NPOI Nitrogen Distribution Progress Report I

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Presentation Contents

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Project Background

- Navy Precision Optical Interferometer
- Used to map stars
- Array telescope
  - 300 meter arms
  - Stations along arms utilized nitrogen devices
- Central nitrogen supply system needed

Changes to Final Design

- Manifold at imaging station (lizard head) replaced by barbed T-fitting
- Two tanks on each arm
  - Prior to gate valves (as in original design)
  - Prior to ninth imaging station (~200 meter)
- Pressure gauges along supply line

Prototype Design

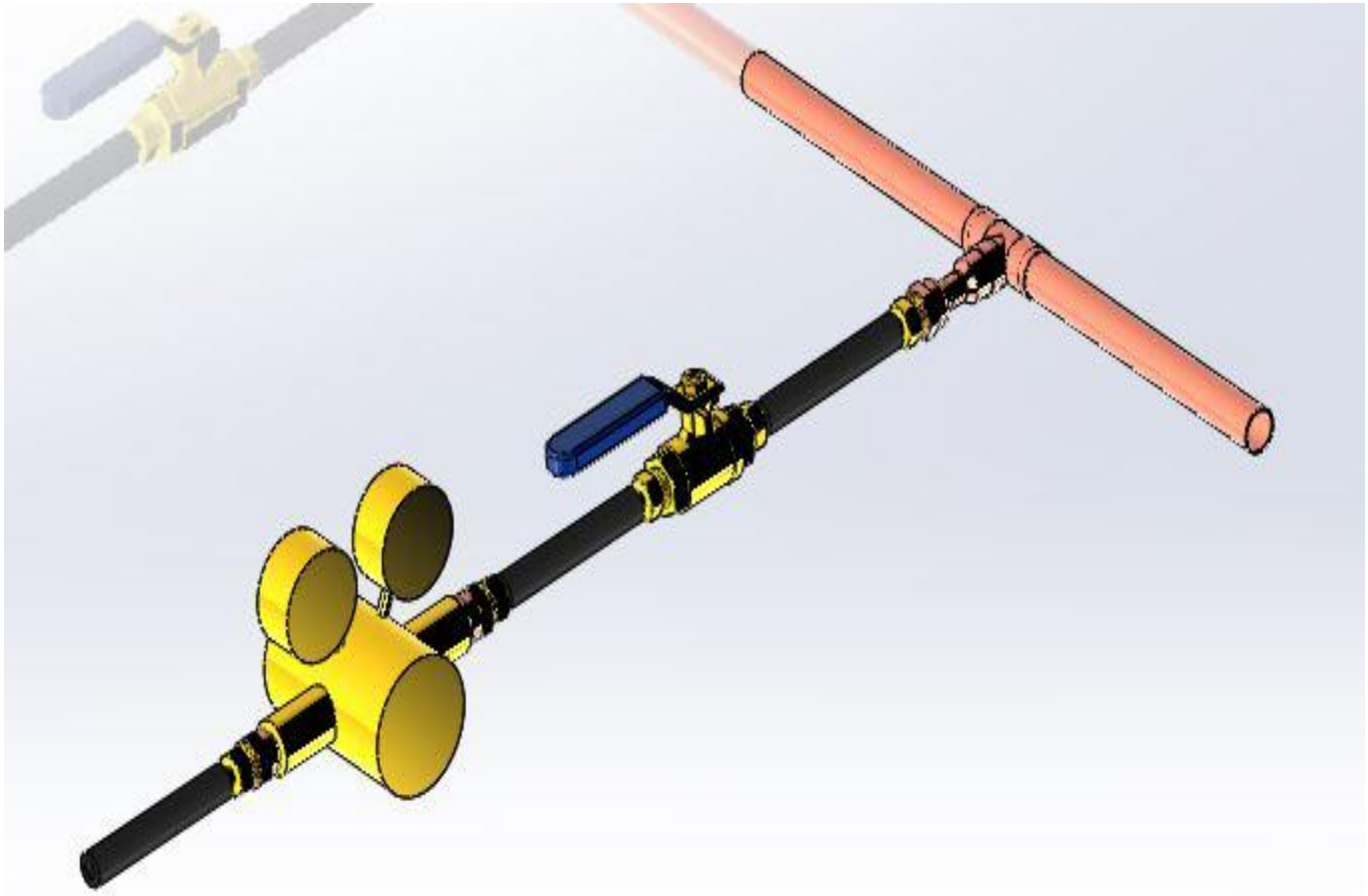
- Small section of west arm
- Contains:
  - Imaging station
  - Astrometric hut
  - Gate valve section
- 100 ft section of supply tubing

Changes to Prototype

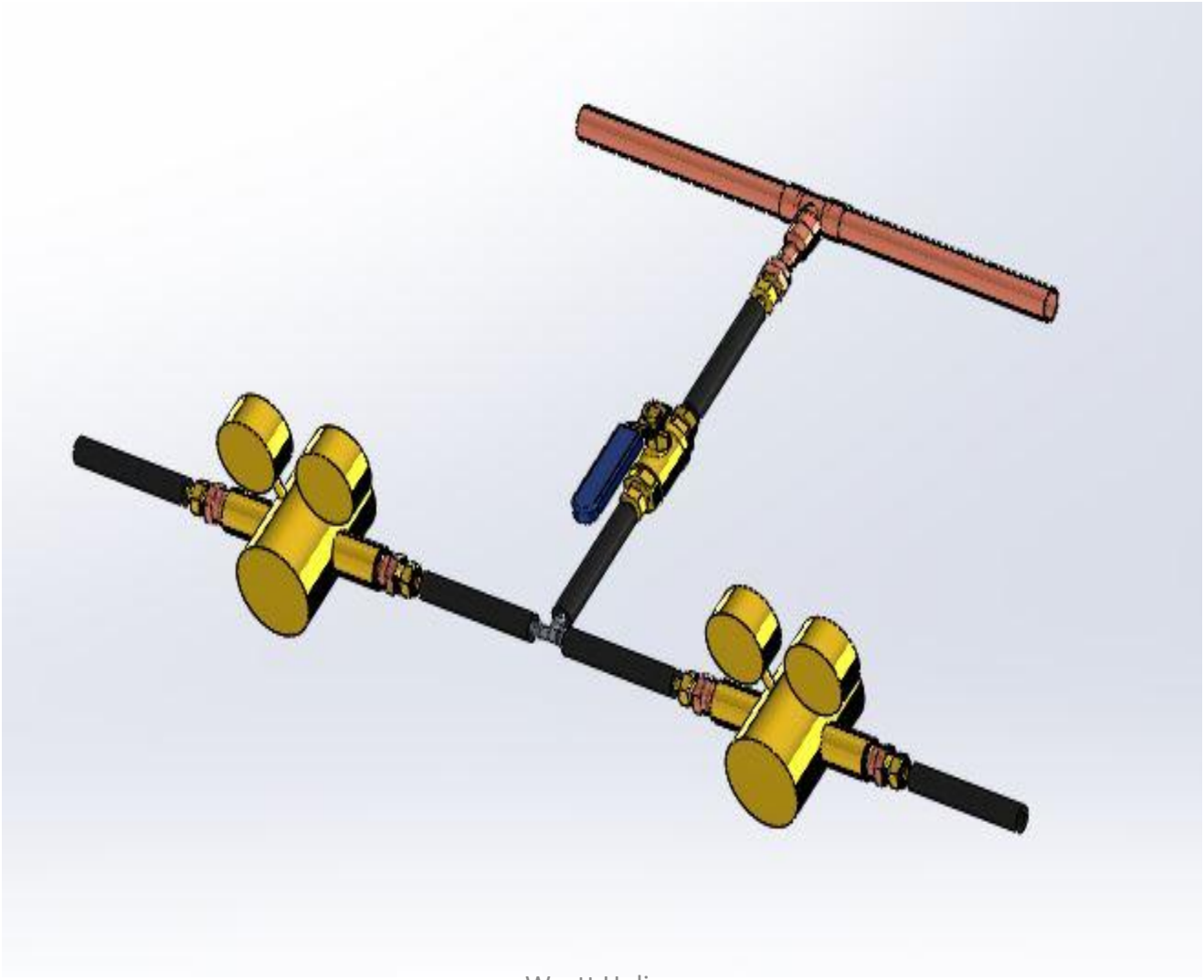
- Dewar replaced by small tank
- Long coil to simulate length of arm
- Storage tank installed prior to gate valve
- Pressure gauge installed on each end of coil

Astrometric Hut Design

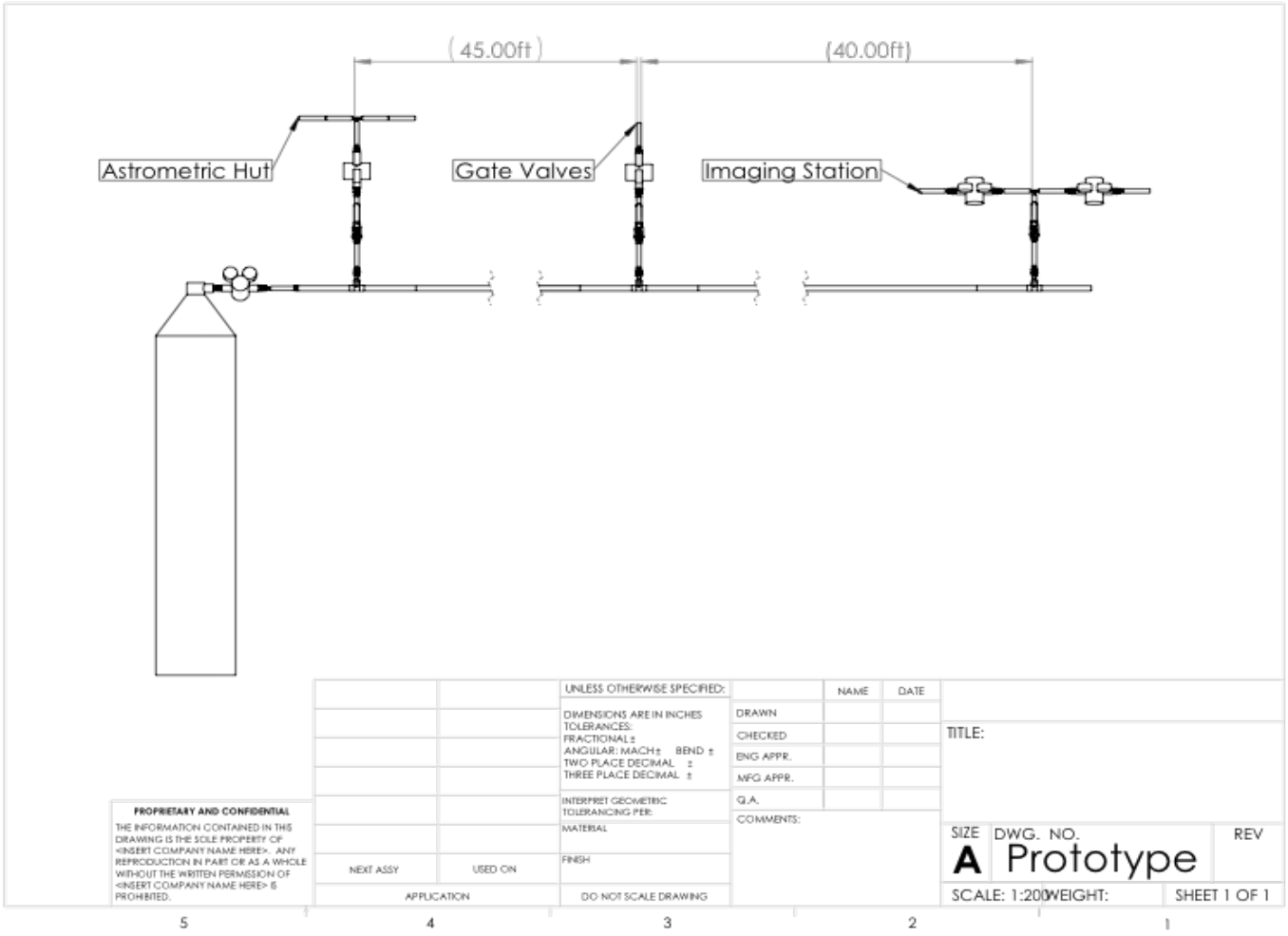
Gate Valve Design



Imaging Station Design



Prototype Design Drawing



Coil & Tank

- Coil installed prior to imaging station
  - Simulates actual distance of array
- Tank installed
  - At end of coil
  - Prior to gate valve
- PVC tubing to tank in-line with supply line

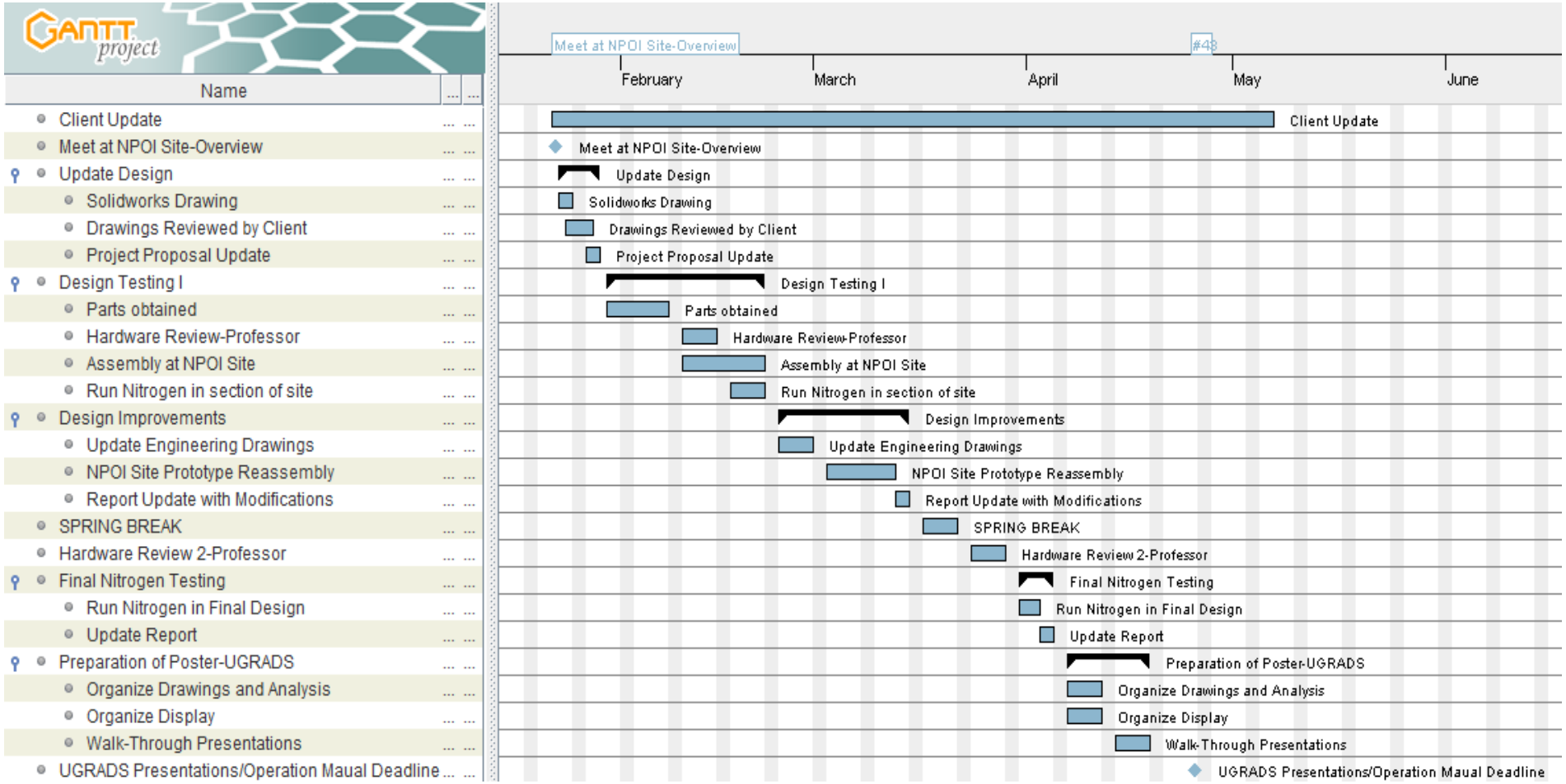
Plan for Building Prototype

- Sponsors must be on site for building
- Construction in order of application
  - Lay out main supply line
    - Includes tube bender
- Install brass fittings station by station
    - Includes cutting, soldering, installation
    - Install tanks, regulators and gauges
- Secure tubing to cable tray
- Charge system after final check

Prototype Cost

- Total cost: $365.00 without coil
- Several components currently on site
  - Polyvinyl hose
  - 5 gallon tank
  - Tools
  - Manifolds

Gantt Chart Update



Individual Responsibilities on Site

Responsibility	Team Member
Schedule Planning	Amelia Fuller
Communication	Amelia Fuller
Logistics	Wyatt Huling
Supplies	Wyatt Huling
Documentation	Scott Ryan
Building	Scott Ryan

Conclusion

- A central supply system is needed for nitrogen distribution at the NPOI.
- Minor Changes have been made to the design:
  - Manifold at imaging station replaced with T-fitting.
  - Two tanks per arm.
  - Pressure gauges installed throughout system.
- Prototype will be built on site and consists of one of every device utilized at facility.
- A coil will be employed to simulate distance of array arm.
- Each team member will be in charge of aspects of the build.