50 TON AHC CRANE

Built: 2023

1 MAIN DATA

1.1 General Data

AHC Boom Crane,
pedestal mounted
Type OC2809 BCE-(25-50)-(20-13)AHC

1.2 Certification and Third Party Approval

Equipment to be formally certified:	**Yes**
Certification by third party:	**Yes**
Basis document for the certification:	**API-2C Specification for offshore pedestal mounted cranes**
Verification by third party:	**Yes**
Basis document for the verification:	**Technical Spec.**
Name of third party:	**LRS – Crane/DNV - Pedestal**
Third party activities including:	
Design approval	**Yes**
Manufacturing survey	**Yes**
Witness of test and final inspection	**Yes**

1.3 Environment

1.3.1 Environmental Conditions

Temperatures	
Min. ambient outside	-20° C
Max. ambient outside	+45° C
Design temperature, steel	-20° C
Design wind velocity	
Operational, 10 min. mean	15 m/s
Stowed, 3 sec. gust	50 m/min
Trim angle	
Max. Crane axis deviation from vertical during crane operations:	
Longitudinal or north-south direction (°) :	4
Transverse or east-west direction (°):	8
Both maxima simultaneously (yes/no):	Yes

1.3.2 Area Classification

Pedestal, inside/outside:	Safe area
Crane house/ machine room, inside/outside:	Safe area
Crane cabin, inside:	Safe area
Main boom:	Safe area

1.4 Crane Design Criteria

For Reaction Forces see doc. T4195-N-RD-001

1.4.1 Classification Rules

API-2C sixth edition, March 2004. Specification for offshore pedestal mounted cranes.

1.4.2 Crane Design Codes

FEM – Rules for the design of hoisting appliances, 1.001, 3rd edition 1998

1.4.3 Design Criteria

	To meet standard spec. no.:	**FEM 1.001**		
1	Lifting appliance	Entire crane		
	Appliance Group	A3		
	Class of Utilisation	U3		
2	Load Spectrum Class	Q2		
	Machinery	**Type of Mechanism**		
		Hoisting	Luffing	Slewing
	Mechanism Group	M4	M4	M4
	Class of Utilisation	T4	T4	T4
	Load Spectrum Class	L2	L2	L2

1.4.4 Crane data

Type of lifts	Lifting data			Dynamic data						Comments
	Hook load SWL	Load radii	Wire falls	Wave height	Dyna-mic factor		Heel + Trim		Wind speed	
	t	m	pc	Hs, m			dgr		m/sec	
Internal on deck	25	20	1		1,4		8+4		15	
	50	13	1		1,4		8+4		15	
Subsea lift	25	20	1		1,5		8+4			
	50	13	1		1,5		8+4			
At the surface	40	10	1		2,0		8+4			

Note! The dynamic factor for the pedestal to be multiplied by 1.5 according to API-2C.

Crane boom tip data, Active Heave Compensation. 95 % Compensation

AHC load SWL	Wire falls	Heave	Period	Heave velocity	Acceleration req.	Comments
T		m		m/s	$m/sec.^2$	
40	1	± 4,0	12 sec	±2,0	±1,0	
0	1	± 5,0	15 sec	±2,0	±1,5	Note: Max heave velocity i 2,0 m/sec.
0	1	± 2,7	8,5 sec	±2,0	±1,5	Note: Max heave velocity i 2,0 m/sec.

1.4.5 Winch capacity (SWL)

Main winch, single fall : 50 t

1.4.6 Working radii

Main winch, maximum : 20,0 m
Main winch, minimum : 4 m

1.4.7 Hoisting speed / Hoisting height

Winch	Hook load SWL	Wire falls	Hoisting height	Hoisting speed On outer layer	
				SWL	Reduced load
	t	**Pc**	**m**	**m/min**	**m/min**
Main	**50**	**1**	**480**	**20**	**80**
	25	**1**	**480**	**> 30**	**80**
AHC Mode (Main)	**40**	**1**	**480**	**10**	**N/A**
Tugger	**3**	**1**	**40**	**100**	**NA**

Luffing speed main boom (s):
Time from horizontal to maximum angle
With full load in hook: 65 sec

Slewing speed (rpm): 1,0 rpm

1.4.8 Max loading forces to the top of the pedestal

Static overturning moment : 7819 kNm
Dynamic overturning moment : 4639 kNm
Slew brake moment : 1884 kNm
Dynamic vertical force: 1620 kN

NOTE!
The loading forces to the top of the pedestal take into consideration the load factors stated under point No. 1.1., Crane data.

Weight
Crane only, dry: 80,1 t
Pedestal: 5,0 t (Height: 2 m)
TOTAL WEIGHT: 85,1 t

1.5 Performance Data

1.5.1 Operational Range

Load radius (mm):	
Main winch: Max:	20 m
Min:	~4
Main boom angles above horizontal:	
Main boom max (°):	80,4
Main boom min (°):	0

1.5.2 Weights

Operational weights:	
Main boom complete: kg	~ 15,7 t
King complete with main winch w/wire and N2 vessel (without hydraulic oil)	~ 59,5 t
Wire rope main winch 525 m, (52mm)	7,4 t
Main winch complete (without wire)	13,5 t
Main boom cylinders 2 pcs. (empty):	6,8 t
Single fall swivel hook main winch:	1,0 t
Pedestal adapter w/circular platform,8000 mm height :	19,5 t
Hydraulic system. System/Tank capacity:	3800/3050 litre

1.6 Mechanical Equipment Data

1.6.1 Hooks

Application	Main Winch	Tugger winch
Type	Ramshorn	BS-13-8
SWL (t)	50	5,0
Swivel	Yes	No
Safety latch	Yes	Yes

1.6.2 Wire Ropes

Application	Main hoist	Tugger Winch
Type	Flex pack	Teufelberger
Construction	34 x 19 LR	TK12-1960-RH02
Diameter (mm)	52	13
Strength (N/mm^2)	1960	1960
Min. breaking load (kN)	2496	131
Surface treatment	Galvanized	Galvanized
Length total (m)	525	50
Number of falls	1	1
Drum end termination	Clamp lock	Clamp lock
Outer end termination	Open spelter socket nr128	Eyelet

1.6.3 Wire Length

	Main winch		Tugger Winches		
Layer no.	PCD mm	Length m	Layer no.	PCD mm	Length m
1	1205	70	1	304	19
2	1299	144	2	327	39
3	1393	225	3	351	50
4	1487	311			
5	1581	402			
6	1675	499			
7					

1.6.4 Wire Rope Sheaves

	Main hoist	Tugger Winches
Design	Welded construction	Cast Material
Material	St 52 3N	SJK 500
Groove dia. (mm)	950	257
Bearing type	2 row roller bearing	2 row roller bearing
Lubrication	Grease nipple in bolt	Grease nipple on bolt

1.6.5 Winch

Application	Main winch	Tugger Winches
Drum design	Bolted	Welded
Min no. of turns	3	5
Spooling device	Lebus	Plain
Gear box type/ ratio	Planetary/ 16.11	Planetary/38,2
No of gears	5	1
No of teeths on pinion	12	NA
Brake design	Multi-lamella, spring activated, wet. - Fail safe	Integrated disk brake
Brakes location	On gear	On gear
Gear ring (also for tacho.)	Yes	NA
No. of teeth	90	NA
Winch tachometer	Yes	No
No. of teeth	12	
Gear ring (only for tachometer)	NA	NA
No of teeth		

1.6.6 Slew Bearing

Manufacturer:		Rothe Erde
Design:		Baalbearing
Roller circle diameter (mm):		2809
Weight (kg):	1840	
Module:		m18
No of teeth		141

1.6.7 Slewing Machinery

No. of slewing gears:	4
Gear box design:	Planetary
Gear box ratio:	100,28
No of teeth	13

1.6.8 Hydraulic Cylinders

Application	Luffing
Type	Double acting
Number of cylinders	2
Piston diameter (mm)	300
Stroke (mm)	3650
Rod diameter (mm)	240
Min. length between bearings (mm)	4950
Design pressure bar	360
Pressure test	460
Cylinder bearing type	Orcot Txm

1.7 Hydraulic Systems

1.7.1 Hydraulic Oil Tank/ Cyl

Material:	Steel
Location:	Inside King
Oil volume/ total volume:	3800L
Oil volume/ nomal volume:	3050 L

1.7.2 Cooling Systems

System	Cooler type	Cooling medium	Fan motor type	Circulation pump (yes/no)
Hydraulic oil	Radiator	Air	Electric	Yes

1.7.3 Telecommunication Equipment

Equipment	Location	Space allocated (yes/no)	Provided by (Seller/ Buyer)	Installed by (Seller/Buyer)
Telephone	Cabin	Yes	Seller	Seller
PA speaker	Cabin	Yes	Seller	Seller
VHF radio	Cabin	Yes	Seller	Seller
UHF radio	Cabin	Yes	Seller	Seller
FM radio/ player	Cabin	Yes	Seller	Seller
Standard Screen/Cabin for Video ROV	Cabin	Yes	Seller	Seller

1.8 Drivers Cabin

Drivers chair type:	Isri 6000/sk575
Space heater (yes/no):	Yes
Heating of circulated air (yes/no):	Yes
Air cooler (yes/no):	Yes
Fresh air supply from:	Underside of cabin
Pressurized cabin (Ex(p))(yes/no):	No
Max allowable normal air temp. in cabin (°C):	28
Fire extinguisher:	2 kg ABS
No. of aerials:	2
Application:	VHF/UHF
Location:	On the top of cabin roof

1.8.1 Noise data

Sound pressure levels, dBA, 10 s mean values	Idling	Worst case
In cabin at drivers position	65	
In machinery house		
Platform outside machinery house		

Note: Idling is defined as prime mover at max rpm but no crane motion. Worst case also with all crane motions at full speed and load.

2 CERTIFICATES

2.1 Third party certification

Classification society; DNV – Pedestal and LRS – crane
Certification in accordance with API-2C.
Witness of factory acceptance test (FAT).

2.2 Makers' certificate

(In format by the International Labour Office (ILO))
Hook / Load block
Shackle (between wire rope and hook / load block).
Wire rope
Electric motor
Makers list with certificate of origin issued by National Oilwell Norway AS of main components. Such as:
Slew bearing
Slew gear boxes
Winch gear boxes
Hydraulic motors
Hydraulic pumps
Hydraulic cylinders
Compensator
Electric motor
PLC for crane control system
Steel structure

3 SURFACE TREATMENT

3.1 Outside Area/Crane Cabin National Oilwell Norway standard, white

Blast Cleaning	: Sa 2 ½ (ISO 8501-1)Surf.	
Roughness	: Grade medium G, 50-85µm (ISO 8503)	
Then Apply	: 1 layer Intershield ENA 300 Epoxy Alu.	125 µm DFT
	1 layer Intergard 263 Epoxy	125 µm DFT
	1 layer Interthane 990	50 µm DFT
	Total Dry Film Thickness (DFT)	300 µm DFT
	NOTE! RAL code to be specified.	

3.2 Inside Pedestal Adapter/Crane King/Machine Room

Blast Cleaning	: Sa 2 ½ (ISO 8501-1).	
Roughness	: Grade medium G, 50-85µm (ISO 8503)	
Then Apply	: 1 layer Interseal 670HS Alu Grey	150 µm DFT
	Total Dry Film Thickness (DFT)	150 µm DFT

3.3 Inside Hydraulic oil tanks

Inside hydraulic oil tanks		
Blast Cleaning	: Sa 2 ½ (ISO 8501-1).	
Roughness	: Grade medium G, 50-85µm (ISO 8503)	
Then Apply	: 1 layer Interzinc 52	50 µm DFT

Colour:

Crane:	RAL Stone PHD 053
Pedestal:	RAL Orange PHD 260 International Orange