CAMPAIGN DEPLOYMENT REPORT (ERICEIRA – LOTE 4)

EOL-LO409-V03

10/07/2025

PREPARED:		APPROVED:	
By:	**HECTOR CASAS** PARTY CHIEF	By:	**CLARA FERRAN** PROJECT MANAGER
Date:	03/07/2025	Date:	10/07/2025
Signature:		Signature:	

REVISIONS:			
Revision:	**Modification causes:**	**By:**	**Date:**
01	Document Creation	Hector Casas	03/07/2025
02	Document Revision	Clara Ferran	10/07/2025
VERSION	Choose an item		Click for date.

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Tables

1. Introduction

EOLOS Floating Solutions has successfully completed the deployment of its metocean buoy unit FLS200 E42 at the Ericeira Site, for the LNEG wind and metocean measurement campaign.

This document provides a summary of the buoy commissioning at its installed location offshore during the 25th of June 2025.

All relevant information regarding the offshore operation is explained in this document.

2. Overview

This section describes the buoy and mooring characteristics and provides the coordinates where the buoy was deployed.

2.1. Buoy Specifications

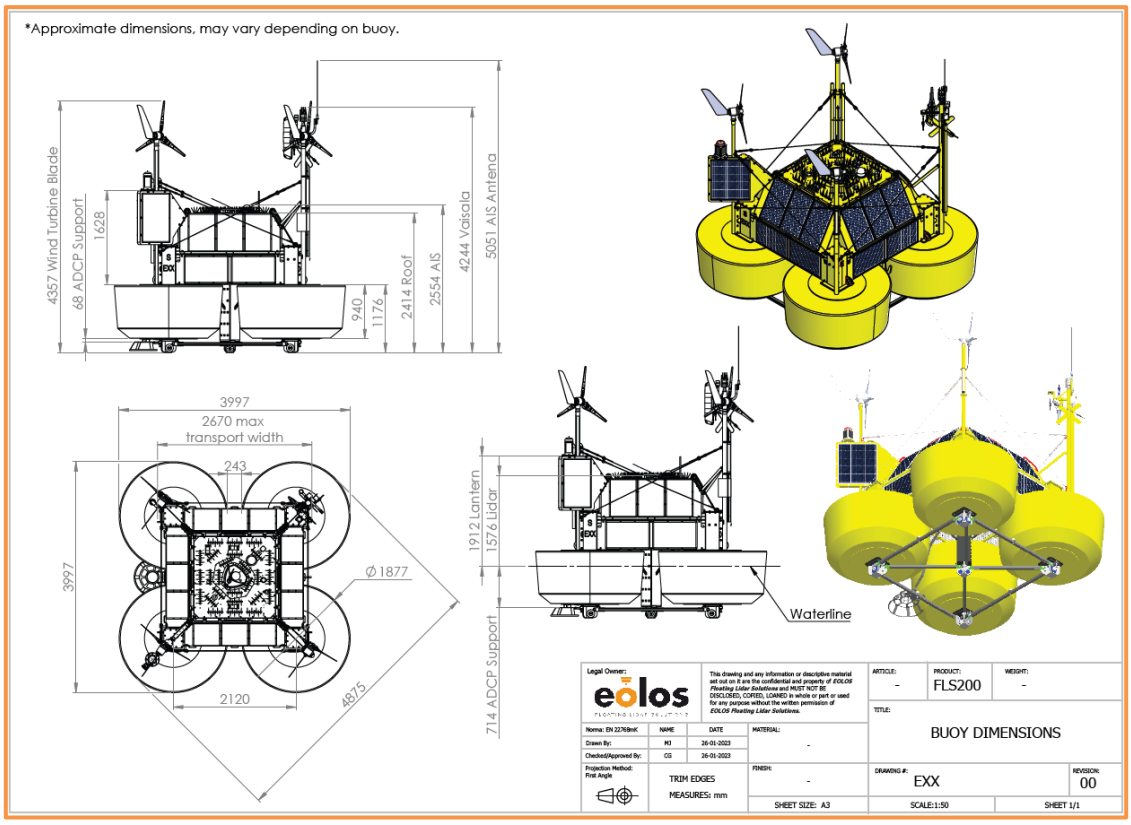


Figure 1: FLS200 E42 general arrangement.

EOLOS FLS200 buoy main dimensions (mm)		
A	External width with floaters	3997
B	Max. diagonal width (with floaters)	4878
C	Total height with masts (including wind generator)	5300
D	Total height without masts	2551
E	Height from floaters deck to top of buoy cover	1250
F	Minimum distance between floater deck and wind generator	2150

Table 1:. FLS200 E42 main dimensions.

2.2. As Laid Mooring

The EOLOS FLS200 E42 buoy at the Ericeira Site has a standard mooring assembly, common for all units, and a site-specific mooring design.

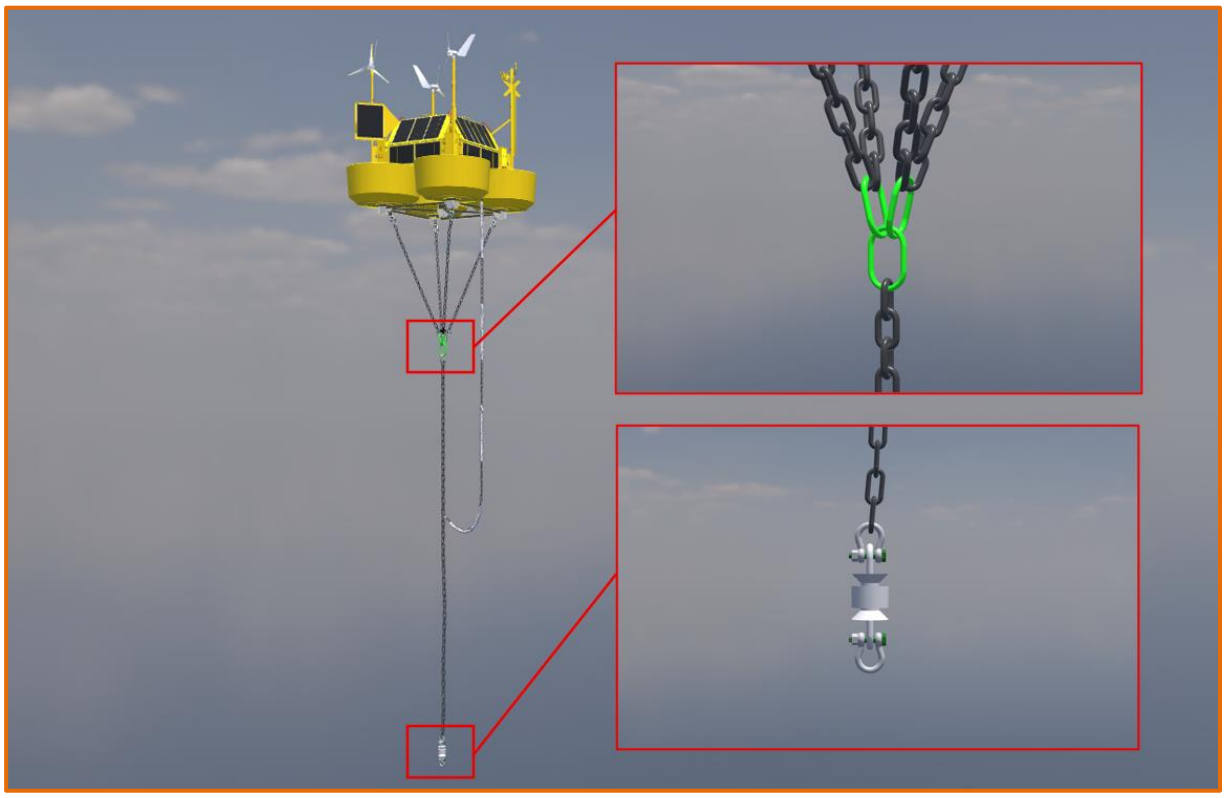


Figure 2: Standard upper mooring lay out and auxiliary/recovery line connection distance.

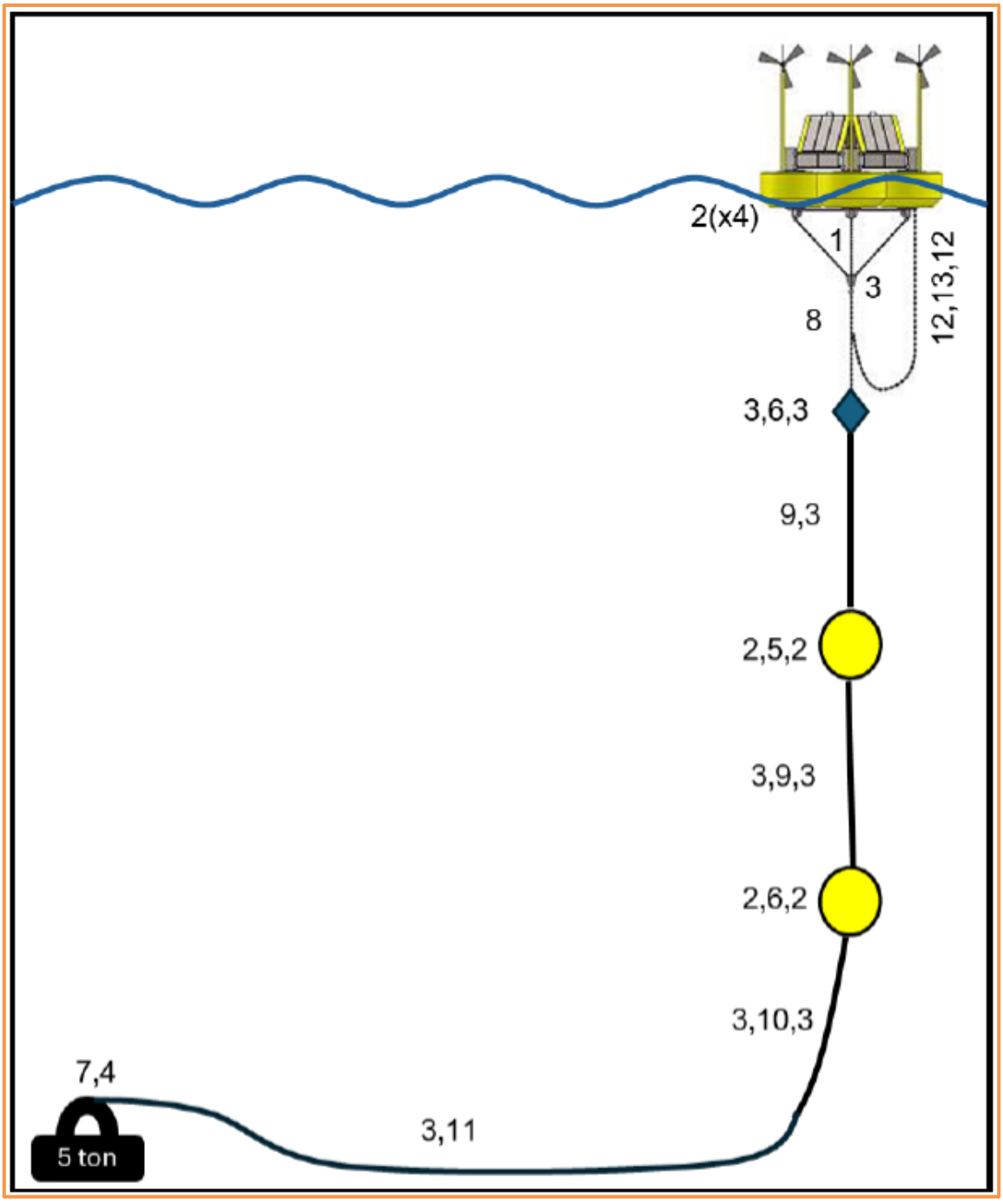


Figure 3: LO4 (Lote 4) project mooring layout.

Client		LNEG		
Document ref		EOL-ML-LO4		
REVISION		00		
CREATED BY		17/12/2024	WATER DEPTH 75 m	
SITE		LO4	E42	
Item	Qty	Equipment	SWL [kN]	Length [m]
		FLS200 Standard Mooring Assembly		
		EOLOS FLS200		
1	1	26mm, 4-Leg chain to 1-Chain Assambly	392	4
2	8	12t SWL Safety bow shackle	118	0,2
		MOORING BRIDLE		
3	9	13.5T Safety bow shackle	132	0,2
4	1	25T Safety bow shackle	245	0,3
5	2	230kg Net Buoyancy Midline Buoy	215	1,3
6	1	38mm SWIVEL ASSEMBLY (SWL 20.5t)	201	0,3
7	1	STEEL CLUMP WEIGHT 5,0 t		
8	1	28mm stabilizing chain	204	10
9	2	28mm G2 STUDLESS CHAIN	204	20
10	1	28mm G2 STUDLESS CHAIN	204	40
11	1	36mm G2 STUDLESS CHAIN	336	200
		AUXILIARY RECOVERY LINE		
12	2	6.5T Safety bow shackle	63	0,1
13	1	16 mm G2 STUDLESS CHAIN	66	10
Designed by:		A. Herrera		
Approved by:				
Date:				

Table 2: Bill of material (Lote 4).

2.3. Installation Locations

The **EOLOS FLS200 E42** was installed at the following coordinates.

FLS200 Unit	LAT:	LONG:	Depth (m)
FLS200 E42 Ericeira (Lote 4) Project Coordinates	39° 5' 12.161" N	9° 37' 56.108" W	74,5
	39° 5.20268' N	9° 37.93513' W	
	39.086711° N	9.632252° W	
FLS200 E42 Ericeira (Lote 4) Final Coordinates	39° 5' 12.450" N	9° 37' 56.328" W	76
	39° 05.2075' N	9° 37.9388' W	
	39.086792° N	9.632313° W	

Table 3: FLS200 Buoy Coordinates

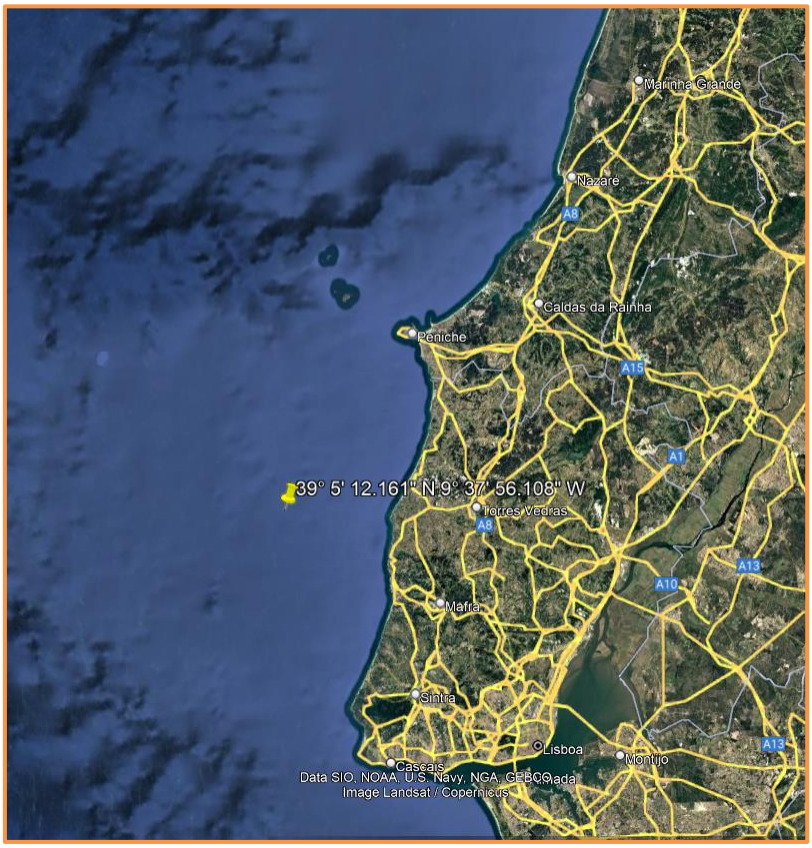
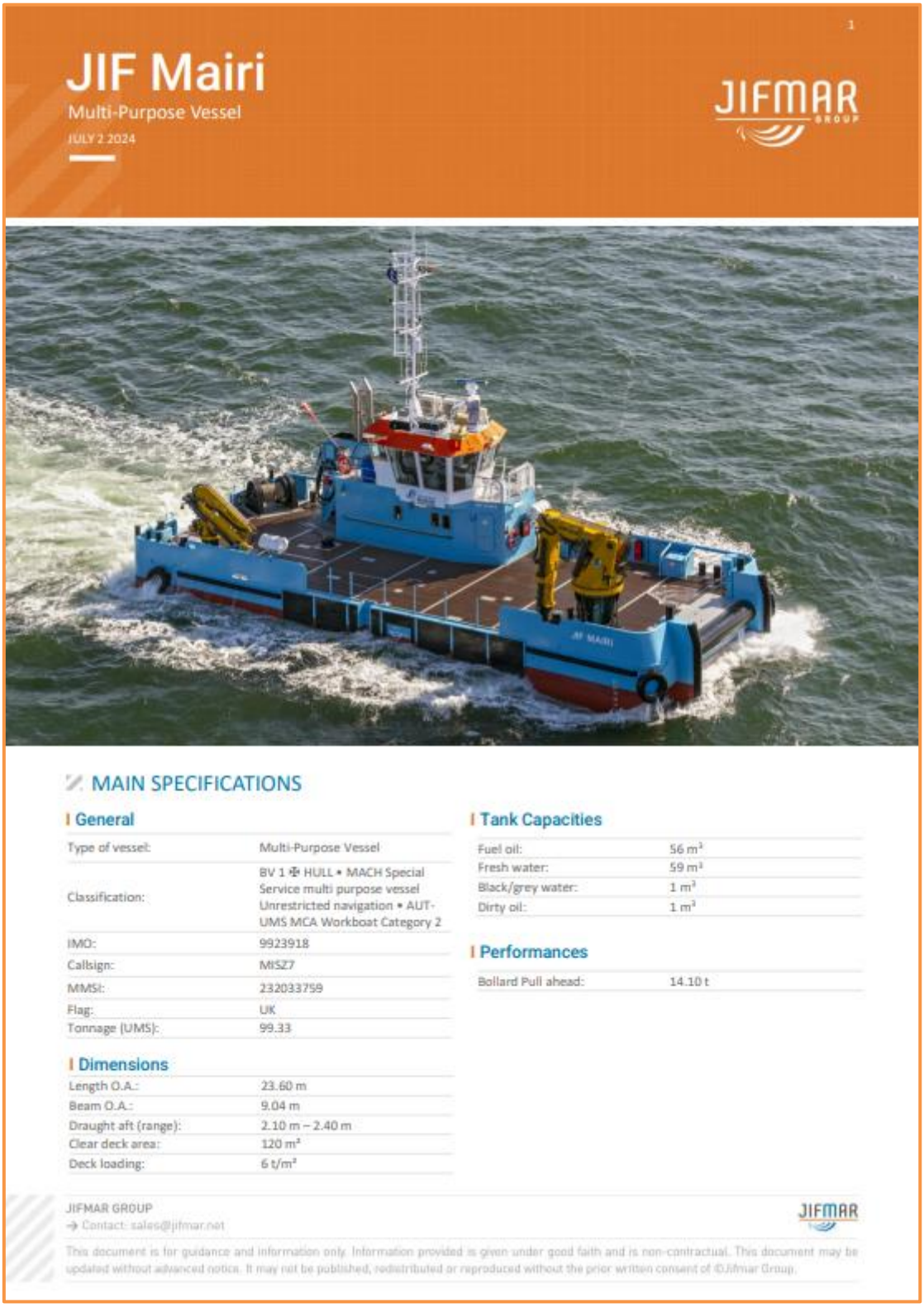


Figure 4: Ericeira - LO4 site location on map.

3. Vessel

Vessel Name: Jif Mairi



JIF Mairi

Multi-Purpose Vessel

JULY 2 2024

JIFMAR GROUP

MAIN SPECIFICATIONS

General

Type of vessel:	Multi-Purpose Vessel
Classification:	BV 1 ✠ HULL • MACH Special Service multi purpose vessel Unrestricted navigation • AUT-UMS MCA Workboat Category 2
IMO:	9923918
Callsign:	MISZ7
MMSI:	232033759
Flag:	UK
Tonnage (UMS):	99.33

Dimensions

Length O.A.:	23.60 m
Beam O.A.:	9.04 m
Draught aft (range):	2.10 m – 2.40 m
Clear deck area:	120 m²
Deck loading:	6 t/m²

Tank Capacities

Fuel oil:	56 m³
Fresh water:	59 m³
Black/grey water:	1 m³
Dirty oil:	1 m³

Performances

Bollard Pull ahead:	14.10 t

JIFMAR GROUP

→ Contact: sales@jifmar.net

JIFMAR

Figure 5: Vessel selected for the operation and its specifications.

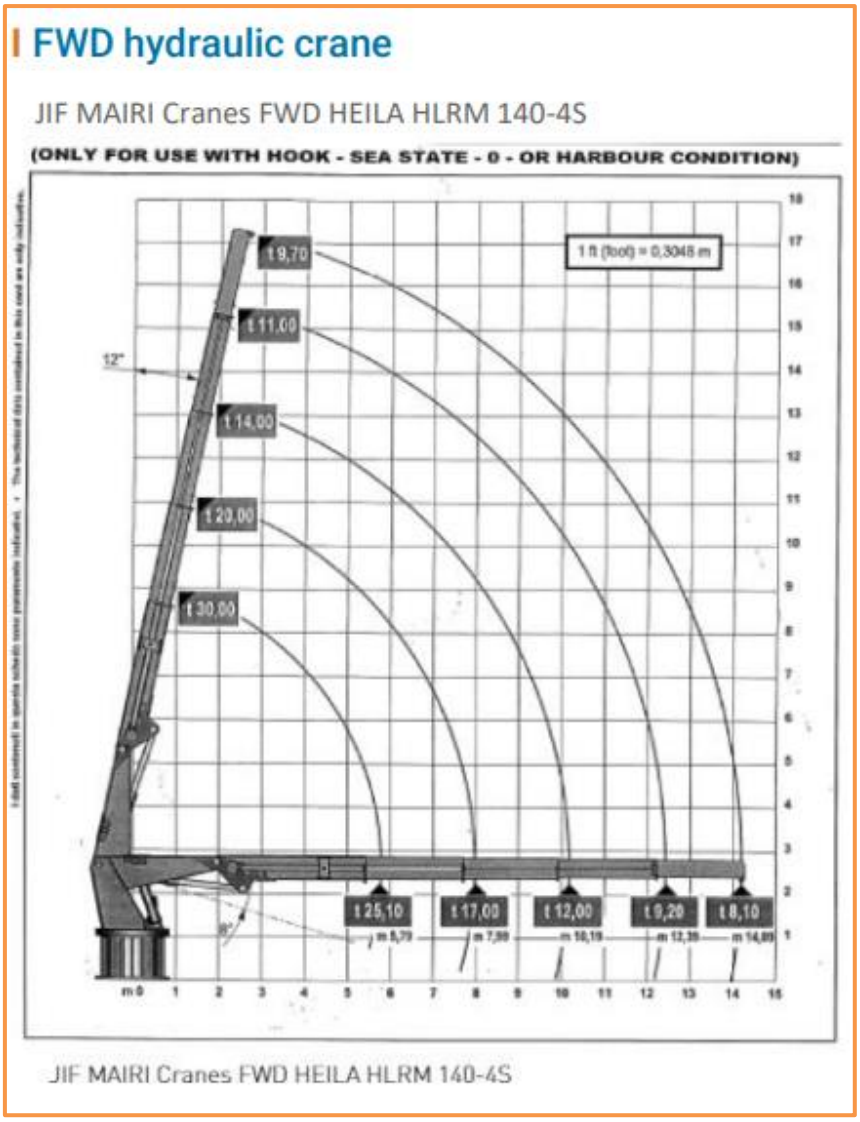


Figure 6: Crane diagram

4. Deploy Operation

4.1. Personnel Onboard

Name	Position	Company	Location
Hector Casas	Party Chief	EOLOS	Offshore
Naim Muñoz	Field Engineer	EOLOS	Offshore
	Captain	Jifmar	Offshore
	Crane Operator	Jifmar	Offshore
	Chief Engineer	Jifmar	Offshore
	Deck Hand	Jifmar	Onshore

Table 4: People involved in the operations.

4.2. Weather forecast

The maximum forecasted weather conditions were:

Hs(m)	Hmax(m)	Wind speed (m/s)
0.71	2.54	4.2

Table 5: Weather conditions during the operations.

4.3. Procedure

On the morning of June 25, the EOLOS personnel mobilized in Aveiro together with the port stevedores transferred the FLS200 E42 and its associated mooring system from the storage area to the quayside where the MV Jif Mairi was berthed.

Using the vessel's forward crane, two chain lengths -100 meters each, of 36mm diameter- were loaded on board. One of the chain lenght was flaked out on the port side near the roller, while the other one was spooled onto the winch. 100 meters of the chain were wound onto the drum, with the remaining 100 meters stowed on the starboard side.

Figure 7: 32mm chain spooled onto the main winch drum.

Following the chain loading, the 5-ton cast iron sinker was brought on board, secured between the towing pins, and connected to the 36mm chain spooled on the winch. The midline floaters, along with the 40-meter segment + the 20-meter segment of 28mm studless chain, were loaded. The chains were flaked out on the starboard side near the roller, and the floaters were positioned forward of the chain.

Additionally, the 10-meter upper mooring chain was loaded and routed aft of the forward crane. Finally, the FLS200 E42 was loaded and stowed near the starboard-side opening. All shackles were connected and welded, and the buoy, chains and floaters were securely lashed for transit.

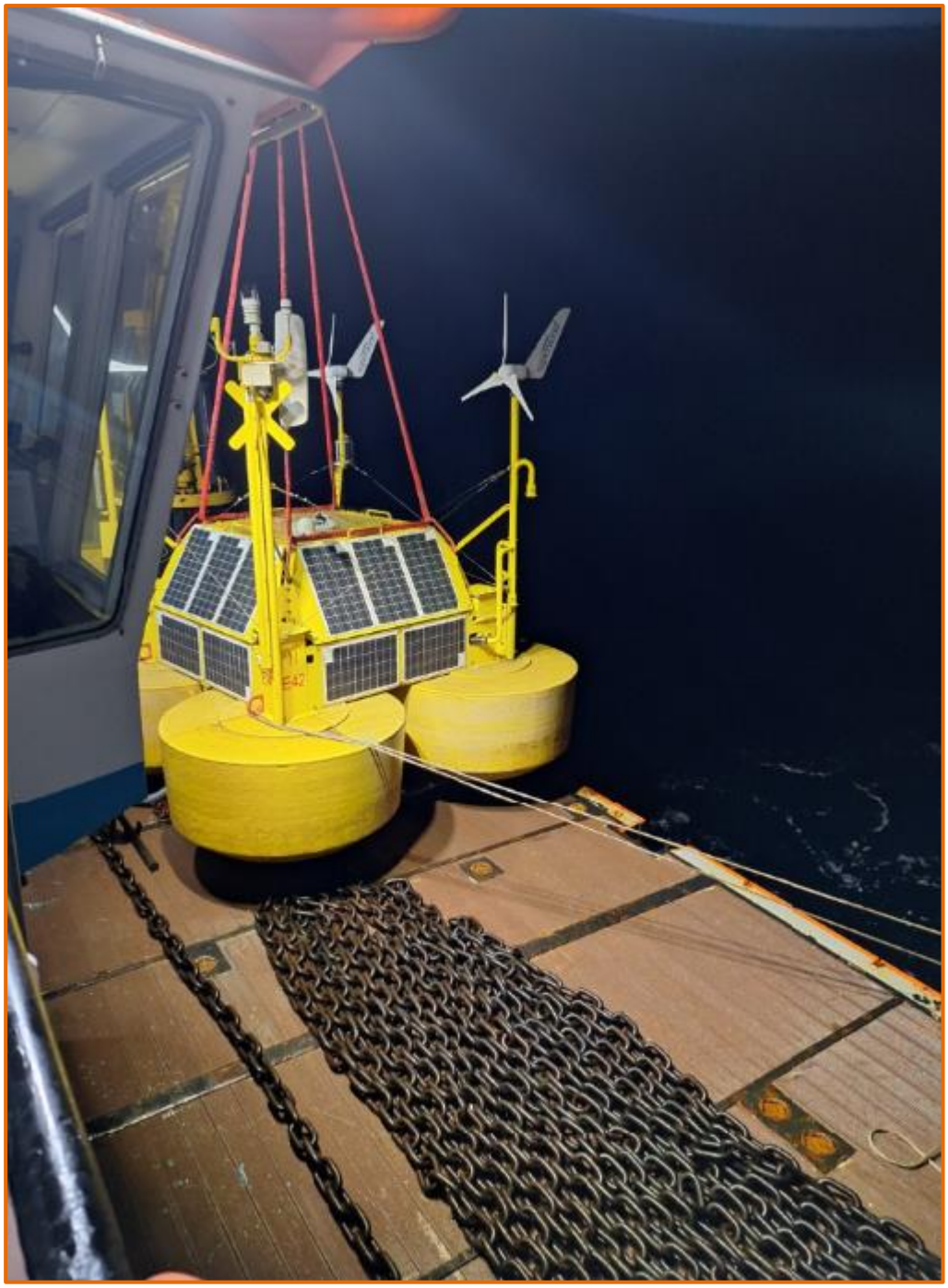


Figure 8: Deck arrangement.

At 10:00 (UTC), after notifying the Aveiro port pilots, the MV Jif Mairi departed for the Ericeira site, arriving approximately at 21:30 (UTC).

Before starting the buoy deployment, a TBT was held at the bridge with all involved personnel at 22:15 UTC. The operation began with the preparation of the Seacatch Quick Release arrangement on the crane hook, connecting one end of the sling to the quick release and the other end to the crane hook, next the swivel was secured on deck and the upper mooring chain thrown overboard on the starboard side. The buoy FLS200 E42 was lifted and lowered onto the water surface through the starboard-side opening. Once afloat, the crew activated the quick

release mechanism and removed the slings from the buoy. The taglines were detached, and the skipper maneuvered the vessel to position the buoy near the bow roller.

As the vessel slowly moved away from the buoy, the securing point on the bow was released, triggering a free fall of the first 40 meters of 28 mm chain. This segment dragged the first midline floater, the second 40-meter segment of 28 mm chain, and the second floater into the water. A pre-installed securing point below the second floater arrested the fall of the chain.

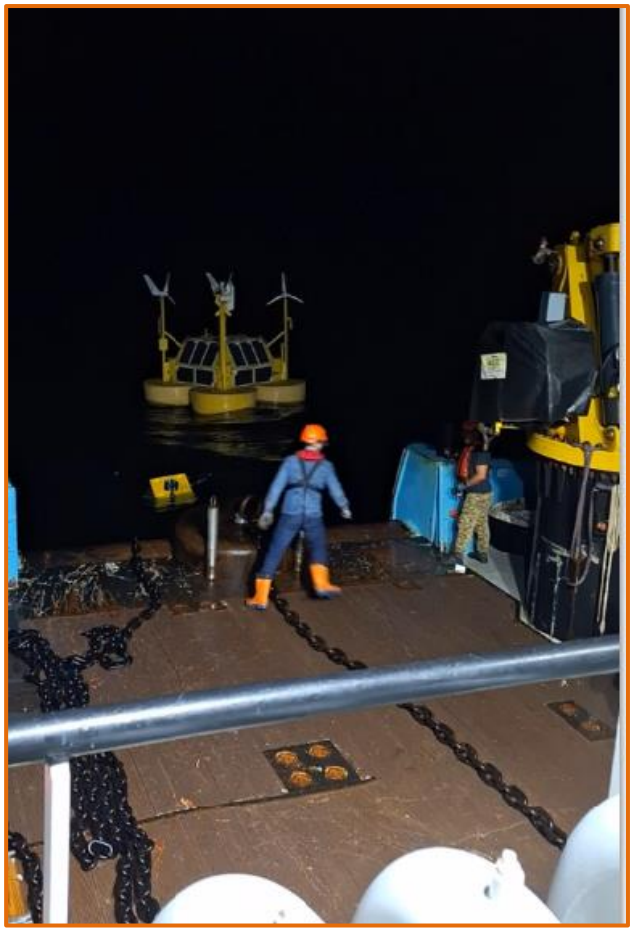


Figure 9: Deployment of floaters.

The operation continued with the deployment of the clump weight. The crane was attached to the 32 mm chain near the anchor and lifted it to the water surface. The winch was then heaved in, transferring tension from the crane to the winch and allowing safe disconnection of the crane. With the crane detached, the 32 mm chain spooled on the winch was gradually paid out until only the last meters remained near the roller.

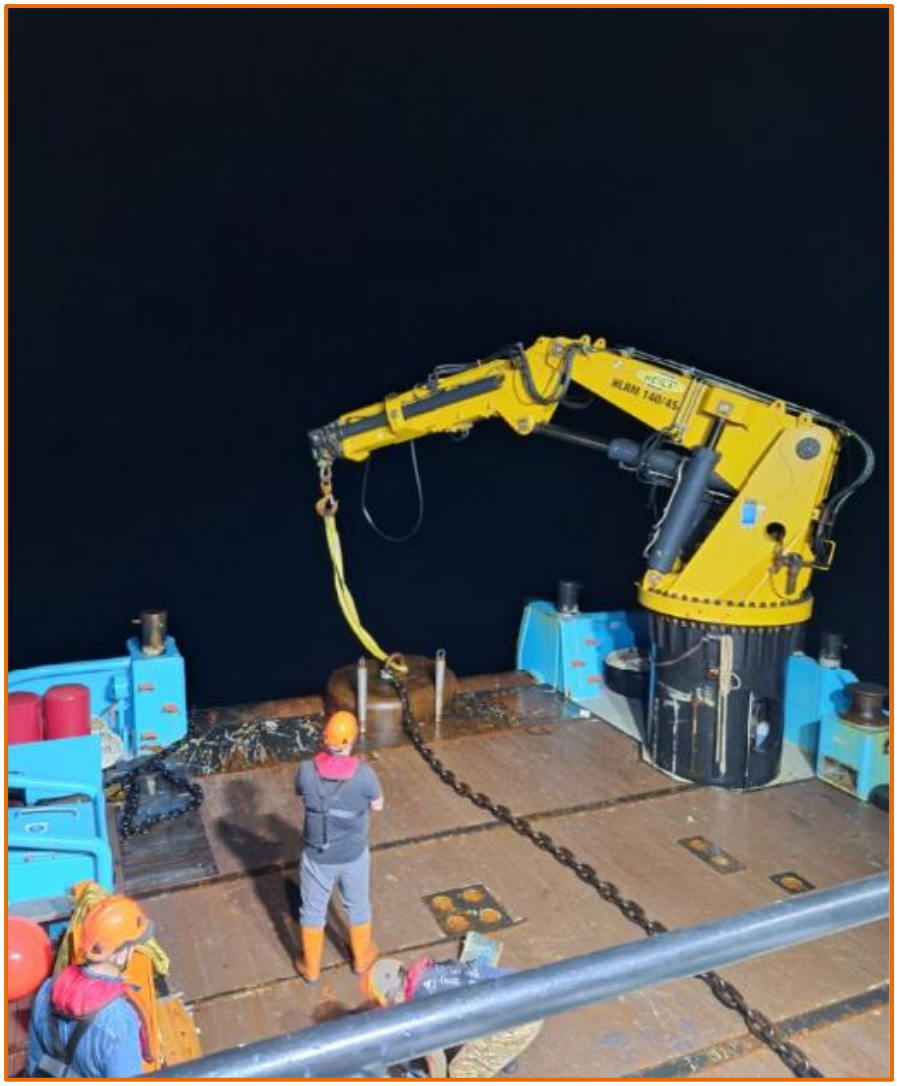


Figure 10: Deployment of CW.

At this point, both the crane and the tugger winch were connected to the 32 mm chain to act as temporary securing points. This setup allowed the winch to be disconnected from the deployed chain. The remaining 32 mm chain, previously stowed on the starboard side, was then spooled onto the winch drum and connected to the other segment near the stern roller. Heaving in on the winch released the tension from the crane and tugger winch, which were subsequently disconnected. The remaining 32 mm chain was then paid out.

To manage the final section of the chain, the crane was used to stop the last few meters, facilitating disconnection from the main winch. The chain was then connected to the 28 mm chain that had been previously flaked out on the port side.

Once the shackle between the 32 mm and 28 mm chains was connected and welded, the quick release mechanism was rigged to the main winch wire. Two 6-meter-long slings (SWL 3t) were connected to the mooring line onboard: one at the connection between the 32 mm and 28 mm chains, and the other below the securing point beneath the second midline floater.

After passing the safety pin of the quick release, the captain heaved in the main winch wire, transferring tension to the quick release and allowing all remaining securing points to be safely disconnected.

To finalize the deployment, the crew cleared the deck and moved to the vessel bridge, from where the quick release was activated. Upon release, the 20 meters of 28 mm chain free-fell into the water, completing the deployment of the FLS200 E42 buoy at the Ericeira site. At 23.15 UTC, the EOLOS engineer onboard *Jif Mairi* confirmed the successful completion of the Site Acceptance Test (SAT), and the vessel began its return voyage to the Port of Aveiro.

Figure 11: SAT completed.

5. HSE

A summary of HSE performance during the project preparation, commissioning, mobilization, and installation phases of the project is detailed below.

5.1. Project risk assessment and method statement

The RAMS document *EOL-LO404-V01-OPS-RAMS for Campaign Deployment* details the health, safety, and environmental risks, and deployment methodologies, associated with the deployment of the FLS200 E42.

5.2. Vessel inductions and emergency drills

A vessel induction was given by the vessel chief officer for the EOLOS personnel as they joined the Jif Mairi on the 25nd of June 2025.

5.3. HIRA meeting & Toolbox talk

A HIRA meeting and Toolbox Talks were carried out with all bridge and back deck personnel before all operations. The TBTs included:

- A review of the recovery methodology for the FLS buoy by the project RAMS document.

- Review safety on the back deck with regards to moving chains, rope, and bights on deck.
- EOLOS Party Chief and Captain overseeing back deck operations from the bridge, with constant VHF communications.

5.4. Incidents, accidents, and near misses

No HSE incident, accidents or near misses were detected during the maintenance operation.

Hazard Observations		
Incident / Near Miss / Accident	**Description**	**Lesson Learnt**
N/A		

Table 6: Hazard Observations

6. Daily Progress Report

- 25th of June 2025: Buoy deployment at the Ericeira Site.

eolos FLOATING LIDAR SOLUTIONS	**Daily Progress report 25/06/2025**	Code:	LO4
		Date:	22/06/2025
		Version:	01

Project	LO4			Date	25/06/2025
Coordinates	39° 5′ 12.18″ N	9° 37′ 56.10″ W		Vessel	Jif Mairi
Activity	Campaign Deployment			Country	Portugal

Health and Safety (HSE)	
Vessel inspection	Yes
Vessel induction	Yes
RAMS review	Yes
Toolbox talk	Yes
Management of Change	No
Incidences	
1	
2	
3	
4	

Personnel		
Name	Position	Role
Naim Muñoz	Field Engineer	Oversee FLS200 and assist as required
Hector Casas	Party Chief	Supervise FLS200 deployment

Weather conditions			
Weather	Dark	Max wind (m/s)	4,20
Visibility	Bad	Max waves (m)	0.71
Operational details			
Asset S/N	E42		
As laid coordinates	39° 5′ 12.42″ N / 9° 37′ 56.34″ W		
As laid new coordinates	*N/A*		
Arrival (UTC)	22:30		
Departure (UTC)	23:20		
Server Actions (START TIME)			
Server Actions (END TIME)			

Narrative			
Time (Local)	Time (UTC)	Day (UTC)	Description
08:30	07:30	25/06/2025	Loading of chains, midline floaters and FLS200 started
11:00	10:00	25/06/2025	Loading completed
11:00	10:00	25/06/2025	Jif Mairi departure from Aveiro port

Figure 12: Daily Progress Report (1/2)

	Daily Progress report 25/06/2025	Code:	LO4
		Date:	22/06/2025
		Version:	01

22:30	23:30	25/06/2025	Arrival at the Ericeira (LO4) site
22:41	23:41	25/06/2025	FLS200 E42 lifted on the water
22:49	23:49	25/06/2025	Midline floaters released
22:57	23:57	25/06/2025	Starts deployment of clump weight
23:15	00:15	25-26/06/2025	Lower mooring released. FLS200 deployed
23:20	00:20	25-26/06/2025	SAT completed
23:20	00:20	25-26/06/2025	Navigation to Aveiro port started.

Service visit details and outcomes
Work completed
- Loading of chain, midline floaters and FLS200 E42 onboard Jif Mairi. - Navigation to Ericeira (Lote 4) site. - Deployment of FLS200 at the Ericeira site.
Proposed work for the next 24 hours
- Navigation back to Aveiro Port. - Loading of FLS200 E02 and its mooring system. - Navigation to Viana (Lote 1) site. - Deployment of FLS200 E02 at the Viana site.
Reference documentation
EOL-LO404-V02-OPS-RAMS for Campaign Deployment
Comments (Challenges and issues)

Author	
Name: Hector Casas	Signature: 

Figure 13: Daily Progress Report (2/2)

7. Appendix 1: Site Acceptance Test (SAT)

Site Acceptance Test – Certificate

Project:	Ericeira (lote 4)
Client:	Laboratorio Nacional de Energia i Geologia (LNEG)
FLS200:	E42
Supplier:	EOLOS Floating Lidar Solutions
Inspection place:	Ericeira Site
Inspection Date:	25/06/2025

Table 7: Site Acceptance Test details.

Testing

Item Tested	Yes/No/NA	Comments
LiDAR	Yes	Capturing data at correct heights
ADCP	Yes	Capturing data at correct depth
Wave	Yes	Capturing data
Weather Station (Airmar)	Yes	Capturing data
Weather Station (Vaisala)	Yes	Capturing data
Compass (Roof)	Yes	Heading: 296.40º
Compass (Mast)	Yes	Heading: 294.70º
Fuel Cell	Yes	No errors
Wind turbine (East)	Yes	Producing energy
Wind turbine (East)	Yes	Producing energy
Wind turbine (East)	Yes	Producing energy
Solar Panels	Yes	Producing energy
AIS	Yes	Communicating
Navigation Light	Yes	Flashing
4G Neptulink	Yes	Communicating
Satellite Iridium (Roof)	Yes	Communicating
Satellite Iridium (Mast)	Yes	Communicating

Table 8: Instruments tested.

SAT

(Site Acceptance Test)

Test Information

Buoy ID:	E42	Date:	2025-06-25
Project:	LO4	Time:	23:14:00 UTC
Personnel Responsible:	Naim Muñoz	Location:	Ericeira Site
Operation Code:	E42.03-045		

Project		Clump weight	
Latitude:	39º 5.203' N	Latitude:	39º 5.207' N
Longitude:	9º 37.935' W	Longitude:	9º 37.938' W

** Test performed in water in open sky*

LiDAR

2025-06-25 23:11:00 UTC

Serial number: 1834

Light Detection and Ranging

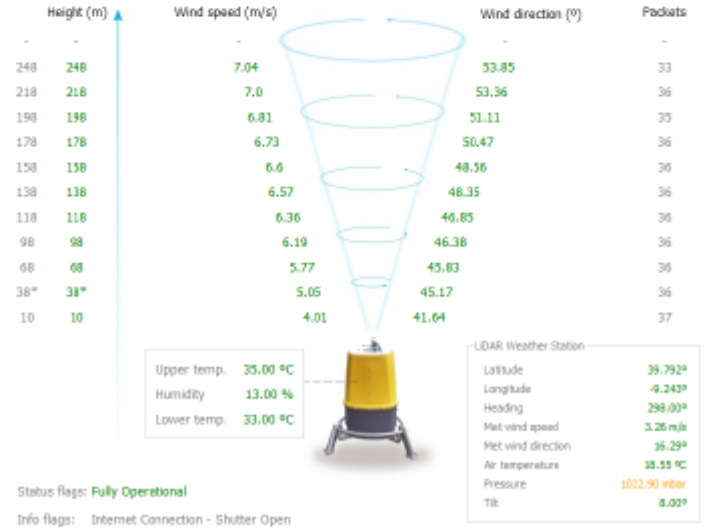


Figure 14: Site Acceptance Test Report (1/6).

ADCP

2025-06-25 23:13:33 UTC

Serial number:	103629	Heading:	8.70º
Temperature:	18.23 ºC	Pitch:	0.70º
Pressure:	0.90 dBar	Roll:	-3.10º

Depth (m)	Velocity (m/s)	Direction (º)	Depth (m)	Velocity (m/s)	Direction (º)
4.2	0.353	52.5	44.2	0.155	60.1
6.2	0.292	54.2	46.2	0.15	59.5
8.2	0.262	67.1	48.2	0.157	67.9
10.2	0.315	77.0	50.2	0.141	70.2
12.2	0.343	74.8	52.2	0.212	66.7
14.2	0.333	79.8	54.2	0.25	67.9
16.2	0.336	79.9	56.2	0.243	71.3
18.2	0.304	71.2	58.2	0.249	74.2
20.2	0.354	71.1	60.2	0.216	72.2
22.2	0.289	64.1	62.2	0.246	64.2
24.2	0.252	57.9	64.2	0.253	63.9
26.2	0.189	62.9	66.2	0.228	76.8
28.2	0.187	64.0	68.2	0.267	70.8
30.2	0.081	66.0	70.2	0.284	67.7
32.2	0.051	24.5	72.2	0.29	72.6
34.2	0.035	25.1	74.2	0.139	97.8
36.2	0.058	43.6	76.2	0.412	80.8
38.2	0.028	210.3	78.2	0.318	72.2
40.2	0.024	90.0	80.2	0.383	59.4
42.2	0.076	62.4	82.2	46.34	225.0

** Values for in water behavior are expected*

Wave

2025-06-25 23:11:05 UTC

Serial number:	2006		
Havg:	0.71 m	Tavg:	6.30 s
Hmax:	2.54 m	Tp:	9.70 s

** Values for dynamic behavior are expected*

AHRS

2025-06-25 23:13:00 UTC

Serial number:	2006		
Pitch min:	-4.98º	Pitch max:	5.91º
Roll min:	-6.46º	Roll max:	5.24º
Yaw min:	-5.67º	Yaw max:	6.82º

** Values for dynamic behavior are expected*

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Figure 15: Site Acceptance Test Report (2/6).

Compasses

2025-06-25 23:11:00 UTC

Compass Mast SN: 2305W034 Compass Roof SN: 2305W032

Orientation

Compass on mast	Compass on roof	LiDAR heading	ADCP heading (*)	External compass	Magnetic declination
294.70º	296.40º	298.00º	8.70º	N/A	-1.3º

Cross-check

	Compass M	Compass R	LiDAR H	ADCP H
Compass R	1.7			
LiDAR H	4.6	2.9		
ADCP H	74.0	72.3	69.4	
Ext. Compass	-	-	-	-

*The 90º mechanical offset of the ADCP is included.

CompassZX is referenced to True North and Compass Roof and Mast are referenced to Magnetic North.

Weather Station

2025-06-25 23:11:00 UTC

Serial number:	V1020752		
Wind speed min	2.10 m/s	Wind dir min	0.00º
Wind speed avg	3.15 m/s	Wind dir avg	41.20º
Wind speed max	4.20 m/s	Wind dir max	358.00º
Wind speed 3s max	3.87 m/s	Wind dir 3s max	65.33º
Temperature:	18.99 ºC		
Pressure:	1021.87 mbar		
Humidity	92.60 %		

* Values for outdoors behavior are expected*

Pyranometer

2025-06-25 23:11:00 UTC

Serial number:	PY 114959	Solar radiation:	0.53 W/m2

* Values for outdoors behavior are expected*

Dataloggers

2025-06-25 23:11:00 UTC

Master		Slave	
Voltage:	12.53 V	Voltage:	13.04 V
SD card space:	29 GB / 30 GB	SD card space:	29 GB / 30 GB

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Figure 16: Site Acceptance Test Report (3/6).

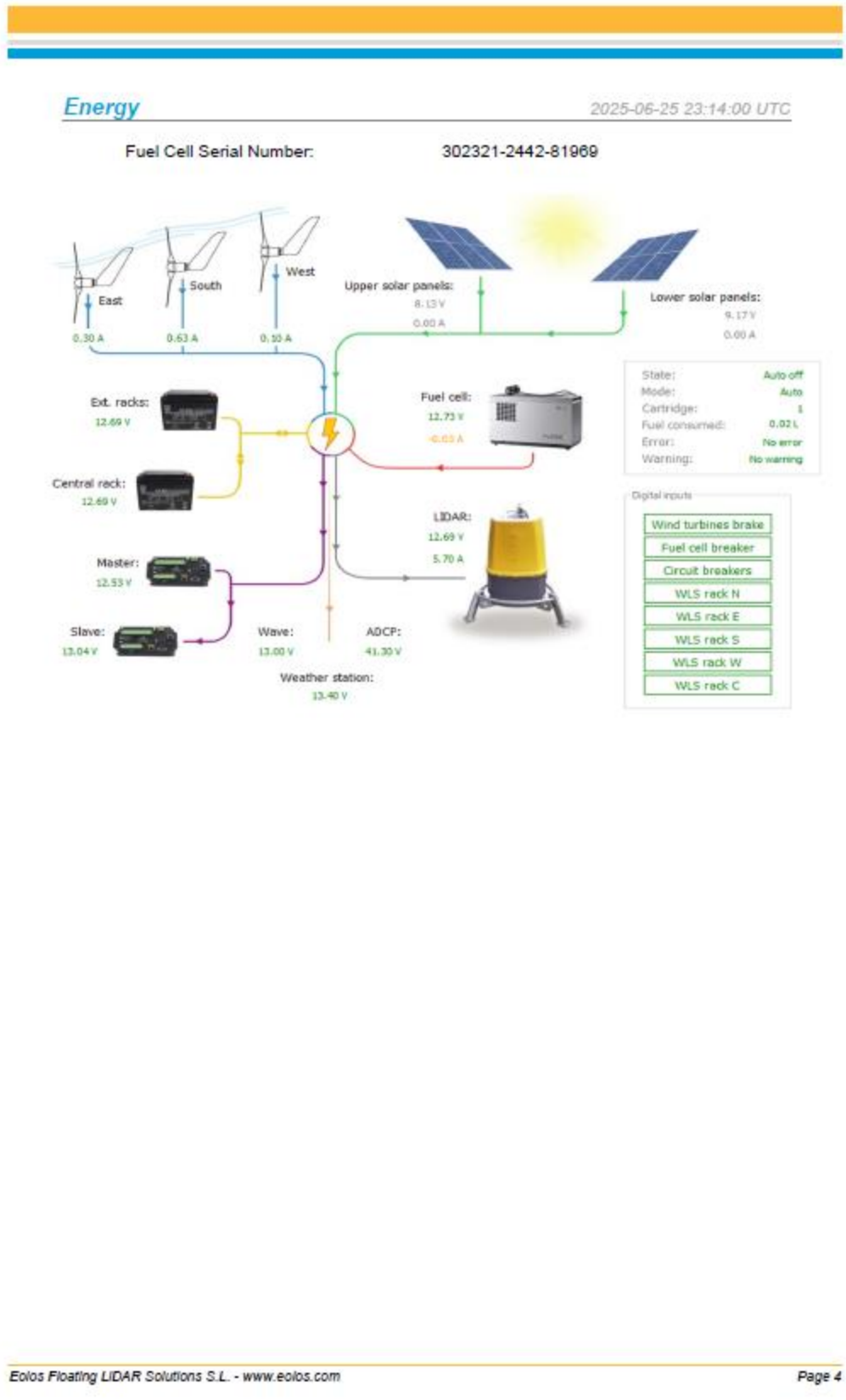

Figure 17: Site Acceptance Test Report (4/6).

GPS

2025-06-25 23:10:00 UTC

Serial number: 6JN006896
Status: Valid position

Position [DMM]

GPS coordinates:
Latitude: 39º 5.204' N
Longitude: 9º 37.9405' W

Project coordinates:
Latitude: 39º 5.203' N
Longitude: 9º 37.935' W

Clump Weight coordinates
Latitude: 39º 5.207' N
Longitude: 9º 37.938' W

LiDAR coordinates:
Latitude: 39º 47.469' N
Longitude: 9º 14.5799' W

AIS coordinates:
Latitude: 39º 5.173' N
Longitude: 9º 37.984' W

Cross-check

	GPS	LiDAR	AIS	Project
LiDAR	85.2 km			
AIS	84.9 m	85.3 km		
Project	8.1 m	85.2 km	89.8 m	
Clump Weight	6.6 m	85.2 km	91.4 m	8.6 m

Checks

(Pending: ! Not Ok: ✗ Ok: ✓)

Device functioning	Status
Lantern flashes when dark	✓
AIS emits signal	✓
Camera remote access	✓
LiDAR window is clean	✓
Clocks are synchronized	✓
GPS data crosschecked with external GPS	✓

Communications	Status
Wi-Fi	✓
4G antenna	✓
Iridium on mast	✓
Iridium on roof	✓

Trackers	Status
SmartOne NW reporting position	✓
SmartOne SE reporting position	✓
SmartOne W reporting position	✓
IDP reporting position	N/A
IDP Daily email configured	N/A
IDP Drift alarm email configured	N/A

Others	Status
Wind turbines brake ON/OFF remotely	✓
Wi-Fi module ON/OFF remotely	✓

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Figure 18: Site Acceptance Test Report (5/6).

Comments

- *Lidar can take up to 72 hours to update the GPS position.*
- *Magnetic deviation of the compasses due to interference from the ship's engines.*

Naim Muñoz Blanco

Field Engineer

Figure 19: Site Acceptance Test Report (6/6).

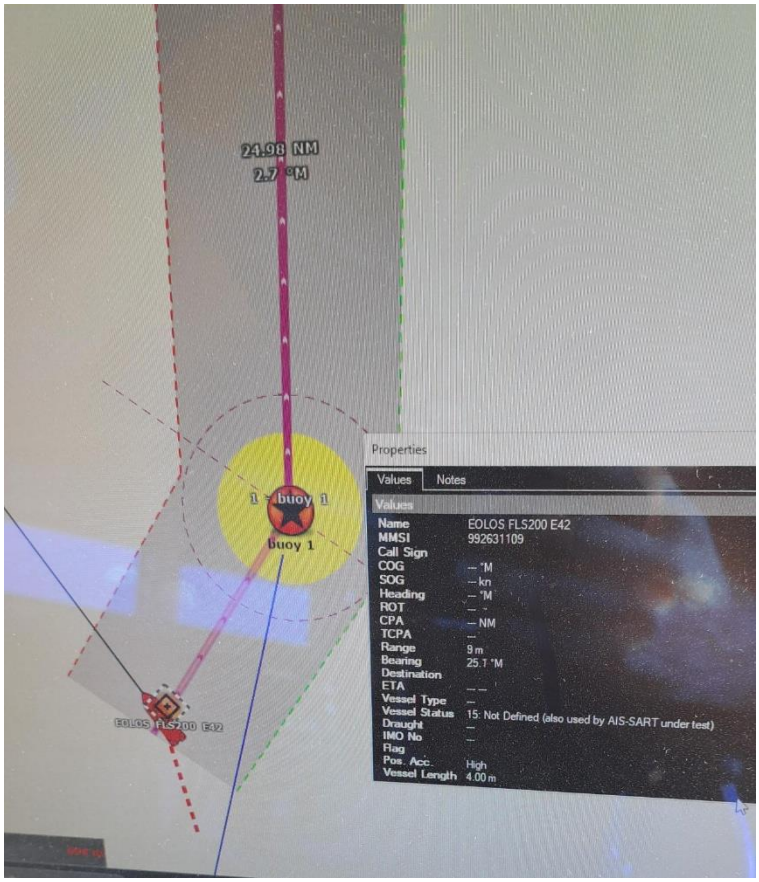

Figure 20: FLS200 E42 AIS signal.