

How to Manage a Crane Accident



Guest

Speaker: Joe Collins,
Heavy Lift Manager, Becht Engineering



Host:

Mike Parnell
President/CEO, ITI
ASME B30 Vice Chair (Cranes & Rigging)
ASME P30 Chair (Lift Planning)

The views expressed in this presentation are that of ITI and are not necessarily the views of the ASME or any of its committees



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WHO WE ARE

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Today's Presentation:

How to Manage a Crane Accident

WEBINAR TRAINING COURSES

- Lift Director & Site Supervisor
- Critical Lift Planning
- Rigging Gear Inspection for Supervisors
- Advanced Rigging:
Load Distribution & Center of Gravity
- Advanced Rigging:
Multi-Crane Lifts & Load Turns



The Heavy Rigging & Lifting Workshop will be held June 17 - 19, 2013, in Edmonton, Alberta. Its focus will be on lifting activities conducted in heavy lift and transport, up/mid/down-stream oil and gas, energy infrastructure fabrication and installation, and all aspects of heavy rigging and lifting in a variety of industries.

The Oil Sands Lifting Workshop will be held September 4 - 6, 2013 in Fort McMurray, Alberta. Its focus will be lifting activities conducted in upstream and midstream oil sands projects including infrastructure fabrication, installation, and maintenance, surface mining, cold flow, steam injection, and SAGD operations.

The Power Generation Lifting Workshop will be held November 6 - 8, 2013 in New York, New York. The focus of the curriculum will be construction and maintenance lifting activities conducted in power generation environments including nuclear, oil, gas, hydro power stations, and wind energy.

- [Mike Parnell](#)
 - President/CEO, Industrial Training International
 - Associate Member, CSA Z150 Technical Committee on Mobile Cranes
 - Vice Chairman, ASME B30 (Cranes & Rigging Standards Main Committee)
 - Chairman, ASME P30 (Lift Planning Standard)
- [Roger "Skip" Ohman, Jr., P.E.](#)
 - Technical Advisor, The Crosby Group
 - BS Mechanical Engineer, MBA, MS Adult Education
 - Formerly Director of Training, The Crosby Group
 - Member of Society of Mechanical Engineers (SME)
- [Michael Brunet, P.E.](#)
 - Director, Product Safety, Manitowoc Cranes
 - Member, CSA Z150 Technical Committee on Mobile Cranes
 - Member, ASME B30 and B30.5 (Mobile Cranes)
 - Member, ASME P30 (Lift Planning Standard)
- [Kenneth Reynolds](#)
 - Lifting & Hoisting SME, Shell
- [Geoff Holden](#)
 - Chief Executive, Lifting Equipment Engineers Association
 - Director, Institute of Association Management
 - Former Manager, Bridon International
- [Steve Fryer](#)
 - Training Manager, NCSG
 - Member of the Alberta Provincial Apprenticeship Committee
 - Red Seal Certification, Mobile Crane Operator

- [Keynote: The Crosby Keys to Heavy Lifting](#)
- [Keynote: A Review of the Shell Lifting & Hoisting Standard](#)
- [Keynote: LEEA - Lifting Standards in Canada & Worldwide](#)
- [Advanced Rigging Foundations](#)
- [Crane Assembly & Disassembly from Manitowoc Cranes](#)
- [Lift Director, Site Supervisor, & ASME B30.5](#)
- [ASME P30 Lift Planning Standard](#)
- [Compressor Module Critical Lift Plan](#)
- [Competency, Training & Qualification of Personnel](#)
- [Multi-Crane Lifts](#)
- [Wire Rope Terminations & High Performance Rope](#)
- [Load Handling Procedures](#)
- [Heavy Lift Shackles & Hooks with Heavy Lift Exercise](#)

MIKE PARNELL – ABOUT YOUR HOST

Mr. Parnell has a wealth of knowledge regarding cranes, rigging, and lifting activities throughout a variety of industries.

- 30+ years learning about wire rope, rigging, load handling, and lifting activities.
- Vice Chair of the ASME B30 Main Committee which sets the standards in the US for cranes and rigging
- Chair of the ASME P30 Main Committee which sets the standards for lift planning.

ASME standards are also adopted by many countries around the world.



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Joe Collins – ABOUT YOUR GUEST SPEAKER

Joseph (Joe) Collins is the Heavy Lift Manager for Becht Engineering Co., Inc. His duties include consulting to clients using the world's largest cranes and super heavy lift projects. He is providing consulting and design services for lifting and transport of process equipment, machinery, chemical, refining and nuclear vessels and components.



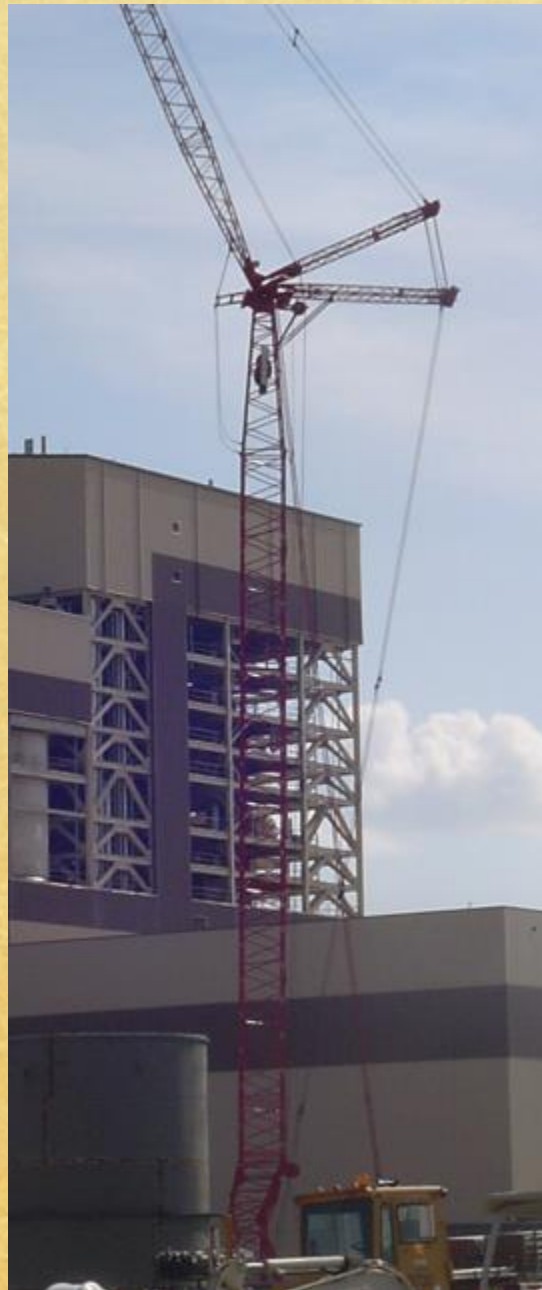
- 40 years experience in Heavy Industrial Construction
- Specializes in Critical Lift Planning and Execution
- Long-term career with Zachry Construction Corporation with an average fleet size of over 300 cranes
- Serves as Vice President of the Board of Directors for the National Commission for the Certification of Crane Operators (NCCCO)
- Member of the Cranes and Derrick Advisory Committee (C-DAC) to OSHA, which wrote and delivered the current draft of the new OSHA Crane Safety Standard

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Managing a Crane Accident

You Are Faced With This At Your Site





Or Something Like This?



Assess Immediate Dangers!

- ♦ Are there any injuries or trapped persons?

Notify Fire and Rescue immediately!

Don't let them walk into a trap and become victims!

- ♦ Are the crane and affected structures secure?

Assess the danger to Rescue Personnel before they arrive. Carefully explain the situation to them as they get to the site. Be assured, they will dominate the scene until all injured are cared for and the site is safe for the public.

Rescue Teams Will Dominate the Site



Assess Immediate Dangers!

- ♦ Are there hazards to the public or job personnel?

Barricade the area to prevent entry by any non-essential persons. This also serves to preserve the site for investigation later.

- ♦ Has the Press showed up? Who will give them a statement?

Most companies have a PR Person but if it is you, give only facts. Do not speculate as the press will run with anything you say and it will be major news within minutes.

Initiate an Investigation

- ♦ Interview all actors and witnesses

Don't fire the operator – Yet. Get statements from everyone as soon as possible. The stories tend to change during the next few days and weeks.

Don't lead the witness. Even if the cause is seemingly obvious, be careful not to put words in the witness mouth. Let them tell their story.

Continue the Investigation

- ♦ Examine the site and the crane.

Take pictures, careful measurements and record everything you see. Note things like boom length and angle, running and standing rope length and condition, outrigger extension and matting, if a load was attached and the final position, condition of the ground, and on and on and on. Something that may seem irrelevant may provide answers later.

Continue the Investigation

- ♦ Record all data from the crane computer.

Consult the crane distributor or factory for this step. They are trained on the cranes computer system and will also be a witness to the recovered data. If the crane is equipped with a “data logger”, they will have the software to download the lift history.

On most cranes, the last configuration will be present when the key is turned on. Be careful not to lose this information. Do not turn on the key until the technician is in place. In most cases, after the key is turned on, the computer will reset to default after a few seconds or minutes.

Continue the Investigation



Complete the Investigation

- ♦ Some crane accidents are minor in nature and are easy to figure out.
- ♦ Others can be very complex and will require weeks or months of forensic study to determine root cause.
- ♦ There may be some that will never be totally solved but you can narrow it down to a few possible causes.

Removing the Crane from the Site

- ♦ This is the most complicated and hazardous part.

!There is no instruction manual for this!

- ♦ It is advisable to consult a Registered Professional Engineer.
- ♦ The engineer can calculate center of gravity for crane up-righting and design the complex unique rigging applications required for handling bent and broken components.
- ♦ Contact the insurance carrier before attempting to move anything.

Removing the Crane from the Site

- ♦ Be sure to manage all stored energy.

It is difficult to ascertain where the stored energy is and how to manage the release in a controlled manner.

!!!Never use a cutting torch unless there is no other way!!!

If a torch is necessary, use the longest barrel available.

Disassemble Boom and Attachments

- ♦ Many workers have been seriously injured or killed disassembling bent booms and jibs.

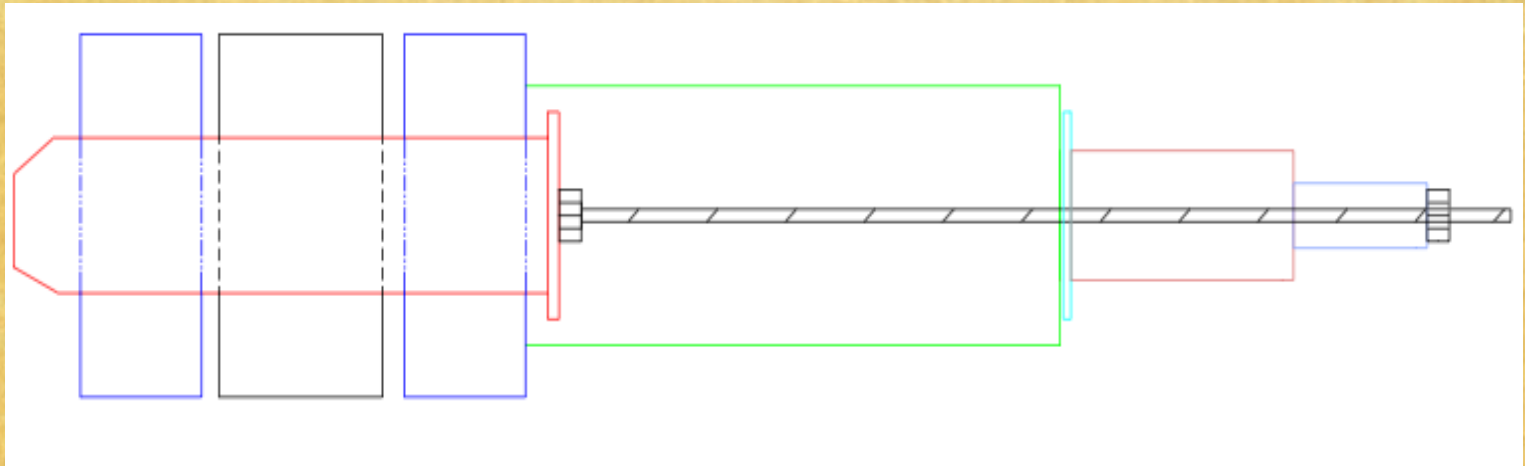
Restrain all boom, jib and crane components before disconnecting. Then release the stored energy a little at a time until the energy is completely released.

Do Not Just Cut It Loose And Let It Flop.

It may flop and hit you causing serious injury or death

Disassemble Boom and Attachments

- ♦ A mechanical “pin puller” can be easily fabricated to remotely remove boom pins while keeping a safe distance from any sudden release of energy or unexpected movement of the boom section. Use a long hose to maintain a safe distance.

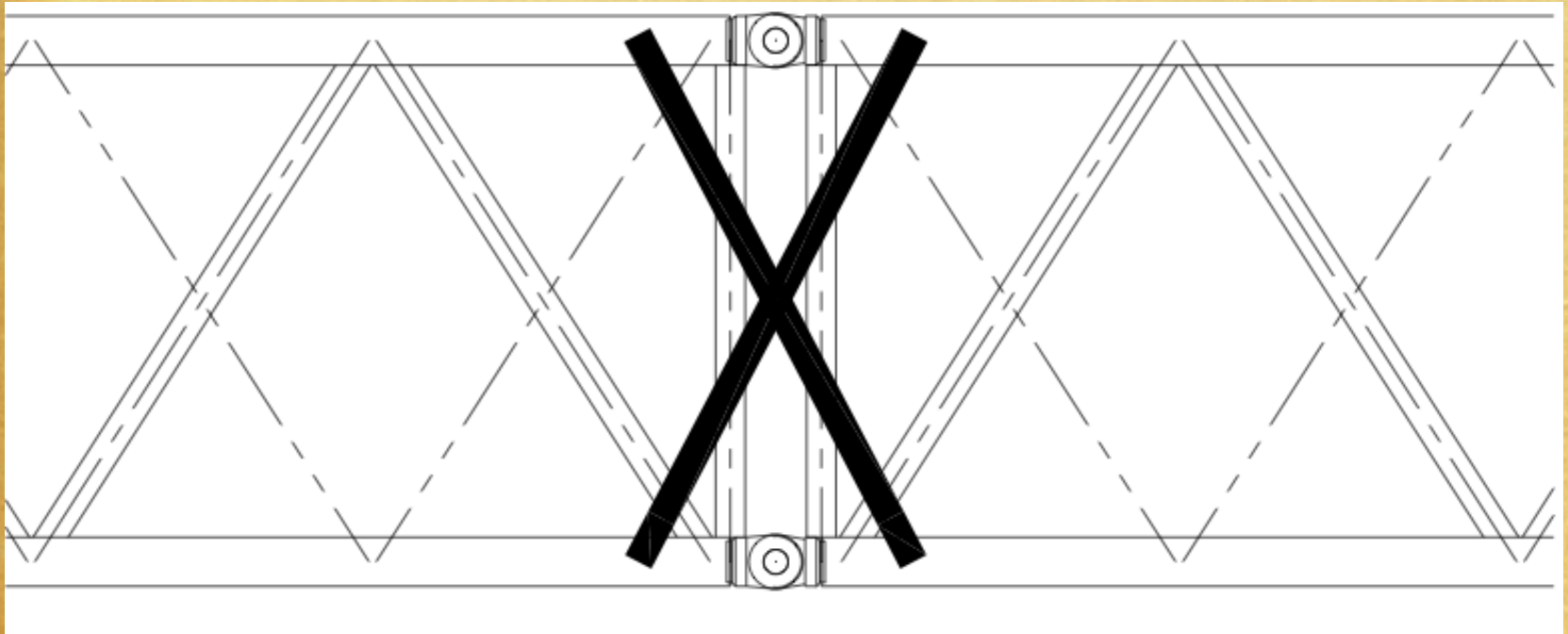


Disassemble Boom and Attachments

- ♦ By attaching chain hoist (come-alongs) diagonally, as shown in the preceding illustration, on two sides; the stored energy can be gradually released by loosening one at a time until you see the direction the two parts begin to move. Then you can decide in what order to alternately relax the energy until the sections are safely separated.

Disassemble Boom and Attachments

An example of restraining a boom section



Up-righting the Crane

- ♦ It is necessary to understand where the center of gravity is before attempting to upright an overturned crane. In addition, it is necessary to adjust for any remaining components, such as boom sections, counterweights, etc.
- ♦ Be sure to use a hold back crane or device of sufficient capacity, so the crane doesn't topple over the other direction as the weight of the crane body passes top dead center. Many cranes are pulled over while attempting to up-right another.
- ♦ **It is always good to oversize the assist cranes to allow for an error on weight or sudden shock load**

Up-righting the Crane

- ♦ Be sure to attach the rigging so it will not slip, cut or break off the section you are rigged to. Counterweights can fall off or be pulled off during the up-ending process.



Up-righting the Crane

- ♦ Carefully hoist up on the lift crane while keeping a light tension on the tailing crane. The tailing crane will receive the weight as the center of gravity passes top dead center.



Up-righting the Crane



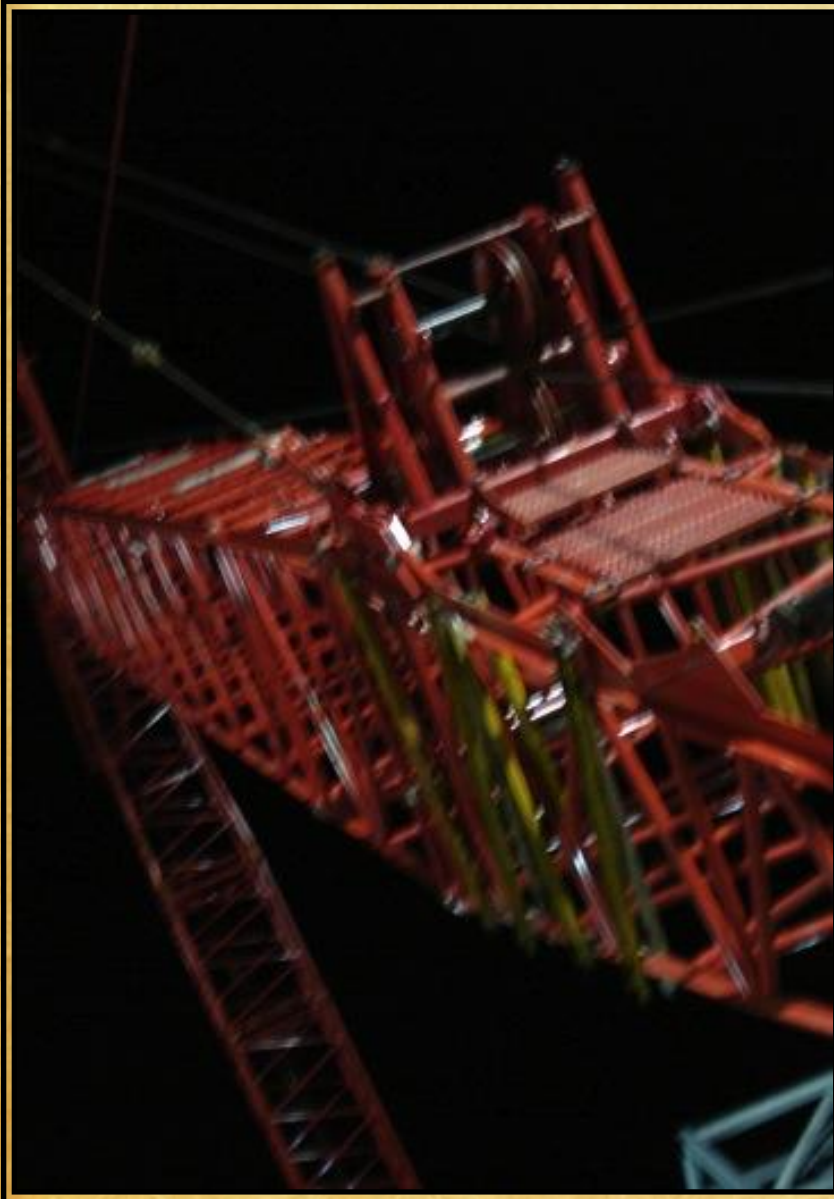
Up-righting the Crane





Crane Rescue

Be advised not to attempt a crane rescue without the assistance of the crane manufacturer or a registered professional engineer.



Crane Rescue

Often we find the crane boom or jib badly damaged.

Many of these can be saved. However, this is an extremely hazardous procedure.

Consult the crane manufacturer or a registered professional engineer

Do not attempt to attach an assist crane to hold the damaged boom

Doing so will certainly result in disaster



In Conclusion

No one plans to have a crane accident.

However, You should make a plan for managing one if it should occur.

Things to include in your plan:

- 1) Know and post the Emergency Response Numbers
- 2) Assign someone the responsibility for assessing the danger and assisting the Emergency Response Teams
- 3) Know and post the Crane Manufacturer's Numbers
- 4) Assign someone the responsibility for addressing the Press

In Conclusion

- ♦ Secure the site and care for any injured.
- ♦ Don't move anything unless to care for the injured.
- ♦ Take pictures and measurements
- ♦ Interview all witnesses.
- ♦ Have the crane manufacturer or Dealer download the computer.
- ♦ Effect the clean up using sound engineering practices



Before the Hurricane

After the Hurricane















Q&A

