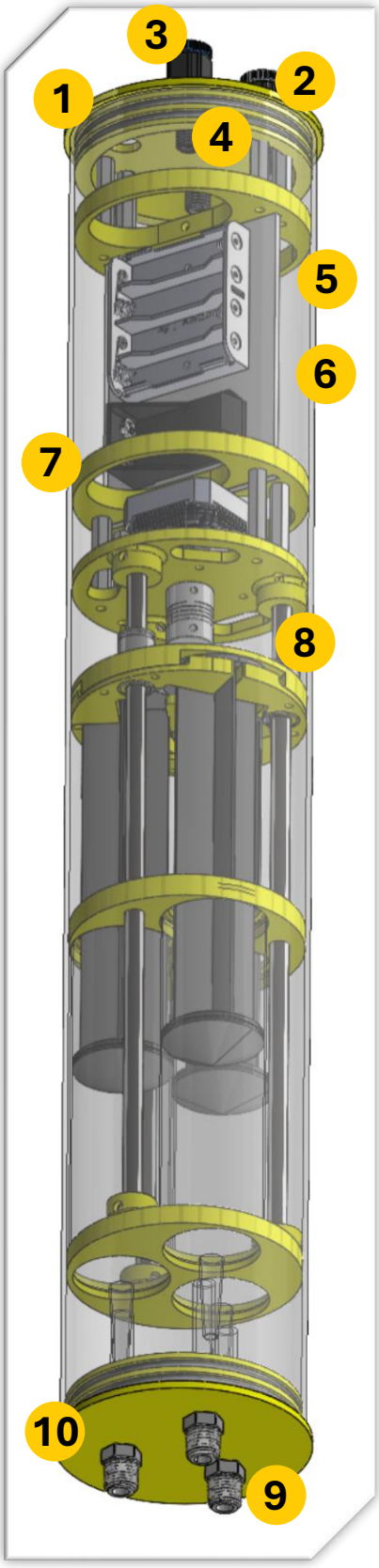

Figure 1. WUROV Float

WUROV
Wentworth Underwater Remotely Operated Vehicle

FLOAT LEOPARD NON-ROV DEVICE

The Wentworth Underwater Remotly Operated Vehicle *(WUROV)* team has designed the WUROV float *(Figure 1)* used in task 4.0 to perform two vertical profiles of an underwater environment semi-autonomously. The device communicates the sampled depth data during its submerged time underwater with the surface station when it surfaces.

The float consists of one large waterproof container that consists of the electronic unit and the buoyancy engine *(ELEC-NRD-002)*. Two **9v batteries** are used to power a stepper motor (NEMA 17) and four **1.5v batteries** are used to power an **ESP32** microcontroller *(ELEC-NRD-001 & 3)*. They are independently in line with **7.5A fuses** to prevent any high currents. When surfacing, the float automatically opens a wireless communication with the mission station using **TCP** *(Transmission Control Protocol)* communication protocol by sending XML *(Extensible Markup Language)* packets.

The clear plastic housing allows for **fast visual inspection** of the inline fuses and the water intake levels. The motor rotation moves a lead screw that enable and disables the buoyancy engine. Steel pebbles are added on the bottom compartment to shift the center of mass towards bottom end cap for keeping the float angled vertically in the water. Three 150mL **syringes** change the weight of the device. The **O-ring end caps** at both ends of the device ensure safety in the case of high pressures *(ELEC-NRD-006)*.

LEOPARD BREAKDOWN

1. **2.4GHz Antenna**
2. **MS2958 Pressure Sensor**
3. **Air Pressure Valve**
4. **On/off switch**
5. **Electronics unit *(ELEC-NRD-004)***
6. **7.5A fuse *(ELEC-NRD-005)***
7. **NEMA 17 Motor**
8. **Syringe**
9. **Barb Intakes**
10. **O-Ring End Caps *(ELEC-NRD-006)***

Figure 2. Float Picture