ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form	Date submitted
Anders Køhler	August 14, 2013

Project name: Poseidon Floating Power

☐ Planned ☒ In Operation ☐Completed

Project description:

Project Developer: Floating Power Plant A/S (FPP)

Technology Developer: Floating Power Plant A/S (FPP)

Technology type: A floating foundation which works as a platform for extracting energy from both wind and wave power

Resource (wave, tidal): Wave and wind

Project scale (test site, prototype, array, commercial): 1:2,5 scale demonstration plant

Installed capacity (MW): 33 kW from wind, 50 kW from wave

Project Website: http://www.floatingpowerplant.com/

Launch Date: September 30, 2008

Additional Description: Poseidon is a concept for a floating power plant that transforms wave energy into electricity. The power plant furthermore serves as a floating foundation for off-shore windmills, thus creating a sustainable energy hybrid. The demonstration plant named Poseidon 37 is 37 meters wide, 25 meters long, 6 meters high (to deck) and weighs approximately 350 tons.

Location:

Ocean/Water body: Baltic Sea

Closest city: Lolland, Denmark

Country: Denmark

Depth: Floating

Coordinates (please use Mercator): 54.95644°, 11.141219°

Process status: Poseidon went into real sea test in 2008 off the shores of Lolland in southern Denmark and has completed 3 grid connected tests. One more test with the p37 is planned for 2013. The test site is grid connected with both a 690V and a 10 KV connection. The electrical infrastructure was installed in corporation with DONG energy.

In parallel with these testing activities the technology is currently (with a large group of partners) being scale up and engineered for the first full scale commercial unit. A P80 (a 80 meter wide construction including 3,6 MW wind and 1,6 MW wave. This facility will be installed in Belgium and UK together with a large group of international consortium partners.

Expected Operation Date:
P37 off shore tests (2008, 2010, 2012 and 2013)
P80: 2015

Licensing information (brief description): P37 has secured a 7 year test license at the Vindeby test site, including infrastructure and PPA. DONG Energy environmental department has been a great help in this process. The project has according to Danish law been in hearing and approved with the necessary documentation.

Key Environmental issues: The platform has been placed in closed connection with an already exciting off-shore wind turbine park in a non sensitive area, in all regards except for birds. The area is in/close to a shallow water sensitive bird habitat. Since no similar platform has never been launched FPP has to a high degree used already published EIA information from off-shore wind turbine parks, barges and similar. To address the issue of the birds FPP has chosen to monitor and count impacts and how the birds interact with the platform (for resting, etc.).

Environmental webpage: *link to project official environmental webpage (if available)*

Baseline studies and project effects studies: Poseidon Floating Power				
General description				
Receptor	**Study description including question and/or objective** (several can be listed per receptor)	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)
Physical Environment	Simple baseline study of sea bottom before installation. Before, under and after each test phase this is updated.	Diver video survey.	No erosion impact. No significant growth impact.	Completed/ undergoing
Benthos	No specific studies except the above video and evaluation of the device when in harbour. FPPs is together with Jotun coatings testing a large variation of environmental	Study of the platform between each tests.	Growth of local species can be significant if not protected.	Completed/ undergoing

	friendly anti corrosion and anti fouling systems.			
Fish and Fisheries	The testing area is placed in a no fishing zone and the area in general is not a commercial fishing area. So no formal impact studies have been implemented during the first two test phases.	Observations only.	Because of the large wave absorption a shelter area is created. Some fish grass and take shelter here.	A more formal study is planned in phase 4.
Large Vertebrates	No large vertebrates present. Data from similar placed wind turbine and other tidal/wave project are used in the scaling up.	None	None	None
Birds	Bird and bat impact is crucial due to the platform placement. Two to main focuses: • Impact • Other interaction due to the large floating surface area	1. FPP has a program for counting bird impacts. 2. The platform and supporting areas is video monitored and taped. 3. FPP has entered into FOA with NMREC concerning the development of advanced bats and birds monitoring and impact systems.	1. No impacts have been registered. 2. For some reason the birds present or migrating do not use the platform resting, eating of fishing (in the still water). Several hypothesis are being evaluated for this.	Still Undergoing
Marine Uses / Users	No key effect, FPP has a continues dialogue with other local users and is used to attract more tourist. We supply tours when testing.	N/A	N/A	N/A
Other	Studies of the cable installation, video and surface studies before and after.	N/A	N/A	N/A
Reports or Papers	No official FPP EIAs have been released, but FPP are in continues dialog with the Danish Energy agency (which is coordination environmental body) and Dong Energy environmental department.			

	Besides the more general known studies of wave energy devices and their impact, we have attached the most used papers/studies by FPP – most of them concerning wind and birds.
Research Projects	See above.

Monitoring and adaptive management: Poseidon Floating Power				
General description	FPP has chosen to divide it off-shore sea trials into 4 test periods. One of the reasons for this is to continue to be able to learn and develop our technology but also to be able to develop and focus our environmental data acquisition. During the next test phases this will be increased and focused even further. This information is crucial in the design and up-scaling process, to secure minimum impact. Documentation in correlation with the application and approvals for p37 be can supplied upon request, but please note all documents and documentation is in Danish.			
Receptor	**Monitoring program description including question and/or objective** (several can be listed per receptor)	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)
Physical environment				
Benthos				
Fish and fisheries				
Large vertebrates				
Birds				
Marine uses/ users				
Other* (can be named)				
Reports or Papers	(Key papers on the areas addressed should be listed here; when possible the files themselves can be made available in downloadable PDF format, alternatively links to the files or project website can be provided when available e.g. SeaGen.)			
Research Projects	(past or on-going environmental research projects at the site)			