THE QUESTION...

How do you prepare to take

a team of people (and an Observer)

with a solar car

accompanied by a fleet of vehicles

on a 2+ week trip

…and not to mention, stay on budget?
THE REALITY...

While most of the team is focused on the solar car, your Logistics Personnel needs to be focused on taking care of the crew, vehicles, and equipment.

Logistics issues can be just as problematic as solar car issues.

No one filled up chase – we need to stop at the next gas station.

Did anyone go shopping last night? Where’s the food? Our Observer is hungry (and so am I).

Where is that tool? We had it yesterday. Did it get packed last night?
TODAY’S TOPICS

Plan for the trip

Determine your race crew

Create a race budget (and stick to it)
  - Entry fee
  - Transportation
  - Lodging
  - Food
  - Miscellaneous

Prep
  - Mock drive
  - Support inspection

Appendix – checklist suggestions
## DAYS ON THE ROAD

<table>
<thead>
<tr>
<th>Activity</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home to Scrutineering</td>
<td>1+</td>
</tr>
<tr>
<td>On-site Registration/Scrutineering</td>
<td>3-4</td>
</tr>
<tr>
<td>Formula Sun Grand Prix/Qualifier</td>
<td>3</td>
</tr>
<tr>
<td>“Rest Day” (travel to start line, display, team meeting, prep)</td>
<td>1</td>
</tr>
<tr>
<td>American Solar Challenge</td>
<td>7-8</td>
</tr>
<tr>
<td>Finish Line to Home</td>
<td>1+</td>
</tr>
</tbody>
</table>

### Travel To Event
- Preview parts of the route
- Sponsor visits/PR opportunities
- Overseas travel

### Travel Home
- Sightseeing after the event
- Sponsor visits/PR opportunities
- Overseas travel
CREW SIZE

Minimum Crew

- 2-4 solar car drivers
- Lead driver
- Chase driver
- Truck/trailer driver
- Navigator/radio comms lead
- Radio communications chase
- Strategist
- ME Lead
- EE Lead
- Team Leader
- Safety Officer
- Observer*

Other Roles to Consider

- ME/EE assistants
- Logistics lead
- Scout driver
- Weather person
- Drivers/assistants for other vehicles
- PR/media/website updates
- Observer manager
- Cook/laundry

Key considerations

- Reduce knowledge lost: bring younger team members to learn
- Rotate people through multiple roles and train for the future
- Make sure there are enough seats in the vehicles

Note: the same person may be able to fulfill more than one role

* Not part of the crew, but team is responsible for transportation, lodging, food, and water
**CREW PLACEMENT**

Think through where each person will actually ride

<table>
<thead>
<tr>
<th>Lead</th>
<th>Chase</th>
<th>Truck &amp; Trailer</th>
<th>Scout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Driver</td>
<td>Driver</td>
<td>Driver</td>
</tr>
<tr>
<td>Navigator</td>
<td>Radio Comms</td>
<td>Navigator</td>
<td>Navigator</td>
</tr>
<tr>
<td></td>
<td>Observer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Between Lead & Chase**

- Safety Officer
- Strategist
- Spare Solar Car Driver
- 4 Body Holders
- ME & EE Leads/Assistants
TRANSPORTATION BUDGET

Vehicles
- Lead
- Chase
- Truck & trailer
- Others (scout, weather van, RV, etc)

Planning Tips
- Vans or large SUVs are recommended for lead and chase to hold people and gear
- If you own your own vehicles, budget for any needed maintenance and oil changes
- See if you can get sponsorship/borrow vehicles (university, local dealership, etc)
- Most vehicle rentals to people under age 25 incur additional fees; ask before you sign
- If you are thinking about using one-way rentals, ask about one-way rental fees

Fuel
- Determine an average fuel price
- Home to Track to Start Line
- Start to Finish Line
- Finish Line to Home
- Misc (add at least 10-20%)

Misc
- Insurance coverage
- Flights for those coming later/leaving early
- Overseas travel
LODGING BUDGET

Hotel
- Expected # of nights
- # of people and # per room
- Cost per night per room

Campground
- Expected # of nights
- Cost per night per person or per site
- Extra charges for extra vehicles

Alumni, family, friends
- Free!
- University Alumni Office may have contacts to help arrange options

Large Parking Lot
- Free!
- Ask first to make sure it is ok

Planning Tips
- Make arrangements in advance for the track and stage points (you know where they are and when you will be there)
- Determine your game plan for nights you are in between stage points
- See if alumni, family, or friends want to house the team for a night
- Try to use the same hotel chain and take advantage of reward programs
- Look for hotels that offer other items you are needing
  - Free breakfast
  - Internet
  - Laundry facilities
FOOD BUDGET

Food Bill
- Headcount x days x estimated cost

Breakfast
- Free, if included with hotel
- Eat during morning charge time

Lunch
- Eat on the go (in the vehicle)
- Sandwiches, fruit, chips work well

Dinner
- Eat during evening charge time
- Cook a meal
- Eat at restaurant, if available

Drinks and Snacks
- Plenty of water, Gatorade, juice
- Pretzels, chips, cookies to munch on

Planning Tips
- Individual sized servings are easier to distribute, but cost more
- Look for sponsorship/donations
- Consider food-related items
  - Coolers (1 per vehicle)
  - Ziploc bags (great for sandwiches)
  - Sharpie marker (label bags & bottles)
  - Cooking equipment (Coleman stove, utensils, etc)
  - Napkins, paper towels
  - Dishwashing soap, wash cloth, towel
- Have a menu that includes items other than peanut butter and jelly
- Minimize caffeine to prevent dehydration
- Be careful of items that may spoil in the heat
- Don’t forget to feed your Observer!
**MISCELLANEOUS BUDGET**

**Team Uniforms**
- Shirts (required)
- Hats, jackets, etc (optional)

**Support Vehicle Graphics**
- Name/number (required)
- Sponsors (optional)

**Laundry**
- Change for using machines
- Detergent

**PR**
- Brochures/handouts

**Contingency for the Unexpected**
- Set aside money to handle the “what if” scenarios
- Adequate Get-Home budget (don’t push too hard for lack of funds)

**Planning Tips**
- Many teams have several T-shirts and a polo shirt for the start, finish, and awards
- Get laundry bags for each crew member for those hard to sort items (socks and undergarments)
- Leverage existing cell phone plans among team members
  - Check on same service and/or multi-line benefits
  - Upgrade plan for one month (increase minutes, add data plan)
- Consider having each person pay for (or raise money to cover) their uniform and a portion of other expenses
- Keep an envelope in each vehicle for collecting receipts
PLAN A MOCK DRIVE

Note: you should have already done significant testing and practice time before this!

Goals

- Simulate a real event
- Get people comfortable with their roles and used to traveling together
- Workout issues before the real event

What to include

- Full race crew
- Simulated conditions (set hours, checkpoints, driver changes, flat tires, etc)
- At least one overnight (test out any camping gear)
- Use part of the actual event route (if possible)

Don’t forget to include the mock drive (and other practice) in your budget!
PREP FOR SUPPORT INSPECTION

Signage & Equipment
- Read the regulations!

Discussion with Safety Officer
- Bring proof of first aid & CPR training

Demonstration of Roadside Procedures
- Placement of cones, flaggers, etc
- Communication between flaggers
- Exiting vehicles opposite traffic where possible
BEFORE YOU GO...

Vehicles
- Check driver requirements: age restrictions, CDL, defensive driving course, etc
- Check insurance coverage
- Complete regular maintenance/oil change before trip (and an oil change on/after trip)
- Check expiration date on license plates
- Get lead/chase early enough to practice driving in convoy and build tables/shelves as necessary
- Make a list of vehicle make, model, color, and license plate (hotels typically ask for this information at check-in)
- Make and distribute extra sets of keys

Race Crew
- Safety Officer First aid/CPR certification (at least one member)

Drivers
- Check drivers license expiration date
- Practice driving and parking the vehicles, especially the truck & trailer
- Practice lead, solar car, and chase convoy driving
- Get plenty of sleep

Paperwork
- Proof of insurance for solar car
- Copies of all forms and documentation submitted to HQ
DON’T FORGET REQUIRED ITEMS

Safety Gear
- Amber lights
- Warning flags
- Orange cones
- Safety vests
- Battery spill kit
- Fire extinguishers
- First aid kit
- Safety glasses

Communications
- CB Radio in every support vehicle
- Two-way radio communication w/solar car (and chargers)
- GPS for chase vehicle

Battery Impound Box
- Consider adding handles and wheels for easier movement to the impound location

Team Uniforms
- Must be worn during event hours

Driver Equipment
- Ballast
- Helmet
- Container for 1-liter of water/fluids

Support Vehicle Graphics
- Team number signs
- Team name/institution signs
- Bring extras in case you need to swap out vehicles

Consider adding handles and wheels for easier movement to the impound location.
TEAM PACKING TIPS

Before You Go
- Make a list of what goes in each vehicle
- Label toolboxes/tools

Items to Consider Bringing
- Work lights, flashlights
- Tarps
- Paper towels, wet wipes
- Extension cords
- Trash bags
- Tables and chairs

Loading the Trailer
- Keep weight distributed
- Properly secure all items
- Include a spare tire, jack, and any other tools you may need

On the Road
- Leave room in chase for the observer’s luggage
- Keep critical items easily accessible
  - Safety gear
  - Tire change and quick fix tools
  - Water spray bottle for array
  - Coolers with food and water
- Don’t bury the luggage, cooking equipment, or camping gear
- Keep a trash bag/container in each support vehicle
- Restock supplies each night
- Consider carrying fuel cans to refuel lead and chase vehicles (keeps lead/chase from leaving checkpoint to find fuel)
PERSONAL PACKING LIST

Clothing
- Uniform shirts
- Casual shirts for travel days
- Shorts/pants
- Socks, undergarments
- Shoes/sandals (include extra pair in case your primary pair gets soaked)
- Clothes to sleep in
- Jacket/rain gear
- Hat

Personal Care Items
- Toothbrush, toothpaste, floss
- Deodorant
- Soap & shampoo
- Razor
- Brush/comb
- Eyeglass/contact lenses solution

Other
- Drivers license
- Insurance card
- Money/credit cards
- Cell phone (and charger)
- Laptop (and charger)
- Camera (and charger)
- Watch, alarm clock
- Any medications
- Sunglasses
- Sunscreen & chap stick
- Notebook & pen
- Flashlight
- Laundry bag, detergent, quarters
- Camping gear (tent, sleeping bag, pillow, towel, etc)