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Introduction - FRC Log

This is the 3574 FRC Log for the 2025 game season, Reefscape. I created this log to keep track of the work we are doing, and it could be useful to us later in the season. I tied it to a google calendar for ease of access. Students on our team in future seasons could look back and read about this to gain knowledge without having to make the same mistakes. NOTE: We came up with a time tracking system to help us stick to schedule, using peanuts. Please keep in mind that 1 peanut = a group of 4 working for 3 hours.

1. January 4th, Saturday - Kickoff - 8 people

Kickoff day! We were at Auburn High School for the kickoff. The game this year is pretty interesting. To score points, you can place coral on a reef, remove algae from the reef, and score the algae in the net or processor. There is also a hang this year, where you hang from either a deep or shallow dangling cage. After the [game](#) was revealed, we broke off into breakout rooms. Many of the students on our team, including myself, have never been to an FRC Kickoff, so this was a new experience for a lot of us. Anyways, the breakout rooms had a few different topics, such as strategy, field strategy, autonomous period, endgame period, and more. I took a few [pictures](#). When we got back to the shop, there were a few things we did to help prepare us to start the build season.

- We discussed the breakout rooms, and started to understand the game more in-depth.
- We decided to meet tomorrow, and every day until the end of the week.
- We started on a schedule and came up with a system where we used peanuts to represent chunks for time. 1 peanut = a 4 person team working for 3 hours.
- We started to assign roles and responsibilities for who would work on what during the season

Tomorrow, our team wants to start discussing the rules in more detail, after spending a night reading over them and talking about them on Discord. We also want to consider strategies that fit within the constraints of the rules.

2. January 5th, Sunday - 3 peanuts 🥜 - 6 people

Today, we worked on reading the rules. Our team split up into two groups of three, where we worked for 20 minutes at a time. We would check in with our coach after working for a bit, then get back to it. One group focused on rules that affected our strategy, and the

other group focused on rules that affected our design. Afterwards, we compiled it into a [spreadsheet](#). I also took a few [pictures](#) of notes we took early on. Here's a few bullet points on what was completed today.

- The team cemented what times to meet for this week. We decided on 5-8:30 because most people could make it.
- We created spreadsheets to keep track of important rules.
- We got the game materials and inflated the algae.
- Started talking basic strategy, and possible scoring routes we could design for.

Tomorrow, we want to go over the rules another time. Once we have the spreadsheets from both groups combined, we will go over what we missed and fill holes. Afterwards, we may start talking more about strategy and optimal gameplay for our robot.

3. January 6th, Monday - 3 peanuts - 9 people

Today, our team went over strategy and design. We split up into three groups of three, two groups worked on strategy and one worked on design. The strategy groups focused on algae, and on coral. We did some math, and calculated how far the distance between the processor and the reef was, or the starting line and the reef. This will help us find iteration time for when we are creating our autonomous. The design team started drawing out some rough ideas of how to control the algae and coral. They also started to think about some climbing mechanisms for both the deep and shallow cage. I did manage to take [pictures](#) and document everything we discussed. So to summarize, we:

- Created spreadsheets.
- Did some math.
- Made a flowchart for possible strategies during the match.
- Drew up basic design ideas.
- Thought about what optimal gameplay would look like.

Tomorrow, I think we want to continue working on strategy and design. The team wants to do some drawings and brainstorming at home, post it on Discord, and discuss it further at the next meeting.

4. January 7th, Tuesday - 2 peanuts - 6 people

I unfortunately got sick and wasn't there today, but I will do my best to still keep this updated. From what I heard, they broke up into two groups of three, one team working on design, and another working on strategy. The strategy team worked on finding the best autonomous paths, and a few possible tele-op strategies. The design team came up with a few ideas for an intake that would be used to manipulate coral. The students that were there did send a few [pictures](#) in the Discord. Here's a few bullet points of what was accomplished:

- Brainstormed autonomous path ideas.
- Brainstormed coral pickup mechanisms.
- Did a bit of math related to the reef and how the algae is aligned.

Tomorrow, we want to put more work into design now that we have a better idea of what strategy we want our robot to execute. We will probably start designing in more detail, and start thinking about how the components will work together.

5. January 8th, Wednesday - 3 peanuts 🥜 - 9 people

Today, I was still sick, so I'm relying on whatever my teammates have posted and explained on Discord. I'm pretty sure today they did a lot of design. The team discussed climbing ideas, and did some math related to picking up game pieces. Most of the design ideas were for the intake, and on how to pick up both algae and coral. There was also some talk about the shape of the robot's drive base. The team did take [pictures](#) of the drawings they made. Here's what was accomplished:

- Designs of an arm to score in the net zone.
- Brainstormed climbing ideas.
- Drew up two designs for an algae intake.
- Did some math for our intake designs.

Tomorrow, we want to start combining the different designs from each of the groups, and start thinking about how they will work together. According to our timeline, we have 2(?) peanuts left for design, so we want to be done with the design phase by the end of the week.

6. January 9th, Thursday - 1 peanut 🥜 - 4 people

I was there today, so I can give you a more clear view of what happened. We started off by prototyping designs for the climbers and what techniques were the best. We decided that bringing the cage into the center of the robot straight down and pulling ourselves up around it would be the easiest to accomplish. We then went to design. Drawing up how we wanted to position the different parts on the robot helped us visualize where everything would go and how it would interact. One team member worked on a bit of math. There are [pictures](#) of everything we drew up. I don't think today was super productive, because we didn't have many people show up. What we did accomplish:

- Got an idea of different configurations of the coral intake, algae intake, and linear slides on the robot.
- Prototyped climbing styles.
- Did some math.

Tomorrow, we probably want to work on putting more detail into our designs, and finding sizes for all the pieces. We may even want to start prototyping.

7. January 10th, Friday - 1.5 peanuts 🥜 - 5 people

Today, the team split into two teams, one that worked on design, and the other that worked on prototyping. I realized that these logs don't have very much detail on what we

are actually doing, and instead are more like a summary. I want to try to change that. Anyways, the design team started drawing up the coral funnel, the algae claw, and the full robot. We drew them to a 2:1 scale, so it was easier to visualize. For the coral funnel, we were first thinking about it being a V-shaped funnel, but after looking at it more closely, it would be better to make it more like a box or a trapezoid. This will help us save space, and better control the coral. For the algae claw, at first, the design was 3 “prongs” with wheels, and we changed it to be angled at a 35 degree angle. We did this for easier alignment with the reef branches, which are also at a 35 degree angle. With the whole robot drawing, we found out we needed to use 16 inch long aluminum for the frame of the robot. The prototyping team worked on how the coral would slide on different surfaces. The design team took [pictures](#) of the scale drawings we made. A summary:

- Drew to scale drawings of the different components on the robots.
- Did trig to determine possible measurements for intakes.
- Tested the game pieces on different surfaces and dropping at different angles.

Tomorrow, we might want to start working on CAD for the swerve drive train, and finalizing design. We also want to do more prototyping to see if our designs are actually viable. writers note- I did like the way that this entry turned out, but I did write more and have to put more effort into it. I will see if I want to keep doing it like this or just go back to summarizing with few details.

8. January 11th, Saturday - 3 peanuts 🥜 - 8 people

Today, we worked on design, math, and started on CAD. I did some CAD between last night and this morning to save time, so we know how our drive rails and swerve modules go together. Our drive train is currently 24x24 inches, but we may want to expand to gain extra space. Today, we had a group work on math for our coral intake. We found out that with our current design, the wheels didn't reach the algae. I did some more CAD, adding a belly pan, making cutouts for the climber and battery. I took [pictures](#) of most of what we did. What we accomplished:

- Did some math for the intake.
- Finished up some CAD.
- Started to build the swerve drive modules.
- Researched possible linear lift options.

On Monday, since we decided to use the linear lift from swyft robotics, we will most likely start CAD for it to figure out specifics. We will also work on finalizing the intakes, and finishing the swerve drives.

9. January 13th, Monday - 2 peanuts 🥜 - 7 people

Today, we started to CAD our linear lift. Since the starting height limit is 3.5 feet, we need to design around that constraint. We also need to make it able to reach the top level of the reef, and score in the net. The other team worked on finishing the algae delivery

system, and a few people went down to the build room to check what parts are available to use. I took a few [pictures and screenshots](#). To summarize:

- We CADed the linear lift and used the calculator to find its height.
- Came up with more precise measurements for the algae claw.
- Did some block CAD to visualize intake and delivery systems.

Next time we meet, we want to finish our designs, start doing CAD with the precise measurements, and think about our climber mechanism.

10. January 15th, Wednesday - ? peanuts 🥜 - ? people

I was not here today, so I will try to relay the information posted on Discord as accurately as possible. Today, the team worked on math for the algae intake, art for our team shirts, and CAD for the coral intake and delivery. We found that our pivot for the algae arm cannot be at the top of the linear lift, so we could solve this by bringing it down about twelve inches. A spreadsheet was made for more detailed calculations. The art team drew up a few ideas of our mascot Eve, and the theme of this year's game. A bit of CAD for the coral mechanism was done. There were a few [pictures](#) taken.

Anyways, this is what was completed:

- Did some algae math and put it in a [spreadsheet](#).
- Made some rough ideas for team shirts and/or hoodies
- Did block coral mechanism CAD.

On Friday, we want to think about our linear lift in more detail, and find sizings. We also want to do more CAD and design with our coral and algae intakes.

11. January 17th, Friday - 3 peanuts 🥜 - 9 people

Today, we worked on our slide, and delivery mechanisms. We had one team working on finishing up the CAD for the coral delivery, one team working on the design for the algae claw, and one team working on CAD for the linear lift. The linear lift team was able to find precise measurements that suited our needs. We wanted our starting height to be 41 inches, so that the slide would fully extend to 105 inches. The coral team fleshed out some designs in CAD. They came up with 3 designs. We also had one programmer looking into April Tag vision, and what we'd need to make that happen. We took a few [pictures and screenshots](#). What we did:

- Found linear slide heights
- Made the decision to have the algae mechanism score backwards into the net.
- CADed designs for coral intake and delivery

Tomorrow, we want to start finalizing everything in CAD, and compiling them onto the same assembly. The team also wants to use the decisions we made with the algae mechanism to start prototyping.

12. January 18th, Saturday - 5 peanuts 🥜 - 10 people

Today, we had the team split into three main groups. One doing coral CAD, one doing slide CAD, and one doing algae prototyping. The algae group managed to put together a rough claw that could pick up the algae. It helped us better understand what size it needs to be, and how far apart the wheels are. The slide team created holes and supports on the belly pan, then cut the slide in CAD to make it the right size. We put that together into one assembly and added legs for more support. The coral team CADed the mechanism, and transferred it over to the same assembly so we could put it all together.

[Pictures](#) were taken of the algae prototype. Here's what we accomplished:

- Prototyping algae mechanism
- Creating the lift in CAD
- Creating the coral mechanism in CAD
- (We also had a few parents come to help clean up the build room, thank you!)

Tomorrow we want to complete putting the CAD together, and even start understanding the algae intake and delivery in CAD. It will be another long day, because we have school off on Monday, so we will have extra peanuts to add to our schedule.

13. January 20th, Monday - ? peanuts 🥜 - ? people

I haven't been keeping up with the log too well recently. I apologize if there are inaccuracies or things I left out here, and I will do my best to recap what was accomplished. Anyways. On Monday, we had a long day, due to school being off. The CAD team continued working on the linear lift CAD, the coral CAD, and the drivetrain CAD. The math team did more work on precisely how far the wheels on the algae claw had to extend from the frame to intake. Here is a [picture](#) from the math spreadsheet.

Here's a summary of what we did.

- Coral CAD for the ramp.
- Linear lift CAD, fixing file paths.
- Drivetrain CAD, rethinking the bellypan.

14. January 22nd, Wednesday - 3 peanuts 🥜 - 8 people

Still catching up with the days I didn't write, so if this is inaccurate or leaves anything out, I apologize. Today, we had access to a cage to do some tests on and learn more about how it will work with our design. We found that we had to think about how it swings back, and maybe add wheels to our climber to trap the cage. We did CAD for the drivetrain and belly pan, for the linear lift, and lots of brackets for connections.

15. January 24th, Friday - peanuts 🥜 - people

I had to leave early today, so this might not capture everything that was accomplished today.

16. January 25th, Saturday - peanuts 🥜 - people

17. January 27th, Monday - peanuts 🥜 - people

18. January 29th, Wednesday - 2 peanuts 🥜 - 7 people

Today, we worked on lots of CAD. The team was split into five groups. We had a person working on CAD for the bumpers and how they would go together. We had another person working on the linear lift CAD, and how the 775 motor would go onto it. The algae team consisted of two people, and they worked on putting the dimensions we calculated for the arm into CAD. The fourth group worked on a cage funnel design, and did some trig to calculate the angle of it. Finally, we had one person work on putting together our swerve drive train, which was very exciting. Today, we:

- Added brackets to the bumper.
- Added motors to linear lift CAD.
- Worked a bit on the initial CAD for our algae intake.
- Calculated angles for cage funnel.
- Built half of the drivetrain

On Friday, we want to finish CAD for the bumper. We have considered using springs to capture the cage in the center of our robot, so some thinking needs to be done for that. The team also wants to finish building the drivetrain base.

19. January 31th, Friday - 2 peanuts 🥜 - 7 people

20. February 1st, Saturday - 5 peanuts 🥜 - 10 people

Today we split into our groups, one person working on drivetrain and bumper CAD, one person

21. February 3rd, Monday- 5 peanuts 🥜 - 10 people

22. February 5th, Wednesday - 5 peanuts 🥜 - 10 people

23. February 7th, Friday - 5 peanuts 🥜 - 10 people

24. February 8th, Saturday - 5 peanuts 🥜 - 10 people

Today, we did more CAD, and some building. We lightened up the belly pan in CAD, to lose weight, and worked on CAD for our algae arm. We also did some work on the climber.

25. February 10th, Monday - peanuts 🥜 - 5 people

Today, we did more CAD. The linear lift needed a way to attach the motor, so we worked on making a bracket and for it. We also added more

26. February 12th, Wednesday - 2 peanuts 🥜 - 5 people

Today, we did more CAD, and some prototyping. We finished the belly pan and coral intake in CAD, so we had the people who were working on those CAD attachments between the slide and coral. We also had a few people working on the algae intake claw and the cage climber. In prototyping, one member worked on putting some wheels on shafts to find exactly how the algae claw would work. To summarize:

- Finished CAD for the belly pan
- Finished CAD for the coral component
- Added holes for the slide and coral to attach
- Started more detailed prototyping for algae intake
- Worked on CAD for the algae intake and for the climber

On Friday, we want to work on adding more detail to our CAD, and making the pivot point for the algae intake. Since our linear lift is shipping so late in the season, we have to make sure that the CAD for it is foolproof.

27. March 6-8th, Clackamas Academy

At the first competition, Clackamas Academy down in Oregon City, we encountered some unexpected challenges. On the way to the competition, our trailer broke down with everything and everything needed for the competition. Our massive tool cart, robot, tables,

storage, batteries, and more were all stuck in the middle of the night. With almost no hope left, some amazing teams drove down to pick up our stuff in their trailer and dropped it off at our pits at 2am in the morning. And they weren't even participating in the competition. The majority of our tools and parts were still at home, but we were able to function, and with the help from many, many other teams, we were able to walk away with the Rising All-Star Award and the title of "Winners". We were chosen by 3663 and 3636, and went undefeated in the playoffs.

28. March 10th, Monday - 4 peanuts 🥜 - 11 people (Day One of Eleven Before Auburn)

Meeting Summary (written the next morning) :
Good morning yall,

Yesterday we discussed and created a master list of must repairs, must buys, upgrades, and degrades for our robot until the next competition. This included things that we must do in order for our robot to run legally, things that we must buy to get there, things that would make our robot/match better, and things that will stop us from getting there, respectively. The list is on the build room whiteboard for everyone to see, and a photo of it will be posted here.

After coming up with those, we decided that we would have 4 subteams, and assigned them each an upgrade to work on breaking down the tasks, but we didn't divide into groups yet. As a group, we broke down "fixing our linear lift" into the ultimate goal of scoring on I4, and that broke down into gaining more torque through the motors. This could be through 2 ways, either gearing up some more 775s and replacing the ones currently on the robot, as well as dropping them down the lift further to allow for enough space for the motor to be able to be repaired. Option #2 is using a different motor with more torque, like a neo, kraken, or falcon, and gearing it down for greater speed and power. Unfortunately, we don't have any available falcons, and krakens would require us using an entirely new encoder (and maybe if i remember correctly, we would have to use a different motor controller like talon srx or sparkmax) and they would be heavier, bigger, and eat up more power. For a neo, we would be able to use the sparkmax controller and rev bore encoder with it and it has something like 5x the torque of a 775. We would have to make a new mounting plate, and potentially also drop it down, but that also helps with lowering our center of gravity, which I will get to soon. We found out that a neo would be able to lift up the weight of the lift, even with a 2:1, but that would be too fast and uncontrolled. If we want to have a barge height extension in 1 second, a 5:1 would do the trick, and if we are ok with 1.5 seconds, 7-8:1 would work as well. We also considered chains rather than pulleys but didn't get too deep with that.

After that, we discussed "fixing balance issues." During the competition, we tried to climb several times, but our robot was extremely front heavy (that's the side of the linear lift) and we were still touching the ground whenever we tried to climb. We wanted to

counteract that and allow for a center of gravity closer to the center to allow us to not only climb safer, easier, and more consistently, but also to allow the driver more room for error and not have serious consequences like the robot falling over. We came up with a few ideas. Option #1 is flipping the crossbars in the climbing area, on the sparkmax and talon srx mounting plate, to the other side to allow more room for climbing towards the front. We were not sure if this would be enough to help us climb, but it would sure make a difference. The only problem is that this doesn't help solve the issue of us falling over. Option #2 is adding more weight to the bumpers. Coach David found out that when he put 24 lb of water in a bucket at the back of the robot, it was balanced. We still have 10 lb remaining in our weight limit and 9lb remaining in the robot limit, so we won't be able to just add weight and hope it works. We thought that we could add 10 lb of metal to the bumpers in the back, and that because the weight is so far out, it would counteract the weight, but when we tested it, it only worked when the climb was 1 inch back from where it usually is, which would involve flipping the crossbars. We also thought about having an arm specifically for balance that would flip down either at the start of the match or when we climbed, that would extend and balance us when we tried to climb. But obviously, that is very complicated and would require some serious engineering for only 10 days.

In conclusion, we need to decide if we want chains or belts on the linear lift motors, and if we have the right parts for this build, as we have already decided to go with neos but won't be able to if we don't have the right parts. We also need to come up with a solution to the weight issue and figure out what needs to be ordered asap. If we want it built, we need it shipped. Lastly, discuss. What other ideas do you have and how do they work? Let's get this party started.

(Some clarification with help from the team) : Krakens has an encoder and controller built in, so no need to have them separately, and the total weight of the neo and its encoder and controller, is actually slightly heavier than the total weight of the kraken, so the kraken would be very similar in weight. But the kraken is bigger and does eat up more power.

Coach David did not actually put water on the back, he bought $\frac{2}{3}$ of a pack of bottled water and that came out to 24 lb.

The motor math was calculated for L4, not the barge.)

To further summarize:

- We created a master list of repairs, things to buy, upgrades and degrades before the next competition.
- We decided on 4 subteams, "Linear Lift to Correct Lift Levels", "Redistribute Center of Gravity to Speed up Robot", "Climb", and "Autonomous Coral"
- We broke down the linear lift and CG tasks into smaller chunks of work, such as deciding on motors, creating a bracket, and coming up with a balanced design.
- We tested some weight on the robot using batteries and found out that with about 24-26 lb on the back of the robot, we would be balanced but if we just put more weight on, we will exceed the weight limit.

On Tuesday, we want to come up with a design for the CG issues, divide into sub teams, start repairing the robot, and complete our must buy list so that we can get some orders out for important parts and tools.

29. March 11th, Tuesday - 3 peanuts 🥜 - 9 people (Day Two of Eleven Before Auburn)

Meeting Summary (after practice) :

Ok soooo Elliot and I [Annabella] made a list of things we could do to make the algae arm lighter.

1. Cut back certain parts of the two outer plates cuz there is so much extra material there that we don't need
2. Make the middle plates 1/4in poly carb
3. Ummm if the two middle plates change thickness then we have to change the spacers to be shorter
4. Use vortex motor so we don't need an encoder
5. Lightning holes like anywhere that there is space
6. Something about hex shaped things so the polycarbonate doesn't get hurt

Yesterday, I [Takeshi] worked on cadding the aforementioned bracket for the neo motor. I assembled the rev 180 degree gearbox in cad but instead of a rev gearbox, we used the same versaplanetary gearbox as the last motor and the same gearing ratio, just to be safe and create less work in the long run. I then planned out how I wanted the bracket to look. I then did the pattern for all of the holes and put a correctly sized box around it before running into issues when trying to line it up with the previous bracket. You see, coach david designed a plate that keeps the linear lift motor stable and doesn't let it bend like it was doing before and we don't want to have to make a completely new bracket or belts or even pulleys, so we are keeping the same center to center, and lining up the versaplanetary gearbox up with the holes it went in last time. Right now, it is in an uncompleted state, and the only other people who know how it works are coach david and liam, so when me and masa leave at 7 tomorrow, if the bracket isn't finished, I will pass on my work to liam.

To further summarize:

- We divided into groups and each worked on the task we wanted to.
- One of the groups was able to find out that once we solved the balance issues, we would be able to climb after some very simple mechanical changes.
- One of the groups listed some ways for us to lighten the algae in the event that we are able to use it.
- One of the groups started researching some info on neo motors and cadding a mounting bracket for it.

30. March 12th, Tuesday - 4 peanuts 🥜 - 12 people (Day Three of Eleven Before Auburn)

Meeting Summary (written after practice) :

Yesterday, I didn't do much because me and masa had to leave early. I started lining up the motors for the linear lift in cad, and was preparing to design the bracket, but I believe somebody else did so while we were gone. It should be noted that the gusset that comes with the 180 degree gearbox is 1/4" thick, but we are making a new one that will be 1/8" thick, so that when added to our bracket that will also be 1/8" thick, it will make a 1/4" thick bracket.

To further summarize:

- One group worked on cadding the motor bracket and was able to produce a finished bracket
- Raj was able to find one 1/4" steel plate for weighing down the bumper
- Corin was able to show up despite his broken leg and helped with fixing an issue with the guides for the cage (the standoff got torqued and the male side got ripped off and lodged in the swerve drive threaded hole. They were able to get it out and I'm not sure how far they got on repairs).
- The swerve drive frame (on the Mk4n it is the L-shaped bracket with threaded holes connecting it to the versaframe) is angled away from the robot and down to the ground a few degrees, and that is part of the reason that the climb guides broke.

31. March 15th, Saturday - 6 peanuts 🥜 - 9 people (Day Six of Eleven Before Auburn)

Meeting Summary

On Saturday, we did some specialized work on the climber mechanism, as we were having weight issues with it. Whenever we climbed, the cam would spin inside the hole of the cage and cause the back of the robot to lift in the air. This made our climb illegal as we obviously don't want that. So, we experimented with different cam designs and decided that just changing the cam wouldn't do the job. We designed a springed hook mechanism that captures the top of the cage and stops it from spinning. We prototyped this with some hooks and tested to see if it would work by tying zip ties around the top of the cage while we climbed to see if the cage would still spin. And sure enough, a legal climb. We also worked on mounting the neo motors on the lift with the newly cut mounting brackets.

To further summarize:

- We found out that our current climb was illegal
- We prototyped and tested different designs and decided on a general idea.
- We cut and mounted the linear lift brackets and motors.

32. March 16th, Sunday - 6 peanuts 🥜 - 9 people (Day Seven of Eleven Before Auburn)

Meeting Summary:

On Sunday, we focused almost exclusively on the linear lift and getting it to run with the new motors. When we initially tried to raise the lift, it bounced furiously up and down. Luckily, the programmers were able to come up with a solution. After, when we tried to raise the lift, it would get jammed and scream at about L2 level. The lifts would also raise different amounts, and they were still not going to the desired height. We found an underlying issue when trying to solve this problem. One of the brackets on the horizontal junction was on the inside, rather than the outside. This freed up so much pressure and allowed the lifts to rise to similar amounts, but still about a quarter inch off. On a side note, we also got the computers in Ghost to turn on, but we can't run any commands without the password. Mentor Brandon is working out a solution, but it is a low priority when compared to other things.

To further summarize:

- We got the linear lift motors up and running
- We encountered many issues with them
- We also found a mechanical issue where a bracket on the horizontal junction was on the wrong side of a plate.
- We got the computers in Ghost on, but can't move forward with it right now.

33. March 21st-23rd, Auburn

Walking into the Auburn event, we had a rough start. At this event, 2910 Jack in the Bot had been in attendance. A thing to know about Jack in the Bot is that they are good, like really, really, really good. Last year, their robot was in the top 10 robots in the world. They went undefeated in every match that they played and walked away champions, unsurprisingly. While most teams got to play with them at least once within their 12 matches, a few unlucky teams did not. We were one of them. In the beginning, we were last place for 30 matches and had been on a 5 long lose streak for what had felt like an eternity. But luckily, we turned it around with the implementation of a legal climb, and we rose higher and higher in the rankings until we ultimately reached 24th/36th place. In the playoffs, we were chosen by an amazing team, 2nd place in raw stats, only beat by Jack. The number 4 alliance remained strong, but after a loss against Jack, and some terrible issues with some wiring, we fell against alliance 3. The sad part is that if we had played instead of calling in a backup robot, we would've won the match and moved on to semifinals. But things happen. In the end, we achieved the Rising All-Star Award for a 2nd time, and placed 31st/132 in districts, we were going to district champs. P.S. one of the monitors in ghost got ripped off in the trailer on the way to the comp.

34. March 24th, Monday - 4 peanuts 🥜 - 10 people (Day One of Nine Before District Champs)

Meeting Summary:

We started by making another master list of must repairs, must buys, upgrades, and degrades. We then split into 3 groups, 4 in total if we count the programmers. Also, a

skunks student who worked on their cameras came in and as far as I know, our cameras are functioning now.

as for group ones (annabella, zoe, and takeshi) status: we were tasked with making sure that all robot extremities were inside the perimeter of the robot at the start of the match. we found out that the right side of the chute for coral remains inside the perimeter, but that even when the linear lifts were straightened, the delivery stuck out of the front. we are going to wait until the linear lifts are repaired and mounted, and then take entirely new measurements. for now, we have a few ideas bouncing on how to fix the issue if it persists, but haven't decided on the best option yet. we could always cut down the polycarb, or loosen and tighten the bolts holding the delivery on to the linear lift panels. we could also tape the delivery back at the start of the match, and when the robot moves, it will break off. lastly, we tightened one bolt holding the falcon's 90 degree gearbox onto the climber structure, and were able to cross the wiggling motors off of the list.

For groups #2 and #3, we worked on fixing the linear lift. We first identified what we needed to have, and steps we needed to take. We made sure this wouldn't interfere with other groups' work. Today, we made the list. We also checked that we had enough components like the string and the bearings. Our next steps are to remove the lifts, remove the coral delivery from the lifts, and disassemble. We are currently waiting for stronger strings to arrive, hopefully we can get that by wednesday.

To further summarize:

- We made a master list of must buys, must repairs, upgrades, and degrades.
- We split into groups.
- Lucas, a skunks programmer who worked on their cameras came in and helped us with ours.
- Group one took measurements and tried to mitigate the problem of the robot extending outside of the perimeter at rest.
- Groups 2 and 3 worked on planning and prepping for the linear lifts to be repaired.

35. March 25th, Tuesday - 3 peanuts 🥜 - 10 people (Day Two of Nine Before District Champs)

today, group one was able to remove the linear lift panels and build some more structure around it. we wanted to ensure that when it was bending, it wasn't pushing the coral delivery outside the perimeter. this included cutting some flat plates to go across the top and bottom, one near the algae hardstop, and the other at the very top, ready to be taken off if an algae arm is incorporated. we were also able to ensure that our climb is legal, and we now have video evidence to prove it. lastly, I counted and sorted some buttons with Andy, and now they are nearly ready for competition.

Groups 2 and 3 removed and disassembled the linear slides, and cleaned them out. We will be able to reassemble them tomorrow when we have the correct ropes for it.

today, group four made an ethernet cable without the PoE (power over ethernet) pins, making it legal for us to use the Rio port in the radio. We binded the d-pad on the driver's controller to move relative to the robot, which I think will help Daniel (driver) precisely adjust the robot for scoring like coral and hang. We measured and tested the cameras. The April tags were not updating our location on the field properly, so fixing that is a next step.

To further summarize:

- Group one removed the linear lift panels and added some more structure to them.
- Groups 2 and 3 worked on removing and disassembling the linear lifts, so that they are ready for assembly when the new ropes come in tomorrow.
- Group 4 (programmers) created an ethernet cable without the power over ethernet pins as a legal alternative to using aux port.

36. March 26th, Wednesday - 2 peanuts 🥜 - 6 people (Day Three of Nine Before District Champs)

today, takeshi, masa, and mentor jules worked on specifying some designs for a modified algae arm that would either remove algae from the reef, or remove algae and score it in the barge.

some general constraints:

must not interact with the chain on the cage, or else we will have an illegal climb.

must fit within the starting area of the robot and not extend more than 22 in, so that it remains within the horizontal extension limit.

must be achievable by DCOMP

we came up with 5 general designs:

1. a flipper without wheels - this would look like 2 small pieces of metal or plastic that would flip down on the algae pivot point and rotate back up to remove the algae. this is the most simple, but most likely will involve some math and would require us to back up while removing the algae to gain enough energy to remove it. it wont require us to remove any of the structure around the linear lift panels, except the temporary top flat plate, unless it stores itself down. in that case, we might have to remove both the bottom flat plate and the old algae arm hard-stop.
2. a flipper with wheels - this would look like the previous design, except with wheels that allow for more tolerance and positive control. we would grab it and then drop it on the floor, using 2 arms on either side to avoid interacting either the chain.
3. a static flipper with wheels - this would look like a set of arms that pop down at the start of the match, and have spinning wheels on them. as we raise the lift, the wheels would move the ball in an arc and remove it from the reef. this would require a much slower linear lift mode to ensure that it is removed efficiently.
4. a grabber with outside wheels - this idea is for a mechanism that can score the algae. it involves 2 arms made of 1 x 1 tube stock that reach up past the top of the lifts. it would feature 2 wheel mechanisms coming off of it that grab the algae on the sides, and spit it

out to score it in the net. this would require some engineering about the bending on the arms away from each other as there is no support currently. it would store itself in the back of the robot, to ensure a steady climb.

5. a grabber with bottom wheels - this design features 2 arms with either one or two wheels on each. they grab the algae on the top and have a static set of plastic or other material that allows the algae to be pressed onto it. this would allow the wheels to pull the algae in and hold it with the help of the static piece. then, this mechanism would rotate up and reach the optimal height for a gentle score, ensuring that the algae will go in consistently.

we have 3 flipper ideas and 2 grabber ideas, and we will figure out which works best for our situation when we have more information. if we are able to fix the lifts soon, then we might have enough time to implement a grabber that can score, if not, we will go for something minimal. let me know what you think about these ideas or if you have any questions. I also did some minor ghost organization of the season and specialty tools drawer.

As masa was the only programmer present, he got a simple task done, ferruling the drive kraken wires. With some help from mentor jules and amaya, now we have at least 2 students who know how to ferrule the wires.

To further summarize:

- As not many students were present, the majority of them worked on the linear lifts, while masa and takeshi worked with mentor jules on designing some algae arms of varying time and impact, to cater to our needs when that time comes.
- Status of the linear lift: we worked on putting together the swyft lift with the new string we got. It seemed a lot stronger than the old one, so hopefully it won't break like it did last time. We managed to get the bearings in the middle slide, but for the outer slide we want to order smaller bearings. It might help the slide move smoother. The ball bearings will be here tomorrow.

37. March 27th, Thursday, 3 peanuts 🥜 - 9 people (Day Four of Nine Before District Champs)

today, me, andy, and annabella worked on changing the old wire protectors for the linear lift to the new thicker and more robust ones. these ones have more wiggle room and fit better within the c channel. we are planning on putting a piece of polycarb on the outer side of the c channel to prevent the wires from swinging outside the robot. after, me and andy worked on packing, and completely cleared out the robot parts box and sorted through the stuff plaguing our pit tables and ghost. the linear lifts also got a lot of progress done. i know that Amaya can speak on the stuff that happened both today and yesterday.

(Amaya):

we put the lifts back together with smaller bearings, and it goes up super smooth now. they are now mounted on the robot, with the coral delivery also on. the parts seem to be inside the frame. The next steps are to rewire and organize the wiring for the lift motors.

- We replaced the old wire protector with the new, stronger one and got it ready for the linear lift to be mounted.
- We organized our packing but there is still work to be done on it.
- the lifts are completed and on the robot
- with the repaired lift, our parts are inside the frame.

38. March 28th, Friday, 3 peanuts 🥜 - 10 people (Day Five of Nine Before District Champs)

Today I (Zoe) continued my work on the funnel for the c channel and bracket for the wiring of the linear lift. I got measurements and the outline down, ready to be cut and bent into the funnel side tomorrow! I also redrew the funnel so it would be on the sides instead of all around the square on top, there is also no tunnel on it because the funnel will help the bracket holder fall into place without the tunnel

Today I (Takeshi) focused on wiring and the wire protector for the linear lift. I started by taking the wire protector that he had already made and making sure that all of the wire connections were good. Then, I focused on securing the protector to stop it from bending and swaying. afterwards, we all worked on cleaning up the wiring and after it was done, we did a systems check and fixed any problems that occurred. Lastly, we checked the linear lifts and heights on the fixed lifts and got the robot to score on all 4 levels.

- worked on the wire protector funnel and it is ready to be cut and bent tomorrow
- worked on mounting the current wire protector and ensuring that all connections are secure.
- worked on cutting down and organizing the wiring for the entire robot.

39. March 29th, Saturday, 6 peanuts 🥜 - 10 people (Day Six of Nine Before District Champs)

Today, we encountered a huge problem with the linear lifts, the rope broke again. We believe it was caused by some rough edges along the edges of the lift stages, so we used a dremel to sand those down, and are reverting back to the original rope. This new rope is load rated for more, but doesn't have a rough protective coating on the outside to stop it from breaking, like the original rope did.

We also worked on wiring the linear lift panels because they were getting in the way of the stationary wire holder when the lift was raised. This was a nightmare because wiring for 3 talon SRXs/Sparkmaxes had to fit within a 2" x 20" space.

Another priority today was CAD for the algae remover. We got a design fleshed out yesterday and was able to finalize the CAD for it. We cut the pieces and are ready for assembly tomorrow. Some students had a meeting with 2046 bear metal about how their team is structured and general team info. We got a jackpot of [info](#) and shared it with the team.

Lastly, we worked on the FRC INFO 2025 document and finalized it. We are hoping to devote an entire day to safety work, judges prep, and scouting work, but likely won't be able to before

DCMP. We also tried to get the scouting tablets running and are experimenting with 2046 bear metal's scouting app.

40. March 30th, Sunday, 6 peanuts 🥜 - 10 people (Day Seven of Nine Before District Champs)

today, we focused a lot on drive practice. after cutting/assembling the algae remover and cutting some axes for the climber that are 0.5in shorter in case of inspection issues, we did some drive practice and played some matches. after fixing some mechanical issues and loctiting the bolts that mount the linear lift, we continued drive practice and we're able to score 5 out of 7 coral that we attempted. I also found out that we won't be able to use the scouting tablets because they are out of date for security features. we were also able to cut and bend a piece of polycarb to stop coral from getting stuck in the robot and amaya will be making some stickers with sponsors, our robot name, and potentially an eve icon. these can be mounted to the inside surface of the coral slide, the new piece of polycarb, and potentially the underneath of the battery plate. coach David is also working on cutting a piece of aluminum to replace the polycarb bracket across the lifts, this new one has one team name and number on it. overall, a very successful day.

- Drive practice
- loctite for linear lift mounting bolts
- algae remover assembled
- polycarb for keeping coral out of robot
- robot bling
- shorter climber axes

41. March 31st, Monday, 3 peanuts 🥜 - 9 people (Day Eight of Nine Before District Champs)

Summary

yesterday, we focused on getting the algae remover mounted and working. it was sorta a pain but we were able to get it on and zip tie the wires in a way that allows them to move in rotation but not get ripped off by other stationary objects nearby. we also planned out how we will do stickers on the robot, and I am finalizing the stickers today. Kallie worked on finishing the safety manual, and i believe that it is ready for print. Andy worked on a slideshow of pictures that will play on the ghost monitors in the pits. we have also decided a robot name, High-dra.

<@FRC_3574> big news for tekerz -- I spoke with my teacher who at this point is very familiar with us. She is getting her CTE (career and technical education) certification at the end of this year. She is getting it with a focus on STEM and part of that is having a STEM program affiliated with the school. She thinks that Tekerz would be a great fit for that role. This would mean official affiliation with a school and with Highline. I am unsure about how it would work as we are a small school with very limited space and funding but I think that this would open the doors for funding from the school district and many potential new members. <@David Damman - Coach> is it ok if I share your contact information with my teacher or should I refer her to someone else? Her name is Christine Morse but she goes by Chrissy.

42. April 2nd-5th - SEASON FINALE - District Champs

Looking back on it, it seems so surreal. Compared to last season, 6 students, one robot, barely. The team was just barely alive. To go from that, to a 12 student team with a blue banner and an amazing experience, it still doesn't feel real. We arrived at DCMP with an open mind and ready hands, and had a great experience. Throughout our quals, we didn't do much. Sometimes our autonomous would drive, but only once did it score on I4. Sometimes we would climb, sometimes we wouldn't. Sometimes we would win, but most of the time we lost. On the other hand, we always had a good time. Some students met up with 1778 and got a boatload of info from them. We also connected with neighboring teams to learn about their bumpers and other mechanical info. And to wrap it all up, we watched the minecraft movie with a bunch of other teams and had a blast. We couldn't be more grateful to everyone who helped us get to where we are today. 2026 season, here we come!

43. April 14th, Monday, 3 peanuts 🥜 - 8 people

Today we focused on preparing for the open house. We had an interested member show up to help out, although he didn't have much to do. We spent most of the day organizing, sweeping, vacuuming, and thinking about how people would effectively view the info. Overall, it was a productive meeting.

44. April 17th, Thursday, OPEN HOUSE!!!

Unfortunately, only 4 people showed up to the open house. Considering that we had very little preparation time, we were excited that we were able to have an open house that early, but it didn't go to plan. We suspect that the reason why is because the skunks, who initially advertised the open house, forgot to add an address to any of the posters, whoops. But its ok, we plan to have many more events in the future.

April 21st, Monday, 3 peanuts 🥜 - 8 people

Today, we discussed offseason goals and broadened them to fit a wide variety of scenarios. Our list included:

- Fundraising
- Grow the Team
 - Increase Current Abilities
 - Expand Beyond Current Abilities
- Organize and Inventory Shop Parts
 - Teamwide Organizational Standard for Robot Related Parts
 - Implement Said Organization
- Enhance Our Team's Skills to a Higher Level
 - Teach New Students Fundamental Skills in New Areas
 - Identify Mistakes, Reflect on Them, Improve Skills Around That Reflection, and Spread the Knowledge
- Identify Individual Skills to Vastly Improve on Areas of Expertise

45. April 28th, Monday, 2 peanuts 🥜 - 7 people

This offseason meeting we talked a lot more in-depth about what a goal would look like in the offseason(details of the goal) we talked about awards, outreach, and impact.