



# ***FIRST* Robotics Competition**

## **Team Safety Manual**

***2006***

*In collaboration with the Bruce Power Company*



# **FIRST Robotics Competition**

Instilling a culture of safety is a value that needs to be embraced in every aspect of the *FIRST* community as we pursue the mission and vision of *FIRST*. We encourage the whole *FIRST* community to adopt safety as a core value and to establish the right framework for safety leadership in all aspects of our endeavors.

*FIRST* believes that the teams that take the lead in developing safety programs and policies have a positive and lasting impact on each team member and mentor, their communities and their work places. *FIRST* will recognize the teams at FRC events who “get it” -- who demonstrate safety throughout their program and who are truly committed to further developing a culture of safety.

## **Safety Awareness and Recognition Program**

Bruce Power began working on this program in 2004 by developing key elements and structure of safety within the *FIRST* environment. For 2006, Underwriters Laboratories has agreed to sponsor the Safety Awareness and Recognition Program and provide professional Safety Advisors at the Regionals and Championship *FIRST* events to create greater safety awareness and consistency. *FIRST* thanks both organizations for their dedication to safety and safety education.

The key objectives of the Safety Awareness and Recognition Program are:

- 1) Ensure participants, staff and the public have injury free competitions
- 2) Motivate participants to learn and follow safe individual and group practices as a life skill
- 3) Select the winning team for the UL Industrial Safety Award

The Safety Advisors will rate safe performance in three key areas:

- 1) Safe Behaviors
- 2) Physical Condition
- 3) PPE (Personal Protective Equipment)

The Program uses coaching and positive reinforcement to meet its objectives. A structured assessment and scoring process will be used to select the team that best meets the Program objectives. A description of the expected “safe” activities that will be looked for over the course of a typical regional competition or the championship are described below.

## **Process**

The Safety Advisors will provide feedback by:

- 1) Providing positive verbal feedback for safe behaviors
- 2) Handing out safety “credits” – the 3 teams that earn the most win an award
- 3) Designating the “Star of the Day” person (mentor or student)
- 4) Selecting the winner of the UL Industrial Safety Award

Prior to the competition, participants are typically coached by Team mentors how to work together, use equipment, construct and operate their robots safely.

Throughout the competition, the Safety Advisors will continuously tour and observe activities in the pit areas, practice field and game field(s) to view the safe habits of participants. This includes observing the uncrating of robots on the morning of the *FIRST* day, and transporting the robots between the pit area and playing field. Safety Advisors tour in pairs and wear distinctive green shirts, which will make them easily recognizable. Do not hesitate to talk with them and ask questions.

## **Safety Credits**

Safety credits will be used to recognize and encourage safe behaviors at the competition. The 3 teams that have collected the most safety credits will be given pins in recognition of this accomplishment. The winner of the UL Industrial Safety award is not eligible to receive these pins. The winner of the UL Industrial Safety Award Winner will receive a separate pin during the awards ceremony. The winners of the safety credit pins will be announced during the awards ceremony. The 3 top teams can pick up their pins following the awards ceremony from the Pit Admin desk.

Each team is given 10 safety credits in their pre-competition package. Five credits are to be kept by each team and five credits are to be given to other teams as “peer recognition” for good safe performance in any discretionary amount up to the 5. Each team can earn additional credits when observed by the Safety Advisors throughout the competition.

Additional credits will be given whenever a Safety Advisor sees an individual or team demonstrating a safe behavior that deserves recognition. Verbal feedback from the Safety Advisors explains why credits were awarded (or not). This strengthens the impact of using the credits by ensuring that participants understand how they are doing from a safety perspective and how this links to the number of credits received. Safety credits encourage teams to accumulate them through innovation and good safety performance.

It is recommended that students provide a container in their pit area where the credits can be accumulated and displayed to the other FRC teams to show their support of safety.

## **Star of the Day**

“Star of the Day” is selected at the discretion of the Safety Advisors on Thursday and Friday. The subsequent day, a poster of the previous day’s Star of the Day award winner’s name and team affiliation should be put up in the Pit Admin area for the duration of the competition. This individual is presented with a small token of appreciation. The Star of the Day can go to any student or mentor, who in the opinion of the Safety Advisors has made a noteworthy contribution to promoting a culture of safety. This is a person that the rest of the *FIRST* community should emulate.

## **UL Industrial Safety Award**

Safety Advisors will watch all the teams and select the one that best meets the criteria for the UL Industrial Safety Award. As the Safety Advisors systematically tour through the pit, practice and game field areas, they record the performance of the teams on the Safety Performance Score Sheet. Each team will be observed at least twice each day. In addition to receiving the UL Industrial Safety Award, the finalist will also receive a Safety *FIRST* Pin.

**The following are areas that will be inspected for safety.  
Note that this is not all-inclusive.**

## **Uncrating Robots and Proper Protective Equipment (PPE)**

Examples:

- Teams should properly use a ladder if needed.
- Bring gloves and safety glasses to the pit so they are available during the uncrating (and not in the crate).
- The proper tools should be utilized to safely hang banners.
- Power supplies should be properly used (not daisy-chained, for example).
- The pit areas should be safe in design and setup.
- The work area should be kept neat and orderly.
- Participants should be wearing PPE in the pit area at all times, including:
  - Safety glasses with side shields or safety goggles over prescription glasses
  - Appropriate footwear with fully enclosed shoes (no sandals)

## **Practice Area**

- There should be an “exclusion zone” around the practice area, if one is set up, to ensure that robots and moving parts will not exceed the practice area and will not impact those viewing the sessions or those traveling nearby who may not be paying attention to movement of the robots.

## **General Safety (some examples)**

- Travel between the pits and the game area should be conducted in a safe manner.
- Safe work practices, safe use of all tools, good attitude towards safety.
- Always walking and working in a controlled and thoughtful manner.
- Care when working at height.
- PPE: wearing of safety glasses, no open toed shoes, gloves where needed, hearing protection if required, etc...
- Clean, neat, orderly pit area at all times, including at night (this includes the floor area, good storage of tools, care with batteries and battery chargers, and personal belongings and equipment stored with due care, etc.).
- Maintaining safe behaviors in the heat of competition.
- Full control of robot at all times with no one in the robot's path at anytime.
- Assisting other teams with safety issues.
- Controlling access to the pit station – visitors are required to comply with PPE rules.
- Safe lifting of the robot with fore thought on what you are going to do with your cart after the lift.

## **A few words on lifting of your robots:**

### **PRE-LIFT:**

- Are all competitors wearing PPE?
- Is the robot safe to move?
- Are all parts of the robot secured?
- Is the robot powered off?
- Is anyone still working on the robot?
- Has there been a pre-lift briefing to determine direction and path?
- Are the areas and the paths clear of debris and any other hazards?
- Are there enough people to perform the lift? Two to four people are preferred where possible.
- Is a lifting device used to lift the robot and do the participants use it properly?

### **DURING THE LIFT:**

- Is there one team member coordinating the lift?
- Are proper Body Mechanics used to lift the robot? Body mechanics would include lifting with the legs, back straight, no twisting of the body and proper hand holds to grasp the robot.
- Is there a team member controlling pedestrian traffic in the area?

### **TRANSPORTING:**

- Is the robot secured onto the cart?
- Is the cart under control at all times?
- Is gracious professionalism used around other participants to prevent damage or injury to others?
- When removing or placing the robot on the cart, is the cart under control from rolling away?
- Is the cart left unattended, after the robot is removed, does it pose a tripping hazard to others?
- Is patience and control exercised when moving the robot in high traffic areas?

### **POST MATCH:**

- Is the robot made safe prior to lifting off the playing field?
- Is all debris, if any, left by the robot removed from the playing field or in fact is any debris left after any lift?

***Good Luck and Be Safe!!***