Test Readiness Review

Submitted to

Dr. Janiszewska

Prepared by

Matthew Geiger

Nick Stassen

Ben Bazan

Engineering 1182

The Ohio State University

College of Engineering

Newark, OH

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Over the next few weeks, the group will perform multiple different performance tests to construct and implement the most energy efficient and proficient AEV to fulfill the given task.

The first performance test will be to design, build, and test 2 different AEV designs and determine which design is superior. To test the new AEV's, the team will use the same testing methods as in the system analysis experiments.

When executing the second performance test, the team will code the chosen AEV design. This code will complete the full track layout that will traverse from the maintenance station to the Grand Canyon to automatically attach a cart, then stop about halfway while on its way to the Alaska Glacier where it will stop for 4 seconds. The AEV will then travel back to the Grand Canyon station with periodic stops along the way. Finally, once at the Grand Canion station, the cart will be automatically disengaged and the AEV will return to the Maintenance station.

After the AEV has been coded for the full track layout, the team will modify both the code and the AEV itself to become more efficient and consistent using previous knowledge and tactics learned from completed lab experiments.

The final performance test that will be performed will be the final AEV coded test. This run will be scored, and values will be used in the Critical Design Review.

For each performance test the leader of each test will be Matthew Geiger being in charge of performance test 1 Design Comparison, Ben Bazan leading test 2 Developing Arduino code, Nick Stassen being in charge of test 3 Modifying Arduino Code, and Matthew Geiger being in charge of test 4 Final Testing unless otherwise voted by the group with a 2/3 majority. For performance test 1 Design Comparison, Ben Bazan will lead the assembly of design 1 with the help of Nick Stassen and Matthew Geiger, Design 1 will be tested and the data recorded by Matthew Geiger. Next Nick Stassen will lead the assembly of Design 2 with the assistance of Ben Bazan and Matthew Geiger, Design 2 will be tested and the data recorded by Matthew Geiger. Matthew Geiger will analyze the data and draw the conclusion of which design is better which will then be confirmed by Nick Stassen and Ben Bazan. For performance test 2 Development of Arduino Code, Matthew Geiger will write the code for the full track layout assisted by Nick Stassen and Ben Bazan who will ensure the accuracy of the code as well as the performance of the code including the servo needed to attach to the cart. For performance test 3 Modification of the code Nick Stassen and Matthew Geiger will modify the Arduino code from the previous test. Ben Bazan will ensure that the code meets the safety standards for the cargo that is to be dragged along with the vehicle. For performance test 4 the lab

The creation of 2 new designs and their respective testing will take roughly 3 days. The creation of design 1 will take approximately a day as well as design 2. The data recorded from these designs and the comparison of them will take the third day. The data recording, chart creation, and comparison of the data might not take a full day. Also, depending on how drastic the differences between designs are the designs may not take full days each. When coding the AEV for performance test 2, the team will take about 3 days to sufficiently code the full length run. The team already has a rough code for half of the coded run so more time can be focused on consistency transporting the cart without any error. When working on the performance test 3, the group will dedicate 1.5 days to make the AEV as energy efficient as possible. The team will

then use the remaining 1.5 days to update the code to also make it as energy efficient as possible as well as making the code as energy efficient as possible along with as consistent as possible to ensure the AEV makes the trip as safe as possible while completing all of the required requirements. For the final performance test, the team will use at most 2 days to ensure the AEV full track run works completely and will use 1 day for the final test.

If any unexpected event presents itself, the team will resolve the problem completely before moving onto the next step or test to ensure no future problems come up because on an unresolved problem.

Ben Bazan completed performance tests descriptions and preparation for every eventuality. Matthew Geiger completed how the work will be completed and who is in charge of what part. Nick Stassen completed the time it will take for each proficiency test.