Week 9– Performance Test 1

Situation:

During the week 9, the team had successfully completed the Performance Test 1. The goal of this test was to make the team's AEV to the gate, stop for 7-seconds and proceed from the gate. This test was a necessary preparation for the Performance Test 2 and Final Performance Test. During this test, the team successfully learned how to write a consistent Arduino code involving multiple tasks. Also, the group learned how to debug the AEV when it didn't work correctly. These experiences and findings will help the team do a perform better on the future performance tests.

Results & Analysis of Performance Test 1

By using the AEV data analysis tool, the team obtained the Power vs. Time (*figure 1*) and Power vs. Distance (*figure 2*) graphs of Performance Test 1. According to the data, the total energy consumed was 59.202 J. To ensure the AEV stopped accurately before the gate, the team used the power braking method to stop the AEV because the team found that power braking method could increase the braking accuracy based on the advanced research. Additionally, by applying the findings from the advanced research, the weight of AEV that the team used for the performance test was minimized which ultimately improved the consistency of AEV. Based on the results from the Performance Test 1, the team decided to keep this AEV design and use it to complete the Performance Test 2 due to its energy efficiency and consistency.

The errors and limitations of Performance Test 1 have been addressed. First, the AEV didn't work accurately when the team was doing the sample Performance Tests. At the beginning, the team wondered if this issue was caused by a code problem. But after the code had been adjusted, the same issue still appeared. Then the team hypothesized that the sensors were at fault and started doing the reflectance sensor tests. The results of the reflectance sensor tests varied each time and the team concluded that the sensors were non-functional. After the sensors were replaced, the AEV performed more accurately than before the sensors were replaced. Based on this experience, the team suggested that a reflectance sensor test should be performed before each lab to avoid this kind of problem. Second, the team found that the AEV performed inconsistently with the same Arduino code when the classrooms were different. The team hypothesized that the different lighting condition might affected the reflectance sensors. The solution for this problem is just to simply adjust the code so that it can work in the assigned classroom.

Takeaways:

- Minimal weight and power braking significantly increased the consistency of AEV
- Functional reflectance sensors are essential to the performance test
- The Arduino code for AEV might be adjusted when the classroom for testing is different

Week 10– Performance Test 2

Situation:

During the week 10, the team had successfully completed the Performance Test 2. The goal of this test was to make the team's AEV stop before the gate for 7 seconds, pass the gate, connect with cargo train, pause for five seconds and finally exit the loading zone with the connected cargo train. Performance Test 2 was a necessary preparation for the final performance test. Through this test, the team learned how to increase the accuracy of coasting distance and how to troubleshoot the hardware of AEV. These experiences and findings will help the team succeed on the Final Performance Test.

Results & Analysis of Performance Test 2

By using the AEV data analysis tool, the team obtained the Power vs. Time (*figure 3*) and Power vs. Distance (*figure 4*) graphs of Performance Test 2. According to the data, the total energy consumed was 184.001 J. By using the same AEV design from the Performance Test 1, the AEV energy consumption was also well-controlled. When the team was testing the AEV's performance after passing the gate, it was found that immediately using power braking after the AEV reached the position didn't always make the AEV reach the loading zone properly. So, instead of immediately using power braking, the team decided to let AEV coast for a certain distance and then power braked. Moreover, in order to ensure the coasting distance was consistent each time, the team used "*goToRelativePosition(50)*" to detect the coasting distance which was reflected in the Performance Test 2 code (*Appendix A, Performance Test 2 code*). By using the new code, the AEV finally landed properly on the loading zone and successfully completed the Performance Test 2.

The errors and limitation of Performance Test 2 have been addressed. First, the team encountered a problem where the AEV sped up very slowly. Then the team hypothesized that this was due to problem with the battery. As a result, the team decided to replace the battery. After the battery had been replaced, the AEV performed accurately again. Second, even though the team had successfully passed the Performance Test 2, it was found that accuracy of the AEV could still be improved by using a while loop in Arduino code. The team was working on the while loop coding but, due to the time limitation, the while loop was not applied on the Performance Test 2. The team plans to use the while loop in the code for Final Performance Test and it will increase the accuracy of the AEV.

Takeaways:

- "*goToRelativePosition()*" could be used to increase the accuracy of coasting distance
- *While* loop could increase the consistency of the AEV
- Battery could affect the speeding efficiency of the AEV

Week 11-12 – Future Plan for Upcoming Weeks

Situation:

In the upcoming weeks, the group will conduct their Final Performance Test (FPT), draft the final presentation, and update the website. In the FPT, the group will use a new 3D printed base which is 30 grams lighter than the previous base used in Performance Test 1 (PT1) and Performance Test 2 (PT2). The goal of the FPT is to transport people safely and consistently from Linden to Easton and Polaris. Specifically, the AEV will travel to the gate, wait 7 seconds, and attach the AEV's metal to the caboose's magnet by moving the caboose less than 4 inches. Then the AEV will bring the caboose back to the gate, wait 7 seconds, and travel to its starting position. The team will complete the FPT by using two "while" loops for the code. These loops will work until the AEV reaches a certain absolute position on the track, then stop. Also, the team will conduct multiple tests to improve the consistency of the AEV's movement. Once the team thinks that the AEV is completing the tasks properly, the team will conduct the FPT. *Refer to the schedule below and Appendix C for details.*

Before the FPT is due, the team needs to prepare the final presentation draft at the start of week 12. The purpose of this presentation is to present the team's unique AEV design and their approach to solving the problems in the MCR. The team will gather the data from PT1, PT2, FPT, and the advanced research to include in the presentation. Additionally, the group will discuss how their approach to solving problems helped them in the AEV labs. While the final presentation is being drafted, two members on the team will be assigned to update the website regularly. Other members will provide these data by conducting the tests. These updates include the team meeting notes, new data from the performance tests, and any design changes to the AEV. The website needs to be updated regularly so that the team can track their progress and communicate their latest ideas with others through the website. *Refer to the schedule below.*

Future Schedule:

Task	Subtasks	Start Date	Due Date	Time	Teammates	Materials	% Complete
Final Performance Test	Collect data and improve accuracy	3/28/2018	4/13/2018	2 hours	Joey, Feifan, Pravesh	AEV, Battery, Rails	67%
Final Presentation Draft	Organize the presentation draft	4/02/2018	4/09/2018	2 hours	All	Computer, Data	10%
Website Updates	Update team meeting notes	3/30/2018	4/20/2018	2 hours	Pravesh, Feifan	Computer, Data	80%

Goals:

- Successfully complete the Final Performance Test
- Gather relevant data for the final presentation and complete the presentation
- Update the website regularly with the newest data and team meeting notes

Appendix A
Arduino Code

Performance Test 1 Code

```
//set all motors at constant power 30%.
motorSpeed(4,30);
//run AEV until reaching 255 marks.
goToAbsolutePosition(255);
//brake all motors.
brake(4);
//reverse all motors.
reverse(4);
//set all motors at constant power 30%.
motorSpeed(4,30);
//run AEV for 1.5 seconds.
goFor(1.5);
//set all motors at constant power 0%.
motorSpeed(4,0);
//wait in front of the gate for 7.5 seconds.
goFor(7.5);
//reverse all motors.
reverse(4);
//set all motors at constant power 30%.
motorSpeed(4,30);
//run AEV for 1.5 seconds.
goFor(1.5);
```

Performance Test 2 Code

```
//set all motors at constant power 30%.
motorSpeed(4,30);
```

```
//run AEV until reaching 258 marks.
goToRelativePosition(258);
//brake all motors.
brake(4);
//reverse all motors.
reverse(4);
//set all motors at constant power 30%.
motorSpeed(4,30);
//run AEV for 1.5 seconds.
goFor(1.5);
//set all motors at constant power 0%.
motorSpeed(4,0);
//wait in front of the gate for 7.5 seconds.
goFor(7.5);
//reverse all motors.
reverse(4);
//set all motors at constant power 33%.
motorSpeed(4,33);
//run AEV for 166 marks more.
goToRelativePosition(166);
//set all motors at constant power 0%.
motorSpeed(4,0);
//run AEV for 50 marks more.
goToRelativePosition(50);
//brake all motors.
brake(4);
//reverse all motors.
reverse(4);
//set all motors at constant power 55%.
motorSpeed(4,55);
//run AEV for 0.5 seconds.
goFor(0.5);
//set all motors at constant power 0%.
motorSpeed(4,0);
//wait in front of the cargo train for 7 seconds.
goFor(7);
//set all motors at constant power 50%.
motorSpeed(4,50);
//run AEV for 7 seconds.
goFor(7);
```

Appendix B
Graphs and plots

Performance test 1

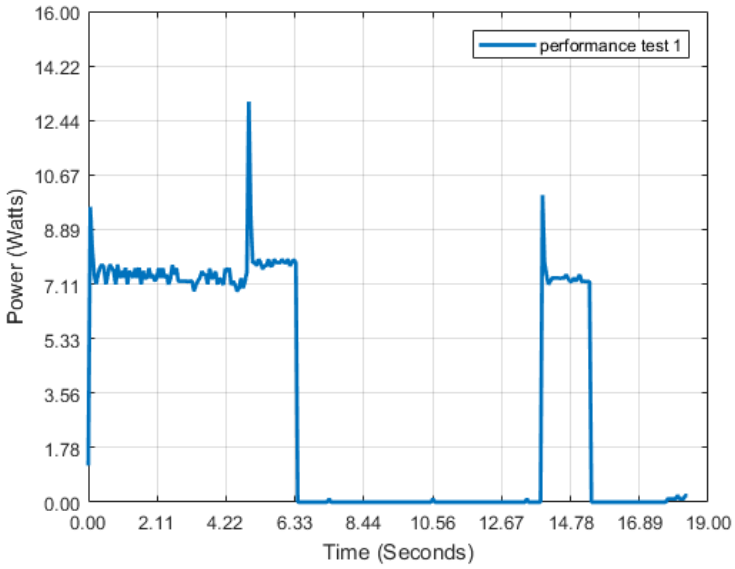

Figure 1. Power(Watts) vs. Time(Seconds)

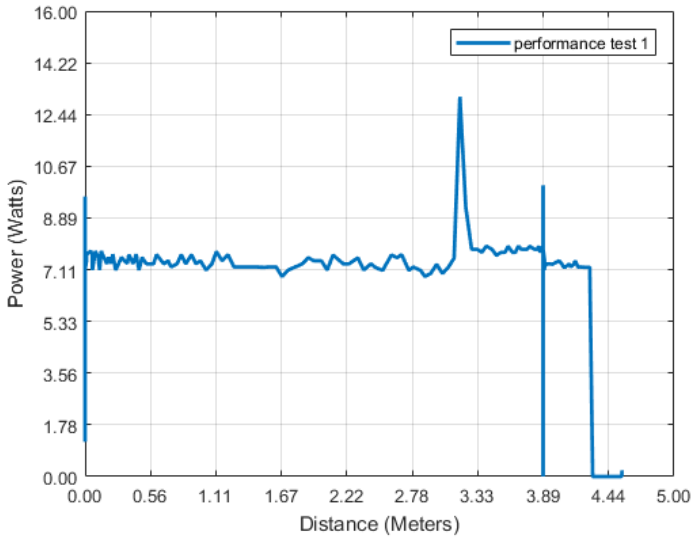

Figure 2. Power(Watts) vs. Distance(Meters)

Performance test 2

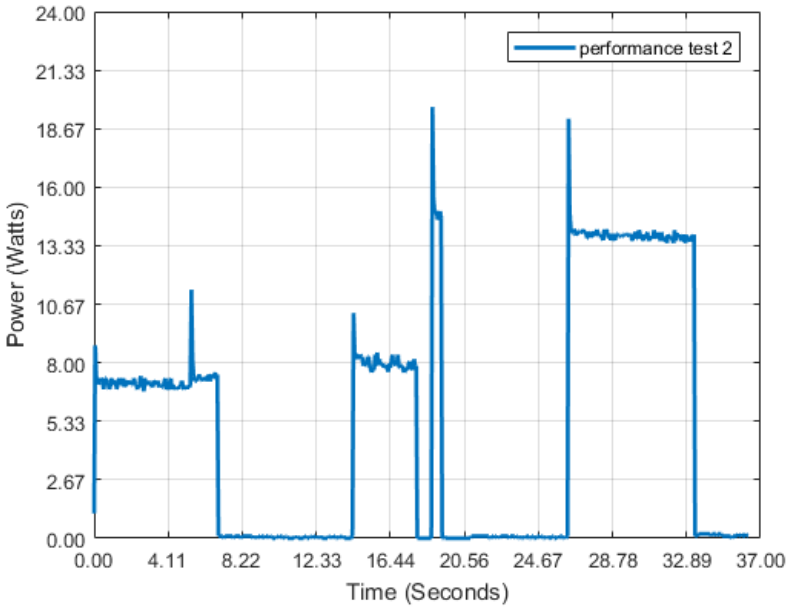

Figure 3. Power(Watts) vs. Time(Seconds)

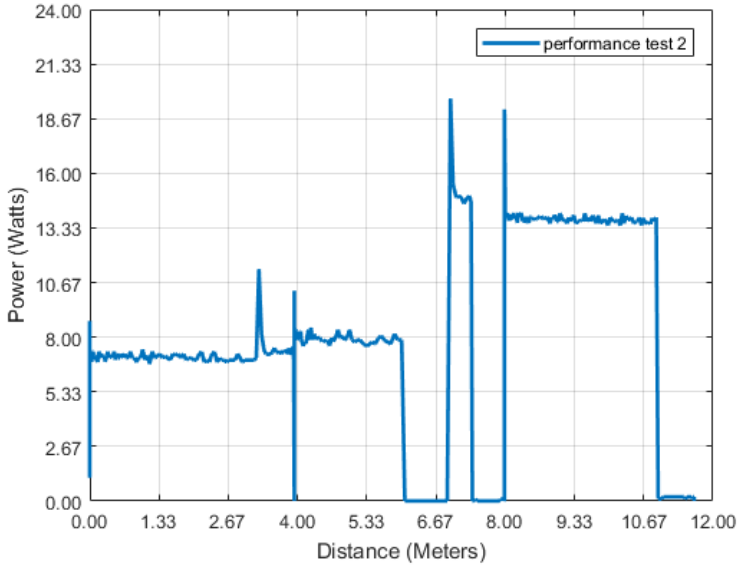

Figure 4. Power(Watts) vs. Distance(Meters)

Appendix C
Team Meeting Minutes

Refer to the link below to check out the team meeting notes under “Meeting” tab.
https://u.osu.edu/eng1182groupn/meeting/

Week 5

February
Meetings #10,11

Date: February 8, 2018
Time: 5:30 PM – 9:30 PM (face to face)
Place: Hitchcock 324, 224
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Progress Report and AEV Design

Date: February 9, 2018
Time: 2:55 PM – 5:15 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Coasting vs. Power Braking

Objective:
During the week 5 meetings, the group’s goal is to finish the Progress report 1 and start Advanced Research and Design.

To do/Action items:
The group attended the 5:30 lab on Thursday to make up lab 2 and lab 4. They discussed details about the AEV design and tested their code during this time. After the make-up lab, the group met in Engineering lab 324 for 4 hours to discuss the progress report and each person’s responsibility.

The group researched Coasting vs. Power braking. The group tested two separate codes to determine whether Coasting or Power braking was more energy efficient. The group discussed how wedge-like wings could potentially harm the AEV stopper since it is like catching a knife. The team encountered several problems when uploading the code to the AEV. The AEV was not recognizing the reverse command. The coder, Feifan learned that a brake command did not have a time specified which caused the motor to be powerless and the reverse command was not working. Joey noticed the error and told Feifan to fix the error which ultimately fixed the

problem. The team was confident that 50% power would not be too much, but the result showed that the AEV reversed too much.

Initial ideas:
Provide specific roles for each member for Coasting vs. Power Braking. (J.G., F.L. P.K., J.C.)
Each member received a part for Coasting vs. Power Braking.

Review the Advanced R&D topics for the lab. (J.G., P.K.)

Update the website for each part in Committee Meeting 1. (P.K., J.G., F.L., J.C.)

Decisions:
-Finish each assigned role before the submission deadline for upcoming deliverables. (FL, JG, JC, PK)

-Prepare for additional Advanced R&D topics. (FL, JG, JC, PK)

-Plan ahead for the upcoming presentations (PK, FL, JG, JC)

Upcoming tasks:
Prepare for another Advanced R&D topics. (J.G.)

Start the Progress Report 2 deliverables. (P.K.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 6

February

Meetings #12,13,14

Date: February 12, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Grant Proposal Roles

Date: February 15, 2018
Time: 5:30 PM – 9:30 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Committee Meeting 1 and Grant Proposal

Date: February 16, 2018
Time: 2:55 PM – 5:15 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Grant Proposal Presentation and Committee Meeting 1

Objective:
During the week 6 meetings, the group's goal is to finish the grant proposal presentation and the committee meeting 1.

To do/Action items:
In the tenth meeting, the group talked about various base designs for the grant proposal. Joey asked the team what we would decide on the number of blades on the propeller. The team also assigned each member a specific part of the grant proposal presentation.

In the eleventh meeting, the group met in the Engineering lab to discuss and finish the committee meeting 1. Pravesh wrote down the team meeting notes and organized the presentation for the grant presentation. Feifan modeled the base as the part being pitched. Pravesh discovered that the current design had a flaw because it lacked a place to attach a magnet. So, the group decided to modify the design to have an attachment at the back of the AEV to hold the magnet.

In the twelfth meeting, the group finalized the grant proposal an hour before the lab in HI 324. Joey presented the grant proposal. The group discussed each part in the committee meeting. Joey and Jingming were responsible for the research and development aspect and Feifan was responsible for public relations. Pravesh submitted the HR portion of the committee meeting online.

Initial ideas:
Provide specific roles for each member for Grant Proposal and Committee Meeting 1. (J.G., F.L. P.K., J.C.) Each member received a part of Committee Meeting 1.

Review the Advanced R&D topics for the lab. (J.G., P.K.)

Update the website for each part in Committee Meeting 1. (P.K., J.G., F.L., J.C.)

Decisions:
-Finish each assigned role before the submission deadline for Committee Meeting 1. (FL, JG, JC, PK)

-Prepare for Advanced R&D topics. (FL, JG, JC, PK)

-Rehearse the presentation for the Grant Proposal (PK, FL, JG, JC)

Upcoming tasks:
Prepare for Advanced R&D topics. (J.G.)

Start the Progress Report 1 deliverables. (P.K.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 7

February

Meetings #15,16

Date: February 21, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Jingming Chen(J.C.), Pravesh Khanal (P.K.)
Topic: Advanced R&D topics

Date: February 23, 2018
Time: 2:55 PM – 5:15 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Pravesh Khanal (P.K.)
Topic: Coasting vs. Power Braking and Solidworks Simulation

Objective:
During the week 6 meetings, the group's goal is to finish Coasting vs. Power braking research as well as start a new research for Wind tunnel. If the Wind tunnel is not working, Solidworks simulation is the next option.

To do/Action items:
In the 15th meeting, the group discussed how Solidworks assembly could be used to model AEV designs. This discussion led the group to talk about Solidworks Simulation. The group considered researching Solidworks simulation since it could provide a useful insight into designing the AEV and analyzing its properties.
In the 16th meeting, the group finished Coasting vs. Power Braking and discussed the results with the team. The wind tunnel lab was canceled, so Pravesh and Jingming decided to start Solidworks Simulation for the group's second research.

Initial ideas:
Research Solidworks simulations. (J.G., F.L. P.K., J.C.) Pravesh and Jingming received a part for Solidworks simulations.

Review the Advanced R&D topics for the lab. (J.G., P.K.)

Update the website for each part in Committee Meeting 1. (P.K., J.G., F.L., J.C.)

Decisions:
-Pravesh and Jingming will finish Solidworks simulations and upload the data for the upcoming presentation. (FL, JG, JC, PK)

-Prepare for Advanced R&D topics. (FL, JG, JC, PK)

-Rehearse the presentation for the oral presentation. (PK, FL, JG, JC)

Upcoming tasks:
Prepare for oral presentation. (J.G.)

Start the Progress Report 2 deliverables. (P.K.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 8

February
Meetings #17,18

Date: February 26, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Pravesh Khanal (P.K.)
Topic: Website Update 3 and Progress Report 1 Rewrite

Date: March 02, 2018
Time: 2:55 PM – 5:15 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Pravesh Khanal (P.K.)
Topic: Website Update 3

Objective:
During the week 8 meetings, the group's goal was to update the Website with the new Advanced Research & Design data as well as finish rewriting Progress Report 1.

To do/Action items:
In the 17th meeting, the team discussed the aspects of Progress Report 1 that needed improvement. Since the forward-looking portion of the Progress Report 1 was non-existent, the group asked TAs questions on what this portion is supposed to contain.
In the 18th meeting, the group met in HI computer lab 224 to discuss what the Website Update 3 was missing. Since the Website Update required updated team meeting notes, the group had to coordinate with other members to discuss whether the meeting notes were up to date.

Initial ideas:
Upload the Solidworks Simulations data on the website. (J.G., F.L. P.K.) Pravesh decided to upload the data in the website.

Upload the Coasting vs. Power Braking data into the website. (J.G., P.K.) Joey and Feifan will upload these materials.

Update the website for the team meeting notes. (P.K.) Pravesh will update the team meeting notes.

Decisions:
-Pravesh and Jingming will finish Solidworks simulations studies and upload the data on the Website. (JC, PK)

-Joey and Feifan will upload the data from Coasting vs Power Braking on the website. (FL, JG)

-Update the Team meeting notes. (PK)

Upcoming tasks:
Progress report 2 forward-looking portions. (J.G.)

Start the Progress Report 2 deliverables. (PK, JG, FL, JC)

Progress report 2 Solidworks Simulations potion. (PK, JC)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 9

March

Meetings #19,20

Date: March 07, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Pravesh Khanal (P.K.)
Topic: AEV Base Printing and Progress Report 2

Date: March 08, 2018
Time: 4:45 PM – 5:20 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G.), Pravesh Khanal (P.K.)
Topic: Progress Report 2 and Website

Objective:
During the week 9 meetings, the group's goal was to update the Website, send AEV base to be printed out, and finish Progress Report 2.

To do/Action items:
In the 19th meeting, the group still needed to send the AEV base design to one of the TAs to be 3D printed. Right before submitting the design, the group had to alter the design of the AEV on the front part where the motor is located because the magnet placement interfered with the location of the motor.
In the 20th meeting, the group needed to meet and finalize progress report 2 as well as update the meeting notes on the website. Since this is the last meeting note that is being submitted on the Progress Report 2, the group had to double check the meeting notes for any errors.

Initial ideas:
Format everyone's part in Progress Report. (J.G., F.L. P.K., J.C.) Pravesh decided to format the Progress Report.

Implement the Coasting vs. Power Braking data into the report. (J.G., F.L.) Joey and Feifan have completed these materials.

Update the website for the team meeting notes. (P.K.) Pravesh will update the team meeting notes.

Decisions:
-Pravesh will format the Progress Report and number the Appendix accordingly (JC, PK)

-Joey and Feifan will write the Coasting vs Power Braking report. (FL, JG)

-Update the Team meeting notes. (PK)

-Joey will write the future portion of the Progress Report. (JG)

Upcoming tasks:
Progress report 2 submissions. (P.K.)

Prepare for the Performance Tests. (P.K., J.G., F.L., J.C.)

Write code for Performance Tests. (F.L.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 10

March

Meetings #21, 22, 23, 24

Date: March 09, 2018
Time: 3:55 PM – 5:05 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: Accuracy for combined Coasting and Power Braking

Date: March 19, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (JC)
Topic: Optimize Speed for Optimal Power Braking / Performance Test 1

Date: March 21, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members Present: Feifan Lin(F.L.), Joey Gill(J.G), Pravesh Khanal (P.K), Jingming Chen (JC)
Topic: CDR Draft / Optimize Speed for Optimal Power Braking

Date: March 23, 2018
Time: 3:55 PM – 5:05 PM (face to face)
Place: Hitchcock 224
Members Present: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: CDR Draft and Performance Tests

Objective:
During the week 10 meetings, the group will complete Optimal Speed to Optimize Braking accuracy, performance Test 1, and CDR draft.

To do/Action items:
During the 21st meeting, the group tested the accuracy for combined Coasting vs. Power Braking.
In the 22nd meeting, the team conducted experiments to Optimize Speed for Optimal Power Braking.
In the 23rd meeting, the group discussed the CDR draft and completed the Optimize Speed for Optimal Power Braking.
During the 24th meeting, the team completed the CDR draft and begun Performance Test 2.

Initial ideas:
Experiment and test Accuracy for combined Coasting and Power Braking. (J.G., F.L.) Joey and Feifan will complete this task.

Optimize Speed for Optimal Power Braking. (J.G., F.L., P.K.)

Update the website for the team meeting notes. (P.K.) Pravesh will update the team meeting notes.

Update the website with the new data from the labs.

Decisions:
-Experiment and test Accuracy for combined Coasting and Power Braking. (FL, JG)
-Optimize Speed for Optimal Power Braking. (FL, JG, PK)
-Update the Team meeting notes. (PK)
-CDR draft should be completed during the week after Spring break (JC, PK)

Upcoming tasks:
Performance Test 1.

CDR Draft. (P.K., J.G., F.L., J.C.)

Write code for Performance Tests. (F.L.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 11

March

Meetings #25, 26, 27

Date: March 26, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members present: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: Performance Test 2/ Committee Meeting 2

Date: March 28, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members present: Feifan Lin(F.L.), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (JC)
Topic: Performance Test 2/ Committee Meeting 2

Date: March 30, 2018
Time: 3:55 PM – 5:05 PM (face to face)
Place: Hitchcock 224
Members present: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: Committee Meeting 2/ Progress Report 3

Objective:
During the week 11 meetings, the group will complete Performance Test 2, Committee Meeting 2, and start Progress Report 3.

To do/Action items:
During the 25st meeting, the group completed the Performance Test 2 and started organizing data for the upcoming committee meeting.
In the 26th meeting, the team finished Performance Test2 since it was not finished on the 25th meeting.
In the 27th meeting, the group discussed Progress Report 3 and concluded the Committee Meeting 2 in lab.

Initial ideas:
Joey thinks that when one of the wires are not properly plugged in, the AEV's inconsistency increases. (JG)

Discuss the Committee Meeting 2 and provide roles for each member. (J.G., F.L., P.K.)

Update the website for the team meeting notes. (P.K.) Pravesh will update the team meeting notes.

Update the website with the new data from the labs.

Decisions:
-Performance Test 2 will be done by Feifan and Joey. Pravesh will help with spotting the AEV. (FL, JG)
-Start data organization for Committee Meeting 2. (FL, JG, PK, JC)
-Update the Team meeting notes. (PK)
-Update the Website. (FL, PK)

Upcoming tasks:
Final Performance Test.

Final Presentation Draft (P.K., J.G., F.L., J.C.)

Write code for Performance Tests. (F.L.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Week 12

March

Meetings #28, 29, 30

Future Schedule

Date: April 9, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members expected: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: Final Presentation Draft/ Final Performance Test

Date: April 11, 2018
Time: 4:10 PM – 5:05 PM (face to face)
Place: Hitchcock 324
Members expected: Feifan Lin(F.L.), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (JC)
Topic: Final Performance Test

Date: April 13, 2018
Time: 3:55 PM – 5:05 PM (face to face)
Place: Hitchcock 224
Members expected: Feifan Lin (F.L), Joey Gill(J.G), Pravesh Khanal(P.K), Jingming Chen (J.C)
Topic: Final Performance Test/ Website Updates

Objective:
During the week 12 meetings, the group will complete the Final Performance test, Final presentation draft, and update the website.

To do/Action items:
During the 28th meeting, the group will finalize the final presentation draft and submit it on carmen. In the 29th meeting, the team will conduct the tests for Final Performance test and decide if the group will meet on Thursday to improve the AEV's consistency. Then, in the 30th meeting, the team will perform the Final Performance test and update the website with the latest data and team meeting notes.

Initial ideas:
The group will test how the while loops affect the stopping distance consistency (JG)

The group will analyze how far the caboose moves in the performance test (J.G., F.L., P.K.)

Update the website for the team meeting notes. (P.K.) Pravesh will update the team meeting notes.

Update the website with the new data from the labs.

Decisions:
-Final Performance Test will be done by Feifan and Joey. Pravesh will help with spotting the AEV. (FL, JG)
-Decision on who will collect the data for the final presentation will be decided. (FL, JG, PK, JC)
-Update the Team meeting notes. (PK)
-Update the Website. (FL, PK)

Upcoming tasks:
Final Performance Test.

Final Presentation Draft (P.K., J.G., F.L., J.C.)

Write code for Performance Tests. (F.L.)

Update team meeting notes. (P.K.)

Update the website. (F.L., P.K.)

Roles subject to change.

Appendix D
Future Schedule

Task	Subtasks	Start Date	Due Date	Time	Teammates	Materials	% Complete
Final Performance Test	Collect data and improve accuracy	3/28/2018	4/13/2018	2 hours	Joey, Feifan, Pravesh	AEV, Battery, Rails	67%
Final Presentation Draft	Organize the presentation draft	4/02/2018	4/09/2018	2 hours	All	Computer, Data	10%
Website Updates	Update team meeting notes	3/30/2018	4/20/2018	2 hours	Pravesh, Feifan	Computer, Data	80%