WELDING PROCEDURE QUALIFICATION RECORD

Firm : Ser Hidrolik Mak. Müh Elektirik Elekt. San. ve Tic. LTD. ŞTİ.

Address : İmes San. Sitesi E Blok 504 Sokak No:13 Y.Dudullu/ISTANBUL

Reference : BV Rules on Material and Welding for the Classification of Marine Units, NR216, Ch 12, Sec 3, Approval of Welding Procedures

Further to the welding of the standardized test pieces carried out in the shipyard at Ser Hidrolik Mak. Müh Elektirik Elekt. San. ve Tic. LTD. ŞTİ. on 02/09/2024 in presence of Mr. Tarık KAMÇI Bureau Veritas Surveyor,

We certify that shipyard welding procedure detailed in page 2/5 of this record has given satisfactory results in accordance with the requirements of above reference.

Date of Issue: 20/01/2025

Prepared by Firm Representative

Name: Mr. Orhan YİĞİT

Signature:
Stamp

SER HİDROLİK MAKİNA MÜHENDİSLİK ELEKTRİK ELEKTRONİK SAN. VE TİC. LTD. ŞTİ. İmes San.Sit. E Blok 504 Sk. No:13 Y.Dudullu-İST. Sarıgazi V.D. 761 048 7689 Tel:0216 527 52 77 Fax:0216 527 52 97 Ticaret Sicil No:425591

Endorsed by BV Surveyor

Name: Mr. Tarık KAMÇI

Signature:
BV Stamp

BUREAU VERITAS MARINE & OFFSHORE INTERNATIONAL REGISTER

Tarık KAMÇI
SURVEYOR
Bureau Veritas İstanbul

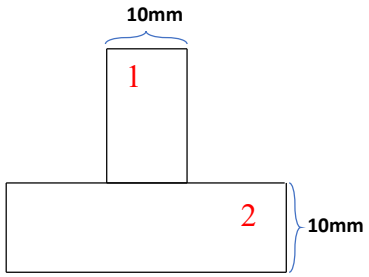
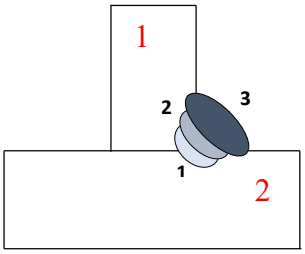
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This document was signed with Secure Electronic Signature according to 'The Electronic Signature Law' No.5070.

1 DETAILS OF WELD TEST

			Part 1	Part 2
Method of preparation: Grinding		Parent material spec	: 316L	316L
Cleaning	: Brushing	Heat Nr	: Y230304B20	Y230304B20
Joint type	: Fillet Joint	Material thickness	: 10mm	10mm
WPS No	: SER-WPS001	Outside diameter	: --	
Parent material spec	: S.Steel & S.Steel	Welding Position	: PB	
		BV Job Number	: 1173.ITB.24	

Weld Preparation Details

Joint design	Welding sequences
	

Welding Details

Run number	1	2	3
Welding process		141 (TIG)	
Welding position		PB	
Autom. Welding .nr. of heads		-	
.weaving		-	
Filler metal:wire (W) or electrode (E)		W	
.Designation		GEKA Elox SG 316 L	
.Grade		--	
.Description		--	
.Diameter	2,4	3,2	3,2
Shielding:Flux (F) or gas (G)		G	
.Power flux .description		-	
.type and trade name		-	
.Gas flux .descriprition		I1	
.type and trade name		KOYUNCU GAZ – I1	
.Backing .flow rate (l/mn)		-	
.Shielding .flow rate (l/mn)		12 - 13	
.Plasma		-	
Tungsten electrode: type/size		-	
Type of current		DC	
Electrode or wire polarity		-	
Current (A)	95	120	150
Voltage (V)	14	13	15
Travel speed S (cm/min)	46,67	84	55,26
Wire feed speed (m/min)	-	-	-
Heat input (kJ/cm) = [k x V x A x 60] / S	1,03	0,67	1,47
Interpass temperature in °C (min/max)		20°C - 250°C	
Welding equipment .trade mark		MAGMA MEKATRONİK – ID 300T DC	
.type			

Pre heat	☑ No ☐ Yes	Temperature°C.....	Holding Time.....
Post heating	☑ No ☐ Yes	Temperature°C.....	Holding Time.....
Post Weld Heat treatment	☑ No ☐ Yes	Temperature°C.....	Holding Time.....

Welder or welding operatör: Murat YILDIZ

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2 TEST RESULTS

2.1 VISUAL INSPECTION

Performed by: İmkosan Kalite Kontrol Ticaret A.Ş. Report Nr. / DATE: 00014-25-VT / 13.09.2024

Requirements : NR216 & NR669

NO	MARKING NUMBER *MARKALAMA NUMARASI*	WELDER NO *KAYNAKÇI NO*	THICKNESS *KALINLIK (mm)*	DEFECT TYPE *HATA TİPİ*	DEFECT DIMENSION *HATA BOYUTU*	DEFECT SIZE *HATA ÖLÇÜSÜ*	RESULT *SONUÇ*	REMARK *AÇIKLAMA*
1.	WPS-05 141 PA	Murat Yıldız	2"x4 mm	-	-		ACC	
2.	WPS-04 141 PA	Murat Yıldız	2"x4 mm	-	-		ACC	
3.	WPQR-04/2 141 PA	Turan Seren	2"x4 mm	-	-		ACC	
4.	WPS-01 141 PB	Murat Yıldız	10 mm	-	-		ACC	
5.	WPS-03 141 PB	Murat Yıldız	10 mm	-	-		ACC	
6.	WPS-03/2 141 PB	Turan Seren	10 mm	-	-		ACC	

2.2 LIQUID PENETRANT EXAMINATION REPORT

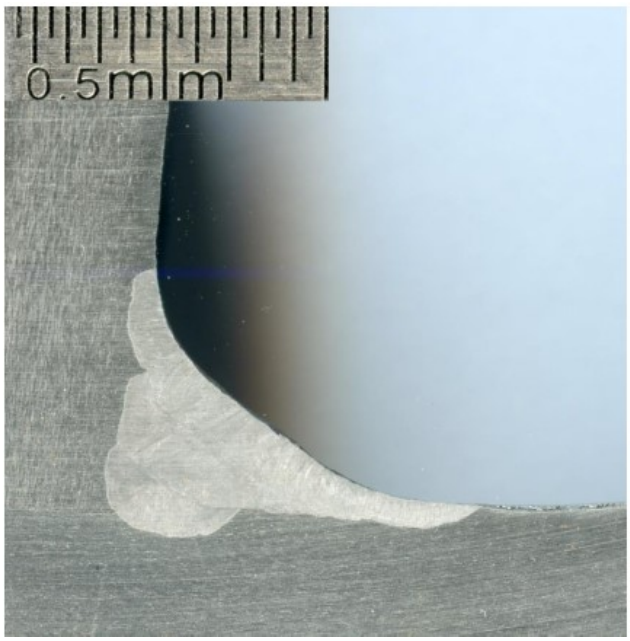
Performed by: İmkosan Kalite Kontrol Ticaret A.Ş. Report Nr. / DATE: 00958-24-PT / 13.09.2024

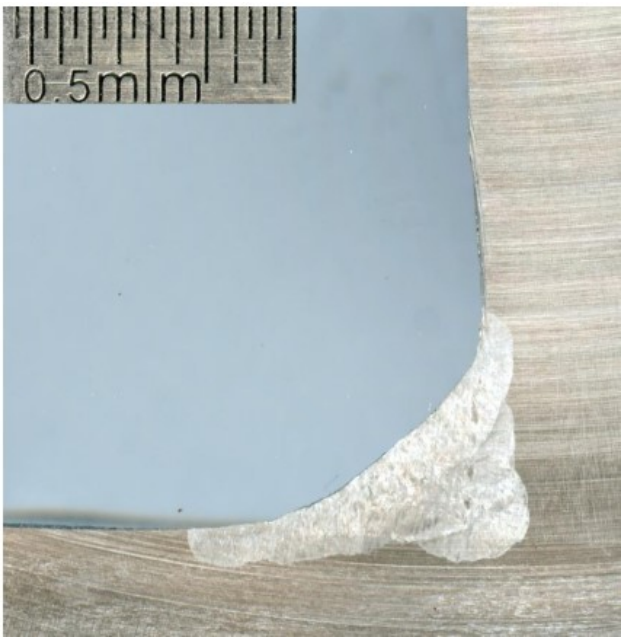
Requirements : NR216 & NR669

NO	MARKING NUMBER *MARKALAMA NUMARASI*	THICKNESS *KALINLIK (mm)*	DEFECT TYPE *HATA TİPİ*	DEFECT DIMENSION *HATA BOYUTU*	NO of REPAIRS *TAMİR SAYISI*	RESULT *SONUÇ*	REMARK *AÇIKLAMA*
1.	WPS-05 141 PA	2"x4 mm	-	-		ACC	
2.	WPS-04 141 PA	2"x4 mm	-	-		ACC	
3.	WPS-04/2 141 PA	2"x4 mm	-	-		ACC	
4.	WPS-01 141 PB	10 mm	-	-		ACC	
5.	WPS-03 141 PB	10 mm	-	-		ACC	
6.	WPS-03/2 141 PB	10 mm	-	-		ACC	

2.3 MACROGRAPHIC EXAMINATION

Performed by: İmkosan Mühendislik LTD. ŞTİ. Report Nr. / DATE: 4539-24-MACRO TEST- / 02.10.2024
Observations : Lack of fusion have not been observed in weld zone, weld zone is homogeneous
Requerments : NR216





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2.4 FRACTURE TEST

Performed by: İmkosan Mühendislik LTD. ŞTİ. . Report Nr. / DATE: 4540-24-FRACTURE TEST- / 02.10.2024

Requirements : NR216 & NR669

TEST SONUÇLARI / *TEST RESULTS*			
Test Numune No	**Kodlama**	**Sonuçlar** *Results*	
Test Pice No	*Denomination*	**Süreksizliğin tipi ve boyutu** *Type of size of Imperfections (mm)*	**Kalite seviyesi** *Quality Level*
1	.	**NO DEFECT**	5817-B CLASS B

2.5 OTHER EXAMINATIONS OR TESTS

2.5.1 WIRE TEST (GEKA Elox SG 316 L – 3,20 mm)

2.5.1.1 TENSILE TEST

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0093.25.0498 / 16.01.2025
Requirements : NR216

TYPE / Nr.	Re (N / mm²)	Rm(N / mm²)	A %	Z %	FRACTURE LOCATION	REMARKS
01	453	602	52	-	-	NO REMARK

2.5.1.2 IMPACT TESTS

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0093.25.0499 / 16.01.2025
Type: ISO V Size : 10 x 10 x 55 mm Requirements : NR216 / at 20°C Min. 63J

SPECIMEN POSITION / NOTCH LOCATION	TEMPERATURE	INDIVIDUAL VALUES 1	2	3	AVARAGE	REMARKS
Material	-20°C	123	110	102	112	NO REMARK

2.5.1.3 CHEMICAL ANALYSIS REPORT

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0093.25.0500 / 16.01.2025

Test Sonuçları *(Test Results)*

Elementler *Elements*	KALAN *Rem.*	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Al	Cu
Test Ortalaması *Test Average*	66,448	0,005	0,510	1,951	0,025	0,012	17,518	2,072	10,967	0,124	0,003	0,177
Standart Değeri *Standard Value*	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Requirements : NR216

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2.5.2 WIRE TEST (GEKA Elox SG 316 L – 2,40 mm)

2.5.2.1 TENSILE TEST

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0094.25.0501 / 16.01.2025
Requirements : NR216

TYPE / Nr.	Re (N / mm²)	Rm(N / mm²)	A %	Z %	FRACTURE LOCATION	REMARKS
01	482	616	50	-	-	NO REMARK

2.5.2.2 IMPACT TESTS

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0093.25.0502 / 16.01.2025
Type: ISO V Size : 10 x 10 x 55 mm Requirements : NR216 / at 20°C Min. 63J

SPECIMEN POSITION / NOTCH LOCATION	TEMPERATURE	INDIVIDUAL VALUES 1	2	3	AVARAGE	REMARKS
Material	-20°C	125	115	116	119	NO REMARK

2.5.2.3 CHEMICAL ANALYSIS REPORT

Performed by: QVV Mühendislik San. Ve Tic. Ltd. Şti. Report Nr. / DATE: 0093.25.0503 / 16.01.2025
Requirements : NR216

Test Sonuçları *(Test Results)*

Elementler *Elements*	KALAN *Rem.*	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Al	Cu
Test Ortalaması *Test Average*	66,802	0,012	0,523	1,961	0,026	0,016	17,365	2,254	10,567	0,120	0,003	0,170
Standart Değeri *Standard Value*	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Annexed Documents Identification		Name and Signature of Bureau Veritas Surveyor	Name and Signature of Firm Representative
Visual Test Report	00014-25-VT / 13.09.2024	Mr. Tarık KAMÇI	Mr. Orhan YİĞİT
Liquid Penetrant Test Report	00958-24-PT / 13.09.2024	Tarık KAMÇI SURVEYOR Bureau Veritas İstanbul	SER HİDROLİK MAKİNA MÜHENDİSLİK ELEKTRİK ELEKTRONİK SAN.VE TİC.LTD. ŞTİ.
Macrographic Test Rep	4539-24-MACRO TEST- / 02.10.2024		
Fracture Test Report	4540-24-FRACTURE TEST- / 02.10.2024		
Other Tests	Wire Test		

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