



VG OFFSHORE CONTAINERS INTERNATIONAL (M) SDN BHD

Inspection Release Certificate

CERTIFICATE NO.: VG/IRC/001

DRAWING NO. : VGOCI-DWG-CV-14-8-8.5-R0

MODEL NO. : VGOCI-CV-14-8-8.5

MANUFACTURER S/NO: VG 1057

QUANTITY: 1 UNIT

THIS IS TO CERTIFY

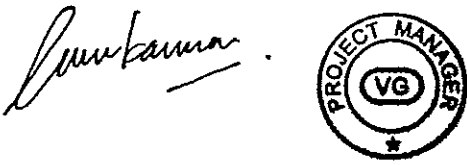
PROJECT NAME: 14FT CONTROL VAN CONTAINER

CLIENT: SUBSEA EXPLORER SERVICES (M) SDN BHD

P.O/CONTRACT NO.: 00272

THAT HAS BEEN FABRICATED AT THE MANUFACTURER'S WORKSHOP
HAVE BEEN FOUND TO BE IN CONFORMANCE WITH THE
REQUIREMENTS, SPECIFICATIONS, DRAWINGS AND ALL WORKS
ACCORDING TO GENERAL TERMS AND CONDITIONS ARE
COMPLETED.



Approved by, 	Approved by, 
Name: Ravichandran Date: 22/04/2009 Department: QA / QC Dept	Name: Venukanna Date: 22/04/2009 Department: Project Management Dept



SAAB

EQUIPMENT ACCEPTANCE CERTIFICATE

OCEANVISION

Accept

SEAEYE MARINE LIMITED's

1. SEAEYE ROV System (300 metre depth rated) - Type FALCON Serial # 12104, complete system, in accordance with Oceanvision's instructions & Seaeeye's specification. Inclusive of 1 set of Vehicle/System records. 2 sets of Handbooks / Technical Manuals in hardcopy format plus 1 copy in CD format.

2. Additional Items: supplied:

- | | | |
|----|--|----------------------|
| a. | 2 x 450m Umbilical Cable | Pt# 5801 |
| b. | 1 x Umbilical Winch - Hand Operated | Pt# WINCH05-A |
| c. | 1 x 30m Umbilical Cable | Pt# 5801 |
| d. | 1 x Falcon Running Lock Latch System | Pt# LATCH01 |
| e. | 1 x Single Function Manipulator System | Pt# GRIPSTICK01-SYS |
| f. | 1 x Falcon 5 Function Manipulator System | Pt# FALCON MANIP SYS |
| g. | 1 x Brush Unit C/W Thruster 1000msw Rated | Pt# SI-BRUSH01 |
| h. | 1 x Cygnus Ultrasonic Thickness Gauging System | Pt# 001-7149 |
| i. | 1 x Falcon Field Maintenance Kit | Pt# FALCON SSK01 |
| j. | 1 x Spares Kit Falcon Remote Location | Pt# FALCON SSK02 |
| k. | 1 x Lamp Unit RS485 75W 48V Long Whip | Pt# SI-LAMP02 |
| l. | 1 x Auxiliary Output 24V 485 | Pt# SI-AUXOP02 |
| m. | 1 x Auxiliary Input Pod RS485 | Pt# SI-AUXIP01 |
| n. | 1 x Seaeeye Colour Camera 2000msw Rated | Pt# CAM04P |
| o. | 1 x Auxiliary Output 24V 485 for Cygnus Probe | Pt# SI-AUXOP02 |
| p. | 6 x Thruster 48 Volt RS485 C/W Prop & Nozzle | Pt# SI-MCT01 |
| q. | 1 x Imagenex Imaging Sonar Kit | Pt# FLK1109 |

3. All above items are accepted as being fully functional and complete in all respects, unless otherwise notified on the Delivery Note.
4. All major parts and respective serial numbers are listed in the System Records Document supplied by Saab Seaeeye Limited.

Signed:

Mr. J. Doherty
Quality Assurance Manager
for & on behalf of
Department of Natural Resources

Signed:

Mr. P. Vallender
Production Manager
for & on behalf of
Saab Seaeeye Limited

Date: 7th August 2007

Seaeeye Ref: SON 15467
Customer Ref: 1638/07

m:\planmgt\dje files\Build\accept12104

Saab Seaeeye Ltd

Address & Registered Office
Seaeeye House
Lower Quay Road
Fareham
PO16 0RQ
United Kingdom

Telephone
+44 (0) 1329 289000
Fax
+44 (0) 1329 289001

Internet Address
www.seaeeye.com
E-mail
rovs@seaeeye.com

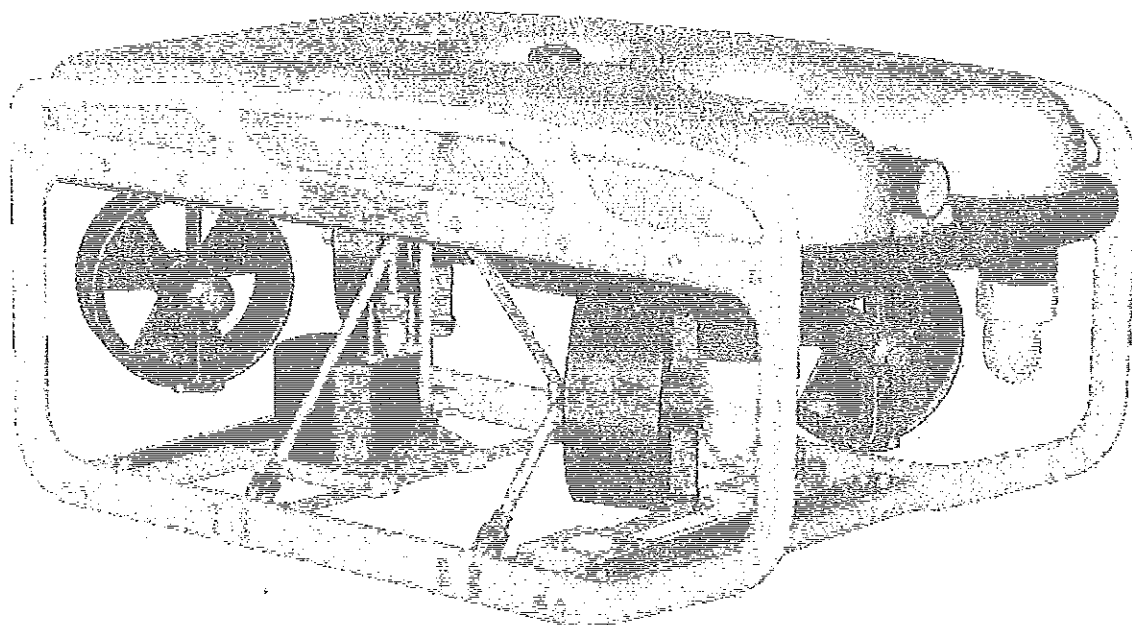
Registered in
England & Wales
No 02022671

VAT No
566 6513 17



FACTORY ACCEPTANCE TEST

Falcon System
12104



Customer: Oceanvision

Customer Representative: John Doherty QA Manager

Seaeye Technician: G. PATRIKIS

FAT Date: 06/08/07

FAT Location: SEA EYE 2

DOCUMENT TITLE: FALCON FACTORY ACCEPTANCE TEST

CONTENTS

1. SCOPE
2. TEST EQUIPMENT / SAFETY
3. FUNCTIONAL/PERFORMANCE TESTING
 - 3.1.Surface Equipment.
 - 3.2.Vehicle and Accessories.
 - 3.3.Main Electronics.
4. TANK TRIALS.
 - 4.1.Pre-dive Checks.
 - 4.2.Vehicle Controls Functional Test
 - 4.3.System Run Tests.
 - 4.4.ROV Weights.

1. SCOPE

- 1.1. This document identifies the factory acceptance testing required for the Falcon system.
- 1.2. All testing will be performed using the equipment to be supplied unless otherwise agreed and noted.
- 1.3. Both Seaeye and Customer representative should initial and date all parameters checked. Any failures or deviations from the specified parameters will be noted and a course of corrective action mutually agreed and noted which may result in a retest if appropriate.

2. TEST EQUIPMENT

2.1. The following test equipment is required to perform the acceptance tests.

- Power supply - Single phase, 110V 60Hz or 240V 50Hz @ 5kVA
- System for acceptance, comprising of;
 - Surface Equipment including all cables etc.,
 - Umbilical: System Umbilical, or Test Umbilical (if necessary),
 - R.O.V., fitted with all accessories, as appropriate.
- Test Tank
- Standard electrical/electronic test equipment
- Standard electrical tool kit

2.2. Safety

WARNINGS

1. DANGER OF FATAL ELECTRIC SHOCK. BEFORE REMOVING OR OBTAINING INTERNAL ACCESS TO THE EQUIPMENT ISOLATE ALL THE UNITS POWER SUPPLIES.

2. DANGER OF FATAL ELECTRIC SHOCK AND DANGER TO PERSONNEL. WHEN THE SUPPLY CANNOT BE DISCONNECTED, FUNCTIONAL TESTING, MAINTENANCE AND REPAIR OF THE ROV SYSTEM IS TO BE UNDERTAKEN ONLY BY PERSONS FULLY AWARE OF THE DANGERS INVOLVED AND HAVE TAKEN ADEQUATE PRECAUTIONS.

3. POSSIBILITY OF FATAL ELECTRIC SHOCK AND DANGER TO PERSONNEL AND EQUIPMENT. BEFORE SWITCHING ON THE ROV SYSTEM ENSURE THAT THE SYSTEM IS FULLY ASSEMBLED AND OPERABLE AND NO MAINTENANCE ACTIVITY IS IN OPERATION

Safety Features: Before starting tests ensure that all electrical wiring has been checked and all safety signs are in place.

Check that all safety precautions are in place.



3. FUNCTIONAL/PERFORMANCE TESTING

Note: Sections 3.1 to 3.4 are to be carried out on the 'deck', prior to the tank trial.

Seaeye

Sign *[Signature]* Date 06/08/07

Customer

Sign *[Signature]* Date *[Signature]*

3.1. Surface Equipment.

- 3.1.1. Connect Surface PSU input to a 110VAC or 240VAC source, as per customer requirements. Record test configuration used:

Tested with: 110VAC ☐ 240VAC ☒

- 3.1.2. Switch Surface Equipment ON. Check that video overlay is present on the system monitor (without video image from ROV). Also confirm that the message 'Vehicle Comms Lost' is displayed on the overlay. ☒

- 3.1.3. Check Surface PSU Cable Compensation is set correctly for Umbilical Tether and Deck Lead used, noting cable types, lengths and resistance.

Main lift cable type: None

Main lift length: 0 metres

Main lift cable resistance: 0 mOhms/km

Tether cable type: 5801

Tether length: 480 metres

Tether cable resistance: 26,354 mOhms/km

- 3.1.4. Switch Vehicle power ON. Check that video image from ROV is now present and that the overlay remains stable, displaying 'live' data. Confirm that the message 'Vehicle Comms Lost' is no longer displayed. ☒

- 3.1.5. Using the 'Help' menu (F1 on keyboard), ensure that all appropriate additional / optional nodes are 'included'. (Note that vehicle control is lost whilst in the 'Help' menu). ☒

- 3.1.6. Using the 'Help' menu (F1 on keyboard), ensure that all nodes are present / o.k. Also check the software issue and serial numbers detailed for each node are correct. (Note that vehicle control is lost whilst in the 'Help' menu). ☒

Standard Nodes							
Node	Current Version	Actual Version	Serial Number	Node	Current Version	Actual Version	Serial Number
TPF	01.09	01.09	0699	Dep	03.07	03.07	0074
TSA	01.09	01.09	0701	Com	03.07	03.07	0074
TSF	01.09	01.09	0700	Gyr	03.07	03.07	0074
TPA	01.09	01.09	0702	Vi1	01.02	01.02	0101
TV	01.09	01.09	0703	Ov1	01.08	01.08	0127
Li 1	04.00	04.00	0299	Master	01.76	01.76	N/A
Li 2	04.00	04.00	0300	Handc	02.38	02.38	N/A
Til	01.06	01.06	0168				
Optional Nodes							
Node	Current Version	Actual Version	Serial Number	Node	Current Version	Actual Version	Serial Number
Man	01.00	01.00		Hm 1	01.03	01.03	0022
Th 6	01.09	01.09	0721	Li 3	04.00	04.00	0301
Hc 1	01.05	01.05	0022				

Seaye

Sign R. Roper Date 06/08/07

Customer

Sign [Signature] Date 06/08/07

Falcon 12104

- 3.1.7. Check the Surface Unit's VGA Output: Observe that the 'Master' programme is operating and check all Hand Controller functions. Also demonstrate that the 'HANDC' programme can be run / operated. ☒

3.2. Vehicle and Accessories.

- 3.2.1. Mechanical Integrity: Inspect and review the security of all bracketry and mounting hardware of the vehicle. ☒
- 3.2.2. Verify that the umbilical routing and clamping is adequate (eg correct fitting of cable grip and shackle, 12 way connector etc.). ☒
- 3.2.3. Verify all penetrators into the Vehicle JB are labelled and that their secondary o-rings are present and have been rolled down. ☒
- 3.2.4. Hand Operated Winch:
Inspect winch for mechanical integrity. ☒
Check for correct operation of winch. ☒

3.3. Main Electronics

Verify the function of the following.

- 3.3.1. Camera 1 Operation:
Check a clear and stable colour image is displayed. ☒
- 3.3.2. Tilt Operation:
Vehicle - Check that the Tilt Platform responds correctly to operation of the Tilt Roller on the Hand Controller. Check that the Tilt information on the overlay responds accordingly. ☒
- 3.3.3. Lights:
Vehicle - Verify brightness control (operate for a limited time only in air). Check that the vehicle responds to the operation of the Lights ON/OFF switch on the Hand Controller. ☒
- 3.3.4. Navigation Node:
 - Verify compass operation is linear for a full 360 degree rotation ☒
 - Verify gyro operation: with thrusters enabled, check that the horizontal thrusters respond to a sharp rotation of the vehicle. ☒
- 3.3.5. Thruster Operation:
Check that all thrusters respond correctly to Hand Controller commands. ☒
- 3.3.6. Manipulator:
Verify correct operation. ☒

Seaye

Sign *F. Narpiens* Date 06/08/07

Customer

Sign *[Signature]* Date 06/08/07

Falcon 12104

4. Tank trial

The following tests are to be performed in a suitable test tank or open water site.

4.1. Pre-dive checks

4.1.1. Carry out pre-dive, using check list in Appendix A



4.2. Vehicle Controls Functional Test

4.2.1. Deploy vehicle.

4.2.2. With vehicle at the waters surface, zero the depth reading.



4.2.3. Operate all vehicle controls on the hand controller. Verify correct operation and no interactive effects with different combinations of controls.

- Forward ☒
- Backwards ☒
- Sideslip Port ☒
- Sideslip Starboard ☒
- Rotate clockwise ☒
- Rotate anticlockwise ☒
- Up ☒
- Down ☒
- Tilt ☒
- Lights ☒
- Depth reading ☒
- Auto depth operation ☒
- Auto heading operation ☒
- Camera 1 - Seaeye Colour PAL ☒

4.2.4. Additional equipment fitted:

- 5 Function Manipulator ☒
- Single Function Manipulator ☒
- Tooling Thruster ☒
- Cygnus Probe ☒

Seaeye

Sign I. Rodriguez Date 06/08/07

Customer

Sign [Signature] Date 06/09/07

Falcon 12104

4.3. System run test

4.3.1. Setup thruster power levels:

(F1 -> Configuration -> Nodes -> Thruster Power Level)

Set	Fwd Rev	80
	Lateral	80
	Turns	80
	Vert	80



4.3.2. Position vehicle in the centre of one of the tank walls and hard against the bottom. With lights fully on and thruster power switch set to min. Apply full vertical thruster down and pull joystick straight back to give full reverse power. Verify satisfactory operation of system running continuously for 10 minutes.



4.3.3. Return Thruster Power Level settings changed in 4.3.1 above to default values of 60.



Seaye

Sign F. Rozpilius Date 06/08/07

Customer

Sign [Signature] Date 06/08/07

Falcon 12104

4.4. ROV Weights

Record bare ROV weight in air: (Without addition lead ballast fitted, this weight should include the weight of lead fitted inside the forward tray)

= 108.4 kg (1)

Weight of addition lead ballast added:
(Excluding that inside the forward tray)

= 1.6 kg (2)

Weight of lead ballast fitted inside forward tray
(Nominally 3.42kg)

= 0 kg

Total ROV weight including lead ballast (for Fresh Water)

= (1) + (2) = 110 kg (3)

Record positioning of all lead ballast on layout sheet (Appendix B).

Seaeye

Sign *P. Nozpin* Date 06/08/07

Customer

Sign *[Signature]* Date 06/08/07

Appendix B

