COUNTERWEIGHT...

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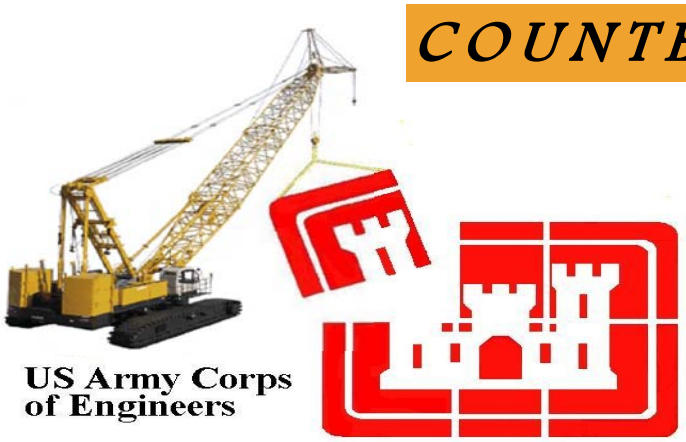

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INSIDE THIS EDITION

What DOES the EM say...about inspections? ....and just how many different kinds of inspections are there?

Over the last 12 months, the Corps of Engineers has experienced over 60 Crane and Rigging accidents/incidents. We have lost 4 lives and experienced property damage approaching $5 million dollars.

These simple statistics may lead you to ask a few questions of the crane operator and a few basic questions with respects to the equipment in operations. One place to consider improving your day-to-day operations is through conducting an assessment of the crane and rigging on your site.

Have you checked to see if the particular crane(s) on your project have had their periodic (at least annual) inspection, as per the EM. Does your crane operator have the appropriate certification for the equipment he/she is operating?

What about daily inspections (usually performed by the crane operator)? Are these **in writing** and are they available for review? The EM requires crane inspections as stated: "The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition." If deficiencies or defective parts are found during these daily inspections they're supposed to be repaired or replaced before the crane is operated.

Let's take a look at what the EM "does" say with respects to inspections.

16.D Inspection Criteria for Cranes and Hoisting Equipment.

16.D.07 **Initial** inspections are required prior to use on all new, re-assembled, modified or altered cranes, derricks or hoisting equipment.

16.D.08 **Start-up** Inspections (pre-operational each shift). Before every crane or derrick operation (at beginning of each shift), or following a change of operators.

16.D.09 **Frequent** Inspections (monthly intervals). Each month the equipment is in service.

16.D.10 **Periodic** Inspections/Comprehensive (at least annually or as recommended by the manufacturer).

16.D.11 Inspection of Cranes/Derricks/and other Hoisting Equipment not regularly in use shall be inspected;

√ Frequent (Monthly)

TABLE 16-1

CRANE & DERRICK INSPECTION FREQUENCY

When to inspect	Type of Inspection
Prior to initial use - all new cranes [a]	Initial inspection
Prior to use - all altered cranes [b]	Initial inspection
Prior to initial use on a USACE project [c]	Periodic inspection
Monthly after initial use on a USACE project	Frequent inspection
Prior to every operation (shift)	Start-up inspection
Before using a crane that is not in use on a regular basis and that has been idle for more than 1 month, but less than 6 months [d]	Frequent inspection
Before using a crane that is not in use on a regular basis and that has been idle for more than 6 months [d]	Periodic inspection
Standby cranes, at least semi-annually [e]	Frequent inspection
Standby cranes, prior to use [f]	Frequent inspection

Cranes/Derricks and Hoisting Equipment Survey

Early this summer, Operations, Engineering and Construction sent out memorandums to the field requesting an informal survey, review, and analysis of all Corps-owned/leased and Contractor operated equipment.

As indicated on the forwarding memorandum, USACE has experienced an unusually high number of crane related accidents and incidents—driven from contractor operations and from USACE-owned and operated cranes.

During the week of September 26th, members from the HHWG met in the South Atlantic Division to review the data that was collected from Operations and Construction. All nine Divisions and HNC responded to the survey request. Our primary objectives were relatively easy to define, but not so easily achieved. They were to:

√ Develop an inventory of all equipment and rigging throughout the organization

√ Assess the strength of our crane operator, rigger, and signal-person program,

√ Verify the physical qualifications of our crane/hoist operators, and

√ Determine if inspections (see article above) were in compliance with our standard.

In the next couple of weeks, CESO will be coordinating and facilitating meetings with all Safety and Operations Divisions at the MSC level. The reasons behind this this meeting are:

√ Review and provide an analysis of the data submitted

√ Identification of deficiencies. And

√ Discuss corrective actions.

Additionally, we will be asking the MSC Operations Division to provide the HHWG with a "complete" inventory of ALL cranes and hoisting equipment. We will provide you with the format for that survey.

The data call was NOT just an exercise. We see the potential for basic, consistent standards within USACE and truly believe that with assistance from the field, we can make improvements to this hazardous, critical part of our mission.

COUNTERWEIGHT –

WHAT DOES THE EM SAY.... regarding Operator qualifications?

According to a study conducted by Cal-OSHA, in a three-year window between June 1, 2005 and May 31, 2008, crane-related fatalities dropped 80 percent; this decrease occurred after the State of California adopted the NCCCO crane operator certification program as a requirement for all mobile crane operators.. The Canadian province of Ontario instituted a certification program in 1979 that has apparently resulted in fewer crane-related accidents and injuries in the construction industry; from 1978, the year in which the certification program went into effect, to 1995, the construction crane fatality rate decreased from 3.59 per year to 1.40 per year, providing some evidence that certification helps prevent catastrophic accidents.

Certification is generally considered to be the key link in a process designed to educate people in the correct way to operate cranes. Well-trained crane operators and related crafts (riggers/signal persons) with independently verified knowledge and skills—make fewer mistakes and, therefore, have fewer accidents than those with less or inferior knowledge. While certification involves written and practical testing, this is "not" the final step in qualifying an employee as certified. The final step, the medical examination, ensures that employees has the mental and physical competencies to safely operate a crane/hoist.
EM 385-1-1, Section 16 states the following:

16.B.01 Cranes and hoisting equipment shall be **operated only by designated qualified personnel**. Proof of qualification shall be provided by the employer and shall be in writing. In addition to fully qualified crane and hoisting equipment operators, the following personnel may be designated to operate cranes and hoisting equipment under limited conditions (may not perform critical lifts):

a. Trainees under the direct supervision of the designated operator of the crane or hoist;

b. Maintenance personnel who have completed all operator qualification requirements. Operation is limited only to those functions necessary to perform maintenance or verify performance of a crane or hoist;

c. Inspectors who have completed all operator qualification requirements. Operation is limited only to functions necessary to accomplish inspection.

16.B.02 Crane Operator Requirements – General.

a. Crane Operators shall be able to communicate effectively with the lift supervisor, riggers), flagmen and other affected employees on site.

b. Prior to the start of a specific activity or task, documentation of operator qualifications shall be included in the AHA and provided to the

16.B.03 Crane Operator Qualifications and/or Certifications. The employer must ensure that, prior to operating any equipment covered under Section 16, the person operating the equipment is covered by paragraph 16.B.01, or is qualified or certified to operate the equipment in accordance with one of the following options:

A. Option 1. A current certification by an accredited crane operator testing organization.

b. Option 2. Qualification by an audited employer program.

c. Option 3. Qualification by the U.S. Military (INCLUDES DOD CIVILIANS)

d. Option 4. Licensing by a State or Local Government Entity.

The above-referenced options are "only" the abbreviated titles. Please see Change 6 for the complete verbiage for these options. In addition to these competencies, the physical qualifications are defined below.

16.B.05 Operator Physical Qualifications/Examination. All crane/derrick operators shall be physically qualified to operate the equipment. Physical examinations for operators are required to be conducted every 2 years and any time a condition is observed that may impact safe operation. Written proof, signed by a physician stating that the operator has had a physical examination and meets the medical requirements set forth below shall be submitted to the GDA for acceptance prior to allowing an operator to operate the equipment.

Note: Operators of Hoisting Equipment are exempt from this requirement UNLESS this equipment is used to hoist/lift personnel. This activity is considered a Critical Lift and as such, requires a physical examination for the operator. See also 16.A.01.i and Section 16.U.

a. Operators shall have a current physician's certification, dated within the past 2 years, that states the operator meets the following physical qualifications:

(1) Vision of at least 20/30 Snellen in one eye and 20/50 in the other, with or without corrective lenses;

(2) Normal depth perception and field of vision;

(3) Ability to distinguish colors, regardless of position;

(4) Adequate hearing, with or without hearing aid, for the specific operation;

(5) Sufficient strength, endurance, agility, coordination, manual dexterity, and speed of reaction to meet the demands of equipment operation;

(6) No tendencies to dizziness or similar undesirable characteristics; and

b. Evidence of physical defects, emotional instability that could render a hazard to the operator others, or safe operation of the equipment, or evidence that

Mr. Garrison Martin Mr. Brian Stanton

SW.....EET in SWL

Lou Ludwig, a nationally recognized motivational speaker, wrote the following with respects to being in the right place at the right time… "When we're in the right place at the right time it's not a matter of luck; it's a person that recognized opportunity and has prepared themselves to see and take advantage of it. The person that recognizes opportunity has a possibility attitude and has prepared themselves for success."

In 1991, Brian Stanton (aka., Pee Wee) started work with the Army Corps of Engineers as a WG-8 Rigger, working in the Little Rock District. As I spoke with Mr. Stanton recently, he noted that he always enjoyed working as a rigger, but he "liked" cranes. Eventually, in 2000, he found himself in the right place at the right time. His years of work as a rigger, learning the skills, refining his capabilities, and opportunity knocked. A crane operator in the Little Rock District was retiring and Brian decided to apply for the position. As he noted, during our discussion, he was selected for the position and for the last 11 years has been busy working in and around the Little Rock District.

What you see below is the M/V Mike Hendricks, a relatively new Crane Barge that was placed into service in July 2010. The crane mounted on the barge is a beautiful Manitowoc 18000. The 18000 features a 600 hp engine, a lifting capacity (on land) of 825-tons, and can be configured with a 320-ft boom (Manitowoc website). Two years ago, the M/V Hendricks was put together and Brian had his hands on the controls from design, to working with the Naval Architects, to being an integral part of sea trials. Brian has been there the whole way. As one of a team of operators, Brian is identified as the primary operator onboard.

The HHWG asked Brian a couple of questions, during the course of our interview:

Q: What do you like most about operating the 18000?

A: Brian noted that the hydraulics make the Manitowoc very easy to operate. Way better than the old friction controls.

Q: What are some of the biggest changes in crane operations during the last 20 years?

A Definitely, safety has been the biggest change Brian has seen during that period of time. There is more responsibility on the operator. With those changes, Brian noted that it takes longer to plan the work, however, once planned, the workflow creates a more confident work environment.

Q: Have you seen our Counterweight publication?

A: Yes, I have seen the Counterweight publication.

Brian noted that during his career, he has seen a real benefit for the Corps to have an apprenticeship program for operators and riggers. He noted that the Operator must have confidence in the rigging operations and the personnel involved. While the Operator is ultimately responsible for the lift, having skilled and competent riggers, is a must.

Working primarily on the Montgomery Point Dam, the M/V Hendricks is integral in the maintenance and operations of locks and dams in the Little Rock District.

Brian notes that most of his work schedule is typically 4 10-hour days, with a rare night operation every now and then. He loves what he does and takes great pride in the fact that he has never had a crane accident.

When you look closely at the M/V Hendricks, like the HHWG did when we saw the picture for the first time, I think we **all** were struck by the degree of organization and housekeeping— an indication of a crew who takes great pride in their work environment.

Oh….and where's the running rigging for the spuds? Below deck! This feature was taken into consideration during the design phase. A tip of the hardhat for that design safety feature.

And a tip of the hat to Brian for this interview…We appreciate Brian's attention to safe-operating procedures.

LESSON LEARNED-1

MULTIPLE-LIFT RIGGING INCIDENT

Sub contractor attempted to lift steel bar joists into place and had a string of 10 rigged (daisy chain). When raising the string, the first bar joist (attached to the ball of the crane) buckled with approximately five of the joists in the air and five still lying on the ground. Crane operator immediately lowered the load back onto the ground.

Direct cause appeared to be rigging being too far to the outside of the bar joist and not more to the center. Contractor had already raised into place a string of ten earlier in the day. Contractor corrected their rigging immediately afterwards. Prime contractor notified COE immediately.

No personnel injured/damage was under $2K in cost.

In reality, multi-lift rigging was being performed incorrectly.

WHERE DO I FIND MULTIPLE-LIFT RIGGING GUIDANCE? Section 15.C.

...a sampling of this text includes...

15.C.01. USACE allows multiple lift rigging practices for the purpose of erecting/placing structural steel ONLY. Strict compliance with this section and 1926.753, Subpart R shall be mandated.

15.C.02. A Multiple-Lift is considered a critical lift and requires a carefully detailed, written critical lift plan per 16.H. In addition, all details and requirements of this section are required to be addressed in the critical lift plan to include, as a minimum; identifying all multiple-lift hazards on the job site, beam list, determining load capacity; determining weight of a member; proper crane hand signals; safety rules for Multi-lift rigging; seven - foot rule; wind/environmental limits; safe route; power line issues; crane requirements; marking centerlines; use of tag line; qualifications and/or certifications of the operators) and riggers) to be performing these operations; rigging equipment: wire rope slings, hooks & shackles; clean lay-down area; cribbing; storage/ staging; personal protective equipment. ***SEE 15.C.03 FOR THE REST***

Picture of the buckled bar joist

LESSON LEARNED-2

A clamshell dredge that was involved in this incident worked on a contract on and off since project commencement. It last remobilized back to the project site on 19 June 2011.

The dredge crane boom failure occurred on Monday, 20 June 2011, at 2000 hours while working on site.

Crane boom failed while dredging small isolated shoals as a fully-loaded bucket of chopped rock was being hoisted to the adjacent scow. Weather was not a factor.

No injuries occurred.
Property Damage—~$300k

Causal Factors:

Reported Direct Cause: Boom Hoist Brake Slipped. Reason unknown at the time.

Reported Indirect Cause: The cause is still under investigation

Contractor's Final Accident Report (ENG Form 3394)

√ Direct Cause—Operator Error.
√ Indirect Cause—Boom Hoist Brake Out of Alignment.

Government assessed direct and indirect causes that led to the collapse of the dredge boom:

Direct Cause: Operator error due to the operator operating outside the cut sheet requirements for a 50 degree minimum boom angle.

Indirect Causes:

1. Inspection and maintenance were not being conducted per the EM 385-1-1.
2. There was no Naval Architectural analysis and load chart for the specific crane.
3. The manual boom angle indicator was not legible to the crane operator.
4. There was no crane operator's manual for the crane on the dredge.

Additional findings will be posted on the CESO Enterprise Lessons Learned website.

WHERE ARE WE?

Who's that guy sitting behind the control's of this crane?

It's a High Hazard Working Group team member, Art Kunigel.

Normal Duty Station—The Dalles Lock & Dam
Portland District

Art is currently deployed to Afghanistan where, as a part of his "battle rhythm," he is bringing his knowledge, skills, and abilities to his work environment. He is inspecting the equipment and training persons on the proper operation of cranes and hoisting equipment.

A reminder—Very thankful for ALL Corps personnel who are currently serving in Afghanistan and Iraq. Keep them in your thoughts and prayers.

Conference reservation website—nacbgroup@cranesafe.com

WHY are we Reporting Everything?

As stated on page 1, there have been over 60 crane, hoist or rigging-related incidents/accidents reported in ENGLink in FY11. Some were serious and recordable (>$2K in property damage, lost work days or medical attention), others were not. I receive a lot of questions about this. Why do we want to report every little incident ? What do we do with that information? Will I get into "trouble" by "tattling" on myself?

If you report the minor incidents occurring, we can follow up with assessment of program requirements and status. If there are any deficiencies, they can be identified BEFORE a larger incident or accident occurs. If we don't know about the small things happening out there, we can't prevent the larger accidents from happening. The reason is NOT to get anyone into trouble or to measure one facility against another.

We, as the USACE, are an employer. We are all tasked to accomplish our mission safely. If a facility is operating in a deficient manner, MY program is deficient. We all want to protect our co-workers from injury, our equipment and property from damage. The only way to do this is to operate safely all the time. We may sometimes THINK we are working safely or that we know the rules and requirements and are following them. But sometimes this isn't the case. This may show up when an incident occurs. By reporting these incidents, we are allowing other sets of eyes to pick out what went wrong. By reporting "near misses", our program WILL improve. We will learn from others' mistakes and others' analyses of these mistakes. Design, equipment, maintenance and training problems have been identified from what was reported this past FY (you'll see more on this in the very near future). We WILL be more prepared to prevent the big occurrences from occurring. Ellen Stewart, CSP

Interesting Crane Links :

1. CESO HHWG Page: http://www.usace.army.mil/CESO/Pages/HighHazardWorkingGroups.aspx

2. OSHA's Crane/Derricks in Construction Rule: http://www.osha.gov/cranes-derricks/index.html

UPDATED ASME STANDARDS PUBLISHED

American Society of Mechanical Engineers (ASME) has recently published 2 revised crane-related Standards: ASME B30.7 – 2006(R2011), Winches (Formerly Titled Base-Mounted Drum Hoists);

ASME B30.2 – 2005(R2011), Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist).

ASME is one of the oldest standards-developing organizations in the world. It produces approximately 600 codes and standards, covering many technical areas, such as boiler components, elevators, measurement of fluid flow in closed conduits, **cranes**, hand tools, fasteners, and machine tools

The charter of the ASME B30 Standards Committee on Cranes and Related Equipment, is to develop, maintain and interpret safety codes and standards covering the construction, installation, operation, inspection, testing and maintenance of cranes and related equipment.

They are available via a national subscription to USACE employees. Questions? Email Ellen.b.stewart@usace.army.mil

Suggestions -

We continue to seek ways to improve the HHWG communications with the field. To that end, if you have a suggestion for an upcoming "Counterweight", please drop us a note. If you know of someone we can interview for the next edition, contact us.

I recognize that in some cases, you might not wish to identify yourself…that's okay. You can fax your suggestion to 404-562-9238.

Please give us some basic information, such as;

- √ Please clarify regulation 16.B.02,
- √ Please provide information on lessons learned
- √ You would like to see interviews or articles on different Operations Division missions.
- √ What does "if practical" mean?

COUNTERWEIGHT

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