition of unsafe crane and rigging operations, better recognition of poor maintenance and inspection procedures, better recognition of near misses, and better recognition of lower threshold accidents (e.g., avoidable contact with no resulting damage), all of which can occur, providing great learning opportunities. Doing this will help eliminate significant and serious accidents, which is our common goal for the Navy's weight handling program.

#### SUMMARY OF PROGRAMS EVALUATED

21 Navy WHE programs were evaluated, 19 were fully satisfactory, and 2 were marginally satisfactory.

#### SATISFACTORY CRANES

25 of 31 cranes were satisfactory.

Reasons for Unsatisfactory Cranes. Crane not properly load tested.

Hoist brake air gap out of specification. Secondary limit switch did not operate as designed.

Load chart missing from crane.

Tension rods for the crane runway were removed.

Secondary limit switch activation not verified per CSA 102.

### **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 – 18 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.) – 15 items.

- Operator's Daily Check Lists/Operator's Monthly Check Lists (ODCLs/OMCLs) and simulated lifts performed incorrectly or not performed - 15 items.

- Weakness in (or non-existent) activity selfassessments, self-assessments not acted upon, not internally focused, not developed utilizing documented monitor or metrics data – 12 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) – 12 items.

- Lack of leading metrics/metrics not being properly analyzed – 11 items.

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

- Operator license/file discrepancies (no objective quality evidence (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) – 10 items.

- Inspection and certification documentation errors – 10 items.

- Operators/riggers/inspectors/test directors lacked essential knowledge (recognizing crane accidents, complex lifts, knowing the weight of the load, how to connect special equipment, etc.) – 9 items.

- Lack of, ineffective, or insufficient crane replacement/modernization plan – 13 items.

- Operator's Daily Check Lists/Operator's Monthly Check Lists (ODCL/OMCL documentation deficiencies (including incorrect form used and pre-completed forms) – 8 items. - Local Weight Handling (WH) instruction/ Standard Operating Procedures (SOPs) nonexistent or inadequate – 9 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, Personal Protection Equipment (PPE) not utilized, deficiencies not identified, lack of a fall protection plan, bearing clearance checks not performed) – 8 items.

- Unrecognized/unreported accident, near miss, or unplanned occurrence (including damaged gear not investigated for cause) – 8 items.

- Poor maintenance planning and/or execution (parts not tagged/bagged, hazardous materials not properly stored, work documents not available, lubrication not per schedule, lack of long-range maintenance schedule, components not reassembled properly, activity deficient in structural bolt installation, missing screws) – 6 items.

- Lack of, ineffective, or insufficient crane replacement/modernization plan – 7 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, 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) – 5 items.

## SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS SECOND QUARTER FY19

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 and efficiency of operations can be improved .

For the second quarter of FY19, the number of accidents were nearly consistent with the first quarter as 66 Navy weight handling accidents (53 crane and 13 rigging) were reported. Of these, 20 accidents were significant (13 crane and 7 rigging). The significant accident rate was approximately 30 percent. While that percentage is lower than last quarter (34 percent), it is still higher than any quarter of FY18 (highest was 28 percent) indicating improvement is needed in reducing accident severity. One OPNAV reportable accident, the first of this FY, occurred when a load collided with and damaged a radar dome. Overloads were the number one type of significant accident this quarter (11), while collisions continue to be the top non-significant accident (22). Contractor crane performance continues to trend in a negative way. Of the 13 contractor accidents (12 crane and 1 rigging), 6 were significant (4 dropped loads and 2 overloads) for a 46 percent significant accident More troubling, 3 contractor accidents rate. involved parting of the cranes' hoist wire rope resulting in the loads and/or hook block falling near personnel. Equally important, no contractor crane near misses were reported, which illustrates the need for increased oversight of contractor crane operations. In response to this issue, 4 weight handling program briefs were issued recently to bring attention to this problem.

#### **INJURIES**

Two rigging accident injuries were reported. A rigger apprentice was cut on the arm by a knife caught in the hand chain of a chain hoist while transferring a load. A rigger's hand was injured when it was pinched between the chain hoist load chain and the lower block during positioning of a shipboard load.

**Lessons Learned:** In the case of the apprentice injury, housekeeping played a large role in this event. The knife was used to cut sling protection; however, the blade was left open in the operating envelope. The hand injury occurred because the rigger had a lack of situational awareness and placed his hand in a pinch point. This occurred because the rigger was focusing on the component being lifted through a patch and had his hand on the load chain of a moving air hoist. Both injuries could have been avoided if the risks were mitigated.

#### **OVERLOADS**

There were 11 overload accidents (7 crane and 4 rigging). While hoisting a sill lift adapter, the adapter snagged a shipboard cross beam resulting in a wire rope leg on the sling assembly parting at the swage fitting. Rigging gear was overload during removal of a propeller. Α chainfall's lower hook was spread when it hung up on the ships structure during a lift. The connecting pin for the load chain on a chain hoist was found bent/cracked. While lowering a piece of equipment onto a mockup, the equipment hung on the mockup then freed itself from the hang-up and dropped approximately one inch. In a similar accident, while lowering a mockup through a binding area the mockup hung up then released causing an impact load on the rigging gear and crane. The lifting pads on a dust collection unit were overloaded during removal of the unit from the dry dock. A shipboard beam was bent during rigging work to install a swaging machine. During removal of a component, the handling beam configuration supporting the rigging was A portable floor crane was overloaded. overloaded and a synthetic sling was damaged during a lift to upend a valve. A sling used to install a shipboard pump was overloaded and damaged during use.

Lessons Learned: Many of these accidents occurred because the activities did not follow established binding control protocols. When activities encounter binding conditions, a portable load indicating device (LID) with a readout readily visible to the rigger-in-charge or a designated LID reader must be used and a chainfall should be used in-line to control sudden overload of the crane or rigging gear. In some of these overloads, a chainfall was in the rigging arrangement; however, when the load passed through tight clearance areas, the activities continued using the crane versus the chainfalls, which would have provided more control. The other overloads occurred due to poor pre-use verification of lifting gear capacity, including the lifting attachments installed on the sling or component to be lifted.

#### DROPPED LOADS

Five dropped load accidents (four crane and one rigging) were reported. While lifting a submersible drone from the water to the pier, the rigging gear detached allowing the drone to fall back into the water. A shop-rigged valve being placed in a shipping container slipped out of the rigging and fell six inches into the bottom of the container. The pin of a shackle attached to a special lift fixture became disconnected from the shackle bail and fell in to the work area. A piece of lashing fell from the unloaded rigging gear of a portal crane hook while being rotated from the ship. An improperly installed swivel hoist ring pulled out of a power supply unit causing the unit to drop five inches to the deck.

Lessons Learned: In the case of the dropped drone, the method of rigging attachment in the water played a large factor in the event. As a result, a new connection method is being developed for the drone while it is in the water to prevent recurrence. The valve accident could have been averted if the user shop had gotten assistance from an experienced rigger to lift the item. It involved synthetic sling usage which was outside the scope of the user shop's ability. The swivel hoist ring accident occurred when the threads of the hoist ring stripped out. This accident may have been avoided if the threaded holes were inspected thoroughly prior to installing the hoist rings. The other two dropped loads could have been avoided if a thorough inspection of the rigging gear was done prior to moving the crane to ensure nothing would fall. In both instances, the crane only had rigging gear attached (no load) to the crane hook.

#### TWO-BLOCK

One two-block crane accident was reported. The hoist block on a jib crane was found "two blocked" during a maintenance inspection.

**Lessons Learned:** The investigation for this event identified that the hoist controls would stick and should not have been used. Additionally, the person responsible failed to report the event.

#### **NEAR MISSES**

On a positive note, activities reported 82 near misses this quarter (70 crane and 12 rigging), which is an increase from 44 near misses (35 crane and 9 rigging) reported in the first quarter. Examples of good near misses included: overloading of lifting pads on a portable fuel tank was averted when an observer identified that the lift slings were the incorrect length/angle; an emergency stop signal was required to avoid a power cable being lifted from a dry dock from contacting other facility equipment; a test was suspended when it was identified that both the test weight and rigging configuration were incorrect; a lift of an air conditioning unit was stopped when the supervisor identified a defective lifting skid; and during a pre-lift check, a forklift's counterbalance was observed to be improperly fastened during a crane lift. Quick thinking by individuals in these events prevented accidents, some of which could have been significant.

### UNPLANNED OCCURRENCES

Activities reported 24 unplanned occurrences (18 crane and 6 rigging). An unplanned occurrence describes an event that does not meet the definition of a crane or rigging accident but results in injury or damage to a crane, crane component, or related equipment due to an event not directly related to a weight handling operation. Some notable unplanned occurrences an unmanned experimental support were: platform barge capsized due to inclement weather causing the pedestal mounted crane to become submerged; during mobile crane movement to a training area, the crane's hook block and auxiliary ball contacted the ground due to weak link failure; during change out of nonserviceable wire rope on the auxiliary hoist of a floating crane, the hoist wire separated from the tether device causing the end of the wire rope to drop to the deck damaging a light fixture.

Weight handling program managers, operations supervisors, contracting officers, 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. On a positive note, data reported in the second quarter of FY19 indicates an increasing trend in reporting of Navy near misses. However, as noted above, the significant crane accident trend for the Navy and for contractor cranes remains high. Increased focus on proper rigging and weight handling techniques is necessary to reduce significant accidents. For contractor cranes, increased oversight by weight handling personnel and contracting officer representatives is essential. Contractor near miss reports were non -existent in the second guarter. I'm asking you to increase your attention in these areas to help our Navy maintain safe and reliable weight handling programs.

## 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 233A – POTENTIAL DEFICIENCY OF EATON 30A AND 60A HEAVY DUTY SAFETY SWITCH AND COMBINATION ENCLOSED CONTROL PRODUCTS MANUFACTURED BETWEEN 2015 AND 2018

1. Remarks: CSA 233 directed activities to identify all potentially deficient Eaton 30A and 60A safety switches and replace as necessary based on an Eaton product safety bulletin. This revision adds applicability of certain 30A and 60A combination enclosed control products. CSA 233A revision replaces CSA 233 in its entirety.

### 2. Background:

A. Eaton has issued a product safety bulletin identifying a potential non-conformance with certain safety switches and combination enclosed control products that may allow the switches to supply power when the handle is in the OFF position posing a hazard to users.

Β. The safety switches and combination enclosed control products identified were manufactured from November 19, 2015 through January 23, 2018. Catalog numbers and manufacturing dates can be identified on the shipping label and the unit publication inside the Safety switches beginning with the switch. following catalog numbers are included in this safety bulletin: DCG110, DCG210, DCG306, DCG606, DCU110, DCU210, DCU306, DEM362, DH161, DH162, DH261, DH262, DH321, DH322, DH361, DH362, DH661, DH662, OLI361, OLI362, STS261, STS262, STS321, STS322, STS361, and STS362.

Combination enclosed control products beginning with the following catalog numbers are included in this safety bulletin:

ECN16A, ECN160, ECN161, ECN162, ECN18A, ECN180, ECN 181, ECN182, ECL12A, ECL12B, ECL12C, ECL12D, ECL13A, ECL13B, ECL13C, ECL13D, ECN36A, ECN360, ECN361, ECN362, ECN37A, ECN370, ECN371, ECN372, ECN38A, ECN380, ECN381, ECN382, ECN430, ECN431, ECN432, ECN461, ECN462, ECN491, ECN492, ECN521, ECN522, ECN541, ECN542, ECN561, ECN562, ECN621, ECN622, ECN641, ECN642, ECN69A, ECN690, ECN691, ECN692, ECS91Q, ECS91S, ECS94Q, ECS94S, ECS97S, ECS97Q, C361SC. C361NC, C361SD. C361ND, C361FNC, C361FND, C361FSC, C361FSD.

C. The Eaton product safety bulletin provides instruction for the identification of affected safety switches and combination enclosed control products and can be found at https:// www.eaton.com/content/dam/eaton/products/lowvoltage-power-distribution-controls-systems/ recall/english/product-safety-bulletin.pdf. The Eaton product safety bulletin instructions include details on verification of satisfactory safety switches by means of a yellow dot located adjacent to the catalog number on the safety switch or combination enclosed control carton; or safety switch handle arm. If required, the repair kit installation instructions for the various makes of switches can be found at https:// www.eaton.com/us/en-us/products/low-voltagepower-distribution-control-systems/switches--disconnects/repair-kit-installation-instructions-forsafety-switches.html.

3. Direction:

A. All activities were to review their crane/hoist inventory and spare parts inventory to identify all affected Eaton safety switches identified in paragraph 2.B by 1 September 2018 as directed by CSA 233. Within the next 30 days, all activities are to review their crane/hoist inventory and spare parts inventory to identify all affected combination enclosed control products identified in paragraph 2.B.

B. For safety switches or combination enclosed control products identified by paragraph 3.A as being included in the product safety bulletin, activities shall verify if the safety switch is satisfactory for continued use by verification of the presence of a yellow dot in accordance with Eaton product safety bulletin instructions indicated in 2.C.

C. For safety switches or combination enclosed control found to be non-compliant (no yellow dot) by paragraph 3.B, activities shall follow instructions provided by Eaton for requesting repair kit(s). Until the repair kit(s) have been installed an appropriate tag shall be affixed to the switch identifying that the switch cannot be relied on to remove power from the circuit as described in the Eaton bulletin. Eaton can be contacted at HdssAdvisoryBulletin@eaton.com for more information.

D. Activities are reminded to follow the NAVFAC P-307 paragraph 2.8.2 proper lockout/tagout procedures and equipment tagging procedures utilized for the control of hazardous energy.

### CSA 235 – RECALL OF CROSBY GROUP INC HALF TON METRIC SHACKLES

1. Background:

A. The purpose of this Crane Safety Advisory is to inform activities of a known deficiency in

certain 1/2 ton shackles from The Crosby Group (CROSBY) with a working load limit of 1,100 lbs. There have been no field failures reported; however, the shackles do not meet the published design factor of 6:1.

B. CROSBY has identified 1/2 metric ton shackles with stock/model numbers 1018017 G-213, 1018026 S-213, 1018375 G-209, 1018384 G-209, and 1019466 G-2130 with product identification codes (PIC) of TSC, TSD, TSE, TUB, TUC, TUD, and TUE. The PIC is a three digit code located on the curved portion of the shackle bow.

C. Additionally, CROSBY is unable to verify that the affected shackles comply with ASME B30.26 design factor requirements as required by NAVFAC P-307 Section 14.8.

2. Direction:

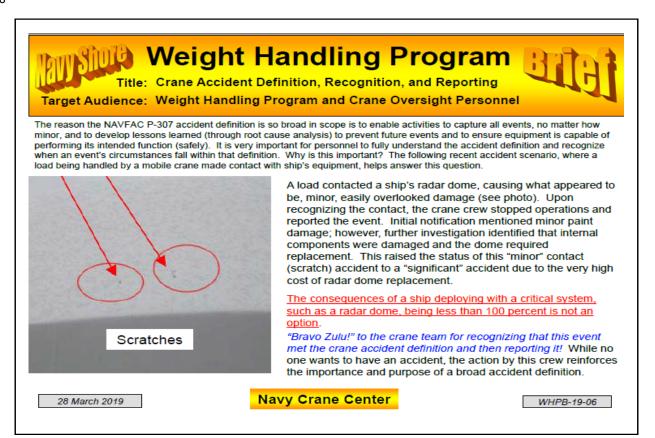
A. Activities shall identify all CROSBY 1/2 metric ton shackles within the next 30 days. 1/2 ton metric shackles identified as meeting the stock/ model numbers and PICs in paragraph 1.B above shall be removed from service immediately.

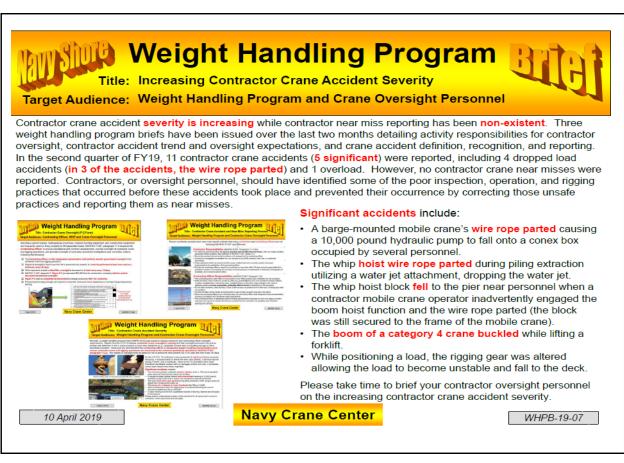
### WEIGHT HANDLING TRAINING, SAFETY AND PROGRAM BRIEFS

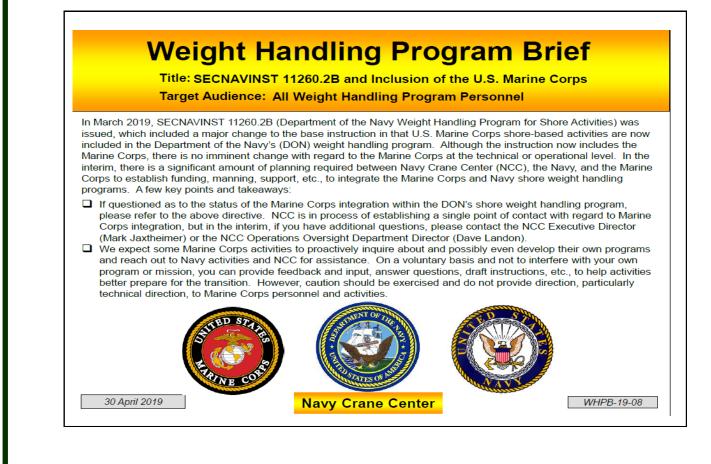
Weight Handling Training, Safety and Program Briefs (WHTSPBs) are provided for communication to weight handling personnel. The following briefs were issued during the past quarter.

The briefs are 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. They 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 Training, Safety and Program 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 WHPB distribution is <u>nfsh</u> <u>ncc crane corner@navy.mil</u>.







# 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>.

#### HOW ARE WE DOING?

We want your feedback on the Crane Corner. Is it Informative? Is it readily accessible? Which types of articles do you prefer seeing? What can we do to better meet your expectations?