Welcome
to the
DARPA Grand Challenge 2005
National Qualification Event
Team Leader Meeting
The 2005 Grand Challenge Semifinalists

43 teams from 15 states

1 high school team / 17 university teams

- A.I. Motorvators
- Axion Racing
- Team AION
- CyberRider
- SciAutonics/Auburn Engineering
- Team Caltech
- Team Banzai
- Team Tormenta
- Terra Engineering
- The Golem Group/ UCLA
- Palos Verdes HS Road Warriors
- Blue Team
- Stanford Racing Team
- Intellignet Vehicle Safety Technologies I
- Mojávaton
- Autonomous Vehicle Systems
- MonsterMoto
- Austin Robot Technology
- Team CajunBot
- CIMAR
- Team UCF
- Red Team
- Red Team Too
- Desert Buckeyes
- Indy Robot Racing Team
- Team TerraMax
- BJB Engineering
- Red Team
- Palos Verdes HS Road Warriors
- Team Overbot
- Team DAD
- Blue Team
- Stanford, CA
- Red Team Too
- Pittsburgh, PA
- Team Jefferson
- Crozet, VA
- Princeton University
- Princeton, NJ
- The MITRE Meteorites
- McLean, VA
- Team ENSCO
- Springfield, VA
- Team Juggernaut
- Sandy, UT
- Team TerraMax
- Oshkosh, WI
- Team Overbot
- Willoughby Hills, OH
- Red Team
- Pittsburg, PA
- Team Cornell
- Ithaca, NY
- BJB Engineering
- Willoughby Hills, OH
- Red Team
- Pittsburg, PA
- Team Overbot
- Willoughby Hills, OH
- 2004 Grand Challenge Team
- 2005 Grand Challenge New Entry
- 1 high school team / 17 university teams
Test Course
How to Succeed at NQE

1. Go through the gates

2. Avoid the obstacles

3. Finish the route as quickly as possible
Agenda

• Speedway Layout
• Rules
• Schedule
• Opening Day
• Track and Practice Area Operations
• Test Course
NQE Start Area

- Spectator Area
- Bot queue
- controlled crossing
- Grandstands
- finish
- fence line
- TOC
- Media
- Team and Media Area
- Start chutes
Resource Operations Center (ROC)

- Track run and practice area run scheduling
- Run results
- Answers to questions regarding all aspects of the event
- Open 7:00 AM – 6:00 PM
Team Internet Center (TIC)

- Wired Ethernet hookups for teams – provide your own laptop and cable
- Please limit use to 1 hour when others are waiting
- Open 7:00 AM – 8:00 PM
Track Operations Center (TOC)

- Staff Only
Practice Area

- Limit of 10 team members in start chute area
- Practice time limited to 60 minutes
Inspections

- Start immediately after opening ceremony
- Static, then dynamic
- Re-inspection in the garages
Rules
• Autonomous operations in the practice area and test track only

• Garage assignments cannot be traded or shared

• No overnight operations

• No idling in garage; no fueling in garage

• No welding in garage

• Watch your belongings!
  - DARPA is responsible for security from 10PM to 6AM

• Please be considerate of your neighbors
<table>
<thead>
<tr>
<th>Credentials</th>
<th>DARPA staff</th>
<th>Team members</th>
<th>Team guests</th>
<th>Media</th>
<th>Spectators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Picture badge</td>
<td>Wristband</td>
<td>Wristband + badge</td>
<td>Media credential</td>
<td>None</td>
</tr>
</tbody>
</table>
Access

Grandstands and viewing area: everyone

Track area: staff only

Media areas: media only

Racing oval: no one

Overpass area: no spectators

Garage area: no spectators
Wednesday, September 28

Opening Day

7:00 AM  Vehicle movement begins
8:30    All vehicles in place
9:00    Opening Ceremony
10:00   Vehicle movement back to garage
10:30   Vehicle inspections start
1:30    First track run
September 28 – October 5

6:00 AM  Speedway gates open

7:00  Track opens

12:00  Lunch

1:30 PM  Track runs resume

5:30  Last practice run starts

6:00  Track closes

8:00  Reduced operations – Garages and parking lot only
Opening Ceremony

• Participation is mandatory
• Bots must be ready to go at 7:00 AM
• 3 team members (max) allowed with each bot
• Teams will not move their bots until escorted
• Vehicles will be escorted to garages afterward
Static and Dynamic Inspection

• Be ready tomorrow after the Opening Ceremony
• Vehicles will return to garages and wait to be escorted
• Inspections will be done in garage order
• Static first, then dynamic
• Inspected vehicles are the ones for the competition
• Vehicles may not leave the Speedway without DARPA’s permission
• Vehicles escorted to garage after inspection
Garage Layout

= Tall Bay  
= Extended Stall  
= Standard Bay
Track and Practice Area Operations
Track Runs

- Run duration will vary (monitor the schedule board in the ROC)
- Teams will be notified in their garage by an escort
- One hour grace period, maximum
- Teams must be escorted to the start queue
- 3 team members allowed in start chute area
- Team will put bot in autonomous mode when directed and leave start chute area.
- One team member stays at the start area to assist in recovery
- Teams recover bot at finish line
- Vehicle escorted to garage
Vehicle Run Order

- Bots are run according to lineup in the ROC
- Run 1 lineup is garage order
- Leadoff bot changes for successive runs
Practice Area

- Practice runs are not guaranteed – teams manage conflicts
- 60 minute maximum time allowed after team enters chute
- Teams will be notified in their garage by an escort
- 30 minute grace period, maximum for bot to start moving
- Teams must be escorted to the practice start queue
- 10 team members allowed in start chute area
- Once a practice session is started, it will not be re-started
- Vehicle escorted to garage at termination of session
Test Course
### NQE Route Statistics

- **Length:** 2.2 Miles
- **Number of Waypoints:** 159
- **Time to Complete at Speed Limit:** 11:06
Gates

LBO boundary

AV Direction

Passed through

Avoided

Hit
Obstacles

LBO boundary

Cone

Obstacle

AV Direction

Cleared

Avoided

Hit
Team #:_______

Officials Names:

_____________________

__________________________________________

Date:  ___________
Time: ___________

# of Gates Passed:  ___

# of Obstacles Cleared:  ___

Comments_________________

________________________

____________________________________________________

Final Stop

Passed through gate between cones
Avoided gate
Hit cone
Cleared obstacle between cones
Avoided obstacle
Hit Obstacle
Team #:_______  
Officials Names: __________________  _________________  _________________

Zone 4
Date: ___________  
Time: ___________

# of Gates Passed:  ____  
# of Obstacles Cleared:  ____

Comments_________________  
__________________________  
____________________________________________________

Passed through gate between cones
Avoided gate
Hit cone
Cleared obstacle between cones
Avoided obstacle
Hit Obstacle

Final Stop

Sharp Turns
Results

• Teams will receive results in the ROC after their run

• Results for all Teams will be posted in the ROC after all 43 teams attempt a run

• Teams are guaranteed 2 opportunities to run

• At least 4 runs is the objective

• The course may be altered for additional runs
Start your engines!

Thank you for your participation in the Grand Challenge.