

Calculations

Load charts

RIG/PLANT Shell Kulluk		REFERENCE T8599		REFERENCE DESCRIPTION Shell Kulluk 3 OC3000 cranes Fellesdok.T8596/97/98			
REMARKS Radiation level limited to 2.0m, specifications of calculation method 6.3 reference to reeving diagram, platform specification, manufacturer listed added.		This document contains proprietary and confidential information which belongs to National Oilwell Varco; it is loaned for limited purposes only and remains the property of National Oilwell Varco. Reproduction, in whole or in part; or use of this design or distribution of this information to others is not permitted without the express written consent of National Oilwell Varco. This document is to be returned to National Oilwell Varco upon request and in any event upon completion of the use for which it was loaned. © Copyright National Oilwell Varco - 2013		a P F			
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CHANGE DESCRIPTION

Revision	Change description
2	Radii increment limited to 2.0m, specification of calculation method, reference to reeving diagram, specification of platform and manufacturer listed added.
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1 GENERAL

The following load charts are calculated according to API 2C 6th edition and are based on the following

Crane platform: CDU Kulluk

Method used for crane ratings: General Method, API 2C 6th ed., section 4.3, p.12

Heel/trim: 3° / 3°

	Serial No.	Distance from sea level to underside slew bearing
Bow crane	T8596	18.5m
Port crane	T8597	17.5m
Starboard crane	T8598	17.5m

Whip hoist rope diameter 30 mm

Main hoist rope diameter 32 mm

Boom hoist rope diameter 32 mm

Pedestal:

C/C diameter 3000 mm

Wall thickness 35 mm

In the calculation of the crane stiffness, deflections of the following components are taken into account:

- Hoisting rope
- Luffing rope
- Boom
- A-frame
- Crane base frame
- Pedestal

2 WHIP HOIST, SINGLE FALL OPERATION

Load radius [m]	Boom angle [°]	Platform lift	Permissible Safe Working Load SWL [tonnes]							
			Sea lifts, Significant Wave Heights [m]							
			0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
8.5	84.63	15.0	15.0	14.9	13.0	11.1	9.4	7.9	6.7	5.6
9.2	83.61	15.0	15.0	14.9	13.0	11.1	9.4	7.9	6.7	5.6
10.0	82.44	15.0	15.0	15.0	13.0	11.2	9.4	7.9	6.7	5.6
12.0	79.50	15.0	15.0	15.0	13.1	11.2	9.5	7.9	6.7	5.6
14.0	76.52	15.0	15.0	15.0	13.1	11.3	9.5	7.9	6.8	5.6
16.0	73.49	15.0	15.0	15.0	13.2	11.3	9.6	8.0	6.8	5.6
18.0	70.40	15.0	15.0	15.0	13.2	11.4	9.6	8.0	6.8	5.7
20.0	67.23	15.0	15.0	15.0	13.3	11.5	9.7	8.1	6.9	5.7
22.0	63.98	15.0	15.0	15.0	13.4	11.5	9.8	8.1	6.9	5.8
24.0	60.62	15.0	15.0	15.0	13.5	11.6	9.8	8.2	7.0	5.8
26.0	57.12	15.0	15.0	15.0	13.6	11.7	9.9	8.3	7.0	5.8
28.0	53.46	15.0	15.0	15.0	13.6	11.8	10.0	8.4	7.1	5.9
30.0	49.59	15.0	15.0	15.0	13.8	11.9	10.1	8.4	7.2	6.0
32.0	45.45	15.0	15.0	15.0	13.9	12.0	10.2	8.5	7.3	6.0
34.0	40.94	15.0	15.0	15.0	14.0	12.1	10.3	8.6	7.4	6.1
36.0	35.90	15.0	15.0	15.0	14.1	12.2	10.5	8.8	7.5	6.2
38.0	30.03	15.0	15.0	15.0	14.3	12.4	10.6	8.9	7.4	5.8
40.0	22.58	15.0	15.0	15.0	13.0	11.6	9.6	7.8	6.3	4.9
41.0	17.48	15.0	15.0	14.4	12.1	10.8	9.0	7.3	5.9	4.6

Method used for crane ratings: General Method, API 2C 6th ed, section 4.3, p.12

Reeving configuration Single fall, refer to Doc.No. T8599-I9002

Platform / vessel: CDU Kulluk

Bow crane: Serial No. T8596

Port crane: Serial No. T8597

Starboard crane: Serial No. T8598

Manufacturer: National Oilwell Varco

3 WHIP HOIST, SINGLE FALL, PERSONNEL LIFT OPERATION

Load radius [m]	Boom angle [°]	Permissible Safe Working Load SWL [tonnes]								
		Platform lift	Sealifts, Significant Wave Heights [m]							
			0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
8.5	84.63	4.0	4.0	2.7	2.2	1.9	1.6	1.4	1.1	0.9
9.2	83.61	4.0	4.0	2.7	2.2	1.9	1.6	1.4	1.1	0.9
10.0	82.44	4.0	4.0	2.7	2.3	1.9	1.6	1.4	1.1	0.9
12.0	79.50	4.0	4.0	2.7	2.3	1.9	1.6	1.4	1.1	0.9
14.0	76.52	4.0	4.0	2.8	2.3	1.9	1.6	1.4	1.1	0.9
16.0	73.49	4.0	4.0	2.8	2.3	2.0	1.7	1.4	1.2	0.9
18.0	70.40	4.0	4.0	2.8	2.3	2.0	1.7	1.4	1.2	1.0
20.0	67.23	4.0	4.0	2.8	2.3	2.0	1.7	1.4	1.2	1.0
22.0	63.98	4.0	4.0	2.9	2.4	2.0	1.7	1.4	1.2	1.0
24.0	60.62	4.0	4.0	2.9	2.4	2.0	1.7	1.4	1.2	1.0
26.0	57.12	4.0	4.0	2.9	2.4	2.1	1.7	1.5	1.2	1.0
28.0	53.46	4.0	4.0	3.0	2.5	2.1	1.8	1.5	1.2	1.0
30.0	49.59	4.0	4.0	3.0	2.5	2.1	1.8	1.5	1.2	1.0
32.0	45.45	4.0	4.0	3.0	2.5	2.1	1.8	1.5	1.3	1.0
34.0	40.94	4.0	4.0	3.1	2.6	2.2	1.8	1.6	1.3	1.0
36.0	35.90	4.0	4.0	3.2	2.6	2.2	1.9	1.6	1.3	1.1
38.0	30.03	4.0	4.0	3.3	2.7	2.3	1.9	1.6	1.3	1.1
40.0	22.58	4.0	4.0	3.5	2.6	2.2	1.9	1.6	1.3	1.1
41.0	17.48	4.0	4.0	3.5	2.7	2.3	1.9	1.6	1.4	1.1

Method used for crane ratings: General Method, API 2C 6th ed, section 4.3, p.12

Reeving configuration Single fall, refer to Doc.No. T8599-I9002

Platform / vessel: CDU Kulluk

Bow crane: Serial No. T8596

Port crane: Serial No. T8597

Starboard crane: Serial No. T8598

Manufacturer: National Oilwell Varco

4 MAIN HOIST, QUADRUPLE FALL OPERATION

Load radius [m]	Boom angle [°]	Permissible Safe Working Load SWL [tonnes]				
		Platform lift	Sea lifts, Significant Wave Heights [m]			
			0.5	1.0	1.5	2.0
7.5	83.96	65.0	65.0	65.0	49.4	36.0
9.2	81.37	65.0	65.0	65.0	49.5	36.3
10.0	80.14	65.0	65.0	65.0	49.5	36.4
12.0	77.05	65.0	65.0	65.0	49.1	36.8
12.5	76.26	65.0	65.0	65.0	49.2	37.0
14.0	73.90	58.3	57.3	57.3	49.5	37.2
16.0	70.70	51.3	48.2	48.2	48.2	37.3
18.0	67.43	45.8	41.0	41.0	41.0	37.3
20.0	64.06	41.5	36.0	36.0	36.0	36.0
22.0	60.59	37.9	31.8	31.8	31.8	31.8
24.0	56.98	34.9	28.1	28.1	28.1	28.1
26.0	53.19	32.4	25.0	25.0	25.0	25.0
28.0	49.19	30.2	22.3	22.3	22.3	21.6
29.3	46.45	29.0	20.7	20.7	20.7	19.5
30.0	44.91	27.5	20.0	20.0	20.0	18.4
32.0	40.25	23.4	18.0	18.0	18.0	15.7
34.0	35.03	19.9	16.2	16.2	16.2	13.3
36.0	28.92	16.7	14.5	14.5	14.1	11.5
37.2	24.53	15.0	13.5	13.5	12.7	10.7

Method used for crane ratings: General Method, API 2C 6th ed, section 4.3, p.12

Reeving configuration: Quadruple fall, refer to Doc.No. T8599-I9002

Platform / vessel: CDU Kulluk

Bow crane: Serial No. T8596

Port crane: Serial No. T8597

Starboard crane: Serial No. T8598

Manufacturer: National Oilwell Varco