



CAMPAIGN DEPLOYMENT REPORT (FIGUEIRA DA FOZ – LOTE 3)

EOL-LO308-V02



CAMPAIGN DEPLOYMENT REPORT (FIGUEIRA DA FOZ – LOTE 3)

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1. Introduction

EOLOS Floating Solutions has successfully completed the deployment of its metocean buoy unit FLS200 E15 at the Figueira da Foz 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 21st 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

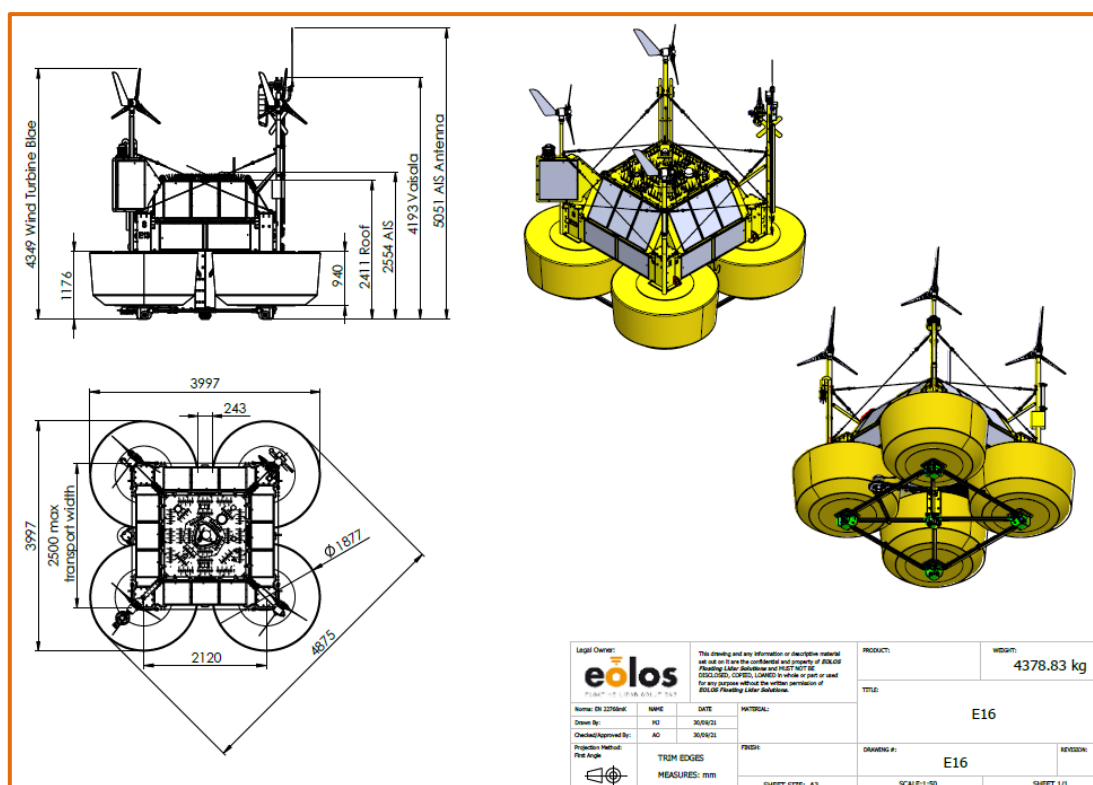


Figure 1: FLS200 E15 general arrangement.

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 the top of buoy cover	1250
F	The minimum distance between the floater deck and the wind generator	2150

Table 1: FLS200 E15 main dimensions.

2.2. As Laid Mooring

The EOLOS FLS200 E15 buoy at the Figueira da Foz site has a standard mooring assembly, common for all units, and a site-specific mooring design.

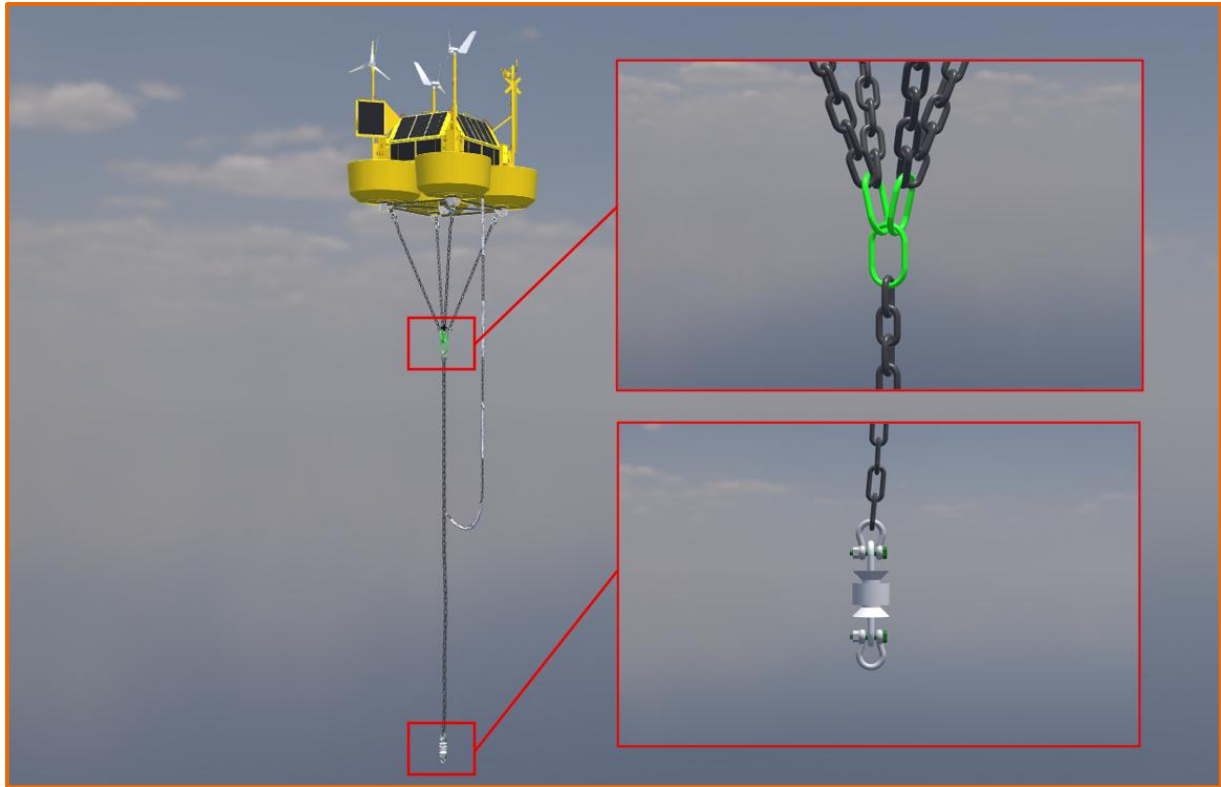


Figure 2: Standard upper mooring lay out and auxiliary/recovery line connection distance.

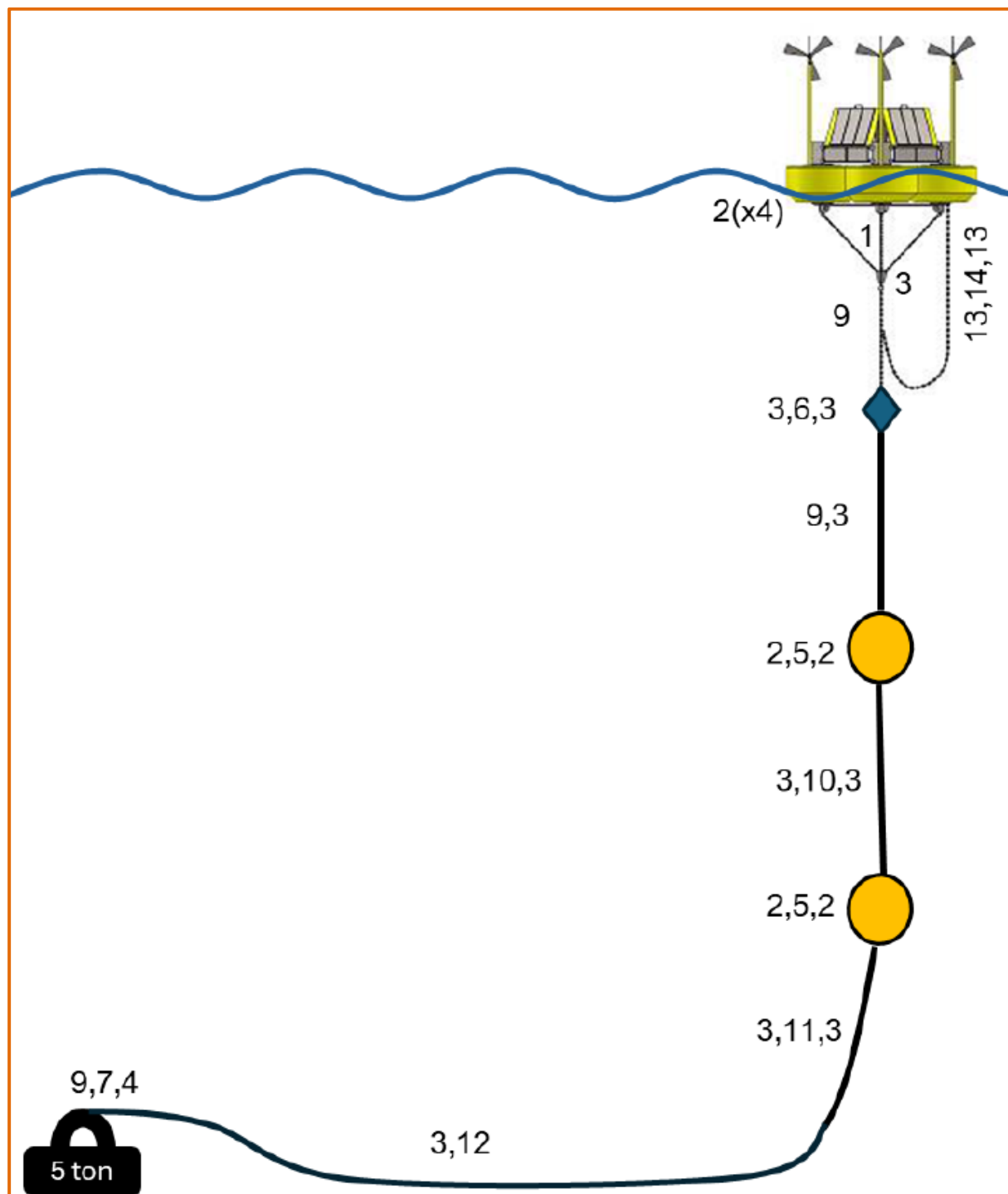


Figure 3: Figueira da Foz site mooring layout.

				
Client		LNEG		
Document ref		EOL-LO306-V01-OPS		
REVISION		0		
CREATED BY		24/11/2024	WATER DEPTH 155 m	
SITE		LO3	E15	
Item	Qty	Equipment	SWL	Length
			[kN]	[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	135	0,2
4	1	25T Safety bow shackle	245	0,3
5	2	750kg 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	1	28mm G2 STUDLESS CHAIN	204	40
10	1	28mm G2 STUDLESS CHAIN	204	60
11	1	32mm G2 STUDLESS CHAIN	256	150
12	1	36mm G2 STUDLESS CHAIN	336	150
		AUXILIAR RECOVERY LINE		
13	2	6.5T Safety bow shackle	63	0,1
14	1	16 mm G2 STUDLESS CHAIN	132	10
Designed by:		A. Herrera		
Approved by:				
Date:				

Table 2: Mooring system bill of materials.

2.3. Installation Locations

The **EOLOS FLS200 E15** was installed at the following coordinates.

FLS200 Unit	LAT:	LONG:	Depth (m)
FLS200 E15 Figueira da Foz (Lote 3) Project Coordinates	40° 11' 10.056" N	09° 30' 03.051" W	154,2
	40° 11.167' N	09° 30.051' W	
	40.186126° N	09.5008475° W	
FLS200 E15 Figueira da Foz (Lote 3) Final Coordinates	40° 11' 09.900" N	09° 30' 03.06" W	154,0
	40° 11.165' N	09° 30.051' W	
	40.186083° N	09.500850° W	

Table 3: FLS200 E15 Buoy Coordinates

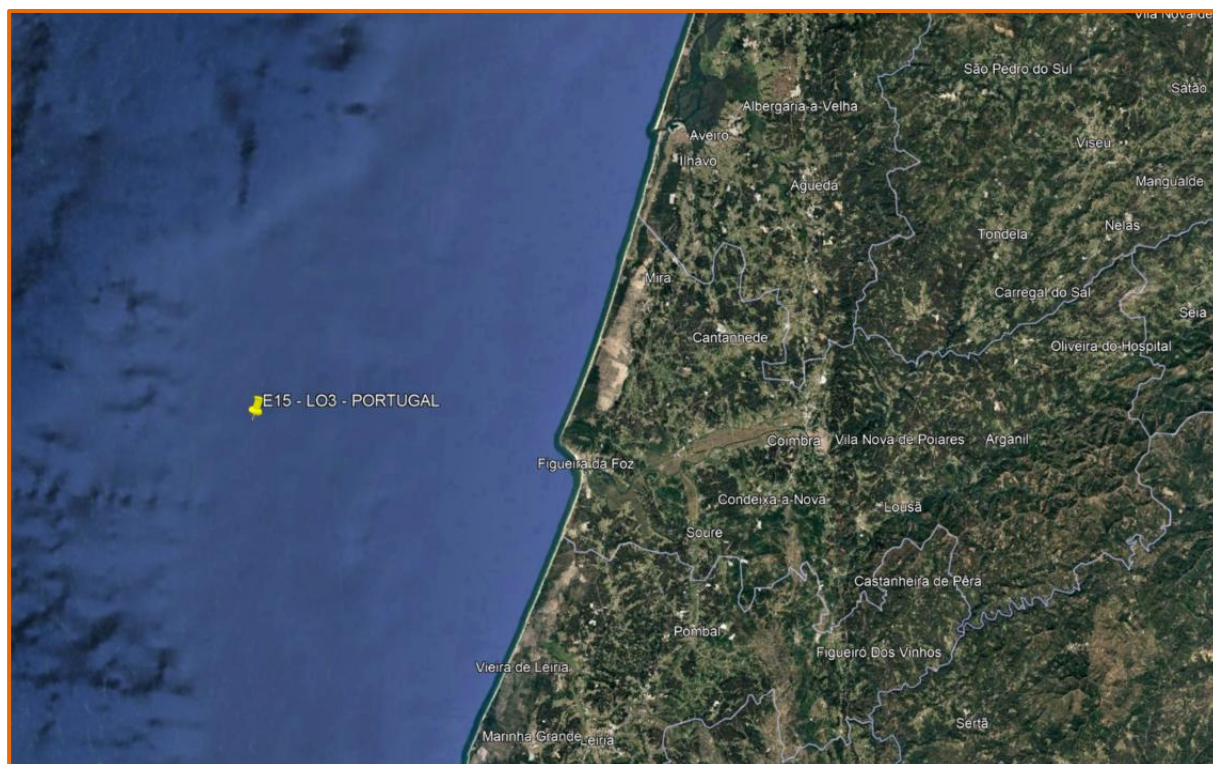


Figure 4: Figueira da Foz site location on map.

3. Vessel

Name: MV Jif Mairi

JIF Mairi

Multi-Purpose Vessel

JULY 2 2024





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 m ²
Deck loading:	6 t/m ²

Tank Capacities

Fuel oil:	56 m ³
Fresh water:	59 m ³
Black/grey water:	1 m ³
Dirty oil:	1 m ³

Performances

Bollard Pull ahead:	14.10 t
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Figure 5: Vessel selected for the operation and its specifications.

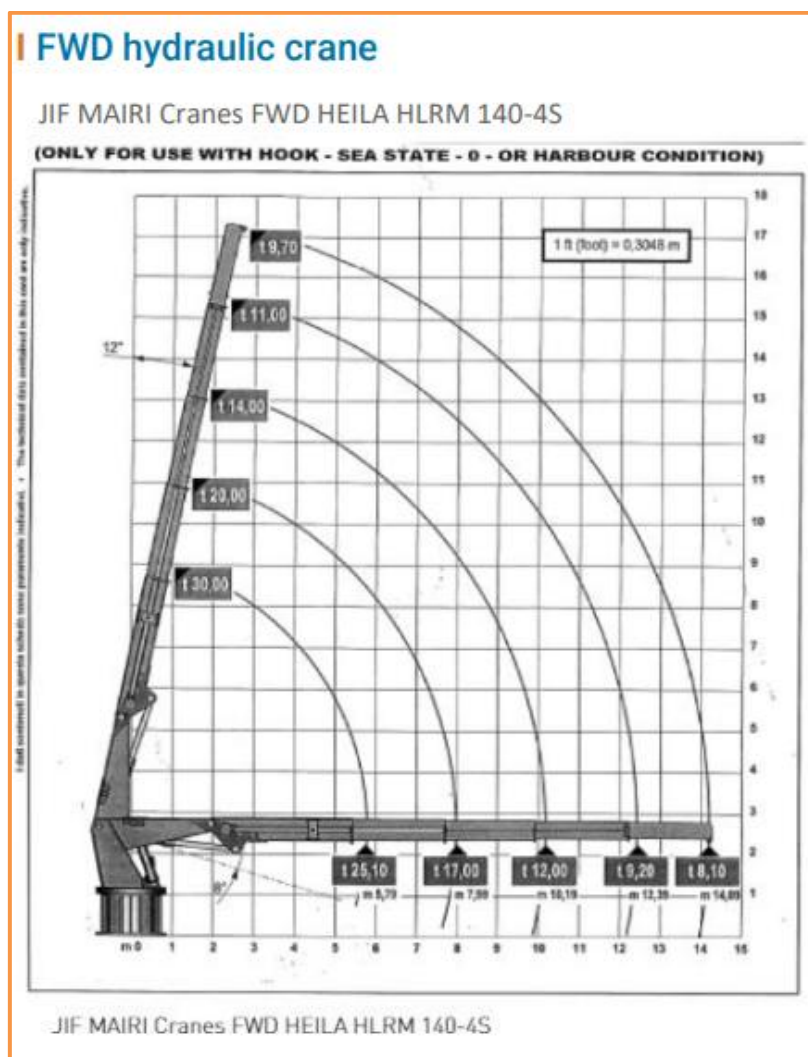


Figure 6: Vessel fore crane diagram.

4. Recovery Operation

4.1. Personnel Onboard

Name	Position	Company	Location
Ignasi Andreu.	Party Chief	EOLOS	Offshore
Mateo Garcia	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 offshore operations.

4.2. Weather forecast

The maximum forecasted weather conditions were:

Hs (m)	Hmax (m)	Wind speed (m/s)
0.8	1.0	10

Table 5: Weather conditions during the operations.

4.3. Procedure

On the morning of June 21, the EOLOS personnel mobilized in Aveiro together with the port stevedores transferred the FLS200 E15 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 -150 meters each, of 32mm and 36mm diameter- were loaded on board. The 32mm chain was flaked out on the port side near the roller, while the 36mm chain was partially spooled onto the winch. Approximately 100 meters of the 36mm chain were wound onto the drum, with the remaining 50 meters stowed on the starboard side.



Figure 7: 36mm 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 two 40-meter segments of 28mm studless chain, were loaded. The chains were flaked out, one on the starboard side and the other on port 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 E15 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.

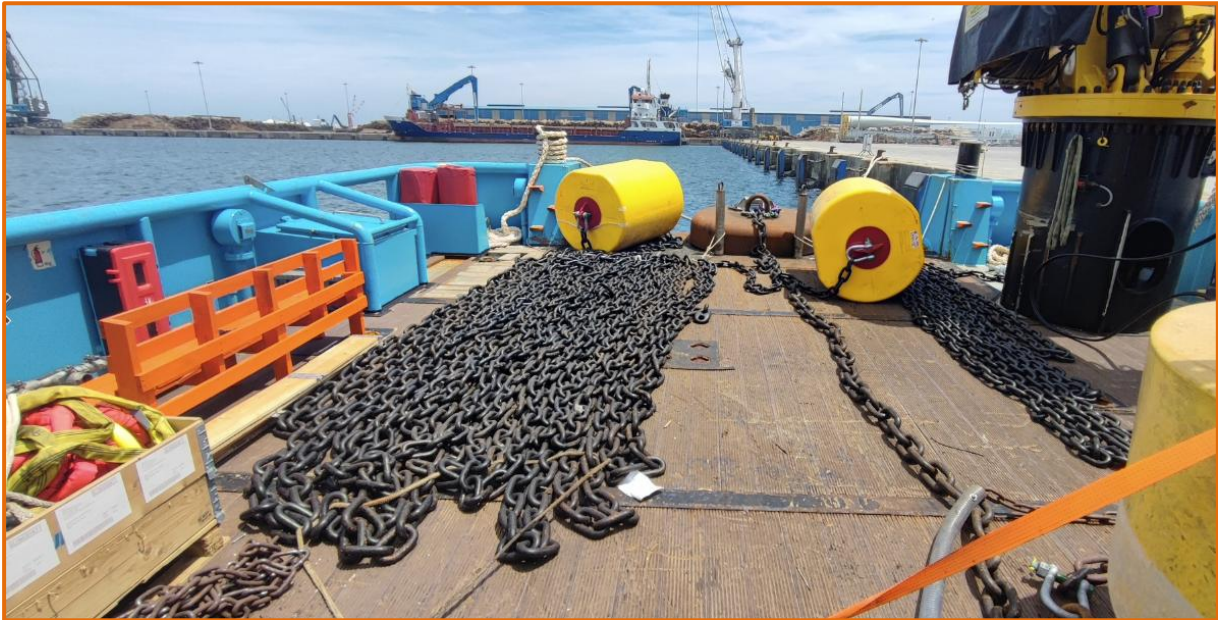


Figure 8: Deck arrangement (1/2).

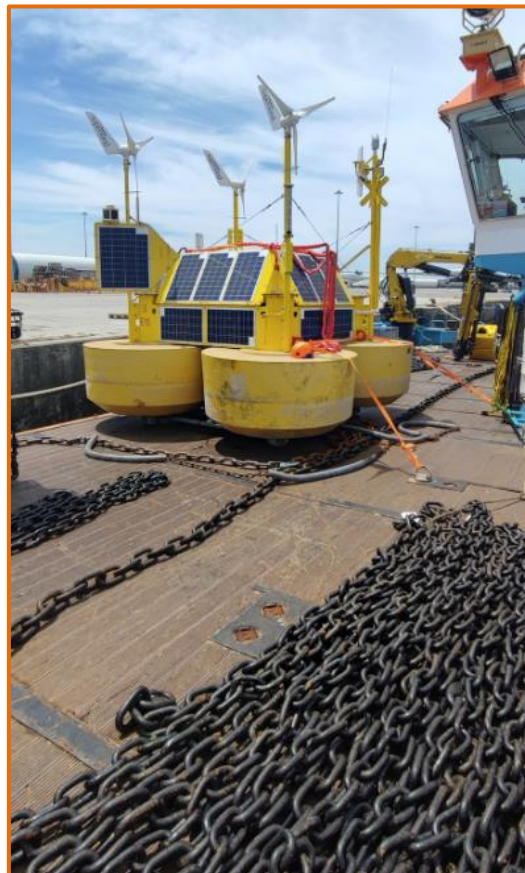


Figure 9: Deck arrangement (2/2).

At 12:20 (UTC), after notifying the Aveiro port pilots, the MV Jif Mairi departed for the Figueira da Foz site, arriving approximately at 18:00 (UTC). A Toolbox Talk was conducted on the bridge with the EOLOS team and all the crewmembers, where the sea conditions were assessed and the deployment methodology described on the RAMS was reviewed.

The operation started at 18:15. First the FLS200 was connected to the crane using the Quick Release, next the swivel was secured on deck and the upper mooring chain thrown overboard on the starboard side.

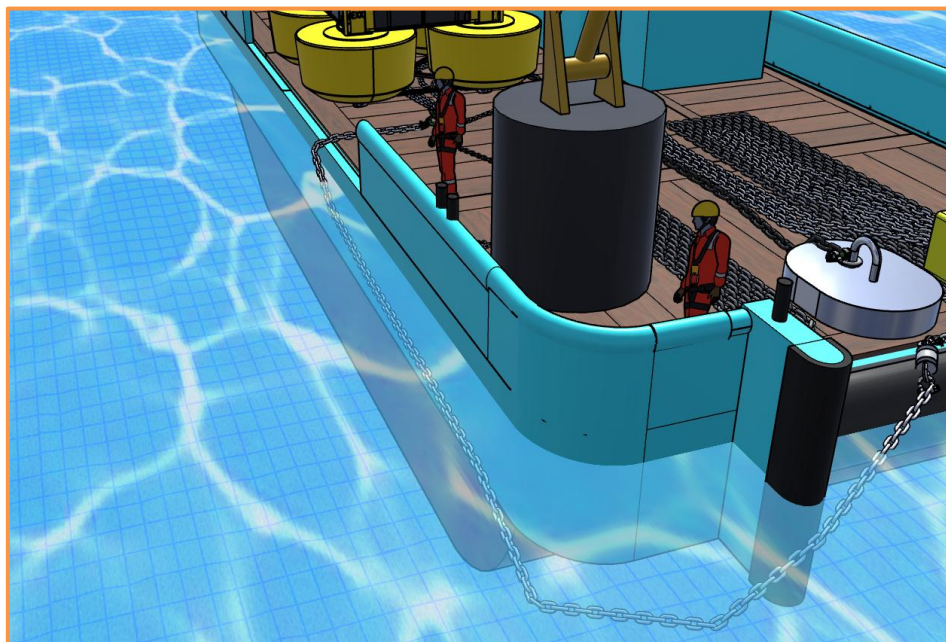


Figure 10: Scheme for the deployment of the 10-meter upper mooring chain.

The FLS200 E15 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 11: Midline floaters deployed.

The operation continued with the deployment of the clump weight. The crane was attached to the anchor pad eye 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 36 mm chain spooled on the winch was gradually paid out until only the last meters remained near the roller.

At this point, both the crane and the tugger winch were connected to the 36 mm chain to act as temporary securing points. This setup allowed the winch to be disconnected from the deployed chain. The remaining 36 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 36 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 32 mm chain that had been previously flaked out on the port side.

Once the shackle between the 36 mm and 32 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 38 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 150 meters of 32 mm chain free-fell into the water, completing the deployment of the FLS200 E15 buoy at the Figueira da Foz site. At 19:59 UTC, the EOLOS engineer onboard *Jif Mairi* confirmed the successful completion of the Site Acceptance Test (SAT), and the vessel began its voyage to the Leixões site.



Figure 12: FLS200 E15 deployed at Figueira da Foz site.

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-LO304-V01-OPS-RAMS for Campaign Deployment* details the health, safety, and environmental risks, and recovery methodologies, associated with the deployment of the FLS200 E15.

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 MV Jif Mairi on the 19th 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 deployment methodology for the FLS buoy as per 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 incidents, accidents nor near misses occurred during the deployment of the FLS buoy.

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

Table 6: Hazard observations.

6. Daily Progress Report

- 21st of June 2025: Deck preparation at Aveiro port and deployment at the Figueira da Foz site.

		Daily Progress report 21/06/2025		Code:	LO2
				Date:	22/06/2025
				Version:	01

Project	LO3		Date	21/06/2025
Coordinates	40° 11' 10.056" N	09° 30' 3.051" 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
Mateo G.	Field Engineer	Oversee FLS200 and assist as required
Ignasi A.	Party Chief	Supervise FLS200 deployment

Weather conditions			
Weather	0.8	Max wind (m/s)	10
Visibility	Good	Max waves (m)	1.0

Operational details	
Asset S/N	E15
As laid coordinates	40° 11' 09.90" N / 9° 30' 03.06" W
As laid new coordinates	<i>Fill in only if the CW have been moved</i>
Arrival (UTC)	18:00
Departure (UTC)	
Server Actions (START TIME)	
Server Actions (END TIME)	

Narrative			
Time (Local)	Time (UTC)	Day (UTC)	Description
09:30	08:30		Loading of chains, midline floaters and FLS200 E15 started.
13:00	12:00		Loading completed.
13:20	13:20		Jif Mairi departure from Aveiro port.

		Daily Progress report 21/06/2025		Code: LO2
				Date: 22/06/2025
				Version: 01

19:00	18:00		Arrival at the Figueira da Foz (LO3) site.
19:05	18:05		TBT completed.
19:30	18:30		FLS200 E15 lifted on the water.
19:45	18:45		Midline floaters deployed.
20:40	19:40		Lower mooring released. FLS200 E15 deployed.
20:59	19:59		SAT completed.
21:05	20:05		Navigation to Leixoes site started.

Service visit details and outcomes	
Work completed	
- Arrival at Aveiro port. - Loading of chain, midline floaters and FLS200 E15 onboard Jif Mairi. - Navigation to Figueira da Foz (Lote 3) site. - Deployment of FLS200 at the Figueira da Foz site.	
Proposed work for the next 24 hours	
- Navigation to Leixoes site. - Addition of 40 meters of 28mm chain and one midline floater. - Navigation to Aveiro port.	
Reference documentation	
EOL-LO304-V01-OPS-RAMS for Campaign Deployment	
Comments (Challenges and issues)	

Author	
Name: Ignasi Andreu Font	Signature:

Figure 13: June 20, 2025 Daily Progress Report.

7. Appendix 1: Site Acceptance Test (SAT)

Site Acceptance Test – Certificate

Project:	Figueira da Foz (Lote 3)
Client:	Laboratorio Nacional de Energia i Geologia (LNEG)
FLS200:	E15
Supplier:	EOLOS Floating Lidar Solutions
Inspection place:	Figueira da Foz site
Inspection Date:	21/06/2025

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: 274.80°
Compass (Mast)	Yes	Heading: 283.00°
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	No 4G signal
Satellite Iridium (Roof)	Yes	Communicating
Satellite Iridium (Mast)	Yes	Communicating

Table 8: Instruments tested.



SAT (Site Acceptance Test)

Test Information

Buoy ID:	E15	Date:	2025-06-21
Project:	LO3	Time:	19:54:00 UTC
Personnel Responsible:	Mateo Garcia	Location:	LO3 Site
Operation Code:			

Project		Clump weight	
Latitude:	40° 11.1676' N	Latitude:	40° 11.16501' N
Longitude:	9° 30.05085' W	Longitude:	9° 30.051' W

* Test performed in water in open sky

LiDAR

2025-06-21 19:51:00 UTC

Serial number: 1009

Light Detection and Ranging

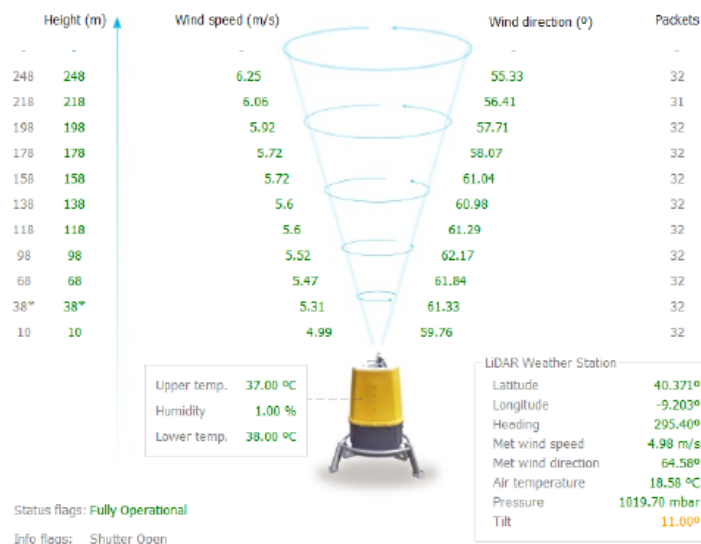


Figure 14: Site Acceptance Test Report (1/6).



ADCP

2025-06-21 19:53:32 UTC

Serial number: 103636 Heading: 277.50°
Temperature: 20.02 °C Pitch: -3.20°
Pressure: 1.44 dBar Roll: 1.10°

Depth (m)	Velocity (m/s)	Direction (°)	Depth (m)	Velocity (m/s)	Direction (°)
5.7	0.069	116.6	89.7	0.098	307.9
9.2	0.049	178.8	93.2	0.121	331.3
12.7	0.166	219.4	96.7	0.124	332.6
16.2	0.166	209.2	100.2	0.077	341.1
19.7	0.124	199.3	103.7	0.051	348.7
23.2	0.079	173.4	107.2	0.089	359.4
26.7	0.043	128.5	110.7	0.114	358.0
30.2	0.044	101.8	114.2	0.173	349.3
33.7	0.091	93.1	117.7	0.178	6.4
37.2	0.099	87.1	121.2	0.127	24.1
40.7	0.085	46.9	124.7	0.135	4.2
44.2	0.031	52.8	128.2	0.157	350.8
47.7	0.035	83.5	131.7	0.148	14.5
51.2	0.015	61.7	135.2	0.141	16.0
54.7	0.02	357.1	138.7	0.184	15.1
58.2	0.028	253.5	142.2	46.34	225.0
61.7	0.028	257.5	145.7	46.34	225.0
65.2	0.052	195.6	149.2	0.121	121.9
68.7	0.061	261.5	152.7	0.076	148.4
72.2	0.072	291.9	156.2	0.026	355.6
75.7	0.048	267.6	159.7	0.072	353.7
79.2	0.043	240.4	163.2	0.073	299.4
82.7	0.056	303.4	166.7	0.025	104.0
86.2	0.052	304.0	170.2	46.34	225.0

* Values for in water behavior are expected

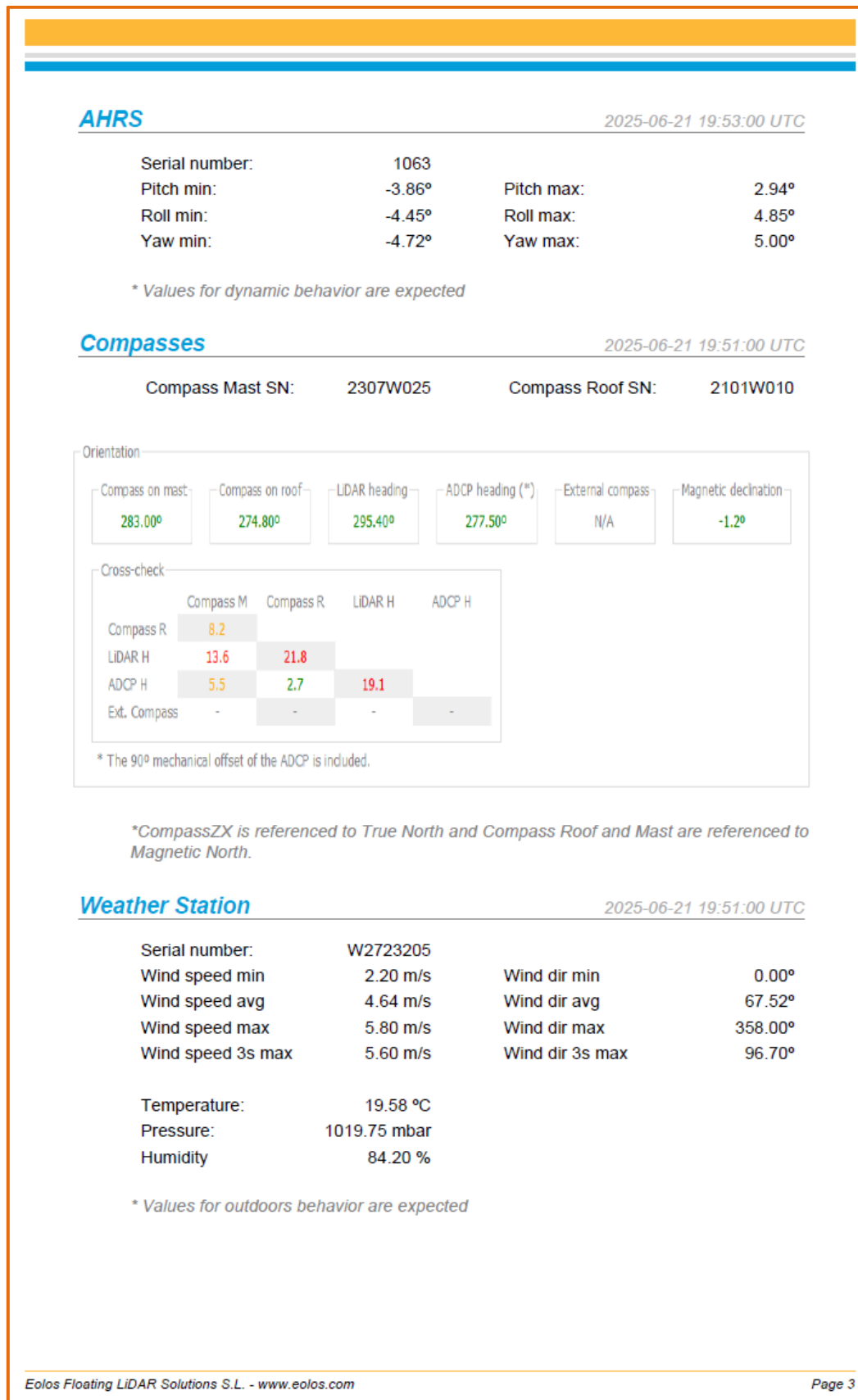
Wave

2025-06-21 19:51:05 UTC

Serial number: 1063
Havg: 0.70 m Tav: 6.90 s
Hmax: 1.43 m Tp: 8.70 s

* Values for dynamic behavior are expected

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



Pyranometer

2025-06-21 19:51:00 UTC

Serial number:

PY114961

Solar radiation:

15.04 W/m2

* Values for outdoors behavior are expected

Dataloggers

2025-06-21 19:51:00 UTC

Master

Voltage:

12.58 V

SD card space:

30 GB / 30 GB

Slave

Voltage:

12.87 V

SD card space:

30 GB / 30 GB

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

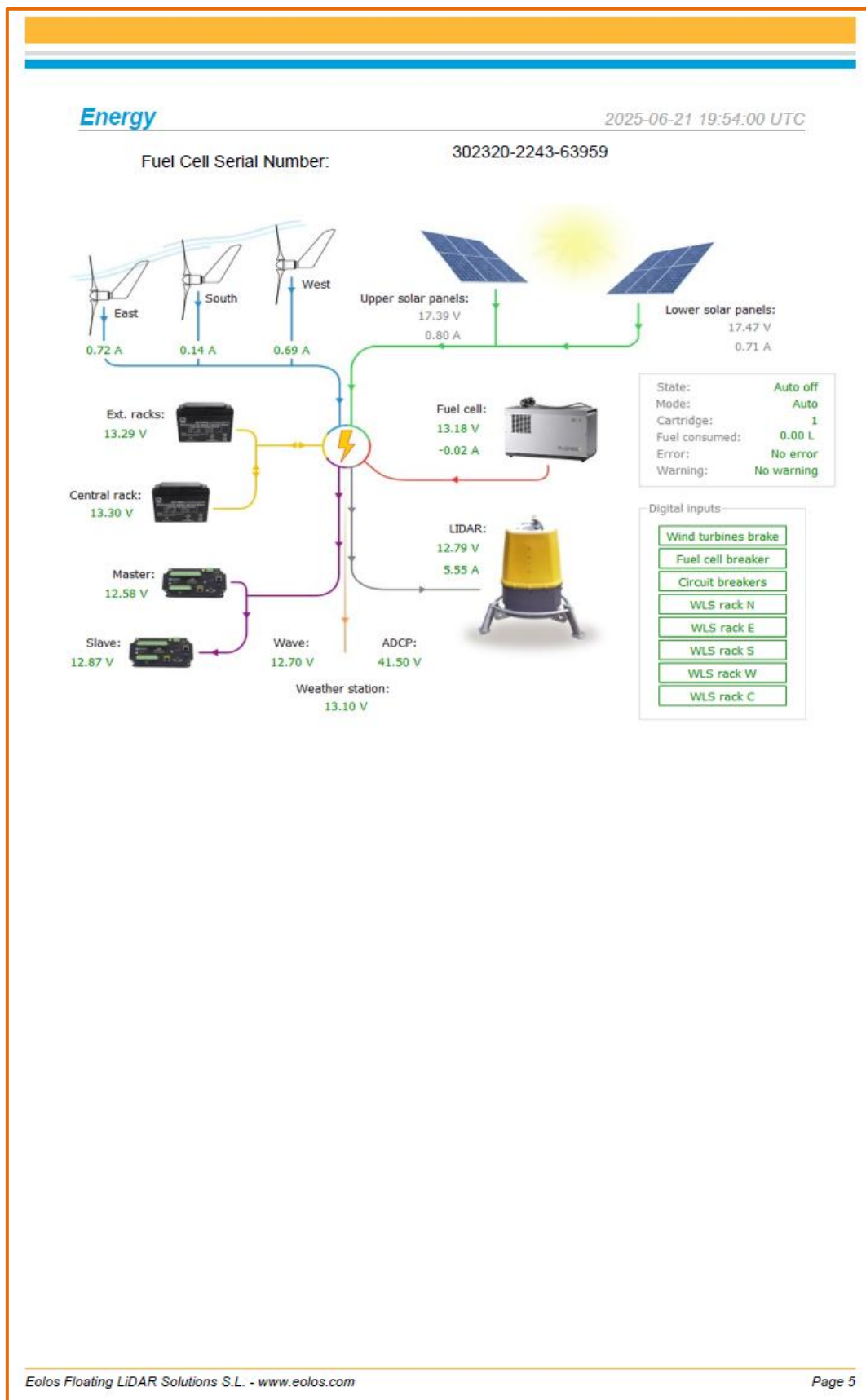


Figure 18: Site Acceptance Test Report (5/6).

GPS

2025-06-21 19:50:00 UTC

Serial number:

6JN004801

Status:

Valid position

Position (DMM)

GPS coordinates:

Latitude: 40° 11.128' N

Longitude: 9° 30.0517' W

Project coordinates:

Latitude: 40° 11.1676' N

Longitude: 9° 30.05085' W

Clump Weight coordinates:

Latitude: 40° 11.16501' N

Longitude: 9° 30.051' W

LiDAR coordinates:

Latitude: 40° 22.2528' N

Longitude: 9° 12.156' W

Cross-check:

	GPS	LiDAR	AIS	Project
LiDAR	32.6 km			
AIS	12.1 m	32.6 km		
Project	73.4 m	32.6 km	79.5 m	
Clump Weight	68.6 m	32.6 km	74.8 m	4.8 m

AIS coordinates:

Latitude: 40° 11.125' N

Longitude: 9° 30.0441' W

Checks

(Pending: ! Not Ok: X 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 19: Site Acceptance Test Report (6/6).

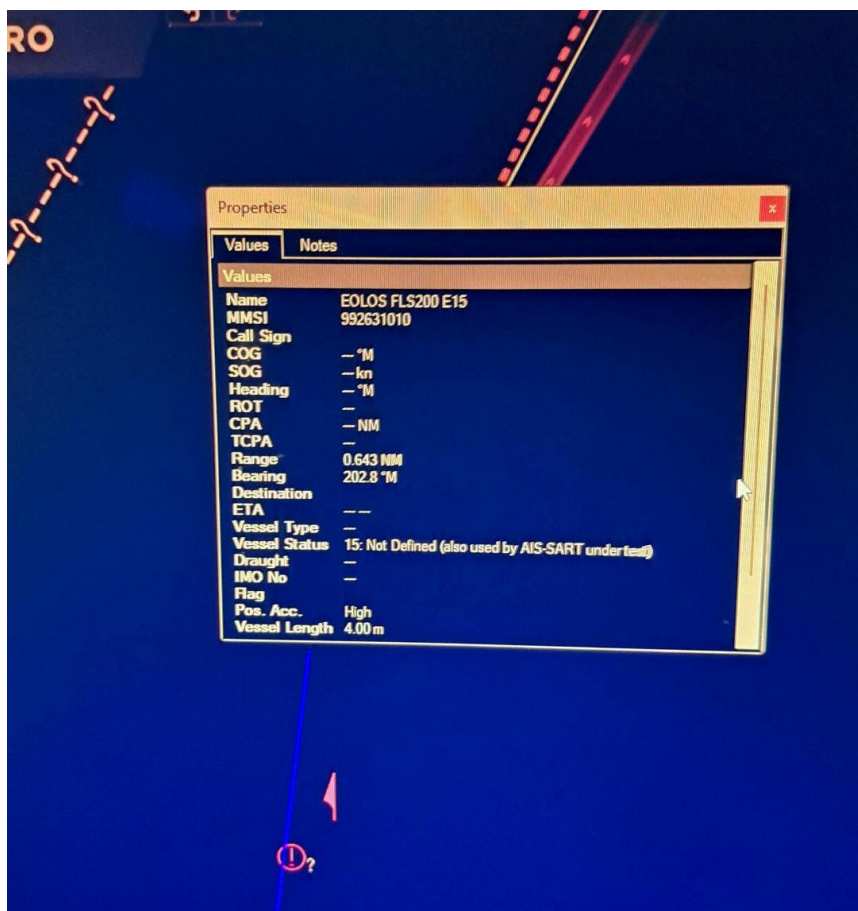


Figure 20: FLS200 E15 AIS signal.