

# Post-Mortem - FRC Championship

Edward Jones Dome, St. Louis MO

25-28 April, 2012

## ***What Worked?***

- 13<sup>th</sup> seed in Newton out of a field of 100 teams
- Popular Mechanics interview
- Molly
- Pit process (FAST!!! Efficient! Coordinated)
- Drive-train and barrier crossing
- Bridge balancing & bridge skills/capabilities
- Bridge arm & encoder mount (did not break)
- Beater bar
- Scouting (with caveats)
- Played strategically
- We know how to drive
- Pivots - we nailed them this year!
- Doug & drive team overall
- The Team was more visible in its volunteer efforts (Not just Mike Rizzo, who became a Head Ref, but Rita Wall as Judge, Siri Maley as referee and Clem McKown as robot inspector)
- We were considered very seriously for awards at Hatboro-Horsham and Lenape

## ***What didn't?***

- Ball lift was very unreliable (belt systematically drives off left flange of top pulley)
- Low Autonomous Scoring (Systematically missing one shot or lift belt jamming)
- Slow Teleop shooting (to allow shooter speed to stabilize)
- "Ready to shoot" information is wrong - we knew this before Championships
- Some communications lag - worse with 2<sup>nd</sup> camera
- New bridge arm (w/ harpoon) did not allow bridge lowering
- Did not have the latest code at start of competition (due to flight delay of one programmer)
- Pit crowd discouraged scouters from other teams
- We were not picked for elims (in spite of 13<sup>th</sup> qualification ranking)
- Practice field process (not our fault) made triple balance practice/testing almost impossible
- Pit setup
- The robot is somewhat top-heavy but looks more top-heavy than it actually is. This made it harder to be selected at Championships (where bridge balancing tests were very difficult to achieve).

- Scouting was better than ever before and met the needs for tactical planning in qualification rounds, but it was not adequate for alliance selection & eliminations planning.

### ***What can we do better?***

- Pit Organization - we worked well, but things are not all where they belong and finding what you need wastes time.

Related Action: In lieu of the drive-train design project, Molly will lead a small team to redesign our competition pit. Product is to include display areas & structures, detailed packing and loading lists and diagrams. This work will require working closely with the media team to assure that the communications aspects of the pit are included in the execution.

- Get organized - put things away - where they belong - every time. Taking time to find "lost" items is a tremendous build season time waster.
- Prototype more concepts - FASTER!!! Other successful teams do this.
- Generate objective test results & record them. Make design decisions based on objective data. Don't just settle on the first concept that seems to work.
- Design more of the robot (we went straight from prototype to final robot with some robot systems without passing through design - these were not our most successful systems).
- Better and more predictable attendance - work planning is difficult without a clear expectation of who will attend meetings.
- Modular design facilitates servicing & repair
- Identify bottlenecks - welding was an unidentified bottleneck this year (and our design relied heavily upon welding)
- Need electrical students (Kira & Lucy stepped forward - *thanks!*)
- Media students are needed - Media students are not low-status! (Patrick D, Ian & Douglas stepped forward - *again, thanks!*)
- Integration team was not visible nor adequately active
- Plan for Championships
- Recruit!!!

### ***Other Actions:***

- Publish Pivot Drive Docs & Control Software (We seem to be in a unique position of executing on pivot drive very well using Labview)
- Lift reliability understood to be due to top pulley axle being non-parallel to bottom pulley axle and canted relative to the belt. Replace fixed bearings with bearing blocks inside the shooter and in the correct positions.
- Fix the tops of the lift rails (in the correct positions)