1460301 2 3" 600# WNRF FLANGE P.O. 134728

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MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7007687(3)-CEF/NOV

Certificate No.: SE7687C2
Date: 12/02/2013

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A-350 LF2-13 CL.1/ASME SA-350 LF2-13 CL.1	ASME B16.5-13 CSA Z245.12

Item No.	CODE NO	DESCRIPTION	QUANTITY	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
			Min Max	- 0.300	0.150 0.300	0.600 1.350	- 0.035	- 0.040	- 0.400	- 0.300	- 0.400	- 0.120	- 0.080	- 0.020	- -			
11	1076921	1500 BLRTJ 3" LF2	75 PCE	0.190	0.210	1.110	0.012	0.005	0.120	0.130	0.110	0.020	0.005	0.001	0.008			0.421
12	1076921	1500 BLRTJ 3" LF2	24 PCE	0.190	0.220	1.050	0.018	0.005	0.090	0.110	0.030	0.020	0.001	0.001	0.007			0.399
13	1076921	1500 BLRTJ 3" LF2	1 PCE	0.190	0.210	1.140	0.016	0.004	0.110	0.090	0.060	0.020	0.010	0.002	0.008			0.415
14	1766462	2500 BLRTJ 2" LF2	60 PCE	0.230	0.200	1.150	0.015	0.008	0.006	0.020	0.010	0.005	0.005	0.001	0.007			0.429
15	1751691	2500 BLRTJ 3" LF2	40 PCE	0.205	0.280	1.090	0.010	0.018	0.008	0.064	0.052	0.005	0.033	0.005	0.003			0.411
16	1076058	300 WNRF STD 2" LF2	300 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007			0.424
17	1076197	300 WNRF STD 12" LF2	10 PCE	0.190	0.210	1.110	0.012	0.005	0.120	0.130	0.110	0.020	0.005	0.001	0.008			0.421
18	1076023	600 WNRF STD 3" LF2	403 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007			0.424
19	1076023	600 WNRF STD 3" LF2	47 PCE	0.200	0.200	1.170	0.021	0.007	0.006	0.040	0.010	0.002	0.005	0.001	0.007			0.405
20	1076681	600 WNRF STD 4" LF2	96 PCE	0.190	0.200	1.020	0.012	0.006	0.120	0.100	0.060	0.010	0.010	0.001	0.007			0.396

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: -46°C Minimum: 20.0 Joule 1	2	3	Material Supplier
	Min Max	485.0 655.0	250.0 -	22.0 -	- 197	30.0 -				
11	450528	503.1	363.8	34.8	150/148	73.8	158.0	139.0	151.0	GODO STEEL
12	Y300289	518.0	376.0	36.8	152/150	72.1	106.0	123.0	111.0	KOTOBUKI
13	292443	529.6	385.4	34.4	154/152	71.3	90.0	105.0	113.0	SEAH BESTEEL
14	4510829	541.3	395.2	33.2	155/153	68.6	86.0	54.0	70.0	ACOMINAS
15	25496	517.8	352.1	36.8	151/148	69.5	36.0	45.0	46.0	NTMK
16	4603012	529.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS
17	450528	503.1	363.8	34.8	150/148	73.8	158.0	139.0	151.0	GODO STEEL
18	4603012	529.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS
19	4625140	527.0	376.0	33.6	153/151	69.5	106.0	69.0	110.0	ACOMINAS
20	C10746	512.0	368.0	38.0	152/150	70.4	90.0	105.0	91.0	SEAH BESTEEL

HEAT TREATMENT(*2)
☒ N

REMARKS
890°CX4HRS
CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A.
CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY)
TEST SPECIMEN SIZE: 10X10
TEST SPECIMEN ORIENTATION: TRANSVERSE
IMPACT TEST TEMP.: -46℃
MN TO C RATIO IS GREATER THAN 3.0"

*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, R.A.=Reduction of Area.

*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furance Cooled, W.C=Water Cooled, O.C=Oil Cooled.

*3: C.E. Value = C + (Mn /6) + (Cr + Mo +V) / 5 + (Ni + Cu) / 15

We hereby certify that the material has been tested in accordance with the above specification and also with the requirements called for by the above order.

SAN ENG STEEL FORGING CO., LTD. SE H.C.J QUALITY ASSURANCE DEPT.

Manager of Quality Assurance Dep't