SUBVISION BUOYANCY ENGINE

NON-ROV DEVICE DOCUMENTATION

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I. Main Functions:

- complete two vertical profiles of the underwater environment
- communicates pressure data, depth data, company number, and UTC time
- can perform preprogrammed vertical movement independently, but can be held and moved by ROV

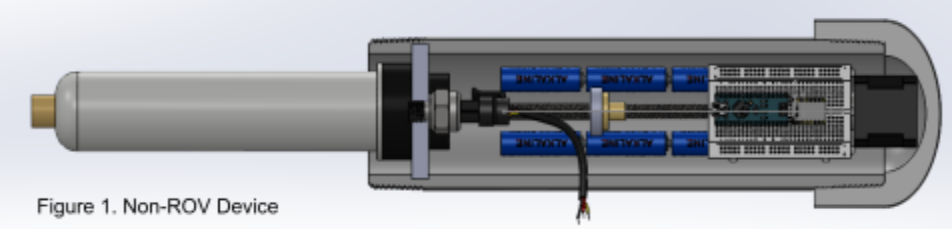

Figure 1. Non-ROV Device

II. Interior Float Design: The float will consist of three primary separate compartments, all surrounding the threaded rod that is connected to the stepper motor:

a. Battery Compartment: We will use several 1.5 V batteries. These batteries will be used to power several other components.

b. Electronic System Design: This compartment will store the Arduino Nano, which will give instructions to other components (pressure sensor and stepper motor) to perform their tasks and also receive data. This will be connected through a PCB. These instructions will be preprogrammed and information will be received via Wi-Fi from the Arduino Nano. The breadboard will be placed vertically as well.

c. Buoyancy Engine: The rest of the float consists of the pressure sensor, the stepper motor on a threaded rod, and the syringe. The pressure sensor will be getting data from this section of the float, which will use a conversion factor to calculate pressure at the bottom of the float. The syringe will be connected to the threaded rod, which will be turned by the stepper motor. This enables the push-pull movement of the syringe to occur. This motion causes water to move in and out of the syringe.

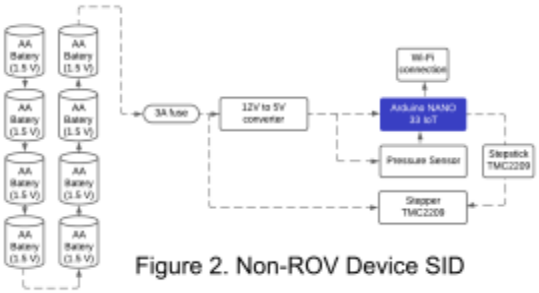

Figure 2. Non-ROV Device SID

III. Exterior Float Design: As shown in the figure, except for the syringe, the entire float will be encompassed in a 3D printed cylinder. The ROV will hold on to this to deploy the float using the gripper.