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Subsystem Team One Pager

Payload Subsystem

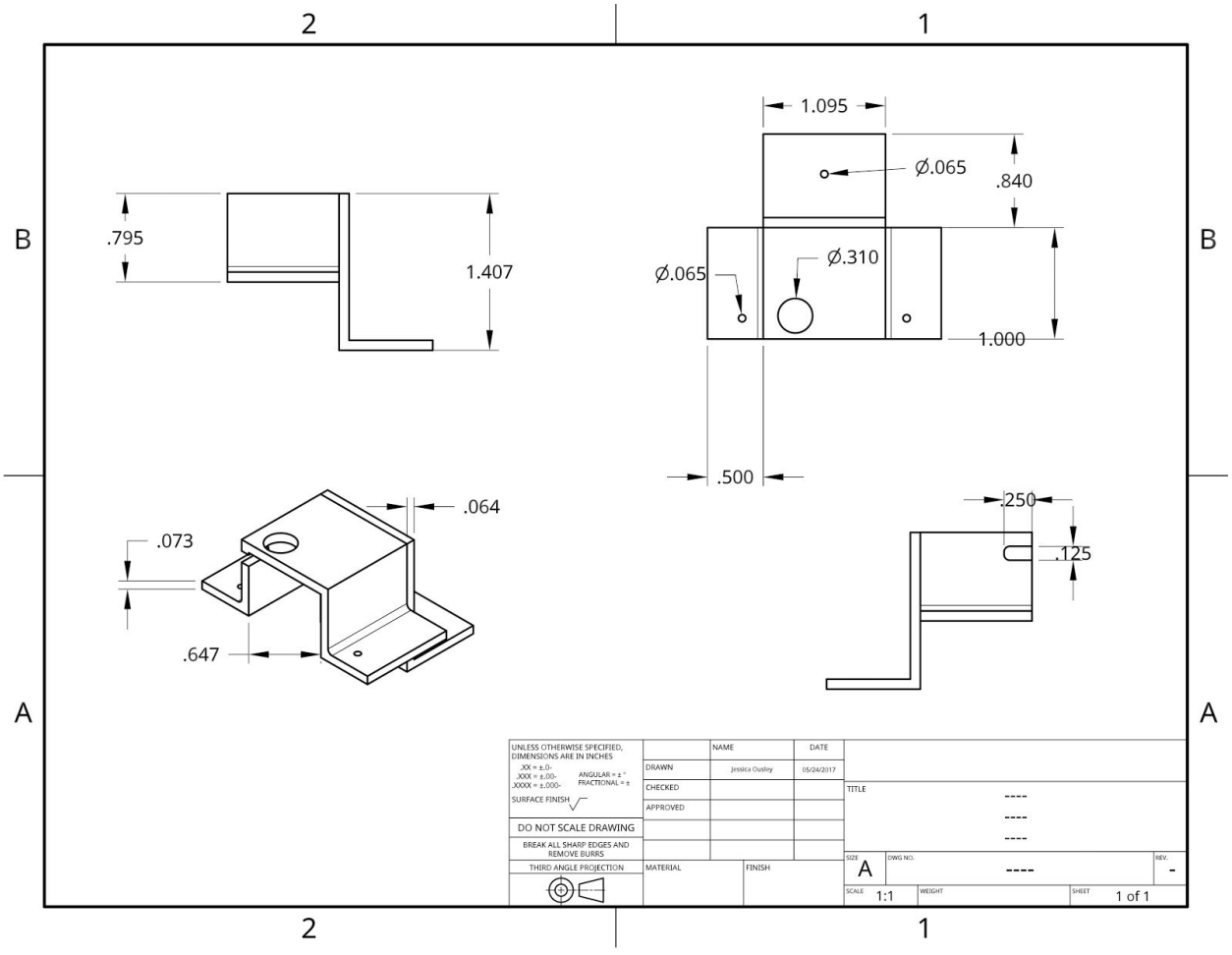
Purpose: The subsystem team was assigned with coding the payload which makes the servo press the camera's button to take pictures at a certain rate under certain requirements. Without this subsystem, the aerial imaging device would be unable to do any imaging.

Key Specifications and Requirements: The payload had to be able to move at the specified rate after a timer had expired and the system was at a height which was signaled by the altimeter. It also had to calibrate so that the servo attachment was at the right starting position which is parallel to the camera and its button.

Key Features: Jessica coded the payload and assembled a breadboard with an Arduino to test the code. There were a button and LED light, but those were removed when combined with the other subsystems. Jessica named the servo Sebastian before it was renamed by either the team leader or Mr. Neill and programmed the servo rate to be faster than the default rate so that it would take as many pictures as possible. Jessica also designed, got printed, and assembled a mount for the servo.

Failed Attempts: After combing the payload with the other the servo was slow and vibrating a lot. At one point the it got overheated. Also, the servo rate had to be reset to

the default because that was a factor that overheated the servo and made it twitch erratically. The mount was first too wide and thin-walled so it was redesigned, but it was then too narrow when a different servo was being used. The wire on that servo came out of the side instead of the top which made it almost impossible to put it in the mount. Then, the camera was moved to the chassis's outside. So, the servo's mount was removed entirely to allow the servo's attachment to poke out of the camera's old hole. Here's a CAD drawing of the servo mount



Individual Tasks Outside of the Subsystem

Purpose: We also worked on things individually, independant from the subsystem to contribute to the rest of the project. These were not part of the payload, but they were part of progressing the aerial imaging system to completion.

Key specification and requirements: The chassis had to be able to take pictures when it's 3 or more meters high. A large parachute was needed for the chassis to slowly descend.

Key Features: Chantisa tested the camera to measure width and height of the photo. Jessica made a parachute with a 32 in. diameter. She first printed a pattern to make the parachute's pieces, and with help from a couple teammates 8 pieces were traced and cut. Then the pieces were pinned and sewn together to make the parachute's main body. She sewed small loops onto the parachute's corners for the string. She measured, cut, and tied 8 strings that were each 5 ft. long. The parachute was then attached to the chassis's lid, and it was used for the final launchings.

Failed Attempts: The parachute took longer than expected due to the sewing machine messing up a few times because it's old and probably broken, but it was (barely) completed in time. The zoom on the camera was not wide enough to capture the entire target. So, Chantisa adjusted to the zoom complications by holding the camera further away from the target.