



Mill Test Certificate

Certificate No. : 180706-FP01PS-0023A1-0003

Date of Issue : Jul., 30, 2018

Order No. : 01S3199959

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

JOB NUMBER 103436
PO NUMBER 4501095461
CODE SYMBOL P42T1884
HEAT NUMBER SF99792 PB15164801
TYPE I-A
DESCRIPTION PLATE
SIZE 35 X 3048 X 12192
QUANTITY 1

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test				Z-Direction Tensile Test		Impact Test	Strain Ageing Impact Test		U.S.T	
						YP (MPa)	TS (%)	EL (%)	YR (%)	TS (MPa)	RA (%)	V Notch -50°C Energy (Joule)	V Notch Strain 5% (-50°C, 60min) Energy (Joule)			
25x3048x12192	PB15163301-3302	2	14,582	SF99792	T	524	595	26	88	A: 585	1: 71 2: 71 3: 70 A: 71	1: 289 2: 308 3: 280 A: 292	1: 310 2: 294 3: 278 A: 294	Good		
25x3048x12192	PB15163201-3202	2	14,582	SF99792	T	520	587	28	89	A: 592	1: 73 2: 69 3: 65 A: 69	1: 289 2: 308 3: 280 A: 292	1: 295 2: 297 3: 272 A: 288	Good		
*** Sub Total (040) ***		4	29,164 (kg)													
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling ***					***											
30x3048x12192	PB15164601	1	8,751	SF99796	T	529	613	22	86	A: 605	1: 76 2: 70 3: 76 A: 74	1: 312 2: 293 3: 304 A: 303	1: 304 2: 297 3: 298 A: 300	Good		
*** Sub Total (050) ***		1	8,751 (kg)													
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling ***					***											
35x3048x12192	PB15164801	1	10,212	SF99792	T	531	613	21	87	A: 587	1: 75 2: 76 3: 73 A: 75	1: 275 2: 317 3: 273 A: 288	1: 274 2: 218 3: 292 A: 261	Good		

* Position - T : Top, M : Middle, B : Bottom
 * Tensile Test. Direction : Transversal, Gauge Length : 5.65 √A. (Rectangular), YP Method : Upper Point
 * Z-Direction Tensile Test (TTT or TTP) - Dia : 10mm
 * Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm
 * Strain Ageing Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm, SF(Shear Fracture), Ageing Temperature : 250°C, Ageing Time : 60min., Strain : 5%
 * U.S.T : Ultrasonic Test.
 * Division - L : Ladle Analysis, P : Products Analysis
 * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. This material is fine grained steel. This material has been made by vacuum degassing and calcium treated process. No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1. Melted and Manufactured in Republic of Korea

Laura Barrera
9/27/2018

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn



Mill Test Certificate

Certificate No. : 180706-FP01PS-0023A1-0003

Date of Issue : Jul., 30, 2018

Order No. : 01S3199959

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

Product No.	Division	Chemical Composition																									
		C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	As (%)	B (ppm)	Bi (%)	Ca (ppm)	Cu (%)	Mo (%)	N (ppm)	Nb (%)	Pb (%)	Sb (%)	Sn (%)	Ti (%)	V (%)	Total-Al (%)	CEQ (%)	PCM (%)			
PB15163301-3302	L	0.0709	0.362	1.544	0.0061	0.0008	0.140	0.346	0.004	1	0.000	10	0.018	0.007	30	0.025	0.0000	0.000	0.003	0.0132	0.003	0.039	0.38	0.18			
	P	0.0770	0.351	1.545	0.0057	0.0010	0.144	0.351	0.005	2	0.000	11	0.018	0.005	29	0.025	0.0000	0.000	0.002	0.0126	0.003	0.036	0.39	0.18			
PB15163201-3202	L	0.0709	0.362	1.544	0.0061	0.0008	0.140	0.346	0.004	1	0.000	10	0.018	0.007	30	0.025	0.0000	0.000	0.003	0.0132	0.003	0.039	0.38	0.18			
	P	0.0770	0.351	1.545	0.0057	0.0010	0.144	0.351	0.005	2	0.000	11	0.018	0.005	29	0.025	0.0000	0.000	0.002	0.0126	0.003	0.036	0.39	0.18			
*** Sub Total (040) ***	***	4			29,164 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B			
PB15164601	L	0.0784	0.392	1.590	0.0057	0.0015	0.143	0.333	0.005	2	0.000	15	0.010	0.006	29	0.026	0.0000	0.000	0.002	0.0128	0.002	0.040	0.40	0.19			
	P	0.0778	0.358	1.564	0.0051	0.0016	0.140	0.344	0.004	2	0.000	13	0.013	0.007	29	0.026	0.0000	0.000	0.001	0.0119	0.002	0.040	0.39	0.18			
*** Sub Total (050) ***	***	1			8,751 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B			
PB15164801	L	0.0709	0.362	1.544	0.0061	0.0008	0.140	0.346	0.004	1	0.000	10	0.018	0.007	30	0.025	0.0000	0.000	0.003	0.0132	0.003	0.039	0.38	0.18			
	P	0.0738	0.346	1.520	0.0055	0.0009	0.141	0.351	0.004	2	0.000	10	0.018	0.004	30	0.024	0.0000	0.000	0.003	0.0131	0.003	0.035	0.38	0.18			

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1.
Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn

Order No. : 01S3199959

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

Product No.	Ultrasonic Test						Remarks
	Examination Method	Apparatus	Transducer	Frequency (MHz)	Sensitivity	Test Result	
PB15163301-3302	2	1	1	5	H	1	1. Application Spec. : EN10160(1999) S1/E2 2. We hereby certify that the material described herein has been examined in accordance with above ultrasonic specification and fully conformed thereto.
PB15163201-3202	2	1	1	5	H	1	
*** Sub Total (040) ***		4	29,164 (kg)				
PB15164601	2	1	1	5	H	1	
*** Sub Total (050) ***		1	8,751 (kg)				
<u>PB15164801</u>	2	1	1	5	H	1	

* Couplant : Water
 * Examination method(1:Direct straight Beam, 2:Direct double beam, 3:Others)
 * Apparatus(1 : Digital Flaw Detector, 2: Others)
 * Transducer(1: ϕ 20mm, 2: ϕ 24mm, 3: ϕ 25mm or 25mm square, 4: ϕ 30mm, 5:8~12.5mm, 9:others)
 * Sensitivity(A:RB-D-1₀=50%+10DB, B:STB-N₁=50%, C:STB-N₁=70%, D:STB-G.V_{1.5-4.0}=50%, E:STB-G.V_{1.5-4.0}=80%, F:STB-G.V_{1.5-2.8}=50%, G:BG=75 $\pm$ 5%, H: ϕ 5.0mmDAC, I: ϕ 11.0mmDAC, J: ϕ 8.0mmDAC, K:GB-T2970 Sensitivity, L:BG=100%, M: ϕ 5.0mmFBH=60%, N:Soviet 75ATM Sens., O:BS5996-93 Sens, P: ϕ 6.0mmDAC, X:Others)
 * Test Result (1: Good, 2: Acceptable)

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. This material is fine grained steel. This material has been made by vacuum degassing and calcium treated process. No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1. Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :



Mill Test Certificate

Certificate No. : 180706-FP01PS-0035A1-0001

Date of Issue : Jul., 30, 2018

Order No. : 01S3216955

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

JOB NUMBER 103436
PO NUMBER 4501095461
CODE SYMBOL P42T1899
HEAT NUMBER SF00552 PB15928801
TYPE I-A
DESCRIPTION PLATE
SIZE 75 X 3048 X 12192
QUANTITY 1

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test				Z-Direction Tensile Test		Impact Test	Impact Test2	Strain Ageing Impact Test		U.S.T
						YP (MPa)	TS (%)	EL (%)	YR (%)	TS (MPa)	RA (%)	V Notch -50°C Energy (Joule)	V Notch -50°C Energy (Joule)	V Notch Energy (Joule)	Strain 5% (-50°C, 60min) Energy (Joule)	
65x3048x12192	PB15928601	1	18,959	SF99847	T	492	550	27	90	A: 530	1: 68 2: 59 3: 55 A: 61	1: 286 2: 286 3: 265 A: 279	1: 305 2: 311 3: 306 A: 307		1: 218 2: 309 3: 287 A: 271	Good
*** Sub Total (050) ***		1	18,959 (kg)													
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling + Tempered (550°C 176min) ***																
75x3048x12192	PB15928801	1	21,880	SF00552	T	424	543	28	78	A: 536	1: 70 2: 73 3: 69 A: 71	1: 372 2: 347 3: 324 A: 348	1: 292 2: 317 3: 268 A: 292		1: 293 2: 298 3: 261 A: 284	Good
*** Sub Total (070) ***		1	21,880 (kg)													
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling + Tempered (550°C 200min) ***																
*** Lot Total ***		2	40,839 (kg)	Lot No. ==> WHITE ROSE PJT												
*** Grade Total ***		2	40,839 (kg)													
*** Grand Total ***		2	40,839 (kg)													
=== Last Item:===																

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : 1/4T Transversal, Gauge Length : 5.65 √A₀. (Round), YP Method : Upper Point
* Z-Direction Tensile Test (TTT or TTP) - Dia : 10mm
* Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm
* Impact Test2. Direction : Mid Thickness Transversal, Full-Size : 10mmX10mm
* Strain Ageing Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm, SF(Shear Fracture), Ageing Temperature : 250°C, Ageing Time : 60min., Strain : 5%
* U.S.T : Ultrasonic Test.
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. This material is fine grained steel. This material has been made by vacuum degassing and calcium treated process. No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1. Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn



Mill Test Certificate

Certificate No. : 180706-FP01PS-0035A1-0001

Date of Issue : Jul., 30, 2018

Order No. : 01S3216955

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

Product No.	Division	Chemical Composition																									
		C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	As (%)	B (ppm)	Bi (%)	Ca (ppm)	Cu (%)	Mo (%)	N (ppm)	Nb (%)	Pb (%)	Sb (%)	Sn (%)	Ti (%)	V (%)	Total-Al (%)	CEQ (%)	PCM (%)			
PB15928601	L	0.0747	0.192	1.607	0.0054	0.0012	0.021	0.603	0.006	1	0.000	11	0.221	0.009	30	0.012	0.0000	0.000	0.001	0.0145	0.002	0.025	0.40	0.18			
	P	0.0692	0.196	1.610	0.0051	0.0011	0.024	0.604	0.005	1	0.000	11	0.230	0.008	32	0.013	0.0000	0.000	0.001	0.0158	0.002	0.025	0.40	0.18			
*** Sub Total (050) ***	***			1	18,959 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B			
PB15928801	L	0.0712	0.227	1.611	0.0060	0.0010	0.027	0.580	0.006	2	0.000	11	0.221	0.003	36	0.011	0.0000	0.000	0.002	0.0133	0.003	0.026	0.40	0.18			
	P	0.0684	0.231	1.575	0.0055	0.0010	0.027	0.590	0.004	0	0.000	7	0.219	0.004	37	0.011	0.0000	0.000	0.001	0.0134	0.002	0.025	0.39	0.18			
*** Sub Total (070) ***	***			1	21,880 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B			
*** Lot Total ***				2	40,839 (kg)		Lot No. ==> WHITE ROSE PJT																				
*** Grade Total ***				2	40,839 (kg)																						
*** Grand Total ***				2	40,839 (kg)																						
=== Last Item ===																											

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1.
Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn

Order No. : 01S3216955

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

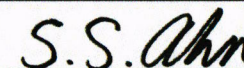
Product No.	Ultrasonic Test						Remarks
	Examination Method	Apparatus	Transducer	Frequency (MHz)	Sensitivity	Test Result	
PB15928601	1	1	1	5	I	1	1. Application Spec. : EN10160(1999) S1/E2 2. We hereby certify that the material described herein has been examined in accordance with above ultrasonic specification and fully conformed thereto.
*** Sub Total (050) ***							
PB15928801	1	1	1	5	I	1	
*** Sub Total (070) ***							
*** Lot Total ***							
*** Grade Total ***							
*** Grand Total ***							
			18,959 (kg)				
			21,880 (kg)				
			40,839 (kg)				
			40,839 (kg)				
			40,839 (kg)				
			=== Last Item ===				
					Lot No. ==> WHITE ROSE PJT		

* Couplant : Water
 * Examination method(1:Direct straight Beam, 2:Direct double beam, 3:Others)
 * Apparatus(1 : Digital Flaw Detector, 2: Others)
 * Transducer(1: ϕ 20mm, 2: ϕ 24mm, 3: ϕ 25mm or 25mm square, 4: ϕ 30mm, 5:8~12.5mm, 9:others)
 * Sensitivity(A:RB-D-1₀=50%+10DB, B:STB-N₁=50%, C:STB-N₁=70%, D:STB-G.V_{1.5-4.0}=50%, E:STB-G.V_{1.5-4.0}=80%, F:STB-G.V_{1.5-2.8}=50%, G:BG=75 $\pm$ 5%, H: ϕ 5.0mmDAC, I: ϕ 11.0mmDAC, J: ϕ 8.0mmDAC, K:GB-T2970 Sensitivity, L:BG=100%, M: ϕ 5.0mmFBH=60%, N:Soviet 75ATM Sens., O:BS5996-93 Sens, P: ϕ 6.0mmDAC, X:Others)
 * Test Result (1: Good, 2: Acceptable)

We hereby certify that the material herein has been made in accordance with the order and above specification.
 This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
 This material has been made by vacuum degassing and calcium treated process.
 No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1.
 Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :





Mill Test Certificate

Certificate No. : 180706-FP01PS-0038A1-0001

Date of Issue : Jul., 30, 2018

Order No. : 01S3199968

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

JOB NUMBER 103436

PO NUMBER 4501095461

CODE SYMBOL P42T1902

HEAT NUMBER SF99843 PB15380601

TYPE I-A

DESCRIPTION PLATE

SIZE 90 X 3048 X 6096

QUANTITY 1

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test				Z-Direction Tensile Test		Impact Test		Impact Test2	Strain Ageing Impact Test		U.S.T
						YP	TS	EL	YR	TS	RA	V Notch -50°C	V Notch -50°C	V Notch -50°C	Strain 5% (-50°C, 60min)	Energy	
90x3048x6096	PB15380601	1	13,127	SF99843	T	423	538	28	79	A: 528	1: 71	1: 302	1: 311		1: 295		Good
											2: 68	2: 315	2: 341		2: 307		
											3: 69	3: 322	3: 320		3: 264		
											A: 69	A: 313	A: 324		A: 289		
90x3048x6096	PB15380701	1	13,127	SF99843	T	423	538	28	79	A: 536	1: 77	1: 302	1: 311		1: 292		Good
											2: 75	2: 315	2: 341		2: 309		
											3: 76	3: 322	3: 320		3: 311		
											A: 76	A: 313	A: 324		A: 304		
*** Sub Total (080) ***		2	26,254 (kg)														
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling + Tempered (550°C 198min) ***																	
100x3048x6096	PB15658401	1	14,585	SF99845	T	430	542	25	79	A: 526	1: 47	1: 244	1: 322		1: 294		Good
											2: 57	2: 246	2: 317		2: 289		
											3: 45	3: 233	3: 299		3: 79		
											A: 50	A: 241	A: 313		A: 221		
100x3048x6096	PB15401101	1	14,585	SF99845	T	439	530	26	83	A: 525	1: 77	1: 314	1: 321		1: 280		Good
											2: 72	2: 316	2: 309		2: 289		
											3: 74	3: 307	3: 323		3: 273		
											A: 74	A: 312	A: 318		A: 281		
*** Sub Total (090) ***		2	29,170 (kg)														
*** Heat Treatment ==> Thermo Mechanical Rolling + Accelerated Cooling + Tempered (550°C 220min) ***																	
*** Lot Total ***		4	55,424 (kg)														
*** Grade Total ***		4	55,424 (kg)														
*** Grand Total ***		4	55,424 (kg)														

* Position - T : Top, M : Middle, B : Bottom
 * Tensile Test. Direction : 1/4T Transversal, Gauge Length : 5.65 √A. (Round),
 YP Method : Upper Point
 * Z-Direction Tensile Test (TTT or TTP) - Dia : 10mm
 * Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm
 * Impact Test2. Direction : Mid Thickness Transversal, Full-Size : 10mmX10mm
 * Strain Ageing Impact Test. Direction : Surface Transversal, Full-Size : 10mmX10mm,
 SF(Shear Fracture), Ageing Temperature : 250°C, Ageing Time : 60min., Strain : 5%
 * U.S.T : Ultrasonic Test.
 * Division - L : Ladle Analysis, P : Products Analysis
 * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification.
 This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
 This material has been made by vacuum degassing and calcium treated process.
 No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1.
 Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn



Mill Test Certificate

Certificate No. : 180706-FP01PS-0038A1-0001

Date of Issue : Jul., 30, 2018

Order No. : 01S3199968

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

Product No.	Division	Chemical Composition																										
		C	Si	Mn	P	S	Cr	Ni	As	B	Bi	Ca	Cu	Mo	N	Nb	Pb	Sb	Sn	Ti	V	Total-Al	CEQ	PCM				
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(ppm)	(%)	(ppm)	(%)	(%)	(ppm)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)				
PB15380601	L	0.0706	0.198	1.614	0.0048	0.0008	0.020	0.591	0.005	1	0.000	10	0.213	0.015	45	0.012	0.0000	0.000	0.002	0.0146	0.004	0.027	0.40	0.18				
	P	0.0659	0.196	1.621	0.0049	0.0008	0.020	0.613	0.005	1	0.000	5	0.219	0.004	43	0.012	0.0000	0.000	0.002	0.0147	0.003	0.026	0.40	0.18				
PB15380701	L	0.0706	0.198	1.614	0.0048	0.0008	0.020	0.591	0.005	1	0.000	10	0.213	0.015	45	0.012	0.0000	0.000	0.002	0.0146	0.004	0.027	0.40	0.18				
	P	0.0659	0.196	1.621	0.0049	0.0008	0.020	0.613	0.005	1	0.000	5	0.219	0.004	43	0.012	0.0000	0.000	0.002	0.0147	0.003	0.026	0.40	0.18				
*** Sub Total (080)	***			2	26,254 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B				
PB15658401	L	0.0698	0.196	1.615	0.0057	0.0010	0.017	0.603	0.004	1	0.000	11	0.217	0.009	31	0.012	0.0000	0.000	0.001	0.0141	0.002	0.025	0.40	0.18				
	P	0.0647	0.193	1.581	0.0046	0.0010	0.021	0.594	0.004	1	0.000	10	0.215	0.005	32	0.011	0.0000	0.000	0.002	0.0139	0.002	0.025	0.39	0.17				
PB15401101	L	0.0698	0.196	1.615	0.0057	0.0010	0.017	0.603	0.004	1	0.000	11	0.217	0.009	31	0.012	0.0000	0.000	0.001	0.0141	0.002	0.025	0.40	0.18				
	P	0.0684	0.210	1.623	0.0055	0.0009	0.021	0.609	0.004	1	0.000	10	0.217	0.006	30	0.012	0.0000	0.000	0.001	0.0145	0.002	0.025	0.40	0.18				
*** Sub Total (090)	***			2	29,170 (kg)																			CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5 PCM (B) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + 5*B				
*** Lot Total ***				4	55,424 (kg)																			Lot No. ==> WHITE ROSE PJT				
*** Grade Total ***				4	55,424 (kg)																							
*** Grand Total ***				4	55,424 (kg)																							

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1.
Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn



Ultrasonic Test Report

Certificate No. : 180706-FP01PS-0038A1-0001

Date of Issue : Jul., 30, 2018

Order No. : 01S3199968

PO No. : KOS-4501095461

Supplier : POSCO DAEWOO CORPORATION

Commodity : PLATE

Customer : KIEWIT OFFSHORE SERVICES, LTD.

Spec & Type : EN10225 S420G2+M Z35

Product No.	Ultrasonic Test						Remarks
	Examination Method	Apparatus	Transducer	Frequency (MHz)	Sensitivity	Test Result	
PB15380601	1	1	1	5	I	1	1. Application Spec. : EN10160(1999) S1/E2 2. We hereby certify that the material described herein has been examined in accordance with above ultrasonic specification and fully conformed thereto.
PB15380701	1	1	1	5	I	1	
*** Sub Total (080) ***		2	26,254 (kg)				
PB15658401	1	1	1	5	I	1	
PB15401101	1	1	1	5	I	1	
*** Sub Total (090) ***		2	29,170 (kg)				
*** Lot Total ***		4	55,424 (kg)		Lot No. ==> WHITE	ROSE PJT	
*** Grade Total ***		4	55,424 (kg)				
*** Grand Total ***		4	55,424 (kg)				

* Couplant : Water
* Examination method(1:Direct straight Beam, 2:Direct double beam, 3:Others)
* Apparatus(1 : Digital Flaw Detector, 2: Others)
* Transducer(1: ϕ 20mm, 2: ϕ 24mm, 3: ϕ 25mm or 25mm square, 4: ϕ 30mm, 5:8~12.5mm, 9:others)
* Sensitivity(A:RB-D-1₀=50%+10DB, B:STB-N₁=50%, C:STB-N₁=70%, D:STB-G.V_{1.5-4.0}=50%, E:STB-G.V_{1.5-4.0}=80%, F:STB-G.V_{1.5-2.8}=50%, G:BG=75 $\pm$ 5%, H: ϕ 5.0mmDAC, I: ϕ 11.0mmDAC, J: ϕ 8.0mmDAC, K:GB-T2970 Sensitivity, L:BG=100%, M: ϕ 5.0mmFBH=60%, N:Soviet 75ATM Sens., O:BS5996-93 Sens, P: ϕ 6.0mmDAC, X:Others)
* Test Result (1: Good, 2: Acceptable)

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. This material is fine grained steel. This material has been made by vacuum degassing and calcium treated process. No repair welding was performed to the products. Test Certificate is issued according to EN10204 3.1. Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

S.S. Ahn