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A WORD FROM TOPSIDE

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Inside this issue:

A Word From Topside	1
Tip of the Spear	2
Summary of Weight Handling Equipment Accidents, Third Quarter, FY21	4
Weight Handling Program Briefs	6
Soft Foot Article	11
Weight Handling Program Safety Videos	13
Share Your Success	13

Often, the focus of the "Word from Topside" is on recent events or trends affecting the Navy's weight handling program. In addition to Navy Crane Center's oversight and regulatory functions, we are also responsible for establishing acquisition policy and procuring most of the Navy's weight handling equipment (WHE). As is the case with many of your team's workloads, crane procurement and overhaul requests have steadily increased in recent years, in both numbers and complexity of cranes requested. While several actions have been taken to improve workload forecasting and resource alignment to improve efficiency, increased engagement with end users and facility support personnel is required to mitigate potential diminishing capacity. Early and frequent engagement from activity weight handling program managers and construction project managers will enable continued success in providing safe and reliable weight handling equipment to the shore establishment.

As noted above, Navy Crane Center establishes policy for acquisition of Navy shore-based weight handling equipment, as codified in Navy Crane Center Instruction (NAVCRANECENINST) 11450.1. The instruction identifies specific types and capacities of WHE that we are required to procure, including NAVFAC P-307 category 1 cranes (except for mobile cranes), cranes with capacities of 10-tons or greater, and cranes used in certain specified applications, such as ordnance handling. The latest revision, 11450.1C, issued July 2019, added,

among other requirements, the request for notification three years in advance of any WHE requiring Navy Crane Center procurement. Additionally, the instruction notes that schedules may be negatively affected for requests received less than nine months prior to intended release for bid. Timely notification allows for improved forecasting of impending workload to ensure necessary resourcing is in place and support prioritization of efforts.

Activities may initiate a procurement request through submission of a WHE Procurement Request form, which is available on Navy Crane Center's website, to the Project Management Director at nfsh_ncc_project_management@navy.mil. Once the form is received, a work induction board is held and a project manager is assigned who will review the provided information and work to develop an initial proposed schedule and cost estimate. The form requests several key pieces of information that are needed upfront prior to contract award to help mitigate potential project delays and cost impacts. In particular, some specific items that have historically resulted in schedule and cost impacts include:

Available Ground Loading - Allowable ground loading at the site for equipment used to install new cranes. In some instances, ground loading information was not provided until well after contract award causing late changes to the contractor's installation plans.

Crane Rail Alignment - A satisfactory crane rail survey is required no more than three years prior to contract award. For new facility projects, the requirement for a survey must be included in the facility contract. The survey shall indicate satisfactory condition to the applicable standard for the type of crane (e.g., CMAA 70 tolerances for top running bridge cranes). Navy Crane Center will not release a specification for bid until notification of a satisfactory rail survey.

Funding - Specification development cannot be released for bid without a promise to pay in the amount of the independent government estimate. While the final estimate may still be pending, sources for funds to cover the crane costs and labor are needed to ensure timely transfer of funds to not delay contract award.

In some situations, there are recognized benefits for having activities self-procure cranes that Navy Crane Center would typically be responsible to procure, such as inclusion of bridge cranes in a new facility MILCON. NAVCRANECENINST 11450.1C provides an allowance for activities to request a waiver for self-procurement. In cases where a waiver will be sought, it is all the more important to meet the requested deadlines for notification of upcoming procurement needs. Advance notification allows time for discussion between the requestor and Navy Crane Center regarding whether a waiver is the best approach, and what conditions will need to be applied to the waiver, which will affect pre- and post-award

requirements, including review and approval of the technical specification. Having these discussions early in the process helps ensure specifications and schedules are built to accommodate the requirements imposed to include the response times for our review.

As a reminder, NAVFAC P-307, paragraph 2.7 requires all Navy activities to have a crane replacement and modernization plan for their category 1, 2, and critical category 3 cranes, as a minimum. This plan is the ideal location to document your intermediate and long-range plans for needed crane procurement and overhaul, while also taking into account the lead times needed for planning, funding, and execution of your projects.

As we continue to gain efficiencies to meet the increased acquisition workload, early and frequent open communication between activity program management and Navy Crane Center project management is essential to ensure successful execution. To that end, as we continually strive to improve, if at any time you identify a concern or a potential improvement, I encourage you to let us know through your activity's management, so that we may review and incorporate any lessons learned to evolve our processes and gain efficiencies. Your input is vital in supplementing the lessons learned we capture, to ensure continued success in meeting the weight handling acquisition needs of the shore establishment.

TIP OF THE SPEAR FOURTH QUARTER FY21 EVALUATION SUMMARY

Due the ongoing restrictions in travel and concern for the health of our personnel, as well as that of activity personnel, most evaluations in FY21 were performed remotely. Remote reviews were limited to a review of activity-provided program management information, effectiveness of corrective actions taken since the previous evaluation, and discussions with activity supervision and management. Since the reviews did not cover all areas of an activity's weight handling program, the overall grade of satisfactory could not be provided; however, one program was determined unsatisfactory from the documentation submitted and discussions during the review.

Nineteen Navy activities were given program reviews.

With the continued easing of restrictions due to the pandemic in the fourth quarter, Navy Crane Center performed full evaluations of 23 activity programs. Twenty-one programs were determined satisfactory and 2 were marginally satisfactory.

Only 10 cranes were inspected and 9 cranes were satisfactory for evaluation purposes.

REVIEW ITEMS

An essential aspect of a safe weight handling program is an effective monitor program.

An effective monitor program results 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.

Many of the activities reviewed showed improvement in their monitor programs, but still have room for improvement, either in identifying the almost inevitable unsafe practices, near misses, and lower-threshold accidents, or in monitoring non-operational functions, such as maintenance, inspection, and testing. Other activities are further behind or have not started this NAVFAC P-307-required function. Monitor programs needing further improvement were reported for all of the programs evaluated/reviewed.

At the same time, and as a result of weak monitor programs, issues with self-assessments were noted in 16 activity programs. A self-critical self-assessment, backed up by documented metrics, is a sign of a forward-looking mature weight handling program.

Issues with the self-assessment were noted in 22 of the reviews. A self-critical self-assessment, backed up by documented metrics, is a sign of a forward-looking mature weight handling program.

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 10 weight handling programs identified this condition.

Common Review Items (three or more items):

- Lack of monitor program or established program that needs improvement or does not cover all program elements – 41 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 – 18 items.

- Lack of (or low number of) lower order crane or rigging accident reports and near miss reports – 14 items.

- Inspection and certification documentation errors – 14 items.

- Lack of, ineffective, or insufficient crane replacement/modernization plan – 9 items.

- Local WH instruction/SOPs non-existent or inadequate – 8 items.

- ODCLs/OMCLs and simulated lifts performed incorrectly or not performed – 7 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.) – 6 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, PPE not utilized) – 6 items.

- Rigging gear, containers, brows, test weights, etc., not marked properly or marking not understood by riggers (including illegible marking, mismatched components, SPS vs GPS, pin diameter not marked on alternate yarn roundslings) – 5 items.

- Poor program management and oversight (including lack of a program manager) – 5 items.

- Lack of leading metrics/metrics not being properly analyzed – 4 items.

- Damaged/deficient equipment found in walk-through – 4 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) – 4 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) – 4 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) – 4 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) – 4 items.

SUMMARY OF WEIGHT HANDLING EQUIPMENT ACCIDENTS THIRD QUARTER FY21

The purpose of this message is to disseminate and share lessons learned from select shore activity weight handling accidents, near misses, and other unplanned occurrences so that similar events can be avoided and overall safety and efficiency of operations can be improved.

For the third quarter FY21, 61 Navy weight handling accidents (52 crane and 9 rigging) were reported, as compared to 56 in the second quarter. Significant rigging accidents decreased from 4 to 2 in the third quarter, with one being an OPNAV class 'C' reportable injury.

Significant crane accidents were unchanged at 7, and none were OPNAV class 'C' reportable accidents. As discussed in paragraph 8, near miss reporting in the third quarter remained consistent with second quarter totals. In addition, 3 significant contractor crane accidents were reported, 1 less than what was reported in the second quarter. These accidents included a pinch point injury (broken leg), a collision resulting in substantial property damage, and a dropped load. Weight handling contractor oversight personnel reported 6 contractor crane near misses, a decrease from the 17 reported in the second quarter.

INJURIES

Two accidents with injuries were reported, one crane accident and one rigging accident. A rigger's hand was injured when an auxiliary

saltwater pump component shifted in the rigging and caught the rigger's hand between the pump and the ship's foundation. The individual experienced lost workdays during recovery and returned to work on limited duty. An electrician's hand was injured when caught between the ground and a shore power cable being lowered by the crane.

Lessons Learned: Investigation of both events identified that management and supervision did not ensure that personnel clearly understood their positions and roles within the active operating envelope, and rigging personnel did not establish adequate communications or maintain visibility of the load. In the event involving the saltwater pump, inadequate rigging support was a contributing factor. Multiple rigger turnovers occurred among the crew of riggers until the fourth assigned rigger made the determination to continue without a second rigger on-site. The rigger was unfamiliar with the rigging configuration and made incorrect adjustments to the load resulting in the load shifting. In the event involving the shore power cable, the ship-to-shore electrician was inexperienced and lacked training on assisting with overhead lifting operations. The crane team did not witness the injury and reporting of the injury occurred five days after the event. Navy Crane Center issued weight handling program brief (WHPB) 21-16, Pinch Points and Hand Injuries, to increase awareness of pinch points and mitigate potential hand injuries.

DROPPED LOADS

Three dropped load accidents were reported (two crane and one rigging). Paragraph 4 describes the dropped saltwater pump component. During acceptance testing of a new category 3 crane, the wire rope parted at the hook causing the test weights to drop approximately six inches to the floor. While conducting a stability check of a pallet of ship stores, the load (wrapped food) toppled over.

Lessons Learned: With regard to the parted wire rope, an inadequate acceptance inspection of a newly installed hoist and misunderstanding of the original equipment manufacturer (OEM) specifications for testing overloaded and subsequently parted the wire rope. Investigation identified that the hoist was tested at 179 percent of the safe working load. Additionally, the hook capacity was overlooked during planning of the acceptance test and records review, and the wire rope did not meet the design factor required by ASME B30.16 nor was the crane capacity properly down-rated. The activity is working with Navy Crane Center's In-Service Engineering Division on redesign as required. In the accident involving the loaded pallet, the rigger recognized that the pallet bar was not properly seated and rather than lowering and resetting the load, attempted to reseat the pallet bar by manually manipulating (kicking) the pallet bar while the load was suspended.

OVERLOADS

Five overload accidents were reported, four crane and one rigging. Paragraph 5 describes the overload during acceptance testing of a category 3 crane. During crane troubleshooting, a crane's 4,000-pound capacity was overloaded by 32 pounds. The maximum radius was exceeded during mobile crane load testing, resulting in an overload. The whip hoist of a portal crane and the associated rigging gear attached to the hoist were overloaded during a lift of a lifting fixture. During rigging work to install a propulsion motor, a section of wire rope lashing suspending the motor was overloaded.

Lessons Learned: The overload during troubleshooting occurred as a result of not factoring the weight of all the rigging gear used into the weight of the load. In the mobile crane overload, a low spot in the test area and excessive play in the outrigger (due to poor wear pad condition) resulted in the left rear outrigger rising approximately one inch off the ground, and

the test weight moving approximately six inches beyond the pre-measured radius mark.

Two conflicting weights were provided for the fixture being lifted by the portal crane, and a load indicating device and predetermined stopping point were not utilized. The lead rigger or supervisor did not verify the size and working load limit of the rigging gear for the propulsion motor during pre-staging of rigging gear. Additionally, at the time the overload occurred, the load had been suspended from the staged rigging by an unknown person. Navy Crane Center issued WHPB 21-12, Preventing Overloads, to reinforce the importance of understanding the weight of the load and the forces applied to the rigging configuration.

TWO-BLOCK

One two-block accident was reported. The auxiliary hoist block on a mobile crane was two-blocked when the operator-in-training engaged the wrong control lever.

Lessons Learned: The operator was not familiar with the functions of the crane and inadvertently engaged the auxiliary hoist in the up direction, without direction. When recognized by the rigger-in-charge, an all stop was called but it was too late to prevent damage to the auxiliary hoist wire rope and sheaves. The operator had not received performance training with a licensed operator prior to performing operational lifts.

NEAR MISSES

Activities reported 99 near misses (86 crane and 13 rigging) in the third quarter. Reporting was comparable to the 107 near misses reported in the second quarter. The level of near miss reporting is indicative of the level of oversight, a major contributor in reducing the occurrence of significant accidents. Navy Crane Center continued to recognize activities who reported lessons learned via the near miss reporting process, i.e., those where personal intervention prevented accidents, by issuing WHPBs 21-14 and 21-17.

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 management and supervisory oversight and to identify issues at the lowest possible level to achieve the goal of zero significant accidents. I encourage you to also challenge other weight handling professionals to continue, and all others to join, in their efforts on educating 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 and stress the importance of situational awareness and utilizing thorough and interactive pre-job briefs.

WEIGHT HANDLING PROGRAM BRIEFS

Weight 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.

Navy Shore Weight Handling Program Brief

Title: Execution of Weight Handling Equipment Maintenance & Inspection
Target Audience: Weight Handling Engineers, Inspectors, and Maintenance Personnel

As discussed in the recent Word from Topside article (Crane Corner 110th edition), and in WHPB 21-10, recent significant maintenance errors occurred as a result of poor maintenance processes which resulted in major equipment damage and impact to the Navy mission. As with any significant event, lessons learned can be applied Navy-wide to mitigate the chance of similar events occurring in the future.

Don't Speculate on the Deck Plate!

Are you currently qualified to perform work on Weight Handling Equipment? Has a knowledgeable supervisor, manager, or designated representative validated completion of training and assessed your knowledge and skill for the work to be performed?

Does your work document...

- Identify specific system and location?
- Involving work on LB/LC or OSD? Has it been reviewed and signed by the inspector or engineer prior to starting work?
- Identify the appropriate test requirements?
- Clearly describe the work to be performed?
- Contain in-process inspections for those items where it is not practical after completion of work?
- Indicate the recertification requirement; if the crane is not undergoing inspection and load test?



Who should document observations during in-process work?

All Personnel in Maintenance, Inspection, Test, Certification and Engineering

Your input is invaluable to identify and correct deficiencies, poor work practices and to recommend improvements in the execution of work.

Don't Forget, Document!

3 August 2021

Navy Crane Center

WHPB 21-22

Navy Shore Weight Handling Program Brief

Title: Supervisors' Human Factors and Recent Lessons Learned
Target Audience: All Weight Handling Program Supervisors and Activity Management

Weight handling supervisors in all areas of the program (e.g., operations, rigging, maintenance, inspection, test and engineering) play a key role to ensure safe and reliable weight handling services are maintained. While not every crane or rigging operation, maintenance evolution, or engineering procedure/process development will have direct supervision on site, every supervisor still has a role in any accident or deficiency that may occur. Even though a precondition may have enabled the decision that led to an unsafe act which caused the accident, the supervisor has a role in preventing preconditions prior to proceeding with work.

What was the supervisor's role in enabling the decision that led to the accident?

Inadequate Supervision

- Oversight/Leadership accepts unsafe or sub par standards
- Supervision fails to lead by example (mentoring)
- Does not provide feedback/lessons learned to work force

Planned Inappropriate Operations

- Personnel assigned not qualified for tasking
- No risk assessment for the job
- Personnel assigned are trained, but not proficient or have limited experience
- Accepts unsafe risks without need

Failure to Correct Known Problem

- Living with personnel or equipment deficiencies

Supervisory Violations

- Directs or allows violations to occur

Recent Lessons Learned

- Several instances have been reported of accidents, near misses, or unplanned occurrences where the root cause was in part due to personnel lacking proficiency. Training does not equal proficiency. NAVFAC P-307, Appendix N states that a knowledgeable supervisor, manager, or designated activity representative shall ensure individuals demonstrate adequate knowledge and/or skill of their trade, as provided in Appendix N. When evaluating performance testing or personnel competencies, the individual's performance shall be the deciding factor, independent of the individual's experience, background, and history.
- During maintenance work to replace a gearbox seal on the main hoist of a bridge crane, the main hoist block/wire rope rapidly lowered in an uncontrolled manner and struck a wooden riser pattern stored under the work area. Prior to this significant unplanned occurrence, supervisors directed the gearbox work to be performed without a detailed work order and assumed assigned personnel understood work to be performed, despite no documentation. At no point did any supervisor, mechanic, or engineer recognize the component as a load bearing component.
- During installation of a shipboard battery, the battery released from the lifting attachment and fell on the foot of a rigger, injuring the rigger's foot. Two preconditions were accepted or directed by supervision when the direction of the work document to remove the battery well hatches was not followed and again when the known equipment deficiency within the rigging configuration (loosening set screw in the davit collar) was accepted.

10 August 2021

Navy Crane Center

WHPB 21-23

Navy Shore Weight Handling Program Brief

Title: Monitor Program and the Gathering of Tangible Deficiency Data
Target Audience: Weight Handling Program Management and Oversight Personnel

A key aspect of the monitor program is to focus attention on tangible deficiencies during in-process weight handling operations, as well as maintenance, inspection, and testing of cranes and rigging equipment. However, **all areas of the program require monitoring**, including engineering and training. While management participation is mandatory, the information provided by the personnel performing the work is invaluable in capturing the most pertinent tangible data. The use of shortened or pocket sized monitor forms and monitor form drop boxes may assist in gathering this data from personnel in the field.

The key concept is to identify and correct problems before they result in accidents or equipment breakdowns.

FIND IT, FIX IT, DOCUMENT IT, TREND IT

The critical purpose is to identify trends for **LESSONS LEARNED** and **PROCESS IMPROVEMENT**.

The monitor program is **not** intended to be used as a **punitive or disciplinary tool**.

The primary emphasis is to **OBSERVE IN-PROCESS WORK** and the identification of tangible deficiencies.

Examples of tangible deficiencies include:

Crane and Rigging Operations		Maintenance, Inspection, and Testing	
• Poor Load Control	• Supervisor Engaged In Work	• Inadequate Removal and Reconnection Forms	• Improper Tooling
• Inattentive Crane Team Members	• Crane Movement Without Direction	• Inadequate Instructions & Procedural Violations	• Inadequate Foreign Material Control
• Lack of, or Inadequate Sling Protection	• Rigger-in-charge (RIC) Not In Overall Control of the Evolution	• Wrong Type Of Material Used	• Undocumented Work Performed

10 August 2021

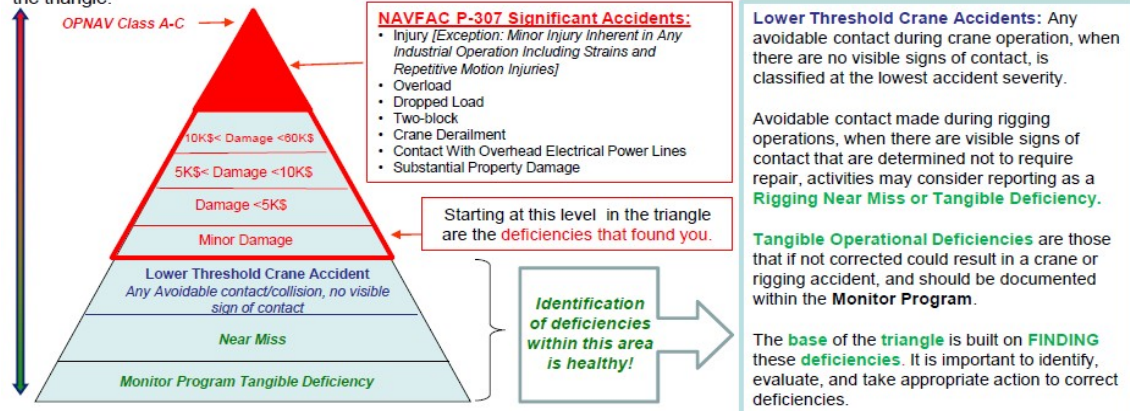
Navy Crane Center

WHPB 21-24

Navy Shore Weight Handling Program Brief

Title: Accident Recognition and the Accident Severity Triangle
Target Audience: Weight Handling Program and Oversight Personnel

NAVFAC P-307 (Section 12) accident definitions are broad in scope to enable activities to capture all events, no matter how minor. The Accident Triangle is used to demonstrate the progression of a **healthy** weight handling program. The **goal** of any organization is to prevent pinnacle events (Significant and OPNAV Class A-C) by striving to **identify deficiencies** at the **lowest possible level** of the triangle.



SUMMARY: There is always some aspect of a weight handling evolution that can be improved or done better. Do you **FIND IT, FIX IT, DOCUMENT IT, and TREND IT** or do you reside inside the Accident Severity Triangle where you react when your deficiencies find you?

16 August 2021

Navy Crane Center

WHPB-21-25

Navy Shore Weight Handling Program Brief

Title: Utilizing OEM Instructions in Servicing Specifications

Target Audience: All Weight Handling Service Provider Personnel

Incomplete servicing specifications due to failure to incorporate original equipment manufacturer (OEM) manuals and instructions can lead to unsafe situations. Activities are reminded to review all OEM literature to ensure their maintenance procedures incorporate OEM instructions and safety precautions, and include the features for their specific equipment.

Consult OEM Manuals to...

- **Develop Specification Data Sheets** per NAVFAC P-307 paragraph 3.2.1., to contain guidance and technical information needed to assist inspectors in identifying critical information (e.g., interlock switches, hydraulic circuit pressure, limit switch settings) when checking for wear, adjustments, settings, and tolerances.
- **Gather pertinent information** for developing lubrication instructions and servicing/maintenance procedures as required by P-307, paragraph 3.5., for mechanical and electrical components requiring repair, periodic adjustment, tune up, or alignment. An activity's engineering organization may approve modifications to OEM recommended programs based on activity and Navy experience and crane usage.
- **Understand** all warnings and instructions associated with stored energy (e.g., electrical, mechanical, pneumatic, potential energy) to develop **Hazardous Energy Control** precautions, such as capacitor discharge instructions, or methods to prevent unexpected lowering or rotation of components.



Limit Switch Setting



Lubrication Charts



Torque Specifications



Brake Tolerance

OEM's Supplemental Service Information

Activities shall contact the OEM or authorized distributor for supplemental service information applicable to their cranes, and, if practical, be added to the OEM's distribution list.

As directed in NAVFAC P-307, paragraph 3.2.2, when new parts or components are added to a crane, or parts or components are upgraded on a crane, activities shall contact the part or component manufacturer to obtain updated maintenance, inspection, and engineering information, if available, and the crane's equipment history file and manuals shall be appropriately updated.

16 August 2021

Navy Crane Center

WHPB 21-26

Navy Shore Weight Handling Program Brief

Title: Near Miss Lessons Learned – August 2021

Target Audience: Crane Operations, Rigging, and WHP Oversight Personnel

During recent weeks, multiple near misses have been submitted 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:

- **NAVFAC FAR EAST** – Two lessons learned to share involving alert and attentive crane operators.
 - (1) A crane operator and rigging team was attempting to remove ship's material when the signal person communicated to lower the boom over the top of the rigging team. The rigging team was unaware of the crane movement when the RIC and signal person failed to communicate. The crane operator stopped operations and communicated with the RIC to adjust the dangerous direction and then continued with the lift. Prior to crane operations, the crane team needs to monitor the crane envelope and properly communicate.
 - (2) During removal of a component from pier to barge, the signal person directed the operator to move the boom dangerously close to a rigger who was unaware of the crane movement. The crane operator stopped the operation, communicated with the RIC to adjust the dangerous direction, and continued the lift.

Crane operators are typically in the best position to observe the entire crane operating envelope. Lessons learned are to ensure your crane operators understand that they are a key and integral part of the crane team and should not perform any operation when they observe an unsafe act or when the lift is not being conducted as planned. Stop and re-brief, then document the issue!
- **NAVFAC SOUTHWEST (San Diego)** – A mechanic was stopped by the weight handling program manager while inflating mobile crane tires as the mechanic was directly in front of the tires while inflating. Additionally, the mechanic was using an air chuck and a separate gauge instead of an in-line low pressure gauge as required by OEM manual. This is a great example as to why it is important to always follow an approved written procedure of the OEM manual during maintenance.
- **NAVFAC FEAD MCBH (Hawaii)** – Contractor crane oversight personnel stopped a lift when a load was about to pass over a manned aerial platform. The worker in the manlift, along with the tagline handlers helped guide the load into position as it passed over the individual in the manlift. Personnel working under loads is one of our greatest dangers. Please stress with all of your personnel that working under loads or passing loads over personnel will not be tolerated and must not be allowed to happen.

31 August 2021

Navy Crane Center

WHPB 21-27

Navy Shore Weight Handling Program Brief

Title: Crane Operating Envelope Control

Target Audience: Crane Operators, Riggers, and Weight Handling Program Oversight Personnel

With operational tempos returning to normal, there has been increase in crane operating envelope deficiencies, including inadequate crane envelopes being established or unauthorized personnel entering the envelope during crane operations. Failure to establish and maintain an adequate crane operating envelope can expose personnel and equipment unnecessarily to risks that could ultimately result in accidents and near misses.

So, what is a Crane Operating Envelope (COE)?

NAVFAC P-307, paragraph 12.4 states "the operating envelope consists of any of the following elements: the **crane**, the **operator**, **riggers**, **signal person**, **crane walker**, and others involved in the operation, **rigging gear** between the hook and load, the **load**, the **crane's supporting structure**, and the **lift procedure**."

Hazards in the Workplace !!!



How many violations can you spot?

24 August 2021

Navy Crane Center

WHPB-21-28

❑ **Control the work area!** Inspect the COE prior to commencing operations and understand the area hazards of the specific location – crowded piers, power lines, personnel and/or vehicle traffic, busy production shops, etc. **DO NOT** except unnecessary risk! In some instances, crane teams identify/document risk but do not take actions or require the risk to be eliminated or mitigated. **Remain vigilant** before, during, and after any crane operation. **Do not become complacent** and remember, **changes can and do occur** in your COE!

❑ Establish an appropriately sized COE for the specific operation and the hazards identified. **Ask yourself, can the team control the area while safely and effectively conducting weight handling operations?**

❑ Riggers-in-Charge (RIC) must ensure the integrity of the crane operating envelope is maintained. If the RIC cannot maintain overall control of the COE due to high volume of traffic, unique obstacles, or lack of personnel, the **RIC must stop operations and contact supervision for additional support or guidance.**

❑ **Talk to each other!** Communications between crane team members is essential. All members of the crane team are responsible for controlling the COE and informing the RIC if they cannot control the COE in their area of responsibility. **Stop anytime the COE could be compromised.** Brief and re-brief as often as needed to mitigate risk. In most cases, the operator is in an outstanding position to observe most of the COE and should stop operations anytime the COE is not being properly controlled.

Navy Shore Weight Handling Program Brief

Title: Portable Floor Crane Requirements

Target Audience: All activities that procure and certify portable floor cranes



24 August 2021

Navy Crane Center

WHPB 21-29

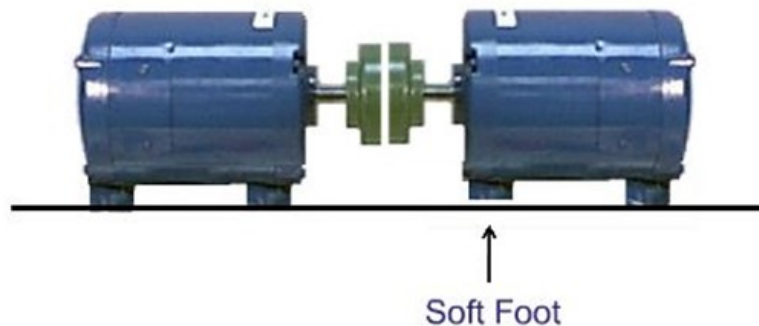
PORTABLE FLOOR/ SHOP CRANES

Navy Crane Center continues to periodically receive reports of structural failures of portable floor cranes occurring at between 100 and 125 percent of capacity. The required standard for portable floor cranes is ASME Portable Automotive Service Equipment (PASE) 2019 which requires shop cranes to be designed to be capable of performing a proof load test of up to 150% of rated capacity. PASE is an industry consensus standard but there are many lower cost shop cranes available that do not meet the design/safety standards of PASE. The following are the NAVCRANECENINST 11450.2 and NAVFAC P-307 requirements for portable floor cranes:

- NAVCRANECENINST 11450.2, Section 2-9.7 (b): Portable floor cranes shall meet ASME PASE and manufacturer's recommendations. New floor cranes should be procured with documentation that the crane meets PASE and the 150% proof load test requirement.
- NAVFAC P-307, Table 14-1: Portable floor cranes shall be **load tested to 125% (in accordance with Note:4)** every 2 years.
- NAVFAC P-307, Section 14.10: Portable floor cranes (including attachments used solely on portable floor cranes/shop cranes) shall meet the criteria of ASME PASE and OEM recommendations.
- PASE floor cranes manufactured since 2014 shall include a load limiting device in accordance ASME PASE 2-2.3: Hydraulic operated PASE shall have an internal load-limiting device that can be deactivated in preparation for the proof load test. The load-limiting device shall activate when lifting no less than 100% of rated capacity but no more than 125% of rated capacity.

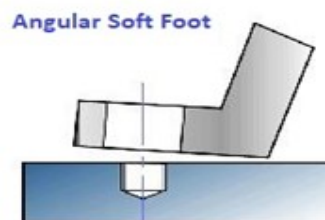
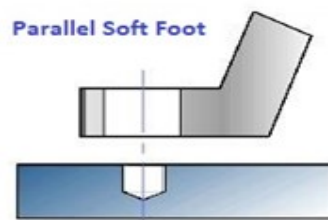
Activities that procure and/or certify portable floor cranes shall ensure that the cranes meet ASME PASE standards (or the applicable PASE/PALD standard applicable at the time of procurement if procured before NOV 2020) prior to certification of the equipment.

SOFT FOOT



The term “soft foot” is used to describe poor contact between a machine foot and its foundation. In this situation, when the mounting bolts are tightened, the machine's frame distorts as it is pulled toward the base. An overly simplistic analogy is a 4-leg chair that has one leg shorter than the other three, but beware there are causes other than simply a shorter leg. There are actually four types of soft foot and often combinations of these four:

- Parallel soft foot – a parallel gap between the machine foot and its support surface, most soft feet are not this simple.
- Angular soft foot – an angled gap between the machine foot and its support surface. Similar distortion to parallel soft foot, but harder to diagnose.
- Squishy soft foot – a damaged or weak foundation, for instance when too many shims have been added to correct a parallel soft foot or excessive corrosion or debris has built up between the machine foot and its support surface
- Induced soft foot – a result of forces exerted on the machinery by pipe strain, electrical connections or severe misalignment combined with a stiff coupling. This type of soft foot cannot be corrected with shims, and requires correcting the undue external force.



Induced Soft Foot



If soft foot is not addressed, the machine frame can be strained resulting in internal misalignment of the machine. This can eventually lead to accelerated bearing wear and shaft failure. Soft foot shall be addressed prior to performing final alignment on equipment. If it is suspected that soft foot was not properly addressed on a machine it should be corrected prior to verifying alignment.

There are four basic steps to detecting and correcting soft foot at initial installation:

1. Relieve existing stress – Ensure the surface between the machine foot and its support surface is clean and free of any rust or burrs. Use wire brush or emery cloth in needed areas. Set machine in place, install but do not tighten mounting bolts.
2. Rough Alignment – If the machine can be rocked from corner to corner, the machine foot and support surface have better contact in one area than other. Measure four points around each of the bolts and record readings.
3. Correct soft foot – Add shims based on the measurements taken earlier. Gaps may utilize full or partial shims
4. Verify correction – Use a laser alignment system or a dial indicator procedure to measure movement. If movement greater than 0.002 inch is measured, soft foot still exists. Procedures should be repeated until soft foot is eliminated

In order to prevent induction of squishy soft foot, ensure the following when correcting for other forms of soft foot:

1. Ensure foundations and machine feet are clean, de-burred and free from dents and damage to mounting locations.
2. Measure shims before placement. Due to manufacturing processes, shims are not individually checked for thickness and dimensions are not always 100% accurate. Shims over 0.050 inch are likely to have more variation in size.
3. Use clean, flat and corrosion resistant shims.
4. Full or partial shims may be needed to provide adequate stack-up of the area.
5. No more than four shims should be stacked under a single machine foot except in exceptional circumstances. Smaller numbers of thicker shims are recommended.
6. Place thin shims between thick shims. This will minimize the potential to damage the thinner shims during installation.

Minimizing soft foot the first time will ensure rotating equipment operates properly, decreases equipment failure and extends the life of the machinery. After installation, the following may be indications that soft foot issues still exist:

- Unstable alignment readings
- Indications of overheating
- Bearing damage
- Machinery vibration
- Abnormal component wear

Remember, simply adding shims to an existing component may unintentionally induce squishy soft foot. Documenting corrective actions is also key is maintaining a history of component issues.



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 set-up, 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.

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