



Safety Awareness Recognition Program

Safety Advisor Guide 2008

In collaboration with the Bruce Power Company



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FIRST Robotics Competition

Safety is a solid investment in human capital and brings tangible rewards to those who practice safe work habits. 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 is looking to recognize those teams at FRC events who “get it” about safety through out their program and who are truly committed to further developing a culture of safety. We are looking for teams that take a lead in developing programs and policies that have a positive and lasting impact on each team member and mentor, their communities, and their work places. Teams need to recognize that safety can deliver a significant return on investment in both the short and long term.

Safety Awareness and Recognition Program

Bruce Power began working on this program in 2004, developing the key elements and structure. Their contributions are many and significant. In 2006, Underwriters Laboratories agree to sponsor this program and provide professional safety individuals at the Regional and Finals event to create greater awareness and consistency. Thank you to both organizations for their dedication to safety and safety education.

The key objectives of the Safety Awareness Recognition Program processes described in this document are to:

1. Ensure participants, staff and the public have an injury free competition
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 meet these objectives by rating students’ performance in three key areas:

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

By meeting these objectives, FIRST nurtures another valuable life skill within its participants.

The program uses a coaching and positive reinforcement model to promote safe behavior and to correct unsafe behavior. A structured assessment and scoring process to select the team that best meets the criteria for the UL Industrial Safety Award is also a part of the process. The coaching and scoring processes are described below, along with a description of the safe activities over the course of a typical regional competition or the championship.

The appropriate number of staff to have at each Regional to ensure the right safety leadership is as follows:

- 4 Advisors (including the Lead) for Regionals with 24 or fewer competing teams
- 6 Advisors (including the Lead) for Regionals with 25 or more competing teams

1.0 Coaching

Coaching by Safety Advisors is used to ensure participants, staff and the public have an injury free competition. Positive reinforcement of desired behaviors is provided through:

- Positive verbal feedback
- Safety credits that earn a reward for the top 3 teams

- “Star of the Day”
- UL Industrial Safety Award

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

Throughout the competition, the Safety Advisors will 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 make them easily recognizable.

1.1 Positive Verbal Feedback

Positive verbal feedback is provided to participants and mentors to both recognize and encourage safe behaviors. A positive focus helps participants understand what they should be doing (rather than not doing), increases their receptivity to coaching, and is ultimately far more enjoyable and effective than a negative approach. When a positive approach is used effectively, the need for negative interventions is correspondingly reduced. Positive reinforcement makes people strive to go beyond minimum compliance by rewarding achievements. The Safety Advisors do not want to be seen as safety police. Safety Advisors need to engage the participants in a positive way so that they seek them out as an ally. If you can start the students down the path of thinking about how they are going to do things safely then you really have made a difference.

1.2 Safety Credits

Safety credits are another mechanism used to recognize and encourage safe behaviors at the competition. The credits will be brought to Pit Admin at noon on Saturday to be counted by the staff (in complete confidence). The top 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 winner is not eligible to receive these pins, so the team with the 4th highest amount could receive the 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 and the Teams’ Safety Captain can pick up their pins from the Pit Admin desk, immediately following the awards ceremony.

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. Each team can earn additional credits when observed by the Safety Advisors throughout the competition. On the first day of activity (Thursday), one credit is awarded to teams that meet a minimum standard as scored using the Safety Performance Score Sheet and two credits are awarded if the standard is exceeded. This payout is doubled on day two, recognizing the significance of maintaining good safe behaviors as competitive pressures increase. Credits are never taken away for poor safety performance.

Credits are also awarded at the discretion of the Safety Advisors. Additional credits should be given whenever a Safety Advisor sees an individual or team doing something good 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.

1.3 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 “Safety 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.

1.4 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 tour through the pit, practice and game field areas, they record the performance of the teams observed on the Safety Performance Score Sheet. Guidelines are available to assist in assigning ratings to performance in three key areas – Safe Behaviors, Physical Condition, and PPE (Personal Protective Equipment). A “comments” field is available to capture qualitative information. Each team will be observed at least twice each day. As information is compiled, a short-listing process of high achieving teams occurs which allows increased observation to be directed at the best-performing teams by all Safety Advisors. This will allow all Safety Advisors the opportunity to assess each of the top teams so that they can fully participate in the selection of the eventual winner. Short listing starts midway through day two (Friday) and the final 3-5 teams are known early on Saturday, with the finalist chosen mid day on Saturday. In addition to receiving the UL Industrial Safety Award, the finalist will also receive a Safety FIRST Pin.

2.0 Scoring for all Awards

The scoring of the teams for all types of recognition is based on evaluating three key areas.

- Safety Behaviors
- Physical Condition
- Personal Protective Equipment (PPE)

1 = Basic expectations not met

5 = Significantly exceeded expectations

The ranking scale is 1 to 5 with 5 being the highest mark. The standard bell curve distribution should apply with 3 being the mid point.

Please refer to **attachment #7** for a description of each of these three key areas and the scoring summary. This attachment should be carried by the Safety Advisors when filling out the Safety Performance Score sheet.

The Safety Performance Score sheet is found at **attachment #6**.

A comment section is also included in the Safety Performance Score sheet. The comment field is intended to be used for noting outstanding events, things or processes that a Safety Advisor witnesses. Up to 5 additional points can be awarded here. Points should never be taken away using the comment field.

3.0 Escalated Coaching Process for Poor Safety Performance

Although a positive reinforcement model is used, other forms of interventions may be necessary in some circumstances. The following process was developed to deal with these situations in a progressive manner.

- 1) Not awarding safety credits to a team and explaining why
- 2) Positive feedback/coaching to the individual(s) involved
- 3) Positive feedback/coaching to team Safety Captain, safety contact or mentors
- 4) Stand Down Level 1* - The entire team is stopped and talked to providing firm direction on what needs to change. This is used in consultation with the Safety Advisors or when imminent danger is seen.
- 5) Stand Down Level 2* - The entire team is stopped and talked to providing firm direction on what needs to change with additional Safety Advisors present. Two Safety Advisors talk about the issue and additional Safety Advisors stand very near by. The attention of additional Safety Advisors is noteworthy. This form of stand down works well because other teams will see that something is going on with the team being stood down. Peer pressure works very well.
- 6) Notify **FIRST** officials to resolve any safety problems.

* *Stand Downs* (all stand downs are in consultation with the Lead Safety Advisor)

This is a progressive approach. It has been shown that most issues are rectified at stage one, two or three. If an issue persists or worsens, then the Lead Safety Advisors will notify *FIRST* officials.

4.0 Pre-Competition

Teams are advised of the safety requirements and criteria for the UL Industrial Safety Award in a communiqué that goes out to the teams prior to the Regional Competitions. As an example, the initial letter used for this purpose is included as **attachment #1**.

Safety Advisors will receive training from the Lead Safety Advisor and should be familiarized with the coaching and scoring processes. Materials will be provided at the Regional and Finals competitions, though a review of the checklist in section 9.0 is recommended. Items such as safety reminder signs, safety glasses (with extras to supply as needed), safety credits, star of the day award materials and pins for the top 3 teams (and UL Industrial Award winner) will be at the Regional. Lead Safety Advisors will want to print out materials as back ups for them and their teams.

5.0 Competition - Wednesday

The Safety Advisors arrive during the evening to familiarize themselves with the surroundings. This provides an opportunity to walk down the pits and the travel routes to and from the game field. This preliminary walkthrough is also an opportunity for the Lead Safety Advisors to suggest to the house some changes that may improve the overall safety of the competition. The Safety Advisors need a lockable meeting room (if feasible) with a power supply, tables and chairs which will be used for collating and analyzing data as well as a place where they can meet in private. The room should be located near the pits and the game area. At this time, with the approval of the Lead Queuer and the local meeting coordinator, signs for robot flow from the pits to the stage and exits should be put up. It is not the role of the Safety Advisors to put up the signs, only to ensure that the route is safe and to make recommendations, if necessary.

6.0 Competition - Thursday

6.1 Uncrating Robots

To be ready for the uncrating, the Safety Advisors arrive before the teams are allowed into the pits to uncrate their robots. This is the first opportunity to observe the teams in action and uncrating tends to be a high-risk activity, since the students are excited and under a time constraint. Extra oversight may be needed for teams lacking the foresight to have safety glasses and gloves available for uncrating (i.e. not inside their crate). Uncrating leads immediately into the setup of each team's pit area. The building of the pit area provides an opportunity for Safety Advisors to see if a team has assessed the safety issues involved in this process. (Did the team need a ladder or did they just stand on something handy? Were tools needed and utilized to safely hang banners? Are the power supplies daisy-chained? etc). Innovation in the safe design and erecting of the pit area should be encouraged. A neat, orderly and well-kept work area is a key contributor to a safe competition.

The Safety Advisors should continuously circulate throughout the pit area all day, and will be wearing recognizable green shirts. This visibility fosters increased safety awareness among the participants and guests, and also makes the Safety Advisors more accessible. Safety Advisors should use a buddy system, which helps when interacting with the teams and also supports consistency of approaches used among the Safety Advisors.

Once uncrating is completed and the remaining participants are admitted into the pit area, the focus of the Safety Advisors is to ensure that all participants wear proper Personal Protective Equipment (PPE). This means safety glasses with side shields or safety glasses over prescription glasses, and appropriate footwear with fully enclosed shoes (no sandals). This does not limit the need to observe and coach on issues of physical conditions and safe behaviors.

6.2 Practice Area

Some of the FIRST Regional Competitions and the FIRST Robotics Championship will have practice area(s) either in the pit area or in areas next to the pit area. These areas are inherently dangerous and require oversight by the Safety Advisors. The practice area often becomes an unauthorized repair area where movement of personnel and energized robots can lead to people being hurt. As the competition progresses the practice area can become a very busy spot so extra monitoring should be provided.

There should be an exclusion zone around the practice area 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.

6.3 Team Safety Captain's Meeting

Plan to have a Team Safety Captain's meeting with the students on Thursday morning at 10am (per the letter the students will receive). During this meeting any safety items that are unique to this competition can be discussed. A reminder sheet has been provided that should be distributed at this meeting, **attachment #3**. It is also a good time to remind the Team Safety Captains about the safety credit program. End the meeting by handing out safety credits to each of the teams that attended the meeting.

Safety Advisors spend the balance of Thursday touring in pairs. The primary focus is on the pit area and practice area. Safety Advisors pairings are changed up throughout the day so they can exchange observations, ideas and information with each other. This allows Safety Advisors to learn from each other and helps "calibrate" everyone so that consistent approaches and scoring are used. This becomes extremely valuable when determining a winner for the UL Industrial Safety Award.

The goal is to score each team twice on the first day using the Safety Performance Score sheet.

6.4 Lead Safety Advisors – Pit Announcer

A pre-fabricated list of safety announcements will be available to be read by the Pit Announcer, as appropriate, throughout the day. This is extremely helpful in focusing attention on issues detected by the Safety Advisors. The Lead Safety Advisor is to be the Single Point of Contact with the Pit Announcer. The messages will be short and communicated at standard intervals, though limiting the overall use of the PA system. If a particular safety issues is more prevalent than others, the Lead Safety Advisor can direct the Pit Announcer to repeat a specific message more often than others.

6.5 Lead Safety Advisors – Queuing

The Lead Safety Advisors should meet with and develop a working relationship the competitions' Lead Queuer. The Lead Queuer is in charge of making sure the robots get on and off the field in an efficient manner. This group may provide feedback to the Advisors on which teams to watch, who may or may not be following the signs / rules.

Remember safe lifting of the robot includes planning the lift and what to do with the cart after any lift. Carts in the wrong areas tend to slow the progress of teams moving on and off the field.

6.6 Lead Safety Advisors – Emergency Response Personnel

The Lead Safety Advisors should also develop a working relationship with the local ambulance / First Aid personnel. The First Aid team should make the Lead Advisors aware of the nature and severity of any injuries that occur. They may also help alert the Safety Advisors to hazards requiring additional attention (e.g. coaching, PA announcements, etc).

6.7 Injury Response

When there is an injury that requires medical attention it is a good idea to follow up with the team. A process has been developed which will encourage the team to review what happened, what was done to control unwanted energy, how was the injured person treated, what was done or will be done to prevent recurrence, and what was done or will be done to communicate the incident, prevention plans and any other details that may have changed. The Injury Response process is found as **attachment #4**.

Following the incident, please validate each incident with the emergency medical team and the student team for accuracy. Provide this completed form to the FIRST on-site event manager on site to be delivered to the FIRST Corporate Safety Program Manager. The Incident Log is **attachment #7**.

6.8 Daily Safety Advisor Debriefings

The Safety Advisors should meet to de-brief and discuss lessons learned at the end of the day. What went well? What could be done differently? Which teams are strong preliminary candidates for the UL Industrial Safety Award? These are some questions that should be reviewed. Provide this overall program feedback to the FIRST on-site event manager to be delivered to the FIRST Corporate Safety Program Manager.

7.0 Competition - Friday

7.1 Daily Housekeeping Tour

The Safety Advisors arrive at the competition before the teams and walk down the pit area to evaluate the physical conditions and housekeeping. (The housekeeping tours could alternatively be completed on the previous nights). Pit areas that are found neat, orderly and free of hazards will receive additional safety credits. A simple rating scale is used. No credits are given if no effort was put forward to clean up the pit area. 1 credit is given if some effort was spent to clean up their pit area and 2 credits are given for the teams that made a concerted effort to make their pit clean, neat, orderly, and free of hazards. The Safety credits given should be doubled on the second day of housekeeping inspections (which could be Friday night or Saturday morning).

A strong initial presence at the beginning of day two (Friday) is crucial and helps re-enforce safety awareness among the participants. As the level of intensity increases, the teams with stronger safety cultures become evident, while other teams will require more coaching to encourage positive behaviors.

Again, try to visit and complete 2 Safety Performance Scores for each team. A review of the scores at this point will begin to indicate teams with the potential to win the award. Teams with higher scores should be observed more frequently to assist with the short-listing of contenders for the UL Industrial Safety Award.

As activity in the game area increases, the attention of the Safety Advisors shifts towards a more even split between the game area and the pits. Special attention needs to be paid to lifting techniques (details available in **attachment #7**), and travel between the pits and the game area. This route can become very hectic. Safety Advisors should rotate among the different areas. However, an ongoing presence in the pit area needs to be maintained throughout the competition.

By the end of the day, the Safety Advisors should meet to develop a short list of teams that have a good chance of winning the award. This shortlist should be 10% to 15% of the total number of teams at the event. The shortlist should be communicated to the Judge Advisor at the event.

8.0 Competition - Saturday

Again a housekeeping tour of the pits can be taken either at the end of the day Friday or before the students arrive on Saturday. Remember a doubling of the safety credits is a good practice at this time. 0, 2 or 4 credits can be given out.

This morning is a repeat of the previous day, with an emphasis on establishing a strong initial and ongoing safety presence. Monitoring the safety performance of all teams, along with positive reinforcement and coaching is still very important, however the focus clearly begins to shift to the short listed teams with the potential to win the award.

We are now into the heat of competition, which helps to separate out those teams, which have truly embraced safety as an integral element of the robotics competition.

The top 3 to 5 teams should be identified by mid-morning Saturday. The Safety Advisors should meet to select the winning team and provide this information to the Judge Advisor at a mutually agreeable time, preferably by noon.

8.1 UL Industrial Safety Award

When the UL Industrial Safety Award winner is announced the following words and structure should be used:

This award celebrates the team that progresses beyond safety fundamentals by using innovative ways to eliminate or protect against hazards. The winning team consistently demonstrates excellence in safety performance that shines in the heat of competition.

The Lead Safety Advisor, in conjunction with Safety Advisors, would need to add 1-2 brief sentences personalizing the award to the team that won and then provide to the Judge Coordinator/Advisor of that event. These sentences would need to be descriptive about the team, but not give the team away until the team number is announced

Congratulations Team _____!

All available information should be considered when making this selection, particularly the comment fields from the Safety Performance Score sheets.

Although the “winning team” has been selected, exceptional circumstances may trigger a re-evaluation right up until the time the award is presented. For example, the “winning team” can lose the award if they make a significant error - someone gets hurt or they have a critical near-miss event. In this unlikely event the second place team is given the award. Or, a short-listed team may do something outstanding which may also initiate a re-evaluation of the winner. It should be kept in mind that the responsibility of the Safety Advisors is to ensure that a deserving winner is selected for the UL Industrial Safety Award. The ultimate goal of the Safety Advisors should be to impart safety as a life skill through positive reinforcement and coaching.

9.0 Checklist for Lead Safety Advisors

This checklist is designed to help the Lead Safety Advisors understand the tools they will be given and those they need to bring to the Regional and Final events.

The Volunteer Coordinator (check-in) will have:

- Shirts for the whole Safety Advisors team
- Pins for the Lead Safety Advisor to distinguish your role

The Pit Admin will have:

- Extra gloves and goggles for you and the students. Refer them to this area if they do not have what they need.
- Safety Tokens
- Star of the Day Awards
- Pins for the 1st, 2nd, 3rd place safe teams and the winner of the UL Industrial safety award (4 teams in all)
- Safety signage

(cont.)

The Lead Safety Advisor should bring:

- Copies of the injury response program for you and your advisors
- Copies of the score sheets and scoring guide for you and your advisors
- A copy of the incident log
- Copies of the “Reminder Sheet” – **attachment #2**, to be given to all the Safety Captains at the Team meeting Thursday morning. Remember to ask the Pit Announcer to announce the location for meeting so the students know where to find you.

Chart of Attachments

Attachment #		
1	Safety at the <i>FIRST</i> Robotics Competition	The letter to be distributed to all teams prior to Regional competitions. In 2006, it will introduce the safety manual.
2	Reminder Sheet Team Captain’s Safety Meeting	The note to be handed out to the Teams Safety Captains during the meeting on Thursday at each Regional.
3	Injury Response	A description of a program to use after an injury or near miss occurred
4	Lifting	How to monitor lifting of the robot and other lifts
5	Safety Performance Score Sheet	Score sheet used for safety reviews
6	Safety Performance Scoring Guide	A reference document to be carried with Safety Advisors
7	Incident Log	A tracking tool for incidents at each Competition

Safety at the *FIRST* Robotics Competition - 2007 -

Safety is a solid investment in human capital and brings tangible rewards. Instilling a culture of safety is a core 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 is looking to recognize those teams at FRC events “who get it” about safety through out their program and who are truly committed to further developing a culture of safety. We are looking for teams that take a lead in developing programs and policies that have a positive and lasting impact on each team member and mentor, their communities and their work places. Teams need to recognize that safe behavior is rewarding in both the short and long term.

Star of the Day

Purpose of the “Star of the Day”

This recognition identifies individuals that have gone above and beyond in making a noteworthy contribution to promoting a culture of safety. Each “Star of the Day” will be chosen at the discretion of the Safety Advisor(s).

There will be a small token of appreciation presented to each “Star of the Day” selected on Friday and Saturday. The names of each “Star of the Day” selected shall be posted in a high visibility area for the duration of the competition, usually in the vicinity of Pit Admin.

UL Industrial Safety Award

Purpose of the Award

This team-based award is intended to encourage and recognize safety excellence. Safe work habits, such as looking out for the safety of yourselves and others, are invaluable life skills. Not only will they help ensure a safe competition, but they will also benefit participants, both on and off-the-job, for the rest of their lives

UL Industrial Safety Award Statement:

This award recognizes the team that progresses beyond safety fundamentals by using innovative ways to eliminate or protect against hazards. The winning team consistently demonstrates excellence in safety performance, which shines in the heat of competition.

How the UL Industrial Safety Award Works

- Safety Advisors will circulate through the competition site, especially the pits, visiting each team’s area at least twice a day
- Safety Advisors will award “safety credits” when safe behaviors are observed
- Each team will start with 10 safety credits and will be able to earn additional credits when the Safety Advisors tour the pits. In the spirit of Gracious Professionalism, 5 of the 10 credits should be used by the team to reward other teams for good safety performance.
- The Safety Advisors will be available to coach team members and mentors on safety issues or questions during the competition.

Safety Credits Award

Purpose of the Award

Provide recognition for those teams who maintained safe environments throughout the competition and were rewarded with safety credits.

All safety credits should be given to the Pit Administration Area by noon on Saturday for a final count. The 3 teams with the most credits will receive an award, as well as the team who has won the UL Industrial Safety Award.

Safety focus areas for all awards

- The Safety Advisors will focus on the combination of individual and team safety behaviors and safe physical conditions along with their safety outreach to other teams. This will include:
 - Safe behaviors – work practices, use of tools
 - PPE - wearing required personal protective equipment (e.g. Safety glasses, closed toe footwear, gloves)
 - Safe Physical Conditions – workspace in pit area, condition of hand tools and power tools, power cords, safe handling of batteries and charging equipment
- Special attention and recognition will be focused on:
 - Maintaining safe work practices when under time pressure
 - Wearing safety glasses in the pit stations and on the playing fields at all times
 - Control of the robot at all times
 - Safe use of hand and power tools
 - No prohibited tools in the pits
 - Assisting other teams with safety issues, as needed
 - Control of the pit area regarding authorized access and visitor safety
 - Condition of the pit work surface, i.e. tripping hazards

All teams are expected to understand and follow FIRST competition rules.

There will be a safety meeting for all Team Safety Captains at 10:00am on Thursday. Please review the information in your team packet for information on where this meeting will be held.

Good luck and be safe!

Attachment #2
Reminder Sheet

Team's Safety Captains Meeting

The Positive Coaching approach of the Safety Advisors will be in support of:

Safe Behaviors – 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, etc.

Personal Protective Equipment (PPE) – wearing of safety glasses, no open toed shoes, gloves where needed, hearing protection if required, etc...

Physical Condition – clean, neat, orderly pit area. 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.

Extra safety credits can be awarded when the Safety Advisors note the following:

- 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. This type of outreach is an example of **Gracious Professionalism**
- Controlling access to the pit area – visitors are required to comply with PPE rules
- Clean pit area, housekeeping kept up at all times, including the last thing at night
- Safe lifting of the robot with fore thought on what you are going to do with your cart after the lift

Each team received 10 safety credits in their team packet. 5 of these tokens are for your team to keep, and 5 to pass to other teams that display good safe behaviors.

Good luck and be safe!

Injury Response

Injury response is the actions taken by a Lead Safety Advisor to investigate an incident among the FIRST Robotics competitors. The goal is to provide some guidance and prevent recurrence.

The medical response team will take the lead on all injuries requiring assistance. Upon notification that an incident has occurred, the Lead Safety Advisor should visit the injured person and their team. If the injured person is not available, the Team should be interacted with for the same outcome. The Team's Safety Captain should be involved in these discussions.

The Lead Safety Advisor must make the injured person feel comfortable and not at fault. During the interviewing of the injured person, keep the participants to a few. Large number of competitors may change the scenario. Keep the number of people to a minimum to control the interview and avoid embarrassing the injured person.

The sequence of the investigation is to determine:

- what happened?
- what was done to control the unwanted energy?
- how was the injured person treated?
- what was done or will be done to prevent recurrence? and
- what was done or will be done to communicate the incident, prevention plans and any other details that may have changed?

This information should all be documented in the Incident Log (*attachment #7*) by the Lead Safety Advisor. After the regional event, this log should be provided to the on-site event manager, who will then, provide it to the Safety Program Manager at FIRST. These incidents will be used to provide proactive messages for the 2007 season.

The guide to performing the above sequence is as follows for occasions when the injured person is available for interviewing. For occasions when the injured person is not available due to medical attention, follow up in the below sequence:

1. During your approach to the team, speak with a Mentor and have them approach the injured person for interview. Ask that a second and or third person be present, perhaps a witness of the injury, a first aid responder and or the Team Safety Captain. If the injured person is not available, talk to those who know best about the incident.
2. Begin the questioning by determining the condition of the injured person. Let them know that you are concerned for their health and want to help prevent the injury from recurrence. Use your professionalism to not encourage the severity of the injury. Saying words such as "Oohh" or "Ahhh" upon seeing the injury may make the injured person less likely to talk and look for more misfortune or pity.
3. Ask the injured person to explain to you what happened. Try not to fill in any words or cut them off. Let them talk. If they pause, let them start up again until they are done. You may want to ask them to paint you a before picture, so that you get a good understanding of the physical conditions they were competing in. This may point out some housekeeping issues or some future planning on their part.

4. Once you have a clear understanding of the sequence of events, if there was still an unwanted energy flow, ask the interviewees how this energy was controlled.
5. Question the interviewees about the minimization of injury. Ask them how they summoned assistance from, Paramedics, Team Members or others in the area. Your goal here should be to determine if they know the action plan for getting assistance or did they fuddle about. Was there panic in the air or a response to a well laid out plan? This questioning will give the Advisor the overall sense of the teams safety planning.
6. Ask the interviewees what has been done to prevent recurrence of this type of injury to them or to other team members. If nothing has been done at this point or the actions are not to your satisfaction, then question further and suggest if you feel you have the experience to contribute.
7. Your final step is to determine if the incident was communicated to all the Team Members to prevent recurrence. The communication can take several forms and many are effective. Simply ensure that whatever means of communications have taken place that the other Team Members know the particulars of What, How, Why and Prevention.
8. Before leaving, thank the interviewees and ask to address all team members present. Let them know a little of the incident and that their team mates will be discussing the issue further with them. This will commit them to communicating the issue.
9. Before you lose the floor, let the team know that a Safety Advisor may be returning to follow up on the incident and witness the preventative measures that the team has put in place to prevent recurrence.

Lifting

These are the guidelines used by FIRST Safety Advisors when scoring the lifting and transporting of the robots during competitions.

All elements of the lifting and transporting should be observed throughout the competition, from pit area to playing field and everywhere in between.

Lifting of the robot is a key area to be monitored because of the weight and size of the robot. It is a multiple person lift.

PRE-LIFT:

- Are all competitors wearing proper protective equipment as stated by FIRST safety rules? Gloves, though not mandatory, should be worn when handling sharp metal edges.
- 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? 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?

These are only guidelines when assessing the lifting and transporting of the robots during competitions.

As the game gets more intense the attention to safe practices sometimes gets lost in the excitement. One of the key ways to understand if a team actually has taken safety to heart is how they perform their lifts in competition. It is recommended that Safety Advisors watch the teams that make it to the short list of potential UL Industrial Safety Award winners to see if they are walking the talk under pressure.

Conducting interviews with participants by the Safety Advisors is recommended to determine what emergency preparedness and contingency planning the teams have in all categories. This should be conducted randomly in the pit areas.

Interviews should also be performed to assess the safety culture the team members had during the build period.

Good luck and be safe!

Safety Performance Score Sheet

Thursday Friday Saturday

Start Time _____

End Time _____

<u>Team Number</u>	<u>Safe Behavior</u>	<u>Physical Conditions</u>	<u>PPE</u>	<u>Comments</u>	<u>Total Points</u>

Safety Advisors: _____

Safety Performance Scoring Guide

	1 Need Safety Help - work with mentors and students	2 Basic Expectations Not Met	3 Basic Expectations Met	4 Expectations Exceeded	5 Significantly Exceeded Expectations (Innovation, Best Practice)
<u>Safe Behaviors</u>	<ul style="list-style-type: none"> unsafe acts / work practices (hands near moving parts, horseplay, dangerous use of tools, prohibited tools, risk of falling – standing on unstable surfaces, unsafe lifts of robot) unprofessional or disrespectful behavior <u>unsafe behaviors persist after being coached</u> 	<ul style="list-style-type: none"> poor work practices (improper use / poor control of tools, running, poor lifts of robot) team responds positively to coaching 	<ul style="list-style-type: none"> good work practices (using tools properly - for intended purpose, good lifts of robot, hands off controls when work done on robot, good communication among team members while working on robot) team responds positively to coaching Team participants demonstrate awareness of how to ensure their personal safety and well being during and traveling to and from multi-day competition(s). 	<ul style="list-style-type: none"> <u>excellent work practices (skilled use of tools, exemplary lifts of robot, physically disconnect controls / energy sources when working on robot,</u> Strong, coordinated teamwork, effective communication, take initiative to protect the well-being of themselves and others Team participants take measures to ensure their personal safety and well being during and traveling to and from the multi-day competition(s). 	<u>Innovative behaviors / activities to manage safety. Including:</u> <ul style="list-style-type: none"> <u>Systematic assessment to identify hazards and controls</u> <u>Peer coaching</u> <u>Eliminating hazards using design.</u> Safety rules developed and posted, all team members use and understand Team participants consistently exemplify best practices in taking measures to ensure their personal safety and well-being during and traveling to and from the multi-day competition(s).
<u>Physical Conditions</u>	<ul style="list-style-type: none"> <u>pit area disorganized to the point of being unsafe (tripping / other hazards present, debris, clutter)</u> 	<ul style="list-style-type: none"> disorganized / poorly managed pit area (using more than allocated space, overflow, material stored outside of pit area, materials in public walkways, tools / cabling / materials / personal belongings scattered across pit area) 	<ul style="list-style-type: none"> <u>organized / well managed pit area (free of tripping hazards - tools, materials, obstacles, cabling, no overflow beyond boundaries)</u> end of day- tools put away, no debris on floor, organized and clean area left clean when robot not present 	<ul style="list-style-type: none"> <u>very well organized pit area, excellent housekeeping</u> <u>designated storage areas (e.g. personal belongings, backpacks, tools, materials)</u> ergonomic workbench (height, stability) battery chargers designed so terminals cannot be shorted out 	<ul style="list-style-type: none"> <u>same as exceeded expectations, plus</u> <u>tools / materials put away immediately after use</u>
<u>PPE</u>	<ul style="list-style-type: none"> <u>Most not wearing safety glasses</u> <u>Most not wearing proper footwear (enclosed shoe or boot, no sandals)</u> 	<ul style="list-style-type: none"> <u>Some not wearing safety glasses</u> Some not wearing proper footwear (enclosed shoe or boot, no sandals) 	<ul style="list-style-type: none"> <u>everyone in pit wearing safety glasses</u> everyone in pit wearing proper footwear (enclosed shoe or boot, no sandals) <u>Safety glasses provided to visitors</u> 	<ul style="list-style-type: none"> <u>Safety glasses and gloves worn during uncrating</u> gloves worn when filing, working with sharp edges additional PPE used beyond Safety glasses (hearing protection while drilling) Proactively managing guests in pit area 	<ul style="list-style-type: none"> <u>hazard assessment to identify needed PPE</u> <u>display box for gloves, hearing protection, etc</u> Proactively managing guests in pit area

Scoring Scale	
1	Basic Expectations – Not Met – need help
2	Basic Expectations – Not Met
3	Basic Expectations – Met
4	Basic Expectations – Exceeded
5	Basic Expectations – Significantly Exceeded (Innovation, Best Practice)

Total Score	Credits given Thursday	Credits given Friday	Credits given Saturday
0-6	0	0	0
7-11	1	2	2
12-15	2	4	4

We used the not met and met, as the descriptors because that is what we saw. These words seemed to be good descriptions that are easy to see and understand. Remember these words are not intended to be seen by the students they are just “feel words” for the advisors. We tried to point out that most are doing the right thing. A positive view of the team.

To Be Considered When Using Scoring Scale:

Elements of a safe lift / carry: lift is planned, obstacles removed from path of lift / travel, bystanders alerted, multi person coordinated lift, good communication throughout lift, good lifting technique used (straight back, bent knees, body close to load), good hand holds used, robot placed securely on stable surface, point-person is used to alert bystanders when robot being transported through crowds. Mechanical lifting / carrying devices significantly reduce the risks of lifting / carrying the robot.

Maintaining safe work practices in the heat of competition, when under time pressure is key. Demonstrating this will count heavily in a team’s favor, while failure to do so will have the opposite impact on performance rating.

Incident Log

Regional _____

Incident	Resolution (Include Safety Advisor's Name)	Team number(s)	Date

The log should be validated with the FIRST representative on site to ensure a proper description, as well as provided to Safety Program Manager after the event (via the Regional event manager). This will be used for the improving on the program for the following year and be included as items for the students to be educated on in advance.

Lead Safety Advisors: _____