Marine & Offshore Division

Certificate number: SMS.LAB.320/61913/B.0

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RECOGNITION OF

TEST LABORATORY

BRODOSPLIT - Laboratorij d.o.o.

Split - CROATIA

Summary of the range of the recognition which is detailed in the subsequent page(s):

MATERIAL MECHANICAL TESTS, NON-DESTRUCTIVE TESTS AND COATING TESTS

This certificate is issued to attest that BUREAU VERITAS has performed, at the above company's request and in compliance with the requirements of NR320, a satisfactory assessment of the testing facilities and associated quality procedures related to the range of the recognition.

This certificate will expire on: 23 Sep 2020

For BUREAU VERITAS,

At BV RIJEKA, on 09 Sep 2016,

Slaven Celic

BUREAU VERITAS SURVEYORS AT PARIS 1828 RIJEKA INTERNATIONAL REGISTER

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF RECOGNITION

1. RANGE OF THE RECOGNITION

Type of test	Test standard	Test witnessing requirements	Remark
Bend Test	EN ISO 5273;EN ISO 7438	Tests to be witnessed	Bureau Veritas Rules
Blasting abrasives testing	ISO 11127 & ISO 11125	Tests to be witnessed at least once per year	
Cathodic protection	SB 7439	Tests to be witnessed at least once per year	
Chemical Analysis	CR 10261	Tests to be witnessed at least once per year	Bureau Veritas Rules
Coating adhesion test	ISO 4624	Tests to be witnessed at least once per year	
Coating hardness test	ISO 1522	Tests to be witnessed at least once per year	
Coating porosity test	NACE RP 0188	Tests to be witnessed at least once per year	
Coating thickness testing (dry and wet film)	ISO 2808	Tests to be witnessed at least once per year	
Contamination of steel	ISO 8502-6 & ISO 8502-9	Tests to be witnessed at least once per year	
Delta perlite measurement	EN ISO 17655	Tests to be witnessed at least once per year	
Determination of density	ISO 2811-1	Tests to be witnessed at least once per year	
Dye Penetrant Test	EN ISO 3452-1;EN ISO 23277;EN 1371;EN 10228-2	Tests to be witnessed at least once per year	Bureau Veritas Rules
Fracture test	EN ISO 9017	Tests to be witnessed	Bureau Veritas Rules
Hardness Test	EN ISO 6506-1; ISO 6506-2; ISO 6507-1	Tests to be witnessed at least once per year	Bureau Veritas Rules
Hydraulic oil contamination by solid particles	ISO 4406	Tests to be witnessed at least once per year	
Impact Test	EN ISO 148-1,EN 875	Tests to be witnessed	Bureau Veritas Rules
Macrographics	EN ISO 17639	Tests to be witnessed at least once per year	Bureau Veritas Rules
Magnetic Particle Test	EN ISO 17638;EN ISO 23278	Tests to be witnessed at least once per year	Bureau Veritas Rules
Metalography	EN ISO 17639;EN ISO 945	Tests to be witnessed at least once per year	Bureau Veritas Rules
Relative humidity, surface temp. and dew point temperature	ISO 8502-4	Tests to be witnessed at least once per year	
Steel Surface Cleanliness	ISO 8502-3	Tests to be witnessed at least once per year	
Steel Surface Roughness	ISO 8503-4	Tests to be witnessed at least once per year	
Tensile Test	EN ISO 6892-1;EN ISO 4136	Tests to be witnessed	Bureau Veritas Rules
Ultrasonic Test	EN ISO 17640;EN ISO 11666	Tests to be witnessed at least once per year	Bureau Veritas Rules
Ultrasonic test PAUT	EN ISO 13588	Tests to be witnessed at least once	

Type of test	Test standard	Test witnessing requirements	Remark
		per year	
Ultrasonic test TOFD	EN 583-6;EN ISO 10683;EN ISO 15626	Tests to be witnessed at least once per year	
Viscosity (Ford cup)	ASTM D 1200	Tests to be witnessed at least once per year	
Visual Examination	EN ISO 17637;EN 13018;.EN ;EN 5817;EN 10042	Tests to be witnessed at least once per year	Bureau Veritas Rules
Volume solids	ISO 3233	Tests to be witnessed at least once per year	
X Rays	EN ISO 1763-1;EN ISO 10675-1	Tests to be witnessed at least once per year	Bureau Veritas Rules

2. LIMITATIONS

Bureau Veritas is to be informed immediately of any modification to testing facilities and associated quality procedures in order to agree on appropriate actions.

BRODOSPLIT - Laboratorij d.o.o. has to carry out and report the tests in compliance with the relevant testing standard(s) and has to make the necessary arrangements to comply with the witnessing requirements agreed with Bureau Veritas.

BRODOSPLIT - Laboratorij d.o.o. has to apply for the periodical audits as agreed with Bureau Veritas.

3. REMARKS

Nil.

***** END OF CERTIFICATE *****

RECOGNITION OF A TEST LABORATORY CERTIFICATE

No. 02-002084/023827

THIS IS TO CERTIFY:

That CROATIAN REGISTER OF SHIPPING did undertake, at the Laboratory's request, and pursuance of the Work instruction QW104 - "Recognition of test laboratory", on assessment of the organisational structure, responsibilities, facilities and associated quality assurance procedures of the referenced Laboratory with respect to test and testing standards, subject to any conditions in the Schedule of recognition attached hereto.

1. LABORATORY:

Name of laboratory:	**BRODOSPLIT – Brodograđevna industrija Split d.d.** BRODOSPLIT – Laboratorij d.o.o.
Address:	Put Supavla 21, 21000 SPLIT, HRVATSKA - *CROATIA*

2. SCOPE OF RECOGNITION

As listed in Annex I of the Schedule of recognition providing that test witnessing shall be as stated hereto.

3. CONDITIONS FOR THE VALIDITY OF THE RECOGNITION

- Tests are to be carried out and reported in compliance with the relevant Regulation(s).
- Surveillance audits are to be carried out annually by the CRS's surveyors and recorded in the Annex II of the Schedule of the recognition.
- CRS is to be informed immediately of any modification in the organisational structure, responsibilities, facilities and associated quality assurance procedures.

Recognition is valid until: **2019-12-16**

Place and date: Split, 2016-04-01

Seal

Signature

Marinko Popović, dipl.ing.

SCHEDULE OF RECOGNITION

Annex I to Certificate No: | No. 02-002084/023827 |

Item No.	Test method	Regulation	Test standards (latest edition)	Test witnessing mode (see note)	Comments
1.	**Ispitivanje metala i zavarenih spojeva metodama bez razaranja /** Testing of metals and welded joints by non-destructive methods		**EN ISO 17635**	(2)	
2.	**Radiografska ispitivanja RT** *Radiographic testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN ISO 5579** **EN ISO 17636-1** **EN ISO 10675-1, -2**	(2)	
3.	**Ultrazvučno ispitivanje UT** *Ultrasonic testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN 583-1, -4** **EN ISO 17640** **EN ISO 11666** **EN ISO 23279**	(2)	
4.	**Ultrazvučno ispitivanje TOFD+PA** *Ultrasonic testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN 583-6** **EN ISO 10863** **EN ISO 13588** **EN 16018** **EN ISO 15626**	(2)	
5.	**Ispitivanje magnetskim česticama MT** *Magnetic particle testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN ISO 9934-1** **EN ISO 17638** **EN ISO 23278**	(2)	
6.	**Ispitivanje penetrirajućim tekućinama PT** *Dye penetrant testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN ISO 3452-1** **EN ISO 23277**	(2)	
7.	**Vizualno ispitivanje VT** *Visual testings*	**Pravila HRB-a Dio 25.** *CRS Rules Part 25.* **Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN 13018** **EN ISO 17637** **EN ISO 5817** **EN ISO 10042**	(2)	
8.	**Razarajuća mehanička i tehnološka ispitivanja metalnih materijala i njihovih zavara** *Destructive tests on metallic materials and welds in metallic materials*	**Pravila HRB-a Dio 25** *CRS Rules Part 25*	**EN ISO 6892-1** **EN ISO 4136** **EN ISO 5178** **EN ISO 7438** **EN ISO 5173** **EN ISO 9017** **EN ISO 148-1** **EN ISO 6506-1** **EN ISO 6507-1** **EN ISO 6508-1** **EN ISO 9015-1, -2** **EN ISO 17639** **EN ISO 17655** **EN ISO 8492** **EN ISO 8493**	(1)	

Note:

(1) Except otherwise agreed upon, the CRS witnessing is compulsory for every test.
(2) First test and one per 4 years.
(3) CRS witnessing is not compulsory.

Item No.	Test method	Regulation	Test standards (latest edition)	Test witnessing mode (see note)	Comments
9.	**Mjerenje deformacija (naprezanja) pomoću mjernih traka** *Measurement of strain using strain gauges*		**ASTM E 251**	(2)	
10.	**Određivanje zaostalih naprezanja tenzometrijskom metodom bušenja provrta i mjernim rozetama** *Determining of residual stresses by the hole-drilling method and strain-gauge rosetts*		**ASTM E 837 - 08 e1**	(2)	
11.	**Ispitivanje kemijskog sastava metalnih materijala** *Chemical testing of metalic material*	**Pravila HRB-a Dio 25** *CRS Rules Part 25*	**Priručnik o ispitivanju LP 1742.1** */ Testing manual*	(2)	
12.	**Određivanje broja čvrstih čestica u hidrauličkim uljima** *Contamination by solid particles in hydraulic oils*	**Pravila HRB-a Dio 24** *CRS Rules Part 24*	**ISO 4406 NAS 1638**	(3)	
13.	**Ispitivanje fizikalnih karakteristika ulja (gustoća, viskozitet, sadržaj vode i pH)** *Examination of physical properties of oil (density, viscosity, water content and pH)*	**Pravila HRB-a Dio 24** *CRS Rules Part 24*	**Priručnik o ispitivanju LP 1742.2** */ Testing manual* **ISO 3675 ISO 3733 ISO 3104 ISO 10523**	(3)	
14.	**Ispitivanje fizikalnih karakteristika vode (tvrdoća, sadržaj klorida i željeza, pH)** *Examination of physical properties of water (hardness, chloride and iron content, pH)*		**Priručnik o ispitivanju LP 1742.3** */ Testing manual* **ISO 10523 ISO 9963-1 ISO 9963-2 ISO 6332**	(3)	
15.	**Ispitivanje ljevačkog pijeska, vezivnih sredstava i kaluparskih mješavina** *Testing of foundry sand, binders and mold mixture*		**Priručnik o ispitivanju LP 1742.4** */ Testing manual* **HRN B.B5.012**	(3)	
16.	**Metalografska ispitivanja** / *Metallographic examination*		**EN ISO 17639 EN ISO 945-1**	(2)	
17.	**Ispitivanje stručne sposobnosti zavarivača** *Testing of welders ability*	**Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN ISO 9606-1 EN ISO 9606-2 EN ISO 9606-3 EN ISO 14732**	(2)	
18.	**Ispitivanje postupaka zavarivanja i dodatnih materijala za zavarivanje** *Testing of welding procedures and consumables for welding*	**Pravila HRB-a Dio 26.** *CRS Rules Part 26.*	**EN ISO 15607 EN ISO 15609-1 EN ISO 15610 EN ISO 15614-1 EN ISO 15614-2 EN ISO 15614-8**	(2)	

Note:

(1) Except otherwise agreed upon, the CRS witnessing is compulsory for every test.
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(3) CRS witnessing is not compulsory.

Item No.	Test method	Regulation	Test standards (latest edition)	Test witnessing mode (see note)	Comments
19.	**Antikorozivna zaštita** **Ispitivanje fizikalnih karakteristika boja i abraziva za čišćenje čeličnih površina (volumni sadržaj suhe tvari, gustoća, vrijeme sušenja, adhezija, raspodjela veličine čestica, soli itd.).** *Corrosion protection* *Testing for physical characteristics of paints and blasting abrasives (volume solids, density, drying time, adhesion, particle size, contaminants etc.).*		**IMO resolution MSC215(82) PSPC** **ISO 3233** **ISO 2811-1** **ASTM D5895** **EN ISO 16862** **ISO 2409** **ISO 4624** **ISO 11127** **ISO 11125**	(3)	
20.	**Antikorozivna zaštita** **Inspekcija pripreme površine i bojenja čeličnih površina (stupanj čistoće, hrapavost, soli/prašina, mikroklimatski uvjeti, debljina filma, adhezija premaza, porozitet).** *Corrosion protection of steel structures by protective paint systems* *Quality control of surface preparation and coating application (de-rusting grade, blast profile, salts/dust, environmental conditions, DFT, adhesion, porosity).*		**IMO resolution MSC 215(82) PSPC** **ISO 8501-1** **EN ISO 8503-4** **ISO 8502-6** **ISO 8502-9** **ISO 8502-3** **ISO 8502-4** **SSPC-PA2** **ISO 16276-1** **ISO 16276-2** **NACE SP0188**	(3)	
21.	**Katodna zaštita žrtvovanim anodama** **Provjeravanje efikasnosti izvedene katodne zaštite mjerenjem zaštitnog potencijala.** *Cathodic protection using sacrificial anodes* *Cathodic potential measurement for control and adjustment of cathodic protection systems.*		**SB 7439**	(3)	

Note:

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(3) CRS witnessing is not compulsory.

SURVEILLANCE AUDITS

Annex II to Certificate no: No. 02-002084/023827

Mandatory survey due period (+/- 3 months):

	1.	2.	3.
Due date:	2016-12-16	2017-12-16	2018-12-16
Date of survey:			
Name and signature:			
Seal:			

Raščlana

55.00

Zamjenjuje potvrdu

02-001672/023242

- END OF DOCUMENT -

POTVRDA O ODOBRENJU USLUŽNE TVRTKE
CERTIFICATE OF APPROVAL OF THE SERVICE SUPPLIER

Br / *No* 01-011872/018344

Potvrđuje se da je ova uslužna tvrtka odobrena u skladu s Pravilima za klasifikaciju brodova, Dio 1. – Opći propisi, Odjeljak 4. – Odobrenje proizvođača i uslužnih tvrtki.
This is to certify that this service supplier is approved on the basis of the Rules for the classification of ships, Part 1 – General Requirements, Chapter 4 – Approval of manufacturers and service suppliers.

TVRTKA:
FIRM:

BRODOSPLIT
BRODOSPLIT-LABORATORIJ d.o.o.
BRODOSPLIT-LABORATORY Ltd

Put Supavla 21, 21000 SPLIT, HRVATSKA - CROATIA

PODRUČJE ODOBRENJA:
FIELD OF APPROVAL:

MJERENJE DEBLJINA ELEMENATA STRUKTURE BRODSKOG TRUPA.
THICKNESS MEASUREMENTS OF HULL STRUCTURE.

ODOBRENJE VRIJEDI DO: **2019-11-12**
APPROVAL IS VALID UNTIL:

UZ UVJETE NAVEDENE NA POLEĐINI
SUBJECT TO CONDITION OVERLEAF

Mjesto i datum Split, 2016-12-05
Place and date

M.P.
(Seal)

(**Potpis** – *Signature*)

Marinko Popović, dipl.ing.