

Risk Reduction in Offshore Decommissioning Chevron's Success in the Gulf of Mexico



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Key Messages

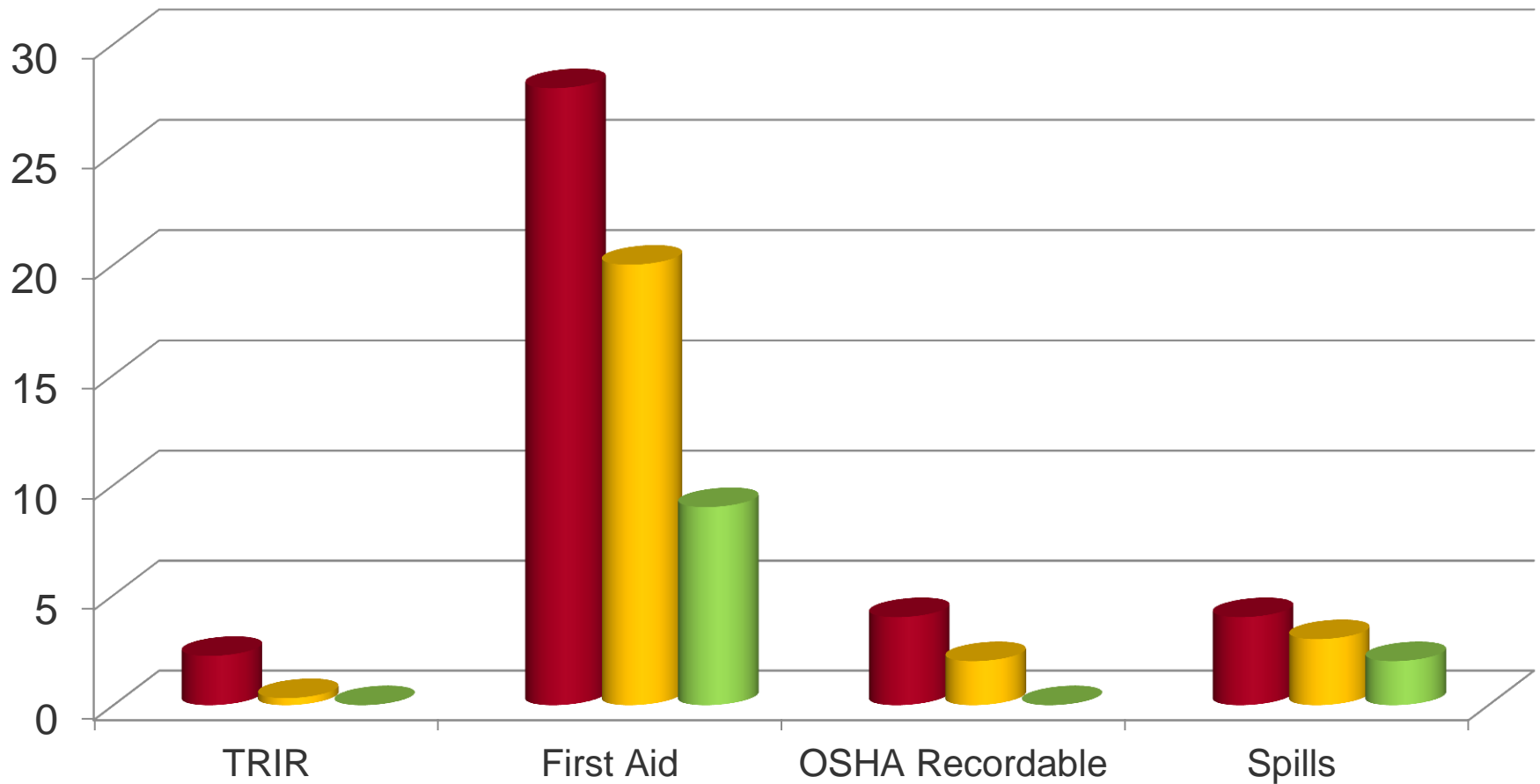


- Focusing on Risk Reduction in Decommissioning works:
 - Use technology to move humans to a safer location
 - Larger lifts: Reduce rigging, lifting and offshore exposure
 - Reduction in Diving Risk
 - Tank Cleaning: Confined Space Risk

- Contractor Collaboration & Partnership key to facilitate technology development and deployment

Path to Zero: Historical Safety Performance

Chevron Hurricane Restoration Team (HRT)



■ 2009 ■ 2010 ■ 2011

Larger Lifts – Reduce Lifting, Rigging, Cutting and Time

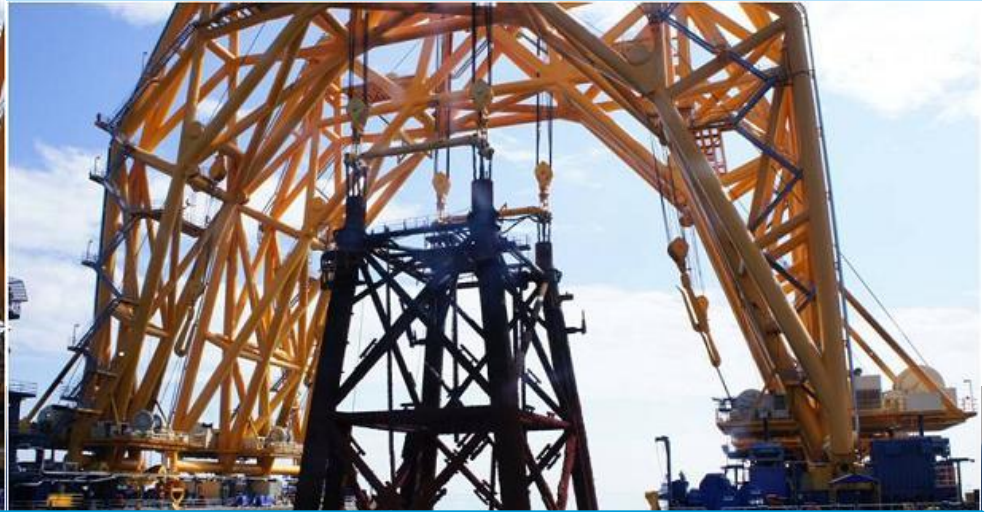


Larger Lifts – Green Canyon 6A 2,667 tons



Larger Lifts – Mississippi Canyon 63B

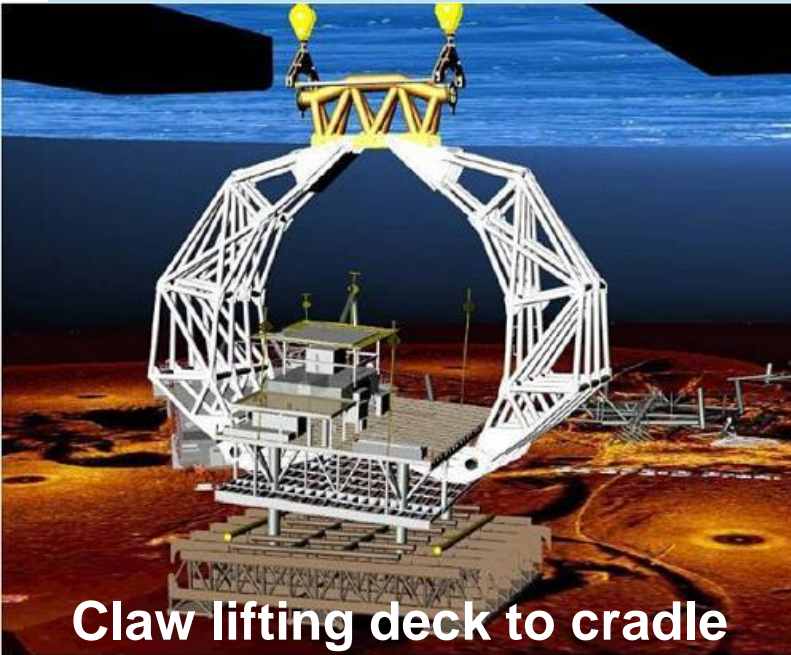
3,600 ton lift, 27 mile tow



DP system & lifting hooks minimize personnel exposure when rigging



Larger Lifts Using The Claw – 5 Decks – September 2011



Claw lifting deck to cradle



Cradle lifted to surface



Cradle transferred to barge for transport

Reducing Diving Risk – The Claw

2011 Case Study from 5 lifts



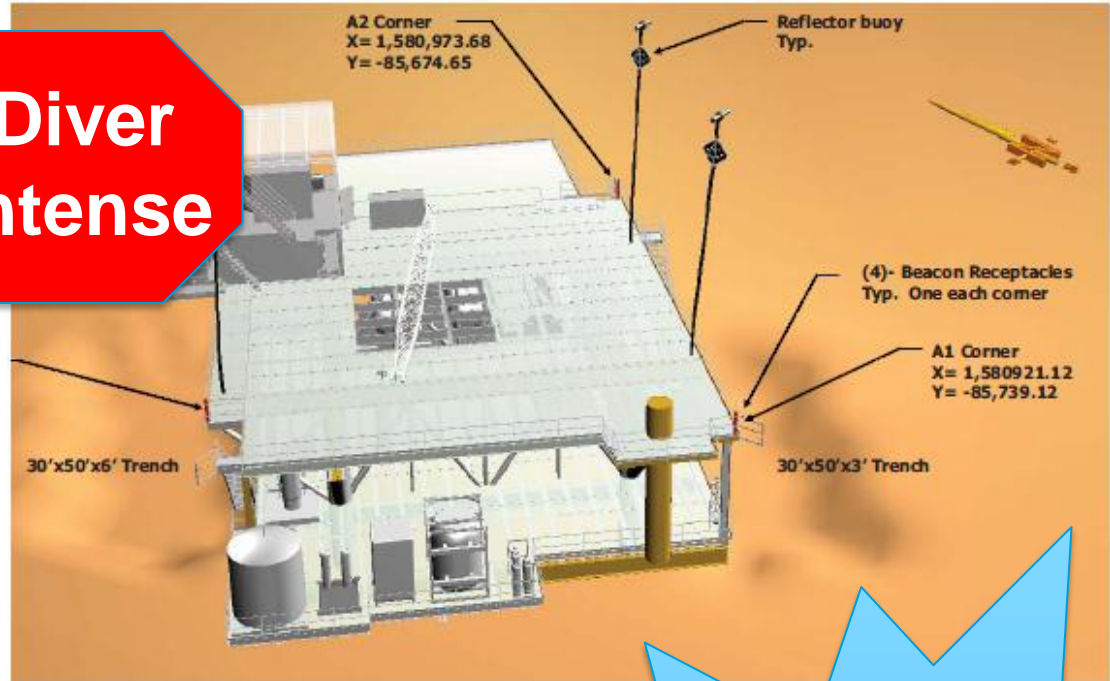
Deck prep without the claw

- Obstruction clearance
- Cut hook holes in deck
- Install Hooks



Deck prep with the claw

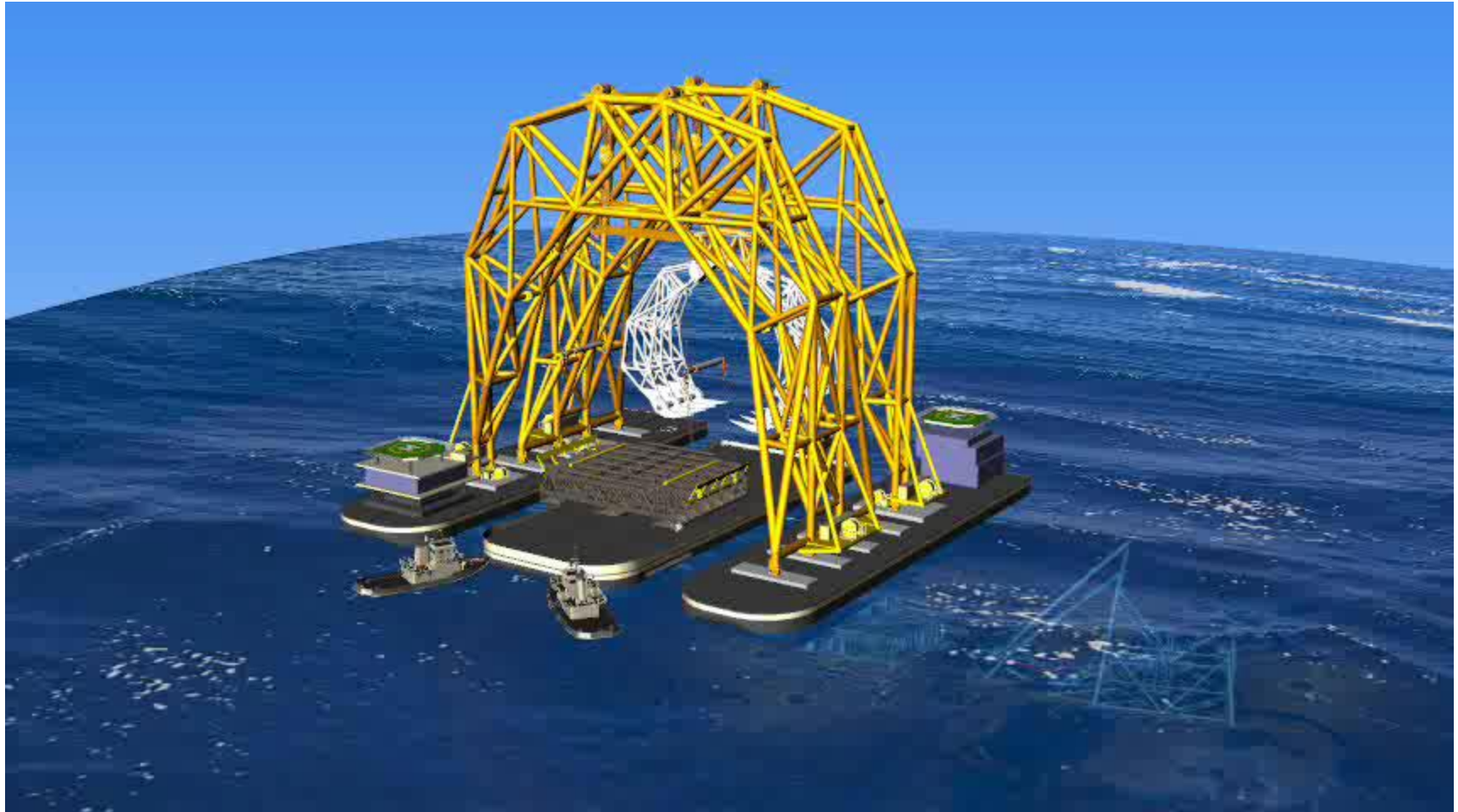
- Jetting for claw access
- Install beacons & buoys



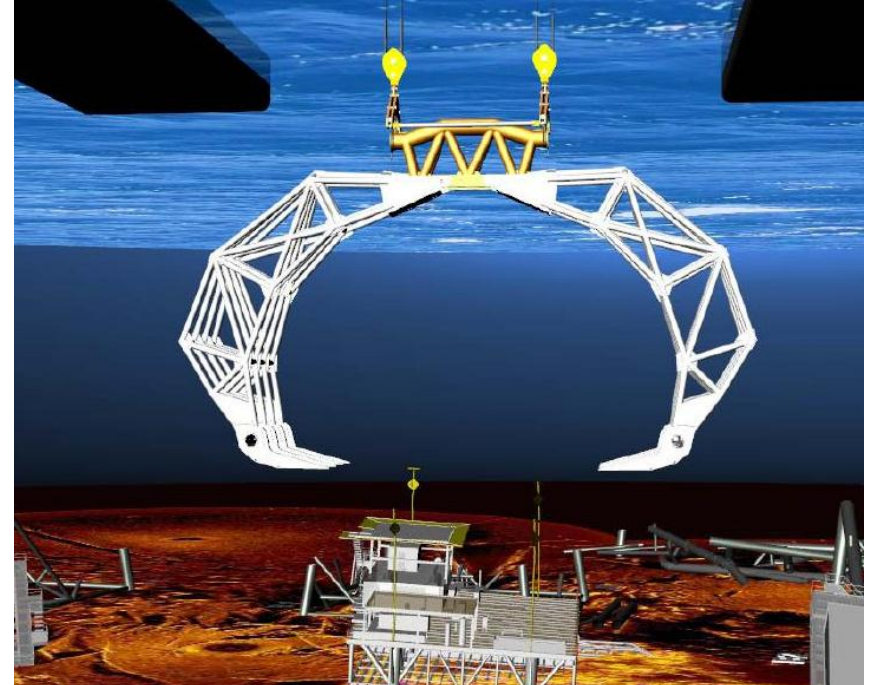
5 deck lifts	Without Claw	With Claw (Actual)
Dive Hrs Saved	1359	121



Target - Reduction in Diving Risk Solution - Develop the “Claw”



The Claw at Work: Zero Diver Exposure

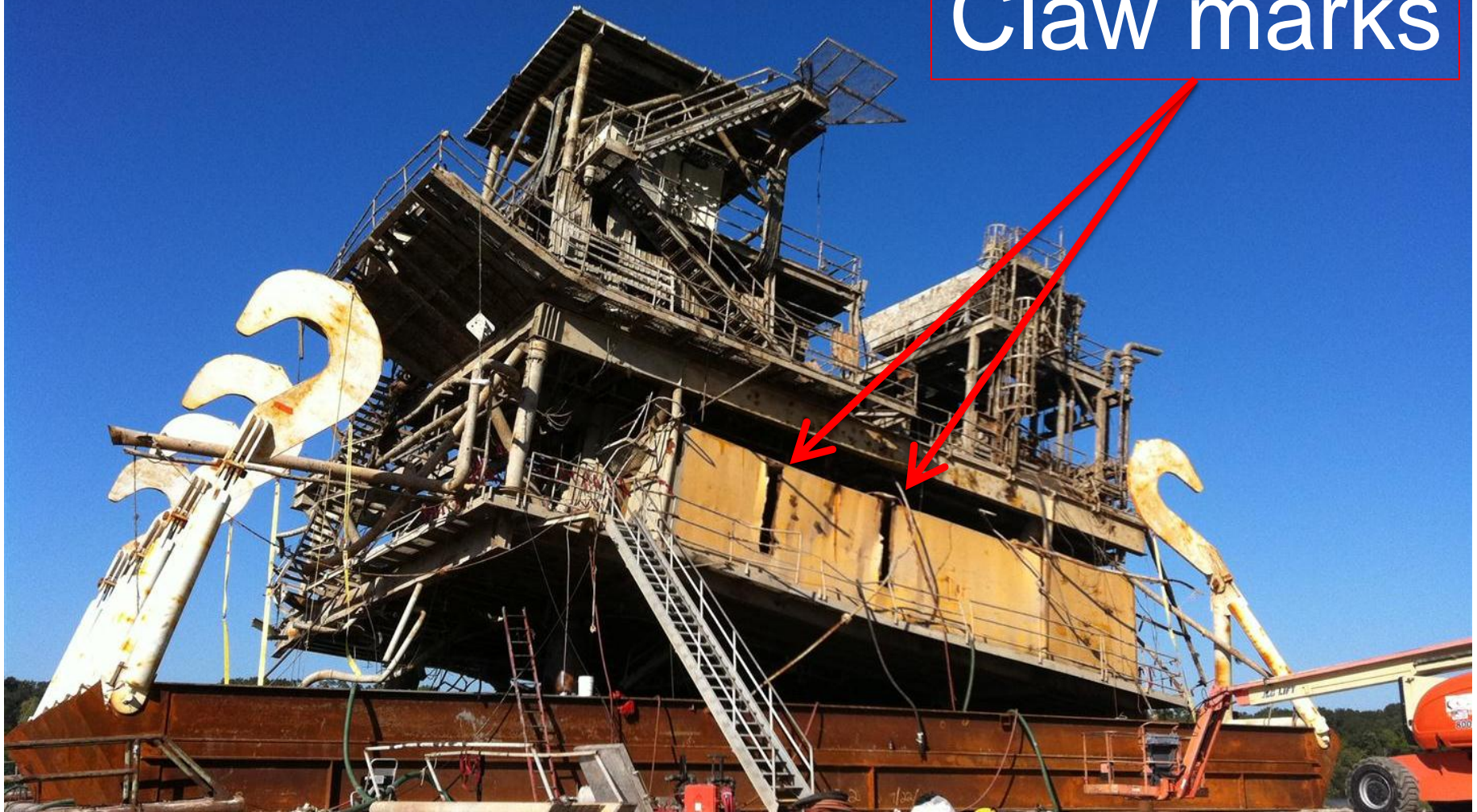


Toppled Platform Deck Recovered with the Claw



Minimal Diver Exposure!

Claw marks



Reducing Diving Risk - Specialty Tools



Large Hydraulic Shear:

- Eliminate all diver exposure to:
 - burning
 - stored energy in members



Large Dredging Pump:

- Minimized diver exposure:
 - Excavation cave-in
 - Reduced time "on bottom"
- Significantly more cost effective



Diamond Wire Saws:

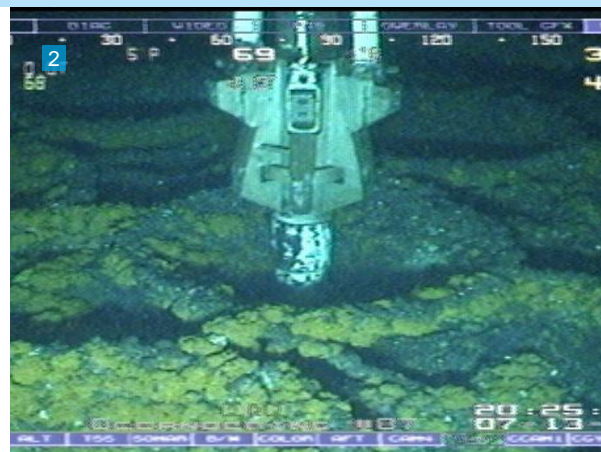
- Eliminates all diver exposure to burning and moving debris



Reducing Diver Risk – Technology: Internal Spear for removing conductors



Lowering spear through top conductor guide



Lowering spear through conductor guide



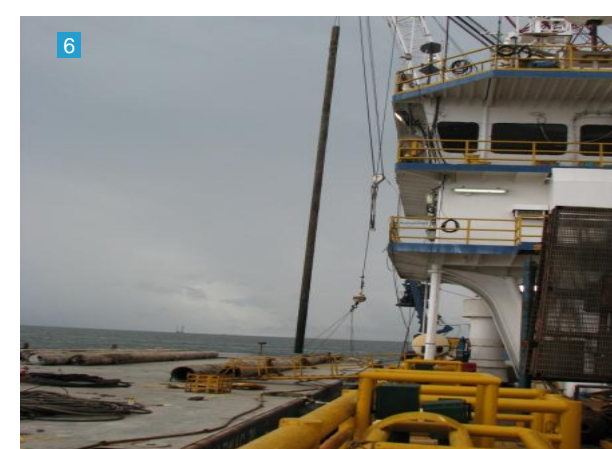
Spear entering well conductor



Conductor lifted through conductor guide



Conductor lifted to the surface

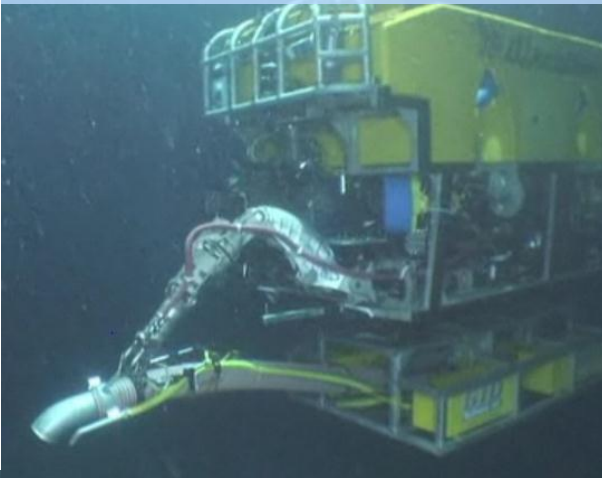


Laying conductor down on cargo barge

Reducing Diver Risk – Increased usage with ROVs

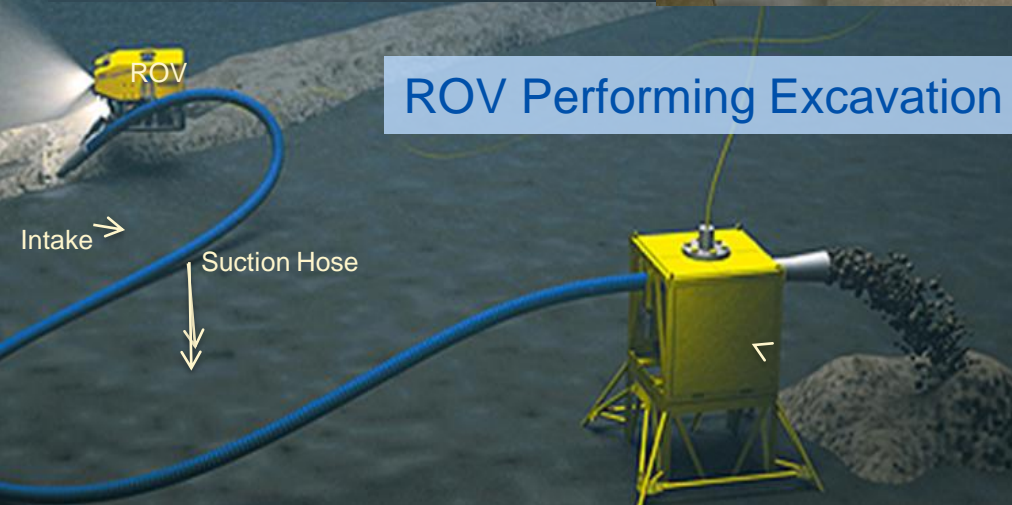
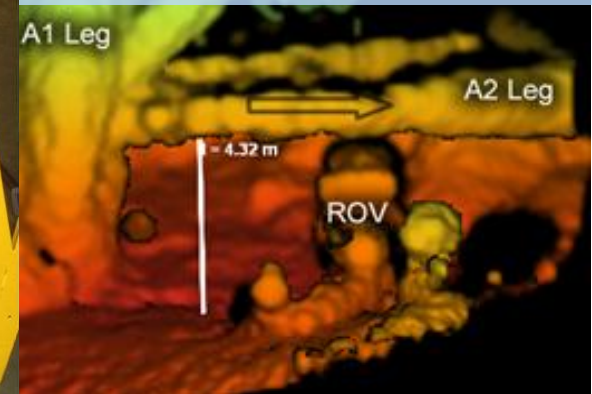


ROV – Arm Holding Intake



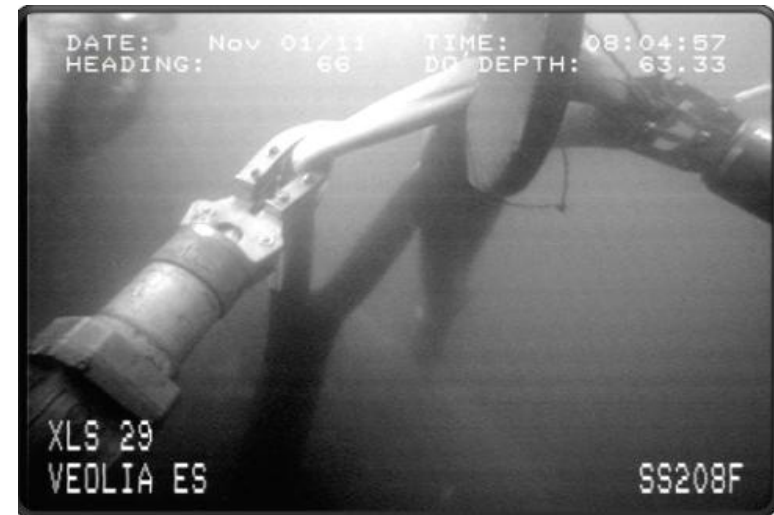
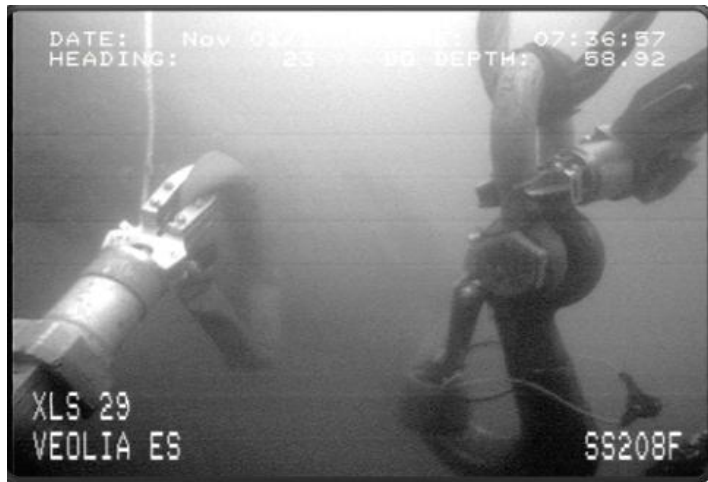
New Dual Pump Dredge

Sonar view - ROV working zero visibility



- ROV advances Risk Reduction :
- diving surveillance, “tool caddy”
 - ROV-Mounted Imaging Systems
 - understand diver situation
 - dive planning with 3D modeling
 - remove diver for high risk steps

ROV cutting and rigging jacket legs, debris



Risk Reduction: Offshore Tank Cleaning



Reduce high risk confined space entry time when cleaning tanks.

“Think outside the tank ”



**3 Fold
Reduction
Of Risk**

Results

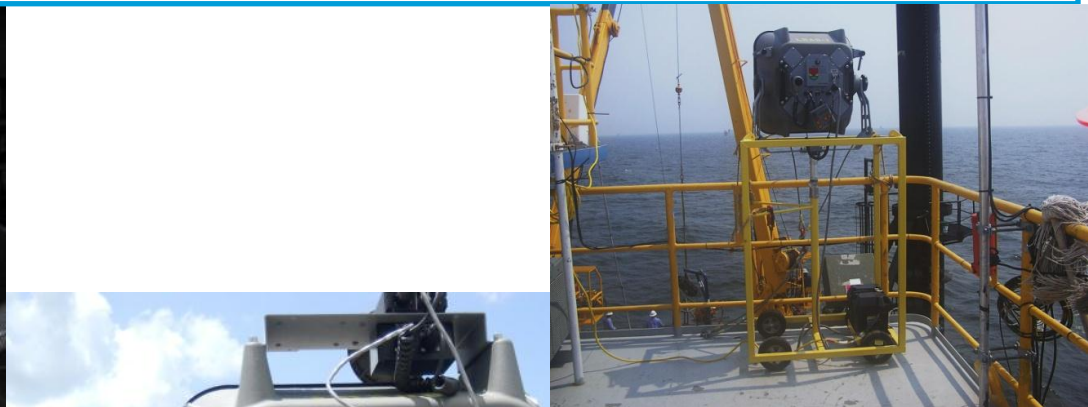
- Cost savings
- Project complete IFO
- Knowledge share

LRAD – Long Range Acoustic Device

Communicate and deter vessel encroachment



History of vessel encroachment on dive ops;
Broadcast : warning tone, live and recorded
voice communication.
Success: used nearly a dozen times.



Contractor Collaboration & Partnership:

Critical to Risk Reducing Technology Development and Launch



- Strategic collaboration, innovative business arrangements
 - New technology for heavy lifts (VB-10,000 & the Claw)
 - New & improved cutting technology
 - Improved ROV Capabilities and applications
 - Communication technology to reduce vessel incursions on dive operations – LRAD

- Routine meetings with dive contractors
 - Reduce risk by sharing incidents and lessons learned
 - Accelerate adoption of new technology

Closing Thoughts

Challenging Industry to Change Their Approach



Step change in safety won't come from "doing it the same way" - requires a completely new approach to work.



We can't go forward "the way it's always been done" and expect better results.

Questions ?



Backup Material



This material might be used in answering questions.

Photos of Additional specialty tools used in Chevron's Decommissioning Operations that help us to reduce risks.



- 13 slides of additional photos



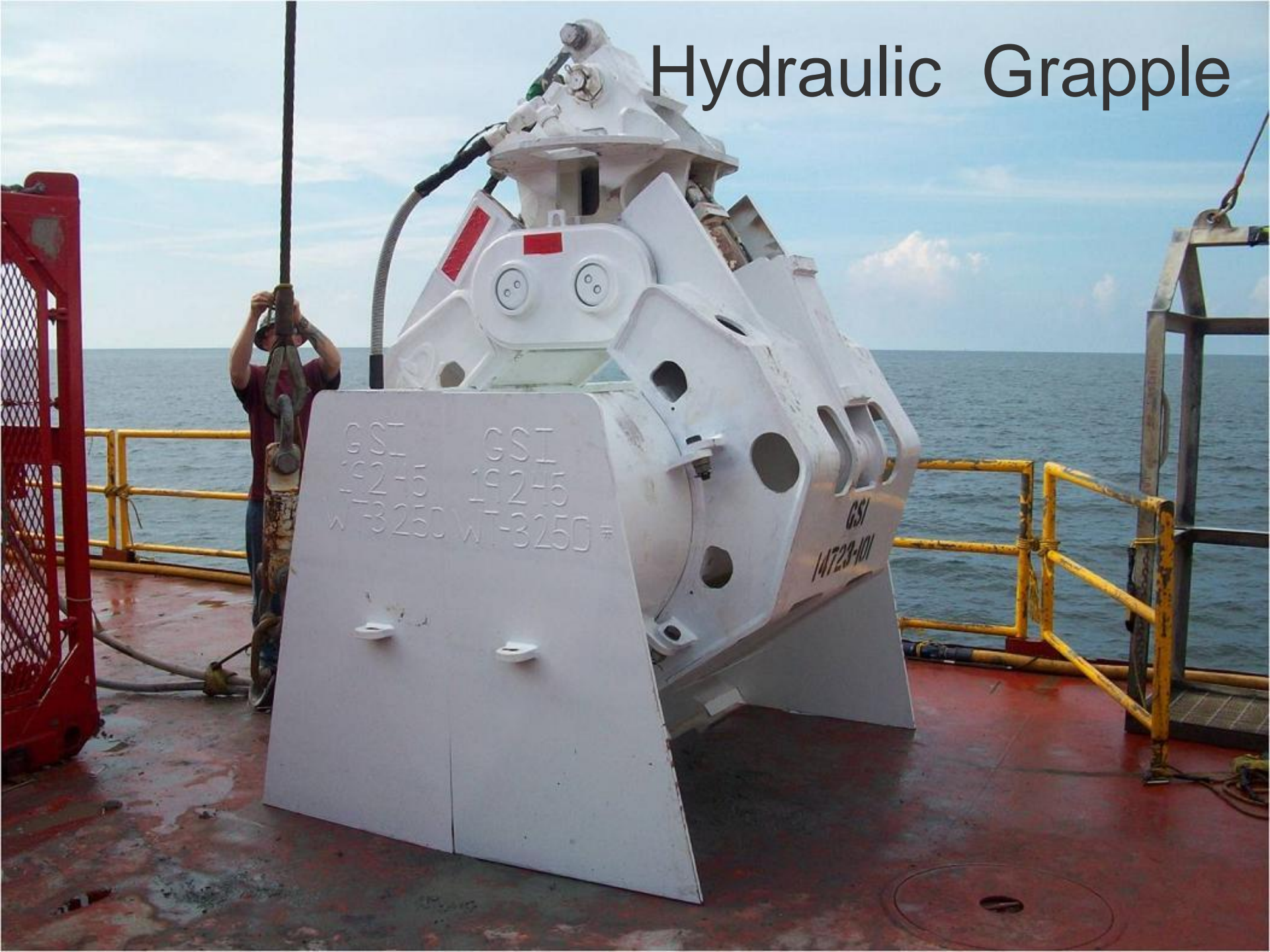
Purpose built saturation diving/ROV support vessel with “paired cranes”.

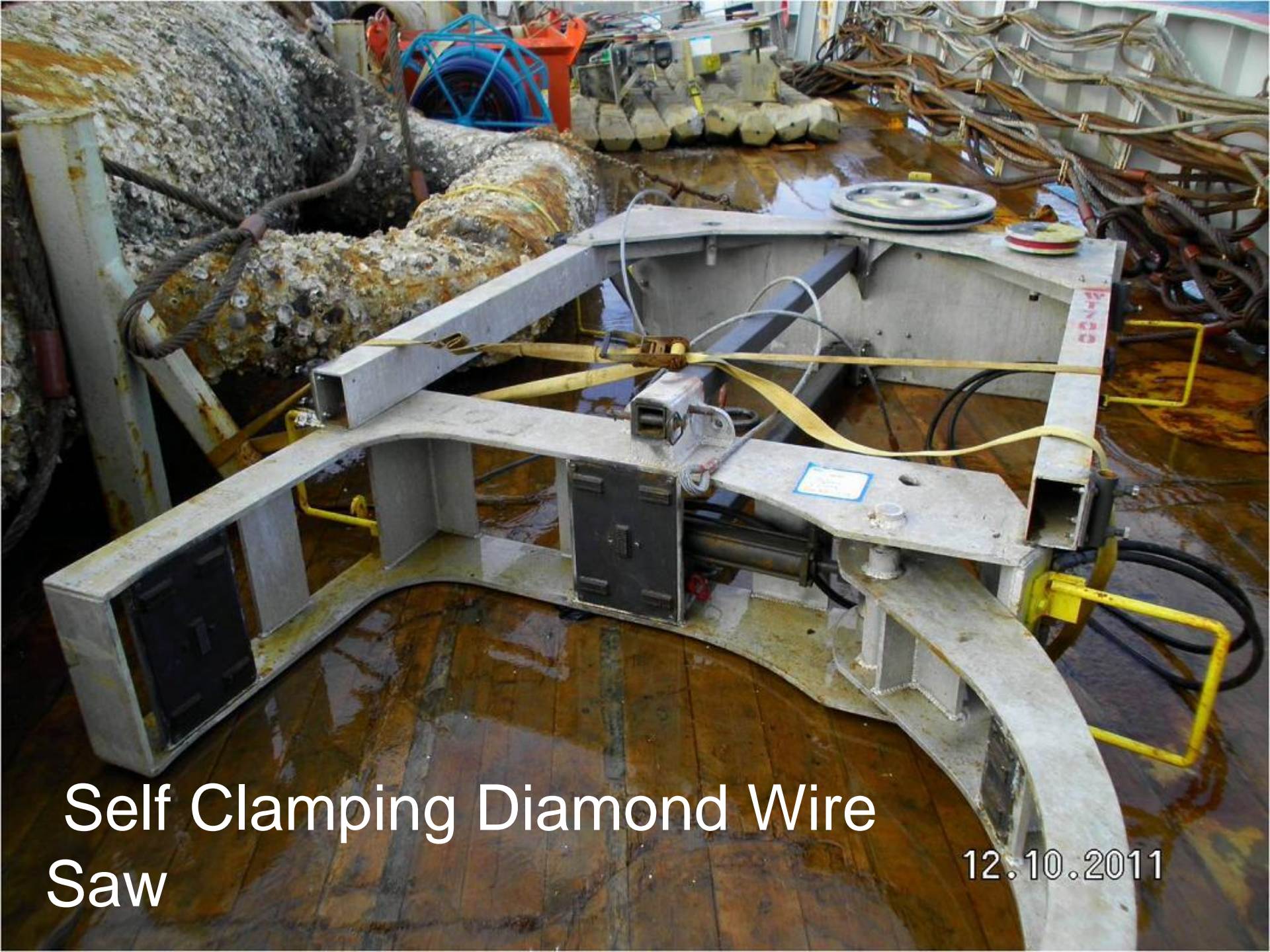
Large Hydraulic Shear



01.08.2012

Hydraulic Grapple





Self Clamping Diamond Wire
Saw

12.10.2011

Dredging Pump

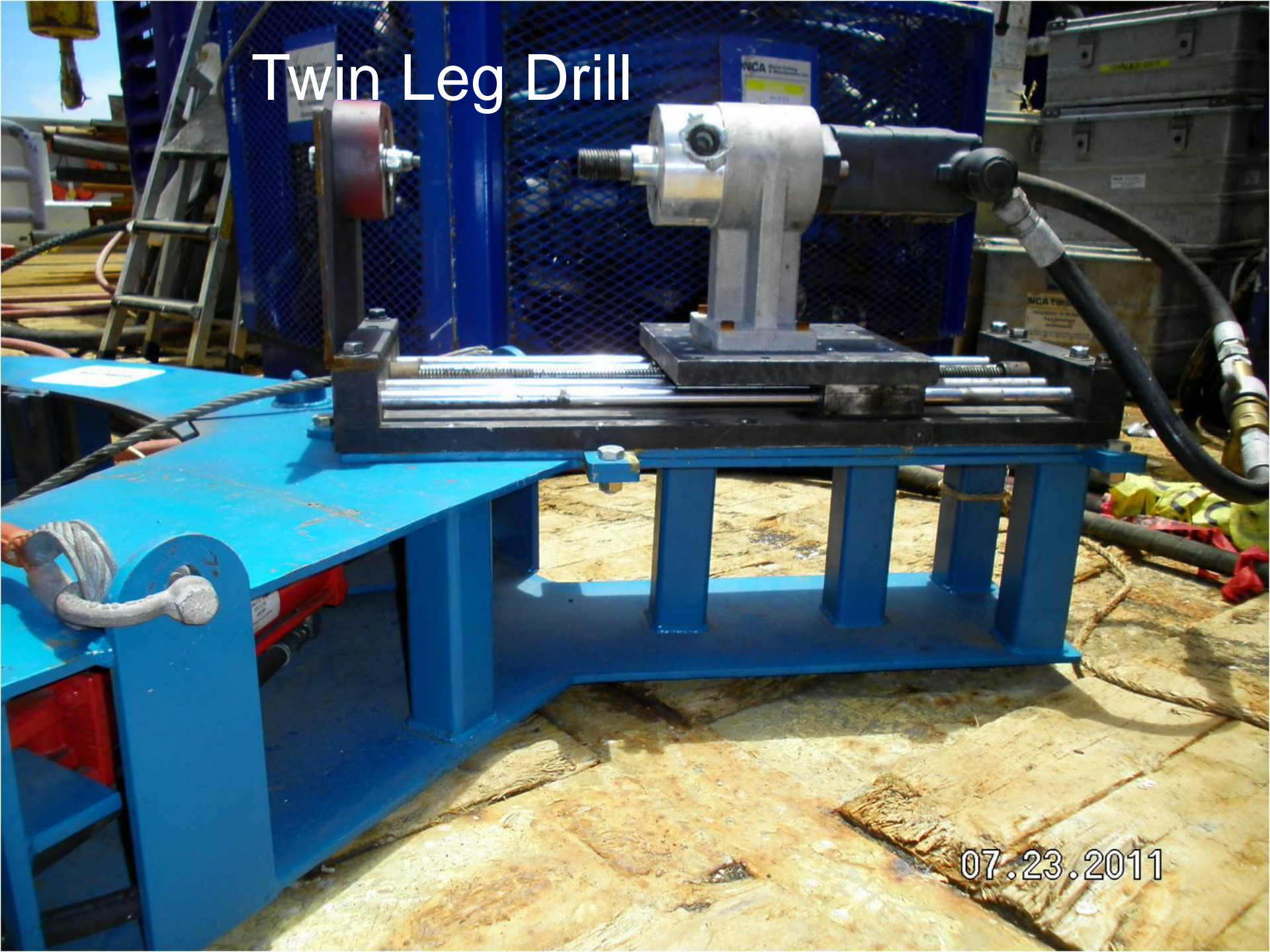


Large Leg Jet



07.11.2011

Twin Leg Drill



07.23.2011

2

08.03.2011

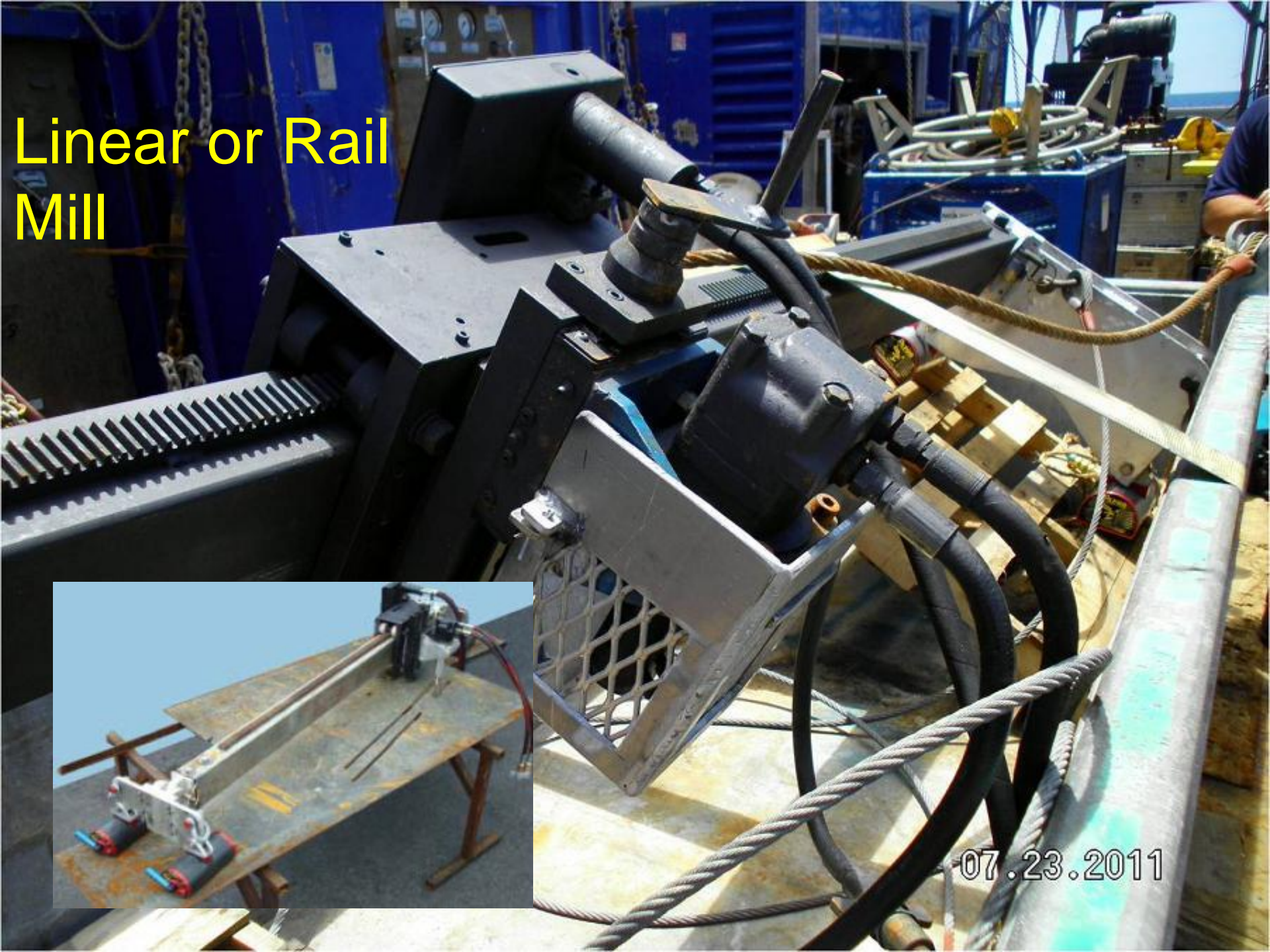


Large Diver Work
Light

Hand held shear



Linear or Rail Mill



07.23.2011

Internal Grit Cutter



01.10.2011

Grit Cutter Deck Use Footprint



07.19.2011