ELECTRICAL INSTALLATION CERTIFICATE

REQUIREMENTS FOR ELECTRICAL INSTALLATIONS - BS 7671 (IEE Wiring Regulations)

CERT No. DSV 01

CLIENT DETAILS

B. MARSHALL MARINE LTD.

INSTALLATION ADDRESS

D.S.V. CURTISS - MARSHALL (DIVE SUPPORT VESSEL)

DESCRIPTION AND EXTENT OF THE INSTALLATION

✔ tick boxes as appropriate

New installation ☑ Addition to an existing installation ☐ Alteration to an existing installation ☐

Description of installation: LEVEL 1 240V DISTRIBUTION SYSTEM (IN DIVE CONTROL)

Extent of installation work covered by this certificate: DISTRIBUTION BOARD No.1 (DIVE CONTROL)

DESIGN

I/We* being the person(s) responsible for the design of the electrical installation (as indicated by my/our* signature(s) below), particulars of which are described above, having exercised reasonable skill and care when carrying out the design hereby CERTIFY that the design work for which I/we* have been responsible is to the best of my/our* knowledge and belief in accordance with BS 7671: 2008 ..... amended to ..... (date) except for the departure(s), if any, details as follows:

Details of departure(s) from BS 7671: NONE

The extent of liability of the signatory or the signatories is limited to the work described above as the subject of this certificate.

For the DESIGN of the installation:

Designer (No.1) - Signature C Jakeman Name (BLOCK LETTERS) C. JAKEMAN Date 2nd/5/2014

Designer (No.2) - Signature A.C-Norris Name (BLOCK LETTERS) A. NORRIS Date 2nd/5/2014

CONSTRUCTION

I/We* being the person(s) responsible for the construction of the electrical installation (as indicated by my/our* signatures below), particulars of which are described above, having exercised reasonable skill and care when carrying out the construction hereby CERTIFY that the construction work for which I/we* have been responsible is to the best of my/our* knowledge and belief in accordance with BS 7671: 2008 ..... amended to ..... (date) except for the departure(s), if any, details as follows:

Details of departure(s) from BS 7671: NONE

The extent of liability of the signatory or the signatories is limited to the work described above as the subject of this certificate.

For the CONSTRUCTION of the installation:

Constructor(s) - Signature(s) A.C-Norris Name(s) (BLOCK LETTERS) A. NORRIS Date 17/5/2014

INSPECTION & TESTING

I/We* being the person(s) responsible for the inspection and testing of the electrical installation (as indicated by my/our* signature(s) below), particulars of which are described above, having exercised reasonable skill and care when carrying out the inspection and testing hereby CERTIFY that the inspection and testing work for which I/we* have been responsible is to the best of my/our* knowledge and belief in accordance with BS 7671: 2008 ..... amended to ..... (date) except for the departure(s), if any, details as follows:

Details of departure(s) from BS 7671: NONE

The extent of liability of the signatory or the signatories is limited to the work described above as the subject of this certificate.

For the INSPECTION AND TESTING of the installation:

Inspector(s) - Signature(s) A.C-Norris Name(s) (BLOCK LETTERS) A. NORRIS Date 11/01/2015

NEXT INSPECTION

I/We* the designer(s), recommend that this installation is further inspected and tested after an interval of not more than YEARS 5 MONTHS 0

ELECTRICAL INSTALLATION CERTIFICATE

REQUIREMENTS FOR ELECTRICAL INSTALLATIONS - BS 7671 (IEE Wiring Regulations)

CERT No. DSV01

DESIGNER (No.1)

Name: C. JAKEMAN.
Company: B. MARSHALL MARINE LTD.
Address: DOCKSIDE ROAD, MIDDLESBROUGH
Postcode: TS38AT Phone No: 01642-211234

DESIGNER (No.2)

Name: A. NORRIS
Company: YARM ELECTRICAL SERVICES
Address: 29 ROUNDHAY DRIVE EAGLESCLIFFE.
Postcode: TS16 9HW Phone No: 01642-787502

CONSTRUCTOR(S)

Name(s): A. NORRIS
Company: YARM ELECTRICAL SERVICES
Address: 29 ROUNDHAY DRIVE, EAGLESCLIFFE.
Postcode: TS16 9HW Phone No: 01642-787502

INSPECTOR(S)

Name(s): A. NORRIS
Company: YARM ELECTRICAL SERVICES
Address: 29 ROUNDHAY DRIVE. EAGLESCLIFFE.
Postcode: TS16 9HW Phone No: 01642-787502

SUPPLY CHARACTERISTICS AND EARTHING ARRANGEMENTS

✔ tick box where applicable

Number of Live Conductors 2/~~3/4~~*	Type of live conductors: a.c. /~~d.c.~~*	
Nature of Supply	Nominal voltage: U 238 (V) U_o ..... (V)	Nominal frequency (f): 50 Hz
	Fault current (earth fault/short-circuit)*: 0.42 kA	External loop impedance (Z_e): 0.71 Ω
Supply Protective Device Characteristics:	BS (EN): 88 FUSE	Rated Current/Current Setting (In) 80 A
Earthing Arrangements:	TN-S ☑ TN-C-S ☐ TT ☐ TN-C ☐ IT ☐	

PARTICULARS OF INSTALLATION REFERRED TO IN THE CERTIFICATE

✔ tick box where applicable

Means of Earthing: Distributor's facility ☑ Installation earth electrode ☐ Maximum demand (load): 80 ~~kVA~~/Amps per phase

Details of Installation Earth Electrode

Location: ..... Type (rods, etc.): .....

Electrode Resistance to Earth (R_A): ..... Ω Method of Measurement: .....

Main Protective Conductors

✔ tick box where applicable

Earthing Conductor:	Material: Copper c.s.a: 16.0 mm²	Connection[s] verified: ☑
Protective Bonding Conductors:	Material: Copper c.s.a: 16.0 mm²	Connection[s] verified: ☑

To: Water Installation Pipe ☐ Gas Installation Pipe ☐ Other Elements ☑ STRUCTURE : 16.0mm

Main Switch or Circuit-breaker

Location: .....

BS (EN), type and No. of poles 60947-3(2) Current rating: 100 A Fuse rating or setting: 80A. Voltage rating: 400 V

Rated residual operating current $I_{\Delta n}$: ..... mA Operating time at $I_{\Delta n}$: ..... ms

COMMENTS ON EXISTING INSTALLATION

.....

.....

.....

.....

SCHEDULE(S)

THE ATTACHED SCHEDULES ARE PART OF THIS DOCUMENT AND THIS CERTIFICATE IS VALID ONLY WHEN THEY ARE ATTACHED TO IT.

No. of Schedules of Inspections attached: 1 No. of Schedules of Test Results attached: 1

This safety certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed and inspected and tested in accordance with BS 7671: 2008 (the IEE Wiring Regulations).

The recipient should receive the 'original' certificate and a duplicate should be retained by the contractor. In the event that you are the person ordering or acting on behalf of the owner, this certificate or a copy of it should it be passed to the owner immediately. The 'original' certificate should be kept in a safe place and should be shown to any person carrying out work on or inspecting this installation in the future.

For safety reasons this electrical installation needs to be re-inspected by a competent person at appropriate intervals. Under the section 'Next Inspection' of this certificate is stated the maximum time interval recommended before the next inspection.

The Construction (Design and Management) Regulations require for an installation covered by those Regulations, that a copy of this certificate together with the relevant schedules of inspection and test results are included in the project health and safety documentation.

This certificate is only intended to be issued for a new installation or for new work carried out on or associated with the alteration or addition to an existing installation.

DETAILS AT DISTRIBUTION BOARD (DB)/CONSUMER UNIT (CU)

CERT/REPORT* SCHEDULE No: D.S.V. 01

Location: D.S.V. CURTIS - MARSHALL Date: /01/2015

Designation: D.B. NO 1. UPPER ACCOMODATION LEUEL (DIVE CONTROL)

Inspected and tested by: (Print and sign)

Name: A. NORRIS

Signature: A.C. Norris

System Characteristics

System type:

TN-C-S ☐ TN-S ☐ TT ☐

[Tick relevant box(es)]

Fault level(s):

1 ϕ 0.42 kA

3 ϕ ..... kA

Measured impedance at dis. board/consumer unit Z_e/Z_s*: 0.71 Ω

Main Switch

Supply polarity confirmed: ✓ (✓)

Make: C.D.G. BS (EN): 60947-3

Voltage rating: 400 V Current rating (I_n): 100 A

(If) RCD: ..... mA Operation time (at $I_{\Delta n}$): ..... ms

DB/CU supplied from: MAIN CONTROL PANEL FUSED @ 80A TO BS 88

Equipment vulnerable to testing:

DIVE CONTROLS & EQUIPMENT AS FITTED. (LIFE SAVING, MONITORING ETC)

Supply Protective Device Details

BS (EN): 88 Current rating (I_n): 80 A (If) RCD: $I_{\Delta n}$: ..... mA Operating time at $I_{\Delta n}$: ..... ms

CIRCUIT DETAILS / TEST RESULTS

Number of ways	Circuit description	Type of wiring (e.g. PVC/PVC)	Number of points served	Circuit conductors (mm²) Live	Circuit conductors (mm²) cpc	Max disconnection time (s) permitted by BS 7671	Overcurrent protective devices BS (EN)	Type	Rating (A)	Fault current capacity (kA)	RCD Operating current $I_{\Delta n}$ (mA)	Circuit impedances (Ω) Ring final circuits only r_1	r_n	r_2	All circuits R_1+R_2 or R_2*	Insulation resistance (MΩ) Between live conductors	Line(s)/Earth	Neutral/Earth	Polarity (✓)	Maximum measured earth fault loop impedance, Z_s (Ω)	RCD operating times (ms) at $I_{\Delta n}$	at $5I_{\Delta n}$ (if applicable)
1	GALLEY HOB	BTY	1	4.0	4.0		BS 61009	B	32	6	30				0.08		≥200	≥200	✓	0.77	20	5
2	GALLEY SOCKETS	PVC/BTY	6	2.5	2.5		BS 61009	B	32	6	30				0.06		≥200	≥200	✓	0.76	20	5
3	DIVE CONTROL FRONT SOCKETS	PVC/BTY	4	2.5	2.5		BS 61009	B	32	6	30				0.08		≥200	≥200	✓	0.77	21	6
4	BEDROOMS SOCKETS	PVC/BTY	7	2.5	2.5		BS 61009	B	32	6	30				0.20		≥200	≥200	✓	0.87	20	5
5	FRIDGE/FREEZER POINT	PVC/BTY	1	2.5	2.5		BS 61009	B	16	6	30				0.16		≥200	≥200	✓	0.83	22	6
6	WASHING MACHINE	PVC/BTY	1	2.5	2.5		BS 61009	B	16	6	30				0.16		≥200	≥200	✓	0.80	20	5
7	TEA BOILER	PVC/BTY	1	2.5	2.5		BS 61009	B	16	6	30				0.13		≥200	≥200	✓	0.81	20	5
8	BEDROOM HEATER (NO.1)	PVC/BTY	1	1.5	1.5	0.4	BS 60898	B	10	6					0.13		≥200	≥200	✓	0.81		
9	BEDROOM LIGHTS	TQ TN		1.0	1.0	0.4	BS 60898	B	6	6							≥	≥	✓			
10	GALLEY LIGHTS	TQ TN	9	1.0	1.0	0.4	BS 60898	B	6	6							≥	≥	✓			
11	DIVE CONTROL EQUIP. SOCKET	PVC/BTY	7	2.5	2.5	0.4	BS 60898	B	32	6					0.11		≥200	≥200	✓	0.74		
12	DIVE CONTROL HEATER	PVC/BTY	1	1.5	1.5	0.4	BS 60898	B	16	6					0.03		≥200	≥200	✓	0.71		

TEST INSTRUMENTS USED	Make / Model / Serial Number	Multi-functional:	Insulation resistance:	Continuity:	Earth electrode resistance:	Earth fault loop impedance:	RCD:
			ROBIN KMP 3050 4121190	ROBIN KMP 3050 4121190		ROBIN KMP 4120 4125859	ROBIN KMP 5404 3366518

Deviations from BS 7671: 2008: NONE

and further comments:

*delete as appropriate

This schedule is based on the model in Appendix 6 of BS 7671: 2008

SCHEDULE OF TEST RESULTS

CERT./REPORT* SCHEDULE No. D.S.V. 01

CIRCUIT DETAILS												TEST RESULTS										
Number of ways	Circuit description	Type of wiring (e.g. PVC/PVC)	Number of points served	Circuit conductors (mm²) Live	Circuit conductors (mm²) cpc	Max. disconnection time(s) permitted by BS 7671	Overcurrent protective devices BS (EN)	Overcurrent protective devices Type	Overcurrent protective devices Rating (A)	Overcurrent protective devices Fault current capacity (kA)	RCD Operating current, $I_{\Delta n}$ (mA)	Circuit impedances (Ω) Ring final circuits only r_1	Ring final circuits only r_n	Ring final circuits only r_2	All circuits R_1+R_2 or R_2*	Insulation resistance (MΩ) Between live conductors	Line(s)/Earth	Neutral/Earth	Polarity (✓)	Maximum measured earth fault loop impedance, Z_s (Ω)	RCD operating times (ms) at $I_{\Delta n}$	at $5I_{\Delta n}$ (if applicable)
13	DIVE CHAMBER SUPPLY	PVC/STY	1	2.5	2.5	0.4	60898	B	16	6					0.18		≥200	≥200	✓	0.76		
14	SPARE	PVC/STY				0.4	60898	B	16	6												
15	GALLEY HEATER (FAR WALL)	PVC/STY	1	1.5	1.5	0.4	60898	B	10	6					0.21		≥200	≥200	✓	0.89		
16	GALLEY HEATER (NEAR)	PVC/STY	1	1.5	1.5	0.4	60898	B	10	6					0.13		≥200	≥200	✓	0.82		
17	BEDROOM HEATER (NO.2)	PVC/STY	1	1.5	1.5	0.4	60898	B	10	6					0.18		≥200	≥200	✓	0.84		
18	ENTRANCE HEATER	PVC/STY	1	1.5	1.5	0.4	60898	B	10	6					0.10		≥200	≥200	✓	0.80		
19	ENTRANCE AREA LIGHTS	PVC/STY	9	1.0	1.0	0.4	60898	B	6	6					0.40		≥200	≥200	✓	0.99		
20	DIVE CONTROL LIGHTS	PVC/STY	12	1.0	1.0	0.4	60898	B	6	6					0.47		≥200	≥200	✓	1.01		
21	SPARE								6													
22																						
33																						
24																						

FURTHER COMMENTS/OBSERVATIONS:

This schedule is based on the model in Appendix 6 of BS 7671: 2008

*delete as appropriate

SCHEDULE OF INSPECTIONS

CERT./REPORT* SCHEDULE No: DSV 01

Methods of protection against electric shock

Both basic and fault protection:

N/A	(i)	SELV
N/A	(i)	PELV
	(iii)	Double insulation
N/A	(iv)	Reinforced insulation

Basic protection:

✓	(i)	Insulation of live parts
✓	(i)	Barriers or enclosures
N/A	(iii)	Obstacles
✓	(iv)	Placing out of reach

Fault protection

(i) Automatic disconnection of supply:

✓	Presence of earthing conductor
✓	Presence of circuit protective conductors
✓	Presence of protective bonding conductors
✓	Presence of supplementary bonding conductors
✓	Presence of earthing arrangements for combined protective and functional purposes
✓	Presence of adequate arrangements for alternative source(s), where applicable
N/A	FELV
✓	Choice and setting of protective and monitoring devices (for fault and/or overcurrent protection)

(ii) Non-conducting location:

N/A	Absence of protective conductors

(iii) Earth-free local equipotential bonding:

N/A	Presence of earth-free local equipotential bonding

(iv) Electrical separation:

N/A	Provided for **one item** of current-using equipment
✓	Provided for **more than one item** of current-using equipment

Additional protection:

✓	Presence of residual current device(s)
✓	Presence of supplementary bonding conductors

Prevention of mutual detrimental influence

✓	(a)	Proximity of non-electrical services and other influences
N/A	(b)	Segregation of Band I and Band II circuits or use of Band II insulation
✓	(c)	Segregation of safety circuits

Identification

✓	(a)	Presence of diagrams, instructions, circuit charts and similar information
✓	(b)	Presence of danger notices and other warning notices
✓	(c)	Labelling of protective devices, switches and terminals
✓	(d)	Identification of conductors

Cables and conductors

✓	Selection of conductors for current-carrying capacity and voltage drop
✓	Erection methods
✓	Routing of cables in prescribed zones
N/A	Cables incorporating earthed armour or sheath or run within an earthed wiring system, or otherwise adequately protected against nails, screws and the like
✓	Additional protection provided by 30 mA RCD for cables concealed in walls (where required in premises not under the supervision of a skilled or instructed person)
✓	Connection of conductors
N/A	Presence of fire barriers, suitable seals and protection aganst thermal effects

General

✓	Presence and correct location of appropriate devices for isolation and switching
✓	Adequacy of access to switchgear and other equipment
✓	Particular protective measures for special installations and locations
✓	Connection of single-pole devices for protection or switching in line conductor(s) only
✓	Correct connection of accessories and equipment
✓	Presence of undervoltage protective devices
✓	Selection of equipment and protective measures appropriate to external influences
✓	Selection of appropriate functional switching devices

✓ To indicate an inspection has been carried out and the result is satisfactory.

N/A To indicate an inspection is not applicable.

In addition to the above, the following notations may also be used when reporting on existing installations:

X To indicate an inspection has been carried out and the result is unsatisfactory.

Lim Indicates that, exceptionally, a limitation agreed with the person ordering the work prevented the inspection being carried out.

Inspected by (print and sign:)

A. NORRIS

Date: 11th / JAN / 2015