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A WORD FROM TOPSIDE

Tim Blanton

Weight handling program maturity at Navy shore-based activities continues to evolve. An increased focus on program management has resulted in a more self-critical approach to maintenance and operations and improved self-assessment through use of effective monitor programs. After years of stressing the importance of self-monitoring (or surveillance), and acceptance by activities to embrace this concept, we included monitor program requirements in the most recent update (June 2016) to NAVFAC P-307. Your efforts have resulted in continued reduction and mitigation of risk, while improving lifting and handling safety. But there is still work to be done in this area.

Navy Crane Center (NCC) Liaison Initiative – As most of you are aware, NCC evaluates activities periodically based on the size and scope of activity weight handling programs. To promote efficiency, multiple activities in a single geographical location (e.g., China Lake, New London, Crane, Monterey) are evaluated during the same week. During the evaluation process, time constraints, particularly at smaller commands, tend to minimize the amount of time that NCC evaluation teams can spend having discussions with activity personnel other than discussing identified deficiencies and violations and during formal in and out-briefs. Also, the evaluation is usually the only time communication with NCC takes place, leaving significant time gaps for smaller activities, with regard to contact with NCC.

For these reasons, and to promote continuous incremental improvement, NCC is implementing a new pilot program, the NCC liaison initiative, which assigns NCC evaluation team members as liaisons with specific activities. Our focus is on activities that are evaluated on less than an annual basis. The goal of this initiative is to promote increased non-evaluation communication between NCC and the weight handling program community. We are establishing an internal goal of communicating twice a year with each activity in an effort to improve working relationships between NCC and weight handling program personnel in a non-confrontational setting outside the evaluation/audit process.

A primary objective of this initiative is to promote a healthy self-critical focus on the foundations of a weight handling program between regularly scheduled evaluations. Additional objectives include establishing a rapport with less-frequently evaluated activities, which can help with reducing barriers, including areas such as losing track of and access to primary points of contact (POCs), particularly for military-run programs, reducing tensions regarding an upcoming evaluation site visit, and providing a conduit for activities seeking helpful guidance. Improved ongoing communications is also intended to promote an activity's submission of minor (no damage) accident reports, as well as near miss and unplanned occurrence reports, which can enhance Navy efforts to drive continued improvements in weight handling safety.

I want to reiterate that the liaison initiative is not meant to be a formal process that follows strict guidelines and requirements. In fact, for this initiative to be successful, it must remain a simple process that encourages frequent communication (twice a year or even more frequently) between the NCC Liaison and the activity's weight handling program POC. This initiative is also not meant to replace required communication between your assigned evaluation team and your activity prior to and following your scheduled evaluation.

I believe this initiative will be of benefit to smaller weight handling programs. As we roll it out, I highly encourage you to provide feedback, so that we can make course corrections or improvements, as necessary.

TIP OF THE SPEAR
THIRD QUARTER FY18 EVALUATION SUMMARY

All 35 activity weight handling programs evaluated in the third quarter were fully satisfactory. Monitor (observation) program issues continued to dominate evaluation items. Although all but three of these activities have instituted monitor programs and some found worthwhile tangible deficiencies (i.e., those that if left uncorrected could result in a crane or rigging accident), many activities were still finding and documenting very few deficiencies and even fewer tangible deficiencies. In addition, numerous activities that perform maintenance, inspection, and load testing did not include those functions in their monitor programs. The second most common item was unsafe crane and rigging operations observed by the evaluation teams. Activities need to review the types of unsafe practices noted below and start self-identifying, documenting, and correcting similar practices in their monitor programs.

SUMMARY OF PROGRAMS EVALUATED
35 Navy WHE programs were evaluated, and all 35 were fully satisfactory.

SATISFACTORY CRANES
40 of 42 cranes were satisfactory (95%).

Reasons for Unsatisfactory Cranes.
Quadrennial load test not performed.
Crane would not start (mobile crane).

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 – 32 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.

- Inspection and certification documentation errors – 13 items.

- Operator's Daily Check Lists/Operator's Monthly Check Lists (ODCLs/OMCLs) and simulated lifts performed incorrectly or not performed - 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.) – 16 items.

- Lack of (or low number of) lower order crane or rigging accident and near-miss reports – 10 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) – 5 items.

- Local WH instruction/SOPs non-existent or inadequate – 5 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.

- ODCL/OMCL documentation deficiencies (including incorrect form used and pre-completed forms) – 8 items.

- Expired or non-program gear in use or not segregated from in-service gear – 6 items.

- Designation issues (no designation, performance examiner designation not specific, designee not qualified, NAVFAC P-307 not referenced) – 5 items.

- Lack of leading metrics/metrics not being properly analyzed – 5 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) – 11 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) – 5 items.

- Inadequate pre-lift brief or brief not conducted – 5 items.

- Weakness in (or non-existent) activity self-assessments – 5 items.

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS SECOND QUARTER FY18

The purpose of this article 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 can be improved.

For the second quarter of FY18, 61 Navy weight handling accidents (52 crane and 9 rigging) were reported. The number of significant accidents as defined by reference A, paragraph 12.3, for the quarter was 14 (13 crane and 1 rigging). Accident reporting remained almost consistent with the first quarter totals (64 accidents with 54 crane and 10 rigging). Two of the accidents involved injuries meeting class C reporting requirements of reference B. Injuries and two-block accidents accounted for nine of the significant accidents reported this quarter. Eight contractor accidents (four crane and four rigging) were reported in addition to the above accidents. Of the contractor accidents, two rigging accidents are categorized as significant (dropped load and an injury).

INJURIES

Five injuries (four crane and one rigging) were reported in the second quarter. A spreader beam was lowered to the ground and rested on padeyes, which resulted in the spreader beam shifting and falling on an employee's foot resulting in a class C injury. The other class C reportable event involved a rigger's finger being pinched when a thrust bearing collar shifted while being rigged into position. A crane maintenance inspector's finger was injured when it was caught between the hoist brake disc and foundation. A rigger received a minor head injury when the rigger was struck by a set of empty pallet slings. A rigger received a head laceration when the air fitting of a hoist rotated while being removed and struck the rigger.

Lessons Learned: Proper body positioning during these evolutions could have prevented the majority of these injuries. During briefings, prior to any evolution, body positioning should be discussed. If discussions identify any unsafe conditions, then a timeout should be called to evaluate a better way to accomplish the task. In the case of the spreader beam accident, blocking/dunnage should have been used. The surface area of the padeyes was not large enough to balance the spreader beam properly.

Another injury occurred due to personnel performing multiple functions at one time and not utilizing additional personnel as necessary.

TWO-BLOCK

Four two-block crane accidents were reported. A mobile crane's auxiliary head attachment sheared off caused the auxiliary headache ball to fall to the ground (potentially deadly accident) due to a two-block. During two different maintenance evolutions, two category 3 cranes were two-blocked. A category 3 crane was identified in a two-block condition during an internal inspection of the facility.

Lessons Learned: In the case of the mobile crane two-block, the load test director had deactivated the bypass switch during testing, but did not reactivate the bypass switch and remove the key when the test was completed per the procedure. NAVCRANECEN notes that the last weight handling related Navy civilian or military fatality was due to a mobile crane two-blocking event in 1994. The two maintenance two-blocks were the result of not following established procedures (complacency may have also factored in these accidents). The last accident was a result of the crane misspooling (most likely caused by the hook block swinging and performing hoisting at the same time) which created a situation where the upper rotary limit switch would not prevent a two-block.

DROP LOADS

There were three dropped load crane accidents. A lifting ring failed while lifting two stacked ordnance containers causing one corner of the load to drop approximately one foot to the deck. During installation of an aircraft component, one end of the component slipped out of its rigging configuration and fell to the shop floor onto a steel rod located on a piece of ground support equipment. Lastly, a test load dropped during an operational test of a category 3 bridge crane.

Lessons Learned: Equipment failure was identified in two of these events (lifting ring and category 3 crane test load). The cause of the lifting ring failure may never be determined as the crane team failed to preserve the accident scene as required by reference A and continued on with lifting operations. The other failure occurred during testing after a voltage boost drive parameter change allowed the test load to drop uncontrolled a short distance to the deck.

At this specific activity, a process is now being developed to allow management review all imminent work that involves lifting test loads outside the annual load test. The aircraft component dropping was due to lifting the component in a non-level manner and not having established lift drawings/sketches to lift the component safely.

OVER LOADS

Two overload crane accidents were reported. A canister adapter lift beam and sling were severely overloaded when binding occurred during reseating on the sill assembly. The other overload occurred when the safe working load of a sling was exceeded when the crane team did not stop hoisting when the pre-established stopping point on the load indicating device (LID) was reached.

Lessons Learned: A number of problems contributed to the canister adapter lift beam and sling accident. The canister adapter did not seat properly, which required the load to be raised. The ship's dog-down mechanism was not completely retracted causing a binding condition and since this was performed on the water, the ship pitched and rolled due to wake from other waterborne traffic. When working with ships force or a blended crew, verification of actions to track for completion of work to perform lifts safely is essential as well as monitoring the sea state and traffic. Poor communication was also a contributing factor in this accident. In the other overload, a chainfall would have helped alleviate the surge identified on the gear when the crane was hoisted.

NEAR MISSES AND UNPLANNED OCCURRENCES

Activities reported 62 near misses (50 crane and 12 rigging) and 36 unplanned occurrences (25 crane and 6 rigging). Near miss reporting decreased slightly over the first quarter. However, unplanned occurrence reports exceeded the first quarter totals. A review of crane near miss reports identified a trend of issues with loads to be lifted that were still attached to structures or components. These potential overloads and/or damaged equipment were averted at the last minute by intervention of outside personnel/supervision. Some other notable crane near misses continue to be miss-spooling of cranes caused by improper operation. An example of a good near miss was identified when a forklift being used to lift a load was nearly overloaded when a spreader beam was not secured to the forklift blades and was out of radius for the load chart capacity.

Weight handling program managers, operations supervisors, 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. Accident reports submitted this quarter identified an increase in personnel injuries.

The goal of every mature weight handling program should be zero SIGNIFICANT accidents. Identification of poor work practices in crane and rigging operations and maintenance, inadequate briefings, and inadequate technical documents should be identified in activity weight handling monitor (observation) programs. If you concentrate on the small details of your weight handling operations, there is little room for larger significant events to find your activity. Be proactive and set the right expectations for your workforce.

CRANE SAFETY ADVISORIES 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 231 – WESTMONT PORTAL CRANE DESIGN DEFICIENCY ON ROTATE AND TRAVEL FUNCTIONS

1. BACKGROUND:

A. The purpose of this CSA is to inform activities of a design deficiency on the rotate and travel functions of 60-ton Westmont Portal cranes. An activity recently reported that a Westmont Portal crane rotated in the opposite direction from which it was commanded. Further investigation identified that a failure mode existed in the rotate and travel functions whereby if the single directional control relay failed open or closed the crane would only rotate in one direction regardless of the direction it was commanded. This design deficiency is applicable to all travel and rotate functions on the 60-ton Westmont portal cranes and hoists that utilize Mentor MP drives on the 60-ton Westmont portal cranes.

2. DIRECTION:

A. Until a design repair is developed, tested, and installed, activities with cranes as described in paragraph 1.A, shall immediately curtail operations such that none of the following lifts are performed: lifts governed by reference A, lifts of higher level radioactive material per references B and C, personnel, constrained or where binding may occur, and complex.

B. Prior to any operations not excluded by paragraph 2.A., with cranes as described in paragraph 1.A, activities shall take appropriate actions to ensure all lift team members are briefed of the operational consequences of the design deficiency, appropriate crane operations required to verify correct movement, understand the actions to be taken in case of improper initial direction of movement, appropriate clearances to maintain in case of improper movement, and any additional safety precautions that are required. Additionally, activities shall install a placard or caution tag in the operator's cab to indicate that if improper movement is detected the operator shall immediately return the controller to the neutral position, cease operations, and notify appropriate supervision.

C. NAVCRANECEN will be reviewing the design repair via the crane alteration request process and will provide updated information and guidance as a revision of this CSA.

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CSA 232 – RECALL OF SQUARE D NEMA 3R SAFETY SWITCHES MANUFACTURED BETWEEN 2014 AND 2018

1. BACKGROUND:

A. The purpose of this CSA is to inform activities of a potential deficiency involving Square D brand general duty 30 & 60A, 120/240-volt, 2-pole and 3-pole NEMA 3R safety switches. Reference A is Schneider Electric's recall notification indicating that certain Square D NEMA 3R safety switches may allow the power to stay on when the safety switch handle is in the OFF position posing an electrical hazard to users.

2. DIRECTION:

A. Within the next 30 days, all activities are to review their crane/hoist inventory and spare parts inventory to identify all Square D safety switches with the date code and catalog number identified in paragraph 1.B.

B. For safety switches identified as being part of the recall, activities shall immediately remove cranes/hoist utilizing this equipment from service until appropriate inspections have been performed in accordance with paragraph 1.C and the safety switch is verified as operating satisfactorily.

C. Activities that identify faulty safety switches, shall contact Schneider Electric for a free replacement safety switch and support to install the replacement switch. Schneider Electric can be contacted at phone number 877-672-1953 or http://www.schneider-electric.com/ for more information.

WEIGHT HANDLING TRAINING AND SAFETY BRIEFS

Weight Handling Training and Safety Briefs (WHTBs and WHSBs) 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 Safety or Training 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 WHTB distribution is nfsh ncc crane corner@navy.mil.

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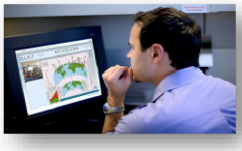
Navy Shore Weight Handling Training Brief!

Title: Revised NAVFAC P-307 Training Course Now Available!
Target Audience: Load Test Directors, Test Team Personnel, Certifying Officials

Updated
Load Test Director, NCC-LTD-03
course
is now available



Online course access information and course descriptions are available at:
http://www.navfac.navy.mil/ncc
via the Training link

Use the Navy eLearning (NeL) direct link:
https://learning.nel.navy.mil
to access NAVFAC P-307 online courses

A new version of the NAVFAC P-307 **Load Test Director** training course, NCC-LTD-03, is now available on Navy eLearning (NeL). This substantial revision restructured and reformatted information for improved delivery and to reflect current requirements. The NCC Training web-page provides a description of changes. NCC-LTD-03 replaces NCC-LTD-02. Personnel currently enrolled in NCC-LTD-02 should withdraw and enroll in NCC-LTD-03.

The NAVFAC P-307 Load Test Director course is required training for load test directors of Navy shore-based cranes. Current load test directors will want to review this material to update their knowledge and familiarize themselves with the latest information

- TARGET AUDIENCE: New and prospective load test directors.
- SYNOPSIS: Load Test Director is designed to acquaint personnel with Navy requirements for the safe load testing of Navy weight handling equipment and provide a knowledge base on which to build upon with on-the-job experience. Emphasis is placed on personnel and equipment safety. Trainees will review the NAVFAC P-307 manual and be introduced to the Navy crane certification program and its associated documentation and procedural requirements. Trainees will learn how to prepare for and conduct the various types of crane tests and how to calculate crane capacities, weight deductions, and test load values.
- PREREQUISITE: In addition to NCC-LTD-03, Load Test Director candidates must complete the applicable NAVFAC P-307 crane safety course for the type(s) of crane(s) for which they will be designated to test.

Note: Load Test Directors must be designated in writing by the Certifying Official.

23 May 2018 | **Training** | *Navy Crane Center 18-T-03*

Navy Shore Weight Handling Training Brief!

Title: 2016 NAVFAC P-307 Revision – Test Loads
Target Audience: Weight Handling Program Test and Certification Personnel

Since July 2017 seven overload accidents (four crane and three rigging) have occurred as a result of using outdated test requirements or incorrectly sized test loads (on the upper end of the test load range).

NAVFAC P-307 paragraph 4.7.1 contains requirements for test loads and test load tolerances for cranes, some of which were revised in 2016. While the nominal test load for many cranes remains unchanged (125%), there were several significant changes including:

- The nominal test load for mobile cranes, category 4 cranes, mobile boat hoists, rubber-tired gantry cranes, aircraft crash cranes, and locomotive cranes was reduced from 105% to 100%.
- The nominal test load for third party certified mobile cranes was changed to 110% of rated capacity.
- The test load tolerance for all crane test loads was changed to +0%/-5% of the nominal test load from +5%/-0%.

NAVFAC P-307, paragraph 14.4.1 contains requirements for test load tolerances for cranes, crane structures, hoists/winches, portable floor cranes, portable gantry/A-frames, and trolleys. This includes a change of the test load tolerance to +0%/-5% from +5%/-0% (of the nominal test load) for all cranes, crane structures, hoists/winches, portable floor cranes, portable gantry/A-frames, and trolleys.

The NAVFAC P-307 Load Test Director training course, NCC-LTD-03, is available via Navy eLearning and contains the latest requirements.

125%: Except as noted in NAVFAC P-307, the following cranes: portal, floating, tower, hammerhead, derrick, bridge, wall, gantry, cantilever gantry, semi-gantry, portable gantry or A-frame with a permanently mounted hoist, jib, pillar, pillar jib, monorail, davit, and fixed overhead hoist…shall be tested at a nominal test load value of 125% of their rated capacity. The actual test load shall be within +0%/-5% of the nominal test load value.

100%: Except as noted in NAVFAC P-307, the following cranes: mobile, locomotive, aircraft crash, mobile boat hoist, rubber-tired gantry, and category 4…shall be tested at a nominal test load value of 100% of their rated capacity. The actual test load shall be within +0%/-5% of the nominal test load value.

110%: When any of the cranes normally tested at 100 percent become third party certified, the nominal test load value shall be 110% of their rated capacity. The actual test load shall be within +0%/-5% of that nominal test load value.

Calculate total test loads for specific cranes, tests, and configurations. The total test load may include…

- Rigging gear
- Ancillary devices
- Hooks, blocks, wire rope
- Below-the-hook lifting devices
- Test weights

21 June 2018 | **Training** | *Navy Crane Center 18-T-04*

Navy Shore Weight Handling Safety Brief!

Title: Damaged Rigging Gear
Target Audience: Weight Handling Program Personnel

24 April 2018

During several recent weight handling program evaluations, damaged rigging gear was found in a gear room or locker and readily available for use.

NAVFAC P-307, paragraph 14.4 requires unsatisfactory equipment and gear be removed from service and disposed of or repaired. Although some gear is removed from service due to normal wear, occasionally, equipment and gear is unsatisfactory as a result of a crane or rigging accident. In all cases, the activity is required to determine if the damage was due to a crane or rigging accident and, if so, ensure that the accident is investigated and reported in accordance with NAVFAC P-307, section 12.

To better identify damaged gear and to prevent it from being reintroduced in to the workplace:

- Per NAVFAC P-307, paragraph 14.4.2, post use inspections of rigging gear is highly recommended to ensure no damage has occurred during the operation.
- When damaged, gear is required to be removed from service and separated from usable gear.
- Conduct an investigation to determine how and why it was damaged. This also assists in helping to identify poor rigging practices or poor technical direction that may have contributed to the gear or equipment becoming damaged.

When damage is not identified right away, some methods may be used to help identify root causes for gear that is found damaged after the fact.

- Understand why post-use inspections are not catching the damage.
- Determine if the activity's monitor program is identifying similar trends.
- Review the gear check-in/out records for the last user.
- Interview user and other personnel involved in the work.
- Determine if rigging gear was used for a specific process. If so, review the work process to identify potential improvements or alternative work techniques.
- Investigate the work area(s) for indications of other damage and report, as necessary.
- Review rigging gear storage and identify improvements to eliminate the potential for damage.

SAFETY

Navy Crane Center 18-S-03

Navy Shore Weight Handling Safety Brief!

Title: PINCH POINT HAZARDS
Target Audience: ALL WEIGHT HANDLING PROGRAM PERSONNEL

Pinch Point is defined as, "any point at which it is possible for a person or part of a person's body to be caught between a moving and stationary object(s)."

Unguarded Bridge Crane Brake

Rigging a Component

Unguarded Swing Radius on Crane

16 May 2018

Over the past three months, several weight handling accidents, near misses, or unplanned occurrences have been reported that involved employees placing their whole body or extremities in or near a pinch point, with one event resulting in a significant injury.

Pinch point dangers are commonly associated with rigging and crane operations; however, pinch point injuries can just as easily occur during maintenance, inspection, testing, etc. You can minimize the potential for "pinch point" related injuries by:

- **Identifying objects** in the crane or rigging envelope or the maintenance area that move or are **capable of moving**. Ask yourself, "What will happen if this moves? Will I be in the path of that movement?" Avoid putting your body, hands, fingers, toes, or feet in pinch points.
- **Being aware of pinch points created** by objects that move and come into direct or close contact with relatively fixed objects (e.g., loads in close proximity to bulkheads or other fixed equipment, loads that are swept by the rigging, suspended loads near fixed or mobile equipment). Ask yourself, "If this load moves or shifts unexpectedly, will I be in the way?"
- **Never placing yourself or any part of your body in a potential pinch point** area unless protective measures (e.g., lock-out/tag-out, blocking) are utilized.
- **Body positioning should be discussed at all pre-job briefs.** At no time should you need to position your body or an extremity in a pinch point. If the job cannot be performed without having to place yourself in a pinch point, supervision needs to be informed and proper controls put in place.

SAFETY

Navy Crane Center 18-S-04

Navy Shore **Weight Handling Safety** Brief!

Title: THREADED ATTACHMENTS
Target Audience: ALL WEIGHT HANDLING PROGRAM PERSONNEL

A recent crane accident was attributed to a threaded lifting attachment pulling out causing the load to drop to the ground. NAVFAC P-307, paragraph 14.4.2 requires equipment to be visually inspected by the user prior to use to verify rated load, marking, condition, and inspection status. In this specific event, the threaded attachment was not verified hand tight prior to lifting.

- ❑ **Prior to lifting any component with a threaded attachment, the crane team should verify all attachments are installed with the shoulder flush with the mounting surface and in the plane of the pull, unless approved by activity engineering.**
- ❑ **In the case of lifting attachments, the crane team should verify proper engagement of threaded attachments, no loose fitting components, and no evidence of pre-existing damage.**

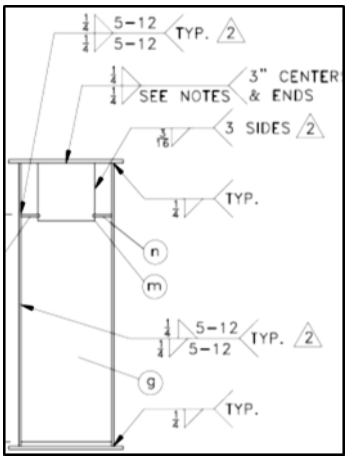
If the attachments do not fit correctly on the component to be lifted or have evidence of previous damage, do not lift the component.

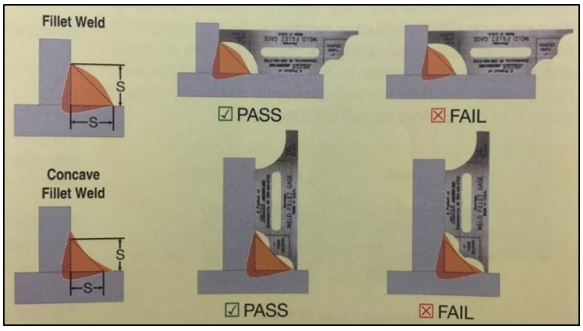
4 June 2018 **SAFETY** *Navy Crane Center* 18-S-05

DID YOU KNOW?
Common Issues in Fillet Welds

Fillet welds are the most common weld type for structural connections, particularly in cranes, because of their relatively low cost and easy fit-up. A typical plate box girder detail is shown at right with fillet welds connecting the webs and flanges. The fillet weld has many advantages such as the high level of visibility a typical fillet weld joint provides. This lends fillet welds to easy and cost-effective inspection techniques, most commonly, visual inspection (VT). Because of the commonality of fillet welds and NCC's inherent need for quality, this article touches on two of the common issues found in field inspections of fillet welds: size and porosity.

Here are examples of fillet weld gages being used to measure fillet welds. A typical fillet weld gage will have one end with a "single wave" profile and one end with a "double wave" profile. The "single" side is intended for convex welds where the limiting dimensions of concern are the legs (dimension S). A satisfactory convex fillet weld will at a minimum contact the gage at the top while the toe will extend at least to the black line on the gage. The "double" side is intended for concave welds and measures the effective throat (dimension E). For concave welds, the middle flat of the gage should contact the weld while the toes should extend beyond the black lines on the gage. It is equally important to consider the weld standard specified in a contract document when determining if a weld is satisfactory.



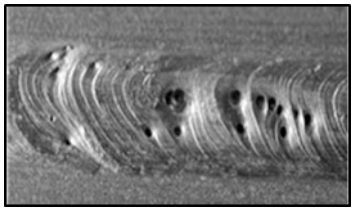


For example, AWS D1.1 and D14.1 both permit welds to be slightly undersized as long as the undersized area does not exceed 10% of the total length or occur at the ends of a weld length. In these codes, permissible undersizing is up to ⅛" depending on the specified weld size. .

These discontinuities may not be considered allowable in other standards. One additional note about verifying weld sizes is that in some countries, weld sizes on drawings are specified by the throat rather than the leg size so again, consideration must be given to the standards in the region you are working.

Another common issue in fillet welds is porosity. Porosity can occur for a number of reasons such as insufficient shielding (common in the windy conditions of field welding), welding over mill scale and grease, and carrying a short or long arc length. Like weld undersizing, it may not look pretty, but minor porosity is acceptable by many codes including AWS D1.1 and D14.1. The degree of acceptability will depend primarily on the code referenced in the contract documents and the type of loading the weld is subjected to. As an example, D1.1 states that for cyclicly loaded connections "the frequency of piping porosity in fillet welds shall not exceed one in each 4in of weld length and the maximum diameter shall not exceed 3/32in." There is different criteria for static connections within the same AWS code. A picture of unacceptable porosity (dark circles) in a cyclically loaded weld is shown here.

Note that both porosity and inadequate weld size are common to the industry. The presence of these deficiencies can have severe implications on the strength of a structural connection when they exceed code allowables, but correcting them are common practice and relatively easy.



DID YOU KNOW?

Large Capacity Weight Handling Multiple Award Contract

On May 31, Navy Crane Center awarded a new Large Capacity Weight Handling Multiple Award Contract (WHEMAC). A synopsis of the award is as follows:

Advanced Crane Technologies, LLC (small business), Reading, Pennsylvania 19606 (N62470 -18-D-2014); Crane Technologies Group, Inc. (small business), Rochester Hills, Michigan 48309 (N62470-18-D-2015); Heco-Pacific Manufacturing, Inc. (small business), Union City, California 94587 (N62470-18-D-2016); Piedmont Hoist and Crane, Inc. (small business), Colfax, North Carolina 27235 (N62470-18-D-2017); and Somatex, Inc. (small business), Detroit, Maine 04929 (N62470-18-D-2018), are each being awarded an indefinite-delivery indefinite-quantity multiple award contract for ordering new, and overhauling existing, weight handling equipment located primarily within Navy, Marine Corps, and other federal activities worldwide.

The maximum dollar value including the base period and four option years for all five contracts combined is $40,000,000. Crane Technologies Group, Inc. is being awarded the initial delivery order at $1,695,773 for the design, fabrication, installation, and testing of one 100-ton double girder, molten metal handling, cab operated overhead electric traveling crane with a 40-ton auxiliary hoist at Naval Foundry and Propeller Center Philadelphia, Naval Shipyard, Building 20, Philadelphia, Pennsylvania.

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 nfsh_ncc_crane_corner@navy.mil.