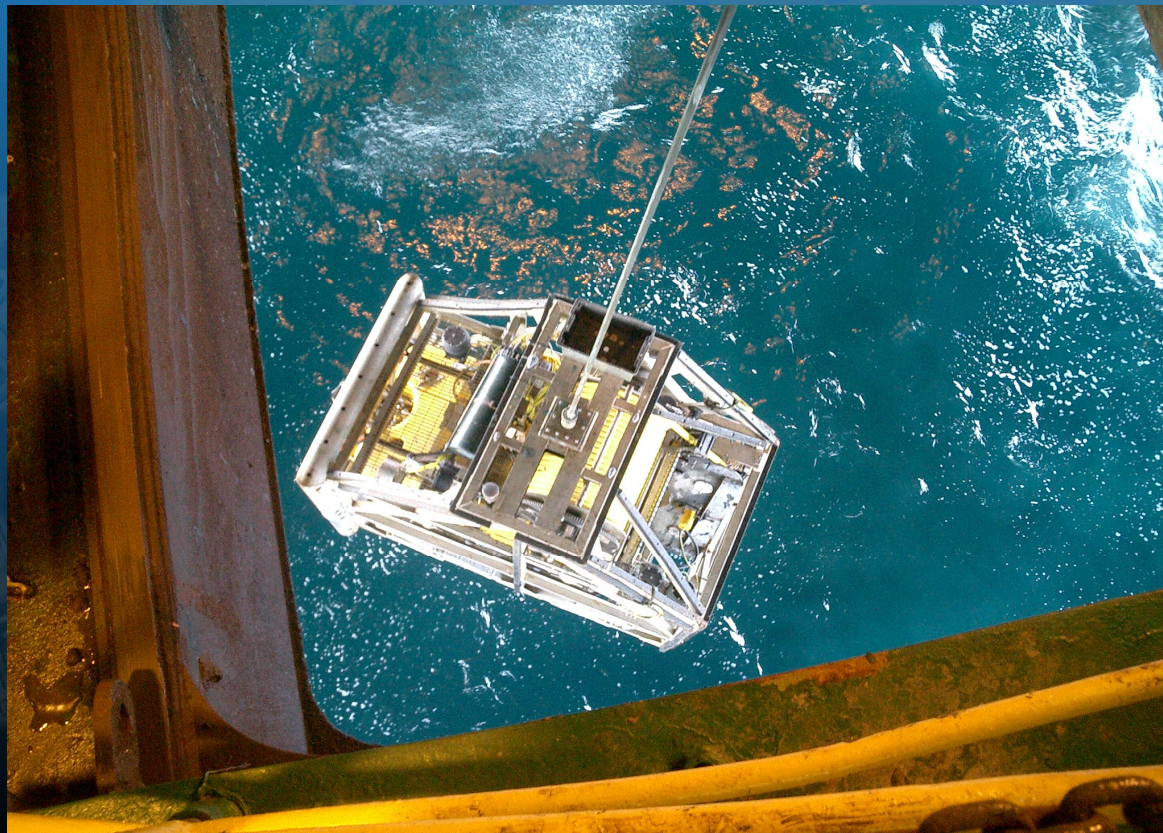


OCEANEERING - ROV

ROV Handling

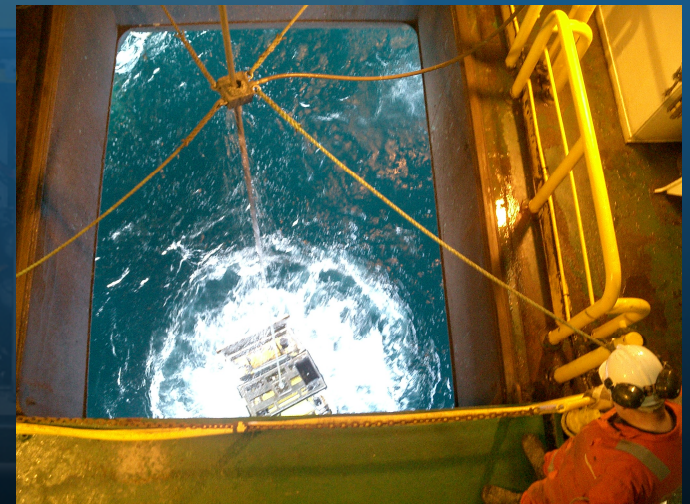


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Hazards:

1. Personnel handling load with swing (4-8 ton):
Risk of personnel injuries and equipment damage
2. Operating manual guide systems:
Risk of squeeze hand or fingers
3. Cage and ROV can hit vessel structure:
Loss of ROV \ Rig downtime
4. Side forces on A-frame \ sheave:
Loss of ROV \ Rig downtime
5. Snap load on ROV umbilical:
Loss of ROV \ Rig downtime



OCEANEERING - ROV

Alternativ solutions



Improvements:

- Remove swing.
- Remote controlled handling
- Avoid drift of and snap load in splash zone

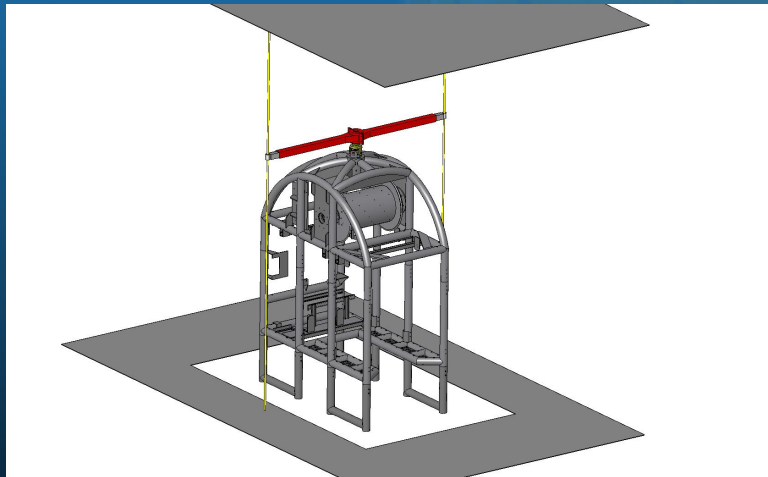
ALTERNATIVES:

- 1- Guiding of Cage/ROV above moonpool
- 2- Guiding of Cage/ROV trough moonpool
- 3- Guiding av Cage/ROV trough splash-zone (full cursor)

OCEANEERING - ROV

Guide above deck

Advantage / disadvantages



- + Improve personnel safety
- + Simple installation
- + Low cost

- Do not solve entry of moonpool on recovery
- Low effect on swing in splash-zone
- Do not improve weather limitations

Estimat Alternative 1:
Prestudie of guide system above deck
Production

: NOK 50-100 000,-
: NOK 0,5-1 millioner

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Guide system trough moonpool

Advantage / disadvantage



- + Low cost
- + Improve personnel safety
- + Simple installation
- + Guided entry of moonpool
- + Reduced swing due to shorter pendel length

- Require work inside or under moonpool
- Modification of hatches
- Limited improvement of weather limitations

Estimat Alternative 1:

Prestudie of guide system trough moon pool :
Production :

NOK 50-100 000,-
NOK 1-2 millioner

Estimat Alternativ 2:

Forstudie av guide system gjennom moonpool:
Anttt prisleie på guide system gjennom moonpool:

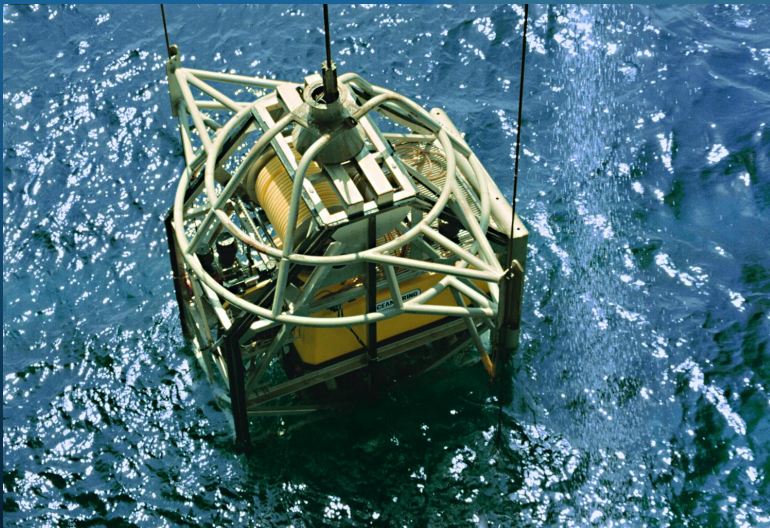
NOK 50-100 000,-
NOK 1-2 millioner

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OCEANEERING - ROV

Full Cursor

Advantage / disadvantage



- + Improve personnel safety
- + Improve equipment safety
- + Designed to withstand sestate 6

- Can not be installed offshore

Estimat Alternative 3:
Prestudie of full cursor
Production

: NOK 50-100 000,-
: NOK 3-5 millioner

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OCEANEERING - ROV

Weather limitation without cursor
Transocean Arctic

ROV Weather Tolerance

LOCATION: Transocean Arctic

ROV: Magnum 12



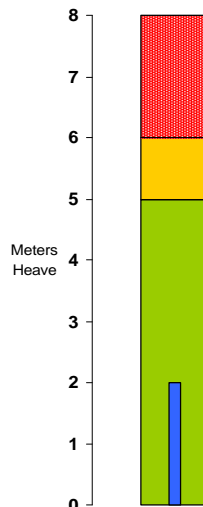
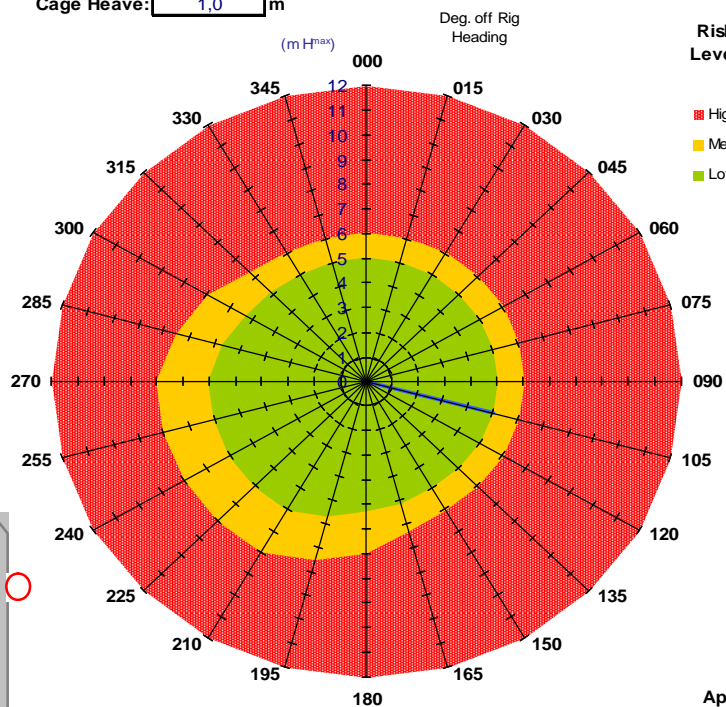
Through Splash-Zone

Max sea: m
Seas from: deg.
Cage Heave: m

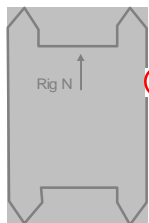
New ROV Location Without Cursor

Heave at Working Depth

Max predicted
heave during dive: m



ROV Location



Date: _____

Approved By: _____

OCEANEERING

OCEANEERING - ROV

Weather limitation with cursor
Tranoccean Arctic

ROV Weather Tolerance

LOCATION: Tranoccean Arctic

ROV: Magnum 12



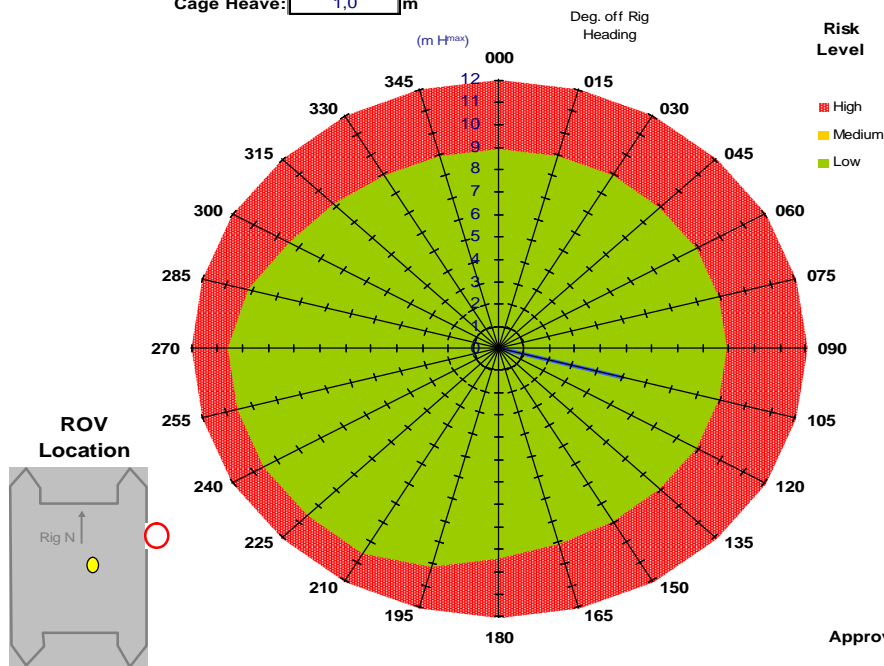
Through Splash-Zone

Max sea: m
Seas from: deg.
Cage Heave: m

New ROV Location With Cursor

Heave at Working Depth

Max predicted
heave during dive: m



Date: _____

Approved By: _____



OCEANEERING - ROV

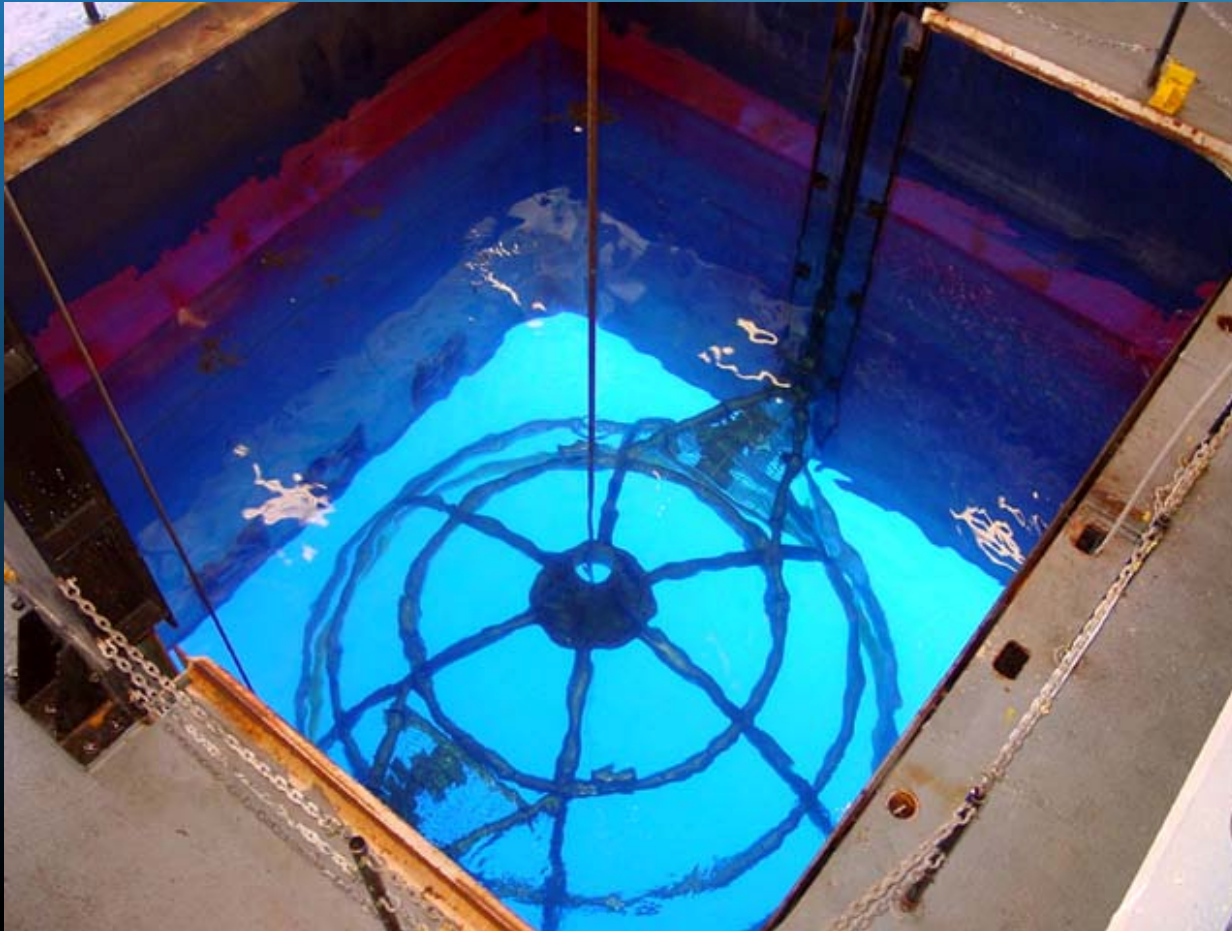
Example - rail system



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Example - Cursor in moonpool



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