**Memo**

To: Professor Pisano

From: PUCKFish Team

Team: PUCKFish, Team 34

Date: 4/29/2022

Subject: Customer Installation Report

1. **Introduction**

PUCKFish is a sensor array that will be emplaced underwater to review indicators of Lobster environments to aid in developing models to increase lobster catch yield. PUCKFish is sponsored by Andy Whitman and Anthony Burn of Fathom Fishing, a small fishing start-up based out of Massachusetts. This memo covers the installation to the customer of the current Prototype of PUCKFish, success categories, as well as path forward.

**2.0 Customer Installation**

2.1 Review of Test

The test consisted of proving PUCKFish's capabilities on April 29th, 2022 including the PUCKFish team as well as Andy Whitman. This included showing the wireless charging at work, submerging the device into a bucket of water, and then retrieving the data from the device. During the test for Fathom Fishing, PUCKFish successfully charged wirelessly via Qi receiver. Upon submersion, the device continued to collect and transmit sensor data over LoRa radio to a laptop that was used as the representation of the base station. As was discussed, only two full prototypes would be required to complete Fathom Fishing’s requirements.

* 1. Review of Requirements

Below is a table of Requirements, success parameters, and changes to reflect the requirements of the customer.

| Original Requirement | Success? | Changes | Notes | Status |
| --- | --- | --- | --- | --- |
| 3 Complete Devices | Requirement Change | 2 Complete Prototypes Made, one does not have functioning pressure sensor, One board left unpoured in epoxy for demo/customer use | Only 2 devices were needed for successful project completion. The 1st device was treated as a prototype | Modified |
| Collection of information in water area around a lobster trap. The following characteristics must be measured.   * Dissolved Oxygen * Depth * Salinity * Temperature * Water Current and Velocity * Ambient Light | The Success Parameters are as follows.   * Dissolved Oxygen – Yes * Depth – Yes * Salinity- Yes * Temperature- Yes * Water Current and Velocity – Yes * Ambient Light- Yes | N/A | Metrics are all collected in the second prototype. First prototype fails to capture pressure data due to software failure, and fails to transmit dissolved oxygen/salinity data due to packet truncation. | Modified |
| Poll Sensors at least once per hour | Yes | N/A | N/A | Original |
| Last 10 Days off of Single charge | Yes/TBD | N/A | From all initial testing, this seems to be successful, however will be fully tested in environment at a later date as discussed in 2.3 | Original |
| Compact Form Factor | Yes | N/A | N/A | Original |
| Rechargeable with shipboard marine Batteries | Yes | N/A | Rechargeable with any QI wireless charging pad | Original |
| Be Robust Enough to withstand constant Marine Conditions | Yes | N/A | Will be tested in the environmental test | Original |
| Automatically detect when trap surfaces/descends | Yes | N/A | This feature functions on the second prototype unit. It does not on the first prototype unit due to pressure sensor failure. | Original |
| Transmits data to shipboard base station when trap surfaces, stored in common devices and formats | Yes | N/A | N/A | Original |
| Unit Cost, $150 for prototype | Yes | N/A |  | Original |

* 1. Assessment and Path Forward

The test was deemed a success from the customer, with the exception of the pressure sensor failure on the first prototype unit. This was attributed to a software issue specific to the first prototype unit. All other aspects of the project were successful.

For the Path Forward, it was decided that additional testing would be done with the second prototype unit with the working pressure sensor, as well as figuring out how to reflash software on the PUCKFish wirelessly to prevent permanent software problems after encasing units in epoxy. In addition, a full test within the environment was scheduled to test the device operationally. This test will involve placing PUCKFish at depth within the ocean as soon as weather permits.

**3.0 Customer Acceptance Email**

**April 29th, 2022, 2:27 pm**

Hey Team,

Wanted to just follow up on the first round of in water testing of the devices. Really pleased with how the device is coming along and how simple everything is to the end user!

The wireless charging appeared to work wonderfully, and without any electrical penetrations or connections, there are nearly no interfaces to be damaged by the user or environment.

Pressure data is going to be crucial and it sounds like it was a hardware not software issue on the first device that prevented collection of that. I believe Alex was on top of it though, and it isn’t expected to be an issue on the next two prototypes.

I’m really excited to see the next completely buttoned up device deployed out in the environment as the weather gets a little better. And per our meeting last weekend a completely assembled device without potting (for future debugging and work).

Let me know if I missed anything, keep pushing to the finish line!

Andy Whitman

Co-Founder, Fathom Fishing

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