

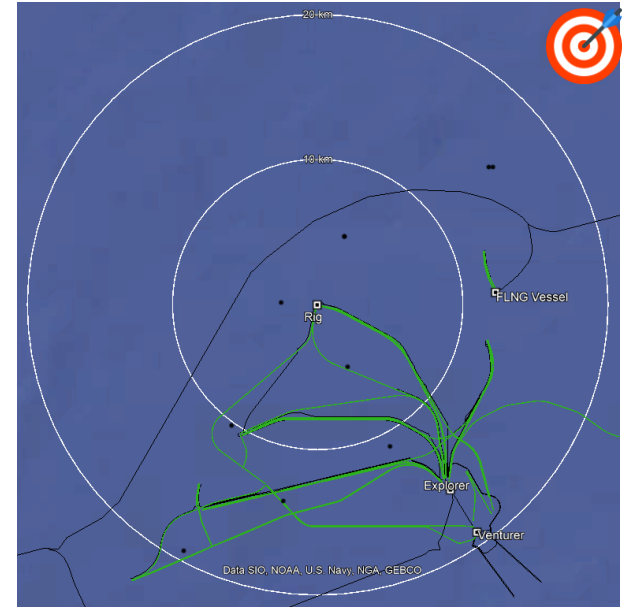
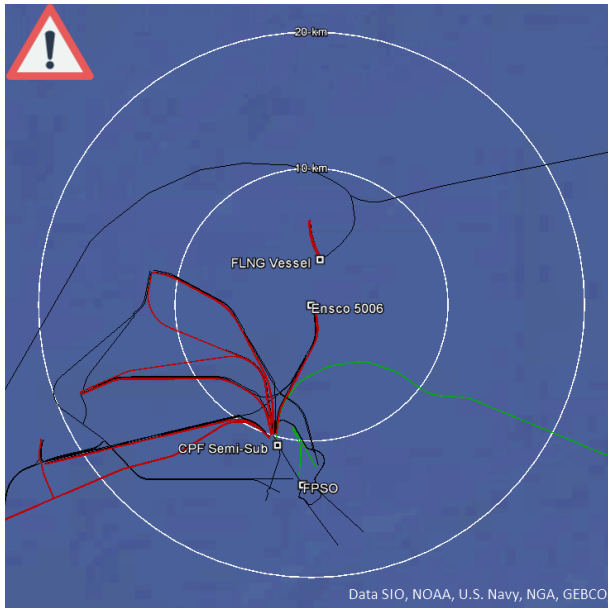


Releasable Mooring System Design



Delivering high quality personnel, service, and equipment - all incident free

Problem + Solution



Not to drill during the cyclone season



Find a way to enable MODU to quickly depart field while still maintaining mooring capability



Regulatory Feasibility



Australian Government
Australian Maritime Safety Authority

Offshore Petroleum and
Greenhouse Gas Storage Act
2006 (OPGGSA)

Management of Safety on
Offshore Facilities
Regulations 1996 (MOSOF)

Navigation Act 2012

Qualification of Technology



Technical Documentation



Case Studies



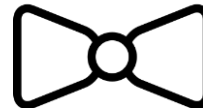
Design Documentation



FMEA



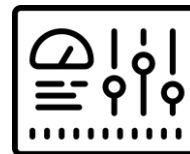
Construction



BowTie analysis for MAE



Operational History

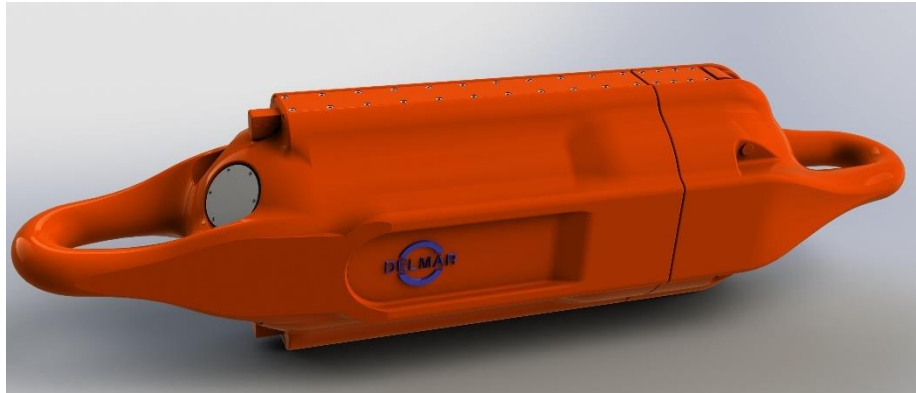


Control Functions



Proof Testing

RAR Plus



Highest number of alternate release options



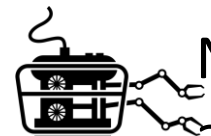
Highest degree of acoustic transducer protection and redundancy.



Highest ultimate load and proof load rating



Highest proven operational performance record

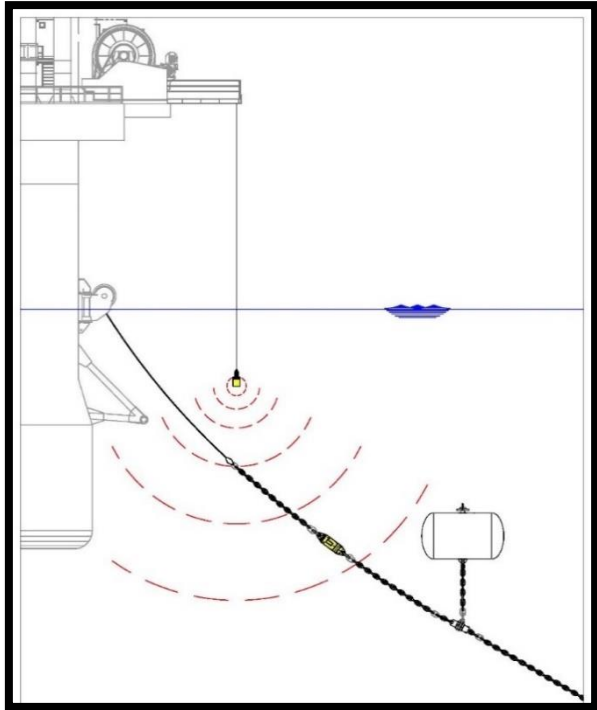


No reliance on ROV for alternate release

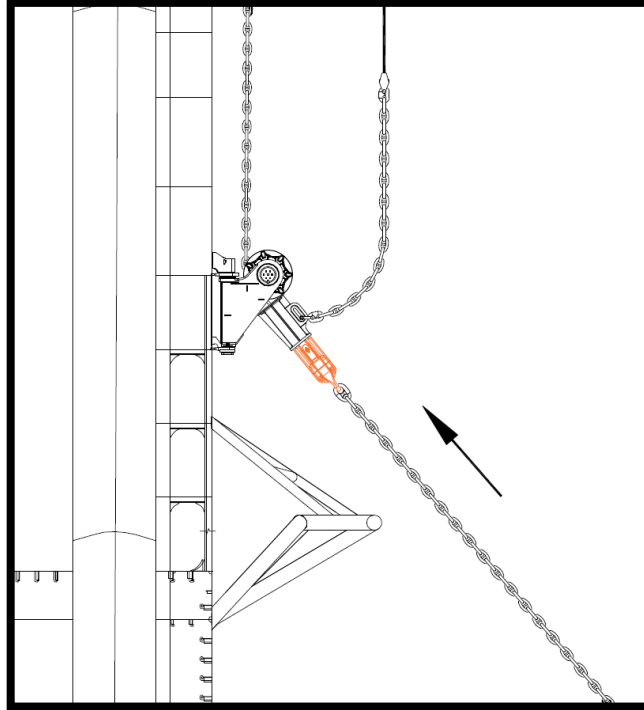


Rig immediately ready for transit

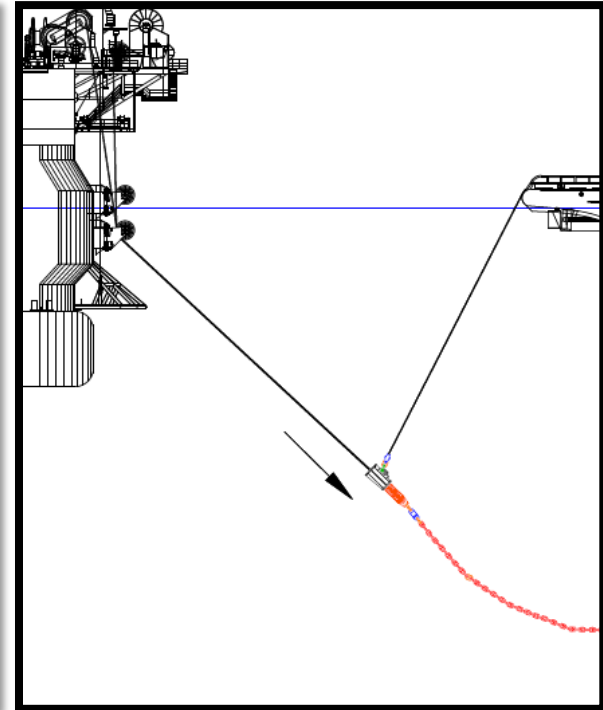
RAR Plus Release Options



Acoustic Release




Backup - Rig Fairlead



Backup - AHTS

Proof Load and MBL

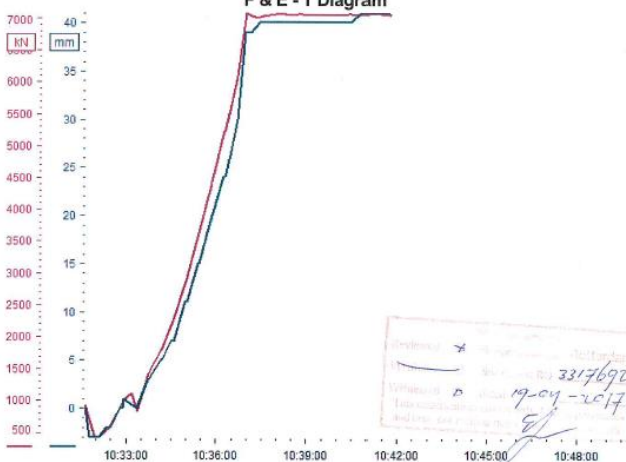


Klant / Customer Order / Order Object / Object	Pleissner Guss 751180 RAR Plus	Omschrijving / Description Proofload test RAR Plus nl between 7010 kn & 7117 kn
Opmerkingen / Remarks Serial No.: REB-003 AEB-003		
Serie nr. / Serial No. Proeftype / Type of test Trekproef		
Proef / Test 0 van / of 0 Datum / Date 19.04.2017		
Starttijd / Time started 19-4-2017 10:31:39 Stoptijd / Time stopped 19-4-2017 10:49:44		


Hoogste Kracht / Highest Force 7071 kN
Hoogste Rek/ Highest Elasticity 41 mm

Stijgtijd / Rising time 1000 kN/Mm

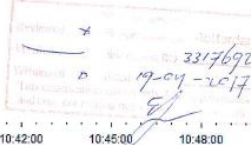
F & E - T Diagram




Stempel / Stamp




Stempel / Stamp




Stempel / Stamp






Mennens Dongen B.V.
 Metaalstraat 5
 5197 ND DONGEN
 Postbus 260
 5190 AG DONGEN


Telefoon: 0031 (0) 162-38 38 00
 Telefax: 0031 (0) 162-32 30 80
 E-mail: info@proofloadtesting.com
 Internet: www.proofloadtesting.com

Part of  AXLOAD



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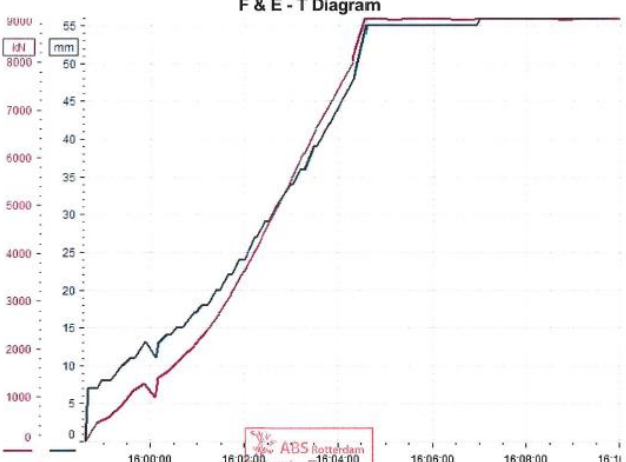


Klant / Customer Order / Order Object / Object	Pleissner Guss 752916 Release end P5/1 Anchor end P2/1	Omschrijving / Description MBL 8900kN
Opmerkingen / Remarks Shoes 4025 / 4026 / 4022/ 4003 / 4029 / 4002 / 4023 / 4008 button 2003 locking rings REB3003 & AEB3008		
Serie nr. / Serial No. Proeftype / Type of test Trekproef		
Proef / Test 0 van / of 0 Datum / Date 22.09.2017		
Starttijd / Time started 22-9-2017 15:58:37 Stoptijd / Time stopped 22-9-2017 16:10:01		


Hoogste Kracht / Highest Force 8919 kN
Hoogste Rek/ Highest Elasticity 56 mm

Stijgtijd / Rising time 1000 kN/Mm


F & E - T Diagram




Stempel / Stamp (Mennens)




Stempel / Stamp




Stempel / Stamp






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Gen II RAR, Model 1686
TEST RECORD - RAR LOAD TEST
 IOS PRC #1686 1031

Date: 9/22/17

NAME OF TEST FACILITY: Mennens
Dongen, Netherlands


Check One: MBL
 STATIC Proof Test Only
 STATIC and 800-kip "Remote"
 RELEASE Test


RAR RELEASE END SN: P5/1 008
 RAR ANCHOR END SN: P2/1 002
 Installed Locking SHOES SN: 4025, 4026, 4022, 4003, 4029, 4002, 4023, 4008
 Installed Locking Button SN: SRB 2003 Release end P-ty: REB 3003
 Safety procedures reviewed 2003 Adv: EU Reg AEB 3008

Static Load Test:
 Step 4d) Static test load 8919 kN lbf verified line tension
 Step 4e) Duration of tension load 5 minutes
 RAR static load test: Pass Fail

Remote Release Load Test:
 Step 7e) 800-kip Remote Release test load N/A lbf verified line tension
 Step 7e) RAR Release - Pass/Fail Pass Fail

IOS TEST SUPERVISOR ON SITE
 Peter Dancy Dancy 9/22/17 IOS
 Signature Date Organization

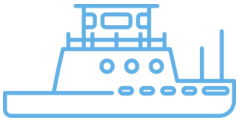
WITNESS 1:  Date Date Organization Organization

WITNESS 2:  Date Date Organization Organization

1686 1031 PlatTest/PRC revA.DOC

SIZE	CODE	DRAWING NO.	REV
A	11420	1686 1031	A
SCALE	NONE	SHEET	5 of 6

Nested for Transit



Eliminates need for AHTS



Minimize personnel exposure



Eliminate AHTS weather downtime



Maximize time savings



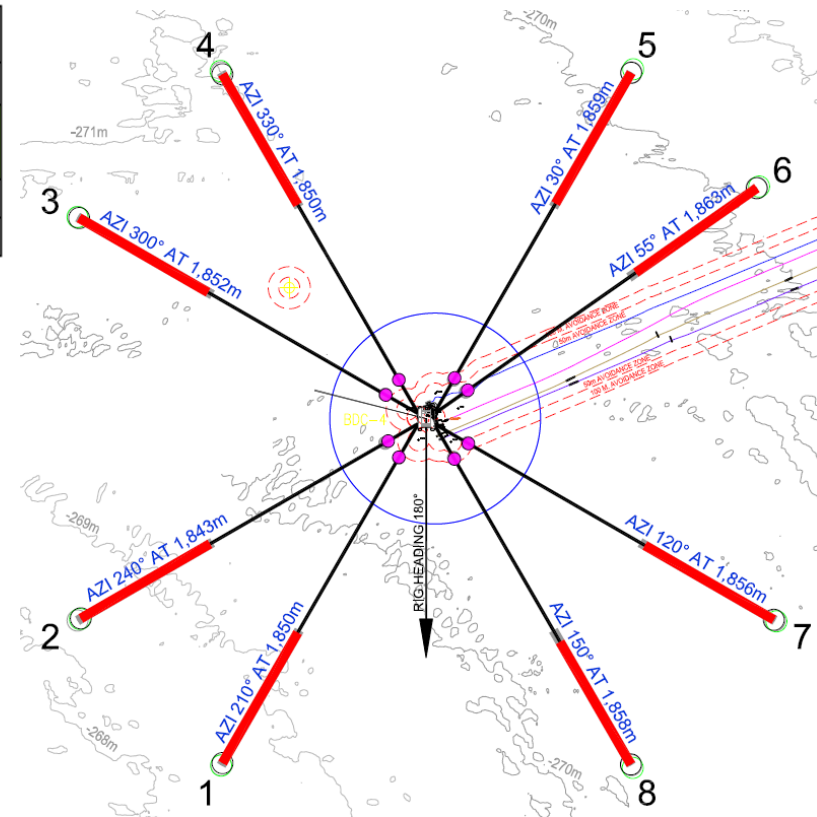
Rig immediately ready for transit



Basis of Design

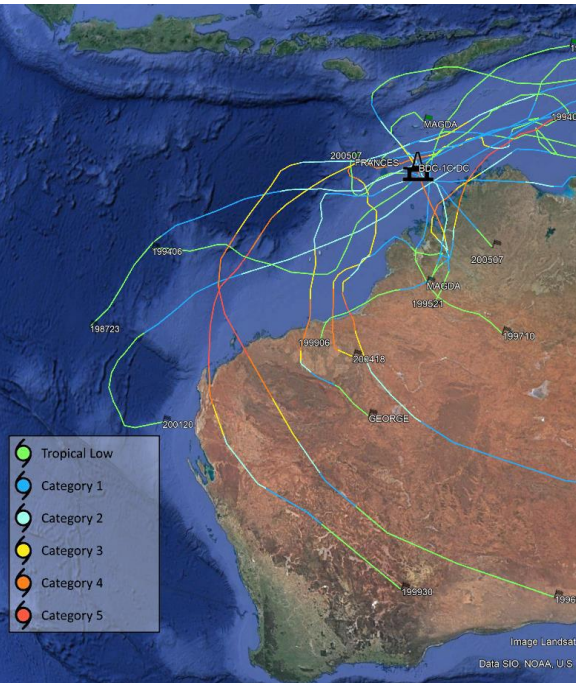
Consequence Test: Is the drill centre in close proximity to high economic or HSE exposure assets?		
No	Yes	
Low	Medium	Low
	Fail	Pass
Risk Mitigation Test: Have tests A, B and C been satisfied?		

Consequence Test (Proximity)		
No	Yes	
5-10	10-20	10
	Fail	Pass
Risk Mitigation Test		

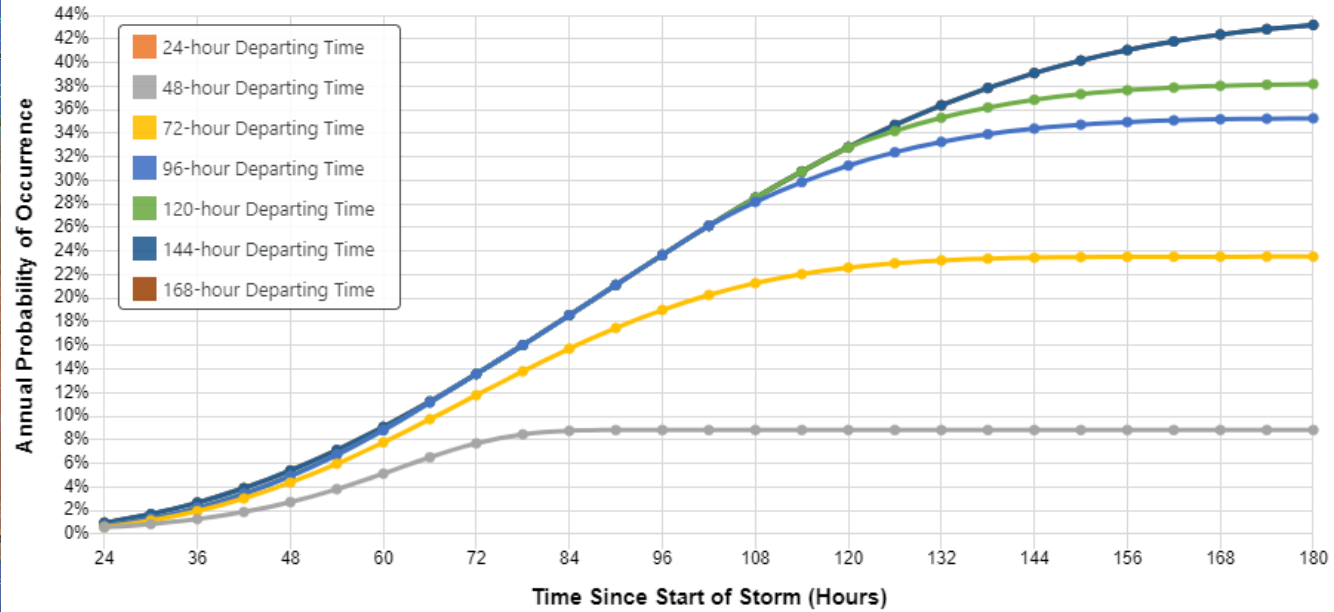


MODU Mooring in Australian Tropical Waters Guideline

Departure Study



Cat-1 Probability of Occurrence (2-knot Transit Speed)



Cyclone Response on Paper

- T-time calculation for current operations
- Operations to be completed for rig avoidance readiness
- Weather Forecast
- Proposed MODU avoidance path/location
- Non-essential personnel mobilisation
- Vessel mobilisation post release



RAR Plus Training



Title Holder



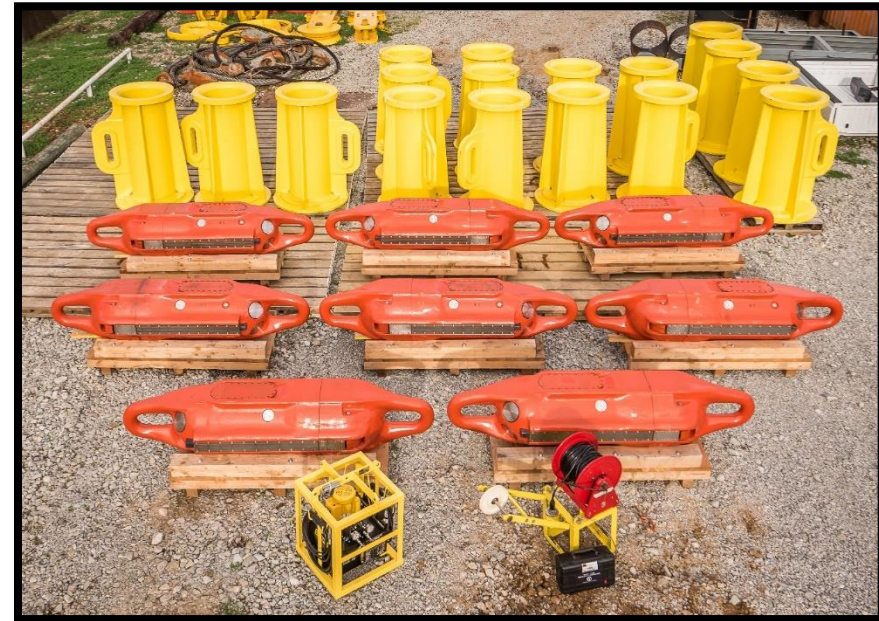
MODU Operator



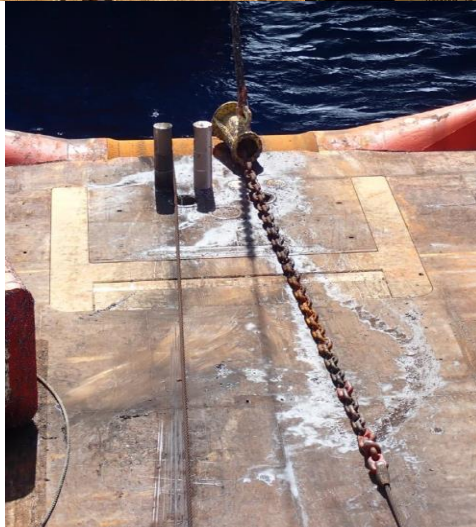
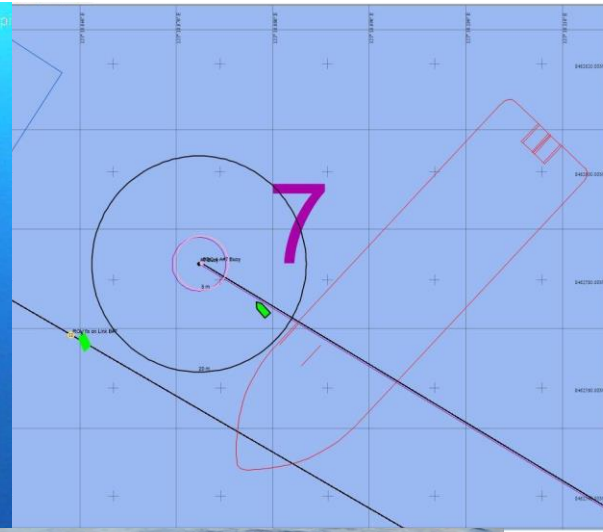
AHV Crew

Equipment

- (Set) Anchor, Chain and Wire per leg
- (Set) 1 RAR Plus per leg
- (Set) 1 Trigger Sleeve per leg
- (4) Spare RAR's and (4) spare end cap
- (2) Hydraulic Service Unit (HSU)
- (2) Command Units and (2) 1120 Transducers w/ deployment reels
- (1) RAR Test/Diagnostic Unit per AHTS
- (1) Spare mooring leg



Offshore Operations



Release Video

Heading: 257.6°
Depth: 372.3 ft.

C-Innovation L.L.C.
UHD14 Dive #4

30/03/2018 15:29:21
Altitude: 88.3 FT

Garden Banks 215 (Conger: 8)
Anchor line 3 - RAR+ Release - 50799 End
HES-01-JOSH-1802

Q & A