# Nozzle & Chamber

## RE

- Bernadette

## Members

- Wouter
- Tom
- Elida

## Responsibilities

- Nozzle & chamber design + mfg.
- Interface with Injector & Ignition team
    - Mechanical connections
    - Chamber conditions
- Interface with Test team for mechanical connections if necessary

## Starting Sources

- Rocket Propulsion Elements (Sutton & Biblarz) - Ch. 3, 8
- Design of Liquid Propellant Rocket Engines (Huzel & Huang) - Ch. 2.4, 2.5, 4, 9
- Exhaust Nozzle Contour for Optimum Thrust - G V R Rao (in textbooks folder)

## For CoDR

- Drawing
- Materials, material thickness

# Injector & Ignition

## RE

- Jeff

## Members

- Walker
- Rishav
- Alec
- (Bernadette)

## Responsibilities

- Injector & igniter design and mfg.
- Interface with Nozzle & Chamber team
    - Mechanical connections
    - Chamber conditions
- Interface with Test team
    - Mechanical connections
    - Cold flow testing
- Interface with Propellant Feed System team
    - Pressure, mass flow requirements
    - Startup/shutdown sequences

## Starting Sources

- Papers in *Liquid Rocket Thrust Chamber* and *Swirl Injector Papers* folders on drive
- Rocket Propulsion Elements (Sutton & Biblarz) - Ch. 8, 9, 11
- Design of Liquid Propellant Rocket Engines (Huzel & Huang) - Ch. 2.4, 2.5, 4, 7, 9

## Tasks for CoDR

- Pick injector element type + rough sizing
- Pick ignition system + rough sizing
- First pass at injector manifold concept (for system cutaway)
- Startup/shutdown sequence
- Valving requirements (Feed system interfaces)

# Propellant Feed System

## RE

- Efaine

## Members

- Alec
- Jeff
- Elida
- (Rishav)

## Responsibilities

- Propellant sourcing
- Propellant storage
- Pressurization
- Flow control (checks, orifices, tubing/piping)
- Main, ignition, purge valves
- Interface with Test team
    - Mechanical connections
    - Required plumbing
- Interface with Injector & Ignition team
    - Pressure, mass flow requirements
    - Startup/shutdown sequences

## Starting Sources

- Rocket Propulsion Elements (Sutton & Biblarz) - Ch. 6, 11
- Design of Liquid Propellant Rocket Engines (Huzel & Huang) - Ch. 2.4, 2.5, 5, 7, 8, 9

## Tasks for CoDR

- Propellant sourcing
- Tank Sizing
- Pressurization
    - Active
- Quantify all relevant interfaces and determine appropriate valve

# Test

## RE

- Wouter

## Members

- Bernadette
- Elida

## Responsibilities

- Test stand structure
- Plumbing layout
- Thrust diverter
- Cold flow rig
- Any component level test fixtures
- SAFETY
- Interface with Propellant Feed System team
    - Mechanical connections
    - Required plumbing
- Interface with Injector & Ignition team
    - Mechanical connections
    - Cold flow testing
- Interface with Nozzle & Chamber team for mechanical connections if necessary
- Interface with Power & Control team
    - Required cabling
    - Power sources
    - Control box mounting

## Starting Sources

- Rocket Propulsion Elements (Sutton & Biblarz) - Ch. 21
- Design of Liquid Propellant Rocket Engines (Huzel & Huang) - Ch. 2.4, 2.5, 7, 8, 9

## Tasks for CoDR

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# Avionics

## RE

- Tom

## Members

- Elida
- Efaine

## Responsibilities

- Power
- Control systems
- Remote control capability
- Interface with Propellant Feed System team
    - Startup/shutdown sequences
- Interface with Injector & Ignition team
    - Spark plug/torch
- Interface with Test team
    - Required cabling
    - Power sources
    - Control box mounting

## Starting Sources

- Rocket Propulsion Elements (Sutton & Biblarz) - Ch. 11
- Design of Liquid Propellant Rocket Engines (Huzel & Huang) - Ch. 10.6 (Legacy info)

## Tasks for CoDR

- Pick DAQ box
- Top-level Avionics diagram