T3Delta Technical Note

*Subject: Dirt Bike UAV Box*

*Date: 05/21/21*

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**Introduction**

The Parrot Anafi drones have proved themselves useful when doing recon on enemies’ location and movement for every event held by T3Delta. With this in mind, we decided to make the Parrots a key part in our Robotic assisted ISR Team for 3-21. Like their previous use they will be launched to surveil locations and movement of troops to orchestrate a series of attacks or movement from the friendly troops.

**Approach**

*Location*

The drones needed to be in a place that was convenient but stable enough to with the rocky terrain of the desert. The drones also needed to be on a vehicle that could go out and do recon and return the camp with intel. The decision was made that the dirt bikes were the best place to have these drones live as the dirt bikes have the capability to do more tactical recon than any other vehicle on the team.

*Container*

Once deciding on the location of the drones they needed something to live in that would attach to the dirt bike. I choose a small Pelican case with divider inside along with a top organizer. The container held 2 Goal Zero Sherpa 100AC, 2 Parrot Anafi’s, 8 batteries, and the controller. The case had an SAE plug that connected to the bike for power and an ethernet port for network connectivity for Nike.

*Charging*

The batteries needed to be charge while not being used in the case. To have this charging station there needed to be a power supply, Goal Zero Sherpa 100AC. In each there were two Sherpa 100AC that each charged four batteries. I made a power system that was a USB-C Connector to USB-A hub that connected to the batteries via USB-A to USB-C cord. If continuously plugged in the batteries would drain the power supply so I needed to create power source for the power supply. Each dirt bike has and SAE plug that I use to provide power to charge the power supplies.

**Testing**

The first two weeks, 4/19-5/2, of 3-21 I spent building the boxes and mounting them to the dirt bikes. The final week of 3-21 they were tested in the field. They were used on the back of the dirt for their intended purpose, recon, by the marines riding the bikes. During the event, the rack the box was mounted to came off making the box unusable by the dirt bike group. The second box stayed attached and was utilized for recon for the rest of the event.

**Future Work**

As seen while testing the box isn’t attached to the dirt well enough to handle the desert terrain. Some idea to fix this problem is to remove the rack and make the box the rack itself. Drill holes in the box that line up with the rack mount and put bolts in. Another idea is creating a smaller box or backpack that can be carried by the ride. I received some feedback from one of the marines riding that the box was a little big and a little of a pain to stretch your leg over the box to get on the bike. He suggest a backpack that could hold everything that way you could dismount the bike and take the UAV with you if you have to be more tactical or the mission calls for on foot recon.

**Pictures**

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