



## CAPE SHARP TIDAL

Ms. Helen MacPhail  
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Via Email <Helen.MacPhail@novascotia.ca>

December 7, 2016

Dear Ms. MacPhail,

**RE: Environmental Effects Monitoring Programs  
Cape Sharp Tidal Venture – Operational Update**

This letter is intended to provide an operational update the Cape Sharp Tidal Venture (CSTV) turbine deployment at the Fundy Ocean Center for Energy (FORCE) site.

CSTV is currently in its commissioning phase during which continuous testing of both the turbine and the monitoring devices is underway. CSTV's environmental effects monitoring program (EEMP) will be formally initiated at the start of the operation and maintenance phase; however, data collection and preliminary analysis has begun. As indicated in the EEMP (February 2016) the program will collect data related to marine mammals, fish, and operational sound of the turbine in the near-field area (*i.e.*, 0 meters to approximately 100 meters) of the turbine.

The following paragraphs provide a summary of the deployment activities, the commissioning phase and operational status of the turbine and monitoring devices.

### ***Deployment***

On November 7, 2016, CSTV safely and successfully deployed the first turbine at FORCE. On November 8, 2016, the cable connection to the FORCE subsea cable was also safely and successfully completed. The coordinates of the turbine center and for each of the three subsea base feet are noted in Table 1. The turbine depth below LLWLT is 29.3 m which allows for approximately 9.3 m draft clearance above the turbine.

**Table 1. Turbine Coordinates**

	<b>Longitude (NAD83)</b>	<b>Latitude (NAD83)</b>
Turbine Center	-64.421677	45.364477
Starboard Foot	-64.421612	45.364296
Port Foot	-64.421427	45.364539
Apex Foot	-64.421885	45.364556

### ***Commissioning Phase***

CSTV is currently in its commissioning phase. The commissioning program tests the connection, communications and electrical systems to confirm energy production and communications with monitoring devices. During this time, OpenHydro has focussed on ramping up the power production of the machine and establishing normal operating parameters through its control system. The commissioning phase is expected to be completed in by the end of December 2016.

### ***Operational Status Update***

#### **Turbine**

On November 8, CSTV has for the first time exported power onto the grid through the FORCE substation. In the first two weeks the turbine has been operated mostly in manual mode by the commissioning team which has then focussed its efforts to enable the automatic mode of the control system to run the turbine system without assistance. During the period the turbine has operated without disruption suggesting that the mechanical operation of the turbine conforms to the initial expectations. All of the turbine control features have been tested and are being fine-tuned throughout the commissioning phase.

#### **Monitoring Devices**

##### *Sonar*

The CSTV turbine has a Tritech Gemini SeaTec sonar device mounted in a protective box on the subsea base. The device is functioning as expected and data is being stored in a hard drive device accessible at the FORCE site. CSTV is investigating if the position of the unit needs to be adjusted. Data is in early stages of preliminary analysis and as more information is gathered, it will provide greater insight into the sonar view plane.

##### *Hydrophones*

The turbine has four Ocean Sonics icListen smart hydrophones mounted in different locations on the turbine and the subsea base (fore starboard, fore port, aft and top of the turbine). Data is being consistently collected from two of the four hydrophones and stored in a second hard drive device on site. Data from a third hydrophone is intermittent and the fourth does not appear to be functioning. However the redundancy of the hydrophone set-up still allows for sufficient data collection. CSTV continues to investigate the issue but preliminary examination suggests that the problem with the hydrophones might come from a defaulting connector. There is a significant volume of data being gathered from the other hydrophones, which is sufficient to enable CSTV to meet the monitoring objectives at this time.

### *Acoustic Devices*

To measure the turbine's operational sound, an Autonomous Multichannel Acoustic Recorder (AMAR) was deployed one week after deployment approximately 100 m from the turbine. An additional AMAR was deployed at a control site. All units are battery-powered and will be retrieved in two months. In relation to this component of the project, four Acoustic Doppler Current Profilers (ADCPs) have been mounted on the turbine and are confirmed to be gathering flow data.

### *Camera*

As a supplemental part of the EEMP, CSTV mounted a SAIS IP-CAM™ high definition Ethernet video camera on the turbine subsea base. The camera was added to satisfy the interests of the fishing community with the objective to explore the option of viewing the rotor during operation. At this time, the video camera does not appear to be functioning. The project team continues to analyse possible reasons to understand if issues are related to a possible defaulting connector or a camera malfunction. Additional cameras mounted on the recovery frame to assist the operational team during deployment operations confirmed that visibility at the site is very poor and not exceeding a couple of feet.

In summary, deployment of the turbine was completed in November and CSTV is currently in the commissioning phase. This phase is focussed on the testing and configuration of both the turbine and the monitoring devices, and preliminary data analysis. The monitoring devices are gathering sufficient data to begin the formal operation and maintenance phase of environmental monitoring to meet CSTV's objectives/obligations of the EEMP.

Please contact me directly should any questions arise.

Sincerely,



Carys Burgess Environmental Manager  
Cape Sharp Tidal Venture

CC: Mr. Donald Humphrey, Section Head, Fisheries Protection Program, Fisheries and  
Oceans Canada  
Melissa Oldreive, Acting Director of Operations, FORCE