

P14474 Hydrostatic Test Apparatus								
ID #	Potential Failure Modes	Potential Effects of Failure	Potential Causes of Failure	Severity	Probability	Rank	Recommended Action	Owner
1	Failure to Sense Correct Pressure	Loss of Test Control	Water Damage	3	1	3	Select Waterproof Sensor	
		Failure to Meet Operating Standards	Impact Damage	3	1	3	Shielding to Protect Sensor	
			Sensor range not wide enough	2	1	2	Select Sensor with applicable range	
2	Timing Error	Inaccurate Hold Time	Water Damage	2	1	2	Isolate Controller From Test Environment	
		Inaccurate Ramp Rate	Impact Damage	2	1	2	Isolate Controller From Test Environment	
		Failure to Meet Operating Standards	Electrical Failure	2	2	4	Use of Surge Protection, Provide Clean Power to Controller	
3	Loss of data transfer	Inaccurate test	Broken Connection	2	1	2	Program Fail-Safe into Controller	
		Loss of Test Control	Sensor Failure	2	1	2	Program Fail-Safe into Controller	
			Signal Interference	1	2	2	Shield Cables	
4	Excessive Leakage	Failure to Build Desired Pressure	Damaged Connection	2	1	2	Choose the Most Robust Connections	
		Fails to Complete Test	Operator Error	2	1	2	Operator Training	
		Harm to Test Apparatus and/or Operator					Inspection of Test Connection before Start.	
5	Enclosure Separation from Test Connection	Fails to Complete Test	Damaged Connection	2	1	2	Choose the Most Robust Connections	
		Harm to Test Apparatus and/or Operator	Operator Error	2	1	2	Operator Training	
						0	Inspection of Test Connection before Start.	
6	Valve Failure	Test over pressure	Valve component failure	3	2	6	Focus on reliable control design	
		Test under pressure	Control system failure	2	1	2	Proof test valve components/select valve with adequate pressure	
		Failure to meet ramp rate						
7	Pressure control response too slow	Test under pressure	Inadequate valve response	2	2	4	Choose fastest control system as is practical	
		Test over pressure	Control system failure	2	1	2	Focus on reliable control design	
		Failure to meet ramp rate						
8	Pipes/Connections Fail/Leak Excessively	Inaccurate Test	Materials not robust enough	3	1	3	Choose correct materials/ Do stress/fatigue calculations	
		Loss of Test Control	Premature wear from vibrations	2	1	2	Add vibration dampeners if necessary	
		Failure to Meet Operating Standards	Sudden, large increases in pressure	3	2	6	Pressure control system/ Robust enough to withstand max pressure	
9	Not able to connect to all enclosures	Unable to complete test	End connection not able to reach enclosure	1	1	1	Use flexible hose that is long enough to reach all enclosure connection points	
		Failure to Meet Operating Standards	Incompatible end connection	1	1	1	Use adapter that has compatible connector	
10	Failure To Display Results	Loss of Test Data	No Information Received	2	1	2	See Recommendation for ID # 3	
		Unusable Test	Broken Display	2	1	2	Use Quality Display	
11	Hardware Failure within Controller	Loss of Test Control	Water Damage	3	1	3	Use Sealants within Controller Enclosure	
		Failure to Meet Test Standards	Physical Damage	3	2	6	Use a Rigid and Sturdy Enclosure	
			Electrical Damage	3	2	6	Use of Surge Protection	
12	Logical Failure within Programming	Inaccurate Control of Test	Incorrect Programming	2	2	4	Heavily Test and Debug Controller Before Use	
		Incorrect Results Displayed						
13	Over Budget	Dissatisfied customer	Necessary parts are more expensive	3	1	3	Perform Cost Analysis	
		Working version of product cannot be created	Multiple of each part needed	1	1	1	Utilize RIT resources	
		Better parts sacrificed for lesser quality ones						
14	Deadline not met	Dissatisfied customer	Parts delivered late	2	2	4	Better time management	
		Bad overall grade received	Poor team time management	2	1	2	Order parts several weeks in advance	
			Repeated mistakes that need to be rectified.	2	1	2	Seek help from Faculty champion	