THE CRANE CORNER

Navy Crane Center Technical Bulletin

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A WORD FROM TOPSIDE

Sam Bevins

Fiscal year 2008 was the best year on record for Navy shore activity weight handling equipment accidents. Unfortunately, we were not quite so successful in FY 2009. Some activities saw significant improvement in their safety record and I congratulate them for their achievement. Others have been challenged with increased numbers of accidents. In addition, our audit teams are still finding evidence of unreported accidents during equipment inspections (misspooled and damaged wire rope, dented and damaged crane components, damaged rigging gear, etc.) that resulted from improper use of the equipment. We saw upswings in accidents occurring during load testing (which by their very nature require heightened attention to the job at hand) and while operating cranes during crane maintenance (where the attention to safe operation may not have been as sharp). We recently issued a safety message addressing these trends.

Fortunately, the number of accidents that were reportable by the standards of OPNAV Instruction 5102.1D remained at a very low 3 percent. There were four Class C accidents, and one accident resulted in material damage in the Class B category. On a further positive note, we view the other 97 percent of the accidents the Navy shore activities reported as golden opportunities to learn valuable lessons from the smaller events, which can be shared with all our Navy weight handling teammates. As you are aware, most accidents are due to human error.

I remain firmly convinced that by maintaining such a "wide aperture" perspective and classifying essentially any unplanned event as an accident to be investigated for lessons learned and reported, we capture the "leading indicators" to proactively address the behaviors that can lead to more serious events. With the larger dataset of events that this approach provides, we can review corrective actions, capture innovative ideas and best practices, and share them with the entire Navy shore weight handling community. We can also spot emerging trends and issue preemptive safety messages to all the Navy shore weight handling community.

So, I ask you to continue to maintain that “wide aperture” and maintain a safety culture that takes every unplanned event as an opportunity to learn from missteps and operate more safely. Take the time to stop and investigate all events that meet our accident definition, as well as those events where an accident could have happened but didn’t just because “we were lucky”. It is time well spent, and in the long run will save time and improve your ability to carry out your important missions in support of Fleet Readiness. We must take every accident seriously in order to help prevent more serious accidents.

Let’s learn from the events of FY09 and commit to make FY10 the best year yet for the Navy shore weight handling program as we maintain our mutual vision of ZERO weight handling accidents!

Inside This Issue

CRANE SAFETY ADVISORIES AND EQUIPMENT DEFICIENCY MEMORANDA

We receive reports of equipment deficiencies, component failures, crane accidents, and other potentially unsafe conditions and practices. When applicable to other activities, we issue a Crane Safety Advisory (CSA) or an Equipment Deficiency Memorandum (EDM). A CSA is a directive and often requires feedback from the activities receiving the advisory. An EDM is provided for information and can include deficiencies to non-load bearing or non-load controlling parts.

CRANE SAFETY ADVISORY

CSA 186 – Failure of Nylon Sheaves on Mobile Cranes

The purpose of this CSA is to alert activities to report nylon sheave failures on mobile cranes.

Background:
A. Two recent incidents of nylon sheave failures on mobile cranes have been reported. The first incident involved a Grove TMS 870 during load testing utilizing the main hoist. While lowering under load, the wire rope rode up onto the sheave flange and became caught between the flange and the sheave guard until a section of the flange broke off. The second incident occurred on a Grove RT 870 during a lifting evolution utilizing the auxiliary hoist. While hoisting the auxiliary wire rope the auxiliary boom nose top sheave fractured.

B. Engineering investigation determined the first incident was attributed to improper adjustment of the upper boom nose sheave. This improper adjustment contributed to the nylon sheave failure.

C. The failed sheave in the second incident has been removed and sent to the OEM for failure analysis. The results of the analysis are pending.

Direction:
A. Activities shall visually inspect nylon sheaves on top of the boom nose on all mobile cranes by the next type A maintenance inspection. While inspecting the nylon sheaves, check for proper adjustment of sheave bearings looking for any signs of abnormal play or wobble and for any signs of cracks or deformation on the sheave hub, web, or flange of the sheave. Any questions concerning bearing adjustment shall be directed to the OEM. Any sheaves found damaged shall be removed from service and reported to the Navy Crane Center (NAVCRANECEN). Contact the OEM for replacement parts.

B. Conclusive results from the OEM failure analysis will be evaluated and disseminated in a revision to this CSA.

CSA 187 – Reported Deficiencies with Festoon C-Track Systems

The purpose of this CSA is to alert activities to reported issues with various manufacturers' festoon C-track system ends stops and coupled track joints.

Background:
A. Several activities have reported issues with the integrity of various manufacturers' festoon C-track system end stops and coupled track joints. Several occurrences have been reported where, depending on the operating environment, trolley wheels can become stiff and resistant to rolling freely requiring a higher level of effort by the operator. The additional force required to pull the festoon pendant station across the track resulted in excessive impact against the track end stop once the trolley wheels became free. This repeated excessive force caused the end stop to gradually move and separate from the track. In another occurrence, the repeated excessive force caused the track sections to gradually move apart and become uncoupled. Activities also

reported other occurrences where fasteners securing the end stops were not installed properly or had loosened over time. In some instances, these failures allowed the festoon, trolleys, and junction box to fall to the floor.

B. Activities should be aware that festoon track systems are not designed for use when the trolley wheels do not roll freely. Any discrepancies in the proper operation of festoon track systems during use should be reported by the crane operator to the proper personnel. Additionally, contact with festoon end stops at excessive speeds should be avoided.

Direction:
A. Before or during the next annual maintenance period, activities shall inspect festoon C-track systems for proper adjustment and integrity. Inspect the festoon system for damage or deterioration and for evidence of loose fasteners or connections (e.g., track joint assembly, track hanger clamps, end clamps/stops, saddle assemblies, tow trolley, etc.). Verify proper operation and that all moving parts operate freely without binding.

B. Activities shall brief appropriate personnel on these festoon track occurrences including the proper operation of festoon systems and reporting of discrepancies.

C. NAVFAC P-307 will be updated to include the festoon track system inspection attributes listed in paragraph A above.

<u>CSA 189 - Uncontrolled Lowering While Using the Index Mode of Magnetek Impulse VG+ Series 3 Drives</u>

The purpose of this CSA is to inform Navy activities of an anomaly in the Magnetek Impulse VG+ Series 3 variable frequency drives indexing mode of operation.

Background:
A. Indexing is a feature that allows the motor being controlled to rotate a predetermined distance at a pre-determined speed (frequency). During indexing mode, the brake remains released and the load is held stationary by the motor while awaiting the next index command. Indexing mode is enabled by the operator through a switched input to the drive.

B. While operating the hoist in index mode, the operator was able to create an internal firmware error that allows internal drive functions to occur out of sequence. This error is caused by the operator quickly returning the controller to the neutral position upon hearing the brakes release while in index mode. This quick action results in the run input being removed from the drive before the no load brake (NLB) start sequence finishes causing the stop sequence to begin. The stop sequence (i.e., load float time, brake set delay, brake failure detection) does not normally start until the index mode is disabled. If the operator again moves the controller to a run state during the brake set delay time, a sequence anomaly occurs which results in the drive operating in a state where neither the NLB start sequence nor indexing is controlling the motor. As a result, the motor is in a magnetizing current only state, causing the load to drift when the brakes are re-released. Depending on the load on the hook, the load could lower uncontrollably until the drive builds up sufficient torque to control the load, or until the e-stop is pressed.

C. The drive manufacturer has been successful in duplicating this issue and has developed a permanent solution through drive firmware modifications. The firmware change insures that even if the operator does not hold the run command on long enough to completely finish the NLB start sequence, the control is sequenced over to indexing and ready to index when the run command is again issued. The stop sequence will be initiated when the index command is removed.

Direction:
A. Activities shall immediately discontinue use of the indexing mode on Magnetek Impulse VG+ Series 3 drives. Hoists may be returned to service in normal mode once the indexing mode has been electrically disabled (disabling of the index mode shall be documented on an alteration request for NAVCRANECEN approval).

B. Activities shall contact Magnetek's service department at 800-MAG-SERV (800-624-7378) who will assist in the process for upgrading the firmware on the Impulse VG+ Series 3 drives control board. The firmware upgrade must be done through an approved Magnetek dealer. Providing a parameter upload (*.par file) or a list of modified constants and the firmware # (UL-14) will allow the factory to pre-program the replacement control board with identical parameters.

C. Installation of the replacement control board and reactivation of the indexing mode shall be documented on an alteration request for NAVCRANECEN approval. The affected hoist shall be load tested in accordance with NAVFAC P-307.

CSA 136B – Samsung Portal Crane Travel Wheels

This revision cancels Crane Safety Advisory 136 and 136A.

The inspections required by Crane Safety Advisory 136A were intended to be done until a final resolution was determined by Navy Crane Center and Samsung Heavy Industries (SHI). SHI has since begun providing replacement wheels resolving the issue. Navy Crane Center considers that the condition of the wheels can be adequately monitored in accordance with NAVFAC P-307, Appendix C.

CSA 188A – Lower Hook Block Deficiency on a Two-Ton BUDGIT USA Hand Chain Hoist

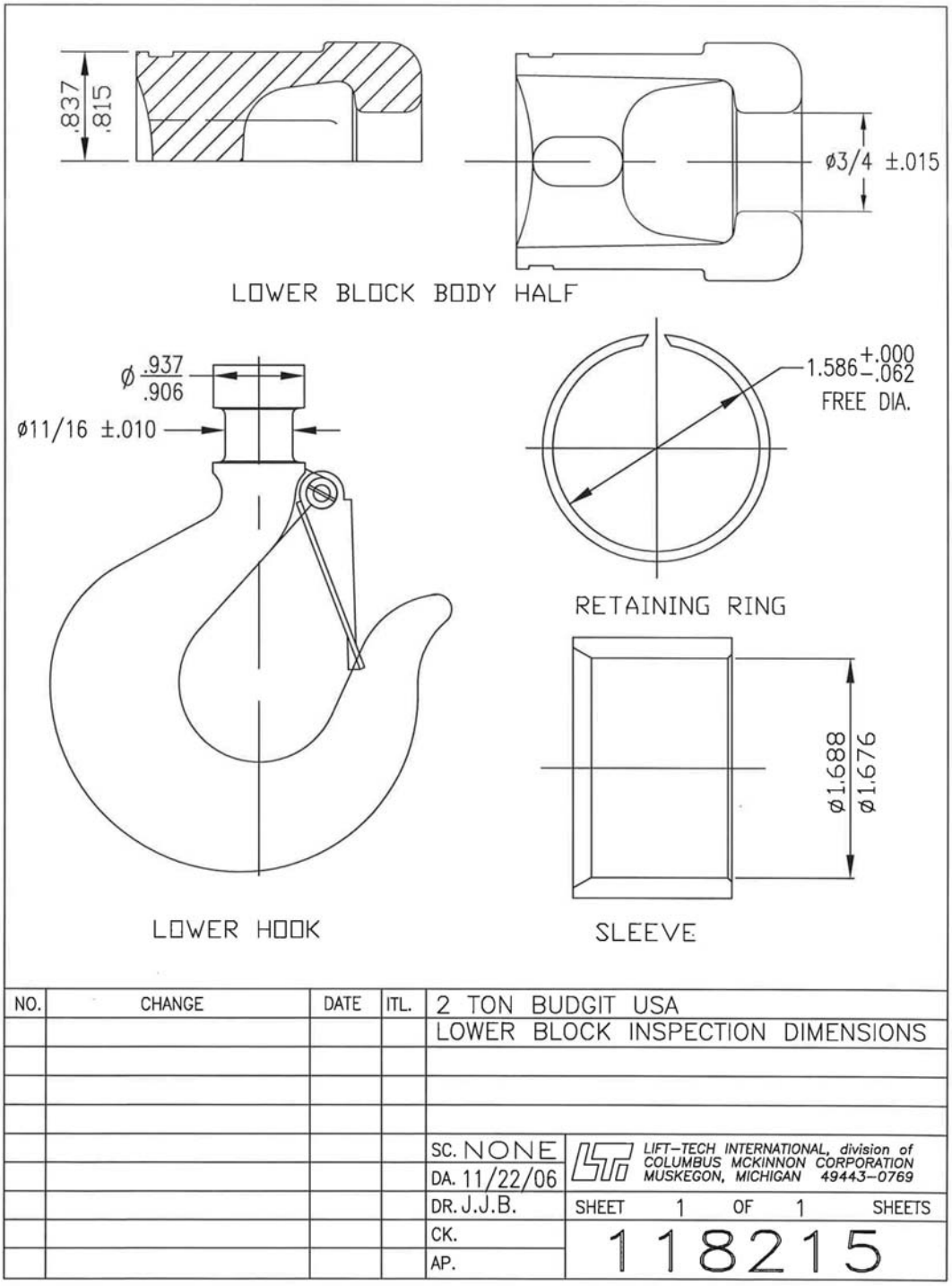
Background:
A. CSA 188 directed activities to disassemble and inspect within 30 days the lower hook on 1-1/2 and 2 ton BUDGIT USA hand chain hoists, BUDGIT aluminum 1, 1-1/2, and 2 ton chain hoists, and TUGIT 1-1/2 ton lever chain hoists. Hooks and lower block assemblies were to be removed from service and reported with hoist serial number to the OEM and NAVCRANECEN if found with damaged components or components that do not dimensionally conform to the BUDGIT drawing. This was due to an activity observing while lifting a load that the lower block body halves were misaligned around the lower hook. Preliminary investigation after disassembly showed that the hook shank diameter and the machined “knob” diameter on the hook shank were smaller than required by the OEM’s drawing. CSA 188A supersedes CSA 188 in its entirety.
B. NAVCRANECEN has determined from reports from the field and through discussion with the hoist manufacturer that CSA 188 is not applicable to the 1 ton BUDGIT aluminum hand chain hoist. This hoist utilizes a smaller hook (size 4) and smaller lower hook block assembly in comparison to the size 5 hook used on the 1-1/2 and 2 ton BUDGIT USA and aluminum chain hoists shown in OEM Drawing No. 118215, 2 Ton BUDGIT USA Lower Block Inspection Dimension. Additionally, it has been determined that the TUGIT 1-1/2 ton lever chain hoists use a size 5 hook and lower block body halves that are very similar to the size 5 hook and block body halves used on the 1-1/2 and 2 ton BUDGIT USA and aluminum chain hoists with the exception that the “knob” and hook shank diameter are machined to a smaller dimension to match the smaller diameters of the block body halves for the 1-1/2 TUGIT lever chain hoist (see OEM Drawing No. 118325, 1-1/2 Ton TUGIT Lower Hook Inspection Dimensions). Also, due to a hook fabrication change in March 2008, OEM Drawing No. 118215, 2 Ton BUDGIT USA Lower Block Inspection Dimension has been revised to include sheet 2 with dimensions of the shank and “knob” for a newer “welded nut” design. Finally, this CSA does not apply to the above hoists that were provided with a size 6 lower hook.

Direction:

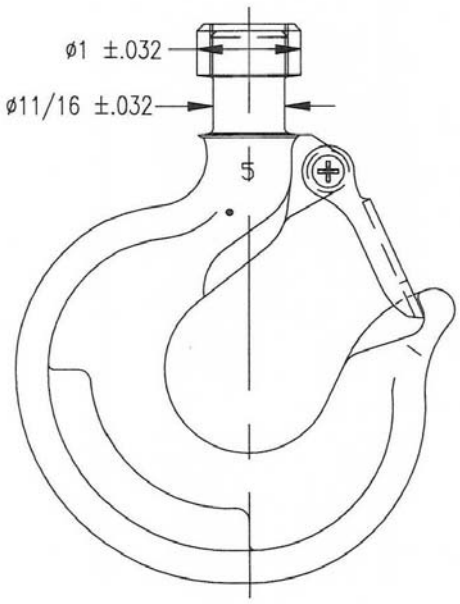
A. Within 30 days of issuance of this CSA, activities shall disassemble and inspect the lower hook on 1-1/2 and 2 ton BUDGIT USA hand chain hoists and BUDGIT aluminum 1-1/2 and 2 ton chain hoists. Inspection shall verify that the hook shank and "knob" diameters are in accordance with OEM Drawing No. 118215, 2 Ton BUDGIT USA Lower Block Inspection Dimension, sheets 1 or 2. Activities shall also disassemble and inspect the lower hook of TUGIT 1-1/2 ton lever chain hoists to verify that the hook shank and "knob" diameters are in accordance with OEM Drawing No. 118325, 1-1/2 Ton TUGIT Lower Hook Inspection Dimensions. The lower block assembly components shall also be inspected for any damage, abnormal wear or other dimensional nonconformance to the BUDGIT drawings.

B. Supply stock of spare hooks and lower block body halves for the hoists identified above shall also be inspected. Parts found to be in conformance with OEM Drawing No. 118215, 2 Ton BUDGIT USA Lower Block Inspection Dimension (lower hook for 1-1/2 and 2 ton BUDGIT USA and aluminum chain hoists) shall be segregated from parts found to be in conformance with OEM Drawing No. 118325, 1-1/2 Ton TUGIT Lower Hook Inspection Dimensions (lower hook for TUGIT 1-1/2 ton lever chain hoist) due to the dimensional differences in these parts. Activities with spare #size 5 hooks and lower block body halves should use caution to not mix-match parts. Specifically, do not install the TUGIT 1-1/2 ton hook in a lower hook block for 1-1/2 ton or 2 ton BUDGIT USA and BUDGIT aluminum hand chain hoists.

C. Remove from service any lower hook or lower hook block assemblies with damaged components or components that do not dimensionally conform to OEM Drawing No. 118215, 2 Ton BUDGIT USA Lower Block Inspection Dimensions or OEM Drawing No. 118325, 1-1/2 Ton TUGIT Lower Hook Inspection Dimensions and report with hoist serial number to the OEM. Any questions concerning lower hook block assembly component dimensional conformance shall be referred to the OEM.



CSA 188 – Attach 1



LOWER HOOK

NOTE:
REVISED DESIGN REPLACING
10670615 HOOK.

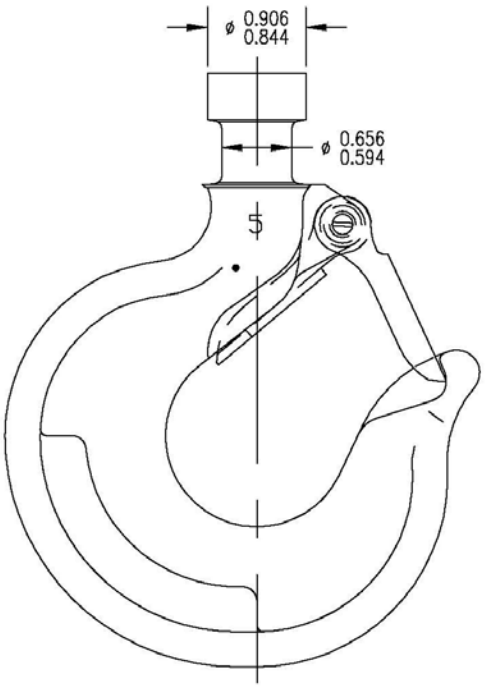
NO.	CHANGE	DATE	ITL.	2 TON BUDGIT USA
				LOWER BLOCK INSPECTION DIMENSIONS
				SC. NONE
				DA. 7/31/09
				DR. B.W.
				CK.
				AP.

LIFT–TECH INTERNATIONAL, division of COLUMBUS MCKINNON CORPORATION MUSKEGON, MICHIGAN 49443–0769

SHEET 2 OF MORE SHEETS

118215

CSA 188A – Attach 1, pg 2



LOWER HOOK 20369101

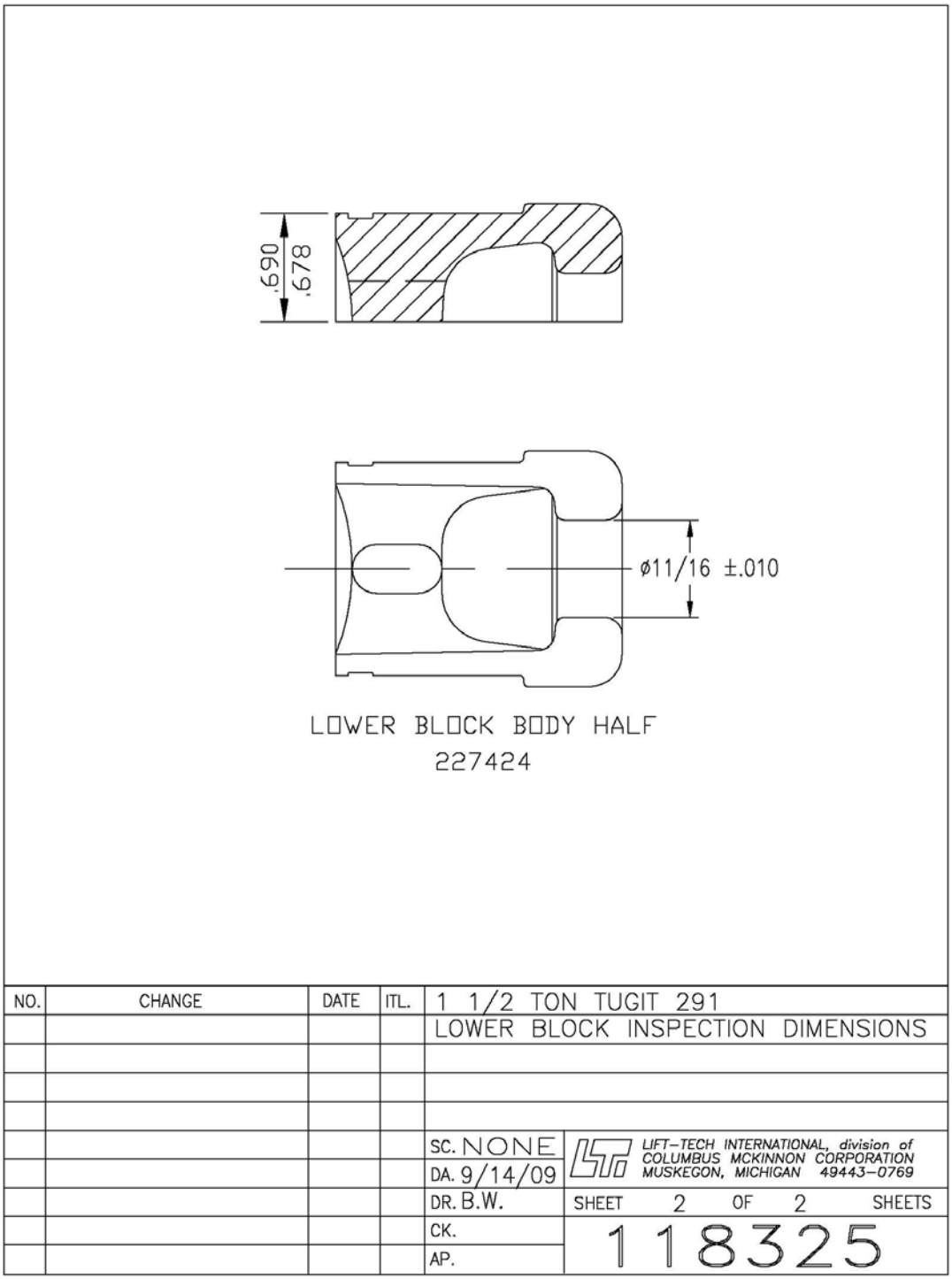
NO.	CHANGE	DATE	ITL.	1 1/2 TON TUGIT 291
				LOWER HOOK INSPECTION DIMENSIONS
				SC. NONE
				DA. 8/28/09
				DR. B.W.
				CK.
				AP.

LIFT-TECH INTERNATIONAL, division of
COLUMBUS MCKINNON CORPORATION
MUSKEGON, MICHIGAN 49443-0769

SHEET 1 OF 1 SHEETS

118325

CSA 188A – Attach 2, pg 1



CSA 188A – Attach 2, pg 2

EQUIPMENT DEFICIENCY MEMORANDUM

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

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS THIRD QUARTER FY09

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

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

For the third quarter of FY09, 49 Navy WHE accidents (39 crane accidents and 10 rigging gear accidents) and 8 contractor crane accidents were reported. Nine of the 39 Navy WHE crane accidents were significant (overload, dropped load, two block, or injury). Some of the more significant crane accidents this quarter are discussed herein.

INJURY

Accident: A load was lowered into a ship's compartment and the rigging equipment was disconnected from the load. As the rigging equipment was being hoisted out of the compartment, the rigging snagged on a handle of the load, causing the load to tip over, strike the rigger and come to rest against ships equipment, resulting in personnel injury and damage to equipment.

Lessons learned: The rigger was performing multiple actions at one time (holding the rigging gear, looking up to guide the gear through the access, and signaling the crane via radio), which resulted in the rigging gear snagging the disconnected load. The use of operational risk management (ORM) to identify the hazards and take actions to minimize the risk involved with the operation could have prevented this accident from occurring. If a job requires multiple actions to be performed, supervision should assign required additional personnel to ensure the crane operating envelope, including the rigging gear, remains clear of all obstructions. The use of a designated signal person and additional riggers to monitor the load and rigging gear clearances should be used as required. The hazards involved during crane operations do not end when the load is set down. Personnel should remain alert for potential hazards until the rigging gear has been removed and the crane has been secured at the end of the day.

Accident: While attempting to lift a load from a welding table with a magnet lifting device, a category 3 crane operator lost control of a load when it was raised at an angle greater than the magnet could hold. The lifting device was not placed over the load's center of gravity, thus causing the load to lift at a sharp angle and slide off of the magnet. The operator received an injury to his finger when the load dropped.

Lessons learned: Because of the location of the load on the table the lift magnet was not properly placed over the center of gravity of the load, which caused the load to slide off of the table when lifted. Personnel should ensure the crane hook, magnet, rigging gear, etc. are placed over the center of gravity of the load to prevent side loading. Side-loads on the crane are not allowed. Personnel should also ensure that items to be lifted are disconnected and clear of all obstructions and interferences prior to lifting the load to prevent binding or overloading of the crane and/or rigging gear.

OVERLOAD ACCIDENTS

Accident: Three crane accidents involved overloading rigging gear as a result of bound load situations. Two of the accidents occurred while removing drydock stop logs, which also requires lifting submerged objects. In both cases, there was insufficient time for pressure equalization to occur on the stop log, resulting in increased pressure, and subsequent overload of the rigging gear. The other accident involved lifting a component in a close tolerance space. While lifting the load, the load jammed, overloading the rigging gear. In all of these cases, a load indicating device (LID) was inline in the rigging configuration and each was treated as a complex lift, however the overloads still occurred.

Lessons learned: Where overloading is possible due to potential binding conditions, a LID shall be used. An appropriate stop point shall be established. The LID shall be carefully monitored to ensure the stop point is not exceeded. In two of the three crane accidents noted above, a LID was in the rigging configuration, but was not monitored. If a stop point is reached, stop the lift. Contact supervision and/or notify engineering to evaluate the situation and determine appropriate actions (i.e. perform calculations, establish another stop point) to resume the job.

CONTRACTOR ACCIDENTS

Accident: NAVCRANECEN has seen an increase in reported contractor crane accidents in the third quarter of FY09. There was a total of eight reported with five of those considered significant (overload, dropped load, or injury). Forty percent of the contractor crane accidents involved dropped loads. The main causes of these were the use of improper rigging practices.

Lessons learned: Contracting officer representatives must remain vigilant to ensure contractors are performing crane operations in a safe manner. The level of oversight shall be based upon risk to government personnel and property. The contracting officer shall notify the host activity and NAVCRANECEN of any WHE accidents upon notification by the contractor. The contracting officer shall also provide NAVCRANECEN and the host activity a copy of every accident report upon receipt from the contractor, who shall use the form provided in section 12 of NAVFAC P-307.

Effective planning, teamwork, communication, situational awareness, and operational risk management (ORM) as detailed in OPNAVINST 3500.39B are all good tools for reducing the risk of an accident. Good job planning and communication go hand in hand. A training video called "Take Two" that discusses the importance of good planning, communication, and ORM is now available on the Navy Crane Center website for your use.

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

BARRICADING THE SWING RADIUS ON MOBILE CRANES

Safe operation of cranes and the safety of those working with, or around, crane operations are of utmost importance. Personnel must maintain a constant awareness of their surroundings and take actions as necessary to minimize the risk involved with all weight handling equipment operations. Cranes are equipped with general and operational safety devices that provide protection for personnel and aid in the safe load lifting and handling capability of the equipment. In some instances, it is necessary to utilize additional protective devices, or methods, that are not normally part of the crane. One such instance involves barricading the swing radius of the counterweight of the crane when the counterweight has the potential of striking personnel.

This is one safety requirement that is sometimes overlooked during mobile crane setup and operations. Paragraph 10.11 of NAVFAC P-307 requires that accessible areas within the swing radius of the rotating superstructure of a crane must be barricaded to prevent personnel from being struck or crushed by the crane. This means that the entire area where a counterweight may be rotated must be barricaded. **The purpose of this requirement is to eliminate the potential for personnel to be caught in a pinch point or from being struck by the rotating counterweight.** Several considerations come into play when determining barricade requirements. First and foremost, install the barricade in a manner that keeps people out of a potential danger area. When installing a barricade, determine the distances necessary to eliminate potential pinch points between the counterweight and a fixed object such as a building or a fence. Even in the absence of a fixed object, the entire counterweight swing path must be effectively guarded to keep personnel out.

A "barricade" is typically a device that delineates and warns of a boundary that is not to be crossed, or an obstruction to deter the passage of persons or vehicles. Examples include tapes, screens, rope, wire, chain, "A"-frame type wood or plastic, fencing and other structures that are intended to warn and limit access to an area. In each of these examples, the purpose of the "barricade" is to delineate a dangerous area and warn employees not to go beyond a specific point. There are no strength requirements for the items used, but the barricade must deter the passage of personnel or vehicles.

Some acceptable methods of barricading the rotating superstructure of the crane include, but are not limited to:

* Attachment of warning or caution tape, chains, or rope to the outriggers, carrier frame of the crane, or other objects such as fencing to keep personnel out of the area. One must ensure that attachment does not in any manner interfere with, or restrict, crane movements.

* Cones or other items with caution tape, wire, or chain connected and establishing a continuous boundary around the accessible areas. Placing a single cone or item between the outriggers or at each outrigger on a mobile crane does not meet the requirement for the barricade unless the item extends the entire length of the accessible area and extends beyond the swing radius of the barricade.

* Placement of temporary fencing or other "A" frame type barricades around the accessible areas.

Operations that require boundaries to be established to keep "unauthorized personnel" out of the area, such as weight testing, are not excluded from the requirement to barricade the accessible areas within the swing radius of the rotating superstructure of the crane. If there are any personnel within that area, whether "authorized" or not, the potential of someone entering the accessible areas of the swing radius still exists. Performing a pre-job brief that includes all hazards involved with the operation adds to the level of personnel awareness, but does not remove the requirement to establish the barricade.

Following established requirements and using Operational Risk Management (ORM) to recognize, reduce and remove the hazards associated with each job helps to ensure the safe performance and safety of personnel during crane operations.

WEIGHT HANDLING OPERATIONS WITH MULTI-PURPOSE MACHINES, ROUGH TERRAIN FORKLIFTS, OR TELESCOPIC HANDLERS

Multi-purpose machines are sometimes used as substitutes for cranes to lift loads suspended by rigging gear. A multi-purpose machine is a machine that is designed to be configured in various ways, at least one of which allows it to hoist (by means of a winch or hook) and horizontally move a suspended load. These are sometimes referred to as telescopic handlers or rough terrain forklifts as described by ANSI-ITSDF B56.6. Serious accidents have resulted from the improper use of subject equipment.

The forthcoming revision to NAVFAC P-307 will address these lifts and will include the requirements noted below.

For Navy lifting operations, activities shall ensure the equipment is authorized by the OEM to make suspended load lifts. Ensure the equipment is properly configured to make such lifts. Ensure the equipment is equipped with a capacity chart. Ensure equipment operators are licensed in accordance with NAVSUP Publication 538 and are trained to make such lifts. Ensure riggers are trained. Suspended load lifts with multi-purpose machines shall be treated as complex lifts if the loads meet the criteria noted in paragraph 10.4.1 of NAVFAC P-307. Lifts of personnel in a suspended platform with these machines is not permitted. Rigging gear shall comply with section 14 of NAVFAC P-307. Accidents occurring during the use of subject equipment while making suspended load lifts shall be reported to NAVCRANECEN in accordance with section 12 of NAVFAC P-307.

For contractor lifting operations, contracting officers shall ensure the following requirements are included in contracts: Require the contractor to comply with OSHA, ASME, ANSI, or other applicable industry standards for subject equipment. Require a certificate of compliance (NAVFAC P-307, appendix P, figure P-1) that the equipment complies with applicable standards, that slings and rigging hardware comply with ASME B30.9 and ASME B30.26 respectively, and that the riggers and operator are trained to make such lifts. Require proof or authorization from the OEM that the equipment is capable of making suspended load lifts. Require prior notification to contracting officers of lifts of suspended loads. Require the contractor to demonstrate the equipment is properly configured to make such lifts and is equipped with a load chart. Require a critical lift plan for suspended load lifts that meet the criteria of paragraph 1.7.2.e of NAVFAC P-307. Lifts of personnel in a suspended platform with these machines shall not be permitted. Accident reporting requirements of NAVFAC P-307 paragraph 1.7.2 shall apply to accidents occurring during the use of subject equipment while making suspended load lifts.

Other construction and material handling equipment (excavators, backhoe loaders, fork lifts, etc.) is sometimes used to lift loads suspended by rigging gear. Activities and contracting officers shall ensure the equipment OEM permits such lifts to be made, that the equipment is properly configured to make such lifts, and that such lifts are made in accordance with OEM requirements. For Navy operations, rigging gear shall comply with section 14 of NAVFAC P-307 and personnel who rig loads shall complete the appropriate NAVFAC P-307 training course. For contractor operations, slings and rigging hardware shall comply with ASME B30.9 and ASME B30.26, respectively. Operators shall be trained and qualified for the specific equipment being operated.

This advance notice is provided so that activities and contracting officers can start to prepare for the upcoming revision to NAVFAC P-307. Pending issuance, activities shall ensure subject equipment is operated in strict accordance with OEM and applicable OSHA or industry requirements. For contracts that invoke the latest (15 Sep 2008) revision of USACE EM 385-1-1, this standard now invokes full crane requirements on multi-purpose machines when configured to hoist suspended loads and invokes new requirements for hydraulic excavators and wheel/track/backhoe loaders used to transport or hoist loads with rigging, as well as for rigger qualifications. Contracting officers shall ensure compliance with requirements.

CRANE ACCIDENT TRENDS INVOLVING TESTING AND MAINTENANCE

Through data analysis, the Navy Crane Center has identified an increasing trend of Navy crane accidents occurring during the load testing of cranes or in the performance of maintenance on cranes. Thus far in FY09, approximately 16 percent of the reported crane accidents involved these two evolutions.

It is extremely important to ensure compliance to the procedures described in appendix E of NAVFAC P-307 when load testing a crane. Proper planning, manning, location and execution of the test are critical components of a safe load test. In over half of the reported crane accidents during load testing, inadequate load control was a factor. Excessive motion or sway of the load created conditions that led to load collisions, shifting loads, or wire rope problems. A common theme in these accidents was that the operator did not control the load with deliberate and smooth movements to avoid excessive motion and sway of the suspended load. Extreme caution must be observed at all times during load tests. Normal but controlled operating speeds shall be employed to safely control loads through all motions of the test. Team personnel must be briefed on required procedures of the load test and emphasis shall be placed on safely controlling the load through all motions at normal speeds. Each member of the test team should be empowered to stop the evolution if a problem is suspected.

Inadequate crane inspections or test area inspections have contributed to several crane accidents. Prior to proceeding with a load test or any operation of the crane, the work environment must be conducive to the task. The test/work area should be cleared of all traffic, equipment, and unauthorized personnel. Associated planning, inspection, and test prerequisites must be complete before proceeding with the test or operation.

Several maintenance related crane accidents involved unplanned contact. During boom limit verifications, a boom was raised and the boom strut contacted an open door of the machinery house. Another accident occurred when an improperly positioned rotate access ladder contacted the deck during rotation of the crane. A two block accident occurred during an upper limit switch verification when the switch did not engage. As with load testing, an adequate inspection of the crane and the work area must be performed to ensure safe operation and adequate clearances. These inspections must include the items that are being worked and include the entire crane operating envelope that will, or may be, affected during operation. Supervision should ensure personnel are briefed on the hazards of each job and placed in proper positions as necessary to perform work.

In performance of crane load testing or crane maintenance, personnel must be aware of their surroundings at all times. Due to the dynamics and potential abnormalities of testing and maintenance operations, it is important to maintain situational awareness of your environment. Situational awareness involves being aware of what is happening around you to understand how information, events, and your own actions will impact what you are trying to accomplish. Operational risk management (ORM) should be used to anticipate hazards, minimize risk to acceptable levels, and reduce the potential for accidents on and during the planning and preparation of each job. The ORM process is applicable to all weight handling operations.

The Navy Crane Center provides videos on “Mobile Crane Safety” and “Load Testing Mobile Cranes at Naval Shore Activities” to assist activities in raising the level of safety awareness among their personnel involved in weight handling operations. These videos provide a very useful tool for emphasizing the impact that the human element can have on safe weight handling operations. These videos can be ordered or viewed on the Navy Crane Center website: https://portal.navfac.navy.mil/ncc.

Each weight handling accident diminishes support to the fleet. Good planning, teamwork, communication, situational awareness and ORM are all good tools for use in reducing the risk of an accident and harm to our workforce. A safe and reliable Navy weight handling program is an essential enabler for fleet readiness. As such, we must strive for the goal of zero weight handling accidents.

NEW SAFETY VIDEO AND ONLINE TRAINING COURSE

A new Category 3 Crane Safety video, detailing proper rigging and operations for category 3 crane operators, is now available from Navy Crane Center. With category 3 crane accidents accounting for 30 percent of all Navy crane accidents reported, periodic review of proper operational and rigging requirements is prudent. This video offers a quick and easy manner in which to do just that. A full length version is available on Navy Crane Center's web site: https://portal.navfac.navy.mil/ncc , click on "NCC Safety Videos". A segmented DVD version, which allows viewers to look at one topic at a time, is available upon request from the Navy Crane Center, Safety and Training Branch.

The web based training module "Mobile Crane Mechanic" is now available on the internet at Navy Knowledge Online (NKO). Mobile Crane Mechanic is designed to acquaint crane mechanics with Navy requirements for safe mechanical maintenance of mobile cranes and provides a knowledge base on which to build with on-the-job experience. Topics covered include basic hydraulic systems, low voltage electrical systems, and mobile crane braking systems. NAVFAC P-307 "Crane Mechanic" Course is a prerequisite for "Mobile Crane Mechanic". Other web based training courses currently available via NKO include: General Crane Safety, General Crane Safety Refresher, Category 2 and Cab-operated Category 3 Crane Safety, Category 2 Crane Safety Refresher, Category 3 (non-cab) Crane Safety, Category 4 Crane Safety, Crane Rigger, Rigging Gear Inspection, Load Test Director, Certifying Official, Contractor Crane Awareness, and Electrical Crane Inspector. These courses can be found on NKO at: https://www.nko.navy.mil .

INSTRUCTOR-LED TRAINING SCHEDULE FOR FY10

The FY10 instructor-led training schedule has been established and can be viewed on Navy Crane Center's training site: https://portal.navfac.navy.mil/ncc, click on "Training", then click on "FY10 Course Schedules."

2011 WEIGHT HANDLING CONFERENCE

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

SHARE YOUR SUCCESS

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

Weight Handling Program Safety Videos

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

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

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

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

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

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

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