

P10225 Mini-Baja Water Propulsion Team
 Concept Risk Assessment MSD I

Risk Item	Effect	Cause	Likelihood	Severity	Importance	Actions to Minimize Risk	Owner	Actions Taken
<i>Describe the risk briefly</i>	<i>What is the effect on any or all of the project deliverables if the cause actually happens?</i>	<i>What are the possible causes of this risk?</i>			<i>L*S</i>	<i>What action(s) will you take to prevent, reduce the impact of, or transfer the risk of this occurring?</i>	<i>Who is responsible for mitigation?</i>	<i>What actions have been taken?</i>
Tank doesn't contain water	Electrocution of users, ruined electronics, inaccurate results	Weak structural integrity, weak material, poorly attached cover	2	1	2	Perform small trial tests, test in a safe environment, simulate results/effects/material	ME group	Created Tank Water Holding test plan to implement 1/15/2010, created Wheel in Water test plan to implement 1/22/2009
Wheel doesn't have enough forward force to move	Wheel doesn't move, no data is collected, increased expenses to fix	Too much weight or friction on wheel, belt slipping, deformation in system	2	2	4	Lubricate track, use grooved belt, perform trial test with low weight	ME group	Changed design to include (3) wheels at each point, picked motor with adequate power, used grooved timing belt
Electronics fail	No or inaccurate data transmission, increased expenses to fix	Inaccurate calibration, short circuit, water in electronics, improper grounding, exposure to extreme temperatures	3	2	6	Test calibration, use careful handling, select durable components	EE group	Waterproof box included for electronics on 11/13/2009, lid designed for tank on 11/18/2009, created Wheel in Water test plan to implement 1/22/2009
Poor water flow	Receive inaccurate data, increased expenses to fix	Poor tank geometry, not enough water, poor water circulation	3	2	6	Research and simulation testing (CFD), prototype testing	ME group	CFD testing attempted but not helpful, tank geometry made as large as possible
Tire flies out of tank	User injury, material damage, increased expenses to fix	Oscillating force too high, material failure, not enough weight to keep tire on track	1	3	3	Perform material simulation, overdesign structure to secure cover, test top weight in small increments with low rpm	ME group	Lid designed for tank on 11/19/2009, thick pin designed to hold swing arm in place, tire hub bolts will hold tire to axle, changed original linear motion design to account for upward force
Finger caught in pulley/track	User injury	Lack of safety guards, lack of safety warning signs, negligence in designing	1	3	3	Install safety guards around pulley, track, and tank opening; install warning signs; install and label kill switch	Everyone	Kill switch and warning signs included in design, lid protects tank opening and mechanisms in tank, safety guard designed around pulley

Likelihood scale	Severity scale
1 - This cause is unlikely to happen	1 - The impact on the project is very minor. We will still meet deliverables on time and within budget, but it will cause extra work
2 - This cause could conceivably happen	2 - The impact on the project is noticeable. We will deliver reduced functionality, go over budget, or fail to meet some of our Engineering Specifications.
3 - This cause is very likely to happen	3 - The impact on the project is severe. We will not be able to deliver, or what we deliver will not meet the customer's needs.

	Importance Score (Likelihood x Severity) Determines Action to Minimize Risk
9 - Prevent	Action will be taken to prevent the cause(s) from occurring in the first place.
6 - Reduce	Action will be taken to reduce the likelihood of the cause and/or the severity of the effect on the project, should the cause occur
3 or 4 - Transfer	Action will be taken to transfer the risk to something else.
1 or 2 - Accept	Low importance risks may not justify any action at all. If they happen, you simply accept the consequences.