Section 9

THE TOURNAMENT

TABLE OF CONTENTS

9 THE TOURNAMENT 2

9.1 OVERVIEW 2

9.2 PRACTICE ROUNDS 2
9.2.1 Schedule 2

9.3 QUALIFICATION MATCHES 2
9.3.1 Schedule 2
9.3.2 Match Assignment 2
9.3.3 Earning Points 3
9.3.4 Match Seeding Points 3
9.3.5 Coopertition™ Bonus 3
9.3.6 Seeding Point Exceptions 3
9.3.7 Seeding Score 3
9.3.8 Highest Coopertition Bonus 3
9.3.9 Qualification Seeding 4

9.4 ELIMINATION MATCHES 4
9.4.1 Alliance Selection Process 4
9.4.2 Backup Teams 5
9.4.3 Elimination Match Ladder 6
9.4.4 Elimination Scoring 6

9.5 TOURNAMENT RULES 6
9.5.1 Safety Rules 6
9.5.2 Referee Interaction Rules 6
9.5.3 Yellow and Red Card Rules 7
9.5.4 Field Reset Rules 7
9.5.5 Timeout and Backup Team Rules 8
9.5.6 Special Equipment Rules 9

9.6 CHAMPIONSHIP ADDITIONS 9
9.6.1 Championship Pit Crews 9
9.6.2 Championship Backup Teams 10
9.6.3 FRC Championship Match Ladder 10

9 THE TOURNAMENT

9.1 OVERVIEW

Each 2010 FRC Regional or District Competition and the 2010 FRC Championship will be played in a tournament format. Each tournament will consist of three sets of matches called “practice matches,” “qualification matches,” and “elimination matches.” The purpose of the practice matches is to provide each team a chance to run its ROBOT on the playing field prior to the start of the competition matches. The purpose of the qualifying matches is to allow each team to earn a seeding position that may qualify them for participation in the elimination matches. The purpose of the elimination matches is to determine the event Champions.

9.2 PRACTICE ROUNDS

9.2.1 Schedule

The practice rounds will be played on the first day of each competition. The practice round schedule will be available on the morning of the first day. Practice rounds will be randomly assigned with each team being assigned an equal number of rounds. At some events, additional rounds may be available on a standby basis. Each practice round will consist of two MATCHES in which teams may operate their ROBOT on the field.

- MATCH A: The first MATCH of each practice round is intended to be a somewhat “free-form” session, in which the ROBOTS may be exercised to evaluate operational characteristics, gain driver experience, determine system robustness, etc. During this MATCH robots should avoid unnecessary robot-to-robot interaction to allow all teams to evaluate their performance without interference.
- MATCH B: The MATCH of each practice round will be conducted as a “competition match” with approximately two minutes for set up, two minutes and fifteen seconds of regular game play (including operations), and one minute to clear the field.

9.3 QUALIFICATION MATCHES

9.3.1 Schedule

The qualification matches will consist of a series of matches, with an ARENA reset between each MATCH. The qualification match schedule will be available as soon as possible, but no later than 1 hour before qualification matches are scheduled to begin.

9.3.2 Match Assignment

The Field Management System will assign each team two ALLIANCE partners for each qualifying match played using a predefined algorithm. The algorithm employs the following list of criteria:

A. Maximum time (in number of matches) between each match played for all teams

B. Minimum possible number of times a team plays opposite any team

C. Minimum possible number of times a team is allied with any team

D. Minimize the use of surrogates.

E. Even distribution of matches played on Blue and Red Alliance (without sacrificing A, B, C and D)

All teams will play the same number of qualifying matches **<u>except</u>** if the number of team appearances (number of teams multiplied by number of rounds) is not divisible by six; in that case the Field Management System will randomly select some teams to play an extra MATCH. For

purposes of seeding calculations, those teams will be designated as SURROGATES for the extra MATCH. If teams play a MATCH as a SURROGATE, it will be indicated on the match schedule, and it will always be their third match.

9.3.3 Earning Points

At the conclusion of each MATCH, each participating TEAM will earn seeding points. Seeding points will be accumulated during the tournament, and will be totaled into the seeding score. The Field Management System will use the seeding score to continuously determine the seeding of TEAMS during the qualification matches. The ranking information will be displayed in the pit area.

9.3.4 Match Seeding Points

All teams on the winning ALLIANCE will receive a number of seeding points equal to the penalized score (the score with any assessed penalties) of the winning ALLIANCE.

All teams on the losing ALLIANCE will receive a number of seeding points equal to un-penalized score (the score without any assessed penalties) of the winning ALLIANCE.

In the case of a tie, all participating teams will receive a number of ranking points equal to their ALLIANCE score (with any assessed penalties).

9.3.5 Coopertition™ Bonus

All teams on the winning ALLIANCE will receive a coopertition bonus: a number of seeding points equal to twice the un-penalized score (the score without any assessed penalties) of the losing ALLIANCE.

In the case of a tie, all participating teams will receive a coopertition bonus of a number of seeding points equal to twice their ALLIANCE score (with any assessed penalties).

9.3.6 Seeding Point Exceptions

A SURROGATE TEAM will receive zero seeding points and zero coopertition bonus.

A TEAM is declared a no-show if **no** member of the team is in the ALLIANCE ZONE at the start of the MATCH; a no-show team will receive a RED CARD for that MATCH.

During the qualification matches, TEAMS can individually receive RED CARDS. A RED CARDED TEAM will receive zero seeding points and zero coopertition bonus.

In the very unlikely case that all three TEAMS on an ALLIANCE receive RED CARDS, all three TEAMS on the winning ALLIANCE would get their own ALLIANCE score as their seeding points for that MATCH.

9.3.7 Seeding Score

The total number of seeding points earned by a TEAM throughout their qualification matches will be their seeding score.

9.3.8 Highest Coopertition Bonus

The Field Management System will keep track of the highest coopertition bonus earned by each TEAM during the qualification matches but this value will not be displayed.

9.3.9 Qualification Seeding

All TEAMS in attendance will be seeded during the qualification matches. If the number of TEAMS in attendance is 'n', they will be seeded '1' through 'n', with '1' being the highest seeded team and 'n' being the lowest seeded TEAM.

The Field Management System will use the following seeding method:

- TEAMS will be seeded in decreasing order by seeding score.
- Any TEAMS having identical seeding scores will then be seeded in decreasing order by their highest coopertition bonus.
- Any TEAMS having identical seeding scores and highest coopertition bonus will then be seeded in decreasing order by cumulative ELEVATED/SUSPENDED points earned by their ALLIACES throughout the Qualification Matches.
- Any TEAMS also having identical highest coopertition bonuses will then be seeded based on a random sorting by the Field Management System.

9.4 ELIMINATION MATCHES

At the end of the qualification matches, the top eight seeded TEAMS will become the Alliance Leads. The top seeded ALLIANCES will be designated, in order, Alliance One, Alliance Two, etc., down to Alliance Eight. Using the alliance selection process described below, each team will choose two other teams to join their ALLIANCE.

9.4.1 Alliance Selection Process

Each TEAM will choose a student Team Representative who will proceed to the ARENA at the designated time (typically before the lunch break on the final day of the Competition) to represent their TEAM. The Team Representative for each Alliance Lead is called the ALLIANCE CAPTAIN.

The alliance selection process will consist of two rounds during which each ALLIANCE CAPTAIN will invite a TEAM seeded below them in the standings to join their ALLIANCE. The invited team must not already have declined an invitation.

<u>Round 1</u>: In descending order (Alliance One to Alliance Eight) each ALLIANCE CAPTAIN will invite a single TEAM. The invited Team Representative will step forward and either accept or decline the invitation.

If the TEAM accepts, it is moved into that ALLIANCE.

- If an invitation from a top eight ALLIANCE to another Alliance Lead is accepted, all lower Alliance Leads are promoted one spot and the next highest seeded unselected TEAM will move up to become Alliance Eight.

If the TEAM declines, that TEAM is not eligible to be picked again and the ALLIANCE CAPTAIN extends another invitation to a different TEAM.

- If an invitation from a top eight ALLIANCE to another Alliance Lead is declined, the declining TEAM may still invite teams to join their ALLIANCE, however, it cannot accept invitations from other ALLIANCES.

The process continues until Alliance Eight makes a successful invitation.

<u>Round 2</u>: The same method is used for each ALLIANCE CAPTAIN'S second choice except the selection order is reversed, with Alliance Eight picking first and Alliance One picking last. This

process will lead to eight ALLIANCES of three TEAMS.

9.4.2 Backup Teams

Of the remaining eligible TEAMS, the highest seeded TEAMS (up to eight) shall remain on standby and be ready to play as a BACKUP TEAM. If a ROBOT from any TEAM in an elimination match becomes inoperable the ALLIANCE CAPTAIN may have the highest seeded BACKUP TEAM join the ALLIANCE. The resulting ALLIANCE would then be composed of four TEAMS, but only three TEAMS will be permitted to continue with tournament play. The replaced TEAM remains part of the ALLIANCE for awards but cannot play, even if their ROBOT is repaired.

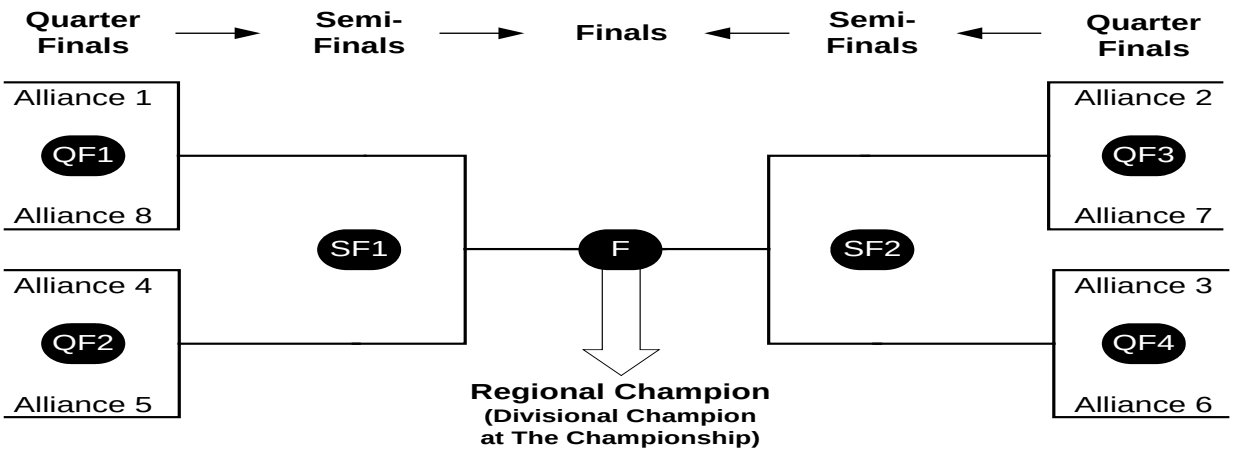
The original three-team ALLIANCE shall only have one opportunity to draw from the BACKUP TEAMS. If a second ROBOT from the ALLIANCE becomes inoperable, then the ALLIANCE must play the following matches with only two (or even one) ROBOTS. It is in the best interest of all teams to construct their ROBOTS to be as robust as possible to prevent this situation.

- Example: Three TEAMS, A, B and C, form an ALLIANCE going into the elimination matches. The highest seeded team NOT on one of the eight ALLIANCES is Team D. During one of the elimination matches, Team C's ROBOT becomes inoperable. The ALLIANCE CAPTAIN decides to bring up Team D to replace Team C. Team C and their ROBOT may not play in any subsequent elimination matches.

In the case where a BACKUP TEAM is called up onto the winning ALLIANCE, there will be a four-TEAM Champion Alliance.

9.4.3 Elimination Match Ladder

The elimination matches will take place on the third afternoon in a ladder format as follows:



In order to allow equal time between matches for all ALLIANCES, the order of play will be:

QF1-1, QF2-1, QF3-1, QF4-1,

Then QF1-2, QF2-2, QF3-2, QF4-2,

Then QF1-3*, QF2-3*, QF3-3*, QF4-3*

Then any QF replays due to ties*

Then SF1-1, SF2-1, SF1-2, SF2-2, SF1-3*, SF2-3*

Then any SF replays due to ties*

Then F-1, F-2, F-3*

Then any F replays due to ties*

(* - if required)

9.4.4 Elimination Scoring

In the elimination matches, TEAMS do not earn seeding points; they earn a win, loss or tie. Within each bracket of the elimination match ladder, the first ALLIANCE to win two MATCHES will advance.

9.5 TOURNAMENT RULES

9.5.1 Safety Rules

<T01> All competition attendees must wear safety glasses while in the ARENA.

<T02> Radio control mode of ROBOT operation is not permitted in areas anywhere outside the ARENA. ROBOTS must only be operated by tether when not within the ARENA.

9.5.2 Referee Interaction Rules

<T03> The Head Referee has the ultimate authority in the ARENA during the competition. THE HEAD REFEREE RULINGS ARE FINAL! The referee will not review recorded replays under ***any*** circumstances.

<T04> If a TEAM needs clarification on a ruling or score, a pre-college student from that team should address the Head Referee after a field reset has been signaled. Depending on timing, the Head Referee may postpone any requested discussion until the end of the subsequent MATCH.

9.5.3 Yellow and Red Card Rules

<T05> The Head Referee may assign a YELLOW CARD as a warning of egregious ROBOT or team member behavior at the ARENA. A YELLOW CARD will be indicated by the Head Referee standing in front of the TEAM'S PLAYER STATION and holding a yellow card in the air after the completion of the MATCH. In the first MATCH that a TEAM receives a YELLOW CARD, it acts as a warning.

<T06> Once a TEAM receives a YELLOW CARD, its team number will be colored yellow on the audience screen at the beginning of all subsequent MATCHES as a reminder to the team, the referees, and the audience that they have been issued a YELLOW CARD.

<T07> A TEAM will be issued a RED CARD (disqualification) in any subsequent MATCH that they receive an additional YELLOW CARD. This will occur after the completion of the MATCH. A RED CARD will be indicated by the Head Referee standing in front of the TEAM'S PLAYER STATION and holding a yellow card and red card in the air simultaneously. The TEAM will still carry their YELLOW CARD into subsequent matches.

<T08> If the behavior is particularly egregious, a RED CARD may be issued without being preceded by a YELLOW CARD, at the Head Referee's discretion. The TEAM will still carry a YELLOW CARD into subsequent matches.

<T09> YELLOW CARDS do not carry forward between qualification matches and elimination matches. All TEAMS move into the elimination matches with a clean slate.

<T10> If a TEAM is disqualified during a MATCH for a reason other than receiving an additional YELLOW CARD, they will receive a RED CARD. This will occur after the completion of a MATCH and will be indicated by the Head Referee standing in front of the TEAM'S PLAYER STATION and holding a red card in the air.

<T11> During the qualification matches, a TEAM that receives a RED CARD will receive zero seeding points and zero coopertition bonus. The rest of the TEAMS in their ALLIANCE will still receive the earned seeding points and coopertition bonus.

<T12> During the elimination matches, a TEAM receiving a RED CARD will cause the disqualification of their entire ALLIANCE for that MATCH.

9.5.4 Field Reset Rules

<T13> At the conclusion of a MATCH, all players shall remain in their assigned locations until the Head Referee issues the "field-reset" signal. Once the Head Referee issues this signal, the 3-minute "match-reset" period will begin. The ARENA must be cleared of ROBOTS from the MATCH just ended, and the ROBOTS and OPERATORS CONSOLES for the following MATCH must be placed in position and ready to start before the expiration of the "match-reset" period. Field Attendants will reset the ARENA elements during this time.

<T14> TEAM members must release and remove ROBOTS from the TOWERS only under the direction of a referee. Violation: YELLOW CARD.

<T15> TEAM members may not carry ROBOTS over BUMPS or the GUARDRAIL SYSTEM due to numerous safety concerns. A gate has been provided to allow entrance/egress from the MIDFIELD. *Violation: YELLOW CARD.*

> At the end of a MATCH, ROBOTS may be in a potentially hazardous loading condition. TEAMS must exercise extra caution when removing ROBOTS from the FIELD.

<T16> Field power to the ROBOTS will **not** be re-enabled after a MATCH.

<T17> The qualification match schedule will indicate ALLIANCE partners and match pairings. It will also indicate the ALLIANCE color assignment, "red" or "blue," for each MATCH. Before queuing for a match, the ALLIANCE members must choose which TEAM will occupy each of the three possible locations for each of the ROBOTS and HUMAN PLAYERS.

<T18> If, in the judgment of the Head Referee, an "ARENA fault" occurs that affects either the play or the outcome of the MATCH, the MATCH will be replayed. Example ARENA faults include broken field elements, power failure to a portion of the field, improper activation of the field control system, errors by field personnel, etc.

9.5.5 Timeout and Backup Team Rules

<T19> There are **no** time-outs in the qualifying rounds. If a ROBOT cannot report for a MATCH, the queuing manager must be informed and at least one member of the TEAM should report to the field for the MATCH to avoid receiving a RED CARD.

<T20> During the elimination rounds, if circumstances require an ALLIANCE to play in back-to-back MATCHES, they will be granted an additional minute of set-up time to reset and allow their ROBOTS to cool down.

<T21> In the elimination matches, each ALLIANCE will be allotted one TIMEOUT of up to 6 minutes. If an ALLIANCE wishes to call for a TIMEOUT, they must submit their TIMEOUT coupon to the Head Referee within two minutes of the Head Referee issuing the arena reset signal preceding their MATCH. When this occurs, the Time-out Clock will count down the six minutes starting with the expiration of the arena reset period. Both ALLIANCES will enjoy the complete 6-minute window. In the interest of tournament schedule, if an ALLIANCE completes their repairs before the Time-out Clock expires, the ALLIANCE CAPTAIN is encouraged to inform the Head Referee that they are ready to play and remit any time remaining in the TIMEOUT. If ALLIANCES are ready before the 6-minute window, the next MATCH will start. There are no cascading time-outs. An opposing ALLIANCE may not offer their unused TIMEOUT to their opponent.

<T22> If during a TIMEOUT an ALLIANCE CAPTAIN determines that they need to call up a BACKUP TEAM, they must submit their BACKUP TEAM coupon to the Head Referee while there is still at least two minutes remaining on the Time-out Clock. After that point, they will not be allowed to utilize the BACKUP TEAM. Alternatively, an ALLIANCE CAPTAIN may choose to call up a BACKUP TEAM without using their TIMEOUT by informing the Head Referee directly within two minutes of the Head Referee issuing the Field Reset Signal preceding their match.

<T23> In the case where the ALLIANCE CAPTAIN'S team is replaced with the BACKUP TEAM, the ALLIANCE CAPTAIN is allowed in the ALLIANCE STATION as a thirteenth ALLIANCE member so they can serve in an advisory role to their ALLIANCE.

<T24> In any case where a HEAD REFEREE has to stop an ELIMINATION MATCH (e.g. due to ARENA fault or a safety issue), it will be replayed immediately. ALLIANCES do not have the option to request either a TIMEOUT or BACKUP TEAM. The sole exception is if the replay is due to an ARENA fault that rendered a ROBOT inoperable.

<T25> In the case of an ELIMINATION MATCH is replayed per <T18>, the Head Referee has the option of calling a TIMEOUT without charging any TEAM with a TIMEOUT.

9.5.6 Special Equipment Rules

<T26> The only equipment that may be brought on to the ARENA is the OPERATOR CONSOLE, reasonable decorative items, and special clothing and/or equipment required due to a disability. Other items, particularly those intended to provide a competitive advantage for the TEAM, are prohibited.

<T27> Devices used solely for the purpose of planning or tracking strategy of game play are allowed inside the ALLIANCE STATION, if they meet ALL of the following conditions:

- Do not connect or attach to the OPERATOR CONSOLE
- Do not connect or attach to the FIELD or ARENA
- Do not connect or attach to another ALLIANCE member
- Do not communicate with anything or anyone outside of the ARENA.
- Do no include any form of enabled wireless electronic communication (e.g. radios, walkie-talkies, cell phones, Bluetooth communications, WiFi, etc.)
- Do not in any way affect the outcome of a MATCH, other than by allowing team members to plan or track strategy for the purposes of communication of that strategy to other alliance members.

9.6 CHAMPIONSHIP ADDITIONS

For the 2010 FRC Championship, teams will be split into four divisions. Each division will play exactly like a Regional Event and produce the Division Champions. Those four ALLIANCES will then proceed to the Championship Playoffs to determine the 2010 FRC Champions.

Procedures in Sections 9.1-9.5 apply during the Championship, with the following additions:

9.6.1 Championship Pit Crews

During the elimination matches, extra team members are often needed to move the team ROBOT from the team's pit area to the queuing area and into the ARENA. For this reason, each team is permitted to have three (3) additional "pit crew" members who can also help with needed ROBOT repairs/maintenance. We suggest that all TEAMS assume they may be chosen for an ALLIANCE and think about the logistics of badge distribution and set a plan prior to the pairings. It is each ALLIANCE CAPTAIN'S responsibility to get the TEAM'S badges to the TEAM pit crew members.

Only TEAM members wearing proper badges are allowed on the ARENA floor**.** *FIRST* will distribute these badges to the ALLIANCE CAPTAINS during the ALLIANCE CAPTAIN meeting, which takes place on the division fields. These badges will provide the necessary access to the ARENA for pit crew members.

9.6.2 Championship Backup Teams

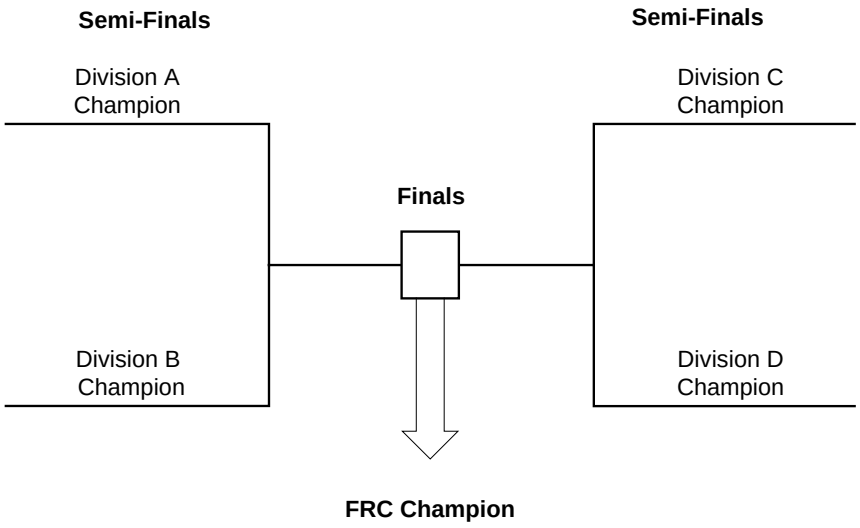
If an ALLIANCE has not previously brought in a BACKUP TEAM, and a ROBOT becomes disabled during the Championship Playoffs and can not continue, the ALLIANCE may request a BACKUP TEAM. The ALLIANCE CAPTAIN will be presented the option of having one of the three lead Division Finalist TEAMS, chosen randomly, from their division join the ALLIANCE as a BACKUP TEAM.

If an ALLIANCE has won their division with a BACKUP TEAM and moved on to the FRC Championship Playoffs, the BACKUP TEAM continues to play for the ALLIANCE in the Championship Playoffs.

As noted in Section 9.4.2, the original three-team ALLIANCE shall only have one opportunity to draw from the BACKUP TEAMS. If the ALLIANCE has brought in a BACKUP TEAM during the division elimination matches or the Championship Playoffs, they cannot bring in a second BACKUP TEAM. If a second ROBOT from the ALLIANCE becomes inoperable during the Championship Playoffs, then the ALLIANCE must play the following matches with only two (or even one) ROBOTS.

In either case, the replaced TEAM remains part of the ALLIANCE for awards but can not rejoin tournament play, even if their ROBOT is repaired. If the ALLIANCE wins the Championship Playoffs, the FRC Champions will be all three original members of the Division Champion ALLIANCE <u>and</u> the BACKUP TEAM.

9.6.3 FRC Championship Match Ladder



The FRC Championship matches will play exactly like the Semi-Finals and Finals of the elimination matches.