

OMMC/OP173.002

Certificate of Approval

Magallanes Renovables – “ATIR”

Deployment at EMEC Berth 1, Fall of Warness, ORKNEY

THIRD PARTY VERIFICATION

Orcades Marine has reviewed the design of the Magallanes Renovables tidal turbine “ATIR”. Subject to the conditions attached and further detailed in Orcades TPV Report Document Number OP 173.001 Rev 1.0, we confirm the structural design of the mooring attachments and its moorings appear suitable for the proposed deployment and operation at EMEC, for a period of deployment not exceeding 1 year.

Environmental conditions

The environmental conditions used as the basis for the mooring analysis have been reviewed and are considered reliably representative for the range of conditions for the proposed deployment location, length of deployment, and period.

Moorings

The design parameters for the mooring analysis and the process’s Magallanes Renovables have used to determine the load cases have been reviewed and are considered to be satisfactory. The suitability of the mooring components including the anchoring system proposed are also considered to be satisfactory.

Structural integrity

An analysis of the structural integrity of the device has been undertaken on:

1. The mooring connection points
2. The structure supporting the mooring connection points

We confirm that the strength and fatigue life of these components appear satisfactory for the proposed deployment period.

Conditions of Compliance Attached to this Certificate

- Environmental limits for operational conditions and storm survival are complied with and operational mitigation measures are applied accordingly.
- Requirements for weather forecasting and monitoring of the environmental conditions are complied with.
- The position and condition of the “ATIR” is rigorously monitored during operations. If any variance is detected from the location and condition parameters, operational mitigation measures must be applied.

- Any significant departure from the basis of design reviewed may invalidate this certificate
- The Hazard Identification & Risk Assessment process must be undertaken prior to deployment and updated during the operational phase

Further details to the above conditions of compliance are contained in Orcades TPV Report OP 173.001, and are integral to the validity of this Certificate.

We conclude that, subject to the limitations of this TPV and the conditions set out in this document and the TPV report OP173.001, the "ATIR" and associated moorings are appropriate for a deployment at the EMEC Berth 1 Fall of Warness location, for a period not exceeding 12 months from the date of first installation.

This Certificate of Approval is issued to

MAGALLANES RENOVABLES

For and on behalf of

ORCADES MARINE MANAGEMENT CONSULTANTS Ltd.

Signed



Name and Position of Authorised Signatory
David Thomson, Managing Director

Date 9th March 2018

Signed



Name and Position
Alexandra Tait, HSQA Manager

Date 9th March 2018