THE CRANE CORNER

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A WORD FROM TOPSIDE

Sam Bevins

In FY02, 179 shore activity weight handling equipment (WHE) accidents were reported to the Navy Crane Center (NCC). This represents a 3 percent reduction from last year and a 41 percent reduction from our accident baseline year of FY99. More significantly, personnel injuries fell to 7 from 12 last year and from 17 in FY99. All of the injuries and most of the property damage accidents were minor in nature. A number of the accidents could have been much worse.

NCC's quarterly weight handling equipment accident summaries provide important lessons learned for significant accidents. Human errors still account for the large majority (90 percent) of the accidents. OPNAVINST 3500.39A, *Operational Risk Management* (ORM), principles should now be standard practice for each and every weight handling operation. Routine application of ORM will drive these numbers down further.

Contractor crane accidents are still a serious problem. Most of the contractor crane accidents reported were serious and included a collapsed boom, an overturned crane, a crawler crane that slid off a barge, a dropped load of sheet piling, and three serious injuries, one nearly fatal. Thorough reviews of contractor critical lift plans and surveillance of contractor crane operations by knowledgeable personnel is essential if we are going to reverse this trend.

The rate of unsatisfactory cranes found in FY02 audits was 26 percent. This was the fourth straight year of continuous improvement from our audit baseline year of FY98 when 48 percent of the audit sample cranes were unsatisfactory. Deficient brakes continued to account for 1/3 of the unsatisfactory cranes. Establishing safe brake setting ranges and improved knowledge of brake adjustments should reduce these occurrences. Load test deficiencies accounted for 15 percent of the unsatisfactory cranes, with many of the problems relating to the testing of mobile cranes. NCC distributed an instructional mobile crane load test video in FY02, which should help reduce these deficiencies. To assist activities in improving their weight handling programs, a complete review of FY02 unsatisfactory crane results and other audit findings can be found on page 9.

Inside This Issue

This year's WHE accident and audit results represent continued improvement, but we can do better. Each accident and unsatisfactory crane takes a crane out of productive service to the fleet. In these times of heightened operational tempos, weight handling support to the fleet is critical. Commanding officers of shore activities are strongly encouraged to intensify their efforts to continue these positive trends.

HAVE YOU HEARD ABOUT?

A crane closed-circuit television camera system - camera, control unit, monitor, and connecting cable - is available for installation on boom cranes to give the operator a view from directly above the load. The camera mounting plate is clamped, bolted, or welded to the boom adjacent to the sheave nest, and the camera housing is suspended on a hinge to maintain its vertical orientation as the boom angle changes. A damper against oscillations and a safety cable are included.

The camera provides a high definition view, 12-to-1 zoom, and directional control (X and Y axes) of 15 degrees (or about 45 feet) with a smooth panning motion. Anti-condensation/defrosting heater and fan ensure a clear view in all weather conditions. A stainless steel housing protects the camera, and the entire assembly weighs 18 pounds. The control unit includes large arrow buttons for directional camera movement, automatic focusing (with manual override), auto-iris (with manual override) to compensate for bright sunlight or dark spaces, and zoom capability. The 12-inch color monitor displays high-resolution images on a non-glare screen. The control unit and monitor require a 5-inch by 5-inch space in the operator's cab for mounting. The system requires a 24 VDC or 110 VAC power source.

A length of 490 feet of 2-conductor coaxial cable, insulated against electronic noise, is included with the system. Damaged cable is easy to repair. For cranes with telescopic booms, an automatic cable payout/retract housing is available. Custom-made systems with multiple cameras are also available.

The cost is about $16,500 per system for fixed-length (lattice) booms and $19,000 per system for telescopic booms.

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 ADVISORIES

CSA-111: Craft 60-Ton Portal Crane Spud Lock Limit Switches, Limit Switch Arm Failure Due to Improper Orientation of the Striker Plate.

CSA-112A: Westmont 100-Long Ton Floating Crane Motor Mounting Flange Cap Screw Failures. N3258A-W2-006A (for YD 254-257 and YD 259-261).

CSA-113: Worn Hook Block Upper Limit Switch Cotter Pins on Shawbox-Lifttech Int. Series 800 Hoists.

SHARE YOUR SUCCESS

We are always in need of articles from the field. Please share your sea stories with our editor, (610) 595-0905, fax (610) 595-0747.

FOURTH QUARTER FY02 ACCIDENT REPORT

The Navy Crane Center (NCC) disseminates crane accident lessons learned to prevent repeat accidents and improve overall crane safety. NAVFAC P-307 requires commands to submit to NCC a final, complete accident report (including corrective/preventive actions) within 30 days of an accident involving Navy-owned weight handling equipment, regardless of severity or type. In addition, contracting officers are required to forward to NCC and the host activity reports of all contractor accidents regardless of severity.

For the fourth quarter of FY02, 45 Navy and 4 contractor weight handling equipment accidents were reported. Serious accidents this quarter included three injuries, nine dropped loads, three overloads, and two two-blockings.

INJURIES

Accident: A crane operator sustained an electrical shock while operating a pendant-controlled bridge crane. He was preparing to lift an item when he accidentally inserted his fingers into a hole in the pendant control box. His fingers contacted the wires inside the control box and he received an electrical shock. The control box had been damaged prior to this operation.
Lessons Learned: Complete a pre-use check of the crane before operating it. Take damaged cranes out of service and secure them immediately. Notify supervision so that appropriate repairs can be accomplished.

Accident: A category 3 bridge crane was being used to lift a power turbine rotor (weighing 200 pounds) when the load shifted causing the sling to jump off the hook. As the load was dropping, the operator instinctively tried to catch the turbine, which caused him to injure his back. The accident report stated that the shifting of this load is a common occurrence and that the hook latch usually catches the load.
Lessons Learned: Category 3 crane operators must ensure that the load is secure and the proper rigging is used before hoisting. The hook must be centered over the load's center of gravity to prevent shifting of the load. The hook latch should never be relied upon to restrain the load from jumping off the hook.

Accident: A crane team member was injured when a monorail hoist, which was carrying a 725-pound load, rolled off the overhead track and struck him on the arm. The hoist operated on a sectional monorail system with an interlocking track connection to allow movement through a doorway. The automatic interlocking closure mechanism (which engages the connecting track when the door is open) was not operating and the crane team forgot to manually engage the connecting track prior to traveling through the doorway.
Lesson Learned: Operators of monorail hoists must inspect the travel path and verify that track interlocks, switches, etc. are properly engaged before traveling the crane.

DROPPED LOADS

Accident: A floating crane was being used to transfer a fire pump motor from its deck to the pier when the pallet, which was being hoisted without pallet bars, broke, causing the load to fall to the pier.
Lessons Learned: When lifting palleted loads, pallets should be evaluated for structural soundness. Pallet bars should be used and activities should brief their personnel on the proper use of pallet bars.

Accident: A chain hoist was being used to change a gas turbine using a hoist-adapter assembly. During this procedure, the adapter failed and the turbine fell approximately 2 1/2 feet. The shoulder eyebolt holding the adapter failed 1/4 inch into the eyebolt hole. The hole had insufficient thread depth to allow the eyebolt to seat properly.
Lessons Learned: Operators and riggers must ensure eyebolts are properly seated. In addition, machinery-type shoulder eyebolts must be installed with the shoulder flush with the mounting surface.

Accident: A portal crane was being used to hoist a hull section (weighing approximately 52,000 pounds) during ship demolition. The shape of the hull section made it necessary to allow it to roll over on its side as it

was set down for maximum stability when released. During this procedure, a portion of the load weighing approximately 680 pounds broke loose and fell 8 feet to the dry dock floor. Inspection of the load revealed that the weld connections between the two pieces were corroded. Layers of paint obscured this condition.
Lessons Learned: Prior to each lift, riggers should verify that all load components are properly secured. When visual inspections cannot determine the reliability of the component connections, component pieces should be removed prior to lifting.

Accident: A crane team was static testing the secondary hoist brake of a bridge crane with a test load of 63,028 pounds when the load lowered uncontrolled approximately 6 inches to the deck. The engineered procedure for electrically releasing the primary brake was ambiguous and both holding brakes were inadvertently released.
Lesson Learned: Load test procedures must be reviewed to ensure they are clear and unambiguous.

Accident: A mobile crane was being used to lower a 300-pound band saw into the hull of a ship. As the band saw was being lowered, the rigger had to upright the band saw to fit it through the hatch. When the saw was a few inches above the deck, the rigger noticed some slack in the sling between the half hitch and the choke. The sling was caught on a bracket, which prevented it from tightening. The rigger shook the load in an attempt to free the sling from the bracket, which caused the load to drop to the deck. After the accident, the rigger continued with the lift since he felt that the collision was so slight that there was no damage. A sailor noticed that the band saw was damaged and advised the rigger of the condition. In addition, when advised of the accident the rigger's supervisor neglected to report the accident.
Lessons Learned: Riggers must be aware of the potential consequences of trying to adjust slings when loads are suspended. Also, personnel should be instructed in the P-307 definition of a WHE accident and the requirement to halt crane operations when an accident occurs.

Accident: A floating crane was being used to apply a static load for the testing of a 6,000-pound capacity monorail trolley/hoist, which was attached to a piece of track suspended from the floating crane. The trolley was secured from traveling by wooden wedges under its wheels. During this test, the hoist load brake failed and the impact caused the wedges to loosen, allowing the trolley/hoist to roll off the track section and fall to the deck.
Lessons Learned: Loads must be properly secured when lifted. Positive track stops, rather than wooden wedges, should have been used for this test.

OVERLOADS

Accident: A 60,000-pound capacity mobile crane was overloaded while it was being load tested. The crane completed the over-the-side maximum load test with the boom at minimum radius and minimum boom length. The load test director then set the next test load at a radius he estimated to be 25 feet. This measurement was never verified. The operator attempted to lift the test load but the opposite side outriggers were lifted 6 to 8 inches off the ground. The crane operation safety director arrived while the crane's outriggers were off the ground but he did not realize the load test was being improperly conducted. In addition, the load test director had left the test envelope to talk to the safety director without first stopping the test.
Lessons Learned: Load testing mobile cranes is a hazardous operation. Load test directors must be fully cognizant of all P-307 test requirements and of the crane's limitations. Test radii must be accurately measured. The test director's attention must be fully on the load test. All other test team personnel must recognize when a safety hazard exists and stop operations when necessary.

Accident: The whip hoist of a floating crane was being used to test a series of 30 grommet slings, which were attached to each other and to a test weight on the deck. The crane's auxiliary hook was located just above the deck for prepping for another test. While a strain was placed on the grommet slings, the lead rigger gave the operator the signal to raise the auxiliary hook. The operator mistakenly raised the whip hook instead causing a grommet sling to part and several shackles to deform. In addition to overloading the slings and shackles, the whip hoist was overloaded by 6,000 pounds. In addition, the supervisor, when advised of the accident, neglected to report the accident.

Lessons Learned: Whenever a crane is being loaded, riggers and crane operators should pay full attention to the task at hand. Diverting the operator's attention and rushing the job invites trouble. In addition, operations must cease and the proper personnel must be notified whenever an accident occurs.

Accident: During the re-calibration of a crane's load moment indicator, the recorded and marked weights of two test weights were found to be incorrect. Both weights were marked as weighing 33,000 pounds. One weighed 38,607 pounds and the other 39,327 pounds. A month prior to this discovery, the crane had been load tested using these two weights and, thus, the test load exceeded the P-307 test load limit.
Lessons Learned: Test weights must be accurately weighed per P-307 and they must be marked with their actual weights.

TWO-BLOCKINGS

Accident: An operator was hoisting a shore power cable when he failed to stop the hook prior to its contacting the anti two-block device. The anti two-block switch failed causing a two-blocking. The operator was watching the tail end of the cable and not paying attention to the hook's location.
Lessons Learned: Operators should always be aware of the hook block's location and should not rely on the anti two-block device for normal stopping.

Accident: Prior to conducting an annual certification load test of a mobile crane, a crane operator mistakenly engaged the wrong lever and raised the auxiliary hook into the cable keeper. The crane's load moment indicator was in the rigging mode and the anti two-block switch was overridden. In addition, the operator had recently been operating a different model crane, which has a different controller configuration.
Lessons Learned: Operator supervisors should ensure when an operator is assigned to operate a crane that is different than a crane he/she has been regularly operating that the operator is reminded of the operating characteristics of the assigned crane.

OTHER SIGNIFICANT ACCIDENT

Accident: A mobile crane was lifting an empty fuel cell when an outrigger pad punched through the asphalt. The fuel cell swung and struck a nearby fuel truck, putting a dent in the fuel truck tank.
Lesson Learned: Where subterranean ground conditions are unknown, a policy of utilizing blocking under the outrigger pads should be instituted.

CONTRACTOR CRANE ACCIDENTS

Accident: An anti two-block counterweight block (weight 18 pounds) which was installed improperly fell 40 feet from a hydraulic mobile crane and struck a rigger in the head. Even though the rigger was wearing a hard hat he still suffered a fractured skull. The crane had been re-reeved but the counterweight block was not installed around the hoist wire rope as required.
Lessons Learned: When configuration change outs are required (e.g., re-reeving), they should only be accomplished by qualified personnel and in strict accordance with approved procedures. After the work is completed, an inspection and operational check should be performed.

Accident: An 80,000-pound capacity floating crane was holding a concrete deck section during a pier demolition. The deck section weighed approximately 27,000 pounds and was still attached to the pilings. An excavator was making final cuts on the pilings when the section freed itself and swung outboard of the crane. As the load began to swing the crane boom collapsed and fell across another barge, which was holding the demolition debris.
Lessons Learned: When conducting demolition operation where the load is still attached to the structure, the operator should always be mindful of the amount of strain that the hoist line may be experiencing. Undo strain on the hoist line may cause damage to the crane's boom. A load indicator should be installed to prevent overloading. In addition, the crane should be positioned so that the hook is centered directly over the center of gravity of the load such that when the load is released from the structure, it will not side-load the crane boom.

Accident: A mobile crane was being used to install pre-cast concrete wall panels that weighed 25,000 pounds. The lift plan called for the panel to be lifted in the horizontal position using both the main and the whip hoists, and then the whip hoist was to be raised to upend the panel to the vertical position. However, when this was done, the whip hoist, which had a capacity of 17,000 pounds, was overloaded when it took the entire weight of the panel. The overload caused the bolts holding the jib tip sheave to fail.
Lessons Learned: Qualified personnel must review lift plans. The main hoist should have been raised so that it would have taken the weight off the panel.

Serious crane accidents are still occurring as noted above, with human error (e.g., inattention to detail) as the primary cause. Weight handling program managers and safety officials are encouraged to consider the potential risk of accidents similar to those highlighted above occurring at your activity and apply the lessons learned to prevent similar accidents. OPNAVINST 3500.39, *Operational Risk Management*, prescribes methods for assessing hazards and controlling and minimizing risks in hazardous operations. Activities should incorporate these principles into both training and day-to-day weight handling operations.

E-mail submission of reports of accidents, unplanned occurrences, and near misses is encouraged. NCC's accident e-mail address is accident@ncc.navfac.navy.mil. Reports must include a complete and concise situation description, corrective and preventive actions, probable cause and contributing factors, and an assessment of damage. For equipment malfunction or failure, include a specific description of the component and the resulting effect or problem caused by malfunction or failure. Photographs may be included in the reports.

P-307 QUESTIONS & INTERPRETATIONS

The questions and interpretations listed below are based on crane program issue that arose and Requests for Clarification, Deviation, or Revision, P-307, figure 1-1. It is also listed on our web page, http://ncc.navfac.navy.mil/. Click on P-307 and then on P-307 Questions and Interpretations. The issues are arranged by the applicable section or appendix to the P-307.

Question: Wire Rope End Connection Load Test Requirement for Swaged Connections. Request approval to use the crane load test in P-307, appendix E, as the load test specified for swaged connections in P-307, paragraph 11.4.2. The strength of swaged and poured sockets are equal to 100 percent of the wire rope breaking strength (P-307, paragraph 5.3.13.2). Per P-307, paragraph 11.4.1, the load test for installed poured socket end connections shall be the crane load test in P-307, appendix E. P-307, paragraph 11.4.2, requires installed swaged connections be load tested but the load test requirements are not specified. Since the strength of poured and swaged sockets is the same and the poured socket is load tested using the crane load test, request permission to use the crane load test in P-307, appendix E for swaged sockets. Additionally, load testing the swaged end connection separately from the crane load test in P-307, appendix E, requires special test equipment not available to us.
Answer: Navy Crane Center approves your request.

Question: Crane Condition Inspection Reports and the Biennial Load Test Program. The P-307, paragraph 3.6, states that a condition inspection shall be performed before, during, and after the load test. The completed Crane Condition Inspection Report (CCIR) shall be included with the crane certification form submitted to the certifying official. Except for category 3 jib cranes, pillar cranes, monorails, and fixed overhead hoists, the condition inspection shall be a separate inspection from the maintenance inspection. When a crane is placed in the biennial load test program and is in the annual no-load test cycle, are we required to complete a CCIR as a part of the certification process? Without a load test, there would be no before, during, or after.
Answer: A CCIR must be completed any time a crane certification document is prepared. This includes certifications where a load test is not required, e.g., an annual certification for a crane in the biennial load test program or an interim recertification per paragraph 3.4.2.2. The next revision of P-307 will change the first

sentence of paragraph 3.6 as follows, "A condition inspection shall be performed before, during, and after the load test (or the operational test in those cases where a load test is not required)."

Question: Crane Alteration Requests for Contracted Crane Work. Is a crane alteration request required when the work is performed by a NAVFAC contract under the technical cognizance of NCC?
Answer: A crane alteration request is not required if a crane is being altered/modified by a contract where NCC is the cognizant technical authority. NAVFAC P-307 will be updated to reflect this clarification at the next change/revision.

FY02 AUDIT SUMMARY

Our auditing of Navy shore activities continued to progress and has proven to be an essential effort to facilitate needed improvements at the various activities, as well as reinforce program adherence to the requirements of NAVFAC P-307. An innovative approach to the auditing component of our mission has contributed to major continuing improvements in the overall condition of the weight handling programs and widely acknowledged by activity WHE managers. Our audit teams provide a rigorous compliance review with an immediate follow-up offer and demonstrated willingness of our team to provide assistance in correcting identified problems. This audit process (along with the integral coaching assistance that occurs during the audit) has continued to improve the safety and reliability of our naval shore activities' weight handling equipment and operations. Another audit innovation is regional WHE audits, which minimize the impact on regional service providers.

Percent of Unsatisfactory Cranes

Activity Type	FY98	FY99	FY00	FY01	FY02
Naval Shipyards (SPS Cranes)	17	19	19	21	10
Naval Shipyards (GPS Cranes)	24	18	16	13	12
Naval Public Works Centers	52	35	34	28	33
Naval Surface Warfare Centers	N/A	48	29	36	32
Naval Air Stations	N/A	66	42	42	28
All Other Naval Activities	N/A	51	36	28	26

Approximately 250 naval shore activities and shore-based operating forces own and operate weight handling equipment. During FY02, audit teams completed 139 WHE program audits. Our responsibilities include auditing all activity WHE programs every 2 years at a minimum and suspending unsafe crane operations, if necessary, at any activity.

This year's audit findings and summary data indicate continued incremental program improvement. For those few activities that have failed to improve or slipped back to deficient programs, additional claimant intervention may be required. As a result of the continuing audit program and the NCC NAVFAC P-307 WHE training provided to most all activity WHE personnel, all activities have an increased awareness of program requirements. However, additional effort is required to ensure completion of continuing and necessary on-the-job and advanced specialized training requirements during FY 03 and consistent program execution to attain and maintain full compliance with NAVFAC P-307.

Equipment Condition

In FY02, the audit teams sample inspected/load tested 527 cranes out of a total inventory of 6,565 for the activities visited. The number of cranes determined to be unsatisfactory by the audit teams continued on a favorable downward trend. Of all cranes sampled 26 percent were unsatisfactory. By contrast, 30 percent were unsatisfactory in FY01, 37 percent in FY00, and 47 percent in FY99.

In general, the total number and severity of deficient conditions found by the audit teams decreased over the last audit cycle. As in the previous three fiscal years, brake deficiencies continued to be the most prevalent unsatisfactory condition the audit teams found, accounting for 32 percent of all deficient conditions resulting in unsatisfactory cranes (virtually the same level as last year's 33 percent). Most of the brake deficiencies were due to settings out of approved specifications (25 percent total). Some of the brakes found out of adjustment were due to either no adjustment range being established by engineering, or the established range being too restrictive. Seven percent of the unsatisfactory cranes were due to mechanical deficiencies and inoperative brakes.

Load test related deficiencies remained as the next largest category of unsatisfactory cranes. Incorrect test procedures accounted for 15 percent. Examples of test directors not following NAVFAC P-307 appendix E test procedures were: not all components tested, incorrect test loads, test loads exceeding 125 percent, test paragraphs not performed (stability, loss of power). A positive indicator of program compliance was only 1 percent of the audit sample cranes failed the load tests.

Deficient limit switches, (9 percent), wire rope/load chain deficiencies (6 percent), and controls systems (5 percent) were other common significant reasons for unsatisfactory cranes.

Other deficiencies of consequence found during audit crane inspections included: defective monorail system structural mounting supports, inoperable mobile crane hoist block upper limit switches, incorrectly configured jib cranes, and inoperable secondary limit switches on portal and bridge cranes.

TOP 10 DEFICIENT CONDITIONS ON CRANES INSPECTED

(CATEGORIZED MOST TO LEAST)

1. Brakes not adjusted to manufacturers' specifications (air gaps, spring length, equalization, etc.).
2. Testing deficiencies (not all components tested, incorrect test load, test loads exceeding 125 percent, mobile cranes not tested in all configurations required by P-307, test paragraphs not performed, e.g., stability, loss of power).
3. Limit switch deficiencies (out of adjustment, mobile hoist limit not preventing the boom from extending, back-up limits inoperative, overload devices not operative).
4. Deficiencies to brake/clutch (brake not opening, hydraulic brake not releasing, inoperative brakes, brake not stopping the load).
5. Wire rope/load chain deficiencies (birdcaged/ damaged wire rope, load chains twisted or installed with weld towards sprocket, incorrect safety factor, mis-reeving on drum).
6. Control deficiencies (loose contactors, air hoist control sticking in hoist position, hoist circuit losing power intermittently).
7. Boom deficiencies (boom will not retract fully, bent gusset, boom back stops preventing boom from lowering due to rust/corrosion in back stays)
8. Hook/Block/Sheave deficiencies (excessive sheave wear, sheaves not lubricated, hook thrust bearing not rotating under load, hook nut welded to hook shank).
9. Failed load test (won't lift/hold load, failed to trolley with load applied).
10. Mechanical miscellaneous (loose couplings, couplings out of alignment).

ACTIVITY PROGRAM COMPLIANCE PROGRESS

Navy Crane Center does not formally rate activity weight handling programs. However, at the conclusion of each audit, the audit report letter categorizes the activity's program status into essentially one of two classifications. Either the program is a fundamentally "sound" program (includes programs where minor improvements are required), or a "deficient " program, which has deficiencies or serious deficiencies requiring significant and immediate action to correct. As a result of the various improvement initiatives and the continuing audit program, a favorable overall trend toward activity compliance has occurred. Of the 139 activity programs audited in FY02, 79 percent were fundamentally compliant. This trend has also shown continual improvement in the past four audit years and major improvement from the initiation of the expanded audit program in FY98 when only 19 percent were considered sound.

For the WHE programs which were found to have deficiencies (not in compliance with the requirements of NAVFAC P-307 standards), significant common findings are listed below (in the order of most prevalent and widespread to least).

RIGGING

- Gear not properly marked per NAVFAC P-307.
- Uncertified gear.
- Mismatched rigging gear.

- Deficient rigging gear in service.
- Multiple leg sling assemblies marked incorrectly
- Re-inspection due dates expired.
- Unsafe rigging practices.
- Incorrect capacities marked on gear.
- Improper load test/slings tested at wrong test load percentage.

PROGRAM MANAGEMENT

- No enforcement of the control/surveillance of contractor cranes.
- NCC mandatory training of inspectors, test directors and maintenance personnel not completed.
- No implementing instructions, instructions not current/complete
- Unauthorized crane alterations reportable to NCC.
- Mobile crane limit switch bypass control instructions not posted in crane cab.
- Work authorizing documents not issued.
- Activity using cranes with expired certifications.

INSPECTION AND CERTIFICATION

- Crane condition inspection reports and maintenance inspection specification reports not filled out correctly, missing signatures, inspection attributes checked satisfactory when crane is not equipped or checked NA when the crane is equipped with the attribute.
- Method of defeating hoist brake to test mechanical load brake not described or documented, load brakes not tested, activity not aware the crane has a load brake.
- Incorrect and missing test paragraph numbers on load test certification, mobile cranes not tested in all applicable configurations, cranes tested with incorrect test load.
- NDT acceptance criteria not specified.
- Brake specification sheets not completed, specification data sheets not developed for specific cranes, incorrect specifications entered on data sheets.
- Repair documents do not adequately describe the work done.

CRANE OPERATIONS

- Operator license files lack essential documentation.
- Operator's Monthly Checklists (OMCL) not filled out properly.
- Operator's Daily Checklists (ODCL) not filled out properly.
- Operator's conducting un-safe crane operations
- Category 3 crane operators lack training.

CRANE SAFETY/ACCIDENTS

- Accidents not reported to NCC.
- Investigations not thorough.
- Lack of compliance with lock out/tag out procedures.

ENGINEERING

- Changes made without alteration development.
- Alterations were locally approved that should have been NCC approved.
- Locally approved alterations not submitted to NCC for information.
- Repair of equipment deferred without justification.

PENDANT CONTROL SECURING DEVICE

If your activity has several pendant controlled overhead electric cranes sharing a common power source, you may need to take one of these cranes out of service without disabling all of them. Crane inspectors have come up with a device that safely secures a crane from being used.

They devised a pendant control-securing device that is easily constructed using inexpensive, readily available materials. The device consists of a piece of PVC pipe of sufficient diameter to fit loosely around the pendant control and long enough to close around the pendant and its fittings. PVC pipe caps are glued onto both ends of the pipe. One of the pipe caps must be drilled in the center with a hole sufficient to allow the pendant wire and strain relief to pass through (about 1 1/2 inch). Once the pipe caps have been glued on and allowed to set, the pipe must be cut in half lengthwise. The two pieces are then hinged together by pop riveting hinges over the split on one side and a hasp over the split on the other side. The finished product can be painted a bright color for easy visibility. Point-of-contact information can be stenciled on the sides of the pipe. These devices can be built in a variety of sizes to fit various electrical pendants as well as pneumatic controllers.

This pendant control-securing device is a method of preventing the use of a crane that is out-of-service. This is not an energy control lockout/tagout device. Any work performed on the crane would still require an energy control lockout/tagout of the power source in accordance with the activity's energy control program (lockout/tagout). ■

CONTRACTOR OPERATED MOBILE CRANES ON BARGES

A Navy contractor recently had a serious crane accident involving a crawler/ringer crane mounted on a barge. While lifting the upper works of a shipyard portal crane, the barge crane's boom collapsed and the lifted load landed in the river. The barge crane operator's cab was crushed but fortunately no one was seriously injured.

Mobile cranes placed on barges present special safety hazards. CSA-98, Operation of Mobile Cranes Mounted on Barges, and our 2nd Quarter, FY02, Summary of Weight Handling Equipment Accidents reported two other serious accidents involving barge-mounted crawler cranes that slid into the water. Contracting officers must be mindful of the potential hazards associated with using mobile cranes on barges and ensure contractors follow requirements.

Barges must be sufficiently stable to take all anticipated loadings without excessive list and trim. Barge list and trim must not exceed the crane manufacturer's recommendations. Frequently mobile cranes need to be down rated when used on barges. Ensure the appropriate loading restrictions are understood and the appropriate load chart is used as recommended by the crane manufacturer.

For lifts with mobile cranes on barges, we recommend any lift anticipated to exceed 50 percent of the crane's appropriately down rated capacity be treated as a critical lift with the requirements of NAVFAC P-307, paragraph 1.7.2.e, applying. Lift plans for these lifts should also include the crane's load chart applicable to the

lift. The next revision of NAVFAC P-307 and UFGS 01525, Unified Facilities Guide Specification on Safety and Occupational Health Requirements for Contracts, will require this.

OSHA standards require load indicating devices (LID's) or load moment indicators (LMI's) on floating cranes used in ship repair or for any crane used in longshoring operations, and UFGS 01525 requires LID's or LMI's on all cranes used in NAVFAC contracts. Ensure contracts require LID's or LMI's, where applicable, and ensure LID's/LMI's are in working order.

OSHA requires third party certification for floating cranes used in ship repair or longshoring operations. The next revision of NAVFAC P-307 and UFGS 01525 will also require third party certification of barge-mounted mobile cranes used in construction.

We recommend barge stability calculations be requested from contractors. The next revision of NAVFAC P-307 and UFGS 01525 will require barge stability calculations for mobile cranes mounted on barges.

Ensure lift plans, crane certification data, barge stability calculations, and applicable load charts all have consistent information and comply with crane manufacturer's recommendations and limitations. Lift plans and barge stability calculations must be reviewed by qualified personnel. Where the contracting officer does not have the expertise to review barge stability calculations or lift plans, consult with naval activities or NCC. Contractors must understand not to deviate from lift plans without contracting officer concurrence.

UFGS 01525 is a guide specification that invokes the contractor crane requirements of NAVFAC P-307. UFGS 01525 is intended for use in NAVFAC contracts, however other contracting agencies may use UFGS 01525 to develop contractor crane requirements for their contracts. UFGS 01525 can be found at http:/www.ccb.org/ufgs/ufgs.htm.

The recovery plan for the accident noted above is much more extensive and complex than the proper planning for the original lift would have been. Delays to this contract and to other contracts at the activity were experienced. The contractor's equipment was irretrievably damaged. Proper concern for safe weight handling operations, particularly with mobile cranes on barges, can save time, money, and possibly lives.

Disseminate this information to field contract administration offices, as applicable.