

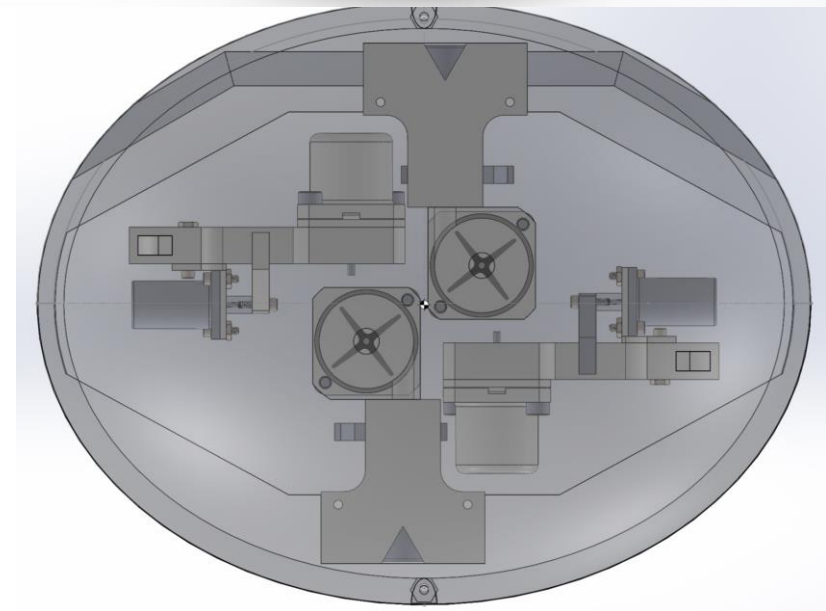
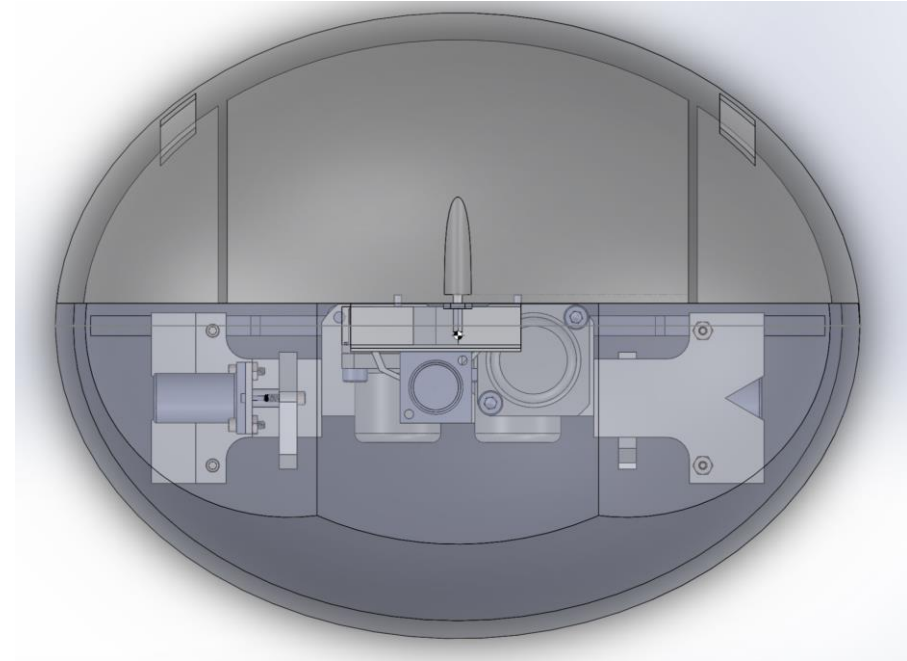
Update

Alev Orfi

July 19th, 2017

Piping Positioning

- Added materials to get a center of mass estimation
- In center of x-y plane
- Z position will depend on electrical components
- Working on a center of buoyancy calculation



- Piping angle set at 30 degrees
- Aspect ratio is around 1.25

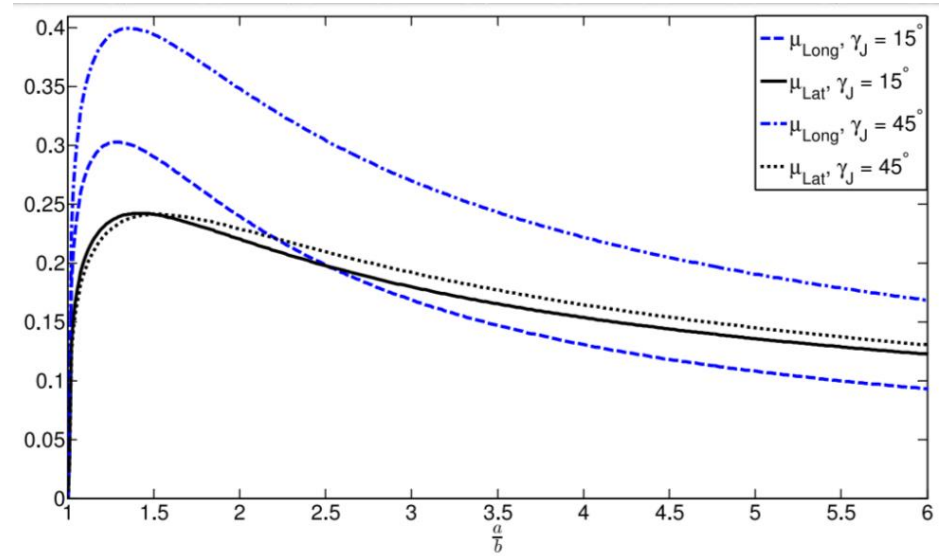
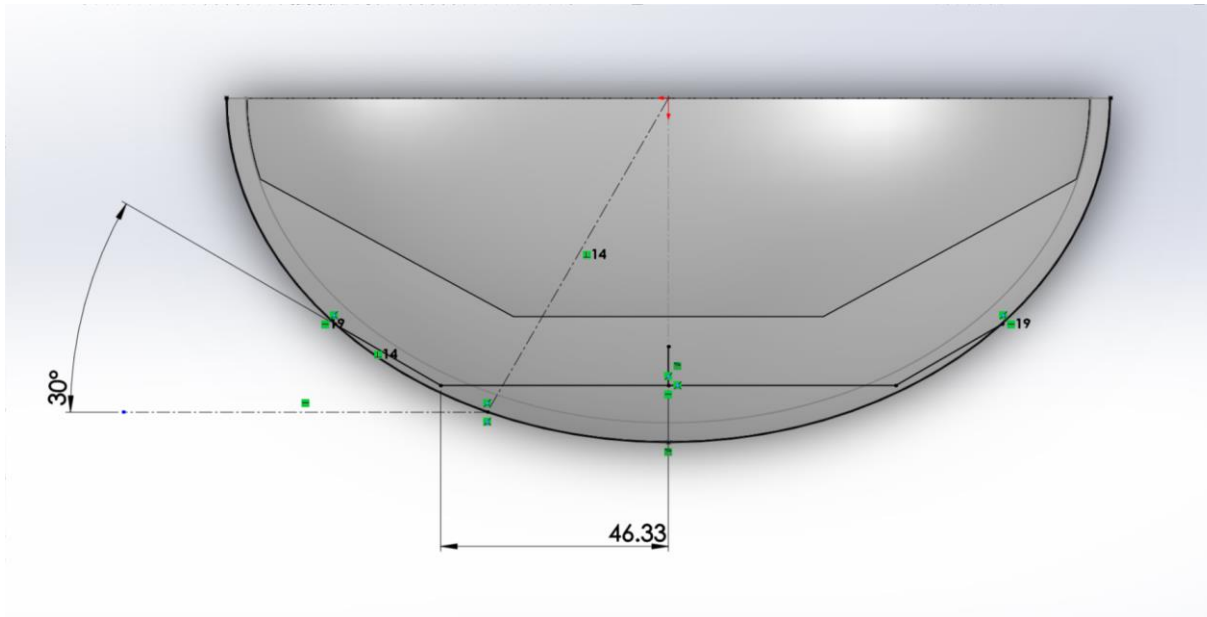


Fig. 7. Illustration of the effect of jet angle, γ_J , and the aspect ratio, $\frac{a}{b}$, on the controllability metrics, μ_{Long} , μ_{Lat} .

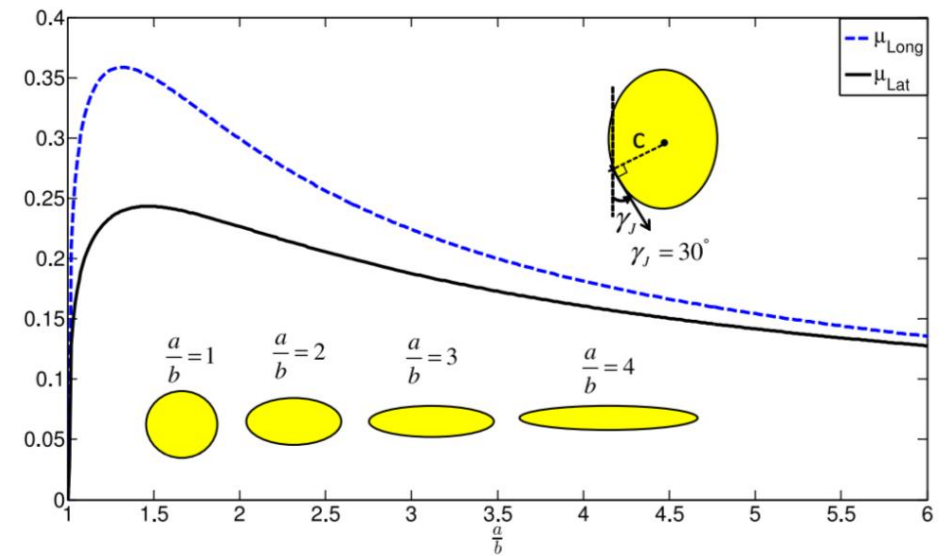
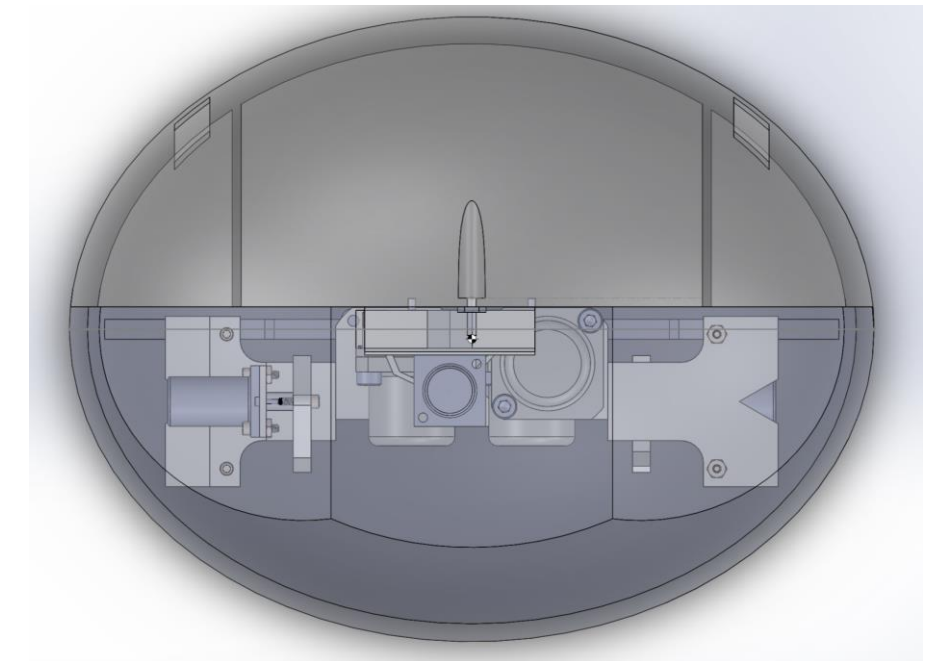
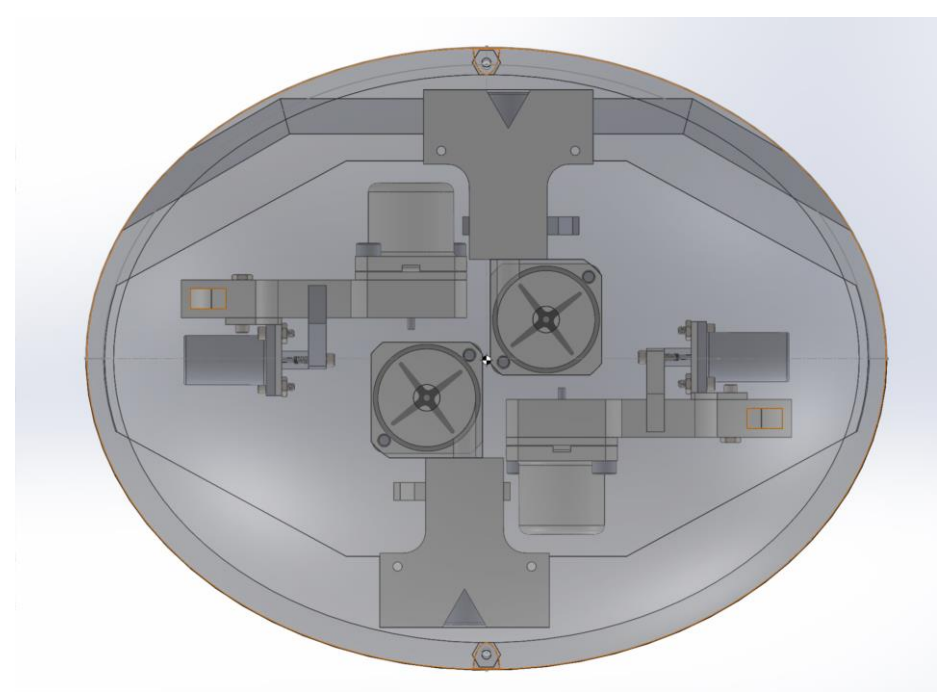


Fig. 8. Illustration of the degrees of controllability, μ_{Long} and μ_{Lat} for the longitudinal and lateral motions, respectively, when $\gamma_J = 30^\circ$.

Roll and Pitch Control

- Currently upwards piping positioning is set based on the value position
- Depends on the position of the center of mass/buoyancy
- Can also alter the height of the ROV

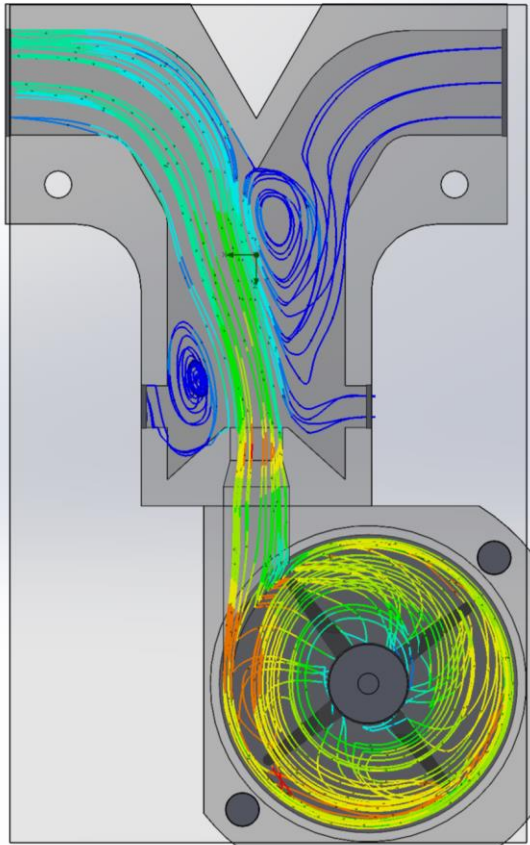
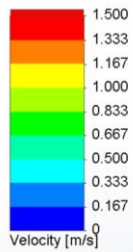


General Simulations

- Incorporating pump motion
- Output flow rate
- Differences in sides

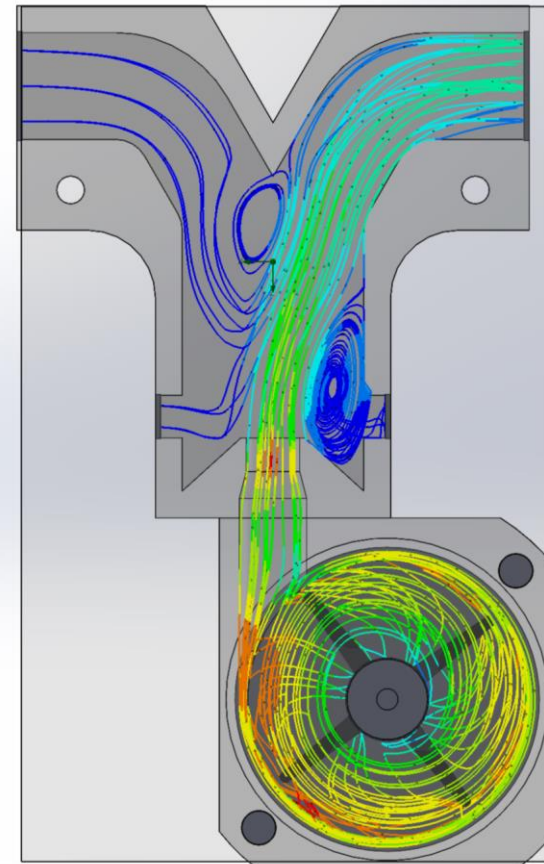
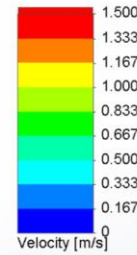
Left Side

Goal Name	Unit	Value
SG Mass Flow Rate 1	[kg/s]	0.0014
SG Volume Flow Rate 1	[m ³ /s]	1.4142e-006
SG Av Velocity 1	[m/s]	0.040
SG Mass Flow Rate 2	[kg/s]	-0.0167
SG Volume Flow Rate 2	[m ³ /s]	-1.6734e-005
SG Av Velocity 2	[m/s]	0.470



Right Side

Goal Name	Unit	Value
SG Mass Flow Rate 1	[kg/s]	-0.0164
SG Volume Flow Rate 1	[m ³ /s]	-1.6483e-005
SG Av Velocity 1	[m/s]	0.464
SG Mass Flow Rate 2	[kg/s]	0.0012
SG Volume Flow Rate 2	[m ³ /s]	1.1850e-006
SG Av Velocity 2	[m/s]	0.034



Moving forward

- Running simulations through the body piping
 - Final output flow rate
 - Look for non symmetrical motion
- Specifying electrical components so center of mass/ buoyancy can be found
- Figuring out acoustic positioning system
- Make electrical housings
 - Waterproofing

Other

- Away next week (22-31)