

Multi-AUV Deploying System

Background

NIWC's Unmanned Maritime Vehicle (UMV) Lab is currently using Remotely Operated Vehicles (BlueROVs) to serve as low-cost Autonomous Underwater Vehicles (AUV).

Problem Statement

The BlueROVs are deployed by hand off a kayak or small boat alongside an unmanned surface vehicle (USV) used to remotely communicate with the BlueROVs. This process is inefficient for researchers and does not allow the USV to be used for the deployment of the BlueROVs. This keeps the UMV Lab from attaining their goal of a fully autonomous system.



Figure 6: NIWC-PAC's USV

Goals

- Remotely deploy 2 BlueROVs into the water
- BlueROVs must be secured to the Pontoons of the USV
- Deploy BlueROVs at 20 meters distance
- Weigh under 51 lbs.
- System needs to be water resistant

Team

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Acknowledgements

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 Sponsor: NIWC-PAC



VideoLink

<https://youtu.be/1eDR8MloyRY>



Figure 1: ROV Housing Sub-assemblies

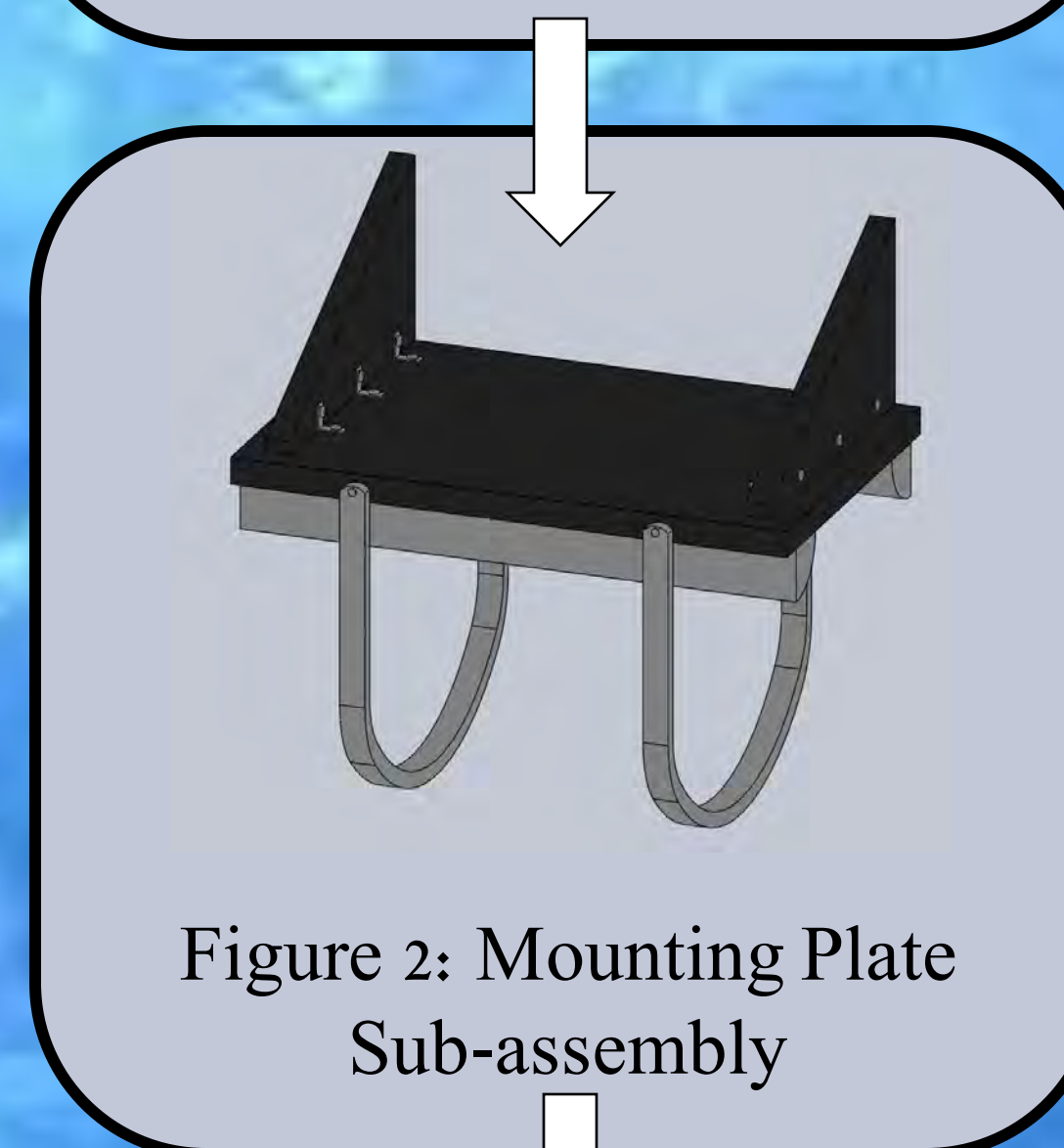


Figure 2: Mounting Plate Sub-assembly

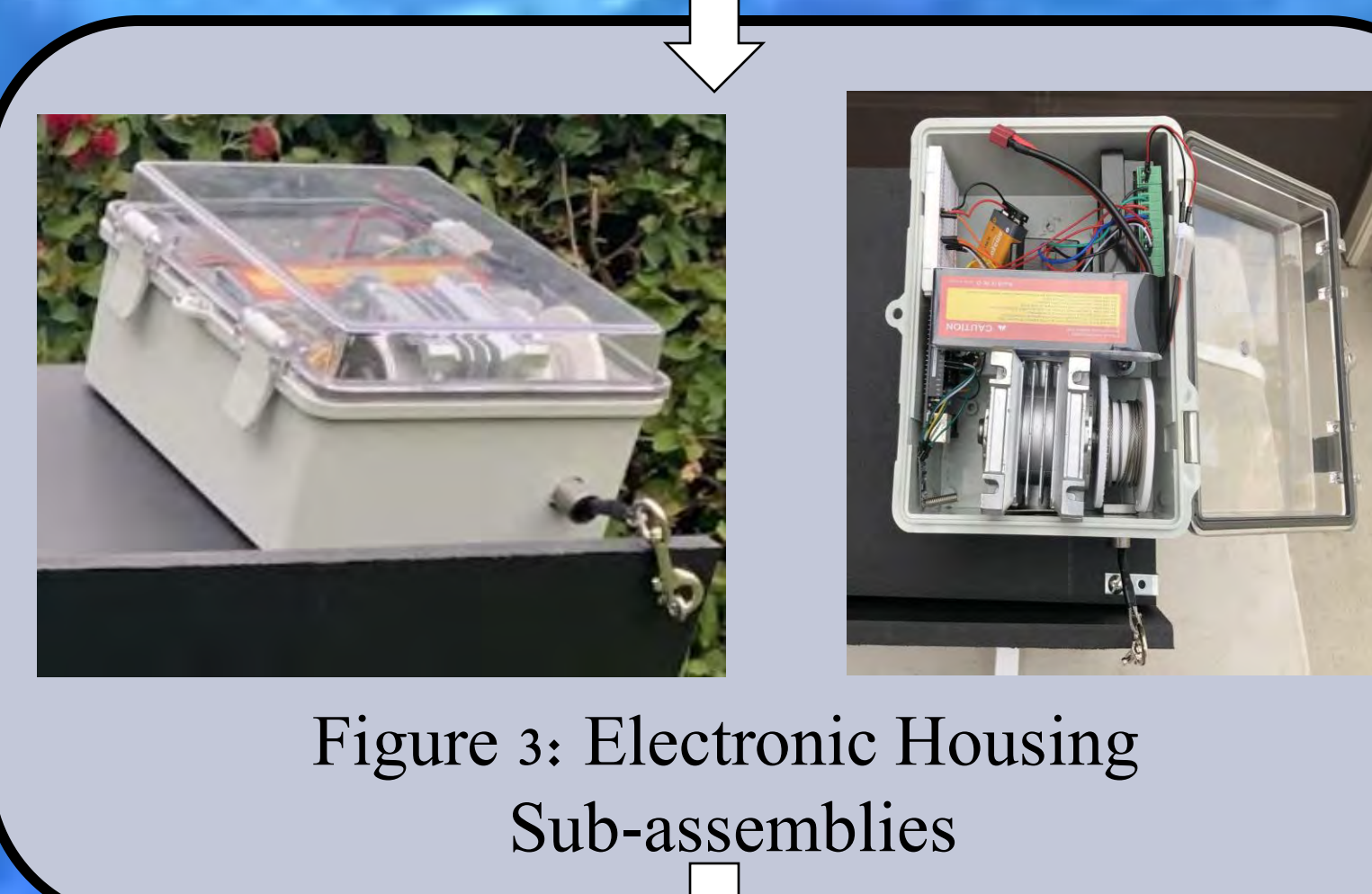


Figure 3: Electronic Housing Sub-assemblies

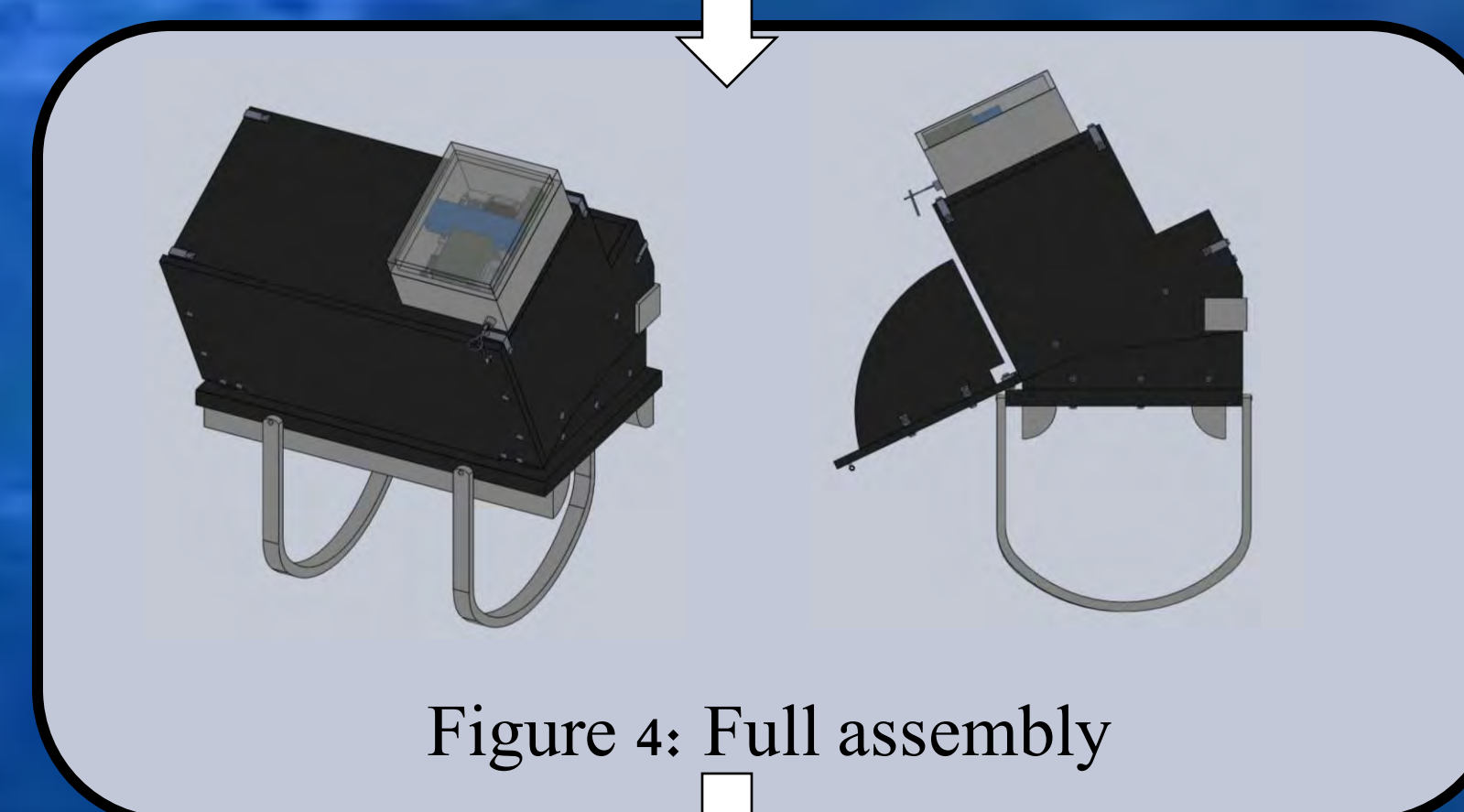


Figure 4: Full assembly



Figure 5: Two identical systems controlled by one handheld remote



Figure 7: Closed system



Figure 8: Open System



Figure 9: Device successfully deployed BlueROV from USV

Electronics

There are two electrical systems: a radio frequency remote communication system and the Electronic Housing which is a system that unspools cable to lower the door and begins the launching sequence.

Results

- An ROV is deployed from either side of the USV with our 2 identical systems.
- The ROVS are secured onto the USV from the ratchet straps and self-locking worm drive used in our device.
- With Long distance antennas 20 meters was easily met.
- With the use of Starboard and tight dimensions, our device is water resistant and weighs 47.3 lbs.
- Testing conducted at NIWC-Pac proved our device to fully satisfy all requirements.

