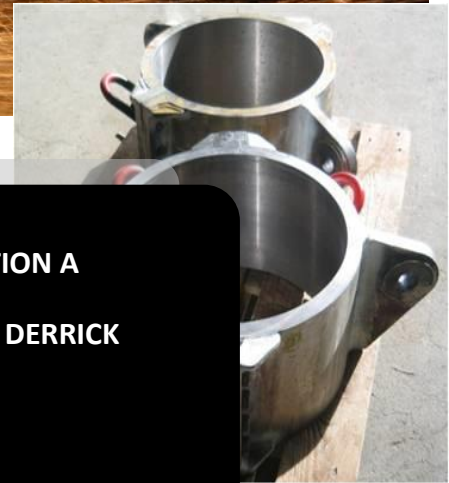


# VINJE INDUSTRI AS



LIFTING DOCUMENT OPERATION A  
GOOSENECK ARRANGEMENT IN DERRICK  
POLAR PIONEER



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*LIFTING DOCUMENT OPERATION A*

Client:

TRANSOCEAN/ BP

Project:

POLAR PIONEER

Equipment:

Equipment tag no.:

GOOSENECK ARRANGEMENT

Document title: **3841-10-LPR-001**

INSTALLATION OF GOOSENECK IN DERRICK

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# 1. Introduction

## 1.0 General:

The purpose of this procedure, is to ensure a safe and proper lifting operation, when installing the Gooseneck onboard at Polar Pioneer.

Check out drawing 3841-A0002 for Lifting arrangement/General arrangement.

This Procedure is made in accordance to:

Norsok R-003

## 1.1 Following equipment is delivered by ODIM JMC:

- One gooseneck (Figure 1.1.1)
- Three skid beam modules for the well service deck with one turntable, two skid pallets, and two skid cylinder assemblies for skidding of the turntable and pallets (Figure 1.1.2)

## 1.2 Following actual equipment delivered by Vinje Industri A/S:

- Gooseneck Interface Frame (Figure 1.2.1)
- Gooseneck Hook-up Frame, with after installing of two 5 Ton Guide sheaves (Figure 1.2.2)
- Walkways and stairs around Well Service Deck/Gooseneck Hook-up Frame (Figure 1.2.3)
- Air driven chain block SWL 8 Ton, and pad eye, bolted to aft DSC foundation (Figure 1.2.4)
- Air driven hatch below aft DSC foundation (Figure 1.2.5)
- Door and access platforms in derrick structure for access to Gooseneck and Interface frame (Figure 1.2.6)
- Service platform, bolted on top of Gooseneck for access to pad eyes (Figure 1.2.7)

- Two Guide Winches for 1 Ton pull, with foundation. One on starboard side, and one on port side of WSD deck (Figure 1.2.8)
- *One leg lifting gear SWL 8 with two master top link for dual lifting operation, and fore runner for crane (Figure 1.2.9)*

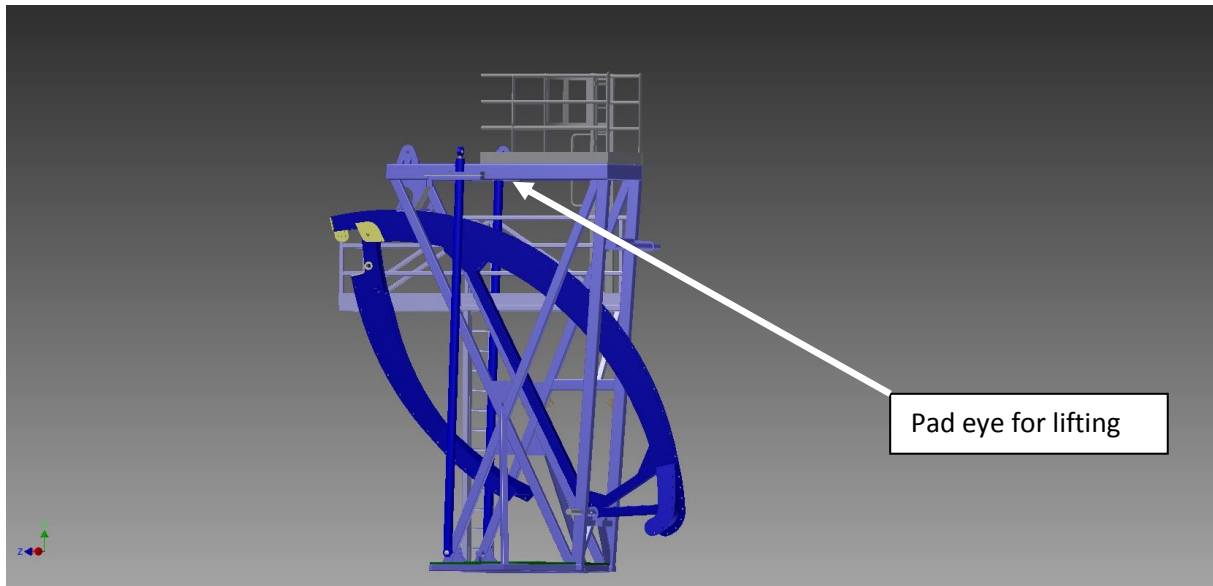


Figure 1.1.1 Gooseneck (NOTE on rev3: gooseneck have been modified by Marotec 2012/2013)

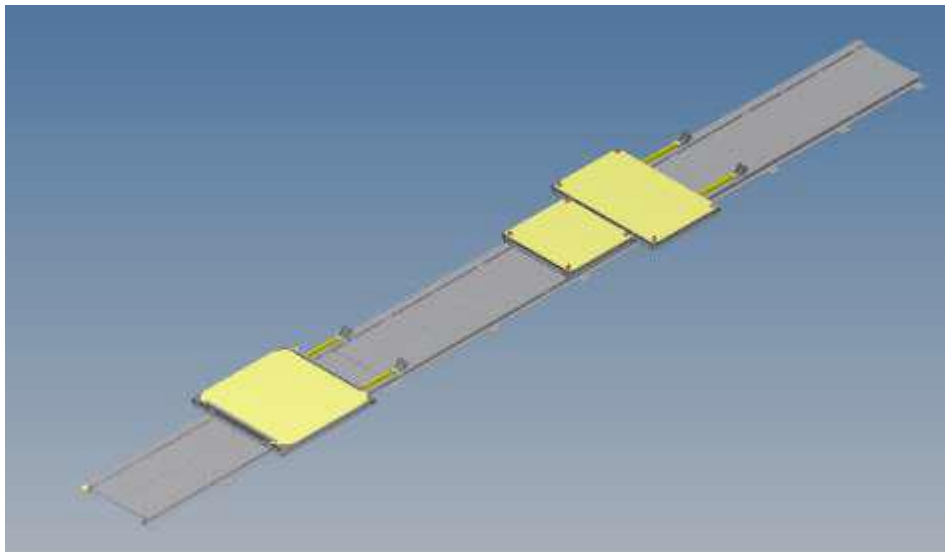


Figure 1.1.2 Three skid beam modules for the well service deck with one turntable, two skid pallets, and two skid cylinder assemblies for skidding of the turntable and pallets.

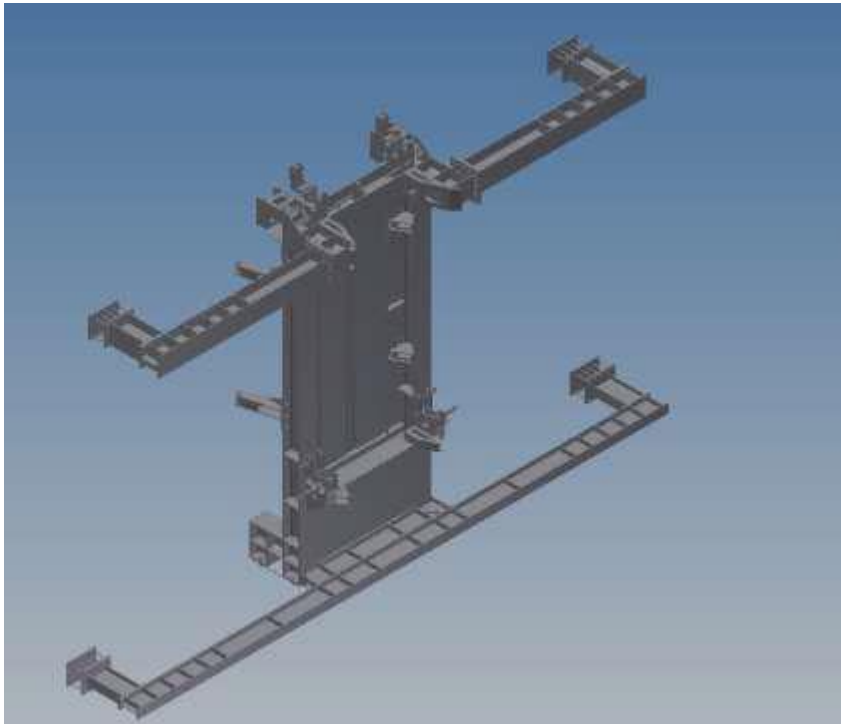


Figure 1.2.1 Gooseneck Interface Frame

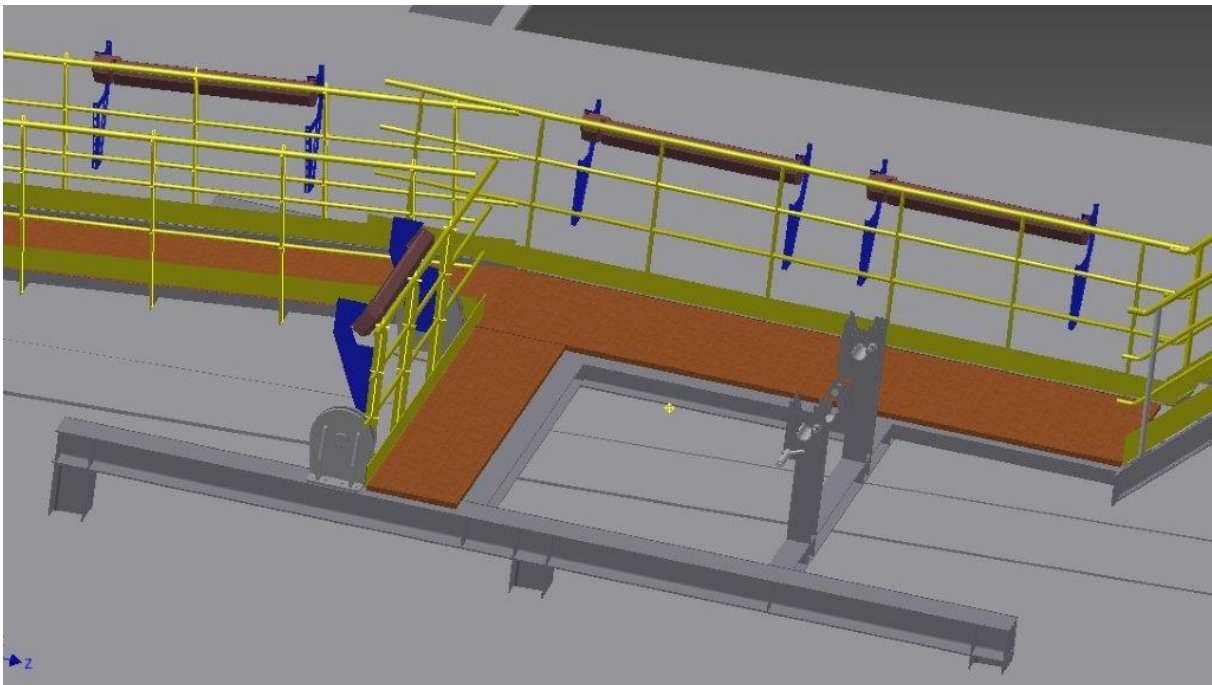


Figure 1.2.2 Gooseneck Hook-up frame



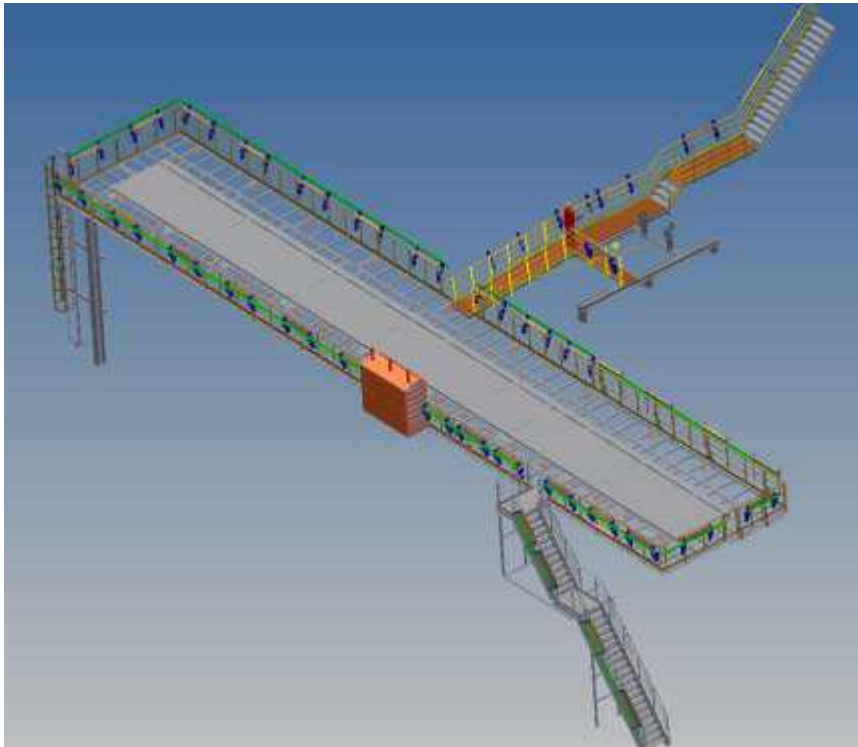


Figure 1.2.3 Walkways and stairs around Well Service Deck/Gooseneck Hook-up Frame

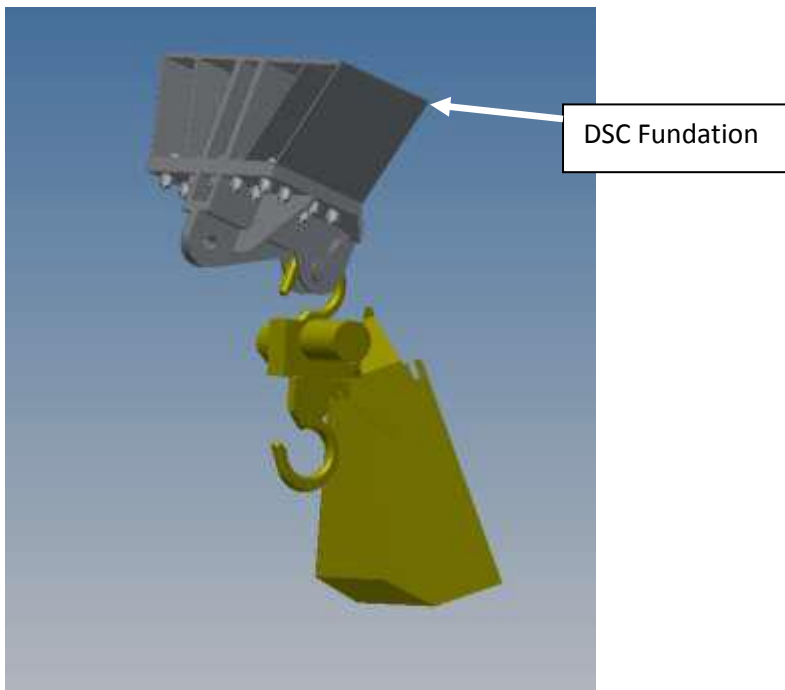
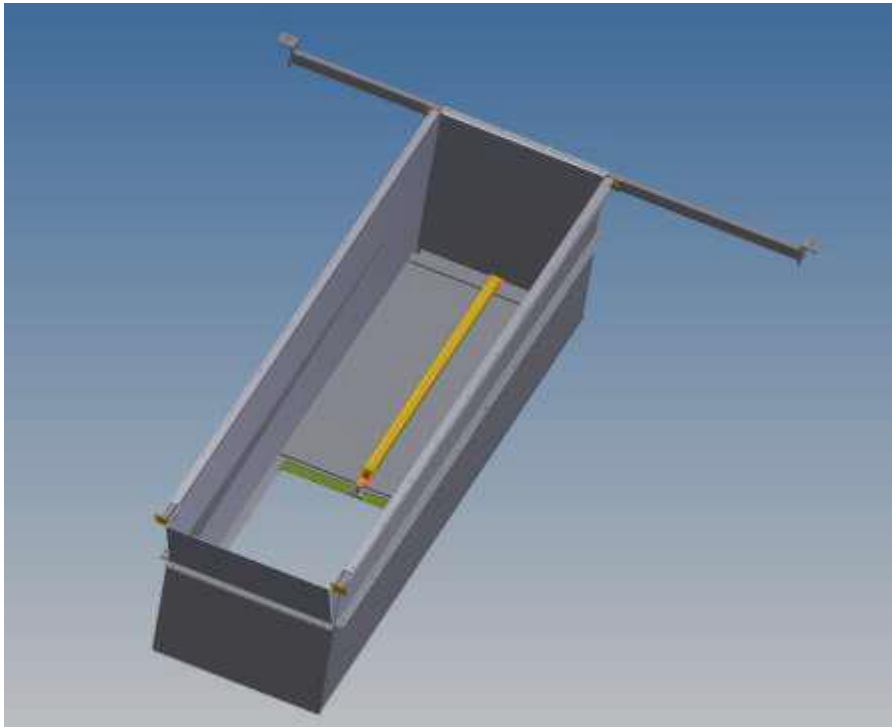
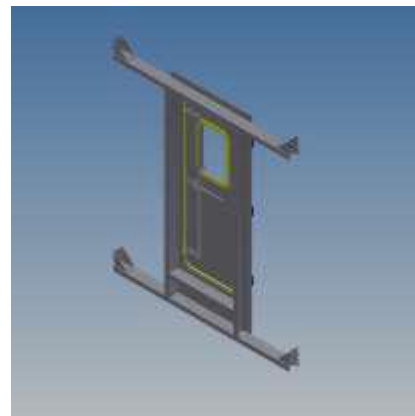
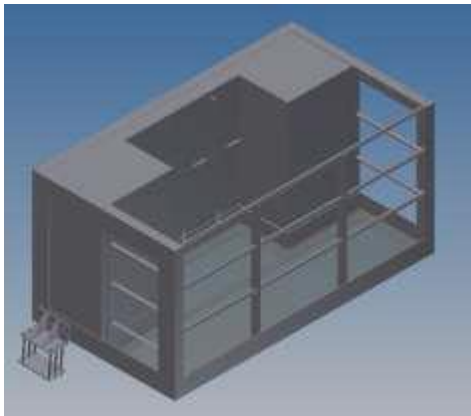


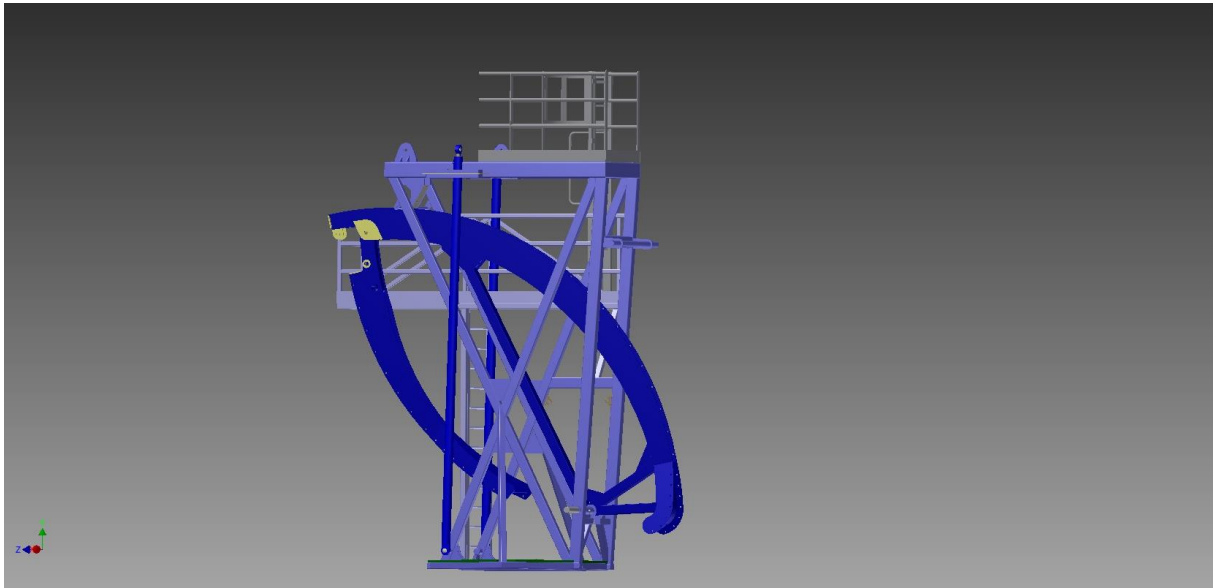
Figure 1.2.4 Air driven chain block SWL 8 Ton, and pad eye, bolted to aft DSC foundation.



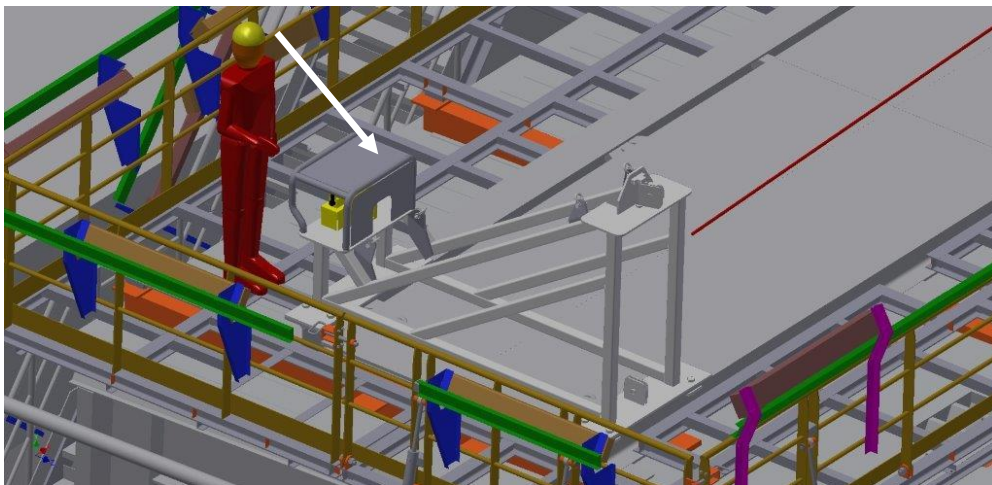
*Figure 1.2.5 Air driven hatch below aft DSC foundation*



*Figure 1.2.6 Door and access platforms in derrick structure for access to Gooseneck and Interface frame.*



*Figure 1.2.7 Service platform, bolted on top of Gooseneck for access to pad eyes.*



*Figure 1.2.8 Two Guide Winches for 1 Ton pull, with foundation. One on starboard side, and one on port side of WSD deck.*

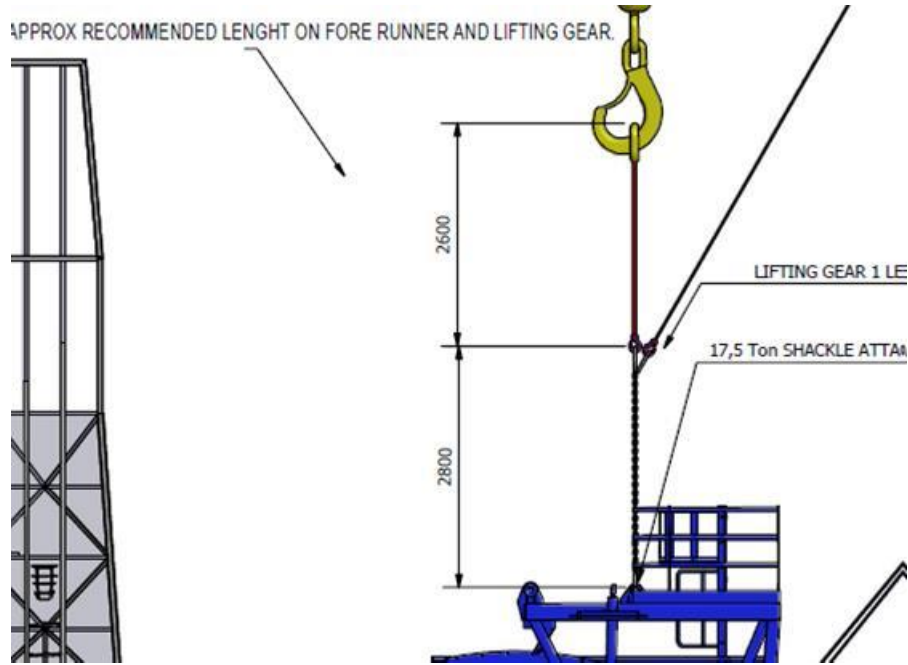


Figure 1.2.9 One leg lifting gear SWL 8 with two master top link for dual lifting operation, and fore runner for crane

### 1.3 Contact information

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## 1.4 References

<i>Ref. nr</i>	<i>Doc. nr</i>	<i>Description</i>
1	10030575	Gooseneck (GA drawing)
2	21347-23523-Z-MB-0002	Operation and Maintenance manual GN
3	10032616	Well service deck (GA drawing)
4	21347-23523-Z-MB-0001	Operation and maintenance manual WSD
5	2440-A9100	Walkways around skid deck (drawing)
6	2440-GA6000	Walkways/GHF Arrangement (drawing)
7	2440-A2100	Gooseneck Interface Frame (drawing)
8	2440-A6000	Gooseneck Hook-up frame (drawing)
9	3841-A0002	Gooseneck Lifting Arrangement (drawing)
10	2440-A3212	Guide Winches 1 Ton (drawing)
11	2440-A2152	Gooseneck access platform (drawing)
12	2440-A2201	Hoisting equipment/air driven chain hoist 8 Ton (drawing)
13	2440-A2400	Gooseneck Lifting gear (drawing)
14	2440-D2400	Gooseneck Lifting Bracket (drawing)
15	2440-02-CPR-001	Commissioning procedure for lifting/guiding equipment
16	685723-03 (SWECO)	Design calculations, Lifting Procedure
17	685723-04 (SWECO)	Design calculations, Winch Base Gooseneck
18	685723-05 (SWECO)	Design calculations, Gooseneck Lifting Bracket (2440-A2400)
19	M-014-2013R0	Structural analysis of the changes by the new lifting procedure of the gooseneck module

## 1.5 Abbreviations

Definitions of short terms used in this document.

<b>Description</b>	<b>Short form</b>
Well Service Deck	WSD
Gooseneck	GN
Air Driven Chain Hoist 8 Ton SWL	ADCH
Gooseneck Hook-up Frame	GHF
Gooseneck Interface Frame	GIF
Guide winch	GW
Health, Safety and Environment	HSE
Det Norske Veritas	DNV
Safe Working Load	SWL
Drill String Compensator	DSC
Rolls-Royce	RR

## 1.6 Communication routines

Good communication is of high importance. Due to the big area of operation, through the whole installation, communication is of high importance. All involved personnel shall have radio contact with each other.

At all time, all personnel are allowed to stop the operation, if something is unclear, something unforeseen happens, or if they observe something that is not according to original plan.

## 1.7 Operation instructions

Due to the safety of the lifting operation, it is of highest importance, that all personnel which will operate the machines, have read and understood the operation instructions for the machines, before operating them. Only qualified personnel shall operate the machines.

### 1.7.1 Air Driven Chain Hoist 8 ton SWL (ADCH)

To operate the ADHC:

- Open air supply valve located at STB side of ADCH, on the derrick structure wall.
- Use the "RESET" button to engage the control panel. Make sure that the emergency stop button is NOT activated, when pushing "RESET"
- Press arrow "UP" for hoisting.
- Press arrow "DOWN" for lowering.
- Check "EMERGENCY STOP" function before use.

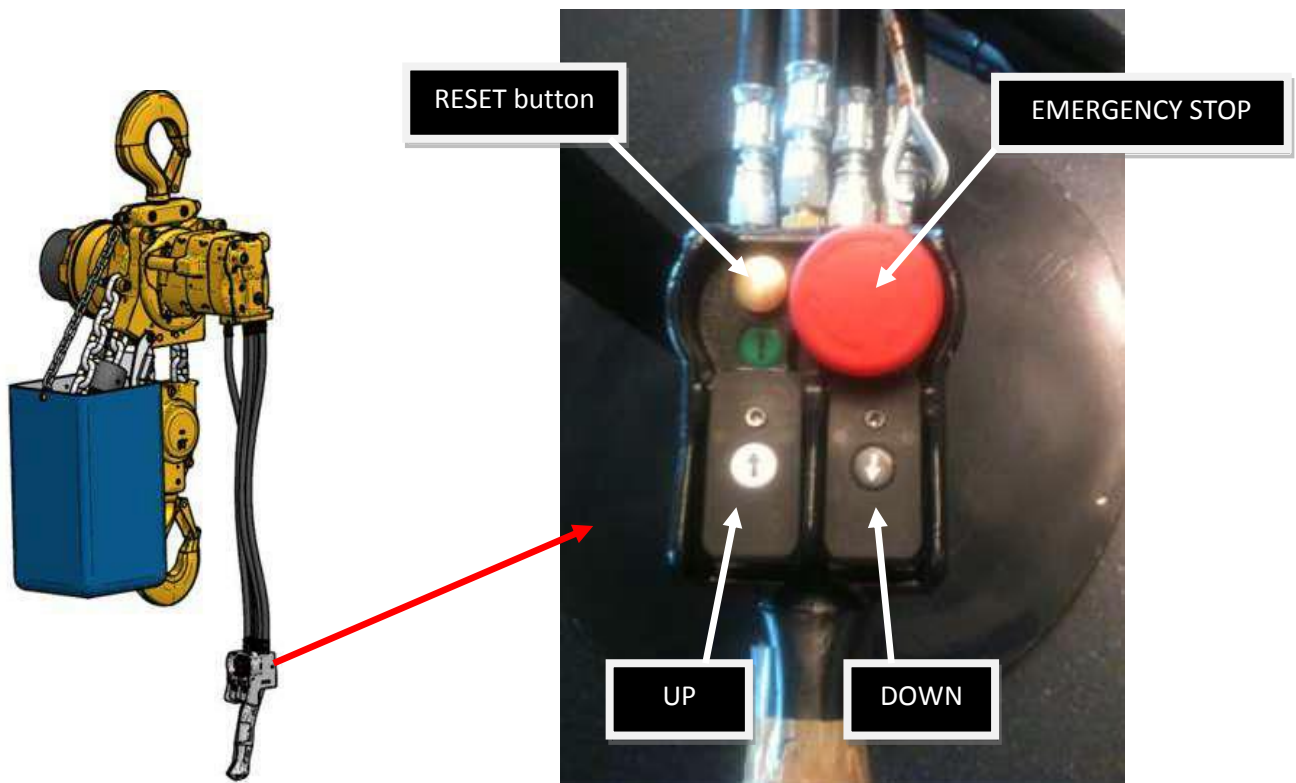


Figure 1.7.1



### 1.7.2 Port and STB side Guide winches

To operate Port and STB side Guide Winches:

- Make sure that the air supply hose is properly connected and secured.
- Open air supply valve located at the aft handrail on WSD.
- Use the "RESET" button to engage the control panel. Make sure that the emergency stop button is NOT activated, when pushing "RESET"
- Pull control handle backwards, to pull wire in.
- Push control handle forward, to release wire.
- Check "EMERGENCY STOP" function before use.

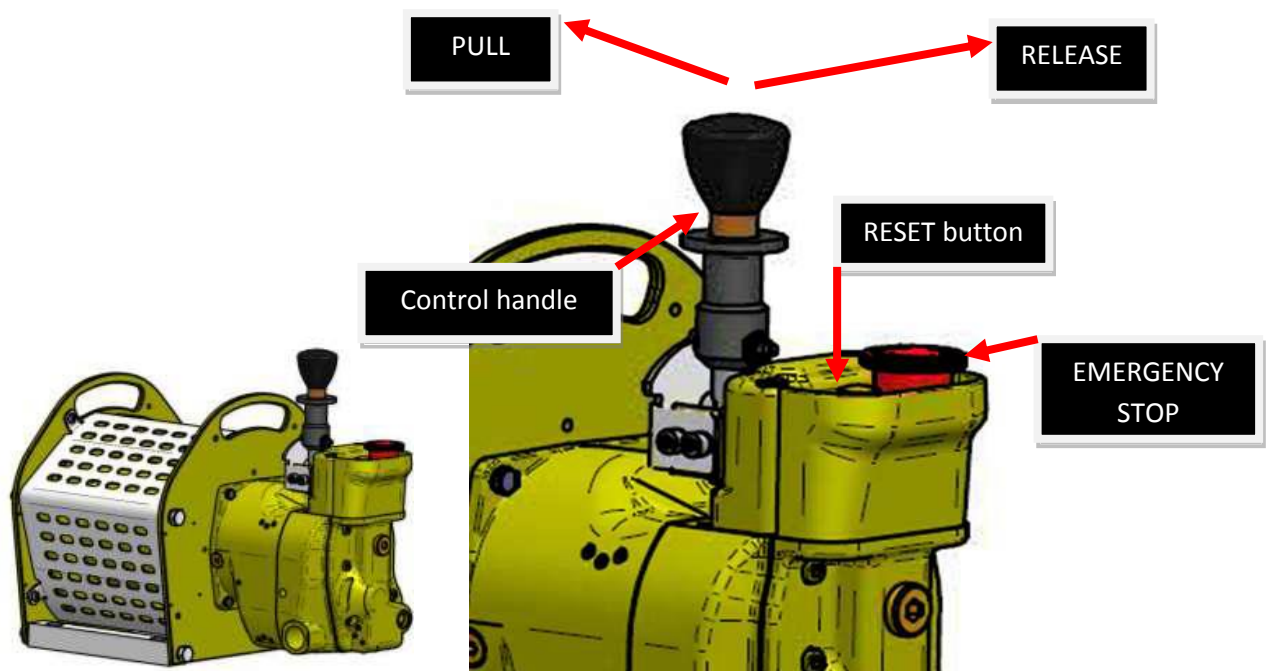


Figure 1.7.2

### 1.7.3 Hydraulic doors on Gooseneck Interface Frame

To operate hydraulic doors:

- Check that hydraulic ring line pressure is engaged.
- Use control handles located at fingerboard level (STB AFT), and follow instructions on sign attached to the control panel, to operate the doors.
- Make sure that the doors are fully open/closed, after operating control handles.
- Nearest emergency stop valve for hydraulic ring line pressure, is located beneath grating. Use access ladder to Upper Racking Arm, to reach it. Make sure to locate the position of this valve, before operating doors.



Figure 1.7.3

### 1.7.4 Air Driven Hatch

To operate Air Driven Hatch:

- Make sure Locking bolt is in open position.(access to locking bolt from grating under DSC foundation. Use fall arrestor for safety)
- Open air supply valve located at STB side of ADCH, on the derrick structure wall.
- Air supply valve, is nearest emergency stop function.
- Use Control handle located at STB side of ADCH, on the derrick structure wall. and follow instructions on sign attached to the control panel, to operate the hatch.
- **NOTE:** Make sure chain on ADCH is in highest possible position before closing the hatch.
- Close locking bolt after use.

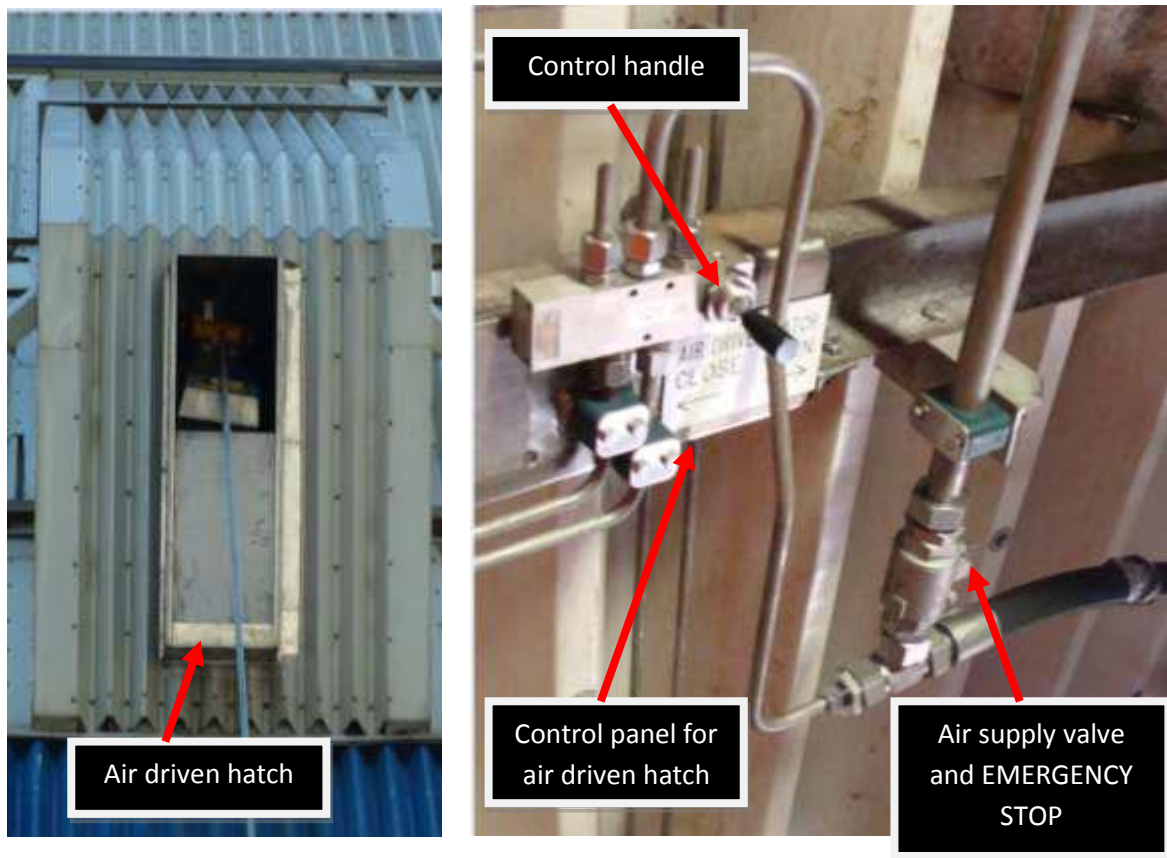


Figure 1.7.4

## 1.8 Estimated time schedule

This time schedule is based on uninterrupted work time.

- Rigging/preparations on WSD for GN up: Approx 1,5 hours
- Rigging/preparations in derrick for GN up: Approx 1 hour
- Lifting sequence GN up: Approx 1 hour
- Securing of GN in derrick after lifting sequence: Approx 1 hour
- Dismantling of lifting gear after securing GN in derrick: Approx 1 hour
- **Estimated total time consumption for GN UP: 5,5 hours**
- Rigging/preparations on WSD for GN down: Approx 1,5 hours
- Rigging/preparations in derrick for GN down: Approx 2 hours
- Lifting sequence GN down: Approx 1 hour
- Securing of GN in GHF after lifting sequence: Approx 30 minutes
- Dismantling of lifting gear after securing GN in GHF: Approx 1 hour
- **Estimated total time consumption for GN Down: 6 hours**

## 2. HSE (Health, Safety and Environment)

### 2.0 General HSE

#### Vinje Industri A/S:

Vinje Industri A/S has a strong focus on HSE. It`s our goal to perform all operations without any damage on people, environment and equipment.

To reach this goal, Vinje Industri A/S continuously work with this matter.

Before this lifting operation take place, it`s of highest importance that all involved personnel, have read and understood the content of this procedure.

### 2.1 Gooseneck Lifting Operation (HSE), Vinje Industri

The most critical moments in this lifting operation, is when GN is lifted out/ landed in the GIF, and the GHF. Good communication between all involved personnel in this critical phase, is of highest importance.

Involved personnel, shall have a safety meeting before the execution of the lifting operation. On this meeting, the supervisor shall inform about safety, communication, areas of responsibility for involved personnel, work procedures etc. A written THINK plan shall be performed at this meeting.

This lifting operation will be leaded by Lifting Supervisor, which have to be a qualified flag man. Normally all crew will be Transocean personnel, and all operators for the machines shall have the necessary skills/certificates, to operate them.

The GN`s weight is approx 5 ton. This weight can cause seriously damage to people and equipment, if it`s not handled correctly.

Before lifting operation take place, all lifting equipment shall be checked for approval and damages. If any lifting gear is damaged, it shall be replaced before operation continues.

Check also emergency functions on all guide winches, and on the 8 ton chain hoist. All winches, and the chain hoist, has emergency stop functions on the control panels. It is also possible to stop all machines by closing the air supply valve. Make sure that all involved personnel know the location of these valves.

Close area beneath, and use safety harness, when working in height!

Make sure that all involved personnel in lifting operation have necessary protection and clearance to hazardous area during lifting operation.

If necessary make some "as build" safety barriers to protect operators.

## BP Norway:

### **2.2 Gooseneck Lifting Operation (HSE), BP Norway**

The main objective is to prevent accident and unscheduled events rather than to react to them. The objectives are to meet or exceed the current HSE objectives for BP Norway and Transocean.

The procedure ("**Proposed plan for lifting the Coiled Tubing Gooseneck to the Derrick Rev.no:01**") when approved and signed, is applicable to the installation of the Coiled Tubing Gooseneck (GN) on the vessel Transocean Polar Pioneer operating for BP Norway. This lifting and installation procedure is written to comply with corporate policies, standards, guidelines and procedures including but not limited to:

- Getting HSE Right
- BP Norway HSE Directives
- Relevant SIKAP: 1.70.107
- Transocean internal procedures (Complex or specialized lifting operations)
- Vinje Industries installation guide
- Rolls Royce operational procedure
- Norsok R-003

### **2.3 Responsibilities**

Well Site leader Intervention (WSLI)/Completion Supervisor (CS)

The WSLI/CS is the senior BP wells representative offshore for this operation. The role and responsibility of the WSLI/CS can be taken by others, as nominated by the Wells team leader or lead engineer onshore.

The WSLI/CS will witness the installation of the GN to ensure that work is performed safely and sufficiently within BP procedures and statutory regulations.

The Barge Supervisor (Transocean)

Shall exercise overall operational management of the lifting operations.

The Crane Operator(Transocean)

Ensure that only certified lifting equipment is used for all lifting Operations, plan each lifting operation, and ensure that the lifting appliances and lifting gear are in good condition for their purpose and in accordance with the manufacturer's descriptions for use, specifications and descriptions.

## 3. Operation and design limits

**3.1 Wind conditions:** According to design calculation report from Sweco (685723-03), the equipment can withstand a wind force of 28m/sec. However, we recommend a wind speed limit of 8 m/s due to safety of the operation.

**3.2 Wave conditions:** Recommended max heave amplitude: +/- 1m, i.e. max 2m total heave movement.

**3.3 Temperature:** Operating temperature for machines: -10°C to +40°C

## 4. Lifting Procedure: Gooseneck up

### 4.0 Personnel

To perform a safe lifting operation, following personnel is required:

- Lifting supervisor (flag man)
- Slinger
- Operator for starboard side Guide Winch
- Operator for port side Guide winch
- Operator for stb crane
- Operator for Air driven chain hoist
- Two men to keep control of guide/ tag ropes on WSD deck level
- Two man to keep control of guide/ tag rope in Derrick
- Operator for Manrider winch

### 4.1 Rigging/ Preparations in derrick

**NOTE:** Before rigging begins, see drawing 3841-A0002 for general lifting arrangement

- Open hydraulic doors on GIF
- Check that all four locking bolts/mechanisms on GIF are working, and leave them in open position. The two on top can be reached from access platform over hydraulic doors. The two in the bottom can be reached through hydraulic doors by use of Manrider Winch
- Attach guide rope to hook on ADCH, open air driven hatch below ADCH, Lower guide rope to WSD level, and lower enough length on the chain, to attach hook to lifting bracket on GN
- Lower two guide tag/ ropes thru hydraulic doors and attach them to existing pull in lifting slings witch are fastened to suitable points of GN



## 4.2 Rigging/Preparations on WSD level

**NOTE:** Before rigging begins, see drawing 3841-A0002 for general lifting arrangement

- Attach two guide ropes/ tag lines to GN
- Mount 17,5 T load shackle and lifting gear in the lifting pad eye on top of the gooseneck frame
- Make sure that preparation on GN is prepared according to RR- manual
- Rig up as shown in 3841-A0002 (lower position, Figure 4.2.1)  
Keep low tension on chain/wires, when locking bolts/mechanisms on GHF are in closed position
- Open locking bolts/mechanisms on GHF

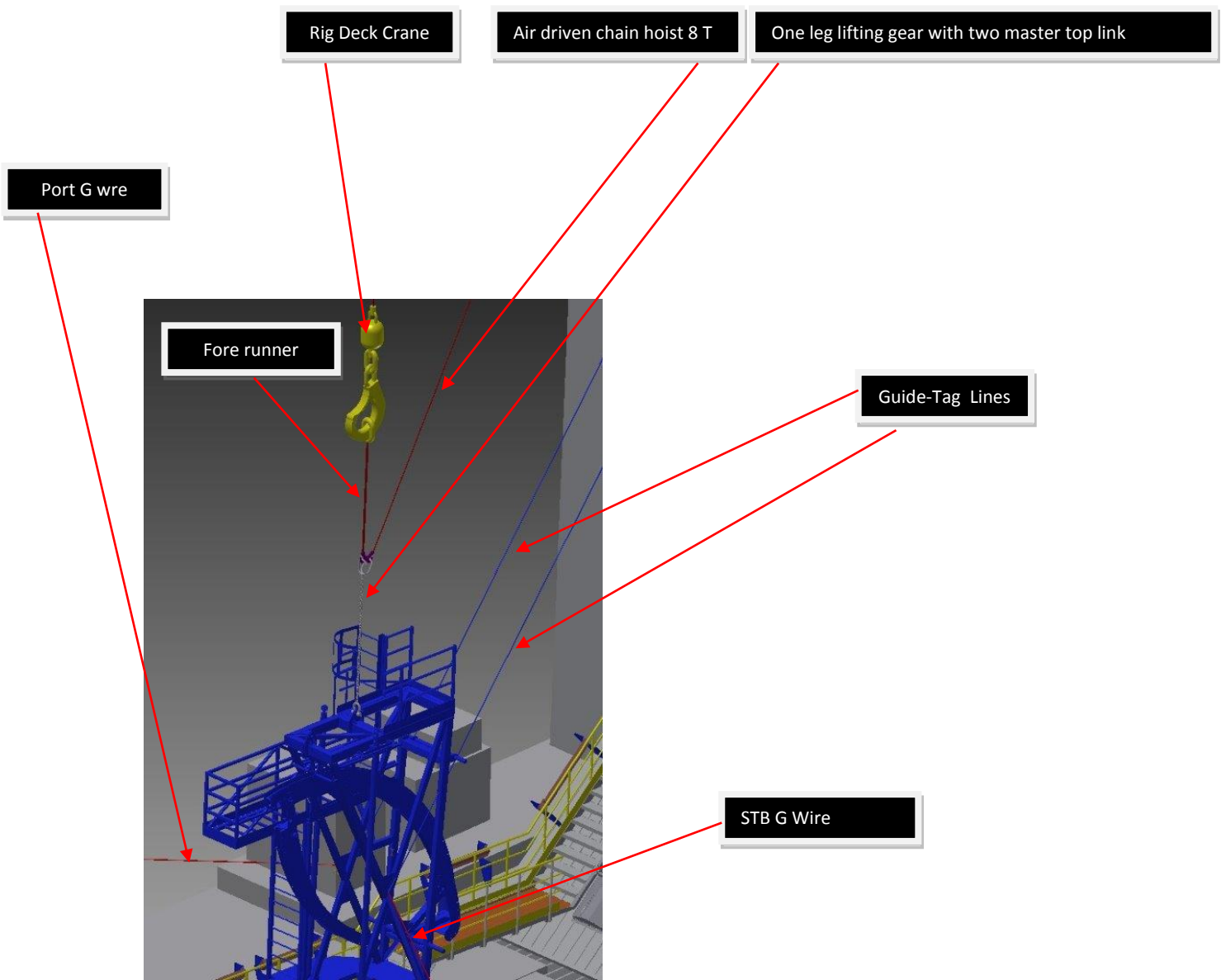


Figure 4.2.1 Lower position GHF

### 4.3 Lifting operation: Gooseneck up

GN is positioned on GHF

The two 1 Ton Guide Winches (positioned stbd and port side on the WSD) to be attached to the, for the purpose installed, pad eyes on the side of the (GN).  
The two 1 Ton Guide Winches are not approved for lifting, only Pull 1000kg.

8 Ton chain hoist and 'pull in device' to be attached.

If the 'pull in wire' is not long enough to reach the GN at the landing area, a rope should be attached and run back up to the winch.

Attach stbd crane with appropriate forerunner.

All wires to be kept slack.

Attach rope Tag-line to GN-frame. This is to prevent load to spinning while lifted to the derrick.

Commence lifting GN.

All wires to be kept slack until GN approaches the derrick.

Limit switches stbd crane to be overridden. Make sure appropriate control measures are put in place.

Crane to creep to minimum distance towards derrick, (Boom-radius  $54^0$  / 36.9 m radius & Swing @  $77^0$ ), using rabbit-speed mode.

Stbd & port tagline to remove the slack and gain some tension for steady control of the load.

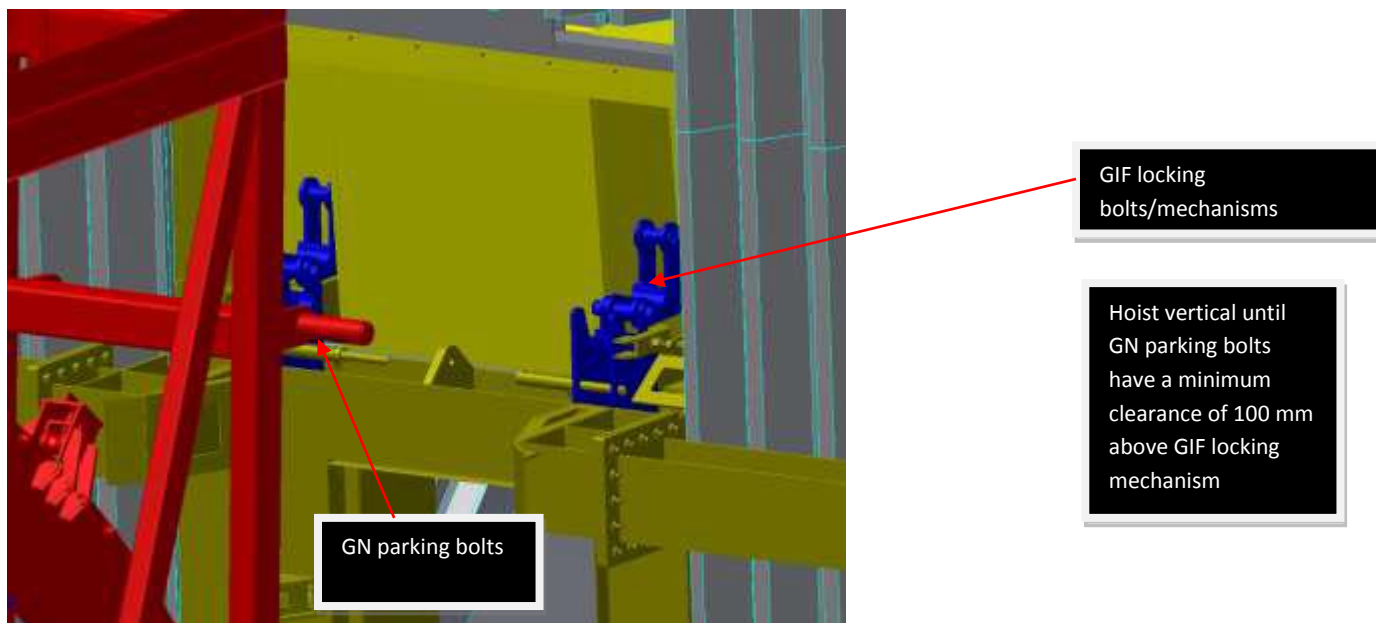
8 Ton chain hoist to take over load as crane slacks off, (crane to stay attached until GN are secured in derrick, consider arrangement for securing head ache ball)

Make sure that procedure for transferring load has been revised.

Use the “Pull in device” & 8 Ton chain hoist to position the GN in the locking positions, while slacking off stbd & port tagline winches. (Figure 4.3.2a/b)

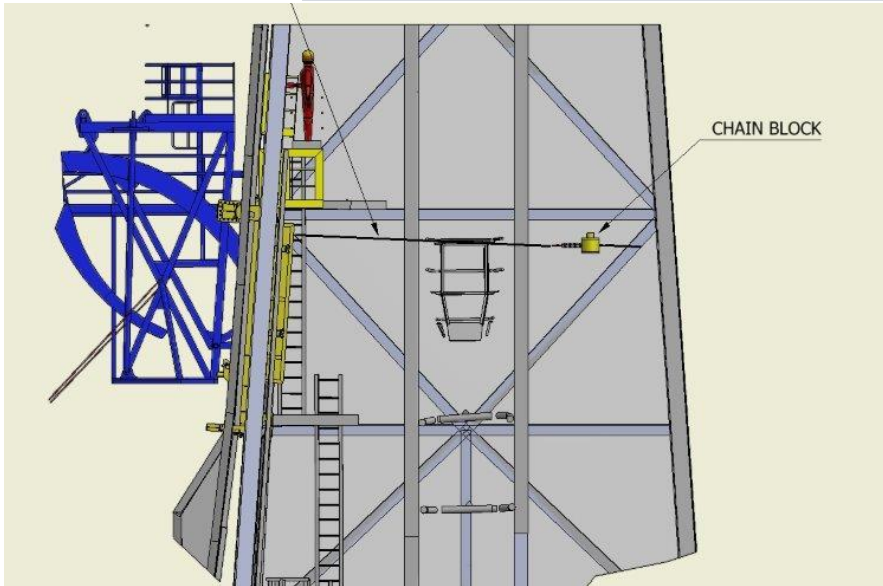
Secure bolts for GN in derrick and disconnect deck crane forerunner. (Figure 4.3.1)

Procedure for preparing the GN for operation will be covered in Rolls Royce’s rigging and user manual.



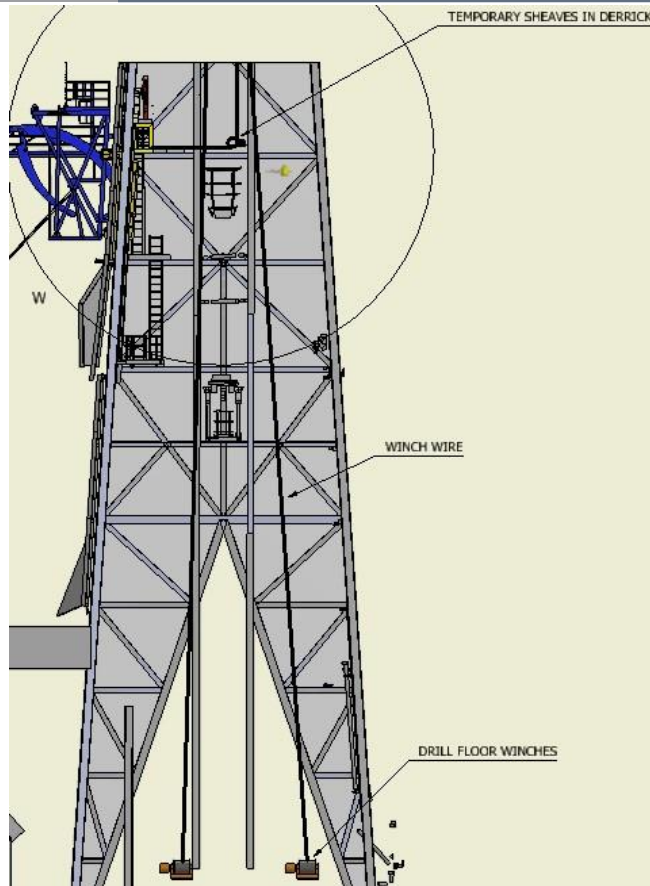
*Figure 4.3.1*

NOTE: When all tension is released on guide winches, it is theoretically possible to lower directly into parked position. Due to trimming of the rig, the GN might have to be pulled in longitudinal direction. Use center GW for pulling backwards. If necessary to pull forward, use a chain block between derrick structure and GN.



*Figure 4.3.2a*

VIEW ILLUSTRATE USE OF CHAIN BLOCK, LOCATED IN DERRICK  
FOR PULL IN GOOSENECK TO INTERFACE FRAME IF NECESSARY  
(Also illustrated in drawing 3841-A0002, sheet 7)



*Figure 4.3.2b*

VIEW ILLUSTRATE USE OF WINCH ON DRILL FLOOR, WITH SHEAVES LOCATED IN DERRICK  
FOR PULL IN GOOSENECK TO INTERFACE FRAME IF NECESSARY.

(Also illustrated in drawing 3841-A0002, sheet 7)

- Check alignment on all four parking bolts in relation to locking mechanisms on GIF if necessary, adjust GN till all locking bolts are in position straight above.
- Carefully lower GN, until all weight of GN is released from the lifting equipment
- Close all four locking mechanisms/bolts on GIF
- Access to top of GN is now possible, by use of door in the derrick structure
- Remove Lifting chain, lifting bracket and guide ropes of from top of GN
- Release all guide winch wires, and lower them to WSD by use of 8 Ton chain hoist and Rig Deck Crane
- For further preparation and installing of GN use RR manual for this task

## 5. Lifting Procedure: Gooseneck down

### 5.0 Personnel

To perform a safe lifting operation, following personnel is required:

- Lifting supervisor (flag man)
- Slinger
- Operator for starboard side Guide Winch
- Operator for port side Guide winch
- Operator for Rig Deck Crane
- Operator for Air driven chain hoist
- Two men to keep control of guide/ tag ropes on WSD deck level
- Two man to keep control of guide/ tag rope in Derrick
- Operator for Manrider winch

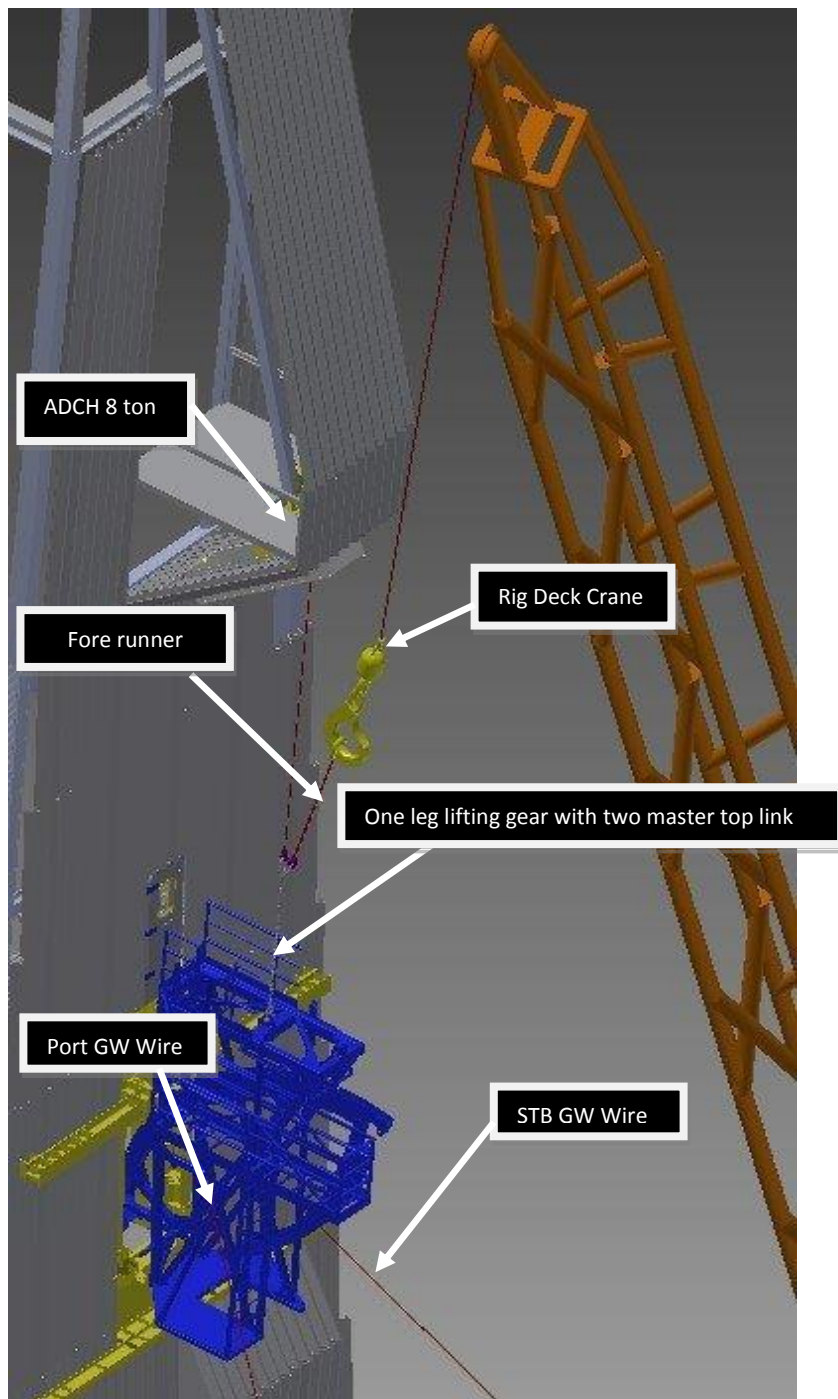
### 5.1 Rigging/Preparations in derrick

**NOTE:** Before rigging begins, see drawing 3841-A0002 for general lifting arrangement

- Check that all external equipment (if any), used for coil tubing operation, is removed
- Check that hydraulic doors on GIF is fully open
- Check that air driven hatch is fully open
- Use RR manual for preparation of GN, before lifting sequence
- Connect two guide ropes to guiding points on GN, and lower them down to WSD (Figure 5.1.1)



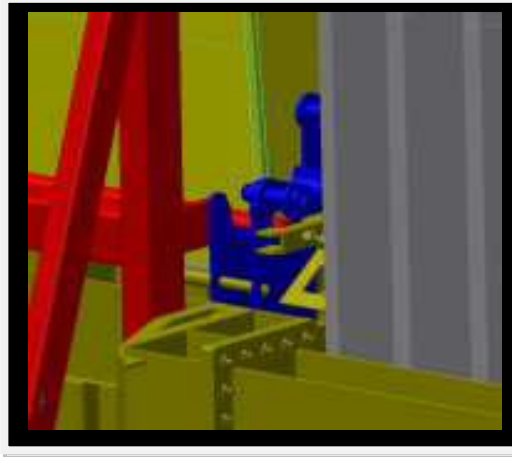
- Use ADCH and Rig Deck Crane to lift up lifting gear with guide winches attached ,connect lifting gear, to pad eye on top of GN (Figure 5.1.1)



(Figure 5.1.1)

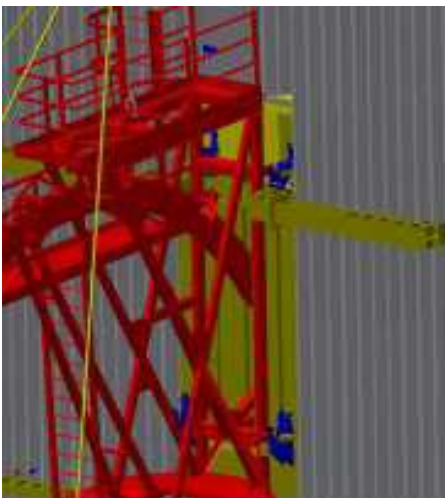
*Figure 5.1.1 Lifting arrangement*

- Carefully, tight up ADCH and Rig Deck Crane, and all Guide Winches. Keep low tension on all winches. Check vertical straightness on lifting chain (8 ton)
- Open all four locking bolts/mechanisms on GIF



*Figure 5.1.2 Locking bolts/mechanisms*

## 5.2 Rigging/Preparations on WSD deck level



**NOTE:** Before rigging begins, see drawing 3841-A0002 for general lifting arrangement.

- Make sure that locking bolts/mechanisms on GHF is in open position

### 5.3 Lifting operation: Gooseneck down

- Make sure that there is tension on ADCH and all Guide Winches. Keep low tension on all winches.
- Use ADCH, and carefully hoist until GN has a minimum of 100mm clearance over locking bolts
- By use of the Guide Winches, and put tension on Rig Deck Crane, pull GN away from the GIF, until there is acceptable distance to the derrick and Interface Frame. Remember to keep tension on the Guide Ropes, to avoid rotation on GN, and release tension at ADCH simultaneous
- When lowering GN to WSD level, make sure that ADHC chain and all wires are slack until GN approaches GHF
- When necessary, flag man and slinger, should move from derrick to WSD level
- When bottom of GN is in position right above parking position above GHF, check that Locking bolts/mechanisms are in open position
- Lower GN into parking position on GHF
- Close locking bolts/mechanisms on GHF
- Release tension, and disconnect all lifting/guiding equipment
- Connect one guide rope to hook on ADCH, and hoist to max upper position. Remove guide rope, and close Air Driven Hatch
- Close hydraulic doors on GIF

## 6. Emergency situation procedure

### 6.0 Malfunction in machines:

- If any malfunction in one of the machines, should lead to the conclusion that the lifting operation have to be aborted, following solutions is recommended:
- If possible, lower GN to GIF or GHF and close locking bolts.
- Malfunction in ADCH: Rig up manual chain hoist in available pad eye on DSC foundation. Use STB deck crane with personnel basket, to attach hook in shackle on top of GN. Put tension on chain hoist, until chain on ADCH can be removed Use chain hoist for lowering GN to parked position.
- Malfunction in Guide Winches: Rig up manual chain hoist between GW foundation and GN by use of STB deck crane and personnel basket. Put tension on chain hoist, until GW wire can be removed. Use Chain hoist for guiding GN in to parked position

### 6.1 Weather conditions:

- If sudden change in weather should lead to the conclusion that the lifting operation should be aborted, lower and park the GN in the GHF, and close the locking bolts. Wait until the weather conditions are better, and start the lifting operation from the beginning.

### 6.2 Escape routes:

- If any alarm sounds, listen to any PA announcement, and follow instructions.
- In case of emergency, there is two escape routes from WSD. One emergency exit ladder, placed on Port side(fig.6.2.1), and stairs on Starboard aft side(fig 6.2.2), See also drawing 2440-A9100. Both exits leads down to main deck. From Main Deck; follow yellow marking to muster station.
- In case of emergency in derrick, use exit ladders down to drill floor, and follow yellow marking to muster station.

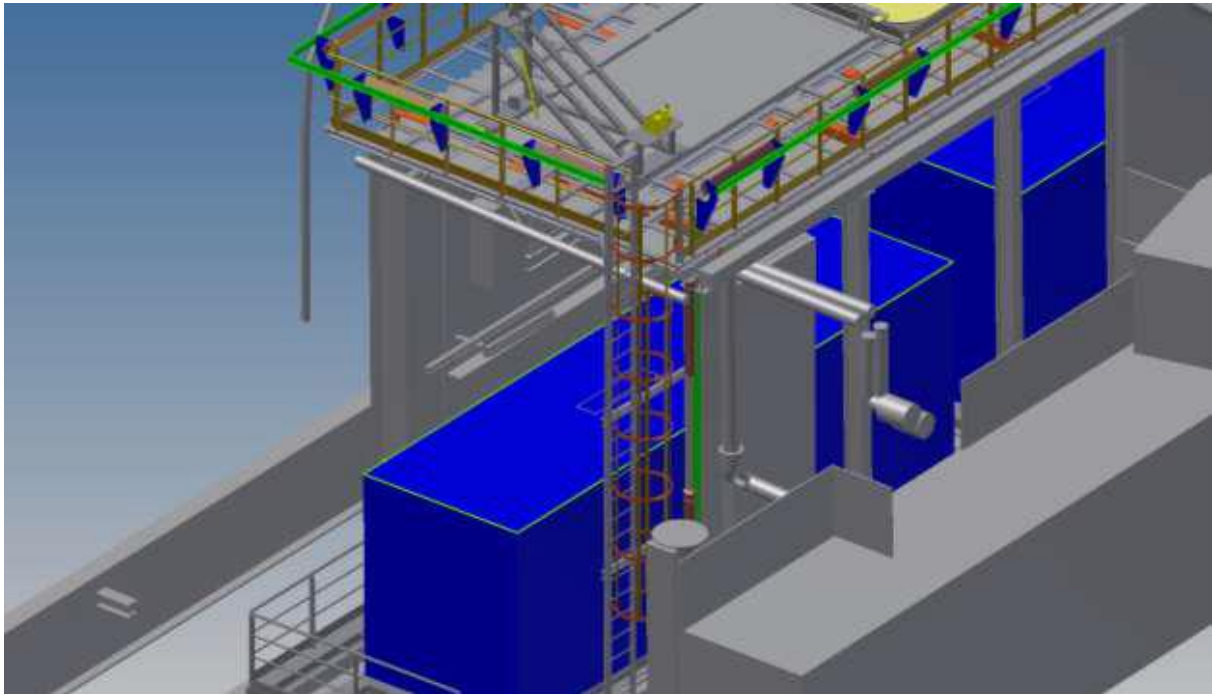


Figure 6.2.1 Emergency exit ladder on port side of WSD

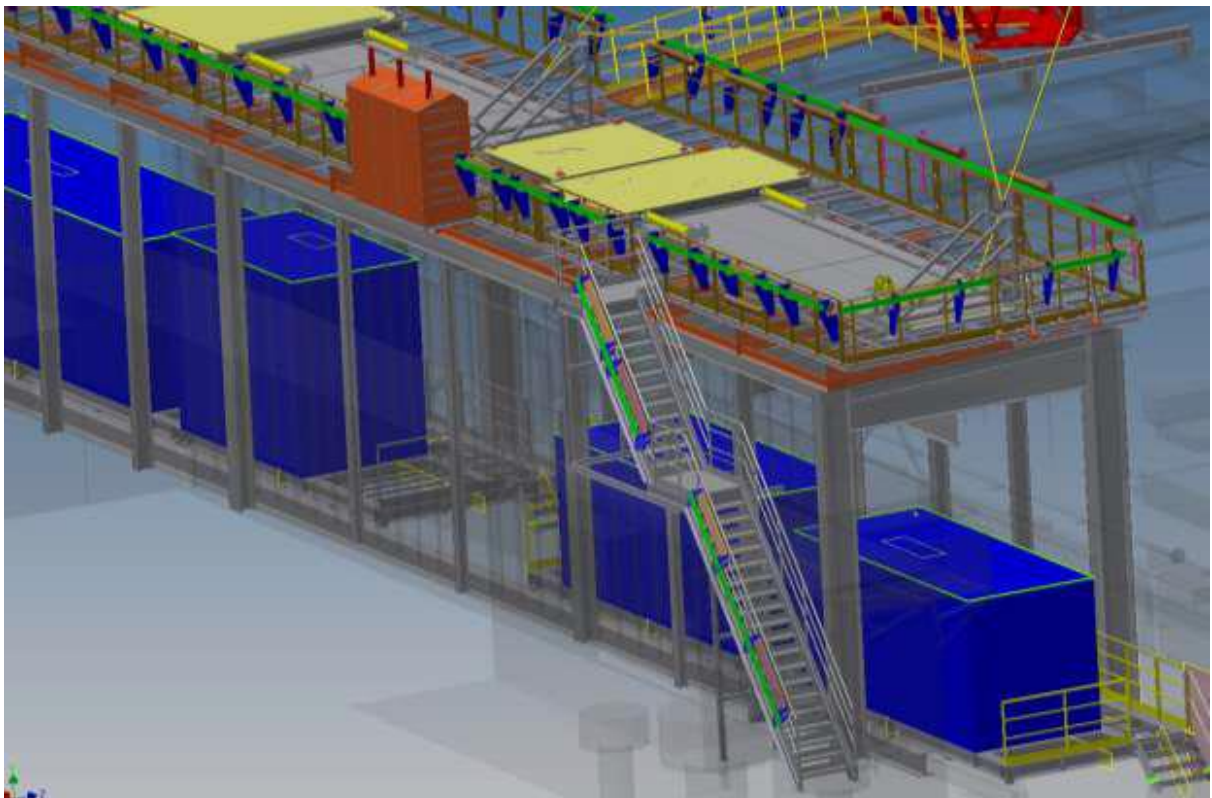


Figure 6.2.2 Stair on Starboard side of WSD

# VINJE INDUSTRI AS



LIFTING DOCUMENT OPERATION B  
GOOSENECK ARRANGEMENT IN DERRICK  
POLAR PIONEER



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*LIFTING DOCUMENT OPERATION B*

Client:

TRANSOCEAN/ BP

Project:

POLAR PIONEER

Equipment:

GOOSENECK ARRANGEMENT

Equipment tag no.:

Document title: **3841-10-LPR-001**

INSTALLATION OF GOOSENECK IN DERRICK

Rev:	Reason for issue:	Date:	Author:	Chck:	Appr:
0	Lifting document operation B	18.04.13	VAA	RT	KJÅ
Customer doc. no.:	<b>VIDOCID-80-2743</b>		THIS DOCUMENT AND ALL INFORMATION AND DATA HEREIN OR HEREWITH IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF VINJE INDUSTRI A/S AND IS NOT TO BE USED, REPRODUCED OR DISCLOSED IN WHOLE OR IN PART BY OR TO ANYONE WITHOUT THE WRITTEN CONFIRMATION FROM VINJE INDUSTRI A/S.		
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**Lifting procedure (Gooseneck up) \_\_\_\_\_ 4**

- Personnel \_\_\_\_\_ 4.0
- Rigging/Preparations in derrick \_\_\_\_\_ 4.1
- Rigging/Preparations on WSD level \_\_\_\_\_ 4.2
- Lifting procedure Gooseneck up \_\_\_\_\_ 4.3

**Lifting procedure (Gooseneck down) \_\_\_\_\_ 5**

- Personnel \_\_\_\_\_ 5.0
- Rigging/Preparations in derrick \_\_\_\_\_ 5.1
- Rigging/Preparations on WSD level \_\_\_\_\_ 5.2
- Lifting procedure Gooseneck down \_\_\_\_\_ 5.3

**Emergency situation procedure \_\_\_\_\_ 6**

- Malfunction in machines \_\_\_\_\_ 6.0
- Weather conditions \_\_\_\_\_ 6.1
- Escape routes \_\_\_\_\_ 6.2

# 1. Introduction

## 2.0 General:

The purpose of this procedure, is to ensure a safe and proper lifting operation, when installing the Gooseneck onboard at Polar Pioneer.

Check out drawing 3841-A0001 for Lifting arrangement/General arrangement.

This Procedure is made in accordance to:

*DNV Rules for Marine Operations Pt.1 Ch 2. Planning of Operations (1996)*

### 1.1 Following equipment is delivered by ODIM JMC:

- One gooseneck (Figure 1.1.1)
- Three skid beam modules for the well service deck with one turntable, two skid pallets, and two skid cylinder assemblies for skidding of the turntable and pallets (Figure 1.1.2)

### 1.2 Following actual equipment delivered by Vinje Industri A/S:

- Gooseneck Interface Frame (Figure 1.2.1)
- Gooseneck Hook-up Frame, with after installing of two 5 Ton Guide sheaves (Figure 1.2.2)
- Walkways and stairs around Well Service Deck/Gooseneck Hook-up Frame (Figure 1.2.3)
- Air driven chain block SWL 8 Ton, and pad eye, bolted to aft DSC foundation (Figure 1.2.4)
- Air driven hatch below aft DSC foundation (Figure 1.2.5)
- Door and access platforms in derrick structure for access to Gooseneck and Interface frame (Figure 1.2.6)
- Service platform, bolted on top of Gooseneck for access to pad eyes (Figure 1.2.7)

- Two Guide Winches for 1 Ton pull, with foundation. One on starboard side, and one on port side of WSD deck (Figure 1.2.8)
- One Guide winch for 3,2 Ton pull, with foundation, located in center of WSD deck (Figure 1.2.9)
- Lifting chain SWL 8 Ton, and lifting adapter with pad eyes for guide winches (Figure 1.2.10)
- Two Guide Wire Interface for 5 Ton pull with one 6,5 Ton shackle on each Guide Wire Interface, bolted on Vinje Interface Frame (Figure 1.2.11)
- Two different Temporary Guide Wire Winch Interface for 5 Ton rental Guide Winches, located in center of WSD (Figure 1.2.12)
- Four Guide post located in Vinje Interface Frame (Figure 1.2.13)

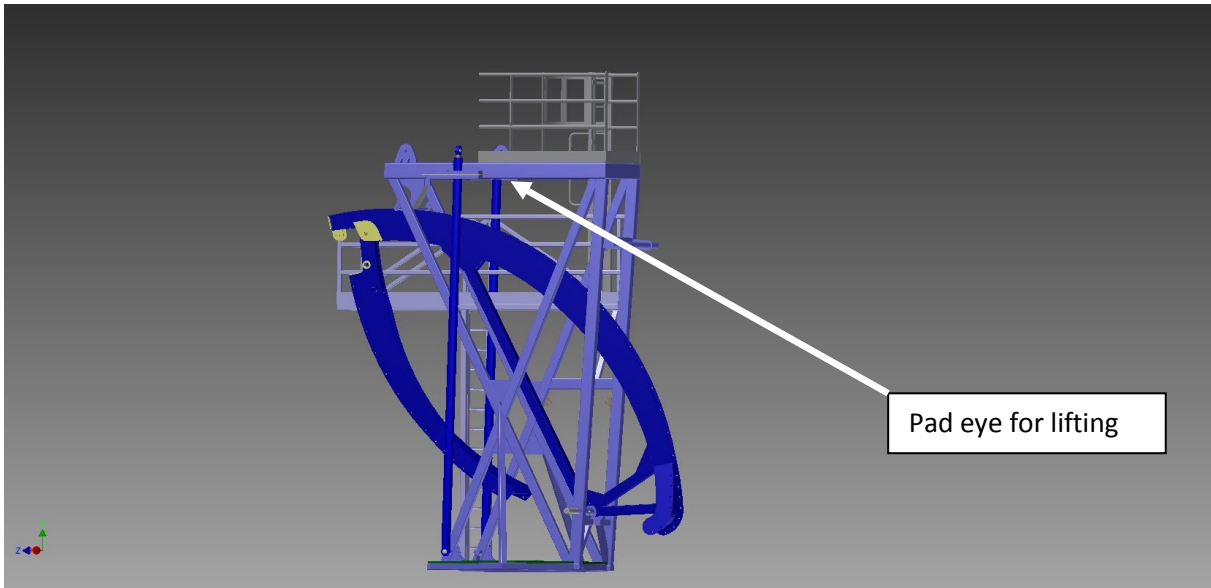


Figure 1.1.1 Gooseneck (NOTE on rev3: gooseneck have been modified by Marotec 2012)

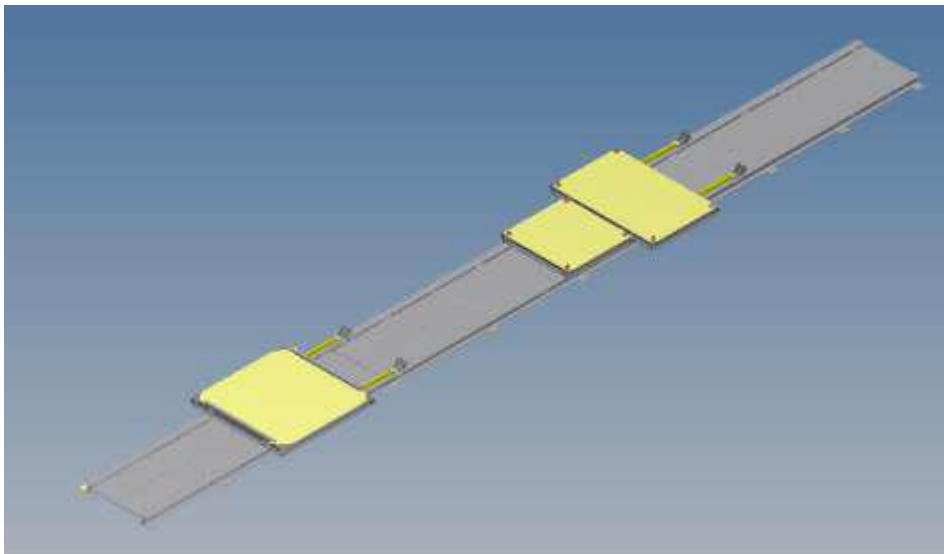


Figure 1.1.2 Three skid beam modules for the well service deck with one turntable, two skid pallets, and two skid cylinder assemblies for skidding of the turntable and pallets.

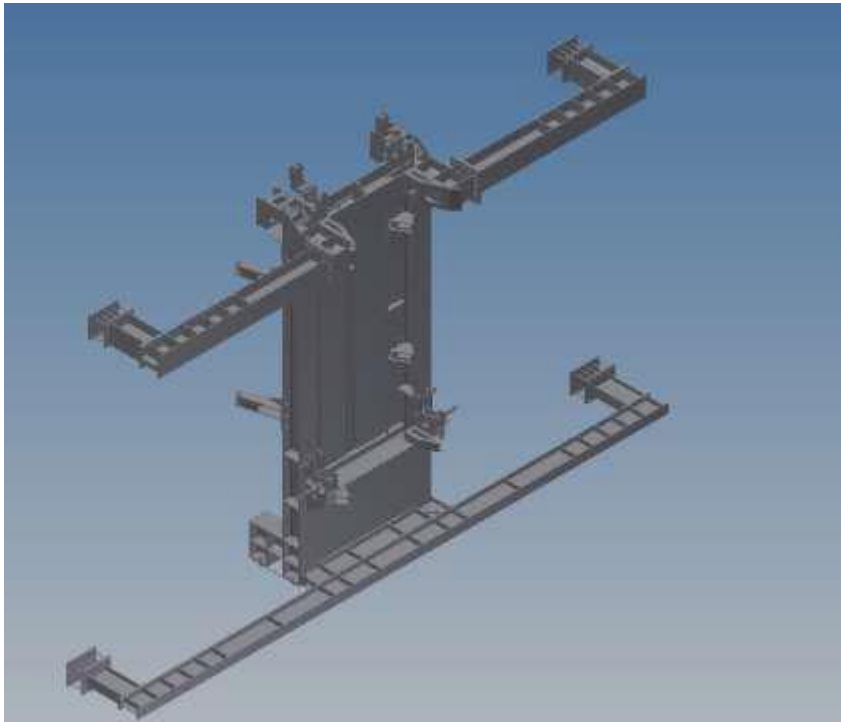


Figure 1.2.1 Gooseneck Interface Frame

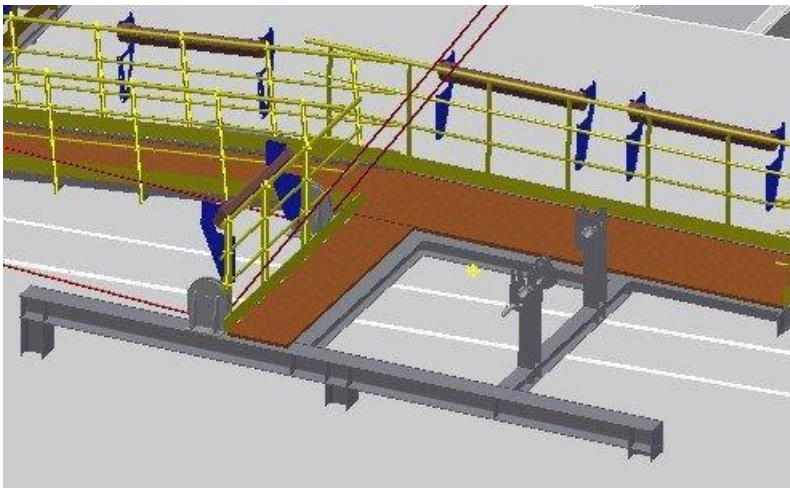


Figure 1.2.2 Gooseneck Hook-up frame



Figure 1.2.3 Walkways and stairs around Well Service Deck/Gooseneck Hook-up Frame

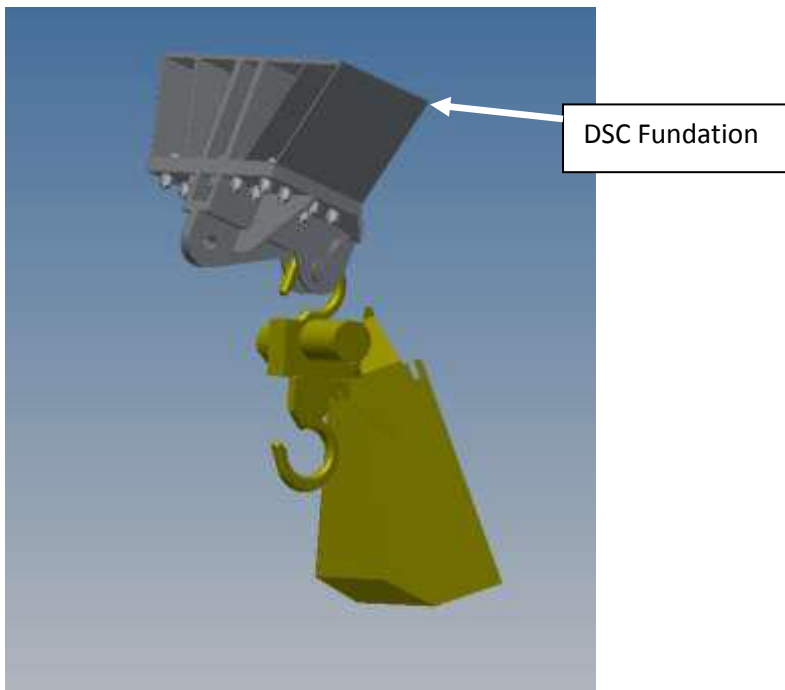
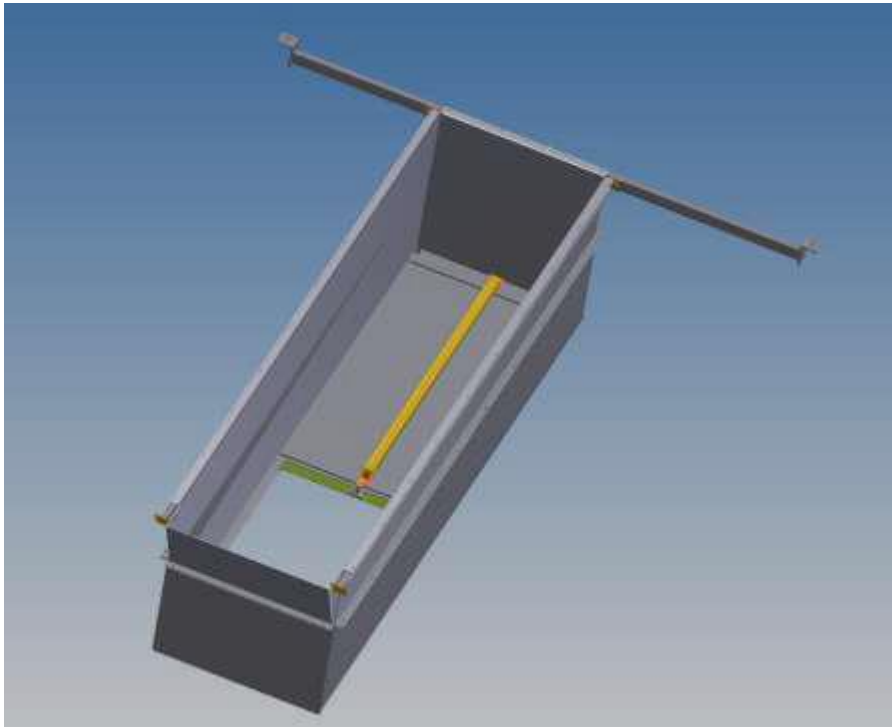
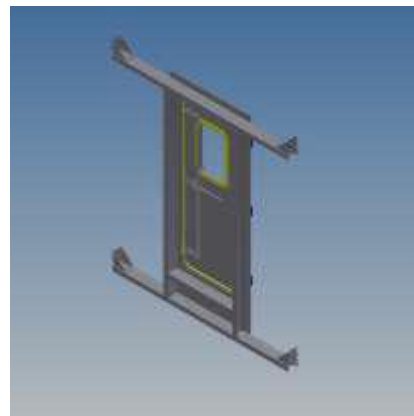
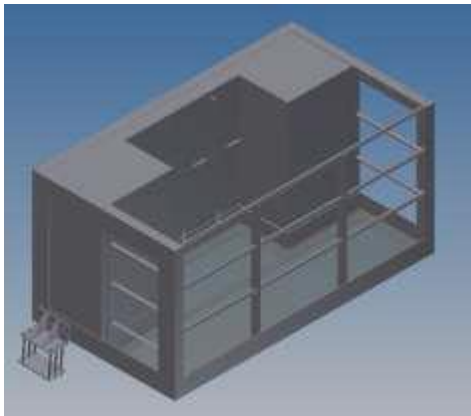


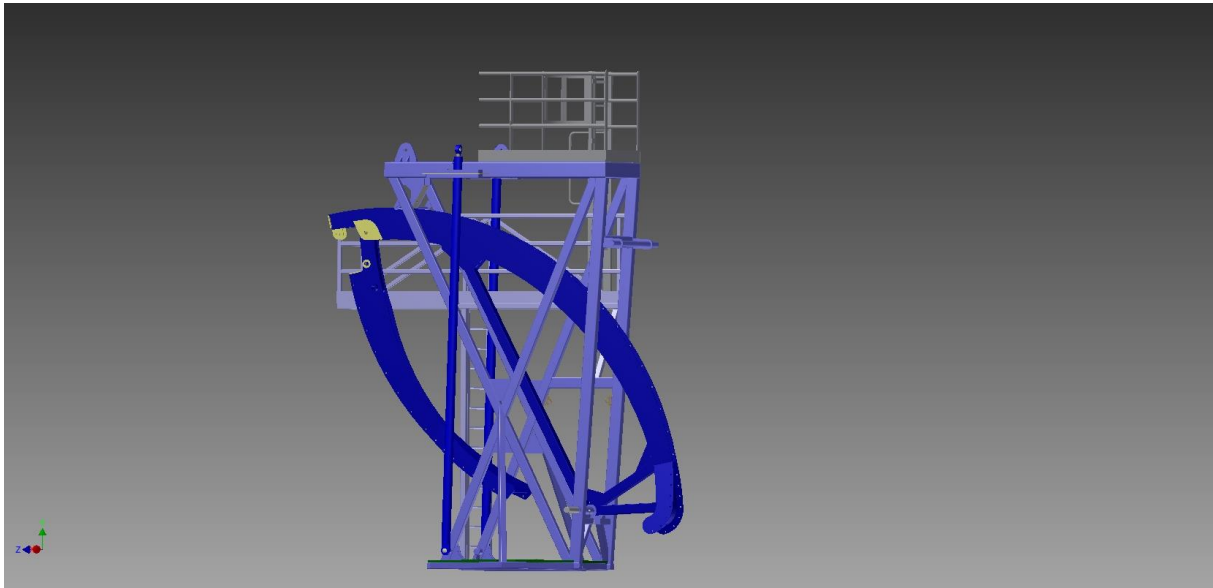
Figure 1.2.4 Air driven chain block SWL 8 Ton, and pad eye, bolted to aft DSC foundation.



*Figure 1.2.5 Air driven hatch below aft DSC foundation*

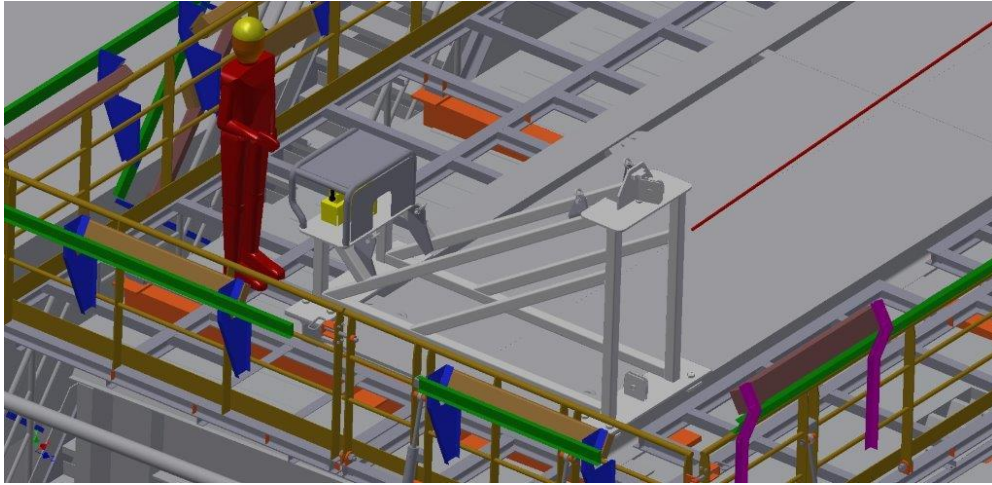


*Figure 1.2.6 Door and access platforms in derrick structure for access to Gooseneck and Interface frame.*

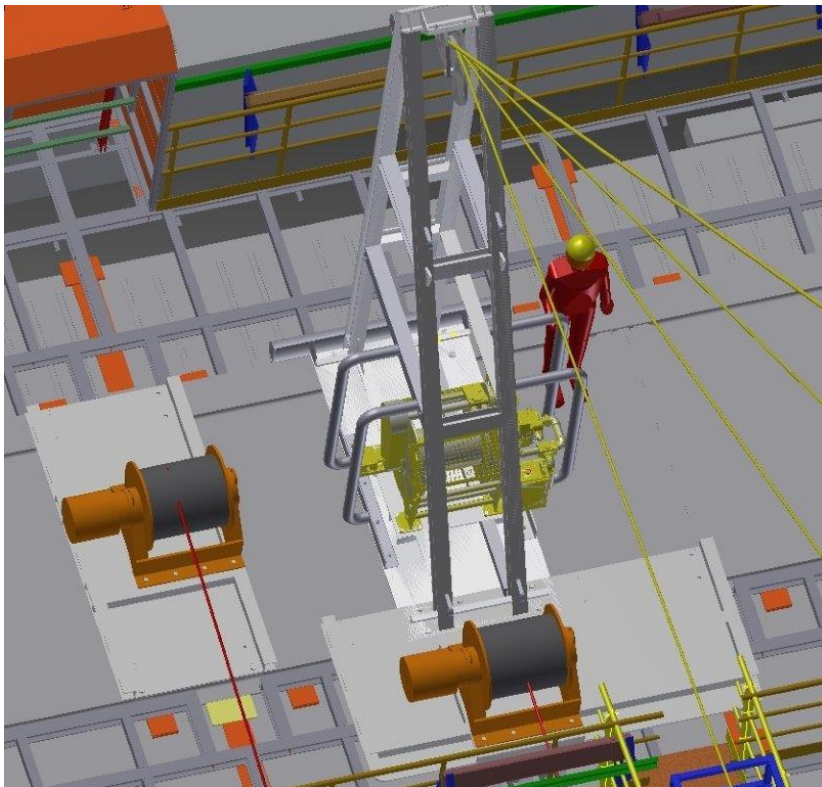


*Figure 1.2.7 Service platform, bolted on top of Gooseneck for access to pad eyes.*

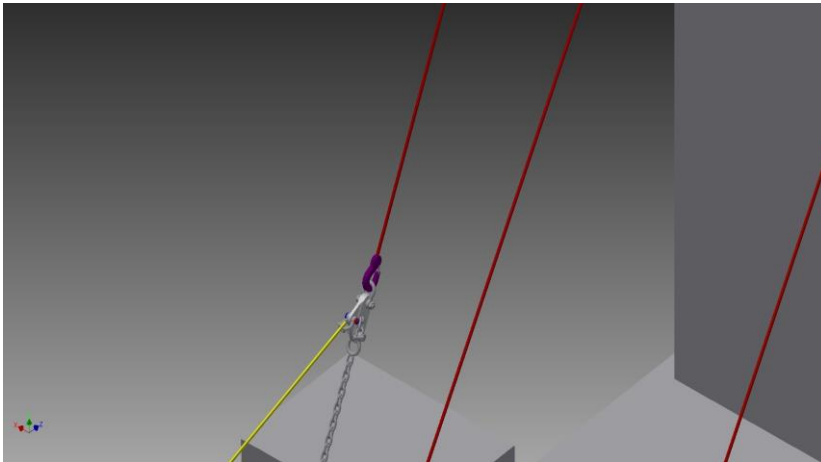




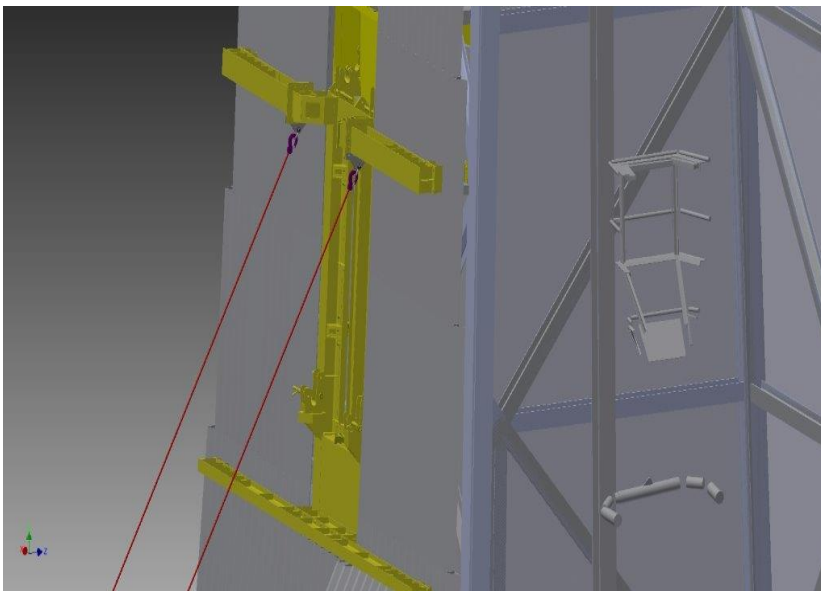
*Figure 1.2.8 Two Guide Winches for 1 Ton pull, with foundation. One on starboard side, and one on port side of WSD deck.*



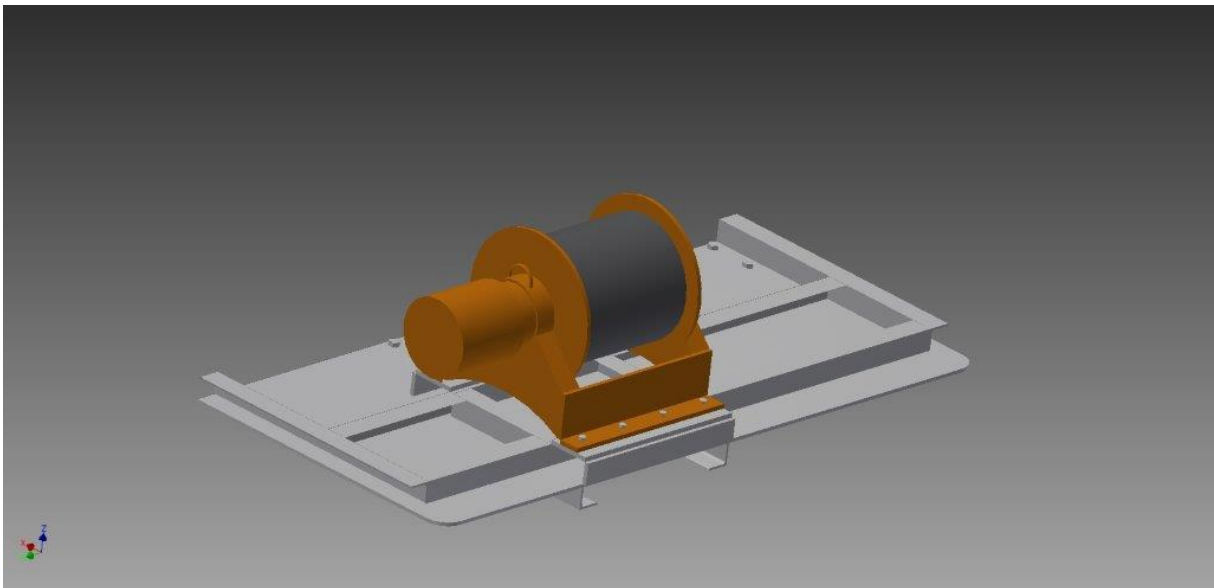
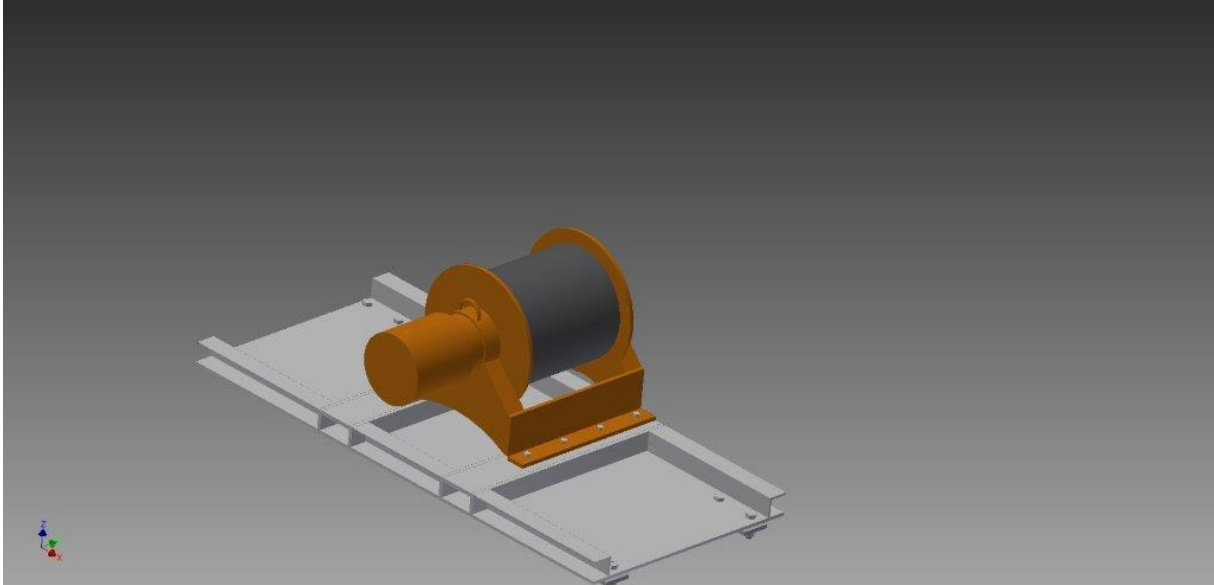
*Figure 1.2.9 One Guide winch for 3,2 ton pull, with foundation, located in center of WSD deck.*



*Figure 1.2.10 Lifting chain SWL 8 Ton, and lifting adapter with pad eyes for guide winches.*



*Figure 1.2.11 Guide Wire Interface SWL 5 Ton.*



*Figure 1.2.12 Temporary Guide Wire Winch Interface.*

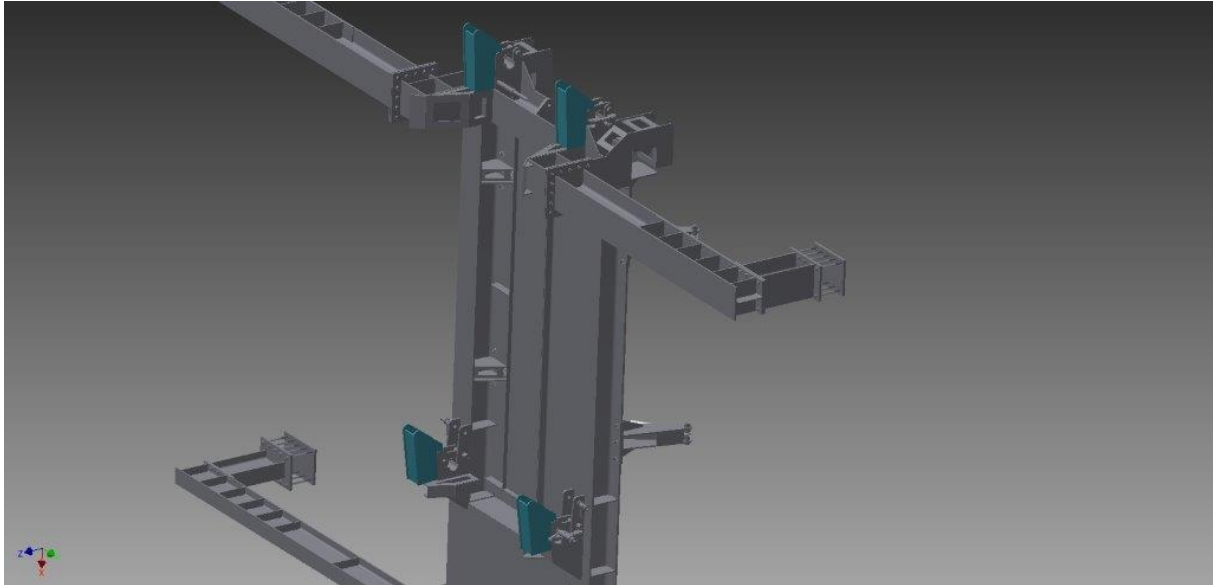


Figure 1.2.13 Four Guide post located in Vinje Interface Frame

### 1.3 Contact information

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NORWAY

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Web: [www.vinjeindustri.no](http://www.vinjeindustri.no)

## 1.4 References

<i>Ref. nr</i>	<i>Doc. nr</i>	<i>Description</i>
1	10030575	Gooseneck (GA drawing)
2	21347-23523-Z-MB-0002	Operation and Maintenance manual GN
3	10032616	Well service deck (GA drawing)
4	21347-23523-Z-MB-0001	Operation and maintenance manual WSD
5	2440-A9100	Walkways around skid deck (drawing)
6	2440-GA6000	Walkways/GHF Arrangement (drawing)
7	2440-A2100	Gooseneck Interface Frame (drawing)
8	2440-A6000	Gooseneck Hook-up frame (drawing)
9	3841-A0001	Gooseneck Lifting Arrangement (drawing)
10	2440-A3212	Guide Winches 1 Ton (drawing)
11	3841-A1024	Guide Winch center 3,2 Ton (drawing)
12	2440-A2152	Gooseneck access platform (drawing)
13	2440-A2201	Hoisting equipment/air driven chain hoist 8 Ton (drawing)
14	2440-A2400	Gooseneck Lifting gear (drawing)
15	2440-D2400	Gooseneck Lifting Bracket (drawing)
16	2440-02-CPR-001	Commissioning procedure for lifting/guiding equipment
17	685723-03 (SWECO)	Design calculations, Lifting Procedure
18	685723-04 (SWECO)	Design calculations, Winch Base Gooseneck
19	685723-05 (SWECO)	Design calculations, Gooseneck Lifting Bracket (2440-A2400)
20	M-014-2013R0	Structural analysis of the changes by the new lifting procedure of the gooseneck module
21		<b>Aker rapport derrick</b>
22	3841-A2500	Temporary Guide Wire Winch Interface 1, (5 T)
23	3841-A2600	Temporary Guide Wire Winch Interface 2, (5 T)
24	3841-A2300	Guide Wire Interface in Vinje Interface Frame
25	3841-A2900	Guide Post at Vinje Interface Frame in derrick

## 1.5 Abbreviations

Definitions of short terms used in this document.

<b>Description</b>	<b>Short form</b>
Well Service Deck	WSD
Gooseneck	GN
Air Driven Chain Hoist 8 Ton SWL	ADCH
Gooseneck Hook-up Frame	GHF
Gooseneck Interface Frame	GIF
Guide winch	GW
Health, Safety and Environment	HSE
Det Norske Veritas	DNV
Safe Working Load	SWL
Drill String Compensator	DSC
Rolls-Royce	RR

## 1.6 Communication routines

Good communication is of high importance. Due to the big area of operation, through the whole installation, communication is of high importance. All involved personnel shall have radio contact with each other.

At all time, all personnel are allowed to stop the operation, if something is unclear, something unforeseen happens, or if they observe something that is not according to original plan.

## 1.7 Operation instructions

Due to the safety of the lifting operation, it is of highest importance, that all personnel which will operate the machines, have read and understood the operation instructions for the machines, before operating them. Only qualified personnel shall operate the machines.

### 1.7.1 Air Driven Chain Hoist 8 ton SWL (ADCH)

To operate the ADHC:

- Open air supply valve located at STB side of ADCH, on the derrick structure wall.
- Use the "RESET" button to engage the control panel. Make sure that the emergency stop button is NOT activated, when pushing "RESET"
- Press arrow "UP" for hoisting.
- Press arrow "DOWN" for lowering.
- Check "EMERGENCY STOP" function before use.

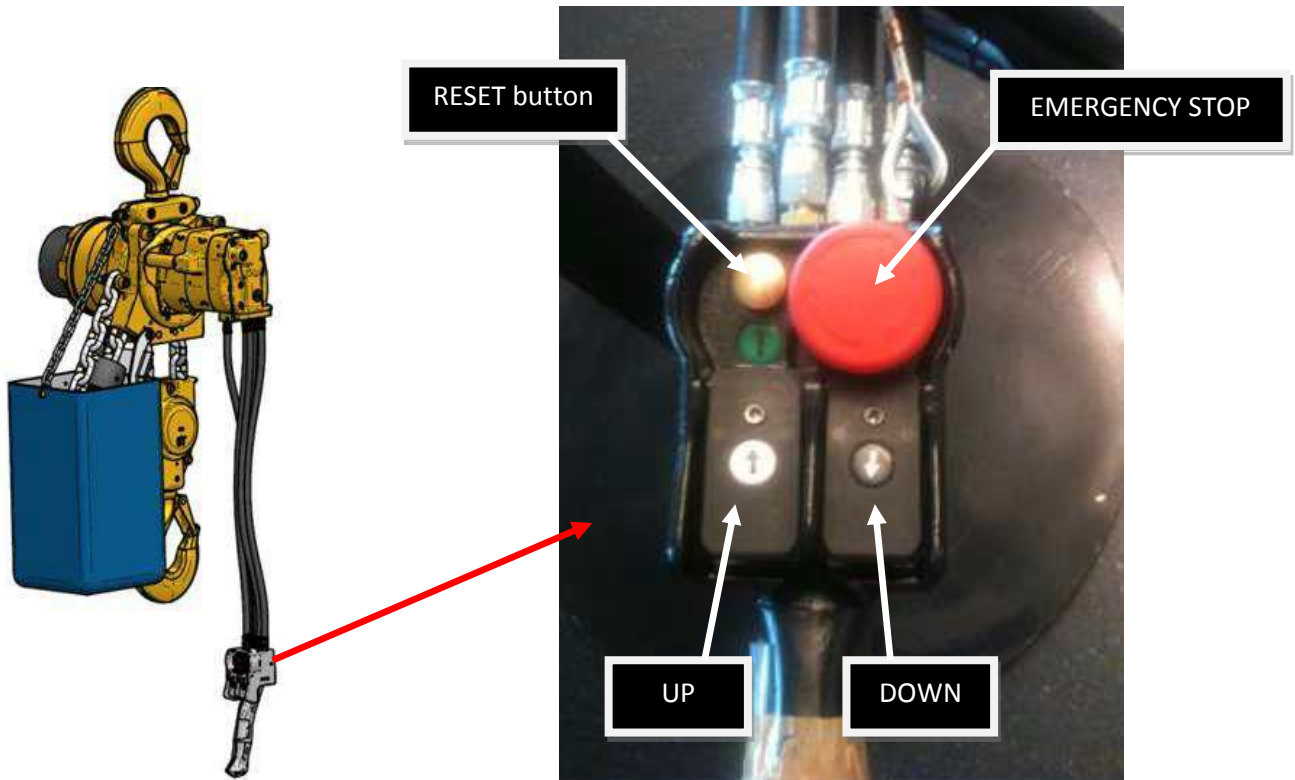


Figure 1.7.1



### 1.7.2 Center Guide Winch 3,25 ton pull

To operate Center Guide Winch:

- Make sure that the air supply hose is properly connected and secured.
- Open air supply valve located at the aft handrail on WSD.
- Pull control handle backwards, to pull wire in.
- Push control handle forward, to release wire.
- Check "EMERGENCY STOP" function before use.

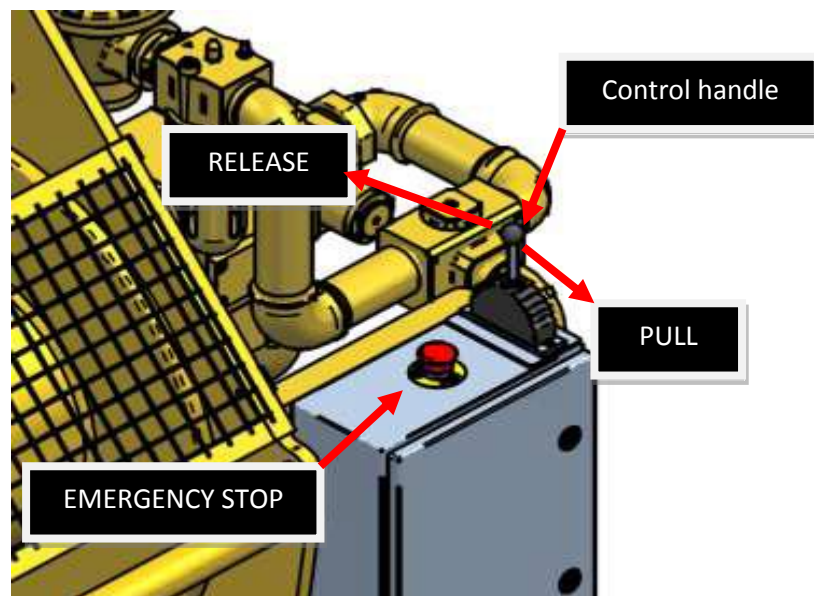
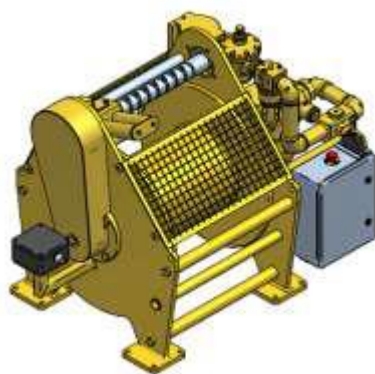


Figure 1.7.2

### 1.7.3 Port and STB side Guide winches

To operate Port and STB side Guide Winches:

- Make sure that the air supply hose is properly connected and secured.
- Open air supply valve located at the aft handrail on WSD.
- Use the "RESET" button to engage the control panel. Make sure that the emergency stop button is NOT activated, when pushing "RESET"
- Pull control handle backwards, to pull wire in.
- Push control handle forward, to release wire.
- Check "EMERGENCY STOP" function before use.

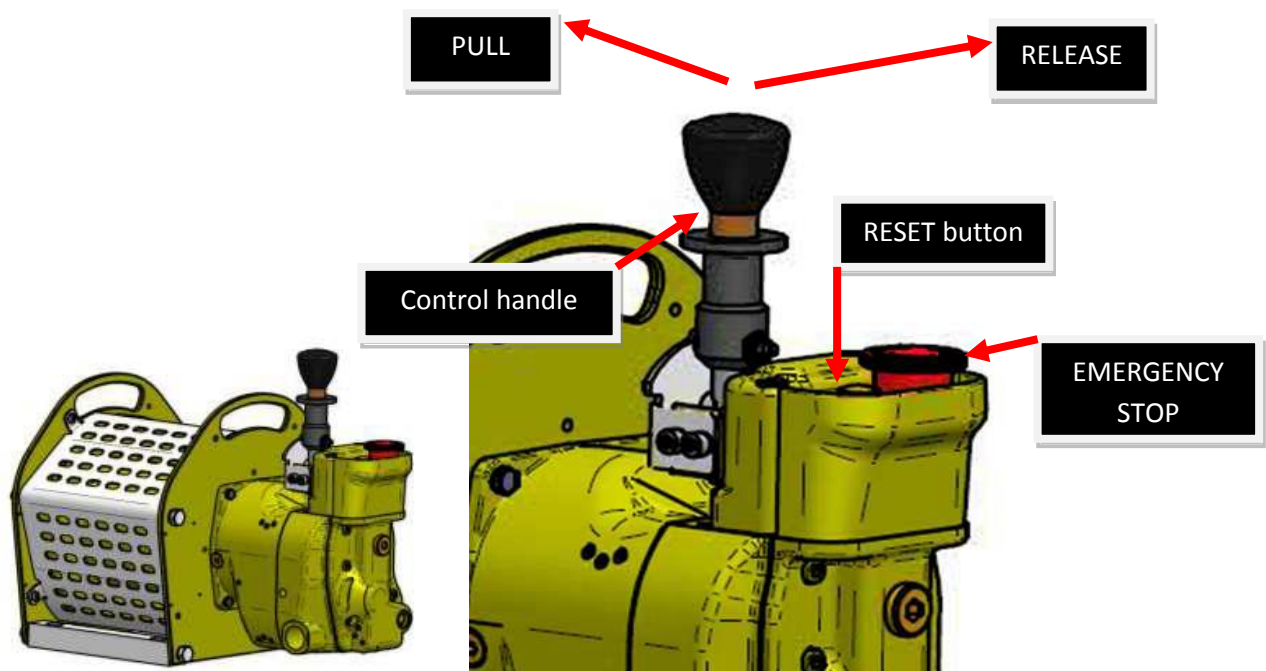


Figure 1.7.3

### 1.7.4 Hydraulic doors on Gooseneck Interface Frame

To operate hydraulic doors:

- Check that hydraulic ring line pressure is engaged.
- Use control handles located at fingerboard level (STB AFT), and follow instructions on sign attached to the control panel, to operate the doors.
- Make sure that the doors are fully open/closed, after operating control handles.
- Nearest emergency stop valve for hydraulic ring line pressure, is located beneath grating. Use access ladder to Upper Racking Arm, to reach it. Make sure to locate the position of this valve, before operating doors.

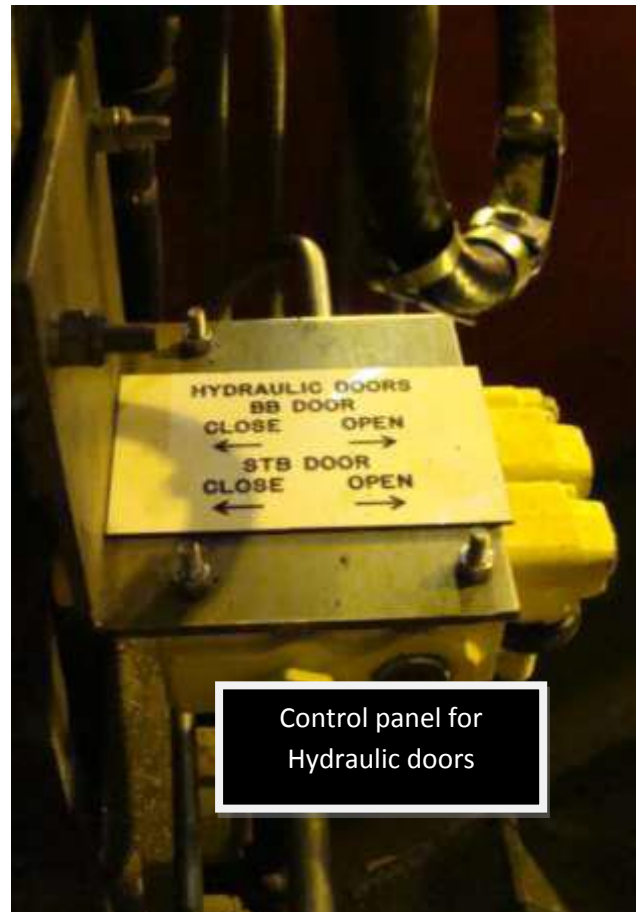


Figure 1.7.4

### 1.7.5 Air Driven Hatch

To operate Air Driven Hatch:

- Make sure Locking bolt is in open position.(access to locking bolt from grating under DSC foundation. Use fall arrestor for safety)
- Open air supply valve located at STB side of ADCH, on the derrick structure wall.
- Air supply valve, is nearest emergency stop function.
- Use Control handle located at STB side of ADCH, on the derrick structure wall. and follow instructions on sign attached to the control panel, to operate the hatch.
- **NOTE:** Make sure chain on ADCH is in highest possible position before closing the hatch.
- Close locking bolt after use.

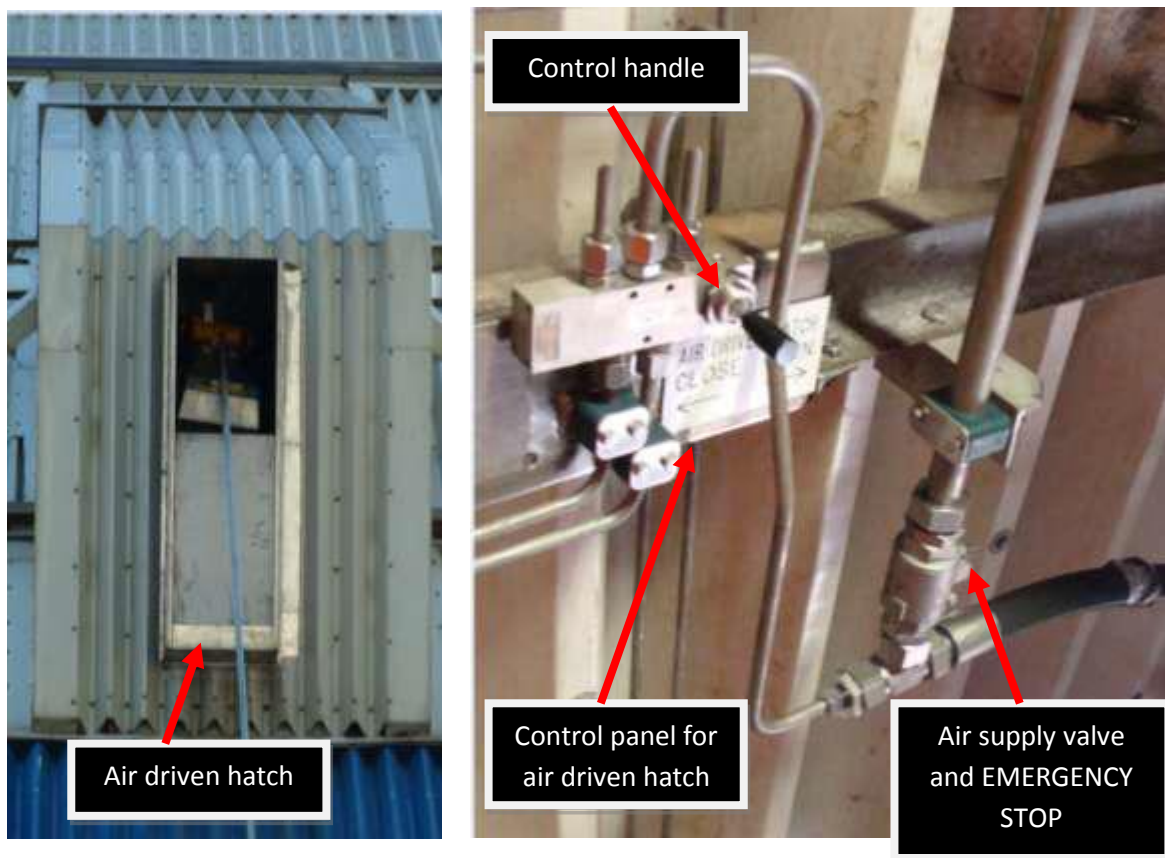


Figure 1.7.5

## 1.8 Estimated time schedule

This time schedule is based on uninterrupted work time.

- Rigging/preparations on WSD for GN up: Approx 1,5 hours
- Rigging/preparations in derrick for GN up: Approx 1 hour
- Lifting sequence GN up: Approx 1 hour
- Securing of GN in derrick after lifting sequence: Approx 1 hour
- Dismantling of lifting gear after securing GN in derrick: Approx 1 hour
- **Estimated total time consumption for GN UP: 5,5 hours**
- Rigging/preparations on WSD for GN down: Approx 1,5 hours
- Rigging/preparations in derrick for GN down: Approx 2 hours
- Lifting sequence GN down: Approx 1 hour
- Securing of GN in GHF after lifting sequence: Approx 30 minutes
- Dismantling of lifting gear after securing GN in GHF: Approx 1 hour
- **Estimated total time consumption for GN Down: 6 hours**

## 2. HSE (Health, Safety and Environment)

### 2.0 General HSE

#### Vinje Industri A/S:

Vinje Industri A/S has a strong focus on HSE. It's our goal to perform all operations without any damage on people, environment and equipment.

To reach this goal, Vinje Industri A/S continuously work with this matter.

Before this lifting operation take place, it's of highest importance that all involved personnel, have read and understood the content of this procedure.

### 2.1 Gooseneck Lifting Operation (HSE), Vinje Industri

The most critical moments in this lifting operation, is when GN is lifted out/ landed in the GIF, and the GHF. Good communication between all involved personnel in this critical phase, is of highest importance.

Involved personnel, shall have a safety meeting before the execution of the lifting operation. On this meeting, the supervisor shall inform about safety, communication, areas of responsibility for involved personnel, work procedures etc. A written THINK plan shall be performed at this meeting.

This lifting operation will be leaded by Lifting Supervisor, which have to be a qualified flag man. Normally all crew will be Transocean personnel, and all operators for the machines shall have the necessary skills/certificates, to operate them.

The GN's weight is approx 5 ton. This weight can cause seriously damage to people and equipment, if it's not handled correctly

Before lifting operation take place, all lifting equipment shall be checked for approval and damages. If any lifting gear is damaged, it shall be replaced before operation continues.

Check also emergency functions on all guide winches, and on the 8 ton chain hoist. All winches, and the chain hoist, has emergency stop functions on the control panels. It is also possible to stop all machines by closing the air supply valve. Make sure that all involved personnel know the location of these valves.

Close area beneath, and use safety harness, when working in height!

Make sure that all involved personnel in lifting operation have necessary protection and clearance to hazardous area during lifting operation.

If necessary make some "as build" safety barriers to protect operators.

BP Norway:

## 2.2 Gooseneck Lifting Operation (HSE), BP Norway

The main objective is to prevent accident and unscheduled events rather than to react to them. The objectives are to meet or exceed the current HSE objectives for BP Norway and Transocean.

The procedure when approved and signed, is applicable to the installation of the Coiled Tubing Gooseneck (GN) on the vessel Transocean Polar Pioneer operating for BP Norway. This lifting and installation procedure is written to comply with corporate policies, standards, guidelines and procedures including but not limited to:

- Getting HSE Right
- BP Norway HSE Directives
- Relevant SIKAP: 1.70.107
- Transocean internal procedures (Complex or specialized lifting operations)
- Vinje Industries installation guide
- Rolls Royce operational procedure
- Norsok R-003

## 2.3 Responsibilities

Well Site leader Intervention (WSLI)/Completion Supervisor (CS)

The WSLI/CS is the senior BP wells representative offshore for this operation. The role and responsibility of the WSLI/CS can be taken by others, as nominated by the Wells team leader or lead engineer onshore.

The WSLI/CS will witness the installation of the GN to ensure that work is performed safely and sufficiently within BP procedures and statutory regulations.

The Barge Supervisor (Transocean)

Shall exercise overall operational management of the lifting operations.

The Crane Operator(Transocean)

Ensure that only certified lifting equipment is used for all lifting Operations, plan each lifting operation, and ensure that the lifting appliances and lifting gear are in good condition for their purpose and in accordance with the manufacturer's descriptions for use, specifications and descriptions.

## 3. Operation and design limits

**3.1 Wind conditions:** According to design calculation report from Sweco (685723-03), the equipment can withstand a wind force of 28m/sec. However, we recommend a wind speed limit of 8 m/s due to safety of the operation.

**3.2 Wave conditions:** Recommended max heave amplitude: +/- 1m, i.e. max 2m total heave movement.

**3.3 Temperature:** Operating temperature for machines: -10°C to +40°C



## 4. Lifting Procedure: Gooseneck up

### 4.0 Personnel

To perform a safe lifting operation, following personnel is required:

- Lifting supervisor (flag man)
- Slinger
- Operator for starboard side Guide Winch
- Operator for port side Guide winch
- Operator for center Guide Winch and guide line winches
- Operator for Air driven chain hoist
- Two men to keep control of guide/ tag ropes on WSD deck level
- Two man to keep control of guide/ tag rope in Derrick
- Operator for Manrider winch

### 4.1 Rigging/ Preparations in derrick

**NOTE:** Before rigging begins, see drawing 3841-A0001 for general lifting arrangement

- Open hydraulic doors on GIF
- Check that all four locking bolts/mechanisms on GIF are working, and leave them in open position. The two on top can be reached from access platform over hydraulic doors. The two in the bottom can be reached through hydraulic doors by use of Manrider Winch
- Attach guide rope to hook on ADCH, open air driven hatch below ADCH, Lower guide rope to WSD level, and lower enough length on the chain, to attach hook to lifting bracket on GN
- Lower two guide tag/ ropes thru hydraulic doors and attach them to existing pull in lifting slings witch are fastened to suitable points of GN

## 4.2 Rigging/Preparations on WSD level

**NOTE:** Before rigging begins, see drawing 3841-A0001 for general lifting arrangement

- Attach two guide ropes/ tag lines to GN
- Mount 17,5 T load shackle and lifting gear in the lifting pad eye on top of the gooseneck frame
- Make sure that preparation on GN is prepared according to RR- manual
- Rig up as shown in 3841-A0001 (lower position, Figure 4.2.1)  
Keep low tension on chain/wires, when locking bolts/mechanisms on GHF are in closed position
- Open locking bolts/mechanisms on GHF
- Connect the wireless measuring panel to the 17,5 Ton Load shackle

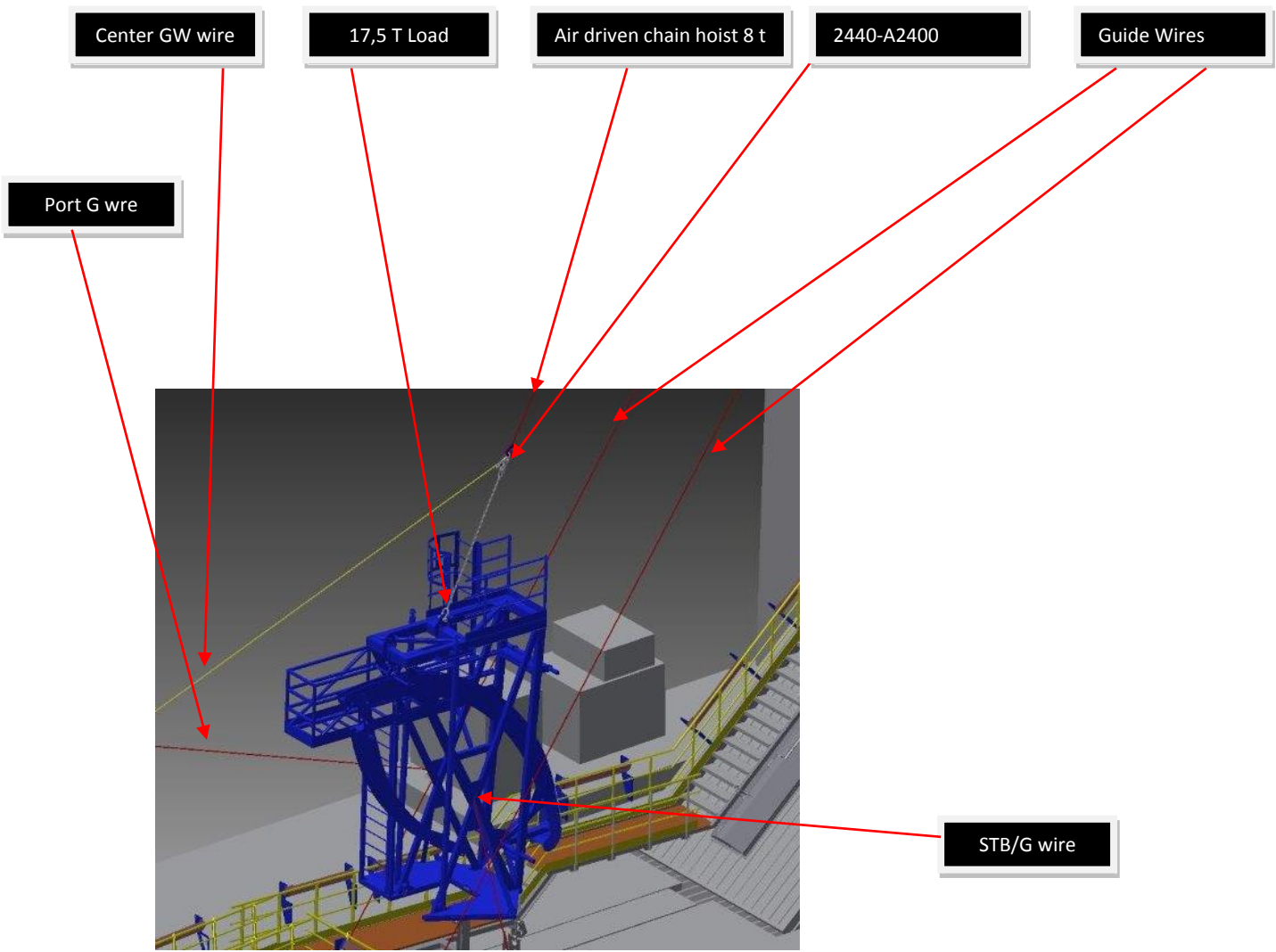


Figure 4.2.1 Lower position

### 4.3 Lifting operation: Gooseneck up

- Carefully put tension on ADCH and center GW. Check vertical straightness on lifting chain between GN and Lifting Bracket. Make sure that 5 Ton installed guide lines wires been tighten up sufficient (Aprox 4 Ton). Tight up sufficient PORT and STB 1 Ton guide wires.
- Pull up on ADCH, and release tension on 3,2 Ton and two 1 Ton guide winches simultaneously.
- When necessary, flag man and slinger, should move from WSD level, to derrick.
- When GN reach upper position hoist vertical until GN parking bolts have a minimum clearance above 100mm over Guiding post on Vinje Interface Frame, release tension on 3,2 Ton and two 1 Ton guide winches, until chain on ADCH is in vertical position. If necessary also release tension on two 5 Ton guide winches, and use pull inn system shown illustrated in figure 4.3.3a or 4.3.3b

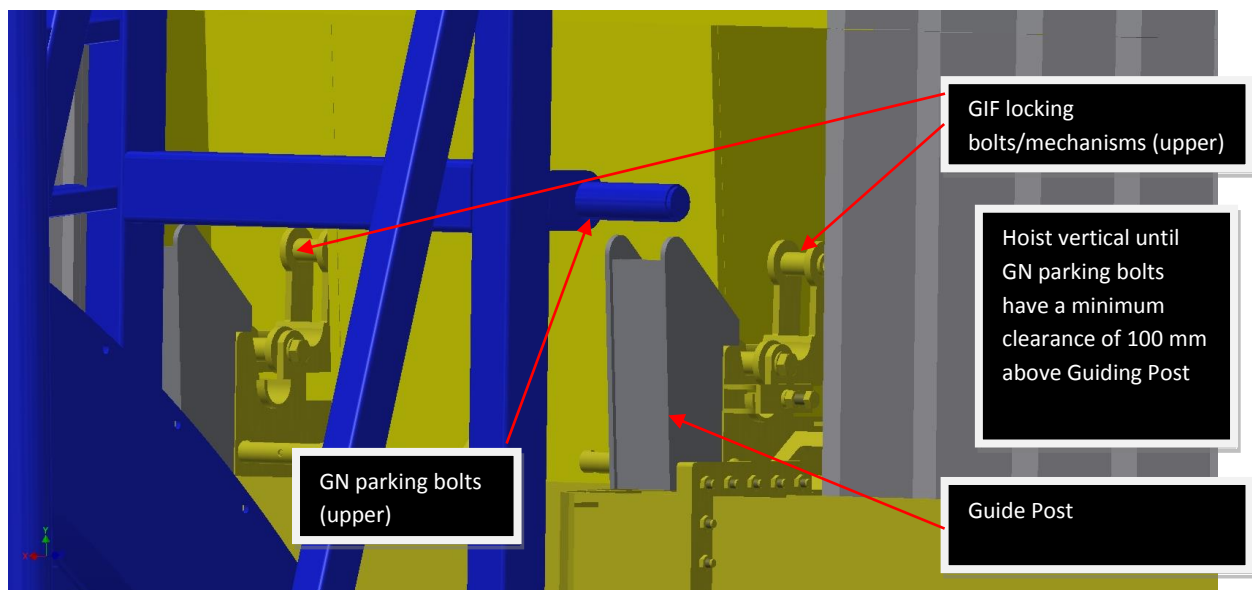


Figure 4.3.1

NOTE: When all tension is released on guide winches, it is theoretically possible to lower directly into parked position. Due to trimming of the rig, the GN might have to be pulled in longitudinal direction. Use center GW for pulling backwards. If necessary to pull forward, use a chain block between derrick structure and GN.

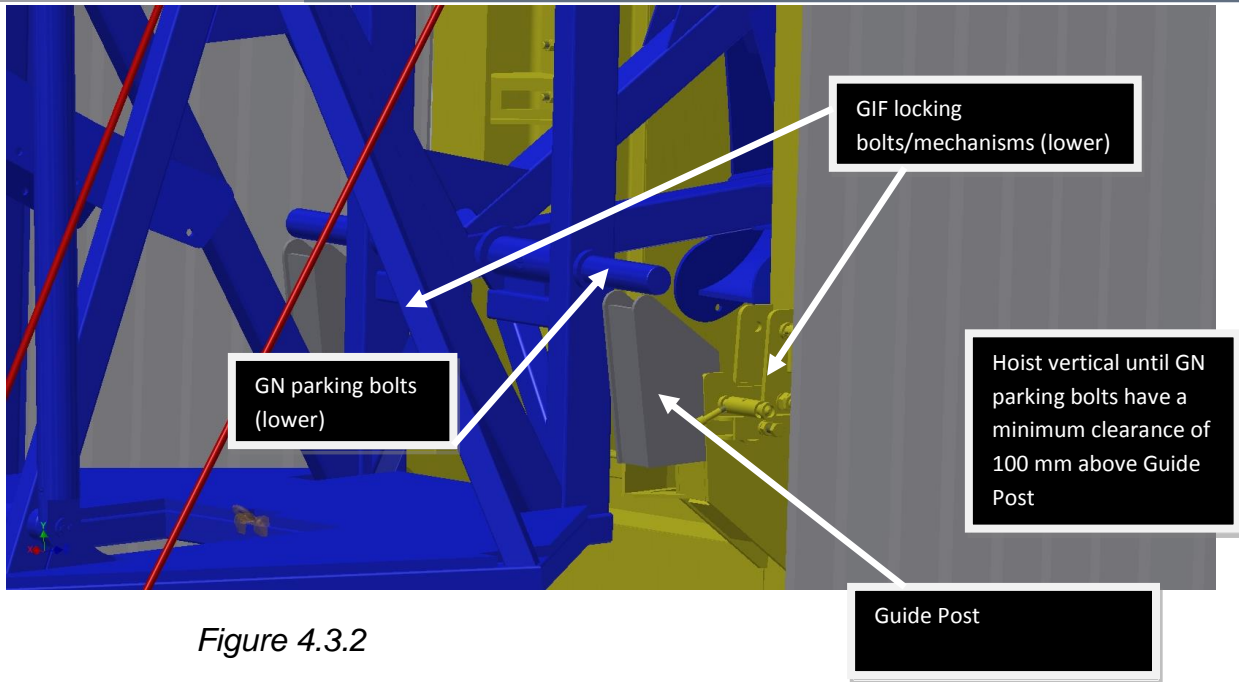


Figure 4.3.2

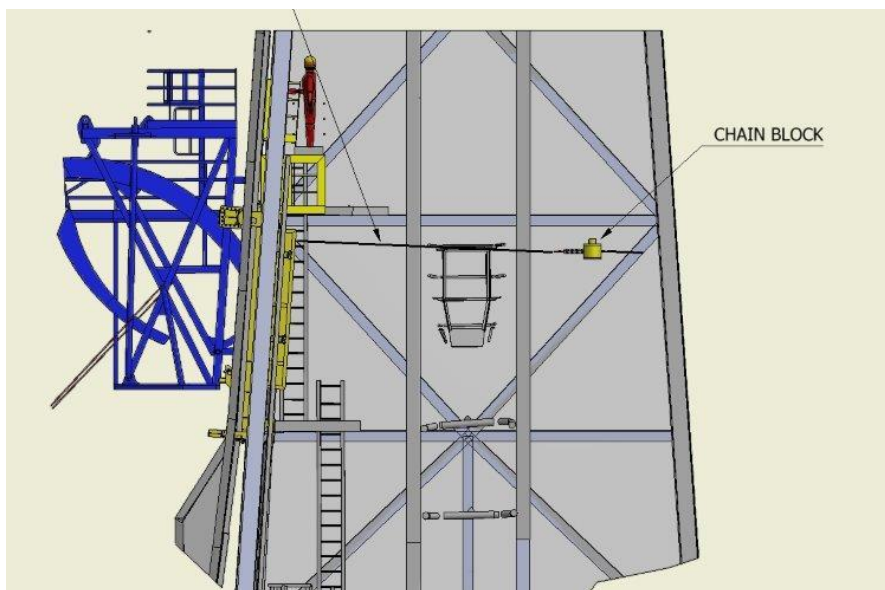
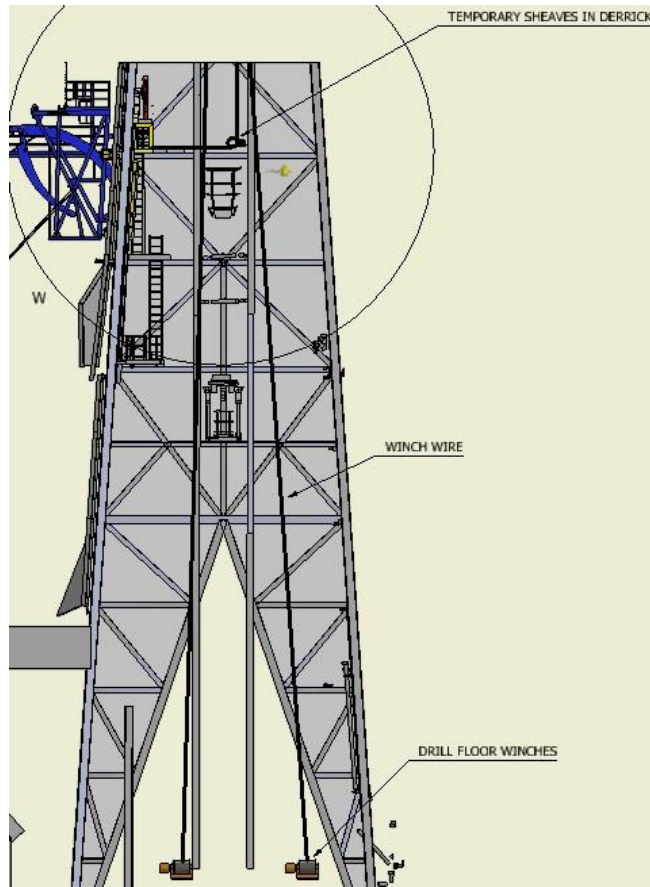


Figure 4.3.3a

VIEW ILLUSTRATE USE OF CHAIN BLOCK, LOCATED IN DERRICK FOR PULL IN GOOSENECK TO INTERFACE FRAME IF NECESSARY (Also illustrated in drawing 3841-A0001, sheet 9)



*Figure 4.3.3b*

VIEW ILLUSTRATE USE OF WINCH ON DRILL FLOOR, WITH SHEAVES LOCATED IN DERRICK FOR PULL IN GOOSENECK TO INTERFACE FRAME IF NECESSARY.

(Also illustrated in drawing 3841-A0001, sheet 9)

- Check alignment on all four parking bolts in relation to locking mechanisms on GIF. if necessary, adjust GN till all locking bolts are in position straight above.
- Carefully lower GN, until all weight of GN is released from the lifting equipment.
- Close all four locking mechanisms/bolts on GIF.
- Access to top of GN is now possible, by use of door in the derrick structure.
- Remove Lifting chain, lifting bracket and guide ropes of from top of GN.
- Release all guide winch wires, and lower them to WSD by use of 8 Ton chain hoist.
- For further preparation and installing of GN use RR manual for this task.

## 5. Lifting Procedure: Gooseneck down

### 5.0 Personnel

To perform a safe lifting operation, following personnel is required:

- Lifting supervisor (flag man)
- Slinger
- Operator for starboard side Guide Winch
- Operator for port side Guide winch
- Operator for center Guide Winch and guide line winches
- Operator for Air driven chain hoist
- Two men to keep control of guide/ tag ropes on WSD deck level
- Two man to keep control of guide/ tag rope in Derrick
- Operator for Manrider winch

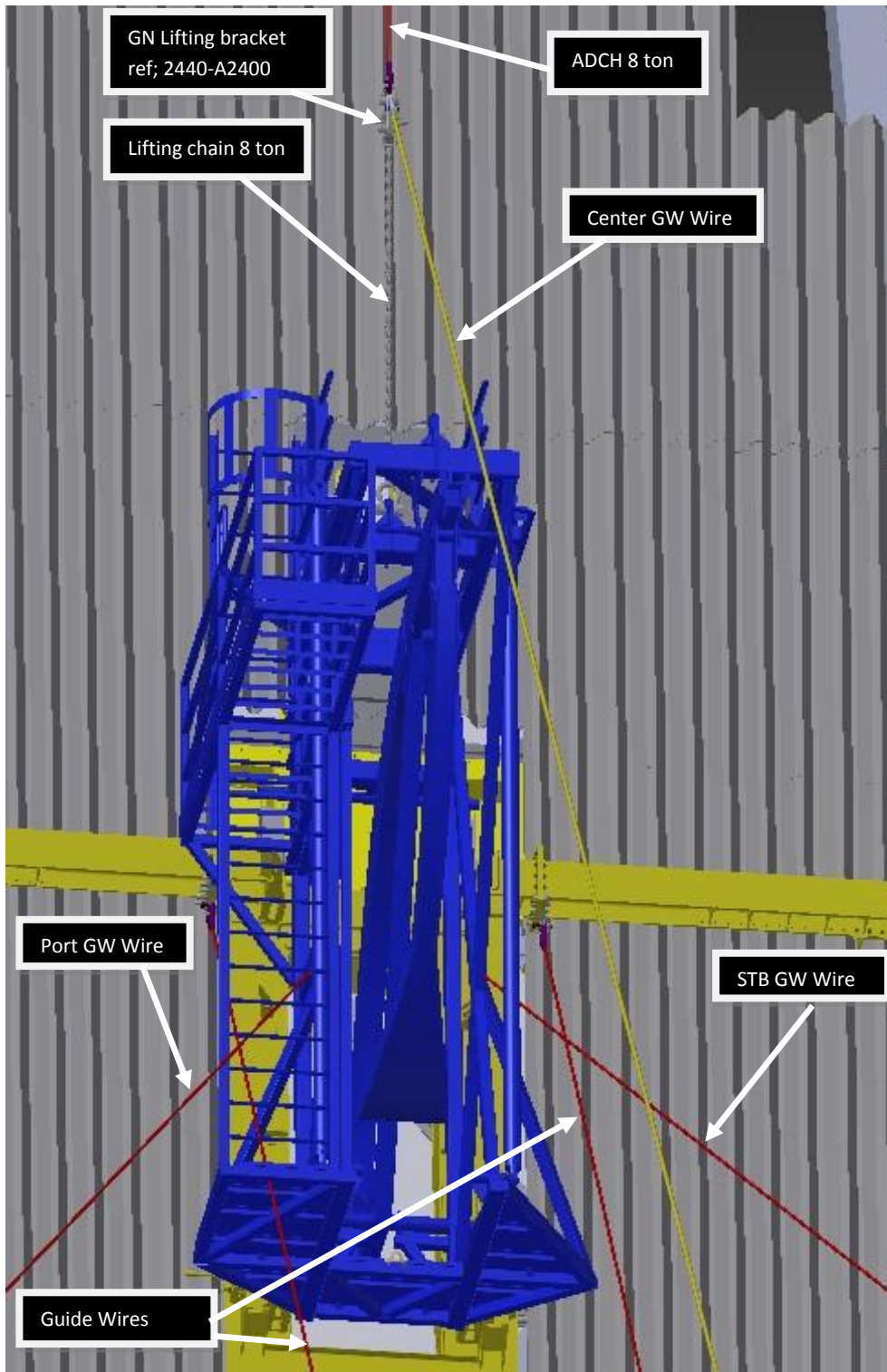
### 5.1 Rigging/Preparations in derrick

**NOTE:** Before rigging begins, see drawing 3841-A0001 for general lifting arrangement

- Check that all external equipment (if any), used for coil tubing operation, is removed
- Check that hydraulic doors on GIF is fully open
- Check that air driven hatch is fully open
- Use RR manual for preparation of GN, before lifting sequence
- Connect two guide ropes to guiding points on GN, and lower them down to WSD

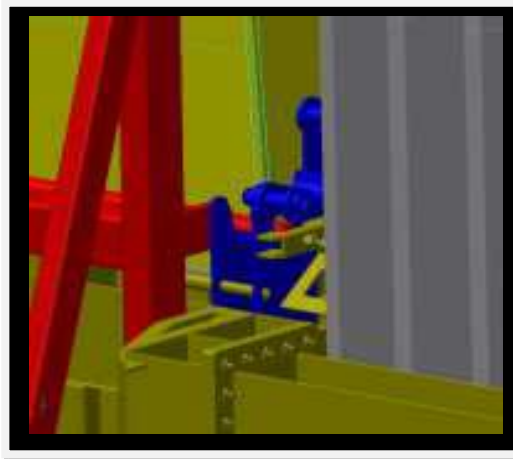


- Use ADCH to lift up lifting gear with guide winches attached ,connect lifting gear, to pad eye on top of GN



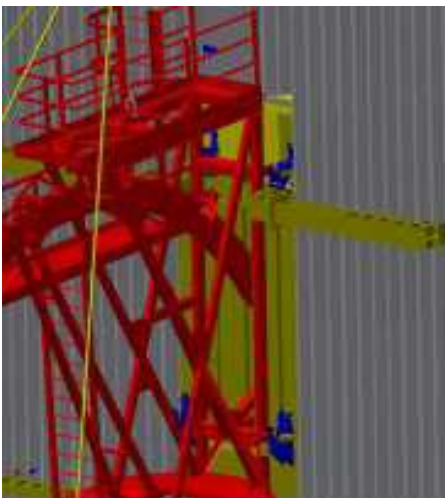
*Figure 5.1.1 Lifting arrangement*

- Carefully, tight up ADCH and all Guide Winches. Keep low tension on all winches. Check vertical straightness on lifting chain (8 ton)
- Open all four locking bolts/mechanisms on GIF



*Figure 5.1.2 Locking bolts/mechanisms*

## 5.2 Rigging/Preparations on WSD deck level



**NOTE:** Before rigging begins, see drawing 3841-A0001 for general lifting arrangement.

- Make sure that locking bolts/mechanisms on GHF is in open position

## 5.3 Lifting operation: Gooseneck down

- Make sure that there is tension on ADCH and all Guide Winches

- Use ADCH, and carefully hoist until GN has a minimum of 100mm clearance over Guide Post
- By use of the Guide Winches, pull GN away from the GIF, until there is acceptable distance to the derrick and Interface Frame. Remember to keep tension on the Guide Ropes, to avoid rotation on GN
- When lowering GN to WSD level, make sure that 5 Ton Guide Wires are necessary tighten up (approx 4 Ton)
- When necessary, flag man and slinger, should move from derrick to WSD level
- When bottom of GN is in position right above parking position above GHF, check that Locking bolts/mechanisms are in open position
- Lower GN into parking position on GHF
- Close locking bolts/mechanisms on GHF
- Release tension, and disconnect all lifting/guiding equipment
- Spool rest of Guide Winch wires on to drum
- Connect one guide rope to hook on ADCH, and hoist to max upper position. Remove guide rope, and close Air Driven Hatch
- Close hydraulic doors on GIF

## 6. Emergency situation procedure

### 6.0 Malfunction in machines:

- If any malfunction in one of the machines, should lead to the conclusion that the lifting operation have to be aborted, following solutions is recommended:
- If possible, lower GN to GIF or GHF and close locking bolts.
- Malfunction in ADCH: Rig up manual chain hoist in available pad eye on DSC foundation. Use STB deck crane with personnel basket, to attach hook in shackle on top of GN. Put tension on chain hoist, until chain on ADCH can be removed Use chain hoist for lowering GN to parked position.
- Malfunction in Guide Winches: Rig up manual chain hoist between GW foundation and GN by use of STB deck crane and personnel basket. Put tension on chain hoist, until GW wire can be removed. Use Chain hoist for guiding GN in to parked position

### 6.1 Weather conditions:

- If sudden change in weather should lead to the conclusion that the lifting operation should be aborted, lower and park the GN in the GHF, and close the locking bolts. Wait until the weather conditions are better, and start the lifting operation from the beginning.

### 6.2 Escape routes:

- If any alarm sounds, listen to any PA announcement, and follow instructions.
- In case of emergency, there is two escape routes from WSD. One emergency exit ladder, placed on Port side(fig.6.2.1), and stairs on Starboard aft side(fig 6.2.2), See also drawing 2440-A9100. Both exits leads down to main deck. From Main Deck; follow yellow marking to muster station.
- In case of emergency in derrick, use exit ladders down to drill floor, and follow yellow marking to muster station.

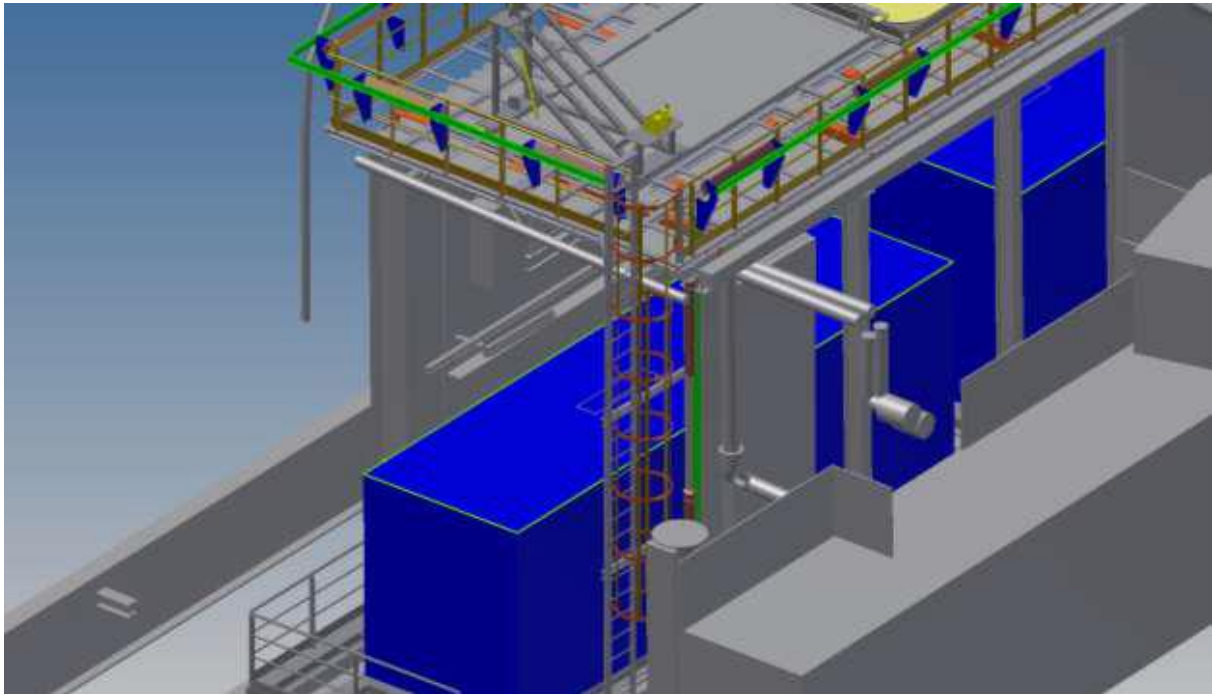


Figure 6.2.1 Emergency exit ladder on port side of WSD

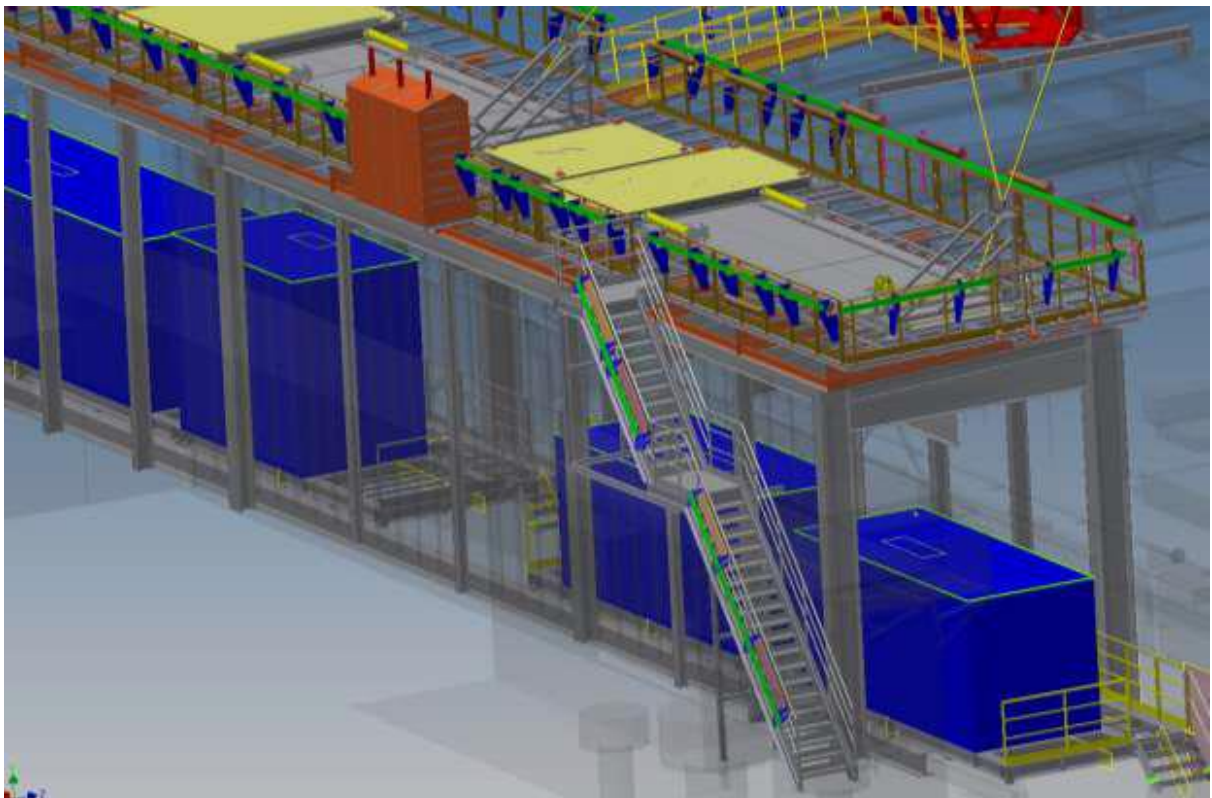


Figure 6.2.2 Stair on Starboard side of WSD