Having a Sloth of Bears at the Race

2019 IEF Solar Car Conference
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Overview

❖ CalSol Presence at Races
  ➢ Zephyr 1.0 Era (2013–2015)
  ➢ Zephyr 2.0 Era (2016–2018)

❖ Recruitment
  ➢ Opportunities
  ➢ Numbers
  ➢ Practices

❖ Case Studies (2016–2018)

❖ Race Personnel Management
  ➢ Basic Needs
  ➢ Personnel Considerations
  ➢ Odds and Ends

❖ Key Takeaways
Before We Begin

❖ This is not aimed to be comprehensive nor 100% ideal as there are many specifics and circumstances unique to each team.

❖ I am aiming to highlight things one should not forget/undervalue/underestimate with regards to race personnel management and planning.

❖ I hope the lessons learned being presented help avoid having to experience headaches for your respective teams.
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❖ Key Takeaways
Zephyr 1.0 - FSGP/ASC 2014

- 18 at FSGP, 17 at ASC
  - 21 unique members
  - Max 14 members at FSGP

- Did not qualify for ASC 2014
  - Lent Esteban a motor
  - Most flew home
  - Some shadowed ASC
  - Trailer crew went scenic route
Zephyr 1.0 - FSGP 2015

- 25 members at FSGP
  - 2 UC Davis guests
  - 1 Michigan State guest

- Lodging changed throughout
  - 3 AirBnB
  - Members were split
Zephyr 2.0 - FSGP/ASC 2016

❖ 33 unique members
➢ 19 peak at FSGP, 31 peak at ASC
Zephyr 2.0 - FSGP 2017

❖ 32 Team Members
➢ 2 UVA guests
37 unique team members
- 33 at FSGP, 20 at ASC
- 3 UVA guests (FSGP), 2 UCLA guests (1 FSGP, 2 ASC)
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Opportunities

❖ New Student Orientation
  ➢ Now Golden Bear Orientation
❖ Calapalooza
  ➢ Fall: 500+ clubs tabling
  ➢ Spring: 250+ clubs tabling
❖ Recent Signups Numbers
  ➢ Fall: 300+ unique signups
  ➢ Spring: 50+ additional signups

Displaying vehicle is hugely important!
Work with administration/campus events
Numbers

Interested: signed into roster
Members: consistently showed up
Active: consistently worked
Practices - Recent

❖ No application
  ➢ No experience required
  ➢ All majors welcomed
  ➢ Can join at any time

❖ Membership Dues
  ➢ Used to procure sponsor/administrative thank-yous
  ➢ Not “mandatory” and able to be opted out

❖ “Natural Selection”
  ➢ Huge membership drop off after first midterm/test
# Team Types - Pros and Cons

<table>
<thead>
<tr>
<th>“Small Selective Team”</th>
<th>“Large Freeform Team”</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Pros</strong></td>
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<tr>
<td>❖ More committed manpower</td>
<td>❖ Able to impact more members</td>
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<tr>
<td>❖ Efficient use of resources</td>
<td>❖ More available manpower</td>
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<tr>
<td>❖ Greater specialization</td>
<td>❖ “Organic” membership</td>
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<tr>
<td><strong>Cons</strong></td>
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<tr>
<td>❖ Narrow reach of member enrichment</td>
<td>❖ Inefficient training/bring up</td>
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<td>❖ Limited mobility</td>
<td>❖ Widely variable prior experience</td>
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<td>❖ “House of Cards”</td>
<td>❖ More bureaucracy</td>
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<td></td>
<td>❖ “Tragedy of the Commons”</td>
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</tbody>
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There are of course many factors unique to each team. There are also practices that can limit both the pros and the cons of different team sizes. A certain team size is not necessarily better than another. It really comes down to team philosophy and resources.
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❖ Key Takeaways
“We didn’t leave the race as friends”

❖ Was CalSol’s first road race since 2012

❖ FSGP:
  ➢ AirBnB was cheap and spacious (for 20 people)
  ➢ Unknown until then, location was terrible
     ■ 40 mins away from both the airport and the track
     ■ Couldn’t easily cook, many people stayed overnight at track, complicated logistics
  ➢ People arrived and left throughout FSGP
     ■ Costly for personnel and vehicle availability

❖ ASC:
  ➢ Way too many people, numbers should have been reversed (30 at FSGP, 20 at ASC)
     ■ Led to extra cars of restless members
     ■ Extremely complicated logistics with members flying in and out
     ■ Toll on lodging, food, and vehicle logistics
  ➢ Little to no effective/clear chain of command
“This is a nice AirBnB”

- FSGP-only year allowed us to focus on getting specific things right
  - Mandated arrival dates and Day 0 preparation (30 members)
    - All but 2 members arrived the day before
  - AirBnB was just big enough to fit 30+ people, and relatively cheap
  - AirBnB was 5 mins away from track, 13 minutes away from airport
    - Food was able to be cooked and delivered to the track still piping hot
“Let’s not repeat 2016”

- Time to apply lessons learned from 2016 and 2017

- **FSGP:**
  - EVERYONE arrived **two days early** (17 on the same flight!)
  - Main lodging was cold pit
  - Required additional room at nearby hotel (advisor + solar drivers)

- **ASC:**
  - Arrivals and departures mandated on “Rest Day”
    - Only 1 premature departure during ASC
  - Had a dedicated support SUV + UHaul carrying luggage and nonessential stuff
    - Counting advisor, observer, and max 2 alumni, had 39 seats for 24 people
    - Still borderline on space!
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❖ Key Takeaways
Basic Needs

❖ **Sleep:** find a single lodging place close to track/route
  ➢ Every minute wasted in transit is one less minute of sleep
  ➢ Races are long (especially FSGP + ASC) and fatigue builds up
  ➢ Beware personnel overlap between late night and early morning shifts

❖ **Food:** don’t overlook shopping, meal prep, and distribution
  ➢ Have designated chefs, and don’t belittle that role

❖ **Money:** have people on-call for shopping
  ➢ Race deposits (via Venmo) for food, lodging, transportation, etc. costs are a way to rapidly reimburse purchasers
Personnel Considerations

❖ **CalSol-imposed cap of 30 members at FSGP, 20 at ASC**
  ➢ Start approaching members in early Spring (if not earlier)
  ➢ “Waitlist” system in place pending availability
    ■ Fill in members based on level of activity/specialty

❖ **Have members commit for entire race**
  ➢ Saves a LOT of logistical nightmares

❖ **Arrive early if possible**
  ➢ Inventory, shopping, getting into “race mode”

❖ **Internship/Work/Summer Classes**
  ➢ >80% CalSol members are “unavailable” during the summer
    ■ Heavy workload for remaining members
    ■ Local members help out on weekends
  ➢ Vast majority successfully obtain days off for races
    ■ Notify recruiter/professor at beginning
Scrutineering Roles Diagram

Team Lead
- Logistics Lead
  - Head Chef
  - Purchasing
- Race Lead
- Media Lead
  - Station Leads
    - Oncall
    - Practice
    - Miscellaneous
- Solar Car Drivers
- Safety Officer

Have role rotations to avoid burnout
But not too many/often!
FSGP Roles Diagram

Team Lead

- Logistics Lead
  - Head Chef
  - Purchasing
- Race Lead
  - Cold Pit
- Media Lead
  - Hot Pit
- Safety Officer
- Solar Car Drivers
- Strategy
- Oncall
- Miscellaneous (Timer, Flagger, Runner)

Have role rotations to avoid burnout
But not too many/often!
ASC Roles Diagram

- Solar Car
  - Solar Comms
- Team Lead
  - Race Lead/Chase Comms
  - Scout
  - Strategy
    - Weather
- Safety Officer(s)
- Media

Have role rotations to avoid burnout
But not too many/often!
Odds and Ends

Prior To Race:

❖ Hold weekly summer meetings
  ➢ Lots of things happen over break, keep everyone up to date!
  ➢ Drill pit/caravan operations and roles beforehand

❖ Separate vehicle and non-vehicle tasks
  ➢ Members physically working on the vehicle should not be in charge of logistical tasks/planning
  ➢ Again fatigue builds up, and these peeps are your most valuable (lots of things happen)

During Race:

❖ Hold All-Hands Meetings
  ➢ After lunch and after dinner are good times

❖ Have Fun
  ➢ Regardless if things are going good or bad

Whenever Possible: Test, Drill, and Practice
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❖ Key Takeaways
Why Bring So Many?

Team Longevity

Classic Solar Car Team:

❖ A volunteer, part-time workforce with questionable vehicle experience and essentially 100% turnover every 4 years

❖ It’s hard to see the big picture without going to a race
❖ The more people that go to the race, the more people “get it”
  ➢ Huge implications for team culture, bonding, motivation, experience, etc.
  ➢ Makes the team’s life easier in the future

Would also recommend attending at least one race EVERY year!
(Shadow, Old car, New/Improved car)
Key Takeaways

Themes and Frameworks:
❖ Attend a race every year
❖ Rigid arrival and departure schedules
  ➢ Arrive 1-2 days early if possible!
❖ Bring as many members as possible*
❖ Learn from previous races

Action Items:
❖ Hold weekly summer meetings
❖ Make sure basic needs are constantly accounted for
❖ Have a clear expenses and reimbursement workflow
❖ Establish a clear chain of command (will be different from school year!)
  ➢ More importantly, make sure people are on the same page
Closing Notes

Disclaimer:
While I would hesitate to say that CalSol’s recent race management is ideal, at the very least I am confident that it is not bad :P

The vast majority of the things that went well the past few years were direct consequences of things that went horribly wrong (FSGP/ASC 2016)

New CalSol Challenge: WSC Personnel Management