

# Section 0

## BETA TEST



### TABLE OF CONTENTS

<b>0</b>	<b>BETA TEST INTRODUCTION</b>	<b>2</b>
0.1	WELCOME TO THE BETA TEST	2
0.2	BETA TEST GOALS	2
0.3	REQUIRED BETA TEST TASKS	2
0.4	BETA TEST COMMUNICATION GUIDELINES	3
0.4.1	Expectations	3
0.4.2	Agreements	3
0.4.3	Timeline for Communication	3
0.4.4	Communication Locations	3
0.4.5	Exhibitions	3
0.4.6	Documentation	4
0.4.7	Software	4
0.5	FRC CONTROL SYSTEM (2009) DEVELOPMENT SCHEDULE	5
0.6	REQUIRED TASKS FOR BETA TEAMS	5
0.6.1	Task 1 – “Out of the Box” Benchtop Test	5
0.6.2	Task 2 – Install Software, Update Software, and Upgrade Firmware	5
0.6.3	Task 3 – Software Development Tools Verification	6
0.6.4	Task 4 – Transplant New Control System Hardware Into an Existing Robot	6
0.6.5	Task 5 – Operator Control of Robot Drivetrain for an Existing Robot	6
0.6.6	Task 6 – Full Control of the Robot with the Transplanted Control System	7
0.7	DEVELOPMENT OF TEAM-SPECIFIC TEST PLANS	7
0.8	BETA TEST SUPPORT	7
0.9	BETA TEAM DISCLOSURE AGREEMENT	7

## 0 BETA TEST INTRODUCTION

### 0.1 WELCOME TO THE BETA TEST

Congratulations! You have been chosen as a 2009 New Control System Beta Test Team. We're happy to have you as part of this effort. FIRST is looking forward to your participation in making the 2009 Control System ready for prime time. While many hours of testing have been logged there is always room for improvement in any new system. We expect that there will be fixes needed, things not working as expected, and we ask that you give the beta team support staff the opportunity to address and fix those issues. As beta testers you have a unique opportunity to represent FIRST and the 2009 Control System to the rest of the FIRST community. Please remember the goal is to make this system better and to ready it for general release. We expect gracious professionalism in all team and individual communications, whether in postings, emails, or conversations with non-beta teams.

Please read through this document carefully. It contains the details you will need for success.

### 0.2 BETA TEST GOALS

The 2009 FRC Control System Beta Test has the following goals:

- Give as many teams as possible early hands-on exposure to the 2009 control system;
- Use beta team feedback to refine/develop supporting documentation and training materials;
- Test the features and functions of the new control system to uncover problems and provide solution suggestions;
- Develop a supporting network/knowledge database to ease the transition to the new system;
- Allow beta teams to become "Control System Experts" and serve as area leaders to mentor other teams;
- Share information broadly to minimize strategic advantage to being a beta test team; and
- Understand the difficulties and issues that teams may encounter with the new control system.

### 0.3 REQUIRED BETA TEST TASKS

As described in the invitation email to be a beta tester of the new control system, beta test teams must perform the following tasks:

- Submit and execute a test schedule and plan;
- Transplant the new control system into an existing FRC competition robot with the understanding that they will not take this opportunity to test new mechanisms;
- Designate one lead student and one technical mentor to serve as the communicators of test results;
- Post their findings on the FIRST Forums at least twice per week;
- Be available to answer questions from teams in their region, and from the broader FRC community;
- Release every piece of code developed;
- Open their facility to regional teams to observe or assist in the test program;
- Agree to serve as "Control Systems Experts" and provide support to teams in their surrounding areas for the 2009 season;
- Hold at least one Saturday controls training seminar open to all neighboring teams prior to the 2009 kickoff. This schedule is to be posted on the FIRST Forums; and
- Agree to return this 2009 Control System to *FIRST* upon request.

## **0.4 BETA TEST COMMUNICATION GUIDELINES**

### **0.4.1 Expectations**

We expect beta test teams to act as ambassadors for FIRST and the new control system, and as such, beta test teams are expected to exhibit the highest degree of Gracious Professionalism in their communications both public and private. Beta test teams are asked to direct all concerns and issues regarding the new control system through the FIRST beta test team forum described below to allow the technical support staff a chance to solve the issue. All communications should be constructive.

### **0.4.2 Agreements**

The Beta Team Disclosure Agreement governs all communications pertaining to the beta testing of the FIRST Control System (attached at the end of this chapter.) This section of the beta manual provides the specific 'written direction' and 'written consent' from FIRST referenced in items 2 and 4 of the Beta Team Disclosure Agreement. In particular, this section provides more specific instructions regarding information sharing with individuals who are not members of beta teams.

### **0.4.3 Timeline for Communication**

By September 22, beta teams should start monitoring the FIRST public beta forum (described below) and answering non-beta test team questions, as they are able.

### **0.4.4 Communication Locations**

There are three primary online communication mechanisms which we anticipate will be used by beta teams:

- FIRST private beta test site– this site will serve as the primary means of communication between beta test teams and FIRST technical support. Teams will receive direction, interact with technical support staff, receive manuals and system documentation, access software updates, submit their testing plan and post preliminary findings. This is a private forum for beta teams and technical support staff only.
- FIRST public beta forum – this site (<http://forums.usfirst.org/forumdisplay.php?f=743>) is where non-beta teams will be able to go for information and updates. Beta teams are expected to exchange information with non-beta teams primarily through this forum. This forum will give Beta teams and the larger community one primary place to go for the best information. Beta teams may discuss any aspect of the new control system they wish on the FIRST public beta forum: hardware, software, interfaces, wiring, personal impressions, etc. There are restrictions, however, on beta teams providing individuals not associated with beta teams with copies of preliminary documentation, software, and sample code. See sections 0.4.6 and 0.4.7.
- Team websites and public forums other than FIRST – Beta test teams may include plans to post information on Team websites and public forums other than FIRST in their testing plan. Beta teams are expected to post links on the FIRST public beta forum to any and all postings on these sites in order to ensure all non-beta teams will have equal access to information.

### **0.4.5 Exhibitions**

Beta teams may exhibit the new control system components and software at any event of their choosing. Please post the time and location of any exhibition well in advance on the FIRST public beta forum so that all non-beta teams may have equal opportunity to participate. Exhibitions can take any form: presentations, training, hands-on activities, webcasts, Q&A sessions, etc. Teams may discuss, display, and demonstrate any aspect of the new control system they wish: hardware,

software, interfaces, wiring, personal impressions, etc. Teams may also do 'on-line' exhibitions via their own websites, as long as links are provided on the FIRST public beta forum to those websites. There are restrictions, however, on beta teams providing individuals not associated with beta teams with copies of preliminary documentation, software, and sample code. See sections 0.4.6 and 0.4.7.

#### **0.4.6 Documentation**

Beta test teams will have access to preliminary system documentation on the FIRST beta test team forum. Beta test teams will be helping to mature this documentation for public release. Beta test teams are not to share this documentation with non-beta test teams or anyone else outside their beta test group. Early release would lead to multiple versions of the same document being referenced, and this could cause confusion and wasted effort. When FIRST determines the documentation is mature enough, it will be released publicly as early as possible. Beta teams are encouraged, however, to create and release their own documentation and training on the FIRST public beta forum as long as that information and training is represented as coming from the team. Beta teams may also post their own documentation and training on their own websites, as long as links are provided on the FIRST public beta forum to those websites. This documentation and training may take any form: written, video, audio, photographic, packaged presentations, etc.

#### **0.4.7 Software**

Beta test teams will have access to preliminary system software and sample code on the FIRST beta test team forum and the DVD they received. Beta test teams will be helping to mature this software and sample code for public release. Beta test teams are not to share this software or sample code with non-beta test teams or anyone else outside their beta test group. Early release would lead to multiple versions of the same software or sample code being referenced, and this could cause confusion and wasted effort. When FIRST determines the software and sample code is mature enough, it will be released publicly as early as possible. Beta teams are encouraged, however, to create and release their own sample code on the FIRST public beta forum as long as that sample code is represented as coming from the team. Beta teams may also post their own sample code on their own websites, as long as links are provided on the FIRST public beta forum to those websites.

## 0.5 FRC CONTROL SYSTEM (2009) DEVELOPMENT SCHEDULE

The development of the 2009 FRC Control System has been an ongoing project since the summer of 2007. The final phases of the 2009 FRC Control System development schedule are as follows:

Date	Milestone	Description
2 Sept 2008	Beta Teams Announced	Announcement of the teams selected for beta testing of the 2009 FRC Control System
15 Sept 2008	Beta Kits Shipped	Shipping of beta control system kits to beta teams commences
22 Sept 2008	Test Plans Due	Beta teams are required to submit detailed test plans as outlined in section 0.7
6 Oct 2008	"Tasks 1-5" Complete	Beta teams must complete Tasks 1 - 5 below (up to the basic operator control of robot with transplanted control system)
20 Oct 2008	"Task 6" Complete	Beta teams must complete Task 6 below (full control of prior robot w/transplanted control system, including autonomous operation)
28 Nov 2008	Open House Held	At least one New Control System open house / training seminar must be held by each beta team by this date
3 Jan 2009	FRC 2009 Kickoff	Kickoff of the 2009 FRC Build Season

Note: FIRST is working hard to make control system kits available before kickoff to all teams that are registered and paid. Details will be announced later.

## 0.6 REQUIRED TASKS FOR BETA TEAMS

All beta teams are required to start their testing with the following tasks. Upon completion of each task, teams should create an entry in the Accomplishments / Tasks Results / Findings" discussion forum. Teams should use the template provided in the appropriate task discussion, but are encouraged to add additional comments, suggestions and other feedback. Please read the feedback template for a task before commencing the task to ensure that you are prepared to provide the desired information.

### 0.6.1 Task 1 – “Out of the Box” Benchtop Test

This test is to ensure your control system kit is complete, and everything is working in a controlled environment. This task includes the following steps.

- Read “Out of the Box” Benchtop Test feedback template
- Inventory the beta control system kit
- Set up “Out of the Box benchtop test” hardware (details in Chapter 2)
- Perform “Out of the Box” software and hardware tests (see Chapter 2)
- Post Task 1 results

### 0.6.2 Task 2 – Install Software, Update Software, and Upgrade Firmware

This task is to verify the software and firmware installation procedures.

- Install software from Beta Software DVD (details in section 4.2)
- Upgrade the software with the latest FIRST software (details in section 4.2.4.2)
- Update firmware on Driver Station (details in section 5.2.1)
- Re-image cRIO, set correct team number (details in section 5.2.2)

- Set correct team number on Driver Station (details in section 5.4.2)
- Confirm that “benchtop” hardware still functions correctly with the updated DS and cRIO. (Repeat “benchtop” tests in section 2.3.1)
- Post Task 2 results

### **0.6.3 Task 3 – Software Development Tools Verification**

This task is to verify the development tools are working properly.

- For teams using C/C++, complete the following tasks as described in the WPILib C/C++ Users Guide:
  - Configure WindRiver Workbench for use (see the C/C++ Programming Guide for FRC, section on Setting up the Environment)
  - Install the FRC 2009 WPILib source code (see section 4.4.3)
  - Create a new sample program (see the C/C++ Programming Guide, section on Creating a robot project)
  - Compile the sample program in Workbench (see the C/C++ Programming Guide, section on Building your project)
  - Create a debug configuration in Workbench and download / debug on the cRIO (see the C/C++ Programming Guide, section on Debugging)
  - Deploy the program onto the cRIO using the FIRST Downloader in Workbench (see the C/C++ Programming Guide, section on Using the FIRST Downloader)
  - Confirm the deployed program starts automatically when the cRIO reboots
  - Confirm that “benchtop” hardware still functions correctly with the software you built. (Repeat “benchtop” tests in section 2.3.1)
- For teams using LabVIEW:
  - Re-image the cRIO with an image which supports LabVIEW
  - Follow the instructions in the “LabVIEW Beta Getting Started Tutorial”
  - Confirm that “benchtop” hardware still functions correctly. (Repeat “benchtop” tests in section 2.3.1)
- Post Task 3 results.

### **0.6.4 Task 4 – Transplant New Control System Hardware into an Existing Robot**

This task is to evaluate the new control system hardware installation in a real robot.

- Select a prior robot to use for evaluating the control system.
- Install the new control system in the selected robot
  - Make use of the new control system power distribution and wiring diagrams
  - Modify robot wiring, etc., as needed
- Post Task 4 results.

### **0.6.5 Task 5 – Operator Control of Robot Drivetrain for an Existing Robot**

This task is to verify the new control system hardware is functioning properly in the recipient robot and to verify minimal usage of the software development environment. This task also provides a baseline before porting the complete robot code.

- Choose one of the template programs, and modify appropriately to drive your robot.
- Post Task 5 results.

### **0.6.6 Task 6 – Full Control of the Robot with the Transplanted Control System**

This task is to test and evaluate the new control system in a complicated robot. It is anticipated that beta test teams will be developing programs which are more complex than have been previously tested at FIRST. Accordingly, we anticipate that teams may encounter bugs and/or difficulties with sensor support, programming libraries and the debug and testing process. We are looking for feedback not only with respect to specific problems, but also in regard to whether the structure of the software that we provided makes it easy or difficult to develop your robot programs.

- Port (or re-implement) your prior robot software for this robot with the new control system.
- Debug and test the operation of the transplanted robot.
- Regularly post Task 6 intermediate results. (We anticipate that this task may require a couple weeks of effort. Continue to post intermediate results at least twice per week.)

## **0.7 DEVELOPMENT OF TEAM-SPECIFIC TEST PLANS**

All beta teams are required to provide detailed test plans and training/information sharing schedules. All training and information sharing plans should include at least one weekend on-site event open to all teams who want to attend.

Test plans must include specific target dates for completing Tasks 1-6 listed in section 0.6. Dates should meet or improve upon dates set for task completion in section 0.

Test plans also must include specific dates for open houses / training sessions for non-beta teams, along with other information-sharing details.

Teams may also wish their plans to include details such as:

- A description of the prior year robot to be retrofitted with the new system. This should include drive train description (number of driven wheels or special type of drive), upper assembly description (pictures, CAD drawings, etc.), number and types of motors used, number of spikes/victors used, etc.
- Sensor testing (please include a list of sensors used on the robot and the plans for testing)
- Review and feedback on support documentation
- C / C++ and LabVIEW comparisons (for teams planning to use both programming environments)
- Developing supplementary educational materials.

Detailed test plans are to be posted by the end of the day Monday, 9/22.

## **0.8 BETA TEST SUPPORT**

Beta teams should seek support. Appropriate technical personnel will be monitoring the forum and will respond not later than 24 hours after posting, with some leeway given for weekends and holidays.

## **0.9 BETA TEAM DISCLOSURE AGREEMENT**

The next page consists of the Beta Team Disclosure Agreement as signed by all beta teams.



## Beta Team Disclosure Agreement

This Memorandum of Agreement will confirm the purpose and scope of discussions/activities to be held and certain obligations of confidentiality to which the Team / Team Members / Individual ("You") agree with respect to those discussions, written or oral, and any and all correspondence.

The purpose and scope of the discussions/activities referred to in this Agreement pertain to the Beta testing of the new *FIRST* (For Inspiration and Recognition of Science and Technology) Control System set for inaugural release to teams for the 2009 Season. Information, whether protected by patents/copyright or not, which *FIRST* provides to you as part of the discussions/activities (whether written or oral) is referred to as "Proprietary Information".

By signing this Agreement, you hereby acknowledge that:

1. any early disclosure of the substance of the aforementioned "Proprietary Information", will be damaging to the integrity of the *FIRST* organization and the Robotics Competition as well as its participants;
2. you agree to preserve the confidentiality of said "Proprietary Information" received hereunder and shall not disclose or use it for any purpose other than for evaluation as per the arrangement with *FIRST* without prior written direction from *FIRST*;
3. any improvements or developments made, either alone or jointly, by you in conjunction with the aforementioned activities that is derived in whole or in part from any of the "Proprietary Information" shall become the property of the *FIRST* community;
4. any and all aspects of the system, software, issues and background information relating to the *FIRST* Robotics Competition 2009 Control System that may become known through the aforementioned discussions/activities are included in the "Proprietary Information" definition and cannot be shared, in writing or orally, in any form at any time without prior written consent of *FIRST*; and
5. any and all contact information relating to staff/management of the *FIRST* organization, the *FIRST* Robotics Competition, and/or any suppliers or vendors associated with the aforementioned discussions/activities shall not be retained or disclosed in any manner at any time.

This Agreement shall be governed by and interpreted in accordance with the laws of the State of New Hampshire, and the signatory below consents to the jurisdiction of the State and Federal courts of New Hampshire for its enforcement and interpretation.

*I hereby agree/accept the above terms/conditions on behalf of the Named Team and certify that I am authorized to sign on their behalf: (Please attach a list of team members and mentor(s) governed by this Agreement)*

**Signature**\_\_\_\_\_ **Date**\_\_\_\_\_

**Name (Print)**\_\_\_\_\_ **Affiliation(Team#)**\_\_\_\_\_

**Address**\_\_\_\_\_ **City/State**\_\_\_\_\_ **Zip**\_\_\_\_\_