



Troll Solution Case Study – Wreck Removal



Troll Solution – Accident 5 May 2015



Challenges of Claims Handling



Troll Solution Incident

Gard's role

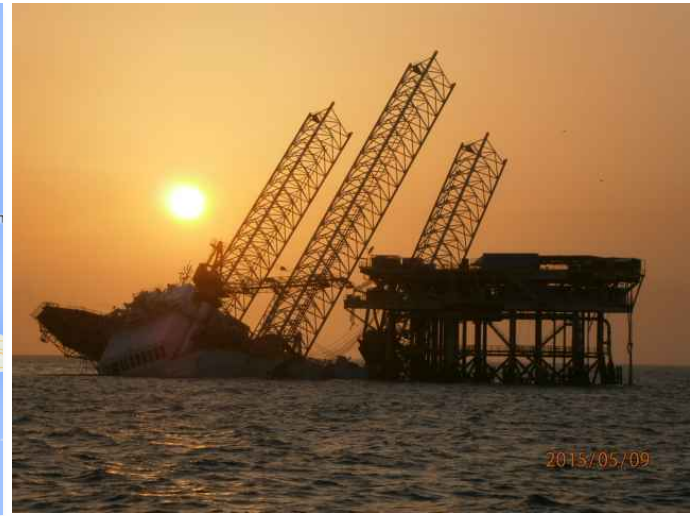
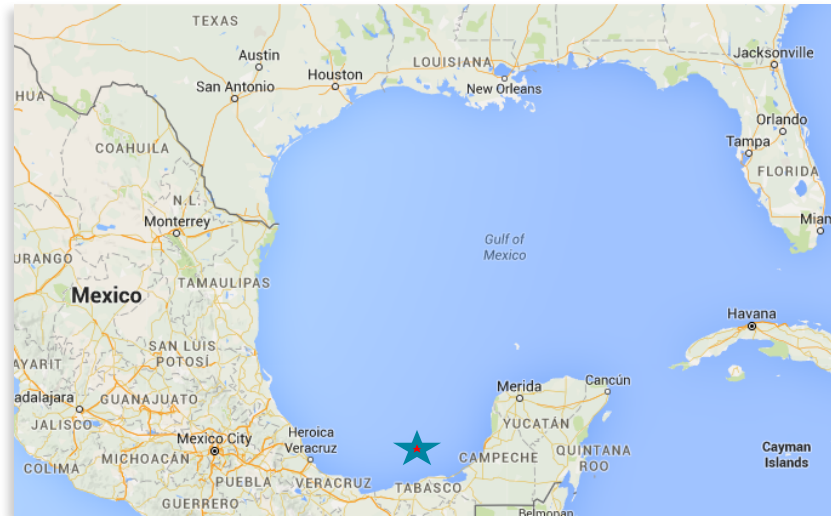
- **Gard** involved as lead underwriter on a syndicated fixed premium P&I cover.
- **Aseguradora Interacciones** – Underwriter in Mexico.
- **Gard** handled the case from Arendal with support by **Morten Lund Mathisen** – Causality lawyer from **Wikborg Rein**.
- **Pinedo Abogados** – Local Gard Correspondent. Provided first line P&I related services in Mexico
- **London Offshore Consultants.**- appointed as technical consultants.



Photo: Smit Salvage

TROLL SOLUTION - The Accident

The location



Bay of Campeche, Mexico - Adjacent to CAAN-A wellhead platform

TROLL SOLUTION "The Scene"



Accidents in Mexican waters - 2015

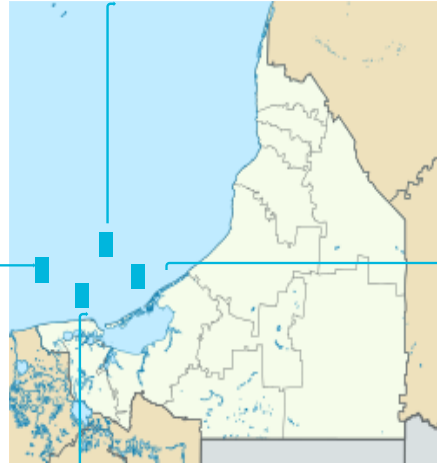
"Abkatun Alfa"

April, 1, 2015.

4 deceased

45 Injured

301 Unharmed



"Akai - H"

Jun, 23 2015

"Troll Solution"

May 05 2015.

2 deceased

19 injured

"Ocean Summit"

May 07, 2015.

CAAN-A

- WELL-SERVICE CAAN-A.- The Caan-A structure is an unmanned eight – legs platform located in a 26 meter (m) water depth, installed in 1993 with the objective of exploiting and extracting hydrocarbons from the Caan field.



Troll Solution

Type:	Jack-up unit
Built:	2010 /NACKS, China
Class:	ABS
Flag:	Vanuatu
Length:	73,15m
Breadth:	55,78m
Depth:	7,62m
Leg lenght:	129m



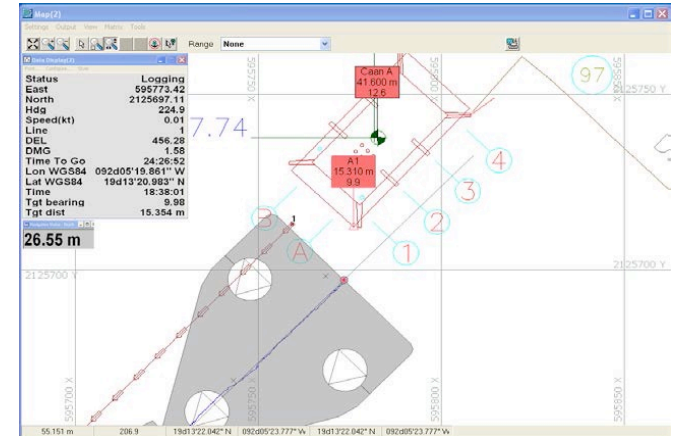
Photo: Gaspar Villaseñor

Troll Solution

Approach to CAAN-A Wellhead platform

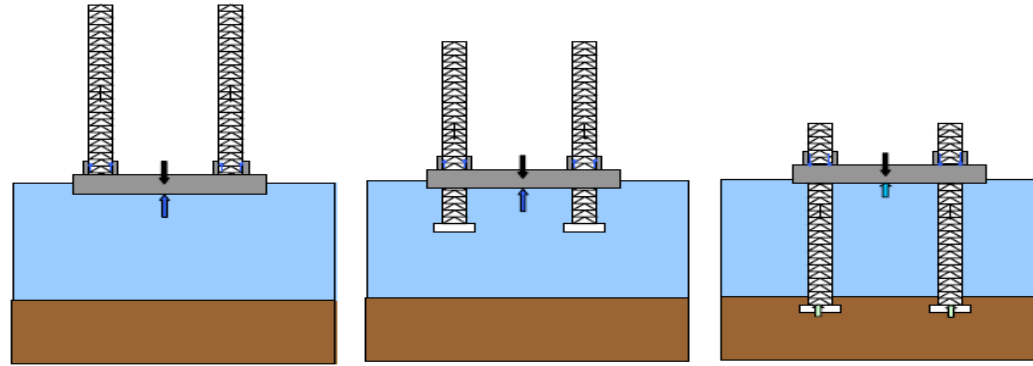
Purpose: Well-service

- Geological assessment done
- Spudcan penetration assessed
- Minor last minute change in position



Troll Solution

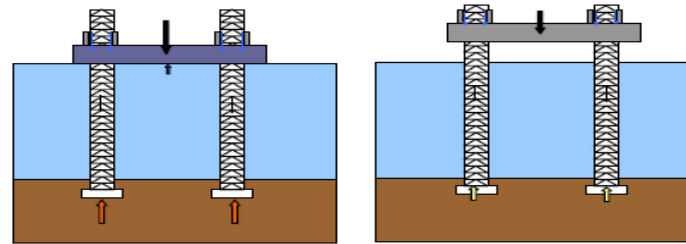
Approach to CAAN-A Wellhead platform



Arriving on Location

Lowering Legs

Coming Out of the Water

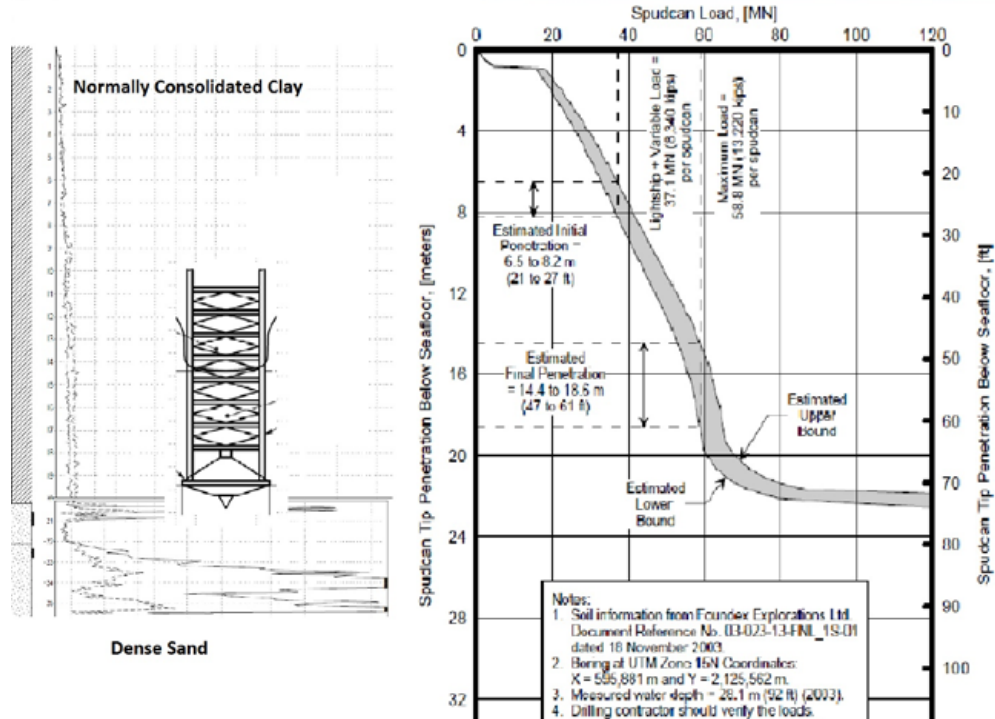


Preloading

At Full Airgap

Troll Solution

Spudcan penetration analysis - illustration



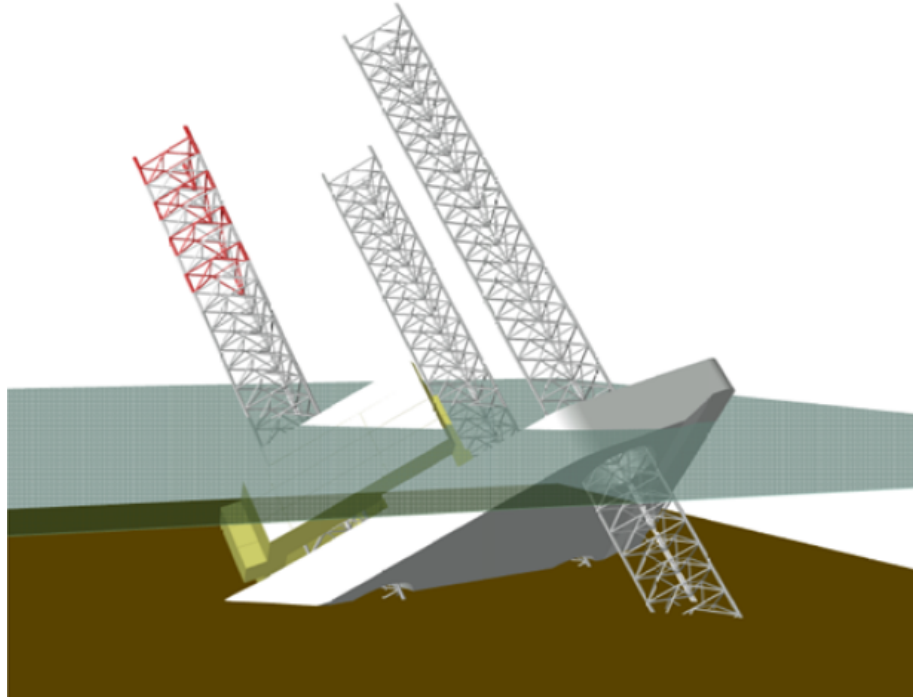
Troll Solution – The Accident

- 100 persons onboard
- During elevation, the unit suffered leaning instability for stbd. leg.
- 10° list, increasing to 14°.
- Unit evacuated.
- Problems with lifeboat launching – on-load release mechanism released.
- 2 persons deceased, several injured.
- Bow leg later collapsed, resulting in a list of 35° and trim of 15°. Unit resting on port leg and on the sea floor at bow and starboard side.
- Media handling required.



Troll Solution

After collapsing of bow leg and stbd. leg.



Port side view

Troll Solution – Salvage / Wreck Removal

Early phase

- Salvage: SMIT Salvage appointed by Hull Underwriters 11. May 2015 on LoF. SCOPIC invoked.
- Special Casualty Representative (SCR) from LOC appointed
- CTL declared by Owners 28. May 2015 – Later accepted by H&M Underwriters.

Troll Solution – Salvage / Wreck Removal

Transition from Salvage to Wreck Removal stage

Threats and opportunities:

- Timing of CTL declaration and abandonment of rights to the wreck.
- Timing of termination of SCOPIC
- Transition to caretaking agreement
- Invitation to tender (ITT) for wreck removal contract?
- Challenges to get equipment and personnel to site
 - Customs procedures
 - Approvals
- Practically no progress achieved during the salvage operations
- World class contractor in progress of getting equipment to site
- Expectations to get the wreck removed soonest
- Weather / Hurricane season

Troll Solution – Salvage / Wreck Removal

Transition to Wreck removal – Phase 1

- SCOPIC terminated: 5. June 2017
 - SMIT Salvage engaged on a interim / caretaking agreement – pending a wreck removal contract to be agreed.
- SMIT was contracted for wreck removal on WreckHire conditions as from 18 June 2015.
- No ITT process prior to contracting SMIT. However, ITT later issued related to possible removal of legs buried in the seabed.
- Good communication established with Pemex and all other governmental agencies and authorities.
- Effective shore organization set-up in Mexico.

Troll Solution

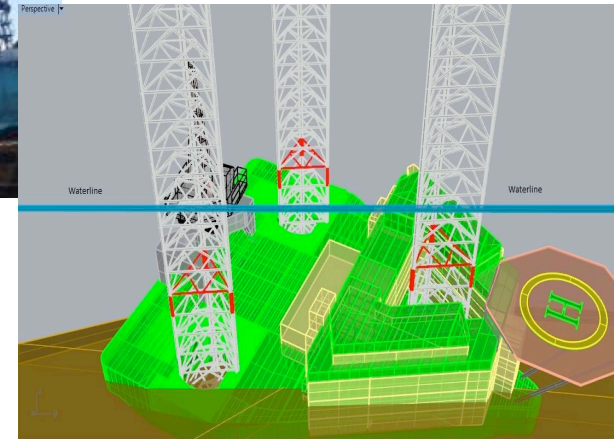
Wreck removal process – Part 1



Hot-tapping of oil



Removal of skid crane etc.



Cutting of upper legs

Troll Solution

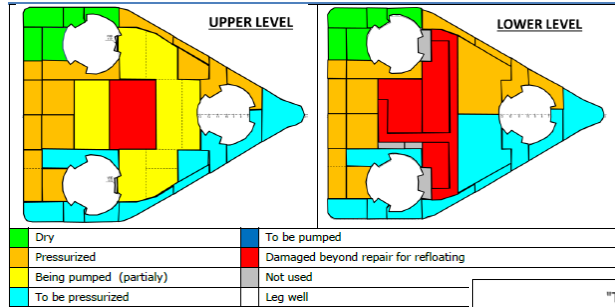
Wreck removal process – Part 1



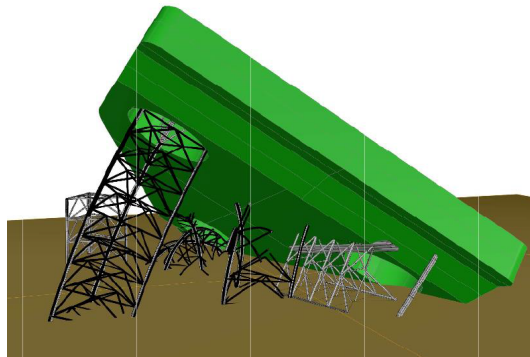
Cutting of upper port leg

Troll Solution – Wreck Removal

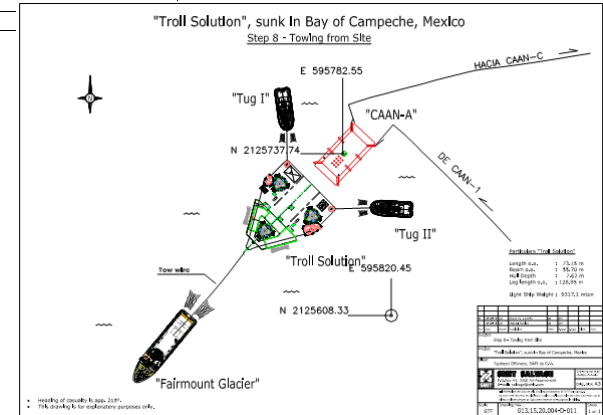
Wreck removal process – Part 1



Re-floating



Cutting legs below the hull



Planned stabilization and towing

Troll Solution – Salvage / Wreck Removal

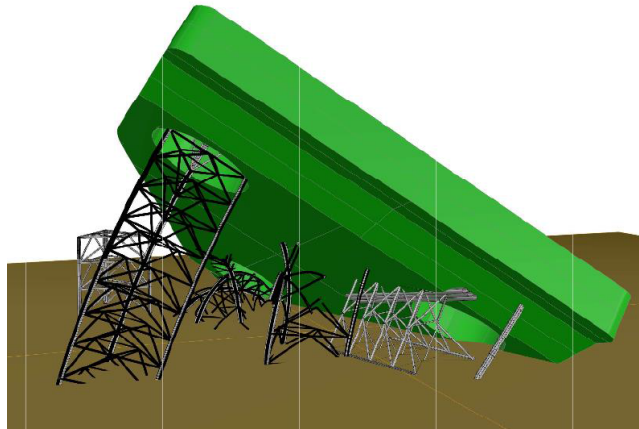
Transition to Wreck removal – Phase 1

Challenges during the project:

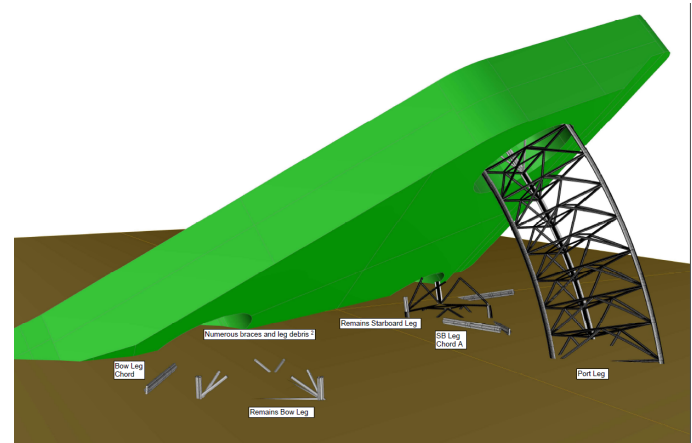
- Practically no progress until mobilization on site 23 June 2015.
- Delays and obstacles in custom clearance of equipment and vessel approvals.
- Underestimation of work involved.
- Management of changes.
- Risk assessment and quality assurance procedures.
- Project extended into season with difficult weather conditions
- Jurisdiction concerns

Troll Solution – Wreck Removal

Debris removal – September/October 2015



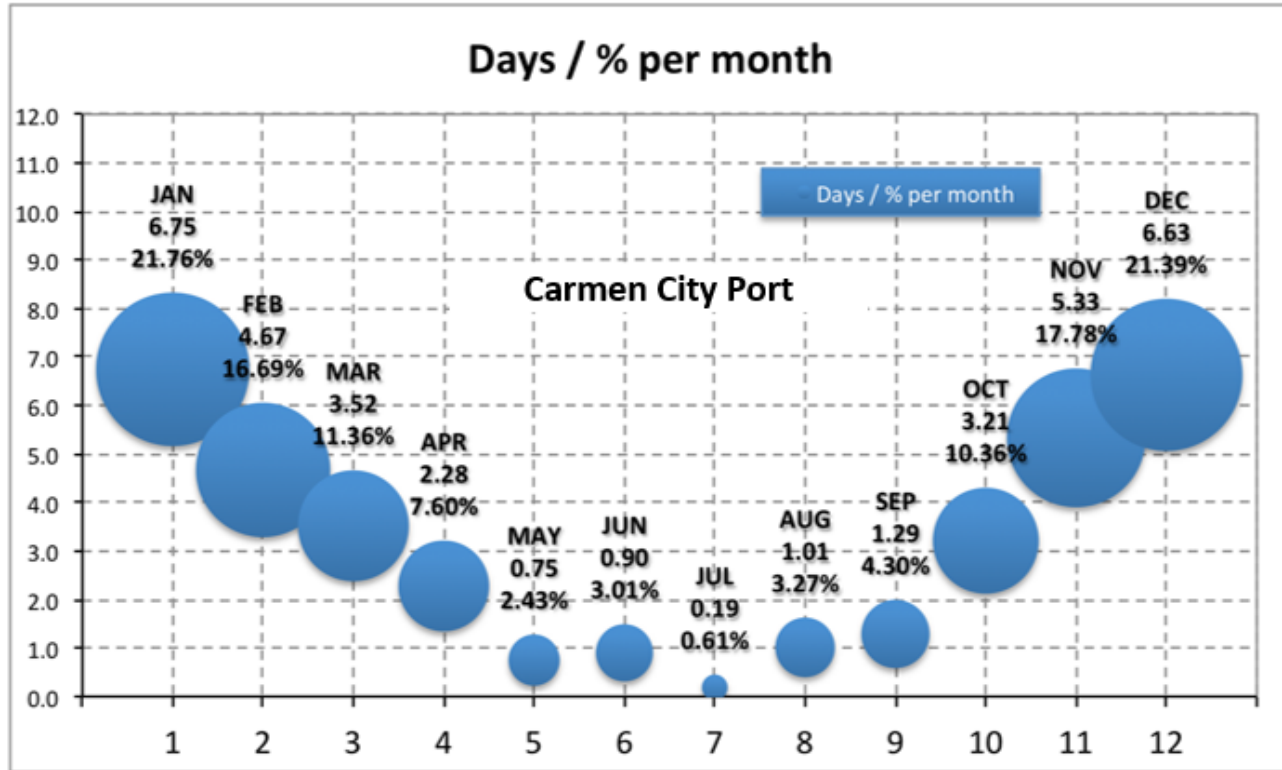
Before debris removal



After debris removal

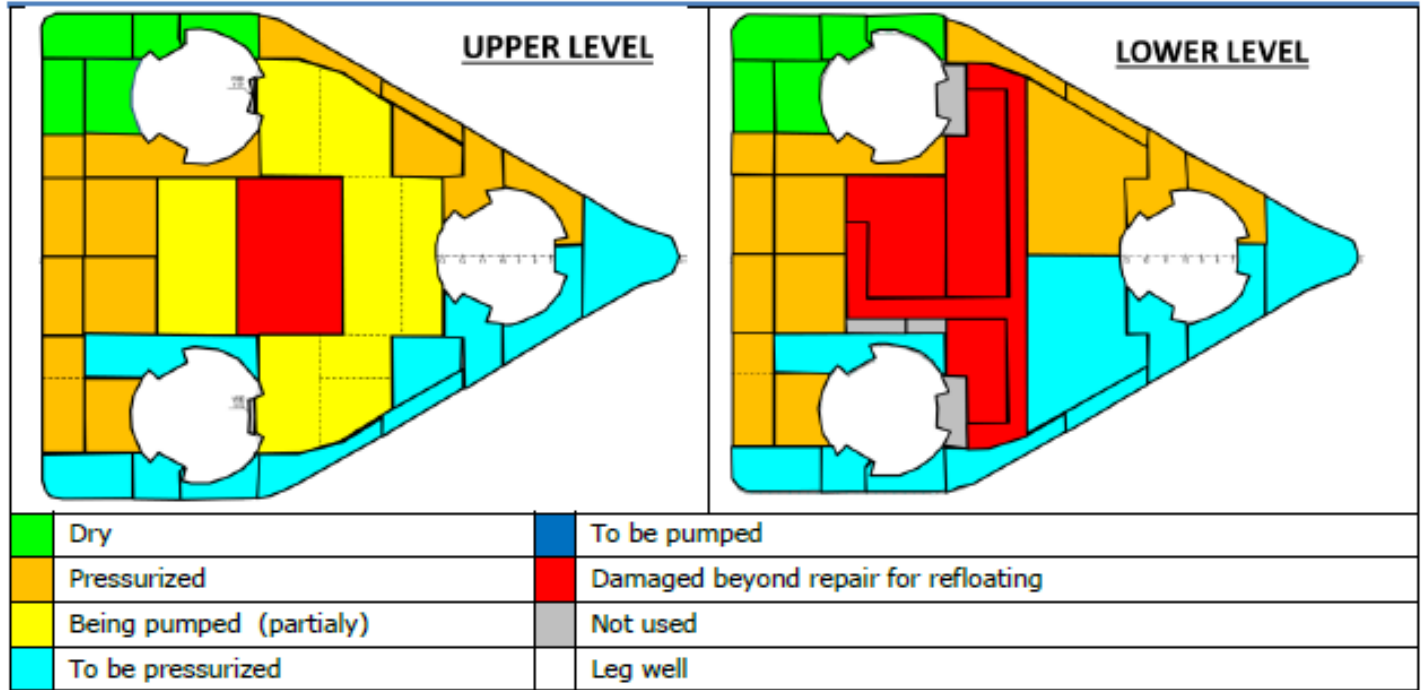
Troll Solution – Wreck Removal

Weather hazard



Troll Solution

Status 25 October 2015

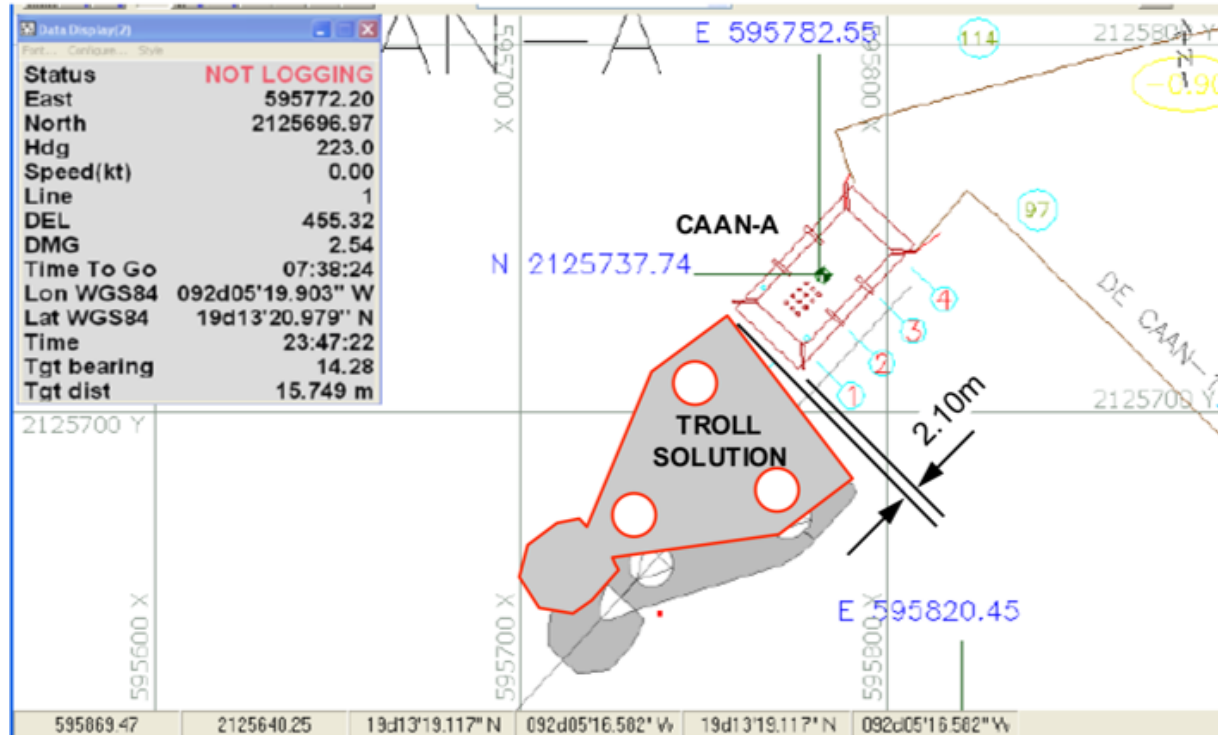


Troll Solution - Sunk 26 October 2015



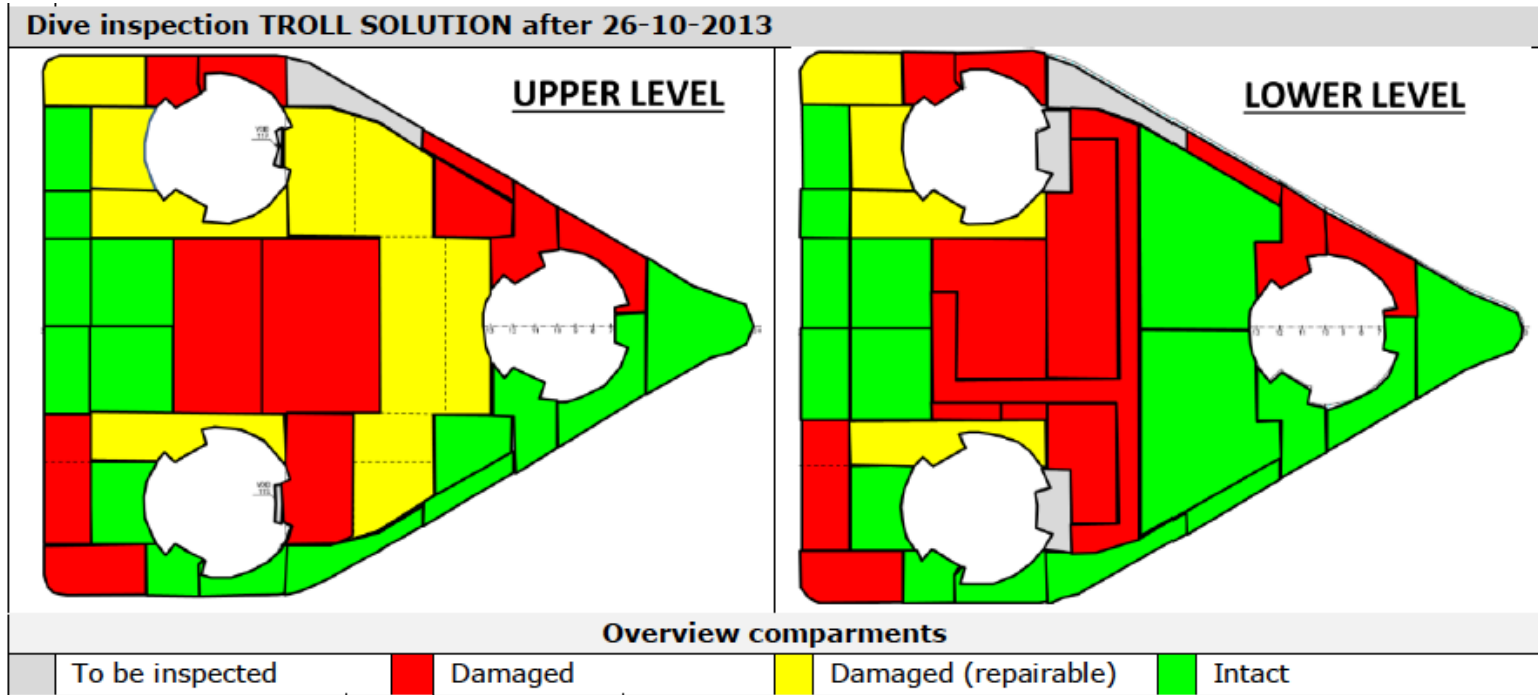
Troll Solution - Sunk 26 October 2015

Position after sinking

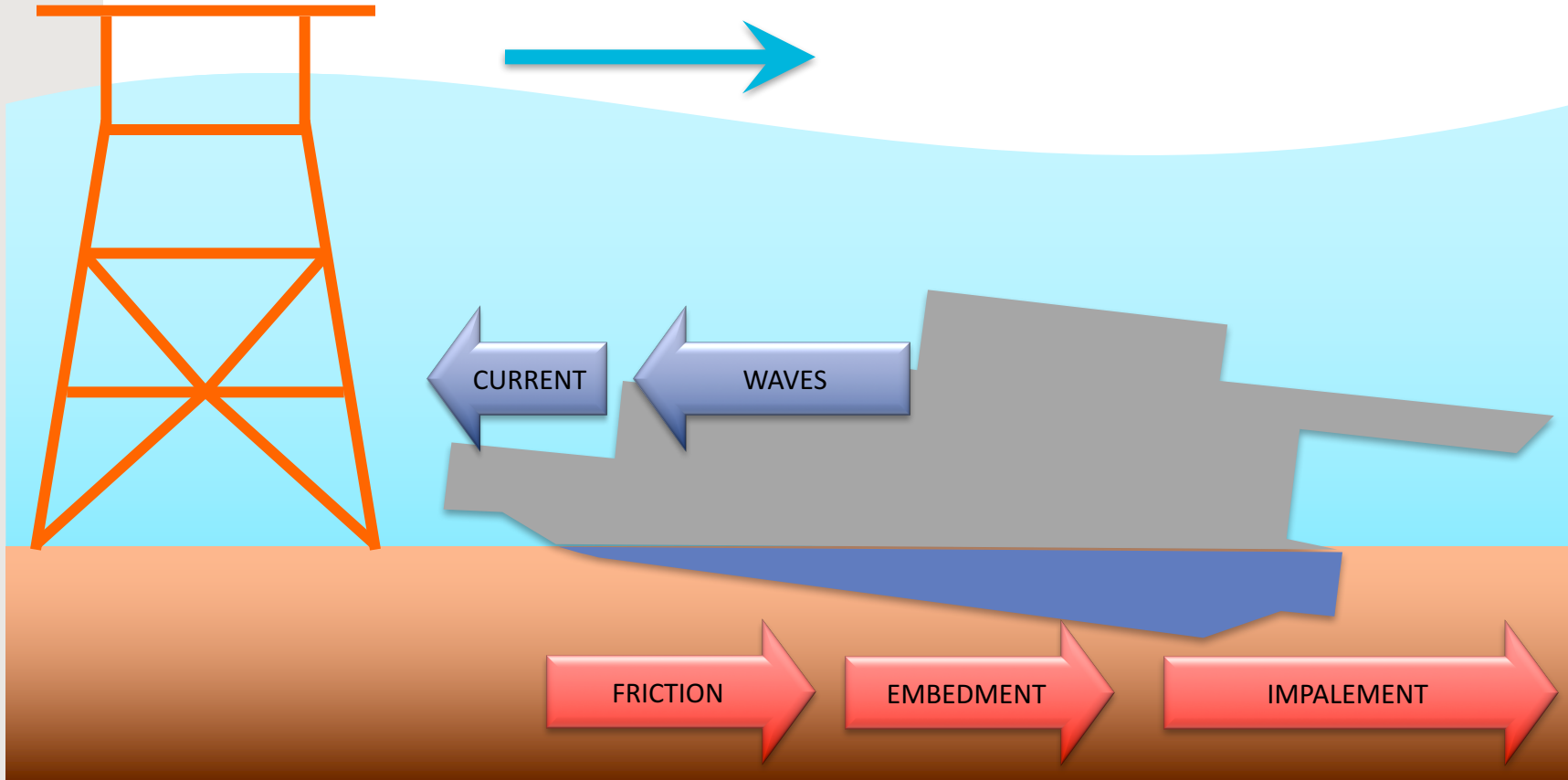


Troll Solution - Sunk 26 October 2015.

Condition of the wreck



Troll Solution – Wreck Stability



Troll Solution

Intermediate phase

- Wreck considered stable over the winter season
- Consultation and communication with Pemex and authorities
- SMIT invited to provide an offer to continue with a modified method considering the new situation
- LOC continued as consultants
- ITT: Hull removal and options for removing legs (partially or fully)

Troll Solution – Wreck Removal

Phase 2 - Main activities

- New ITT for wreck removal sent out on 19 December 2015.

- Requirements / Clarifications:
 - Plan - method statement.
 - Hazard Identification, risk assessment and mitigation plan.
 - Qualification of personnel.
 - Timeline
 - Reporting procedures.
 - Management of change procedures.
 - Contract type and cost model.

Troll Solution – Wreck Removal

Phase 2 - Main activities

- Ardent contracted on a WreckStage contract February 2016.
- Main stages in the wreck removal operation consisted of:
 - ❖ Mobilization of equipment.
 - ❖ Cutting of the hull, mainly using a guillotine system.
 - ❖ Partial removal of lower legs protruding above the seabed.
 - ❖ Scuttling of the hull sections.
- The removal of the hull and partial lower leg removal was successfully completed 6 November 2016, to the satisfaction of Mexican Authorities and Pemex.

Troll Solution – Wreck Removal

Phase 2 – Wreck removal process



Guillotine arrangement



Lifting hull sections



Scuttling

Troll Solution – Wreck Removal

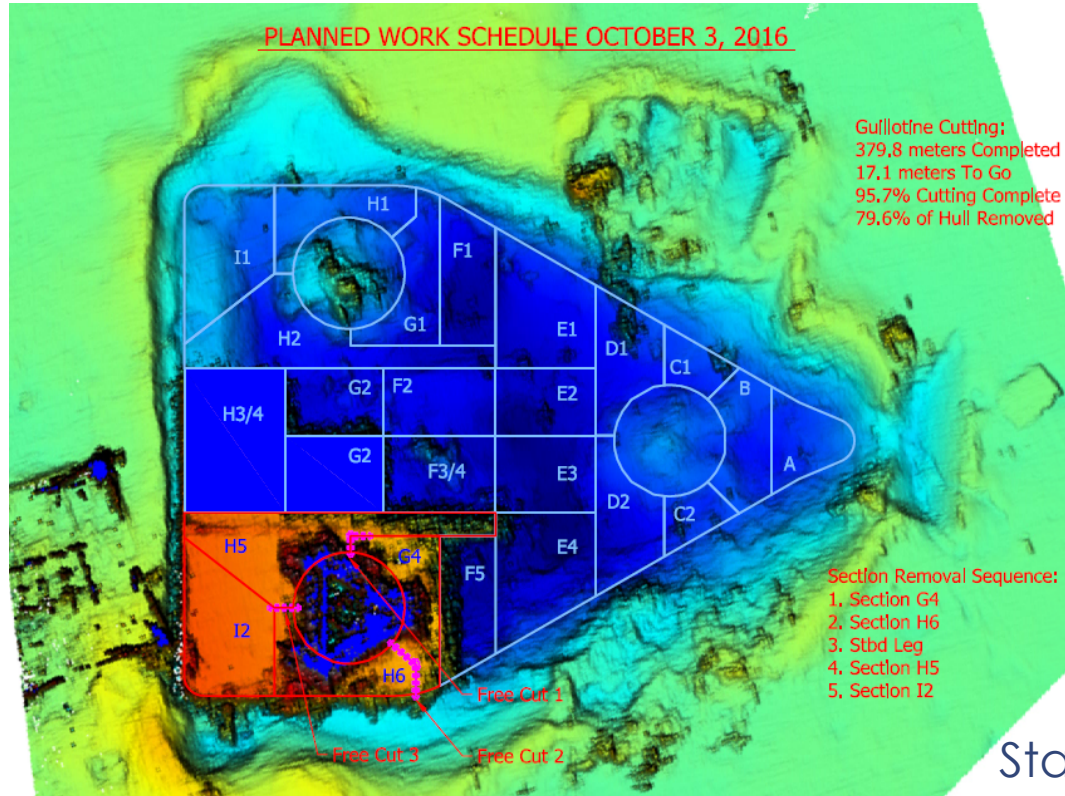
Phase 2 - Main activities

Some obstacles and delays:

- Mobilization of assets
- Custom clearance / vessel approvals for work in Mexico
- Effectiveness of guillotine – start-up problems
- Weather delays
- Unexpected modifications on Troll Solution – additional accommodation section needed to be removed

Troll Solution – Wreck Removal

Phase 2 – Multi-beam survey



Status 3 October 2016

Troll Solution

Scuttling Permit



Photos: Ardent

- 9,140 tons.
- Pre-approved scuttling location avoided a new environmental impact study of the scuttling site.
- Frequent meetings with Ministry of the Navy in both, Mexico City and at Ciudad del Carmen
- Previous approval of removal and scuttling plan by the Ministry of the Navy and the ASEA.
- Individual reports on each scuttling operation – 23 scuttling operations in total – supervised by personnel from the Ministry of the Navy on site with copy to Mexican Customs.
- Final report on the scuttling operations in compliance with the scuttling permit.
- Legs buried in the seabed to remain.
- Approval of completion of wreck removal by the Mexican authorities and Pemex.

Troll Solution – Wreck Removal

Phase 1 vs Phase 2 – Pre-operation

	Phase 1 (2015)	Phase 2 (2016)
Preparation phase	Short	Ample
Tender process	No	Yes
Full Time dedicated Project manager (i.e. not combined with Salvage Master)	No	Yes
Contract	WreckHire	WreckStage
Method statement	Yes. Re-floating	Yes. Chopping in pieces
Hazard Identification /Risk assessment (HIRA) – Communicated by Contractor	No	Yes
Time Schedule (Gantt)	Yes – Made in a hurry	Yes
Budget	No. Brief overall estimate	Fixed price. Caveats on certain risks.
Management of Change procedures	Not well defined	Yes

Troll Solution – Wreck Removal

Phase 1 vs Phase 2 - Operation

	Phase 1 (2015)	Phase 2 (2016)
Progress reporting	Yes	Yes
Financial reporting	Running costs only. Not against budgeted costs.	Yes, on elements at owners risk
Schedule reporting	Rarely	Weekly
Variation order /approval procedure – related to changes in specifications	Poor	Yes
Level of Company influence on operation	Low / Medium. Consultation w.r.t. hiring of main assets	Low/Medium. Manly as an effect of fixed price.
Result	Failure	Success

Project Management

PMI's pulse of the profession :

64% of projects successfully met their original goals and business intent in 2011.

Which means...**over one third did not.**

What differentiates those organizations with higher success rates from those with lower success rates?

Critical success factors

- *Talent*: Staffing the team with appropriately skilled people
- *Project Management Basics*: Taking the time to create a realistic implementation plan
- *Executive Sponsorship*: Ensuring top-level management support for the project
- *Focus on Benefits*: Clearly defining the expected benefits from the project
- *Change Management*: Effectively managing change associated with the project

		% of projects meeting original goals and business intent		
		% of on-time projects	% of on-budget projects	
Reported Organizational Project Management Maturity Level	High	67%	68%	73%
	Medium	55%	58%	67%
	Low	39%	44%	53%

Project Management

What is a successful project?

A successful project for Gard is performed:

- at right quality,
 - According to plan/contract.
 - As communicated with stakeholders – Well managed expectations.
 - No personal injuries, and no undue harm to environment.
- at agreed price / on budget.
- According to the agreed time schedule.

Project Management

The most important project management elements

- Well qualified project management team with a clear mandate.
- Management involvement.
- Good communication - Management of expectations.
- Clear contract and project specifications, as far as possible.
- Planning for efficient operation.
- Hazard identification and risk assessment, also including mitigation strategies for unacceptable risks.
- Proactive execution of the project.
- Management of changes – Good procedures to be in place.
- Identification of learning points for new projects.

Troll Solution – Learning Points

- Importance of Project Management in general
- Utilize local competence
- Good communication with stakeholders is essential
- Duly consider robustness of the chosen methodology



Thanks for the attention