Scoring & Referee Tablet Guide

This guide covers FTC-Live Tablet functions for Official Scorers, Referees, and Head Referees.

Revision History	
Revision	**Description**
V26-27.1	Initial 2026-27 Season Release

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Overview

Scope

This guide covers Scoring and Referee scoring tablet functions for the *FIRST*® Tech Challenge (FTC) program for the BIOBUZZ™ season. This document is not intended to detail how to set up an event in the system or set up the Event Management System at an event. Please see the FTC-Live Scoring Setup Guide for more details on the FTC-Live setup.

Event Management System

The FTC Event Management System is composed of FTC Scoring, FTC-Live, and FTC Events.

FTC Scoring

FTC Scoring is the cloud-based, official event management system for FTC. Volunteers and Teams use FTC Scoring for a variety of functions. These include:

- Manage Region, League, and Team Information
- Create and manage Events and Leagues
- Complete hybrid Judging and Portfolios

The FTC Score Calculator is part of FTC Scoring and can be used by teams and Referees to provide a practice input for scoring. All of the scoring functions are replicated in the FTC Score Calculator. Additionally, the FTC Score Calculator shows a live score breakdown, including RP, at the top of the screen and includes a timer functions to allow a team or volunteer to run a complete match with the FTC Score Calculator.

FTC-Live

FTC-Live is the local event management software used during an event to run matches, operate local displays, manage awards, and determine advancement from an event.

- Local event management
- Manage & track event scores and rankings
- Scoreboard and display management

FTC Events

FTC Events is the official score results website for *FIRST* Tech Challenge. On this site, people may:

- View region, league, and team information
- View event, match, and ranking information
- View awards information, league rankings, and advancement information

Device Setup

Scoring System Connection and Setup

In order to use a device such as a phone or tablet for any Referee function, the following steps must be completed:

- Connect to the Wi-Fi network being used by the event.
- In an internet browser (see supported browsers below), set the address to the FTC-Live IP address.
- Login with appropriate credentials (username & password) created for the event in FTC-Live.

Username	Password
test_referee1	[redacted]
Username	**Password**
test_referee2	[redacted]
Username	**Password**
test_scorer1	[redacted]
Username	**Password**
test_scorer2	[redacted]

Figure 1: Example Credentials

The individual operating the local scoring system (e.g., Scorekeeper) can provide the IP and login information. Events and/or venues may restrict which devices are allowed on their network and instead require the use of event- or venue-supplied devices. If you anticipate needing to use a personal device, let event technical volunteers know as soon as possible.

Device Settings & Configuration

Physical Configuration

It is recommended that devices used for Scoring and/or Referee functions have the following features:

- Tablets are recommended for Official Scorers and Head Referees.
- Phones are recommended for Referees.
- Any tablets and phones that are used should include a physical feature that helps prevent accidental release of the device or prevent it from travelling far if released.
    - Wrist or neck lanyard
    - Case with built-in handle or hand-strap
    - Circular or ring grip/stand

Settings

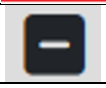
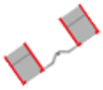
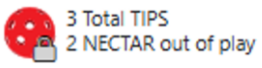
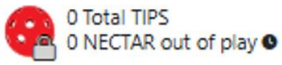
It is recommended that devices used for Referee functions have the following operating system settings:

- Latest version of operating system and browser.

> Safari and Chrome are the supported browsers for iOS.
> Silk and Chrome are the supported browsers for Fire OS.
> Chrome is the supported browser for Android and all other operating systems.

- If there is a password or PIN code to unlock the device, it should be communicated to the users (Head Referee, Referees, Official Scorers), and/or FTA.
- The screen is set to not auto-rotate e.g., “Auto-rotate” is OFF or Rotation Lock is ON.
- The screen is locked in portrait mode (vertical).
- The screen is set to stay awake – e.g., “Auto-Lock” or “Screen Timeout” – a minimum of 5 minutes.

Frequent Icons and Terms

Icon	Term	Description/Definition
	Increase count (blue)	Increase the count shown in the adjacent box for blue.
	Increase count (red)	Increase the count shown in the adjacent box for red.
	Decrease count (any)	Decrease the count shown in the adjacent box.
	Achieved	This scoring achievement has been accomplished.
	Not Achieved	This scoring achievement has not been accomplished.
	Hive tip direction indicator	Indicates the direction the hive being scored is tipped based on correct starting setup and current inputs.
	Total tip indicator & nectar out of play – tip based (red)	Total tips during a match. The minimum number of nectar that must be held out of play is calculated and displayed.
	Total tips indicator & nectar out of play – time based (red)	See above. After one minute or less is left in the match, the clock icon indicates that no nectar must be held out of play.
	Add red nectar to flower	Adds a red nectar to the top of the flower.
	Add blue nectar to flower	Adds a blue nectar to the top of the flower.
	Add pollen to flower	Adds a (yellow) pollen to the top of the flower.
	Red nectar in flower	Indicates a red nectar that meets the scoring criteria in the flower.
	Blue nectar in flower	Indicates a blue nectar that meets the scoring criteria in the flower.
	Pollen in flower	Indicates a pollen that meets the scoring criteria in the flower.
	Remove pollen/nectar from flower	Removes the indicated pollen/nectar from the flower.

General Tablet Setup

Resources

General resources that are useful for events are included in the “Resources” for all logins, as shown in Figure 2 and Figure 3. This includes:

- the latest version of the Competition Manual, and
- the latest Official Scorer Training Guide.

In order to access resources, tap the 3 bars in the top right corner of the tablet to expand the header. Select “Resources.” PDF resources will be opened in the device’s default PDF viewer.

> It is important to determine if a PDF viewer has been installed on your tablet device before matches begin, as not all tablets have PDF viewers installed by default.

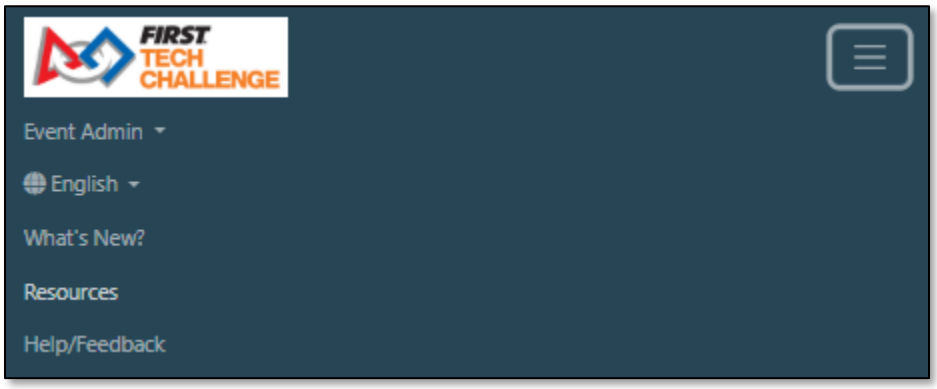


Figure 2: Expanded FTC-Live Menu – Including “Resources”

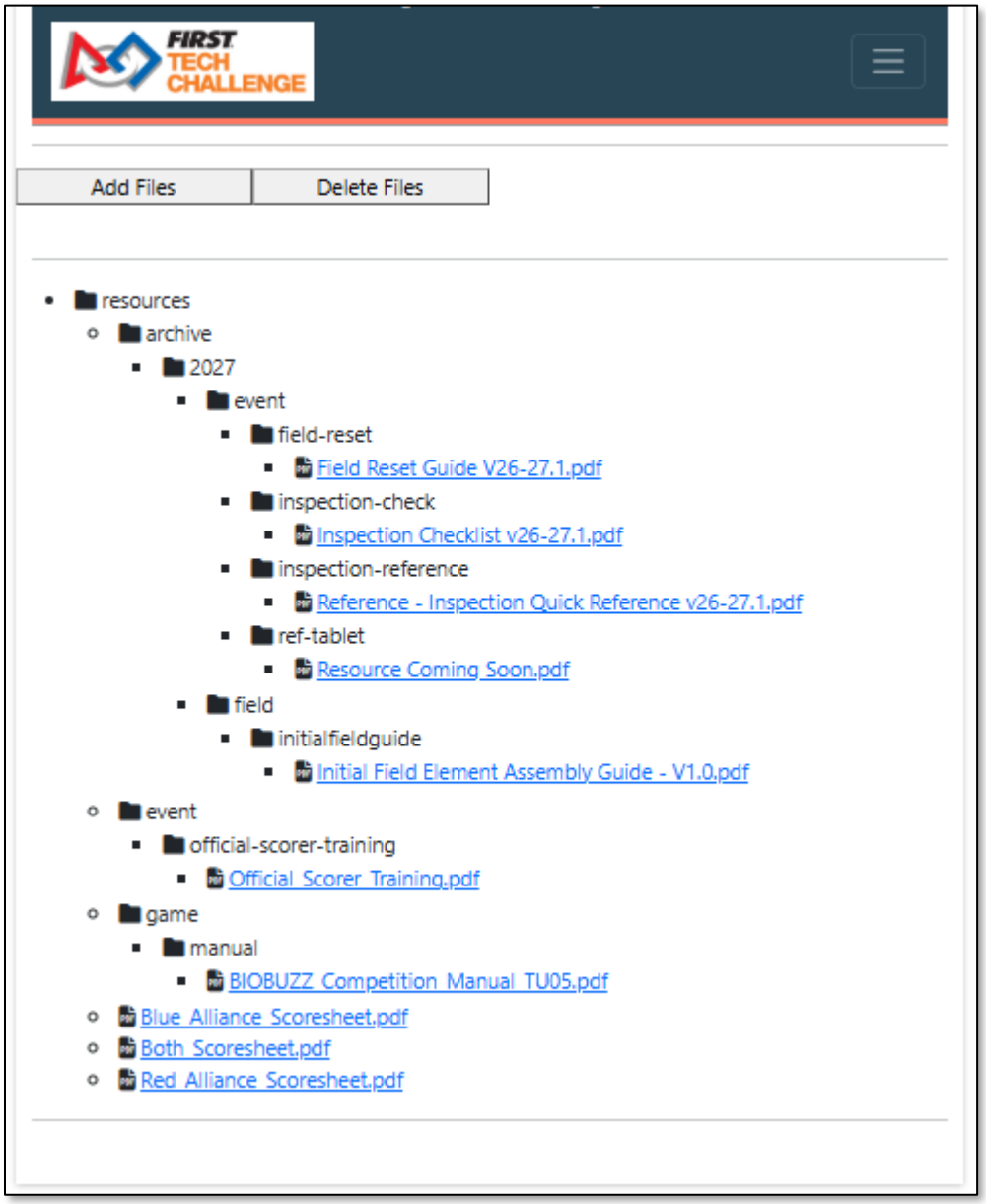


Figure 3: FTC-Live Resources – Example

Official Scorer & Referee Locations at the Field

Official Scorers and Referees should be located adjacent to the alliance area that aligns with their tablet color.

- Official Scorers are adjacent to the garden for that alliance.

> Official Scorers are responsible for all of their assigned scoring achievements, which are primarily on their side of the Field.

- Referees are adjacent to the loading zone for that alliance.

Note the assigned flowers are the two flowers closest to the Official Scorer.

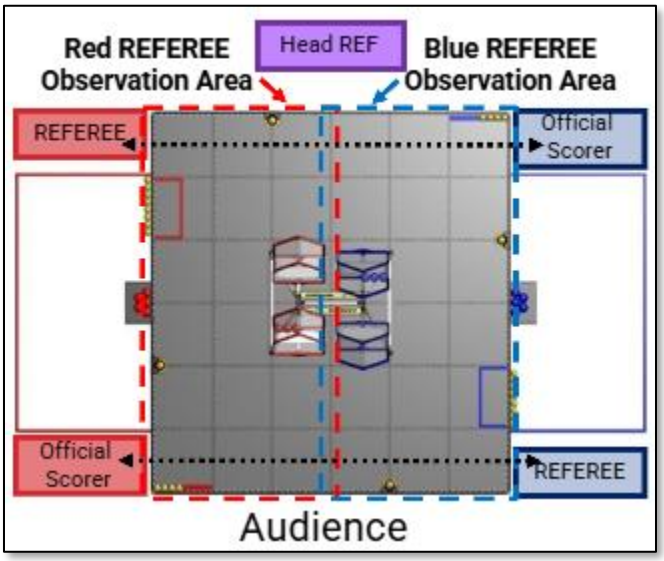


Figure 4: Official Scorer & Referee Locations

Access Role-Based Application

Official Scorer

Once logged in to a valid Scorer login, an Official Scorer must navigate to the Official Scorer category on the FTC-Live event home page shown in Figure 5 and select either Red or Blue Alliance Wall Scorer.

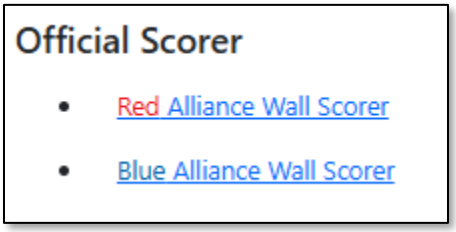


Figure 5: Event Home Page for Official Scorers

Referee

This is an option that must be enabled, if the event is able to support the number of devices required. This option was created to streamline Referee logistics during a match. However, it does not remove the requirements that Referee crews call fouls live, input fouls live, or communicate during a match.

Once logged in to a valid Referee login, a Referee must navigate to the Referee category on the FTC-Live event home page shown in Figure 6 and select either Red or Blue Alliance Referee. If no selection

One Referee must select the blue Referee entry and one must select the red Referee entry when this mode is enabled. Referees should stand next to the alliance area that aligns with their device input color.

is available, the Referee devices are not enabled. See Enabling Referee Input Devices.



Figure 6: Event Home Page for Referees

Head Referee

Once logged in to a valid Head Referee login, a Head Referee must navigate to the Referee category on the FTC-Live event home page shown in either Figure 7 or Figure 8 and select Head Referee.



Figure 7: Event Home Page for Head Referees

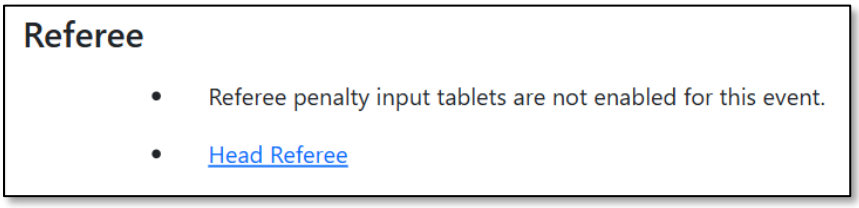


Figure 8: Event Home Page for Head Referees – Referee Input Tablets are not Enabled

Field Selection

The Field Selection screen allows the user to select the appropriate field(s).

Within either the red or blue score tracking, a selection of fields must be made if the event has more than one field, as shown in Figure 9. It is recommended for volunteers at multi-field events to only select the field on which the tablet is used. At most events for the majority of matches, the volunteer

> Once Playoff Matches are on "Field 0" (i.e., the multiple field event is now down to a single field), it is advisable to setup tablets for "All Fields."

should select only one field.

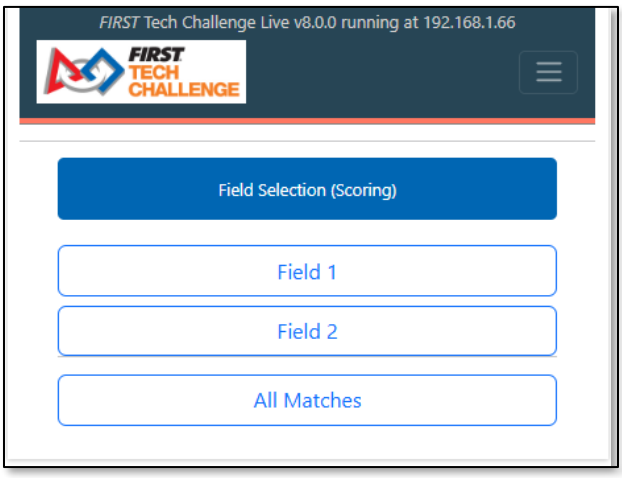


Figure 9: Blue Alliance Wall Scorer – Field Selection

Fullscreen Mode

All Scoring and Referee devices have a “Fullscreen Mode,” which is recommended for smaller devices to remove the header from the screen and maximize the user’s view of match-relevant information.

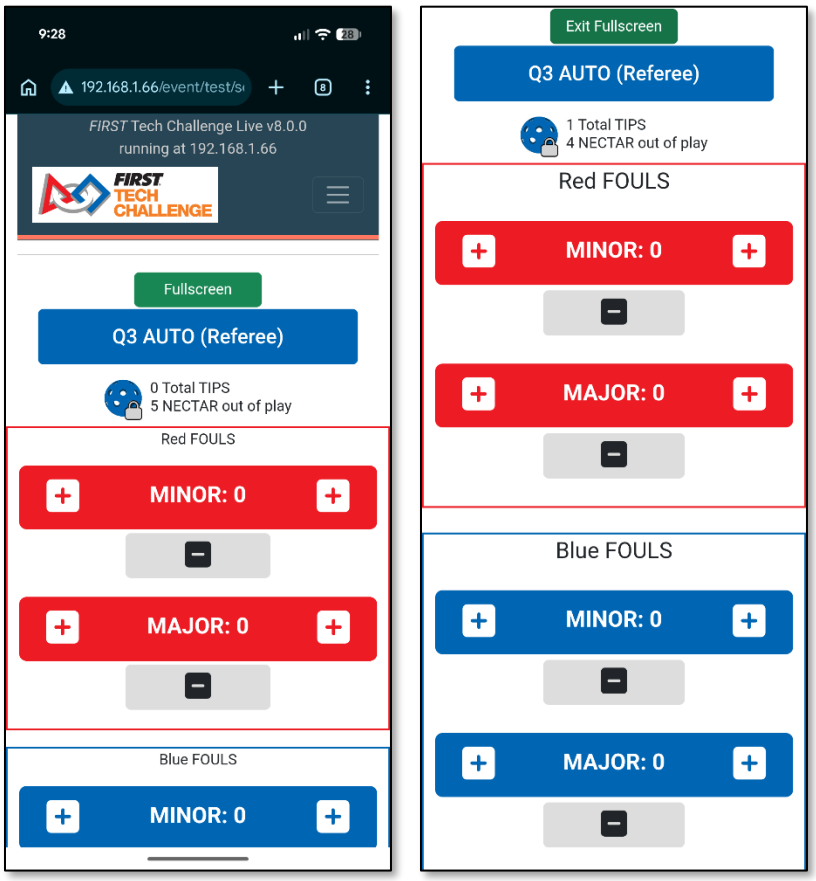


Figure 10: Example Referee Device (Phone) without (Left) and with (Right) Fullscreen mode

Match Selection

The Match Selection screen is the beginning of the match cycle on the tablets.

If no match is available for selection, as shown in Figure 11, then the Scorekeeper has not made the next match active.

Once the Scorekeeper has activated the match, it will be selectable on this screen, as shown in Figure 12. Official Scorers and Referees should check the match number and ensure that they are selecting the correct match.

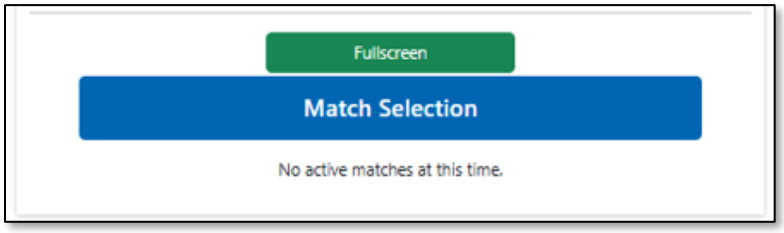


Figure 11: Match Selection – No Matches

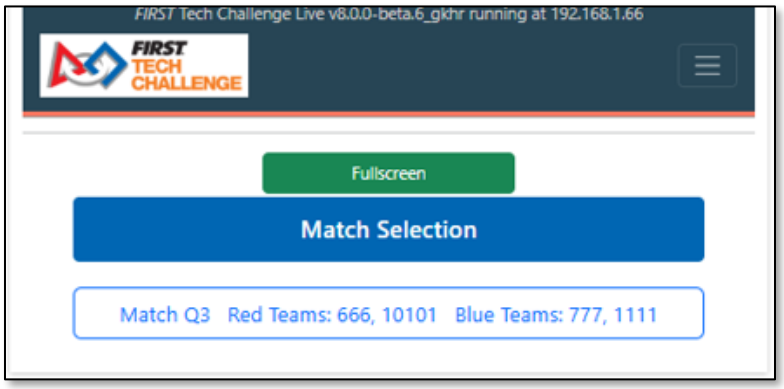


Figure 12: Match Selection – Match Available

General In-Match Inputs

Fouls

Depending on the device availability at each event, the fouls may be input by the Official Scorers or the Referees.

> Foul counts are shared between AUTO and TELEOP.
> When entering a foul, the user should ensure they enter the correct foul type for the correct alliance.

Regardless, the Referees should signal the violations that occur.

Official Scorer Foul Input



Figure 13: AUTO Scoring – Foul Input for Official Scorers

The Official Scorer should enter any fouls communicated to them by the designated Referee during the match.

Each Official Scorer can enter fouls for either alliance, but they will not see foul counts entered by others.

Referee Foul Input

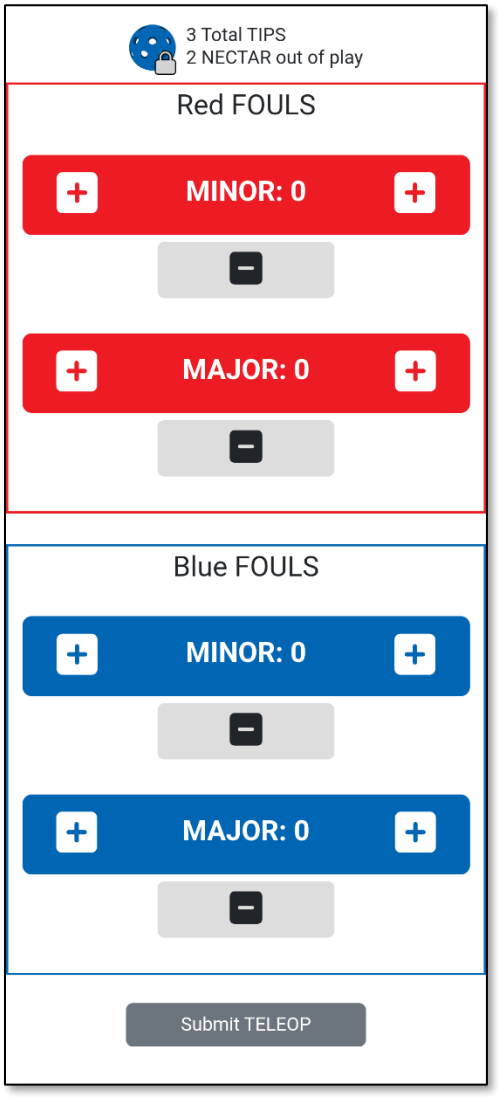


Figure 14: AUTO Scoring – Foul Input for Referees

If the Referees are using Referee input devices, each Referee should enter any fouls that they call during the match.

Each Referee can enter fouls for either alliance, but they will not see foul counts entered by others.

Early Submission

For in-match scoring, the user cannot submit before the period has concluded and will receive a warning.



Figure 15: Early Submission warnings for AUTO (Left) and TELEOP (Right)

Late Submission

For in-match inputs, the page will blink yellow if the user has not advanced within a minor delay, as shown in Figure 16. This is an indication that the user should advance to the next screen, as they are now inputting information into the wrong screen based on the match phase.

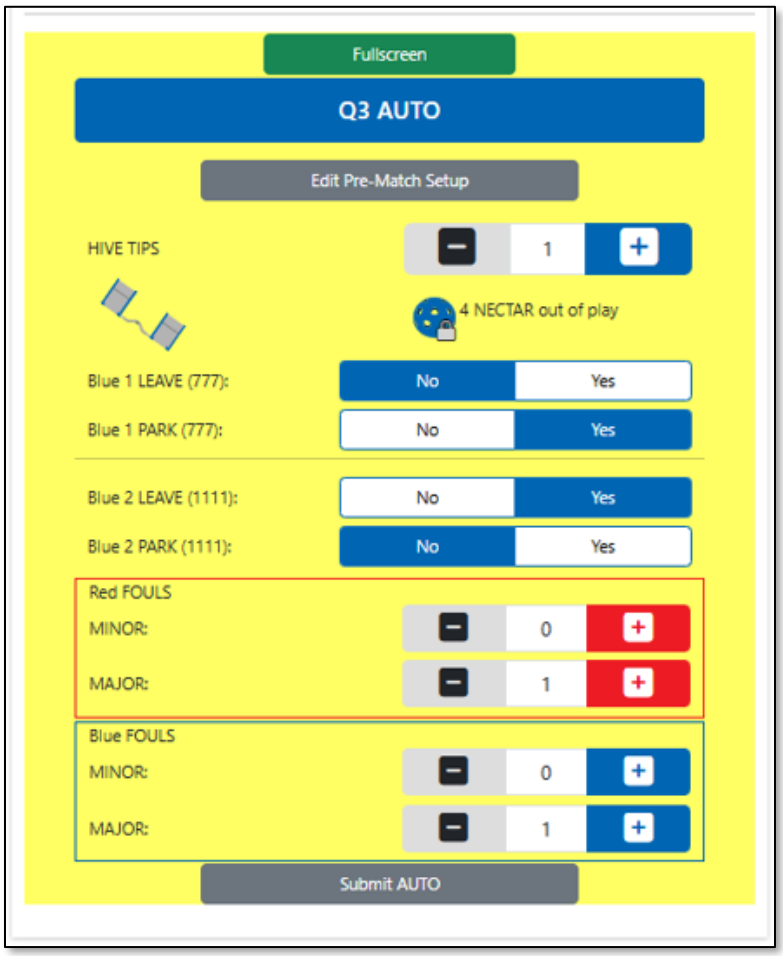


Figure 16: AUTO – Late Submit Example

Official Scorer Match Inputs

Pre-Match Setup

> The color banner should match the color of the alliance area nearest to the Official Scorer.

On the page shown in Figure 17, the Official Scorer should check that they are in the correct position around the field and remind themselves of their scoring achievements – notably, the flowers.

Referees should check to confirm the correct teams are present, that the drive teams are prepared to participate in the match, and the robots are compliant with relevant rules at the start of the match.

The Official Scorer will enter information about each of the teams present in the alliance area adjacent to them, on the nearest side of the field, as follows:

- **No team**: no team members are present at the field and their robot is not present on the field.
- **No robot**: the robot is not present on the field, but at least one member of the drive team is present in the alliance area.
- **Present**: the robot is starting the match on the field and at least one drive team member is present at the field. Present is the default selection.

The scoring system automatically applies the relevant rules based on these selections.

> During Playoff Matches, “No Team” is not an option.

After inputting team information on the Pre-Match Setup screen, the Official Scorer should advance to the Ready screen with the “[color] Alliance Ready” button. The Official Scorer can return to this screen at any time until they submit AUTO.

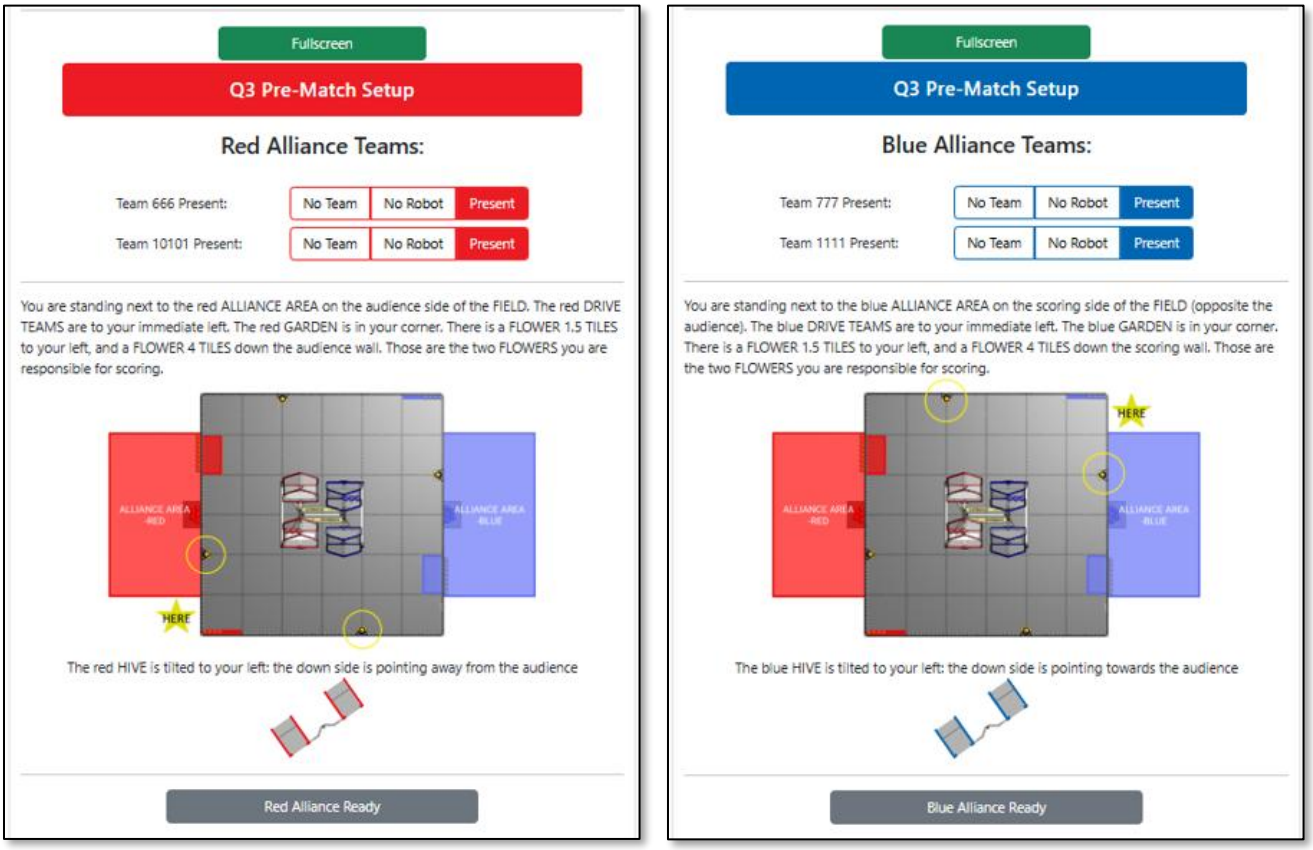


Figure 17: Pre-Match Setup for the Red (Left) and Blue (Right) Official Scorers

Ready

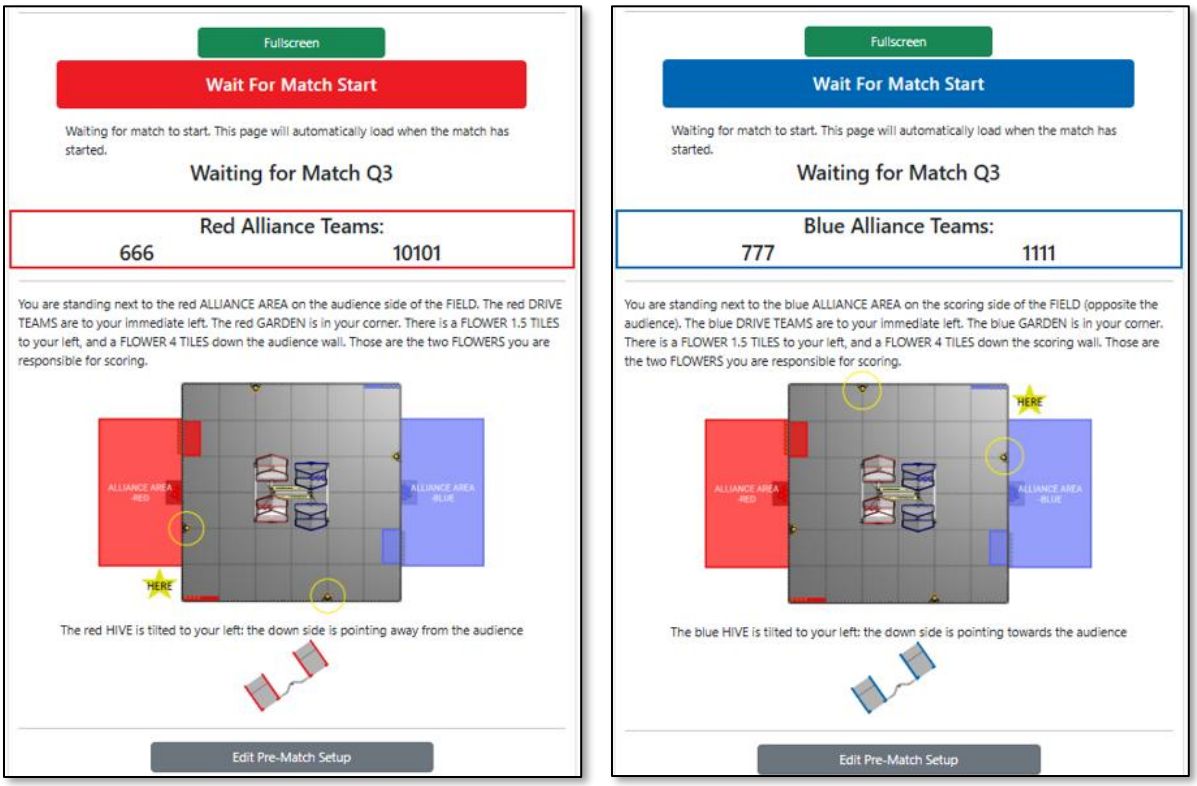


Figure 18: Ready Screen for the Red (Left) and Blue (Right) Official Scorers

The Ready screen, as shown in Figure 18, denotes that the Official Scorer is ready and the relevant alliance's participation status is confirmed to start the match. It flags to the Head Referee and Scorekeeper that the Official Scorer is ready.

If one or both of the Official Scorers is not on the Ready screen, this will be apparent to both the Head Referee and the Scorekeeper. See Figure 19 as an example of the blue Official Scorer not being ready and Figure 20, where both Official Scorers are ready.

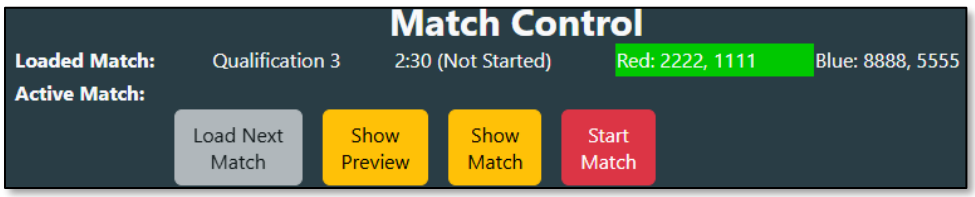


Figure 19: Scorekeeper's Match Control Screen – Red Official Scorer is "Ready" & Blue Official Scorer is not "Ready"

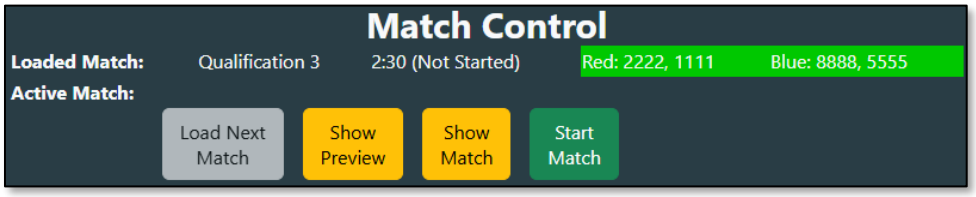


Figure 20: Scorekeeper's Match Control Screen – Red Official Scorer and Blue Official Scorer are both "Ready"

The Official Scorer can return to the Pre-Match Setup screen, if needed, in order to edit the status of the teams participating in the match. However, the Official Scorer must return to the Ready screen to indicate they are ready to start the match.

AUTO Scoring

This page is for recording AUTO scoring.

After scoring AUTO, click the submit button to advance to the TELEOP screen. Even if the Official Scorer has questions about AUTO, they should submit what they can and move on so they don't miss TELEOP achievements. The page will blink yellow if the Official Scorer has not advanced to TELEOP in time.

> Official Scorers can make edits to the AUTO scores in the Review screen following TELEOP.

For in-match scoring, the Official Scorers score achievements that occur *primarily* on the same side of the field. Official Scorers are looking at the hive and garden immediately adjacent to them, the robots that start on their side of the field, and the two closest flowers (one to their left along their alliance wall and one ahead of them on either the Audience wall – for the red Official Scorer – or the scoring wall opposite the audience wall – for the blue Official Scorer.

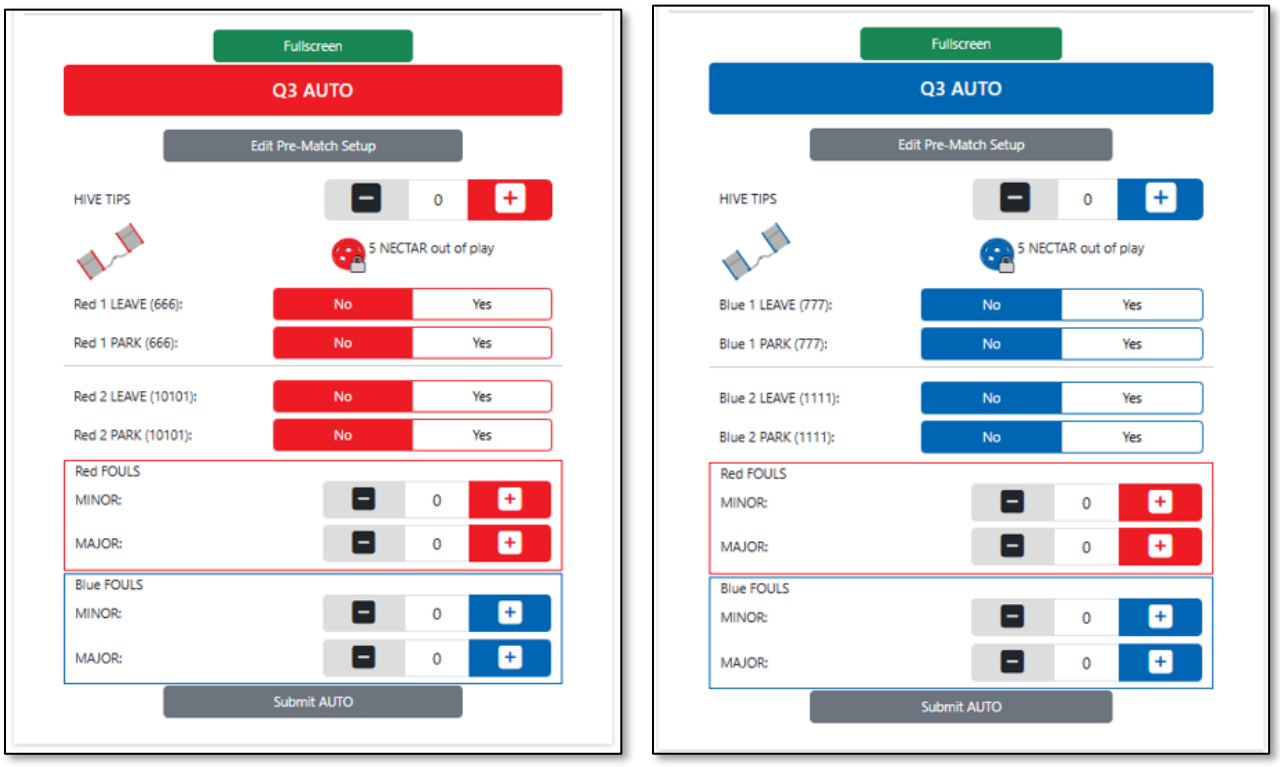


Figure 21: AUTO Scoring – AUTO Inputs for the Red (Left) and Blue (Right) Official Scorers

Hive Tips



Figure 22: AUTO Scoring – Hive Tip Inputs and Hive Tip Indicator for the Red (Left) and Blue (Right) Official Scorers

Use the top input to record the number of hive tips achieved by the alliance, live during the match. A hive tip occurs when:

- it moves from one stable state to the other stable state with the downwards-facing cell becoming the upwards-facing cell, and
- subsequently, the damper on the hive that was previously not contacting the frame begins to contact the frame.

> The number of hive tips will “reset” when the Official Scorer advances to TELEOP. The total number of hive tips achieved during AUTO and TELEOP is captured and noted below the hive tip count and the hive tip indicator will continue to reflect the state based on the tips that should have occurred.

The indicator on the left shows the tilt of the hive that you should observe from your location.

The indicator on the bottom indicates the minimum number of nectar that must be held out of play by the alliance, based on both criteria: the number of hive tips and time remaining in the match.

Leave & Park



Figure 23: AUTO Scoring – Leave & Park Inputs for the Red (Left) and Blue (Right) Official Scorers

For each robot that started on the Official Scorer’s half of the field, check their location at the end of AUTO (approximately at the start of the buzzer).

- To count for leave points (mark as "Yes"), the robot must be not be in contact with the field perimeter wall at the end of AUTO. Otherwise, the Official Scorer should mark them as "No."
- To count for park points (mark as "Yes"), the robot must be in (over) the loading zone at the end of AUTO. Otherwise, the Official Scorer should mark them as "No."

> Leave and park achievements are not related. A robot that has earned park has not necessarily earned leave.

The number in parentheses is the team number for that robot. The correct status should be entered for the correct team.



Figure 24: Leave & Park cannot be scored with "No Robot" or "No Team"

Fouls

If instructed to do so, the Official Scorer should enter any fouls communicated to them by the Referee

> When entering a foul, the Official Scorer should ensure they enter the correct foul type for the correct alliance.

during the match. See Fouls.

Submit AUTO

After scoring AUTO, the Official Scorer must click the Submit button to advance to the TELEOP screen. Even if an Official Scorer has questions about AUTO, they should submit what they can and move on so they don't miss achievements. Official Scorers can make edits to the AUTO scores in the Review screen

> The page will blink yellow if the Official Scorer has not advanced to TELEOP by the time TELEOP starts, as noted in Late Submission.

following TELEOP.

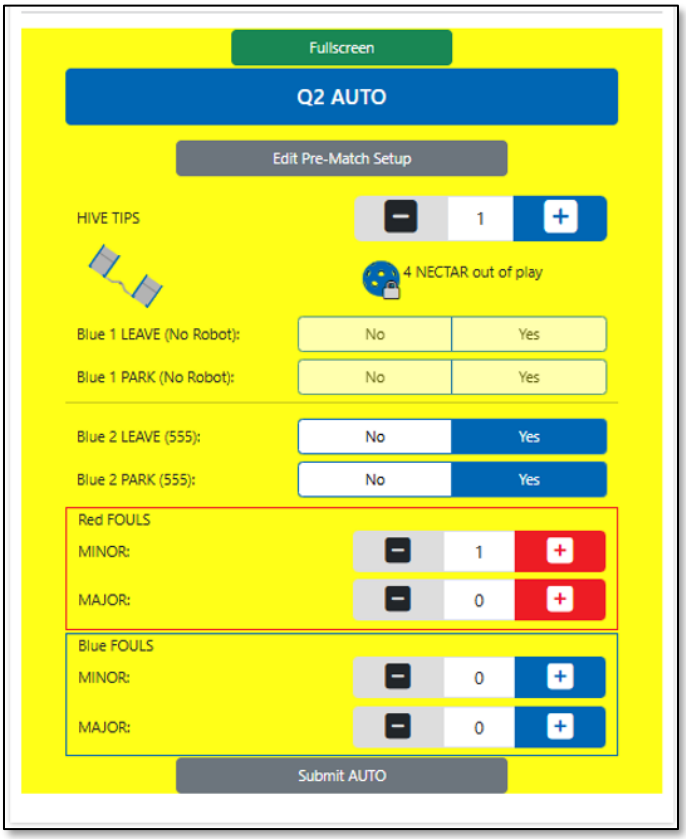


Figure 25: AUTO – Late Submit

TELEOP Scoring

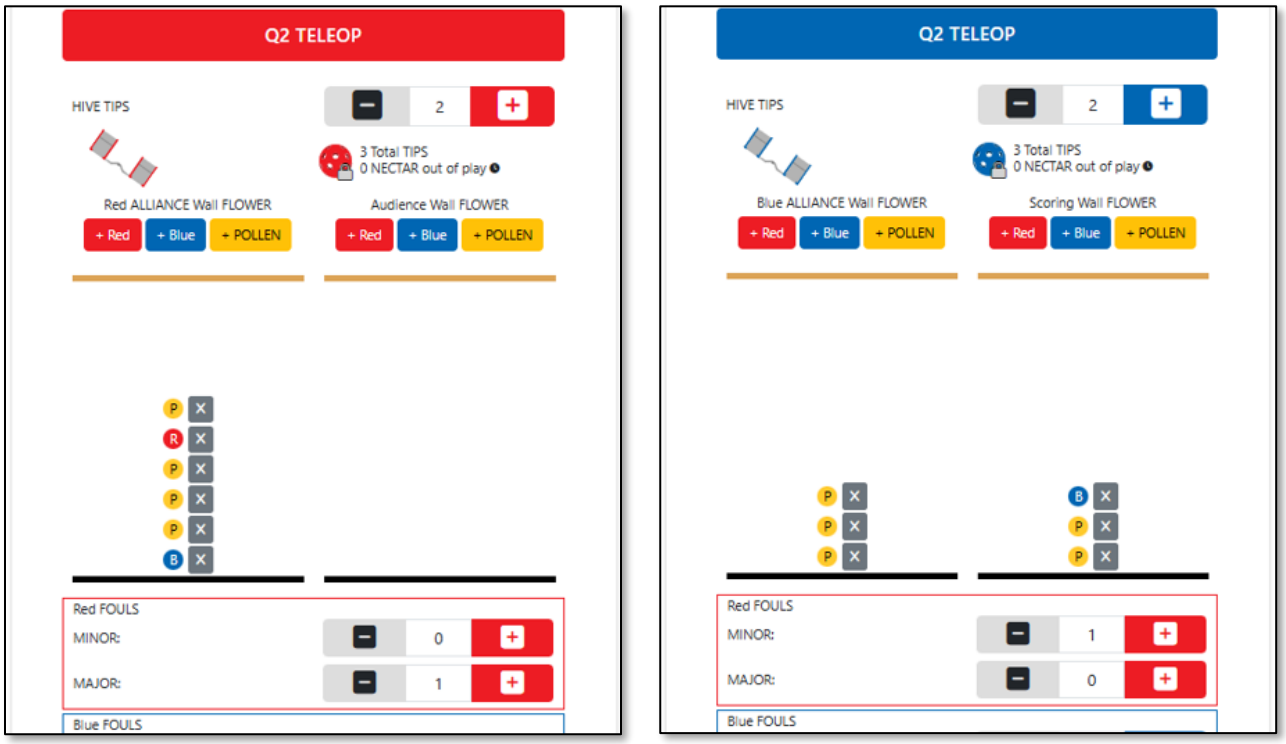


Figure 26: TELEOP Scoring – Hive Tips, Flowers, and Fouls for the Red (Left) and Blue (Right) Official Scorers

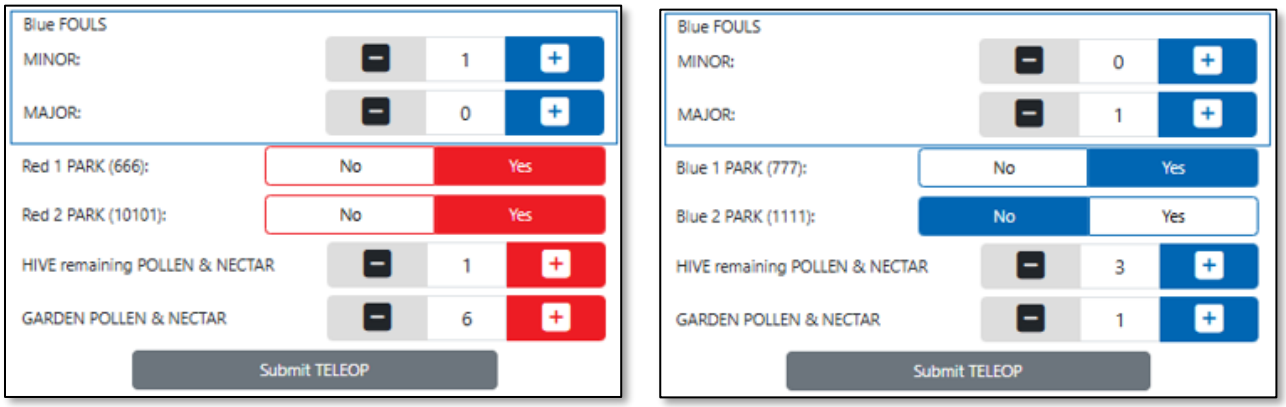


Figure 27: TELEOP Scoring –Fouls, Park, and Pollen & Nectar Scoring for the Red (Left) and Blue (Right) Official Scorers

Only fouls input during AUTO will “carry over” display on the TELEOP scoring screen. Fouls are cumulative throughout the match.
No scoring achievements are cumulative inputs through the entire match.

This page is for recording TELEOP scoring. Foul counts have carried over from AUTO.

Hive Tips

Continue to score hive tips live, as was done in AUTO.

The number of hive tips in the input box has reset for TELEOP, but those tips are still counted towards the total number of hive tips, indicated below the input box.

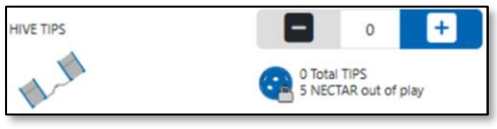
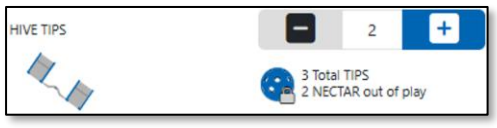
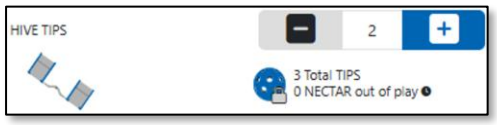
The indicator on the left shows the tilt of the hive that you should observe from your location.

The indicator on the bottom indicates the minimum number of nectar that must be held out of play by the alliance, based on both criteria: the number of hive tips and time remaining in the match.

- If there is more than 1 minute left in the match, the minimum "nectar out of play" is calculated based on the total number of hive tips that have occurred across AUTO and TELEOP. There is no clock icon.
- If there is 1 minute or less left in the match, the clock icon shows to indicate that the team does not have to hold any nectar out of play, regardless of the number of hive tips they have.

Some hive tip scoring and indicator examples for the blue Official Scorer are shown in Table 1.

Table 1: TELEOP Scoring – Hive Tip Scoring and Indicators Examples

Example	Upward-Facing Hive Cell	Hive Tips			Nectar out of play	
		in TELEOP	Total	in AUTO (calc.)	Determined by	#
	Right	0	0	1	Hive tips	5
	Left	2	3	1	Hive tips	2
	Left	2	3	1	Time remaining in match (clock icon)	0

Flowers

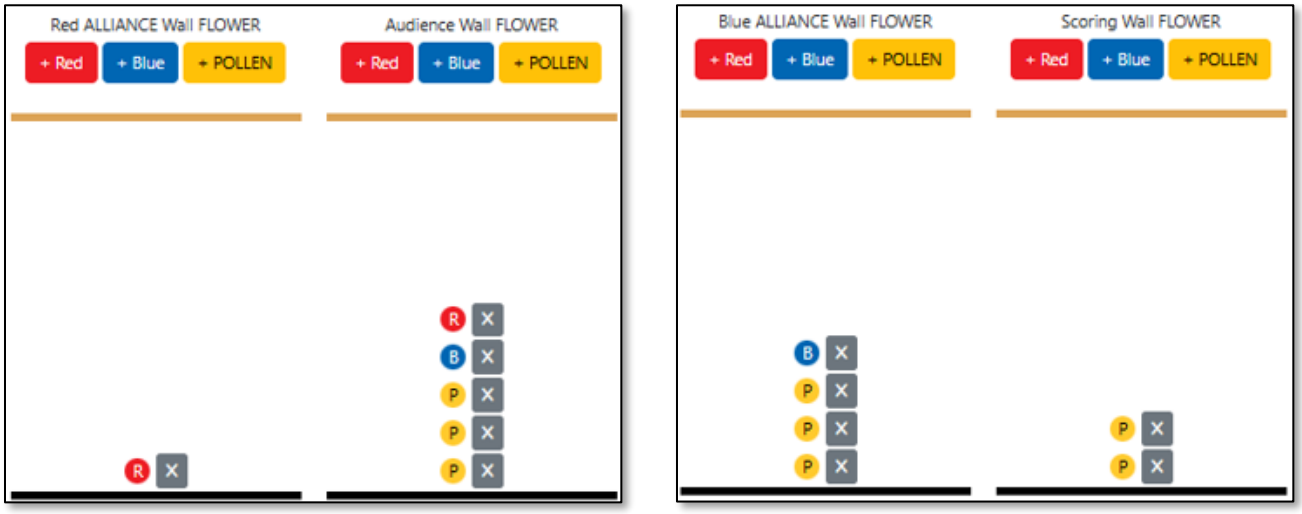


Figure 28: TELEOP Scoring – Flower Inputs for the Red (Left) and Blue (Right) Official Scorers

Flower scoring should be input and maintained throughout TELEOP, but live hive tips should be prioritized over flower scoring.

Inputs for each flower are:

- **+ Red** to add red nectar to the top
- **+ Blue** to add blue nectar to the top
- **+ POLLEN** to add a pollen to the top
- **X** to remove the adjacent scoring element that was input

Scoring elements must be entered in the order they are in each flower scoring volume, from the bottom to the top. Official Scorers should “score what they see.”

After the field has come to rest after the end of the match, Official Scorers must check and confirm the final state of the scoring elements in the flowers matches their inputs.

> If there is an input error for flower scoring, the Official Scorer should inform the Head Referee.

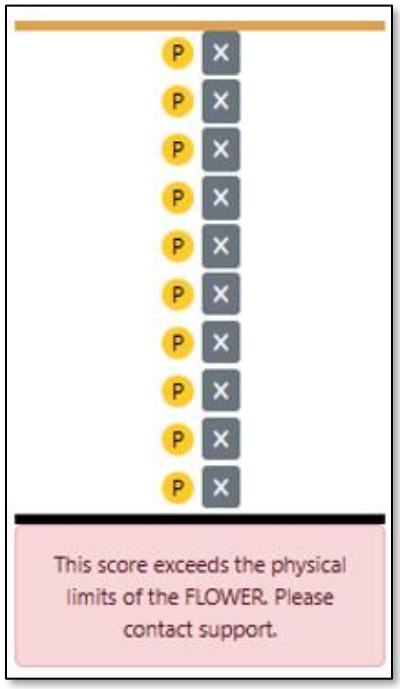


Figure 29: TELEOP Scoring – Example Flower Error Official Scorers

Park

At the end of the match (T=0:00), each Official Scorer and Referee should look at the loading zone nearest them. They must record if each of the robots has met fully or partially returned criteria.

- A robot must be at least partially in the loading zone to earn park.

Pollen & Nectar Remaining in Hive & in Garden



Figure 30: TELEOP Scoring – Pollen & Nectar Remaining in Hive and in Garden Inputs for the Red (Left) and Blue (Right) Official Scorers

After the field has come to rest after the end of the match, Official Scorers must check, count, and input all pollen and nectar (from both alliances) that is in:

- the garden nearest to them, and
- the upward facing hive cell on their side of the field.

Fouls

If instructed to do so, the Official Scorer should enter any fouls communicated to them by the Referee during the match. Foul counts are shared between AUTO and TELEOP. See Fouls.

Submit TELEOP

Save any questions or discussions for the review phase, during which any inputs for AUTO, TELEOP, and fouls can be edited. Clicking "Submit TELOP" will transition to the Review page.

> If the Referee has not submitted TELEOP within 10 seconds of the period ending, the page will flash yellow, per Late Submission.

Scoring Review

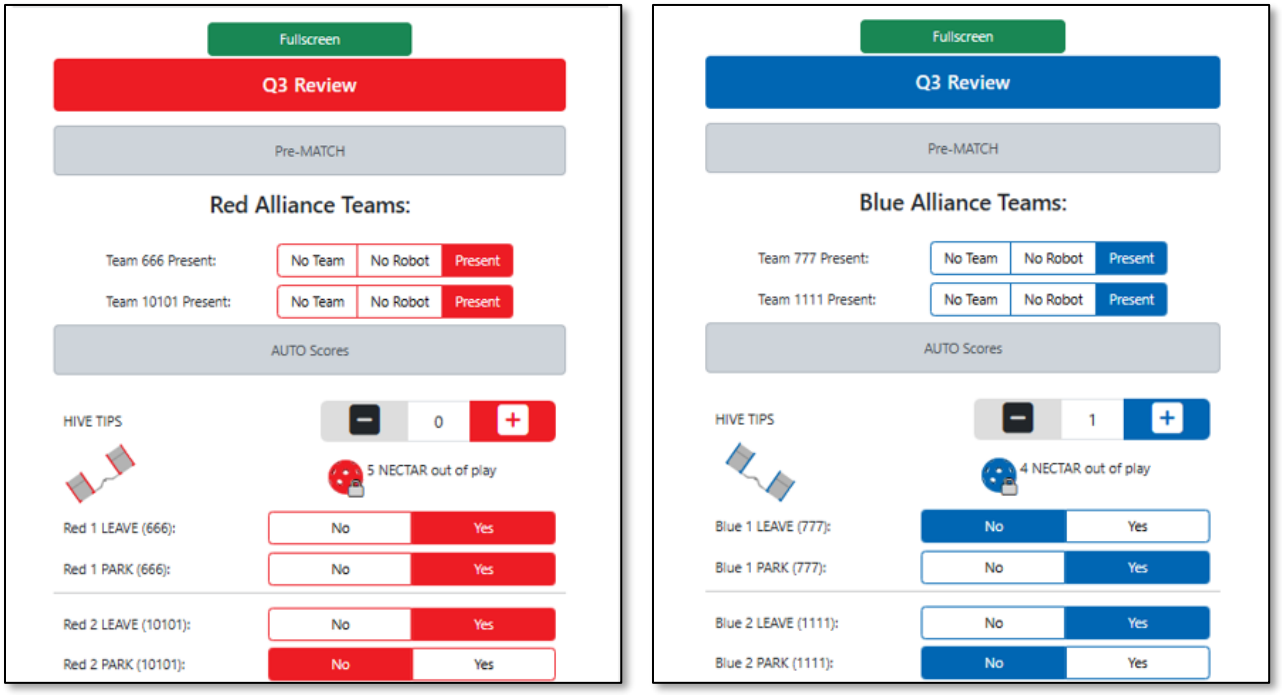


Figure 31: Review Scoring – Pre-Match and AUTO for the Red (Left) and Blue (Right) Scoring Referees

The Review page for each Official Scorer, as shown in Figure 31 through Figure 33 lists the scoring achievements and fouls entered by that Official Scorer for both AUTO and TELEOP periods. This page is a “shopping cart” for the Official Scorer to review and ensure that all inputs are correct before the final submission.

Any edits done here will not reflect in the live scores shown on the displays but will reflect in the final, posted results.

A Referee should review the scoring and foul inputs made by the Official Scorer. They may confer with the Head Referee, if needed. Fouls for AUTO and TELEOP are combined and shown at the bottom of the review page, if input by the Official Scorer.

> Only the Head Referee or Scorekeeper may enter yellow or red cards. If any violations resulting in a card has occurred, it must be communicated to and confirmed by the Head Referee and confirmed and entered by them.

Once both Official Scorers have finalized their inputs, they should click "Submit Final Scores."

Once both Official Scorers submit their scores, only the scorekeeper can edit the scores. The Head Referee may only continue to edit fouls and violations if they have held the match for review prior to Official Scorers (and Referees, if used) submitting their scores.

> If there is an input error for flower scoring, the Official Scorer should inform the Head Referee.

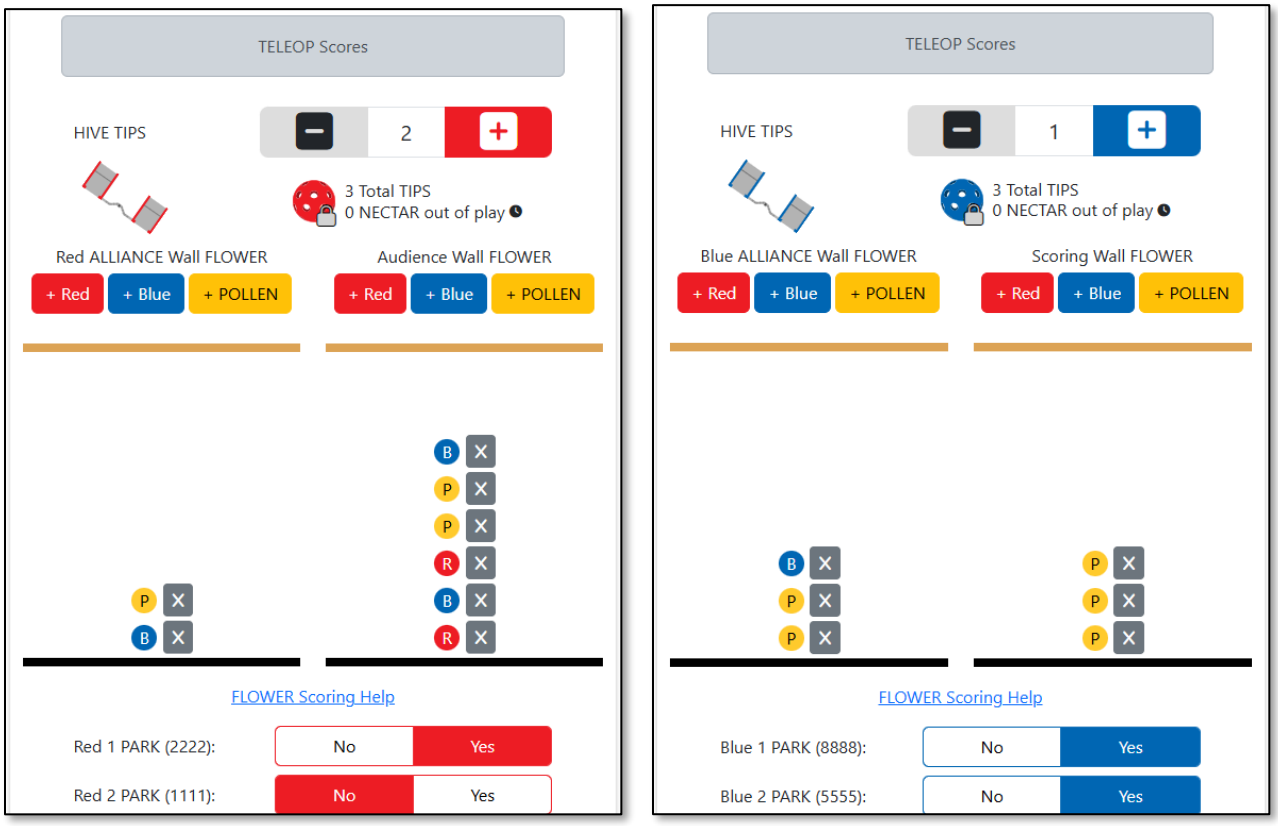


Figure 32: Review Scoring – TELEOP for the Red (Left) and Blue (Right) Official Scorers

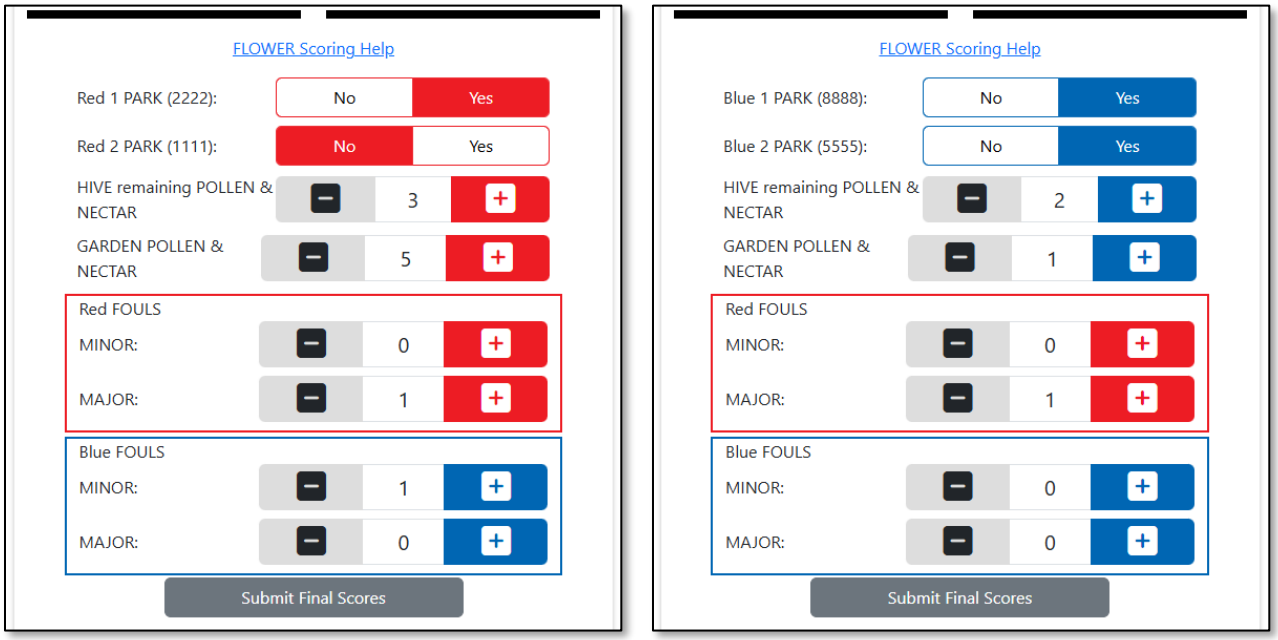


Figure 33: Review Scoring – TELEOP & Fouls for the Red (Left) and Blue (Right) Official Scorers

Referee In-Match Inputs

This is an optional feature that must be enabled, in coordination with the Head Referee and key event volunteers including the Scorekeeper.

General

The Referee devices will allow Referees to input major and minor fouls for both alliances live, as they occur. Referees cannot input scoring achievements or cards.

The Referee user interface has been designed to fit well on a phone for ambidextrous use, prioritizing foul entry, but allowing for foul removal, as required. Tapping anywhere on the wide red or blue "increment" buttons will increase the foul count.

Referees should input fouls that occur that they call, primarily on their side of the field. The Referees should know from the Scoring & Referee Logistics Meeting who is responsible for calling and inputting fouls in which area of the field.

Referees should not miss action on the field for the sake of inputting fouls into their device. They should prioritize calling rule violations live with visual and/or verbal cues, and therefore they should time foul entry around the action that occurs on the field and minimize the time spent looking at their device for entry.

Impact on Other Users

When the Referee devices are enabled, the following changes will occur to the other Referee devices and Scorekeeper view.

- Official Scorers no longer has foul entry included on their tablets. This means the Referees and the Head Referee must input all Fouls on their devices.
- The Head Referee tablet features an additional row of statuses to capture all four devices set for the active match. The "Foul input" line is now indicating the fouls input by the Referee devices instead of the Official Scorer devices.
- The Scorekeeper is able to view all four in-match Scorer & Referee device statuses. These are shown with a horizontal split across the tablet status indication. Referee tablets are on the bottom, scoring tablets are on the top.
    - Orange indicates the device is on a prior match phase.
    - Green indicates the tablet is on the correct phase or that the review has been submitted post-match.

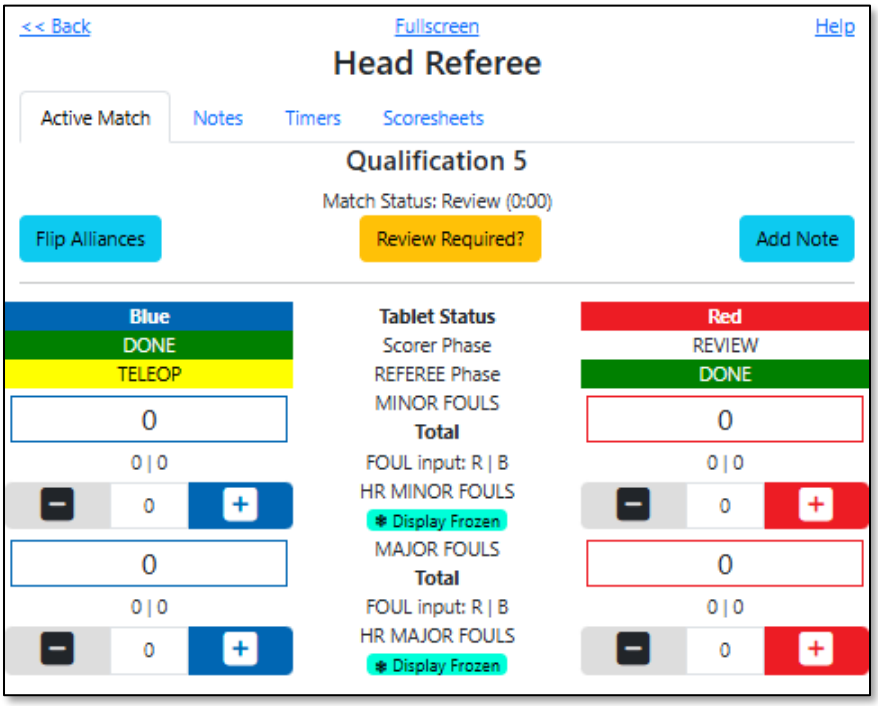


Figure 34: Head Referee Tablet with Scoring and Referee Tablet Statuses



Figure 35: Scorekeeper Indicator for Tablet Status (Examples)

Pre-Match Setup

Referees are not required to provide any inputs other than selecting the active match prior to the match start.

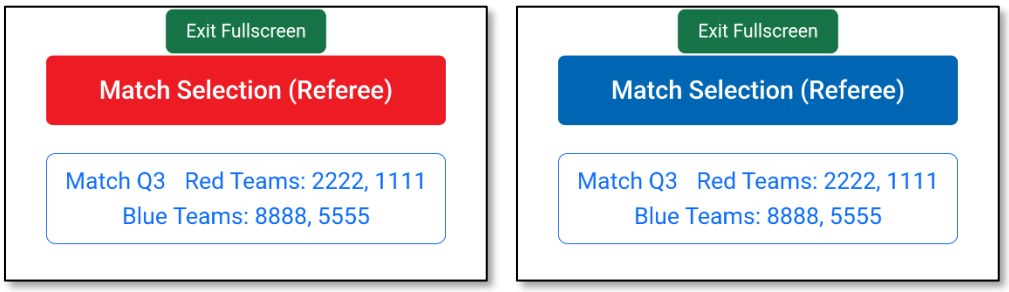


Figure 36: Match Selection – Match Available for the Red (Left) and Blue (Right) Referees

Once the match is selected, the Referee sees a screen with a field layout and their location indicated. The Referee should check that they are in the correct position around the field and confirm correct field setup, including the correct directional tip of the hive during pre-match setup.

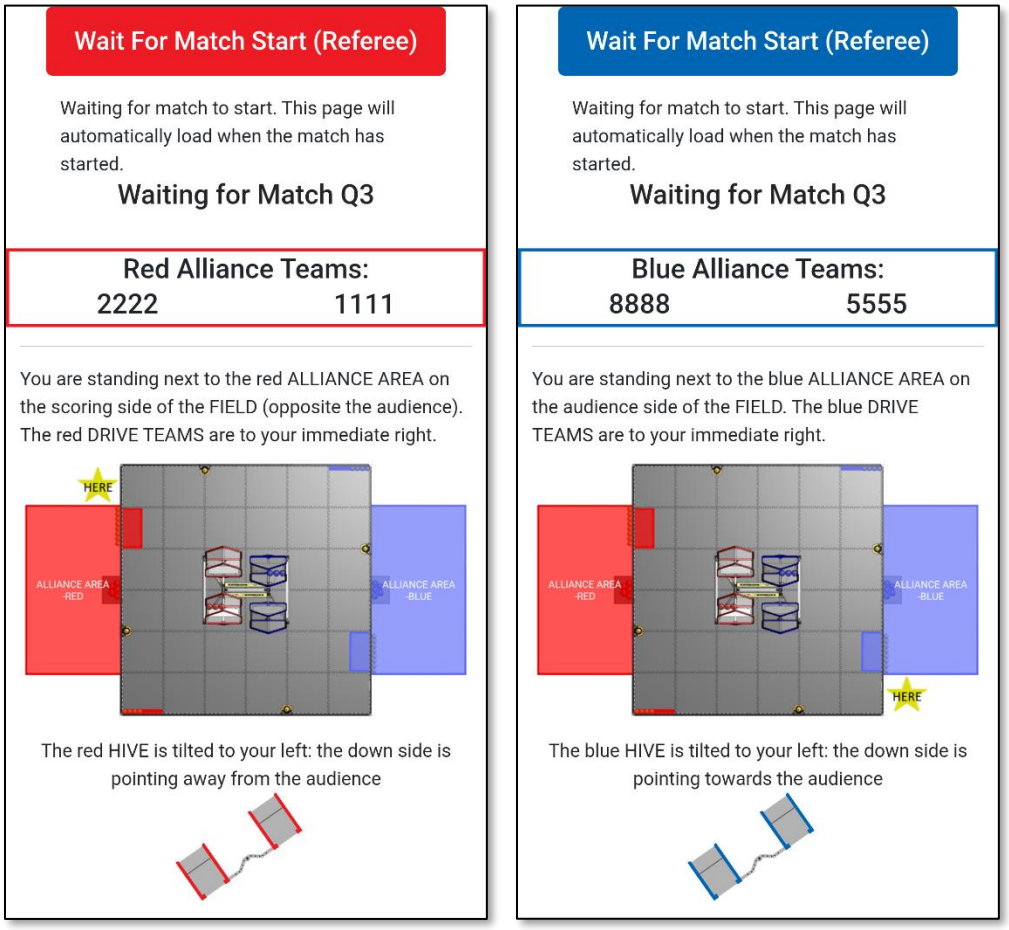


Figure 37: Ready for Match Screen – for the Red (Left) and Blue (Right) Referees

AUTO

The Referees will input fouls observed & called during the AUTO period of the match by incrementing fouls with the large colored and labeled buttons on their device. Fouls can be removed with the grey decrease button found directly under the red/blue button for the foul type.

The Referee screen will automatically advance from AUTO to TELEOP at the end of AUTO without user input; therefore, the AUTO screen does not feature a “Submit AUTO” button.

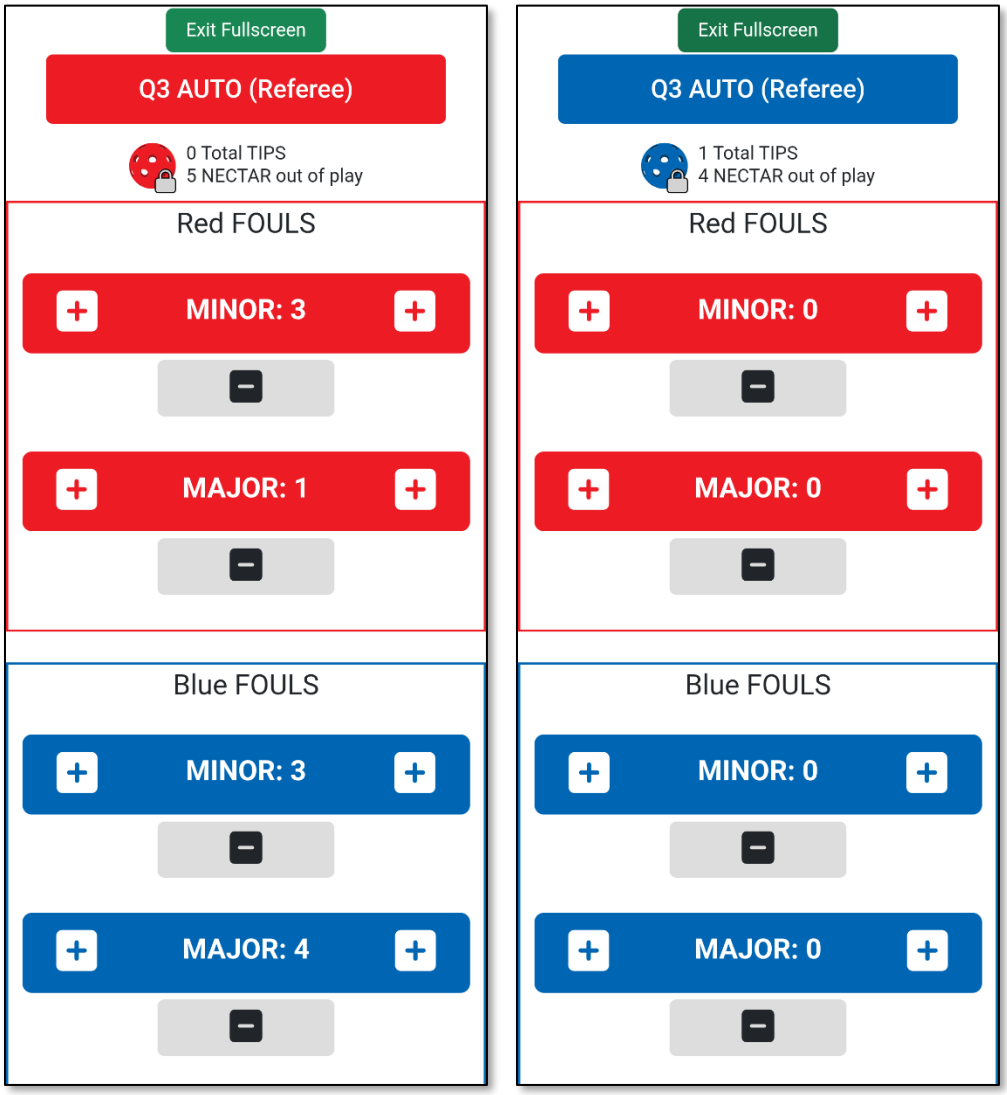


Figure 38: AUTO Scoring – Hive Tip Information and Fouls for the Red (Left) and Blue (Right) Referees

The number of fouls will carryover between AUTO and TELEOP, as fouls are cumulative over a match.

TELEOP

The Referee should continue to enter fouls as they occur throughout TELEOP. If a Referee tries to submit TELEOP prior to the end of TELEOP, it will not work and they will be alerted, and TELEOP will not submit, per Early Submission. Once TELEOP has ended, they must use the "Submit TELEOP" button,

> If the Referee has not submitted TELEOP within 10 seconds of the period ending, the page will flash yellow, per Late Submission.

which will transition to the Review page.

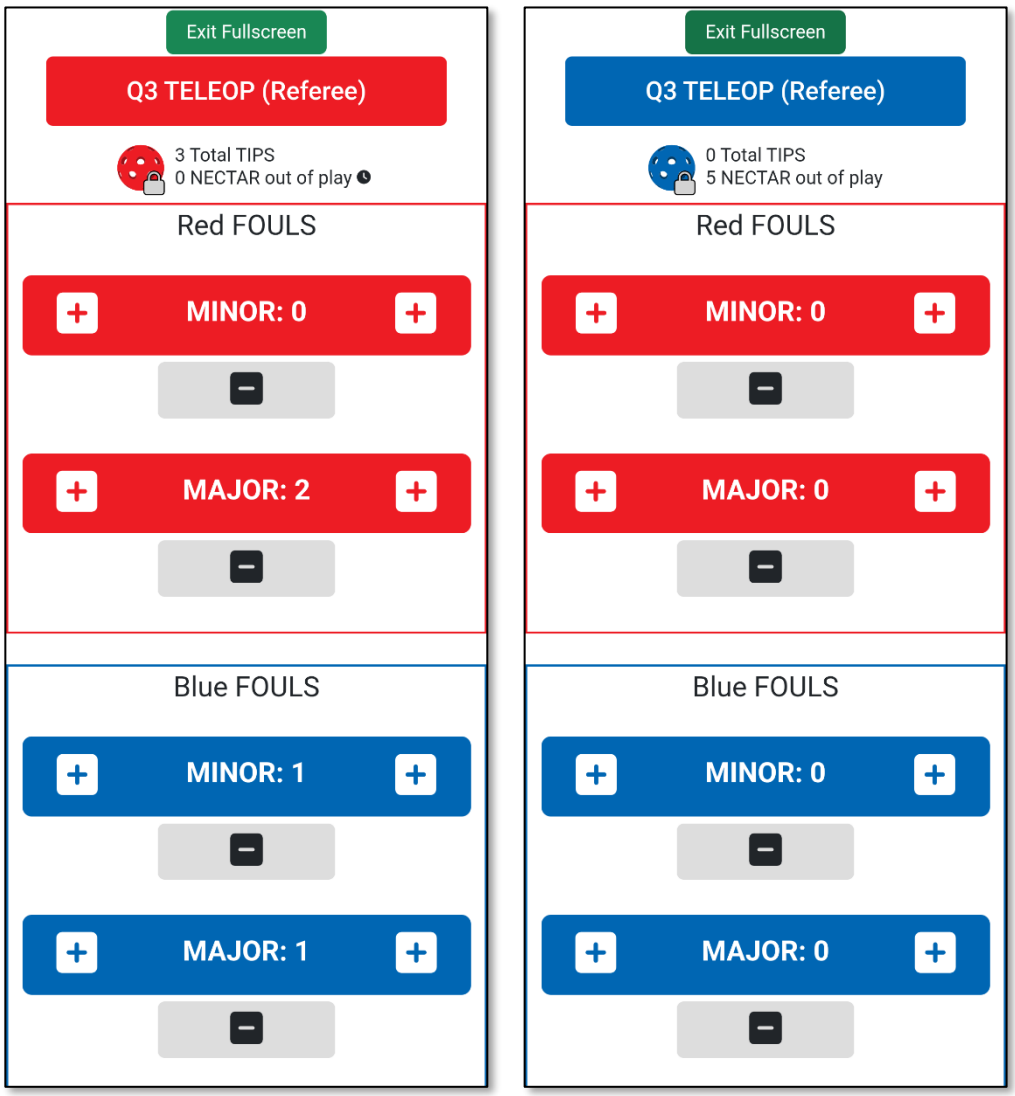


Figure 39: TELEOP – Referee Input Screens for the Red (Left) and Blue (Right)

Review

> Referees are expected to review the scoring inputs by Official Scorers following the conclusion of a match, regardless of if they are inputting their own fouls or not.

The Review screen for each Referee displays the fouls entered by that Referee for both AUTO and TELEOP periods and allows them to review and adjust foul counts during a Referee conference before the final submission. Any edits done on the review screen will not reflect in the live scores shown on the displays, but will reflect in the final posted results.

Confirm with the other Referee and the Head Referee that the correct fouls have been input correctly,

> Referees must ensure that the Head Referee inputs any cards.

without double-counting.

Each Referee must “Submit Final Scores” once any review is complete.

> The Referees must submit final scores for each match, whether or not they record any fouls. Otherwise, it will hold up the match submission.

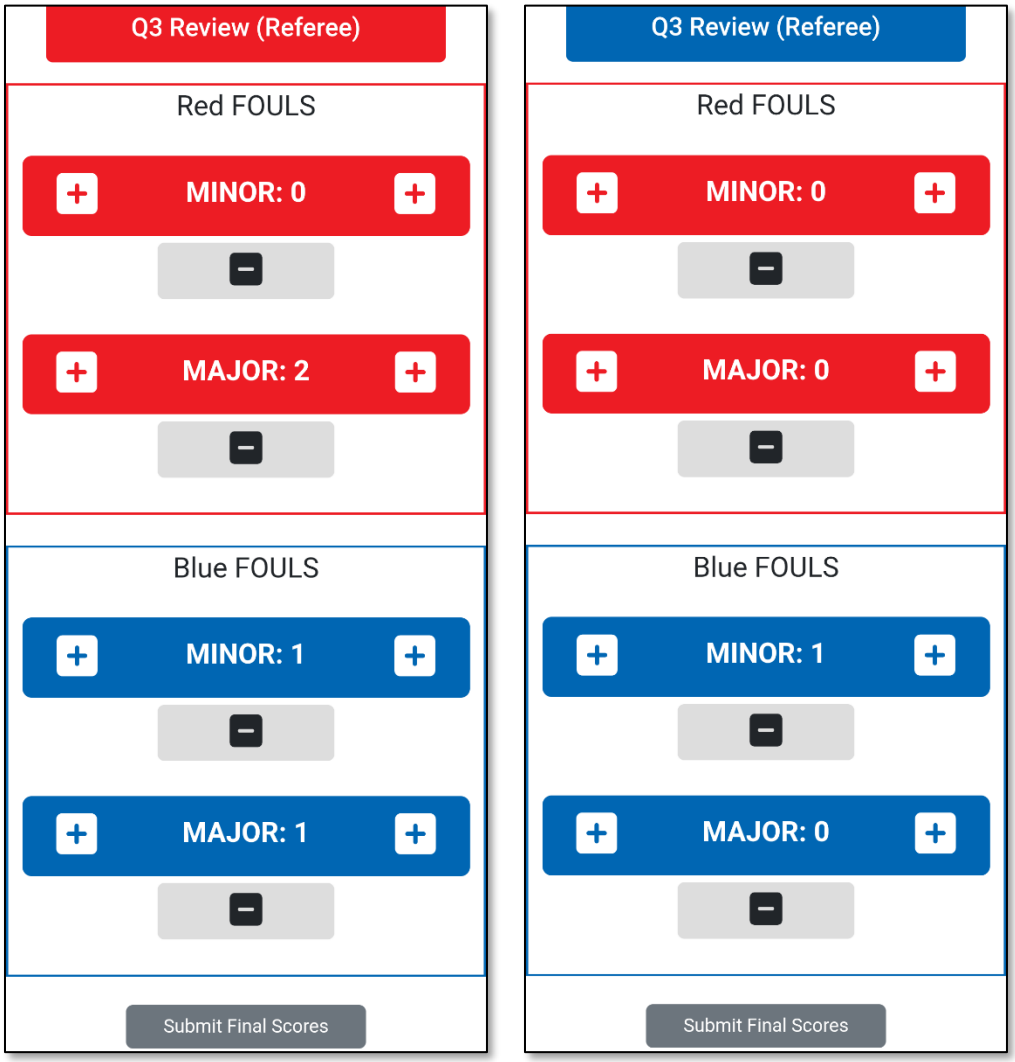


Figure 40: Review Referee Input Screens for the Red (Left) and Blue (Right)

Head Referee Active Match

Overview

When a match on the appropriate field is active, the active match tab will display match information, status, scoring achievements, and fouls/violations for the Head Referee.

AUTO Scores and TELEOP Scores sections should be expanded for complete viewing, but may be collapsed for a greater focus on violations. Additionally, these sections may be toggled between for devices with small screens.

The Head Referee Active Match tab condenses a large amount of information and multiple functions about the current match into a single screen:

- General Match Information: Informs the Head Referee of the current status of the match.
- General Head Referee Functions: Allow basic operations for the display, notes, and match.
- Fouls: Allow the Head Referee to monitor Referee foul inputs and input minor and major fouls.
- AUTO Score Summary: Provide a brief overview of AUTO scoring achievements.
- TELEOP Score Summary: Provide a brief overview of TELEOP scoring achievements.
- Ranking Point Violations: Allow input of Ranking Point impacting fouls and tracking.
- Team List & Cards: Allow viewing of prior input for teams participating in the match and assignment of yellow and/or red cards.

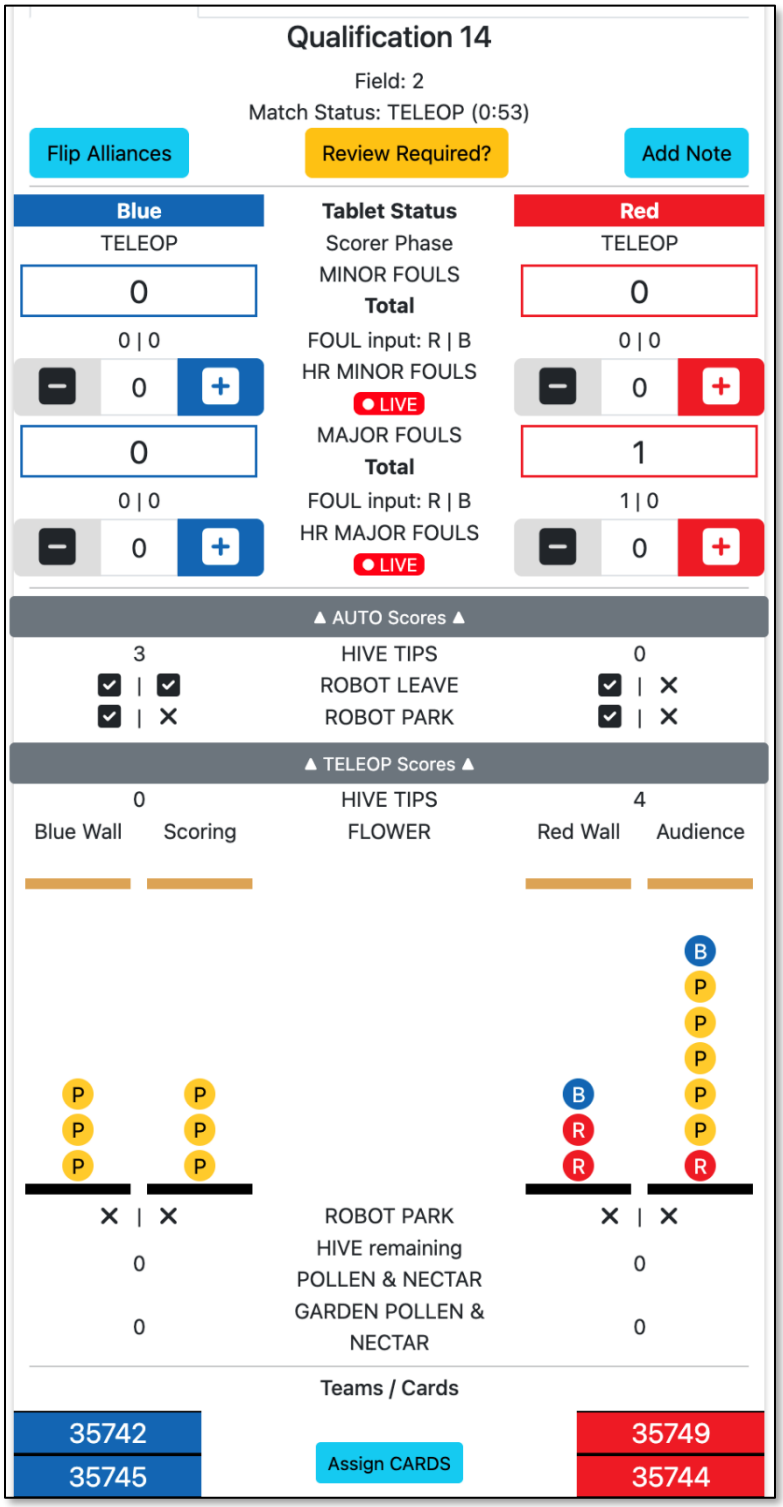


Figure 41: Head Referee Active Match – Overview with Example Inputs

General Match Information

The Active Match tab will display the active match on the relevant field, as shown in Figure 41, Figure 42, and Figure 43.

- Match Number
- Field Number (if at a multi-field event)
- Participating Teams (at the bottom)
    - If the team number is shown on a yellow background, the team is carrying a yellow card into the match.
    - If the team number is shown with a speech bubble, there are notes on the team from prior matches.
- Match Status
    - Unplayed, AUTO, Transition, TELEOP, Review
- Tablet Status
    - Displays the current status of the blue and red Official Scorer (and, if applicable Referee) tablets for the current match.
        - These will display "READY" as indicated for both Referees and the red Official Scorer in Figure 42, when:
            - a Official Scorer is on their "Ready" screen, and/or
            - a Referee selects the Match.
        - These will display in yellow and indicate the match period the device is lingering in. if the Official Scorer is not on the appropriate screen for the match period.
            - For example, in Figure 43 the blue Referee is still on TELEOP, as indicated by the yellow background behind "TELEOP," even though the match is complete.
            - This will also occur if the Scorer is still on the AUTO screen during TELEOP.

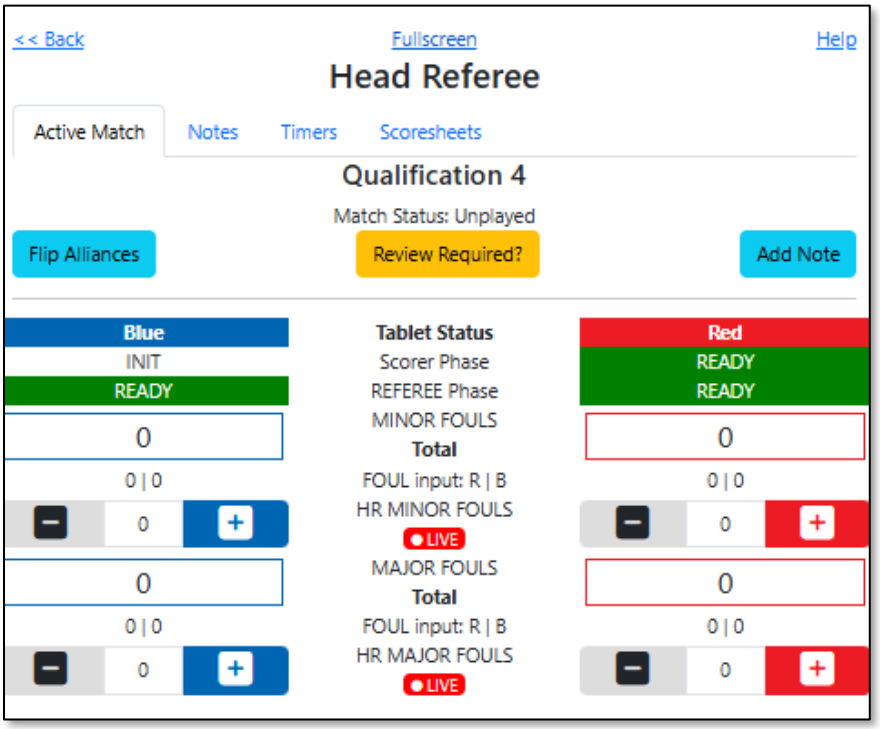


Figure 42: Head Referee Active Match – Match Information & Head Referee Functions: Initial Setup

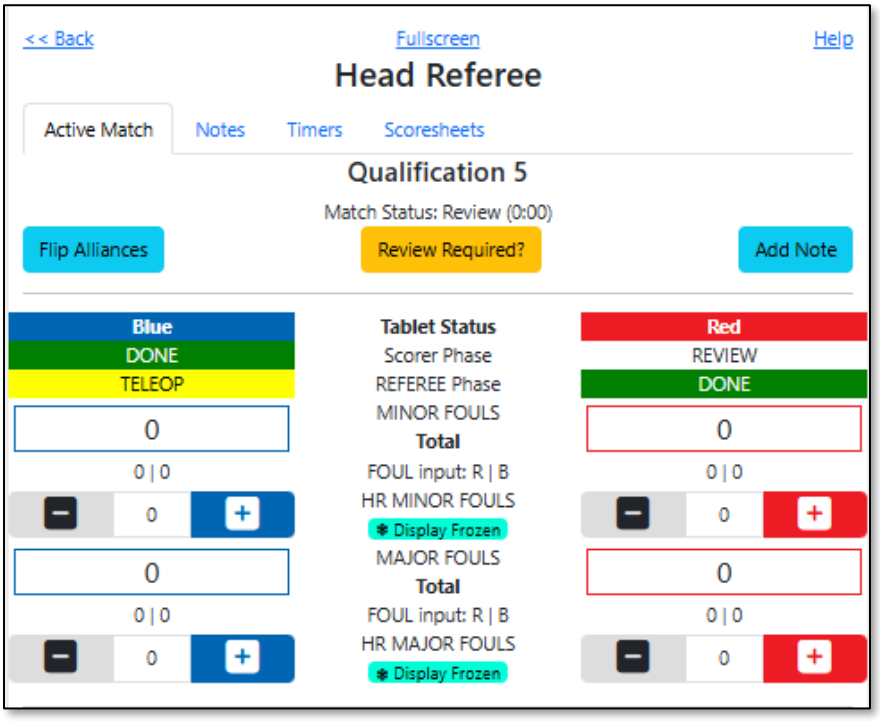


Figure 43: Head Referee Active Match – Mixed Referee Status Example

General Head Referee Functions

These functions allow the Head Referee to change their display, add notes and hold the match results from being submitted.

- Flip Alliances
  - Tapping this button will flip the red & blue alliances, as displayed on the Head Referee tablet.
  - This function is primarily intended to enable the Head Referee to change the display in order to optimize their intake of information based on where they are standing around the field.
- Add Note
  - This will open the Match Notes pop-up for the current match, enabling quick entry of relevant notes.
- Review Required?
  - Tapping this orange button will hold match results from being submitted to the scorekeeper, regardless of the state of the scoring Referee tablets.
  - "Review Required?" should not be regularly used. It should always be used in the following situations:
    - An Official Scorer and/or Referee has submitted their scoring achievements and/or fouls with an error that should be resolved before scores are posted.
    - The Head Referee assigns cards to one or more teams.
    - The Head Referee identifies a complex issue that will require time to adjudicate.

Fouls

The Head Referee can view all fouls input by all Official Scorers Referees for the active match and can add minor or major fouls for both alliances using the inputs for each type of foul, as shown in Figure 44.

> When entering a foul, the Head Referee should ensure they enter the correct foul type for the correct alliance.

The Head Referee cannot remove fouls input by the Official Scorers or Referees from the Head Referee

> To avoid double-counting fouls, Referees should communicate who is inputting the foul(s) if multiple Referees see the foul occur.

tablet. Removing fouls input by others must be done on the relevant device or with the Scorekeeper.

The fouls are always displayed in the order total followed by R | B and the HR input indicating:

- Total = the total number of fouls of that type on the alliance, which should equal the sum of the below items:
  - R = the number of fouls of that type put in by the Official Scorer or Referee with the red device,

- B = the number of fouls of that type put in by the Official Scorer or Referee with the blue device, &
- HR = the number of fouls of that type put in by the Head Referee, via the inputs on their screen.

> The Head Referee should be aware of the total quantity of fouls and violations submitted for each match and work with the Referees to ensure that all violations are counted exactly once.

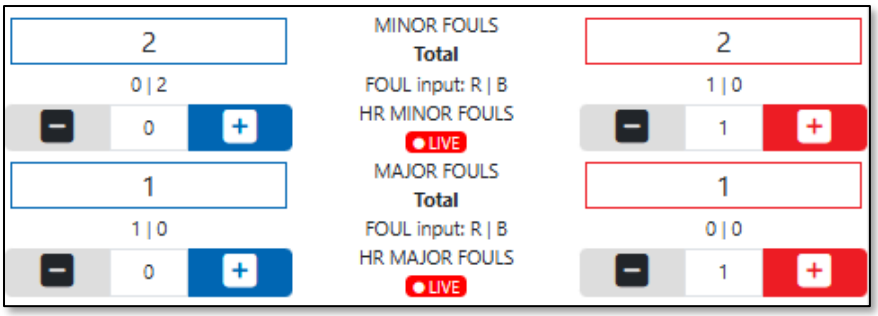


Figure 44: Head Referee Active Match – Fouls

Yellow and Red Cards

Referees and Official Scorers cannot input cards. These must be input by the Head Referee or the Scorekeeper.

At the start of every match, the cards will be hidden on the Head Referee tablet to prevent accidentally selecting these items, as in Figure 45. The Head Referee must tap the blue "Assign Cards" in order to enter cards. Figure 46 shows the card section unhidden, and Figure 47 show the card section with inputs.

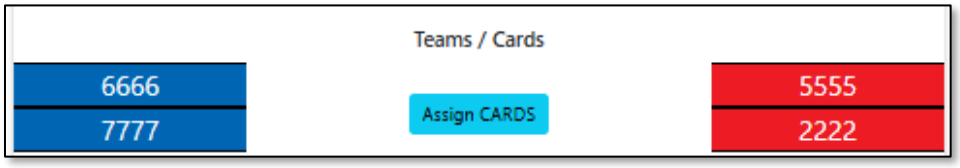


Figure 45: Head Referee – Additional Violations

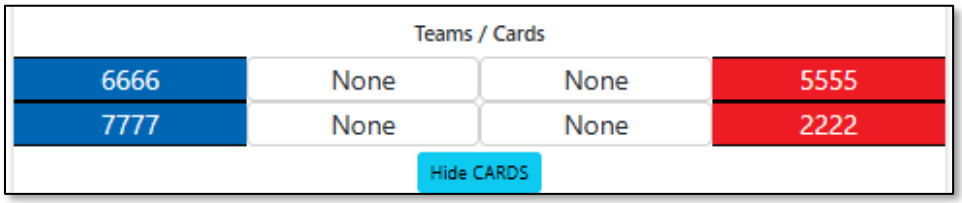


Figure 46: Head Referee – Additional Violations, Expanded

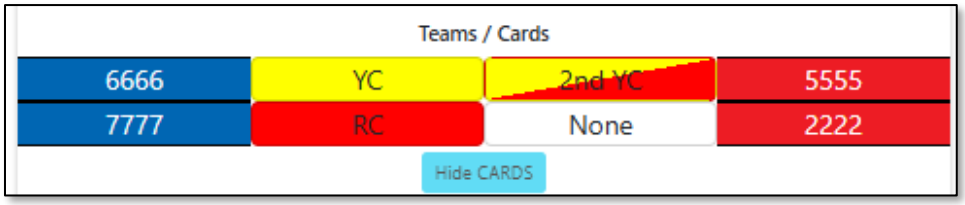


Figure 47: Head Referee – Additional Violations, Card Inputs

The Head Referee should assign cards by tapping the box adjacent to the appropriate team number. The box will cycle through None > YC > 2nd YC > RC > None. These are not final until the review has been submitted.

Confirm notes on the team number to ensure escalation is happening correctly. A note must be recorded for each card given.

- None: No Yellow Card assigned during the Active Match
- YC: The first Yellow Card is assigned during the event phase
- 2nd YC: A second (or additional subsequent) Yellow Card is assigned during the event phase
- RC: a Red Card is assigned during the event phase

> The Head Referee must still clearly communicate cards to the team and Announcer, in addition to inputting them into the tablet.

Review Required

Once a card has been selected, the Head Referee tablet is automatically put into "Review Required" (green box).

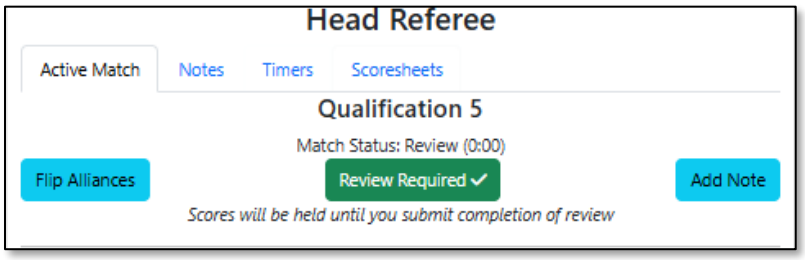


Figure 48: Head Referee – Review Required Status

The Head Referee may also manually put the tablet into "Review Required" by tapping the orange "Review Required?" button at the center top of the Head Referee tablet, as shown in Figure 49. The orange box will turn green when all other Official Scorer and Referee devices have submitted the match, as shown in Figure 48.



Figure 49: Head Referee – Review Required? Orange Button Option

If the match is in Review for any reason by the Head Referee, the Head Referee must tap the blue "Submit Review" at the bottom of their screen in order to submit the match scores. This is only available after all other users have submitted the match results. Note the Scorekeeper screen shown in Figure 51.

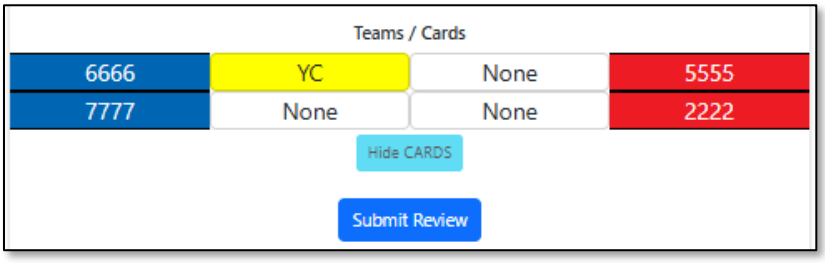


Figure 50: Head Referee – Additional Violations, Submit Review



Figure 51: Scorekeeper View of Match Results – Head Referee Hold for Review

Head Referee Additional Functions

Enabling Referee Devices

The Referee devices will allow Referees to input major and minor fouls for both alliances live, as they occur.

Device Setup

The Scorekeeper must enable the Penalty Referee Tablets per Enabling Referee Input Devices.

Both Referees must use input devices if this option is selected. Enabling the Referee devices removes foul inputs from the Official Scorer tablets.

If the Referee device entry mode is either enabled or disabled while Referee devices are active, all Official Scorers and Referees must exit their role-based application pages and re-access them from the FTC-Live event home page on the device. They may need to refresh the home page.

Timers

On the timer tab, as shown in Figure 52, the match timing is displayed, including the current time, when the upcoming matches are scheduled to start, and if that start time has passed without the match starting with the note of "*Match start time has passed!*"

The scheduled time for future matches will not update until the prior match has ended.

G301 – Delay of Match Violation Timer

> The guidance on when to initiate a G301 timer is found in the Competition Manual. The Head Referee should use the timing information found in the Head Referee tablet as one of several factors in determining if a G301 timer should be started.
> **Just because the G301 timer is available to be started does not mean it should be started.**

The timer feature enables the Head Referee to quickly judge if the expected match start time has passed, in addition to other G301 considerations and if a G301 timer can be started. The timer cannot be started unless the timing conditions specified in G301 are met – it will be greyed out. However, the Head Referee should ensure that all G301 violation conditions, including the timing condition, are met prior to starting the G301 timer.

To start the timer, the Head Referee should tap the green "Start 2-Minute Warning" button. The 2-minute timer will then display in red text on the timer tab of the Head Referee tablet, counting down to 0:00. The timer can be restarted with the red "Restart 2-Minute Warning" button shown in Figure 53, if appropriate.

When a G301 timer has been activated by the Head Referee on the field, the Referee scoring tablets will indicate that a timer is active, with the current timer countdown displayed in a pink header, as shown in Figure 54. Tapping this header will display the timer in a full-screen mode, as shown in Figure 55. This is useful to display near the team to indicate to them how much time is left before an escalation of G301 will occur.

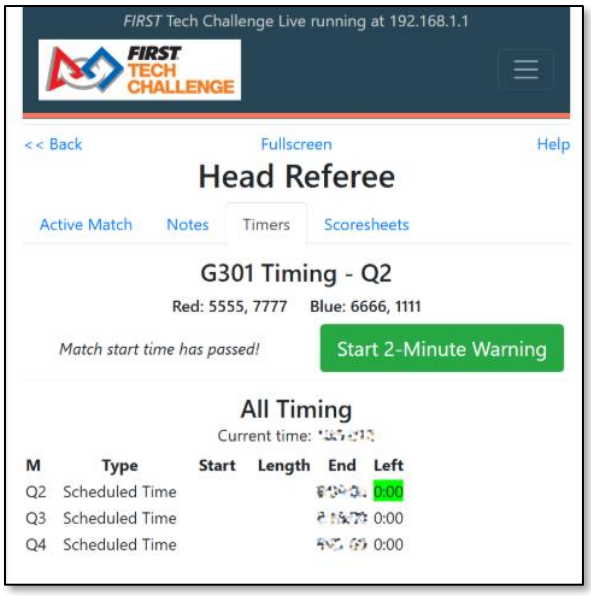


Figure 52: Head Referee Timers Tab

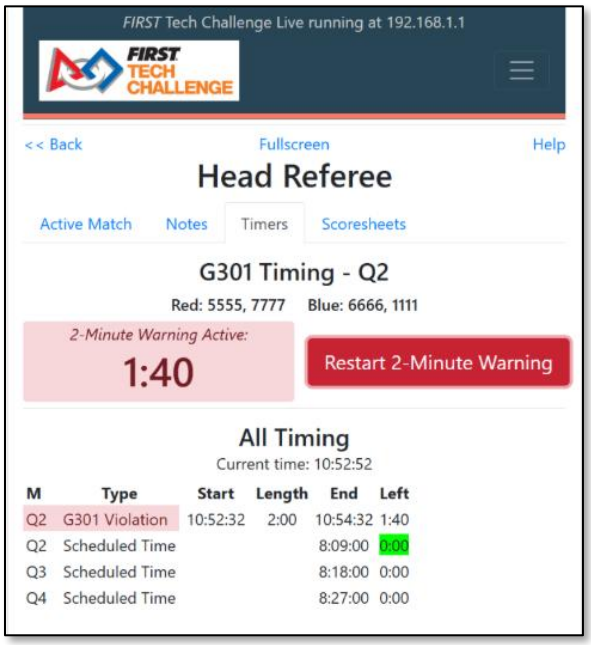


Figure 53: Head Referee Timer Tab – Active 2-Minute Warning Timer



Figure 54: Scoring/Referee Tablet when G301 2-minute timer is active

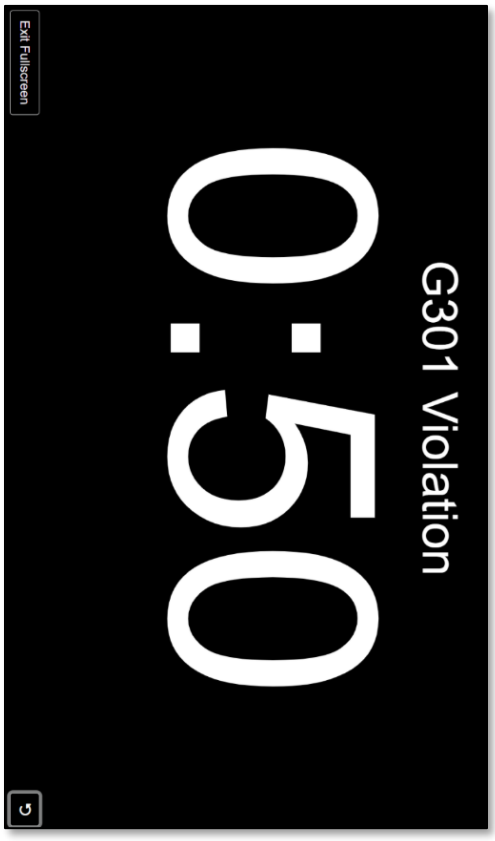


Figure 55: Scoring/Referee Tablet Fullscreen G301 Timer

Notes

Notes are located on the Notes tab.

Team & Match Notes

Team notes are used to find or edit notes on a team. Team notes do not propagate between events.

Match notes include notes on a team during the match and general notes. When entering notes on a team, use the team number check boxes to associate the note with a specific team in the cross-referenced notes.

In "By Match," tap on a match line to view all notes for the match. A general note or if there is only one note on the match, it will always be displayed on top. If multiple team notes are present, tap to see all match notes.

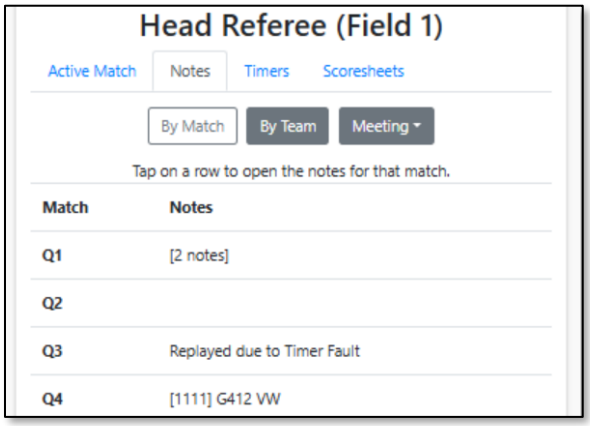


Figure 56: Head Referee Notes by Match Example

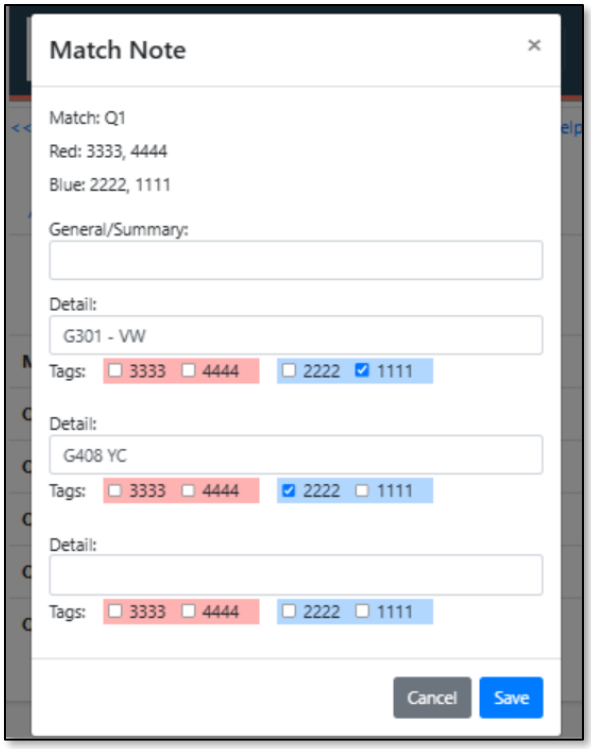


Figure 57: Head Referee Notes by Match – Q1 Example

Tap on the team number row in order to view all notes on the team in more detail or edit the notes on the team. From the team summary of notes, tapping on a match will enable input for any team in the match. See Figure 58 as an example.



Figure 58: Head Referee Notes by Team Example

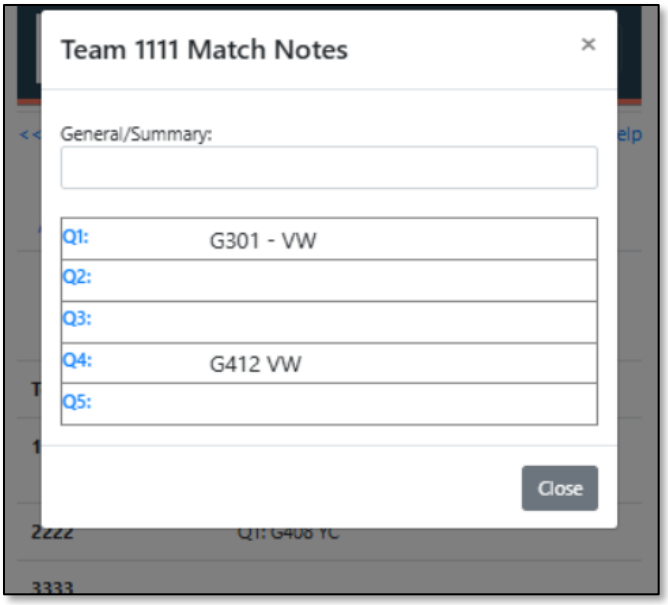


Figure 59: Head Referee Notes by Team – Team 1111 Detail Example

Meeting Notes

Meeting notes include boilerplate templates for key talking points for the Referee Meeting, the Drivers' Meeting, the Alliance Captains' Meeting, and a blank page for "Other."

These notes are a valuable starting point for talking points during these key, Head Referee led meetings. All of these can be edited for the current event and saved for future reference. Meeting notes

> Head Referee boilerplate templates can be found online in advance of an event. These can be copied and modified in advance of an event and be ready for use during an event. There may be additional notes to add early in the event.

updates are not automatically transferred to future events.

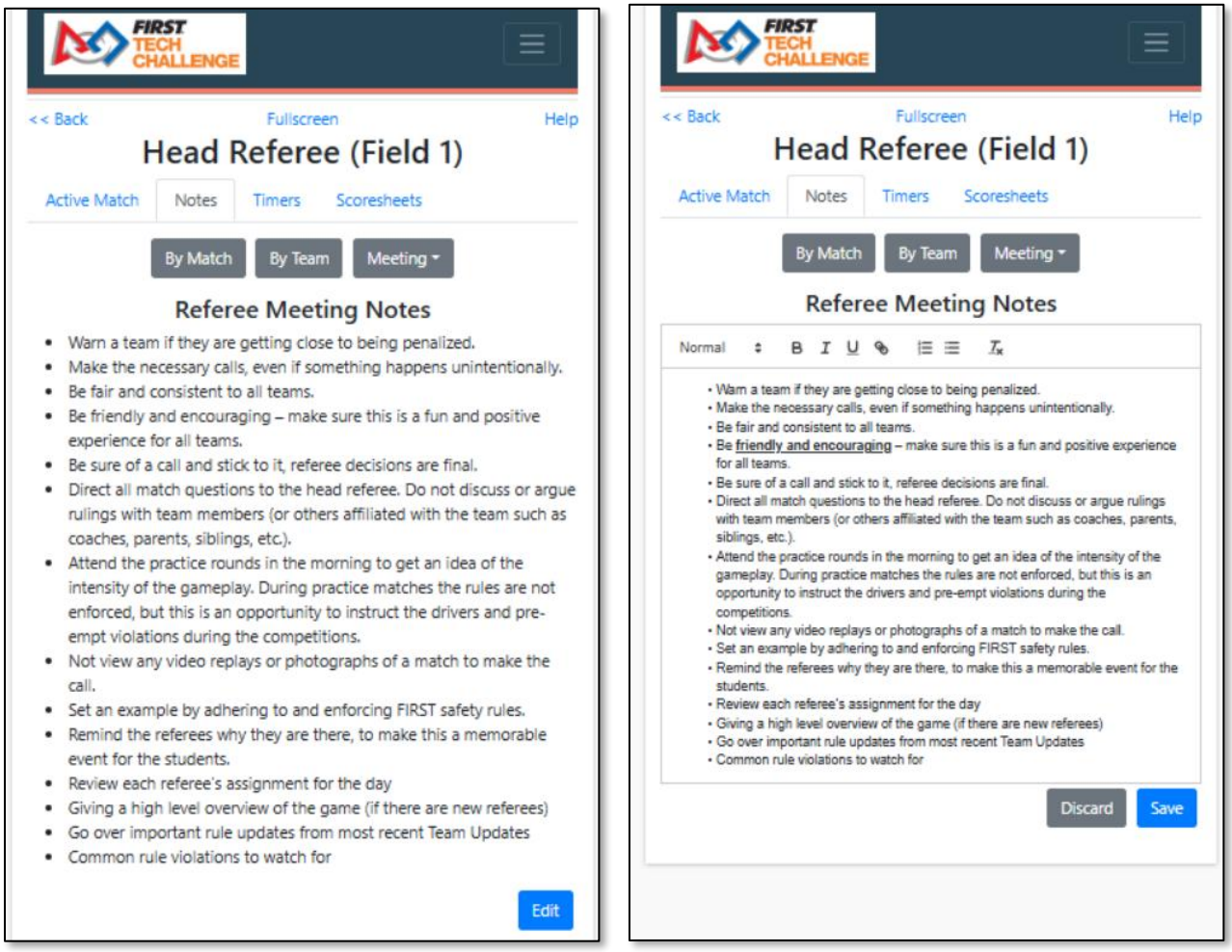


Figure 60: Example of Referee Meeting Notes & Editing Meeting Notes

Scoresheets

The Head Referee can display scoresheets for previous matches directly on their tablet to aid in Question Box and Referee conference discussions.

Select the correct match number.

Selection inputs include match number – which can be filtered to just Playoff Matches, and red alliance, blue alliance, or both alliances – the default is both alliances. Confirm the match number, alliance color, and team number are correct when reviewing a scoresheet.

Scoresheets, such as the one in Figure 61, are designed to display the quantity and type of scoring achievements, fouls, and whether ranking points were earned, but not the scores earned by each alliance. This should help the conversations between Head Referees and others remain objective.

General match information:

- Alliance color
- Match number
- Field number

For AUTO, the scoresheet displays:

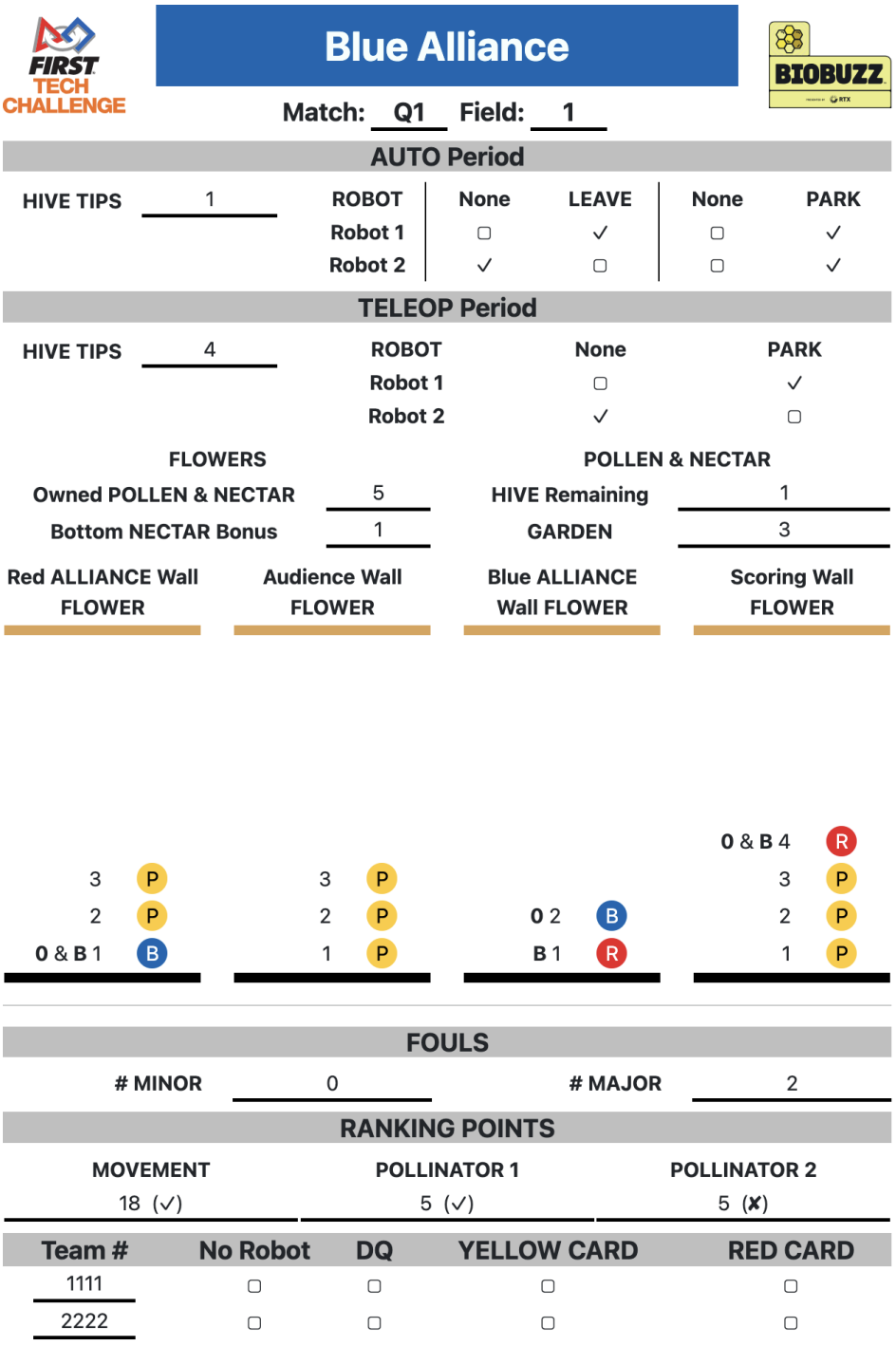
- The number of hive tips earned
- Each robot's status for leave and park

For TELEOP, the scoresheet displays:

- The number of hive tips earned
- Each robot's status for park
- A summarized assessment of all flower scoring:
    - The total scoring elements that are in owned flowers
    - The number of bottom nectar bonuses
- Pollen & nectar remaining in the hive
- Pollen & nectar in the garden
- Details of all flowers, with the ordered scoring elements in each flower shown along with a count of elements and the bottom nectar bonus and owners indicated.

For the match overall, the scoresheet displays:

- Minor and major fouls assessed against the alliance
- Ranking points earned and the criteria earned towards the threshold
- If a team was indicated as having no robot, a disqualification, yellow card, or red card.



Blue Alliance

Match: Q1 Field: 1

AUTO Period

HIVE TIPS	1	ROBOT	None	LEAVE	None	PARK
		Robot 1	☐	✓	☐	✓
		Robot 2	✓	☐	☐	✓

TELEOP Period

HIVE TIPS	4	ROBOT	None	PARK
		Robot 1	☐	✓
		Robot 2	✓	☐

FLOWERS		POLLEN & NECTAR	
Owned POLLEN & NECTAR	5	HIVE Remaining	1
Bottom NECTAR Bonus	1	GARDEN	3

Red ALLIANCE Wall FLOWER	Audience Wall FLOWER	Blue ALLIANCE Wall FLOWER	Scoring Wall FLOWER
3 P	3 P		0 & B 4 R
2 P	2 P	0 2 B	3 P
0 & B 1 B	1 P	B 1 R	2 P
			1 P

FOULS

# MINOR	0	# MAJOR	2

RANKING POINTS

MOVEMENT	POLLINATOR 1	POLLINATOR 2
18 (✓)	5 (✓)	5 (✘)

Team #	No Robot	DQ	YELLOW CARD	RED CARD
1111	☐	☐	☐	☐
2222	☐	☐	☐	☐

Figure 61: Head Referee Scoresheet Example

Any changes to scoring achievements, fouls, or other match results must be input through the Match Control Screen operated by the Scorekeeper. See Updating Match Results.

Scoring System Interfaces

> Please work with event technical staff, including the FTA and Scorekeeper, to determine if the event can support Referee Devices (i.e., devices are available and the network will support them).

Enabling Referee Input Devices

Enabling Referee Tablets will allow the Referees to input their own fouls, as opposed to communicating them to the Official Scorers for input.

To enable the Referee devices:

1. On the Scorekeeper's Match Control screen, under "Settings" tab, check the "Enable Referee Tablets" option.
2. Refresh all Official Scorer and Referee devices prior to starting a match.

One Referee at each field must use the "Red" device and one must use the "Blue" device.

All Referees must use devices if this option is selected.

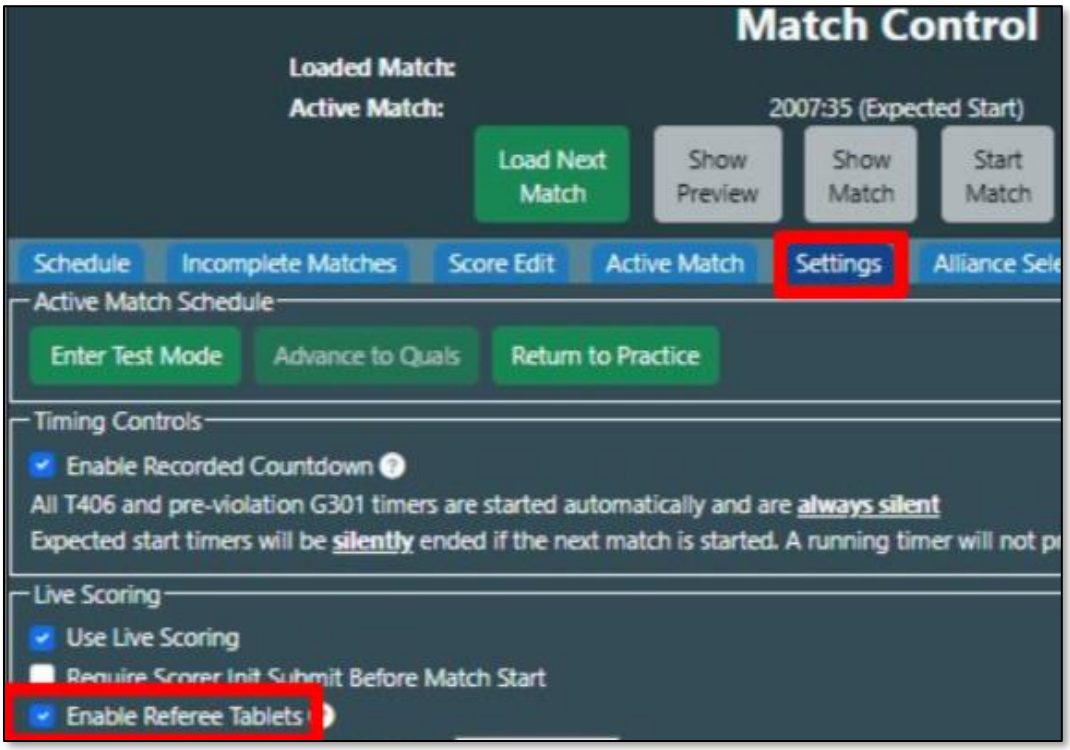


Figure 62: Enabling Referee Tablets

Updating Match Results

Updating a match result must be done in coordination with a Scorekeeper.

If the match outcome does not change: on the Scorekeeper's Match Control screen, identify the match and select "Edit."

- Confirm the correct match is selected prior to editing the recorded results.
- Confirm the correct edits are made to the match, then "Save Edits," and "Commit."
    - "Post" is not needed if the match outcome does not change.

If the match outcome changes:

- Follow the same edit process above.
- Advise the Scorekeeper to "Commit" and "Post" the match results only once the teams involved in the match have been informed of the change, and the Announcer is ready to announce the change.

The match outcome changes if:

- The winner of the match changes,
- Ranking points changed, and/or
- A card is issued or rescinded.

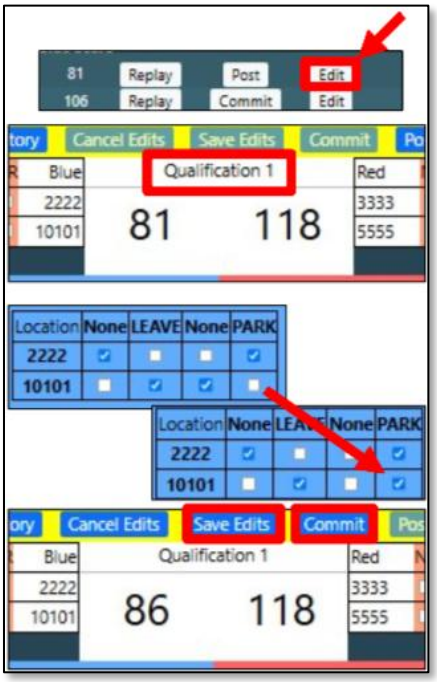


Figure 63: Editing a Match Result – Example

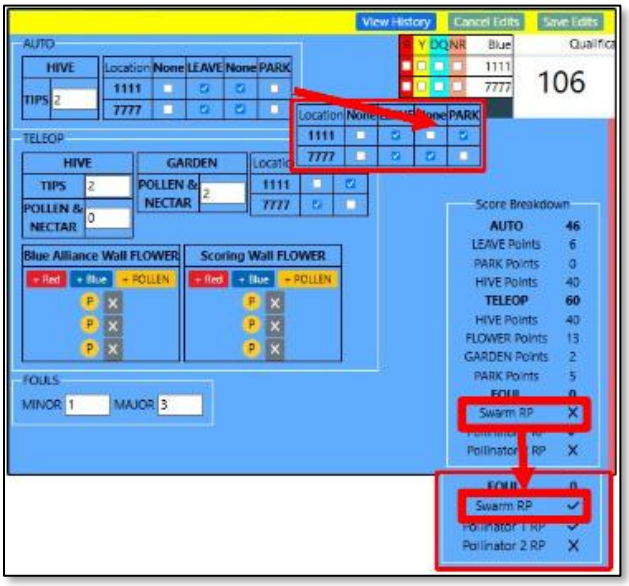


Figure 64: Editing a Match Result – Ranking Point Change Example

Enable Scoring System Recorded Countdown ("3-2-1-Go!")

> Please work with event staff to determine if this feature should be used at your event.
> This feature should **not** be used if an Announcer is available.

To enable the scoring system automated count-in:

- On the Scorekeeper's Match Control screen, under "Settings" tab, check the "Enable Recorded Countdown" option.

Test match sounds prior to beginning a match to confirm behavior is as expected.



Figure 65: Enable Recorded Countdown Option

Event Day Support

Please utilize the tools at the event's disposal, including:

- Key Volunteers at the event who are familiar with FTC-Live
- FTC-Live Setup Guide
- Scoring & Referee Tablet Guide (this document)

Additional event day support of issues with the scoring system can be found through the Scorekeeper's Match Control page, on the Help tab.

For Gameplay/Referee Issues:

- Start an On Call Support Request workflow in **#all-event-support** in the FTC Referee Slack, or
- Call: (603) 206-2412

For Technical Issues:

- FTC Live Tech Support Live Chat (available through Match Control → "Help"), or
- Call: (603) 206-2450

Referee Slack On-Call Support

To use the Referee Slack, in the **#all-event-support** channel, press the green button labeled "► On Call Support Request."

- Clicking or tapping on this button will cause a form to appear. Refer to Figure 66.
- Fill out the form to the best of your ability. See Figure 67 for an example.
- Click **Submit** on the form. This will create a private channel to discuss your issue with *FIRST* Staff and Referee support volunteers.



Figure 66: Referee Slack On Call Support Request Button

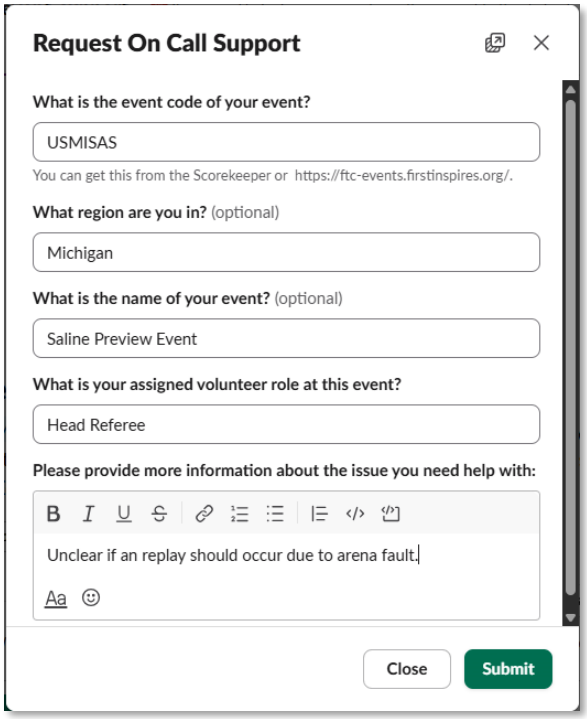


Figure 67: Referee Slack On-Call Support Request – Example Form