

Crane Derating & Regulatory Compliance Update

Presentation for
2013 Locks Maintenance Workshop

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OUTLINE

- Crane Derating
- Update on Subchapter M – Inspection of Towing Vessels
- Update on EPA 2013 VGP and 2014 sVGP
- Update on Ballast Water Management



Crane Derating

- EM 385-1-1: July 2011 Changes
 - Revisions to 16.L Floating Cranes/Derricks, Crane Barges, and Auxiliary Shipboard Mounted Cranes
 - All lifting equipment designed and constructed to applicable standards
 - A naval architecture analysis to determined the allowable loads and radii for all floating cranes/derricks and shipboard cranes.



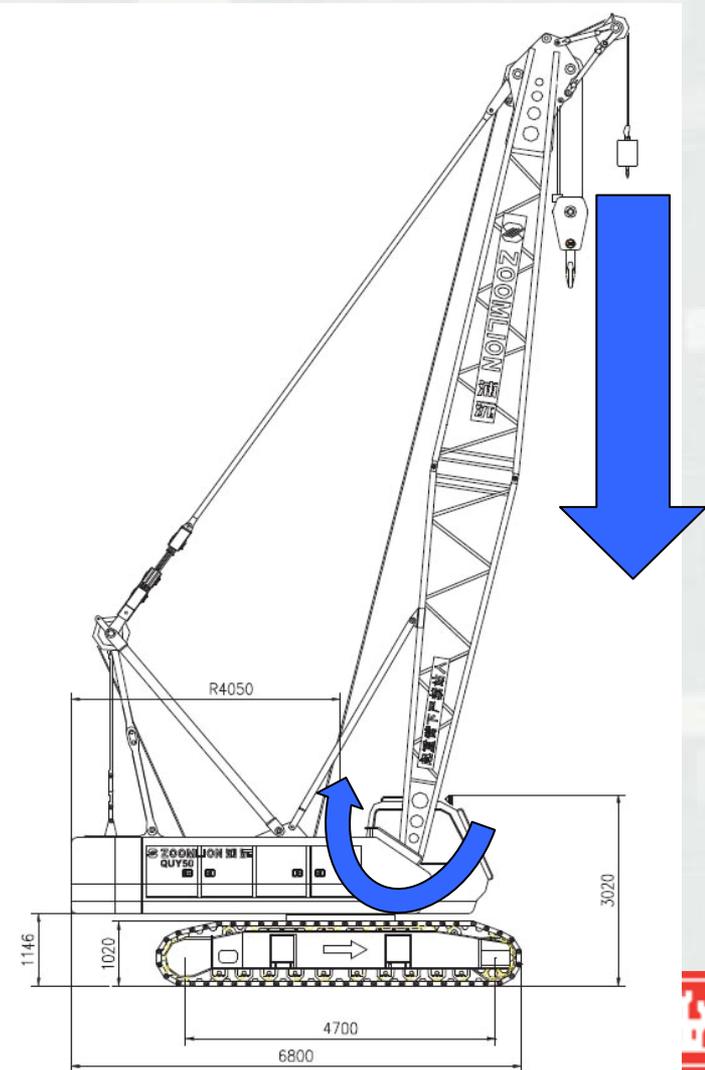
Crane Derating

- Cranes on a Barge
 - Many of the cranes used on barges in USACE are land-based cranes, design for level ground operations.
 - USACE also utilizes cranes specifically designed and constructed for floating operations.



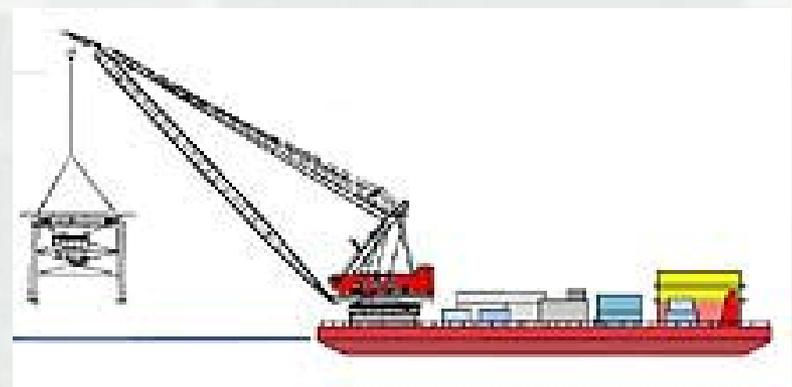
Crane Derating

- Boom Loads
 - The booms on land-based cranes are designed to be operated on level ground
 - The internal mechanisms and booms are structurally designed for the vertical force and the moment from the hook load



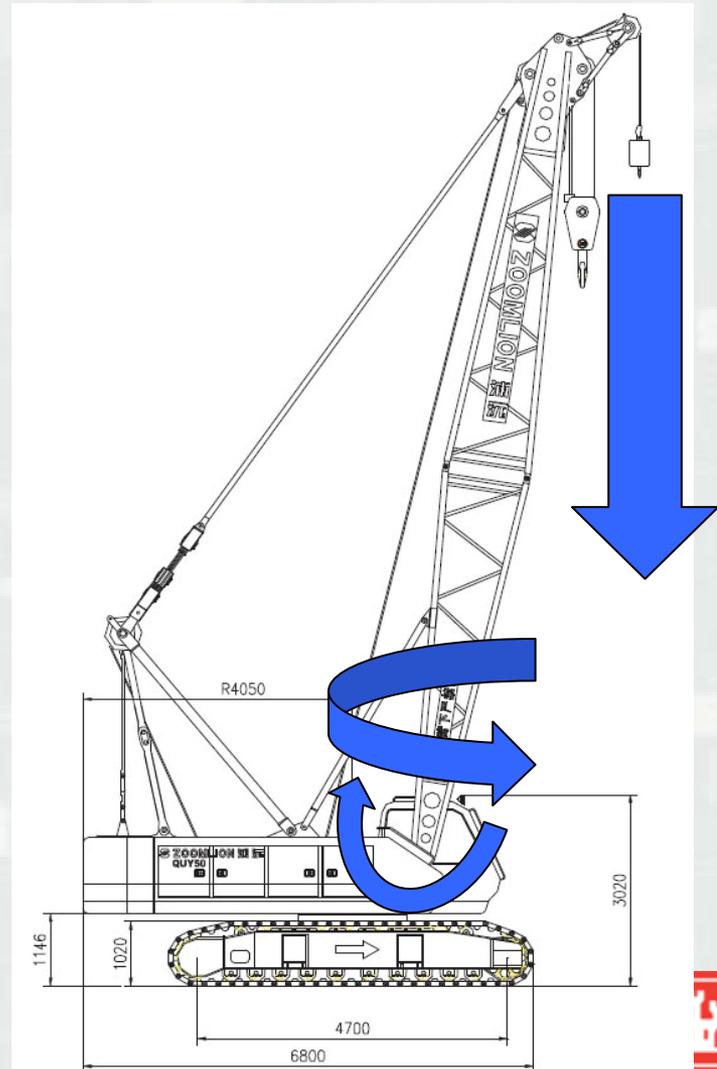
Crane Derating

- Boom Loads
 - When placed on a barge, the crane no longer operates on a level surface
 - The barge will react (heel and trim) to the weight of the crane and the hook load
 - This is dynamic as the crane boom rotates and radius changes



Crane Derating

- Machine List & Trim
 - As the barge reacts (heels & trims), this causes the crane to experience out-of-level conditions (machine list & trim)
 - Machine Trim changes the lifting radius
 - Machine List creates side loading on the boom and internal mechanisms



Crane Derating

- Result
 - Mainly as a result of the side loading, the allowable lift capacity at the radii have to be adjusted to avoid failure in the boom and internal mechanisms.



Crane Derating

- Result
 - Manufacturer or Qualified 3rd Party can create “Barge Mounted” or “Floating” load charts
 - Charts start at 1° and typically go to 3° machine list/trim
 - Some land-based cranes can go to 5°
 - Cranes designed for floating operations can typically go to 5°
 - Some smaller shipboard cranes designed for floating operations can go to 10-15°
 - Excavators are designed for out-of-level land operations, therefore they can experience 25-35° without derating



Crane Derating

- Result
 - Typical land-based lattice boom crane derating can be 15% to 50%
 - Typical land-based RT or extendable boom crane derating can be 5% to 30%
 - Manufacturer derating is only half the battle



Crane Derating

- The Other Half
 - The other half of the equation is the barge
 - The size of the barge has to be matched with the selected crane to ensure the reactions of the barge do not cause the crane to exceed the manufacturers limits (i.e. machine list and trim)
 - Naval architecture analysis ensures the crane manufacturers limits are not exceeded, the barge has ample stability and will provide any limitations on the crane/barge setup (i.e. deck load, further derating, etc.)



Crane Derating

- Recent Analysis
 - District places a land-based RT crane on barge for lock maintenance work
 - Request naval architecture analysis to comply with EM
 - Qualified 3rd Party provides a load chart for up to 3° machine list/trim conditions
 - Load chart is reduced ~15% from original
 - Naval architect analysis reveals that lifting conditions using the new floating load chart cause the machine list/trim limits to exceed 3°



Crane Derating

- Recent Analysis
 - Further analyses are performed to determine the maximum lifting capacities that satisfy the manufacturers out-of-level criteria.
 - Load chart is reduced up to 50% from original load chart (35% additional from floating load chart).
 - With a larger barge, that capacity of the crane can be increased back up to the floating load chart capacities.



Crane Derating

- Barge Master
 - Motion and wave compensation platform



Video Link: <http://www.barge-master.com/technology.html>



Crane Derating



Update on Subchapter M

Inspection of Towing Vessels

•Final Rule

- The USCG has not published the final rule. The rumor in the industry is possibly Fall 2013??

•Compliance Options

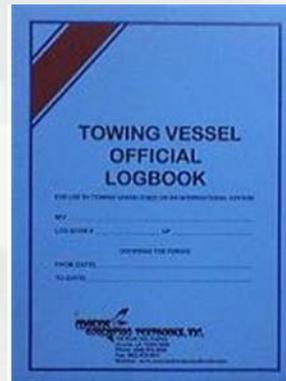
- Develop and comply with a Towing Safety Management System (TSMS), use 3rd party auditors and inspectors
- Submit to an Annual Coast Guard Inspection
- ABS Classed Vessels will generally be in compliance



Update on Subchapter M Inspection of Towing Vessels

• Major Considerations

- Design and Construction
 - Generally not an issue for USACE towboats built < 10 yrs
 - Redundancy in critical systems may impact older vessels
- Log Books & Record Keeping
 - The proposed rule contains provisions for maintaining detailed record and log books



Update on Subchapter M Inspection of Towing Vessels

- Be Proactive!!
 - Contact your local USCG Sector
 - Participate in the USCG Bridging Program
 - Request a 3rd party survey of your vessel IAW the American Waterways Operators (AWO) Responsible Carrier Program (RCP)
 - Maintain ABS class and/or get your vessel re-classed



Update on EPA

Vessel Discharge Permit (VGP) 2013

- EPA issued the proposed VGP for December 2013
 - Stricter bilge and effluent discharge requirements
 - Ballast water BMPs and requirements
 - Environmentally Acceptable Lubricants
- Final rules expected to be published by March 15, 2013
- EPA & USCG MOU – USCG will enforce VGP



Update on EPA

Vessel Discharge Permit (VGP) 2013

•What Can You Do?

- Become familiar with draft and final rule (when published)
- Submit the required paperwork (NOI, Annual Reporting, etc.)
- Begin investigating the use and transition to EALs for oil-to-sea interface operations
- Develop and maintain a Ballast Management Plan (BMP)
- Ensure OWS (if equipped) is properly functioning
- Avoid unnecessary discharges (gray water, treated black water, etc.)
- **Maintain Accurate Logs and Inspection Records**



Update on EPA

Small Vessel Discharge Permit

(sVGP) 2014

- EPA issued the proposed sVGP for December 2014
 - Vessels < 79-feet
 - Potential to have a significant impact on USACE small vessels
 - Recreational vessels are exempt...the rule is being clarified to exempt LE and other work/commercial vessels that are essentially recreational vessels (i.e. Boston Whaler, Zodiac, etc.)
 - Record keeping, BMPs, Bilge, Ballast, etc.



Update on Ballast Water Management 2012

- USCG Ballast Water Management Rules went into effect in June 2012
- Only large USACE dredges may require ballast water treatment devices
- Bottom line, if a vessel has ballast tanks, there are parts of the 33CFR151 Subpart D that are applicable
 - Mainly reporting requirements, record keeping requirements and BMPs with respect to the uptake and discharge of ballast water and the conditions of the tanks.



DISCUSSIONS/QUESTIONS

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