PSAS Launch Tower Upgrade
REVIEW PRESENTATION

Launch Tower Goals

- Any Linux computer put as controller.
- I/O management through USB external to control computer.
- Acquisition of environmental conditions (wind, temperature, humidity)
- Smaller tower box (reduction of 50% weight)
- Visual indication of system health @ launch tower
- Visual ground control software
- Provide future capabilities
  - Trigger video acquisition of takeoff.
  - Addition of more sensors

Old vs. New System

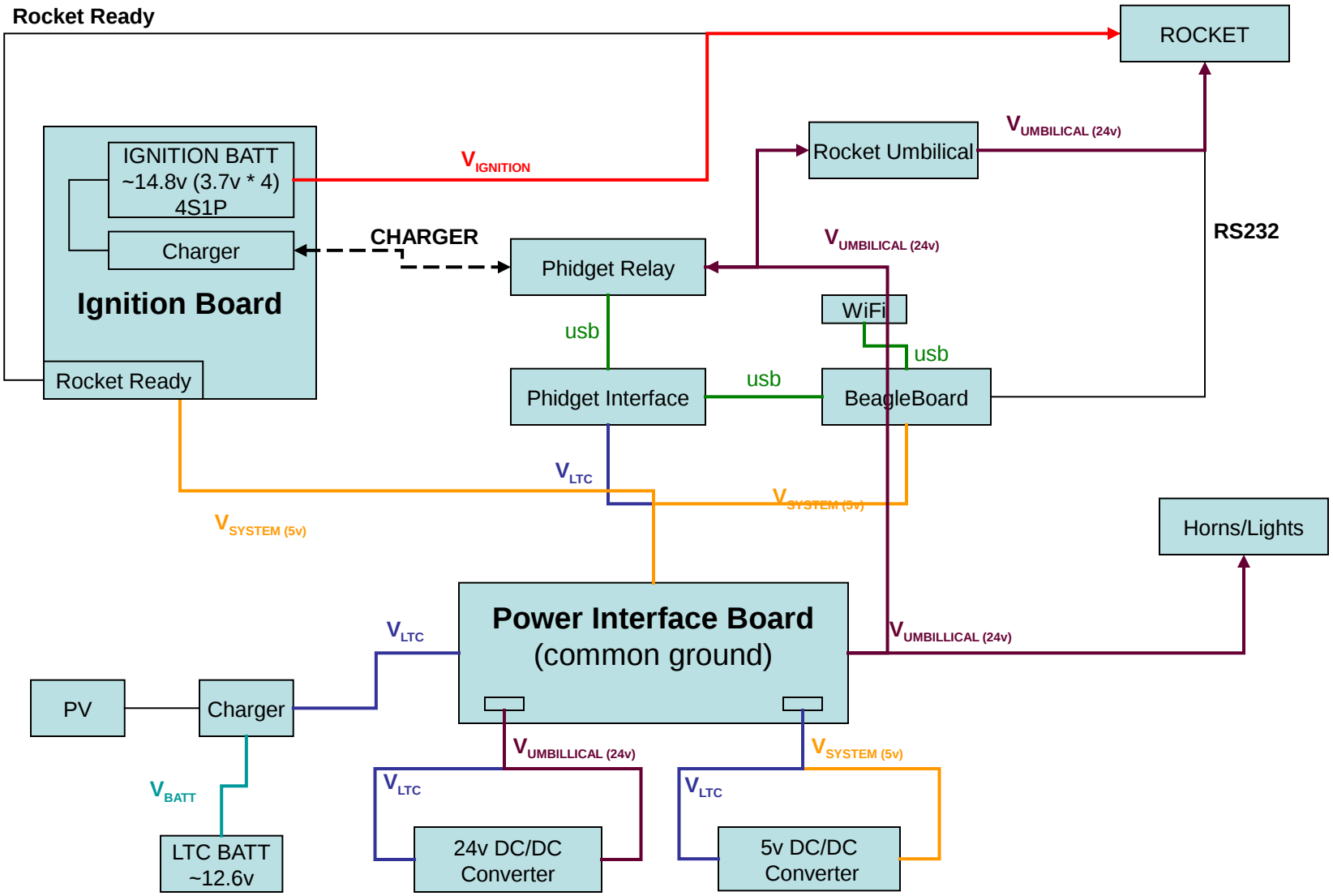
- Unreliable wireless
- System weight
- System size
- Ign. battery weight
- x86 and PIC boards lost in time
- Questionable reliability

- New wireless card
- Lighter
- Smaller
- LIPO Launch battery
- New COTS system
- Designed to be reliable

How Reach Goals

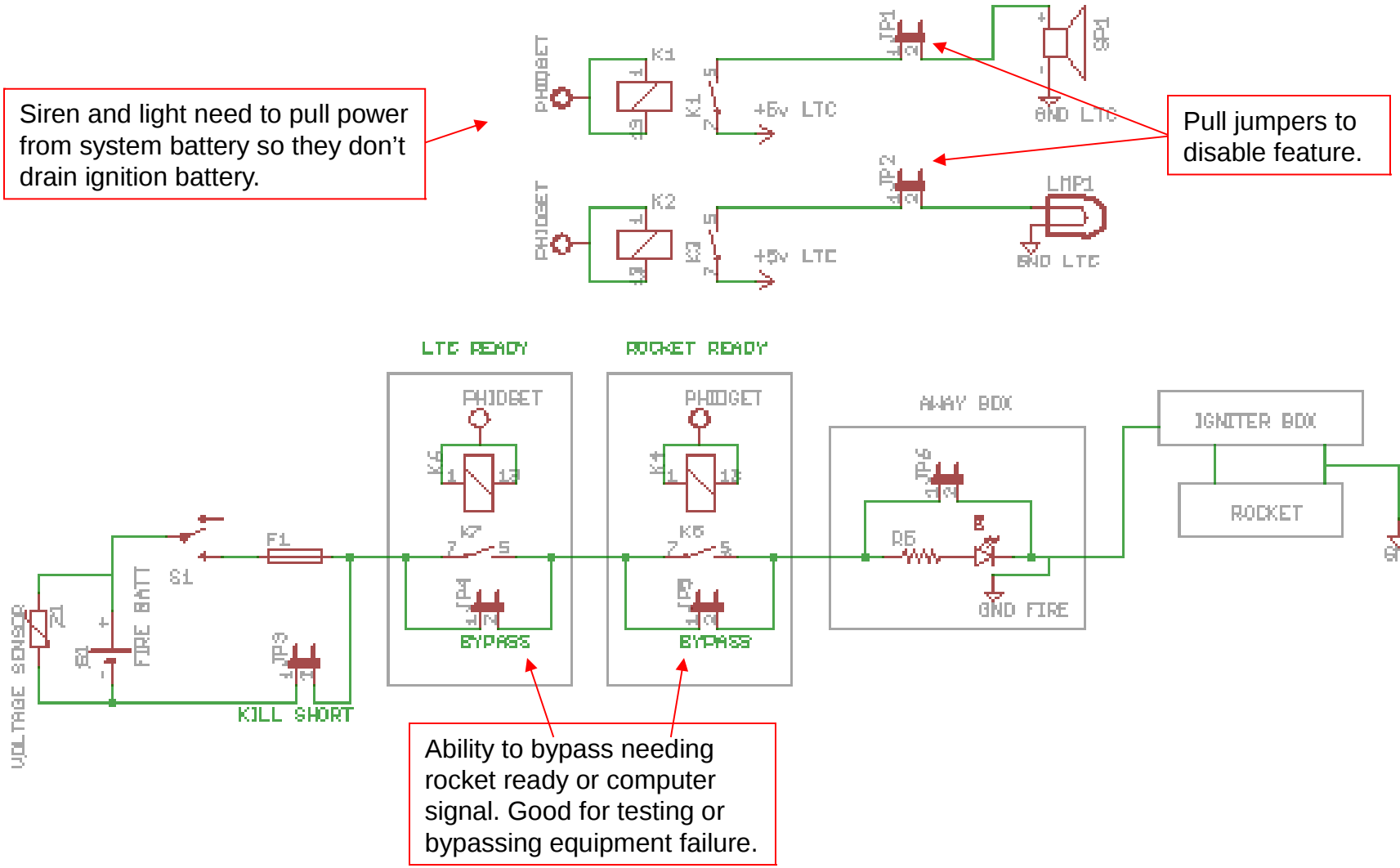
- Smaller Computer
  - Beagleboard
- Data Acquisition
  - Phidgets
- System Health
  - Power Interface Board
  - Ignition Board

System Block Diagram



IGNITION PATH & FEATURES

Siren and light need to pull power from system battery so they don't drain ignition battery.



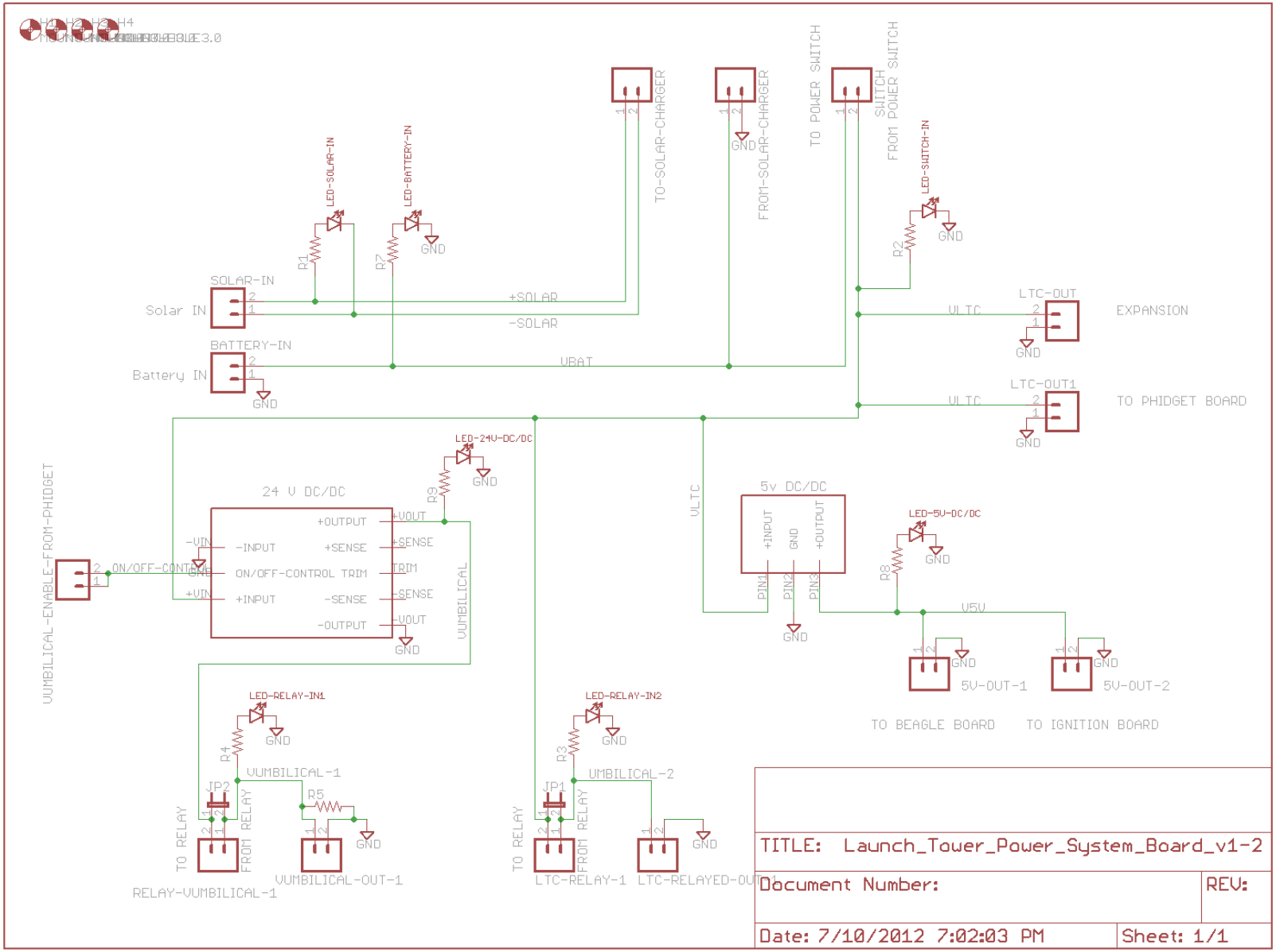
Pull jumpers to disable feature.

Ability to bypass needing rocket ready or computer signal. Good for testing or bypassing equipment failure.

Power Interface Board

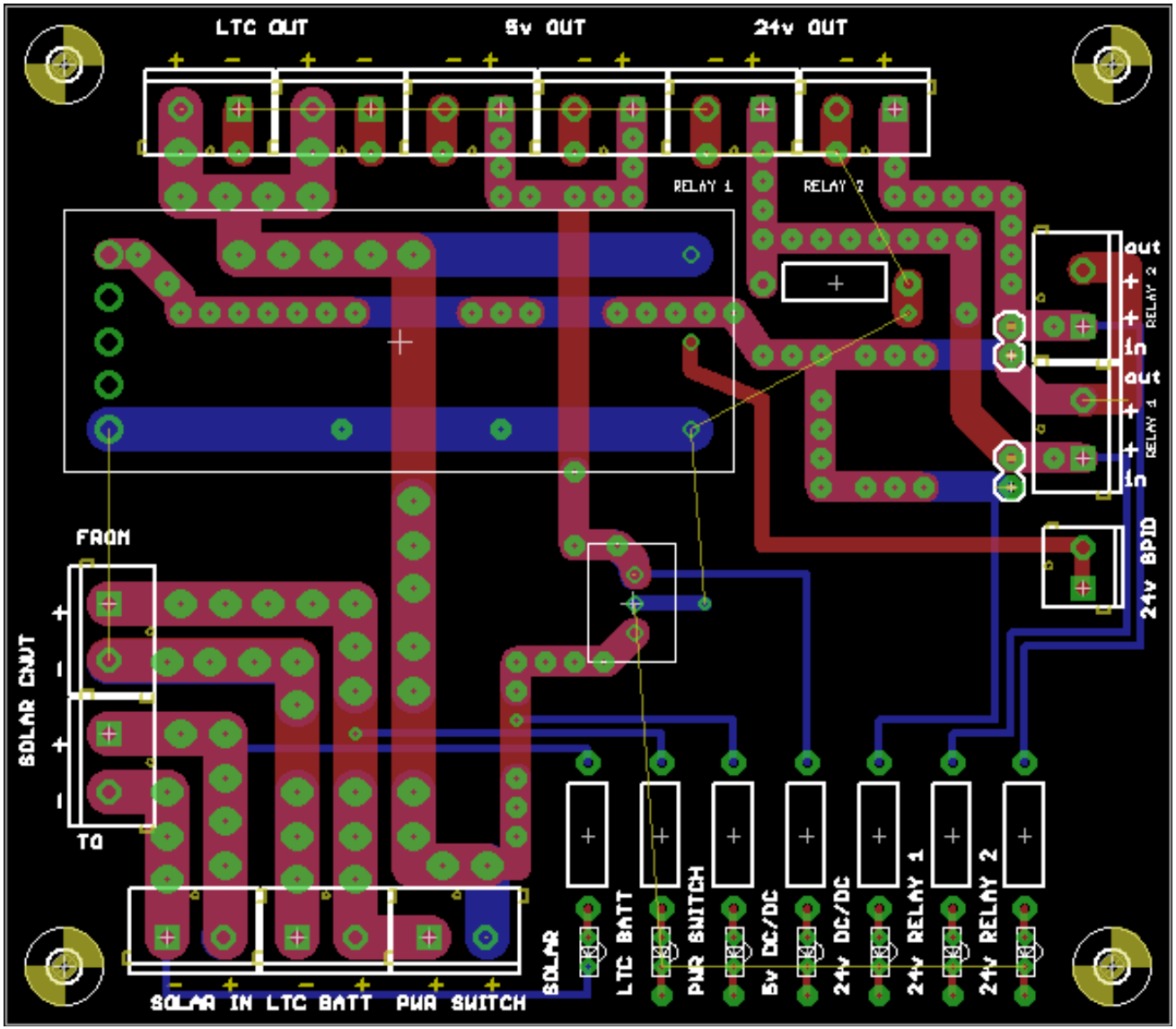
- PROS
  - Provide single point to view system health with LED indicators
  - Provide on-board conversion of voltage
  - Provide common ground point
- CONS
  - Star topology for power

Power Interface Board



Power Interface Board

- Ground plane on both sides of board
- Traces on both sides are “stitched” together
- 5v DC/DC could be mounted horizontally w/ 90* headers



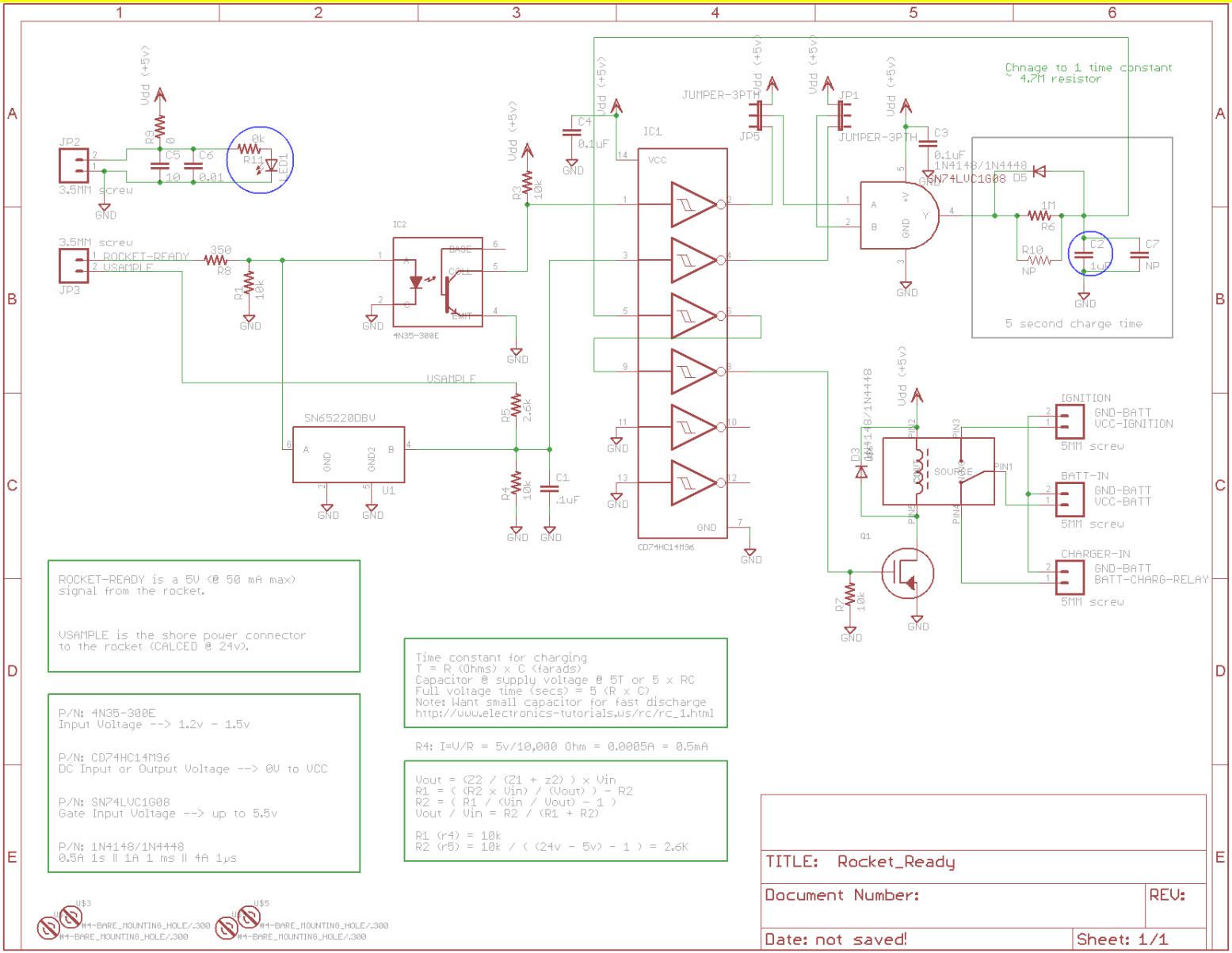
Ignition Board

- Combines the capability of rocket-ready with all LIPO battery functions.

- PROS
  - LIPO Battery
  - Charging functions handled on board and controlled via Phidget relays
  - Timing circuit designed for drop-in change of resistor and capacitor
  - Has bypass jumpers for testing and bypassing fault on launch day (unsafe)

- CONS
  - Not digital (but its cool to go analog sometimes)

Ignition Board



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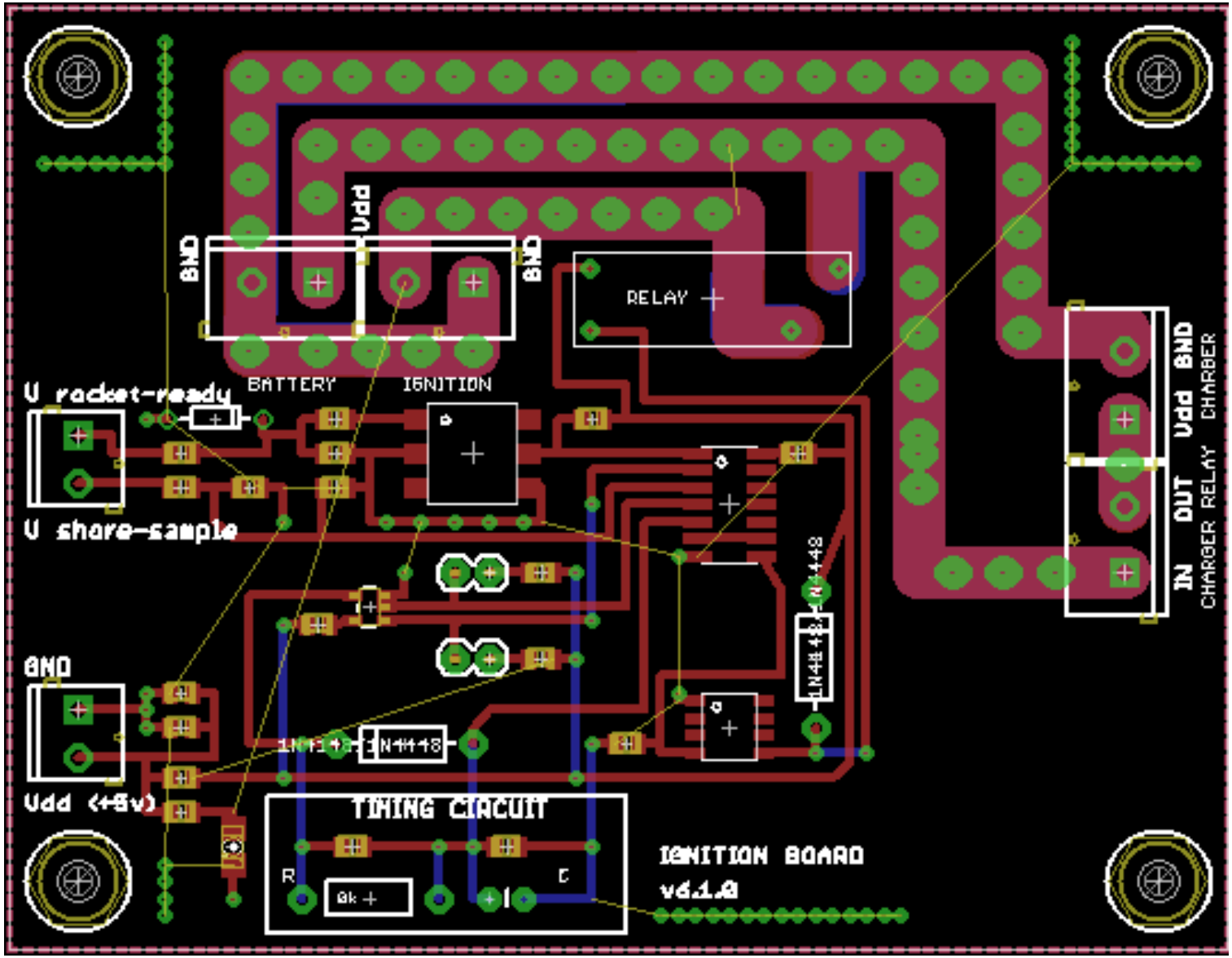
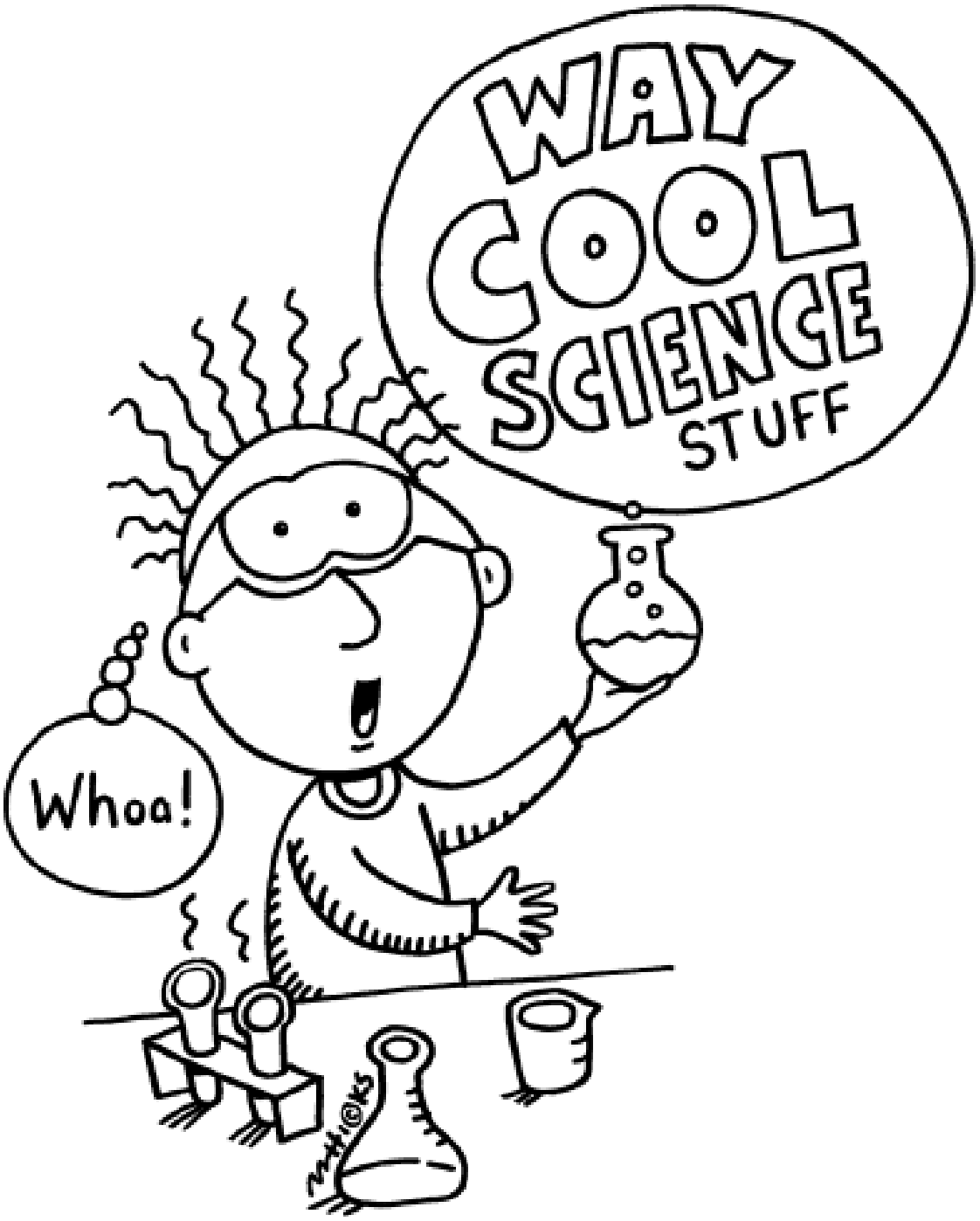


Timeline

- Order Parts 1 week
- Manufacture Boards 1 week
- Assembly & Test 2 weeks
  - Possible initial rocket access tests

- Mid-August mount to launch tower and mate with rocket for full testing.


WAY COOL SCIENCE STUFF
Whoa!