



# THE CRANE CORNER

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114th Edition

## *Navy Crane Center Technical Bulletin*

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### A WORD FROM TOPSIDE

*Tim Blanton*

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In the last edition of "The Crane Corner", my Word from Topside article briefly discussed "**Get Real, Get Better**", a leadership movement sparked by the CNO's call to action for all Navy leaders. In this edition, I want to continue the Get Real, Get Better discussion and build on that concept. The concept of Get Real, Get Better is very important to me personally and to our Navy's Weight Handling Program. The ability to have a team of personnel, our Navy Weight Handling Program Professionals, who have the innate ability to be able to STOP when an anomaly occurs during their work, to investigate that anomaly to determine lessons learned so that the anomaly does not recur, and then share those lessons learned with their fellow Weight Handling Professionals is of extreme importance to the safety, reliability, efficiency, and professionalism of our Weight Handling Program. My predecessor (Mr. Sam Bevins) had many sayings, one of which was "Gravity Never Sleeps!" It only takes

an instant in our world of weight handling, where we are routinely defying gravity that something can go terribly wrong, resulting in damage, or even worse, a fatality. Our Navy's weight handling program experienced its last fatality on 24 August of 1994. Some people would say we have been lucky. From where I sit, luck has little to do with it. The ability of our Navy's Weight Handling Program Professionals to STOP when that minor anomaly occurs and learn and share those lessons drives us to be a continuous learning organization and ingrained within our program is GET REAL, GET BETTER! Our Navy's Weight Handling Program was intentionally established to pay specific attention to the minor issues. By using the methodology of identifying the minor issues before they gain legs and grow to have greater potential, we infuse the Get Real, Get Better concept into our everyday processes and practices. In this edition, I want to focus on self-assessment, which is the foundation for Get Real Get Better.

**Self-Assessment.** As I stated in the previous Crane Corner, I review each activity's evaluation report. In doing so, I get a pretty good picture of the maturity and health of each activity.

One of several issues I note in reviewing an activity's self-assessment is if the activity has the ability to be self-critical or does the activity skew the real issues, the GET REAL issues if you will. Sadly, there are many activities that have not matured to the point that they have the ability to state in writing the REAL issues of concern within the activity. As an activity within the Navy's Weight Handling Program, if this is your activity, you need to mature to the ability to GET REAL and state the self-critical issues. In order to GET BETTER, we must first GET REAL! In order to improve, we must first have the ability to state our own self-critical issues.

Taking a more in-depth look at self-assessment, I view a good (mature) self-assessment as an assessment that identifies primarily your OWN problems, meaning problems within your control. Unfortunately, at times, I see an activity's top problems stated as external issues (e.g., lack of support by an external equipment service provider), with no self-critical issues identified.

Although external issues must be dealt with, and it is okay to have one of these types of issues in your self-assessment if they are impacting your activity, the lack of ANY self-critical assessment items is very concerning and it is the exact opposite of Get Real, Get Better. The inability to be self-critical creates an immature environment for continuous learning and improvement. If you do not have the ability to be self-critical, you are not embracing the concept of GET REAL, GET BETTER. Another self-assessment concern that I see from time to time is an activity having the same self-assessment concerns over several

years. Although these issues may be internal, self-critical items, if they remain a top concern over several years generally means one of two things: (1) that you have not identified the true problem and your corrective actions have been ineffective, or (2) you haven't responded to the issue as a top concern because you are basically "going through the motions" to meet a requirement, specifically in this case, the NAVFAC P-307, paragraph 2.4.2 (self-assessment) minimum requirements.

At this time, I would like you to review NAVFAC P-307, paragraph 2.4.2. Go ahead, pull it up on your computer or open up your hard copy of NAVFAC P-307...ready? You will see at the bottom of the paragraph that the self-assessment should be based on all available data and metrics, to include several specific elements. Although there are several elements listed, some of them may not apply to all 400+ activities in the Navy's weight handling program. For example, your specific activity, particularly if you are a smaller command, may not conduct or be required to conduct internal audits, may not have had any recent external reviews, or had any changes in mission or workload. That only leaves two specified elements, monitor program observations and metrics (with associated analysis). Now I am going to state the obvious, if you don't have data, you very well cannot have metrics, let alone analyze them.

For each and every command, from the smallest to the largest, the key element that should be used to drive your Get Real, Get Better self-critical self-assessment is the monitor program. Want to guess what the focus of my next article will be?

## **TIP OF THE SPEAR THIRD QUARTER FY22 EVALUATION SUMMARY**

**T**hirty-eight Navy activity weight handling programs were given on-site evaluations in the third quarter. There were no remote reviews performed.

All 38 programs were satisfactory, although 5 programs were marginally satisfactory. For the first three quarters of FY22, the satisfactory rate for the 94 programs fully evaluated was 99%.

Evaluation teams revisited two activities whose programs were found less than satisfactory earlier in the year. Improvement was noted in both programs.

### **SATISFACTORY CRANES**

Thirty-one of 37 cranes were satisfactory (86%). For the first three quarters of FY22, 83 of 95 cranes were satisfactory (87%).

### **Reasons for Unsatisfactory Cranes**

Multiple doglegs in the hoist wire rope.  
Portal crane travel brake did not release when energized.  
Trolley festoon system was improperly repaired.  
Auxiliary hoist wire rope was misreeved between the drum and the boom tip sheave.  
Mechanical load brake failed to operate.  
Mechanical load brake tested to only 25 percent of certified capacity.

### **EVALUATION ITEMS**

**Significant Items:** Effective monitor programs result in better recognition of unsafe crane and rigging operations, which in turn result in better recognition of lower threshold accidents (avoidable contact with no damage) and near

misses, thus helping to prevent serious accidents. In addition, the monitor program better enables development of a value-added self-assessment. Most of the activities evaluated had established monitor programs, although some activities still lacked a monitor program, which has been a requirement since 2016. However, numerous activities saw a decline in monitor program performance from the previous NAVCRANECEN evaluation to a point where the program had become ineffective.

This key program area will continue to be a focus of NAVCRANECEN evaluations.

A lack (or very low number) of reported lower order crane or rigging accidents and near misses was indicative of failure to recognize these events, particularly at activities with higher operational tempos. Identification and reporting of such events has been shown to minimize the potential for significant accidents. Reviews of 19 weight handling programs identified this condition.

As on-site evaluations increased, there was an increase in observations of unsafe crane and rigging observations. Activities can improve their monitor programs by accompanying NAVCRANECEN evaluators during their observations of weight handling operations and crane maintenance. Deficiencies were observed in 18 evaluations.

### **Common Review Items (five or more items):**

- Lack of monitor program or established program that needs improvement or does not cover all program elements – 34 items.

- Lack of (or low number of) lower order crane or rigging accident reports and near miss reports – 23 items
- Various unsafe crane and rigging operations observed by the evaluation team (side loading, unattended load, standing/walking beneath the 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.) – 18 items.
- ODCLs/OMCLs and simulated lifts performed incorrectly or not performed – 18 items.
- Weakness in (or non-existent) activity self-assessments, self-assessments not acted upon, not internally focused, not developed utilizing documented monitor or metrics data – 16 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) – 13 items.
- Inspection and certification documentation errors – 12 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) – 12 items.
- Damaged/deficient equipment found in walk-through or crane inspections – 12 items.
- Lack of leading metrics/metrics not being properly analyzed – 10 items.
- Corrective actions from previous evaluations or from accident or near miss investigations are weak or incomplete – 9 items.
- Operators/riggers/inspectors/test directors/supervisors lacked essential knowledge (recognizing crane accidents, complex lifts, knowing the weight of the load, how to connect special equipment, etc.) – 8 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) – 8 items.
- Expired or non-program gear in use or not segregated from in-service gear – 7 items.
- Tagging issues (illegible or incorrect caution tags, cranes/crane structures with expired certifications not tagged, inspector did not have tag in possession, tag not removed upon condition correction, essentially permanent tags in lieu of more effective solutions, such as removal of obstruction or relocated rail stops, incorrect tag used) – 7 items.

- Deficient or worn rigging gear (including noncompliant gear) – 6 items.
- Poor inspections/inspection processes (incl. inspector removing load bearing fasteners voiding certification, inspections not performed, work documents not available for in-process inspections, unsafe practices, wire rope not inspected completely, fall protection PPE not utilized, deficiencies not identified, lack of a fall protection plan, bearing clearance checks not performed) – 6 items.
- Inadequate pre-lift brief or brief not conducted – 6 items.
- Work document issues (lacked sufficient detail, no work document for inspection disassembly, no statement of work for contractor service providers, inspection document not signed, work document not issued) – 5 items.
- Rigger-in-charge not in control of lift (or involved with other functions) – 5 items.

## **SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS SECOND QUARTER FY22**

**T**he 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 FY22, 57 Navy weight handling accidents (49 crane and 8 rigging) were reported, as compared to 62 in the first quarter of FY22. Significant crane accidents remained high with 12 reported, the same number as reported in the first quarter. Significant rigging accidents increased to 3, up from 1. Of concern, 1 rigging accident resulted in a partial finger amputation and met the OPNAV class 'B' reporting threshold. Contractor crane accidents increased from 11 to 14 and significant contractor crane accidents doubled from 4 to 8. These significant events included two injuries (one fall zone and one pinch point), one dropped load, one crane capacity overload, and two two-blocking events. Contractor

near miss reporting declined from 11 to 9. Of note, no contractor crane near misses were reported at the activities where the significant contractor crane accidents occurred.

### **INJURIES**

Four injury accidents (three crane and one rigging) were reported. The rigging injury accident met the reporting threshold of OPNAV class B due to the partial amputation of a finger. During rigging work to install a hatch cover, a mechanic's finger was in a pinch point (to remove a fastener), and when the fastener was removed the hatch pivoted, severing the finger at the first knuckle. While removing a component from a stand, a rigger's thumb was bruised while in a pinch point while attempting to steady a load between a stand and the load. While rigging and removing a bow plane, a rigger pinched their finger between a shackle and pad eye resulting in a minor injury.

A rigger was disconnecting shackles from a load when debris dislodged striking him in the face and shoulder.

**Lessons Learned:** Personnel must anticipate the possibility of pinch points during every lift and take actions to mitigate the need to use their hands in pinch point areas. While removing the fastener, the mechanic did not recognize the risk of placing a finger into an area that had the potential to become a pinch point. Weight handling professionals should always provide watch team backup to ensure personnel within the operating envelope remain clear of potential hazardous areas (e.g., pinch points, under the load, or within a fall zone). While removing a component from the stand, the rigger did not fully understand the shape of the item being lifted and placed their hand into a pinch point between the stand and a support pad on the base of the part being lifted. While setting the rigging for the removal of the bow plane, the rigger did not maintain situational awareness and placed their hand on the load. While removing the rigging gear from a component, personnel were not aware of the debris on top of the load. Personnel focus and situational awareness are essential to ensure the safety of personnel throughout the weight handling evolution, from gear installation until rigging gear removal and stowage. NAVCRANECEN issued WHPB 22-08// Pinch Points and Hand Injuries and Navy activities should utilize this brief to stress to their personnel pinch point hazards.

### **DROPPED LOADS**

Four dropped load crane accidents were reported. During a lift of a tower section from a dry dock, a small herculite cover blew off the load resulting in a dropped load. While lifting a pump motor, a spacer plate detached from the load and fell to the deck. While lifting a winch from a boom truck using an overhead crane,

the hydraulic motor/pump separated from the winch and fell onto the roof of the boom truck. During a lift to lower an extension ladder through a ship's access tube, a section of the ladder separated and dropped into the empty tube.

**Lessons Learned:** The crane team must inspect the load and ensure all loose items on the load are removed or secured prior to lifting. While preparing to lift the pump motor, the assisting trade's mechanic removed the incorrect fasteners allowing the spacer plate to be lifted with the load and the component configuration was not identified by the rigging team during a pre-lift inspection of the load. The shop repair order (SRO) and written original equipment manufacturer (OEM) procedure for removal of the drum were vague and did not provide details on how to prepare the winch for lifting. Prior to the lift of the winch, maintenance crew personnel removed the fasteners securing the motor/pump to the drum. The rigging crew reconfigured the rigging from a choker to a basket hitch, which allowed the load to shift within the rigging and unsecured items fell from the load. Prior to lowering the two-section extension ladder, the rigging team did not inspect the condition of the ladder to ensure both sections of the ladder were secure.

### **OVERLOADS**

Five accidents (four crane and one rigging) resulted in overloaded rigging gear, one of which also exceeded the crane capacity. During a lift to remove a wing from an aircraft, the mechanics did not completely remove all the hold down fasteners resulting in a crane overload. While attempting to seat the lift beam support pins, a jack stand test beam was overloaded.

The maximum test load of an ordnance sling was exceeded (overload) during proof testing. Two similar overload events occurred at separate Navy activities when the hook of a sling fouled on the proof-test fixture base as the crane hoist was raised. When operating a vertical test machine, two chain falls were tested to a tolerance of +5/-0% versus +0/-5% per the requirements.

**Lessons Learned:** During the lifting operation to remove an aircraft wing, the operator did not stop at the appropriate position for removal of fastening components, which resulted in a binding condition. Personnel involved in the use of the jack stand were not familiar with the procedure and lost situational awareness of the load indicating device. As a result, one of the four jack stand pins did not seat flush with the lifting beam to secure the load, exceeding the predetermined stopping point and the beam's capacity. In both proof testing overload accidents, riggers were not in position to monitor the unused ends of the sling hooks/legs to ensure they cleared all obstacles, nor were the slings secured against inadvertent contact. The person testing the chain falls did not verify the weights displayed and was unfamiliar with the automatic testing feature.

### **TWO-BLOCK**

Two two-block accidents were reported. A crane's operating controls were reversed and safeties were void; when operated under these conditions, the crane was two-blocked. A user-shop crane operator, conducting an operator's daily checklist (ODCL), pressed the hoist down button and the hoist raised into the trolley frame.

**Lessons Learned:** A fused disconnect was installed on the crane with reversed

polarity. Investigation identified that the SRO for the installation did not provide direction to perform an operational check of the crane functions. In the second accident, contractor upgrades to the wiring of the crane disconnect resulted in reversing of the phasing for the power supply to the crane. Operators must remain visually aware of the direction of the hoist block movement at all times. It is recommend that the first hoist operation be in the upward direction to test the functionality of the upper limit. In the event that the hoist does not operate in the intended direction, the load block would be moving away from the crane trolley. NAVCRANECEN issued WHPB 22-06//Operations in the Vicinity of Hoist Limit Switches on operations within the vicinity of hoist limit switches. Navy activities should utilize this brief to stress to their personnel the purpose of this operational safety device and the operational precautions used to protect the lifting and handling capability of the equipment and the safety of our personnel.

### **NEAR MISSES**

Activities reported 139 near misses (109 crane and 30 rigging). The level of near miss reporting is indicative of the level of oversight, a major contributor in reducing the occurrence of significant accidents. Crane accident near miss reports submitted this quarter provided lessons learned that prevented the potential occurrence of 10 injuries, 13 dropped loads, 13 rigging gear overloads, 1 crane capacity overload, and 5 two blocking incidents. The vigilant performance of the teams in moments where personal intervention prevented accidents and the effort taken to document and share these lessons learned are invaluable to maintaining excellence and providing safe and reliable weight handling services.

NAVCRANECEN continued to recognize activities who reported lessons learned via the near miss reporting process by issuing several WHPBs that can viewed on the NAVCRANECEN website.

Weight handling program managers, supervisors, and safety officials should review the above lessons learned with personnel performing weight handling operations and share lessons learned from other activities with personnel at your activity. In most reports, inadequate pre-job planning, inadequate pre-lift briefings, and a lack of supervisory oversight were identified as contributing factors. Your assistance is needed to provide the required management and supervisory oversight necessary to identify issues at the lowest possible level. There were 12 significant

accidents reported this past quarter; let's all work together to achieve the goal of zero significant accidents. I encourage you to challenge other weight handling professionals to continue in their efforts to educate the workforce to self-report deficiencies via the monitor program. This will increase the opportunities to share lessons learned throughout individual activities as well as with the Navy's weight handling community. Please continue with your vigilant oversight of weight handling operations, including operations during maintenance, and stress the importance of situational awareness and utilizing thorough and interactive pre-job briefs.

## WEIGHT HANDLING PROGRAM BRIEFS

**W**eight Handling Program Briefs (WHPBs) 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 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 [nfsh\\_ncc\\_crane\\_corner@navy.mil](mailto:nfsh_ncc_crane_corner@navy.mil).

# Navy Shore Weight Handling Program Brief

**Title:** Hoist Replacement Standing CAR Revisions  
**Target Audience:** Hoist Procurement and Certification Personnel

Revisions to the Standing Crane Alteration Requests (CARs) for hoist replacement are now available on the Navy Crane Center (NAVCRANECEN) website:

[https://www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/ncc.html](https://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc.html).

CAR Number	CAR Title
N3258A-19-004A	Replacement of Manual Chain Hoists and Hoist / Trolley Units
N3258A-19-005A	Replacement of Pneumatic Chain Hoists and Hoist / Trolley Units
N3258A-19-006A	Replacement of Pneumatic Wire Rope Hoists and Hoist / Trolley Units
N3258A-19-007A	Replacement of Electric Chain Hoists and Hoist / Trolley Units
N3258A-19-008A	Replacement of Electric Wire Rope Hoists and Hoist / Trolley Units

Replacement hoists meeting **ALL** of the requirements of the applicable standing CAR may be submitted via local crane alteration to NAVCRANECEN; otherwise, hoists that do not comply with the standing CAR shall be submitted to NAVCRANECEN for approval. NAVFAC P-307, paragraph 6.2.2 provides additional guidance on the use of standing CARs.

**Hoist replacement standing CARs do not apply to the following applications:**

- Capacities of 20,000 lbs or greater
- Ordnance Handling
- Hazardous Area Applications per NEC
- Hoists Utilizing Microprocessor Controls
- Special Purpose Service
- Molten Metal
- Precision or Synchronized Lifting

16 May 2022

Navy Crane Center

WHPB-22-09

# **Navy Shore Weight Handling Program Brief**

**Title: Near Miss Lessons Learned – May 2022**

**Target Audience: Weight Handling Program and Crane Oversight Personnel**

During recent weeks, multiple near misses have been submitted, the reporting of which help prevent accidents. NCC commends activities for their efforts and continues to stress the importance of oversight and the identification and reporting of events which can be used as lessons learned to improve weight handling performance. Well done to the following activities that identified and reported these near misses, where intervention prevented potential accidents:

Multiple reports in the past month identified inadequate rigging pre-job briefings and pre-job checks. It is vital to ensure rigging personnel fully understand the task assigned prior to any rigging operation. **Riggers are trained to preform pre-job checks, including proper gear selection, appropriate rigging paths and verification of equipment capacity and attachment points prior to use.**

**Trident Refit Facility Bangor** – While rigging out a ship’s motor, an overhead lifting pad was nearly **overloaded when riggers began to drift the motor onto a lifting pad with a capacity less than the weight of the motor.** A team member recognized the error and stopped the work avoiding an overload.

**Trident Refit Facility Kings Bay** – Two **shop workers assigned and briefed** to conduct a load test of a brow were stopped from testing when another worker identified the brow they rigged to test was under repair and was not the brow identified in the pre-job brief.

**Norfolk Naval Shipyard** – A supervisor halted load testing of a shipboard **sail plate clamp** when it **was identified** that a chain fall within the rigging configuration was undersized and **would potentially be overloaded if work were to continue.** It is essential to ensure all rigging gear is adequately sized to support the expected load throughout all aspects of the load movement.

**Fleet Readiness Center (Cherry Point)** – The **lead rigger** stopped rigging work and prevented a potential injury when **a worker’s finger was observed in a pinch point between the load and support equipment.**

25 May 2022

**Navy Crane Center**

WHPB 22-10

# NAVY SHORE Weight Handling Program BRIEF

Title: NAVFAC P-307 Training Courses on JKO

Target Audience: Contracting Officers and WHE Program Managers

Crane Electrician, Electrical Crane Inspector, Crane Mechanic, Mobile Crane Mechanic, and Mechanical Crane Inspector are now available on JKO



The training courses can now be accessed at the web address below:

<https://jkodirect.jten.mil/Atlas2/page/login/Login.jsf>

Users can log into JKO using a **Common Access Card (CAC)**, or **User Name and Password** provided upon Sponsor and Account Approval

Several additional NAVFAC P-307 training courses are **now available** on Joint Knowledge Online (JKO).

➤ The **Crane Electrician** (USN-NCC-CE-02.2), **Electrical Crane Inspector** (USN-NCC-ECI-02.2), **Crane Mechanic** (USN-NCC-CM-02.1), **Mobile Crane Mechanic** (USN-NCC-MCM-02.1), and **Mechanical Crane Inspector** (USN-NCC-MCI-02.1) training courses have recently been placed on JKO.

➤ Additional NAVFAC P-307 training courses available on JKO include: Category 3 Non-Cab Operated Crane Safety, Category 2 and Cab-Operated Category 3 Crane Safety, General Crane Safety, Load Test Director, Certifying Official, Rigging Practices, Contractor Crane Awareness, and NAVFAC P-307 Overview.

➤ As noted in NAVFAC P-307, Section 7 paragraph 7.2, all Navy Crane Center (NCC) training courses are available on Navy eLearning (NeL) at

<https://www.aas.prod.nel.training.navy.mil/>

➤ **JKO allows other Department of Defense Commands, Government Agencies, and Government Contractor personnel without a CAC** to request access to training with sponsor approval. Request a JKO account by selecting the "Non-Government Personnel / Sponsored Account Registration" link at the bottom right of the Login screen to initiate the request. **The sponsor must be a U.S. Military or Federal Government Civilian**, and must have an e-mail address that ends in .gov, .mil, .ndu.edu, .nps.edu, or .dodea.edu to validate the account. Personnel with a CAC should continue to access NCC training via NeL as normal.

2 June 2022

Navy Crane Center

WHPB-22-11

# NAVY SHORE Weight Handling Program Brief

**Title: Weight Handling Lessons Learned – June 2022**

**Target Audience: Weight Handling Program and Contractor Crane Oversight Personnel**

During recent weeks, multiple contractor crane near miss reports have been submitted; the reporting of near misses helps to prevent accidents. NCC commends activities for their efforts and continues to stress the importance of oversight and the identification and reporting of events in an effort to share lessons learned to improve contractor weight handling performance. Well done to the following activities that identified and reported these near misses:

## Contractor Crane Lessons Learned

**NAVFAC SOUTHEAST** – During a lift, the ROICC Representative observed a contractor crane operator **by-pass the anti-two block circuit** for the hoist and raise the load. The ROICC Representative immediately stopped the operation. Operators must ensure that all safety devices such as interlocks, limit switches, and operator aids are enabled; they **shall not be by-passed** during normal operations or used as operational controls.

**NAVFAC HAWAII** – **Two issues** were identified, that if not corrected, could have resulted in an accident.

(1) **Contractor Crane Oversight (CCO) personnel** identified that the hook throat opening latch on the main hook of a contractor crane was **partially open** versus being fully closed. Hooks used on cranes shall have self-closing latches or the throat opening shall be “moused”. Additionally, the synthetic round sling used to hoist the load **met rejection criteria** due to the inner core being exposed. Slings shall be inspected prior to use and removed from service if damaged (meet rejection criteria).

(2) **CCO personnel** stopped a contractor crane lift when it was identified that **the signal person was giving the operator incorrect signals**. Signal persons shall understand and use the Standard Hand Signals for Controlling Crane Operations.

**NAVFAC EURAFCENT** – **CCO personnel** observed the crane operator **look away from the load while booming down**. Additionally, the operator **exceeded the pre-determined stopping point** of 70 percent of the crane capacity. **The crane operator’s primary responsibility is the safe operation of the crane**. Activities should ensure contractor crane operators understand that they are a key member of the crane team and should not perform in any manner that compromises safe operation of the crane or deviates from an approved lift plan.

**Navy Crane Center**

22 June 2022

WHPB 22-12

## COLLISION AVOIDANCE FOR PORTAL CRANES

Since well before Archimedes is said to have coined the term "Give me a place to stand on, and I will move the Earth", people have striven to move material in increasingly safe and efficient ways. Through the progressions of levers, treadwheels, hydraulics, steam engines, electromotive force, and finally automation, technology has continued to progress in ways the original crane builders could have only imagined. To fulfill the mission of Navy Crane Center, it has been critical to stay adept in new forms of control, especially in recent decades as electronics systems have continued to evolve. Legacy product availability necessitates continual systems upgrades as components become unsupported by the manufacturer, while continuing advances have increased the speed at which components become obsolete.

Crane collisions can be potentially catastrophic, expensive, and are essentially avoidable. With the goal of increasing productivity in a safe environment, cranes need new forms of collision avoidance to maintain production and avoid safety-related incidents. Typical systems use Radar, Ultrasonic, Lidar, magnetic field generation, infrared, and optical. New Artificial Intelligence (AI) software is being incorporated into optical cameras and is available on the market today. This fusion of AI and optical sensors is yet another example of a rapidly changing industry. The next generation of technology will use a combination of these sensors and algorithmically process the data as an operational aid. Systems like these presently operate self-driving cars and it is only a matter of

time until more fusion collision avoidance systems are available for the crane industry. We have numerous collision avoidance systems on bridge cranes and are looking into the feasibility of portal crane implementation.

Crane accident reduction is a paramount goal of Navy Crane Center and we seek to achieve this by designing and ensuring the program management of fail-safe systems. It is sometimes difficult to accept new technological paradigms when it means they will replace systems that have been used on Navy cranes for decades. As weight handling professionals, we must understand evolving industry standards and new technology so that we can best determine how to design and implement our future crane configurations in a way that is safe, secure, and effective.

In the near future, Navy Crane Center will be reaching out to the shipyards asking for availability of a portal crane on which beta testing of a collision avoidance system could be conducted. If you are interested in participating in this program, please contact Josh Bierman 360-362-2945 or Scott Emerson 757-274-9041.

## 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](http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc/about_us/resources/safety_videos.html)

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